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with the
American Microscopical Society
The Crustacean Society

FINAL PROGRAM

San Francisco Marriott Marquis
3-7 January 2018

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The Society for Integrative and Comparative Biology
FINAL PROGRAM

San Francisco Marriott Marquis

780 Mission Street

San Francisco, CA 94103, USA

Future Meeting Dates

3-7 January 2019
 Tampa, Florida

3-7 January 2020
 Austin, Texas

3-7 January 2021
 Washington, District of Columbia

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 Comparative Biology**

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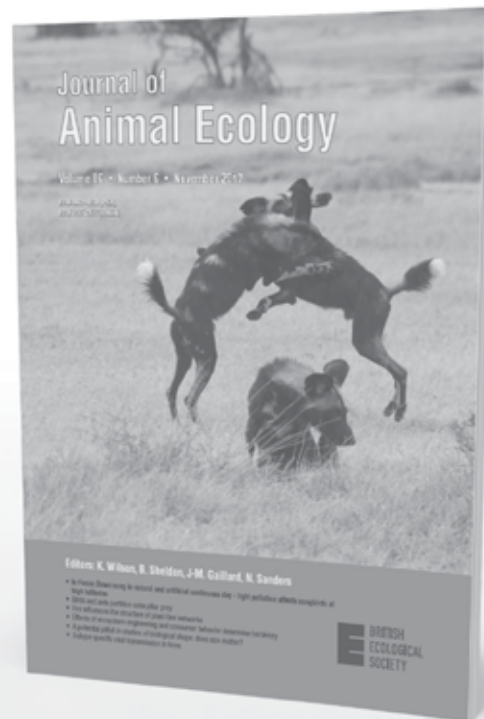
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Welcome to San Francisco

Message from the President

The 2018 annual meeting of the Society for Integrative and Comparative Biology is in a great city with a great venue! Welcome!

Here are some important things for you to think about as you enjoy the meeting.

- We have revised the meeting Code of Conduct that provides an excellent guide for everyone to enjoy our meeting with professionalism in an open and supportive environment.
- We wish to honor particularly this year our symposium organizers. The excellent symposia on display this year have resulted from the dedication and hard work of a few individuals who have gone out of their way to provide you with an exciting program. The symposia make up the core of the scientific program around which the rest of the meeting is built.
- The meeting is organized by a Program Committee of about 15 people who have worked very hard to plan all of the events in our schedule. We are especially grateful to our Program Officer Rick Blob and our Program Officer-Elect Susan Williams for their huge efforts in directing the hard-working program team. If you see someone with “Program Officer” on his or her name badge, please thank them!
- Our Meeting Manager Lori Strong and her group at our management company, Burk and Associates, Inc., assist the Program Committee and are there every second of our meeting making sure things run smoothly. Please drop by the registration desk and thank them for their herculean efforts. Also, be sure to drop by the exhibits of our vendors; these exhibits provide useful information and they support our Society.

SICB has made great strides in broadening the participation in our science to all groups, but especially underrepresented groups. We take great pride in this and will continue our efforts as we help to train the next generation of scientists.

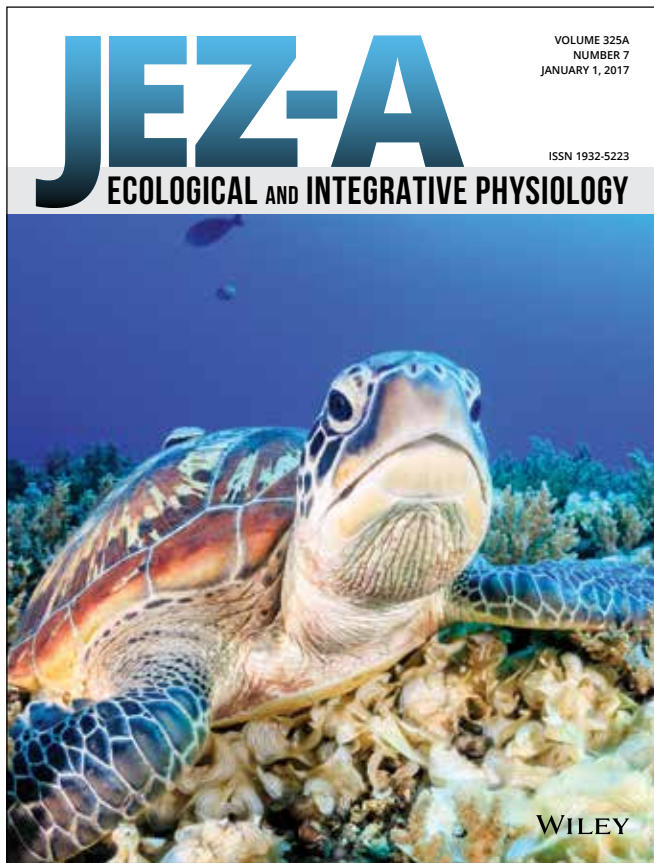
This is a particularly exciting time for SICB as we prepare to launch a new journal under the capable leadership of Adam Summers and as we reinvigorate our current journal *Integrative and Comparative Biology* through the efforts of Editor Marty Martin and his excellent editorial board. Please take the time to learn about these important efforts that will greatly strengthen how integrative and comparative biology are communicated to the world.

Finally, SICB works so well because we have 158 individuals who serve the Society as officers, committee members, and editorial board members. These people volunteer their time to make SICB a healthy and active enterprise that strongly supports its members and takes pride in a vibrant and active student membership. You can do your part by volunteering to serve and by continuing your membership.

I hope you enjoy the 2018 Annual Meeting of SICB!

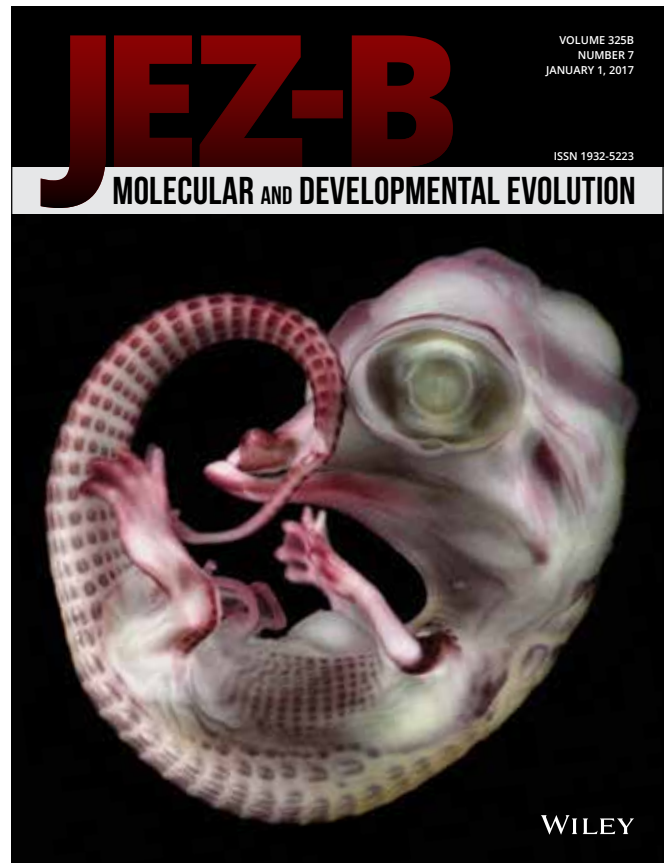
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Welcome to San Francisco

Message from the Program Officer

Welcome to the Annual SICB meeting in beautiful San Francisco, California! Our last meeting here was in 2013, so we're returning to the City by the Bay a little sooner than we usually come back to a venue – but, the response last time was so fantastic that we thought a rapid return was in order. What better place for our annual celebration of integrative and comparative studies of biological diversity, than a city that celebrates diversity in a striking natural setting? But with almost 1950 presentations (a new record) scheduled over four full days, there will barely be time for a cable car ride! There are 11 symposia (several with associated complementary sessions), 142 oral sessions, and three days of posters. For a quick guide to where and when everything occurs, the entire schedule grid can be found through links on the meeting webpage (www.sicb.org/meetings/2018/index.php), or use our Annual Meeting Mobile App. Mark Twain's coldest winter may have been summer in San Francisco, but we'll be here in winter – so here's hoping for a fog-free and delightful time. Get excited and get some hill work in before you make the trip!

Major lectures: We are excited to kick-off our Conference at 7:30 pm on Wednesday, January 3rd, with the Plenary Lecture by prominent science journalist and author Carl Zimmer. His presentation will headline a special emphasis on Science Communication this year, which will carry through into our symposia as well (see below). On the following evenings, we will hold the Bartholomew Lecture (Thursday, Jan 4 at 7:00 PM), by Caroline Williams and the Bern Lecture (Friday, Jan 5 at 7:00 PM) by David Norris. We will conclude the meeting with the Moore Lecture (Sunday, Jan at 3:45 PM) by Katayoun Chamany.

Symposia: The 11 symposia will present and synthesize a diverse range of research across all SICB divisions, with two focusing on Science Communication in particular. Moreover, besides being excellent presentations, remember that these symposia are the foundation of our journal, *Integrative and Comparative Biology*. As a member, you will have access to the papers developed from the symposia and the full range of additional journal content.

Workshops: We managed to top last year's record of eleven workshops and will offer twelve (!!!) this year, providing information, support, and challenges to develop professional skills, approach science from new directions, and reach out to new audiences. These include the Editor's Challenge to define "stress" during the day before the Plenary talk; symposium-associated Science Communication workshops; topical workshops on the Origin of Cell Types, NGS Datasets in Polar Studies, and Transcriptomics; a return of the popular Sketchnotes workshop; student/postdoc workshops on GIAR/FGST grant writing (by the Student Support Committee) and publishing pointers (sponsored by Wiley and the Journal of Experimental Zoology); and workshops offered by the SICB Public Affairs Committee, the Student Post-Doctoral Affairs Committee, the Broadening Participation Committee, the Educational Council, and the NSF.

Socials: Come out and be social! There will be lots of opportunities to catch up with friends and connect with other SICB participants. In addition to all of the divisional and affiliate socials, there is the society-wide welcome reception on Wednesday after the Plenary talk, from 8:30-10 PM, and the end-of-meeting reception in honor of students and postdocs from 5-7 PM on Sunday. The Broadening Participation Committee also organizes a social that will be held on Saturday from 7-9 PM – check the meeting schedule for the locations of these events. And, while you're at it, consider purchasing a commemorative T-shirt, which not only helps support the Society and says "SICB," but has adorable otters on it!

Business meetings: These are great meetings – you should come to them! Learn more about the activities of your division!! Find out how to participate!!! Be part of the action!!!! Especially if you are a student or postdoc, please attend the divisional and society business meetings. Coming to the business meetings is a great way to get involved, develop professional skills, make connections, and learn how your division contributes to the success of SICB. Bring some friends .

Finally, there are many people who worked hard to put this meeting together, including the Divisional Program Officers, program reps from The Crustacean Society (TCS) and American Microscopical Society (AMS), the symposium organizers, the SICB Executive Officers, and our great team from Burk & Associates: Brett Burk, Lori Strong, Jennifer Rosenberg, Raelene Sok, Jill Drupa and Ruedi Birenheide. Please remember to thank these folks when you see them.

Enjoy the City and the Meeting, and thank you for coming!

Rick Blob, SICB Program Officer

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The Crustacean Society (TCS)

The co-sponsoring society presentations are integrated into the program to minimize the potential conflicts of similar presentations being scheduled at the same time.

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Meeting Highlights/Social Events

Events take place in the San Francisco Marriott Marquis, unless otherwise noted

Wednesday 3 January

Student Worker Orientation & First Timer Orientation

Salon 7, 5:30 pm-6:30 pm

“How to get the most out of your SICB Meeting”

**Required for students with Charlotte Mangum support*

Plenary Session: Carl Zimmer

Salon 1-7, 7:30PM – 8:30PM

The Plenary Address, “Science and Scandal: Reporting on Biology In An Age of Controversy” will be given by Carl Zimmer, Columnist for *The New York Times*.

Welcome to San Francisco Reception

Golden Gate Ballroom, 8:30 pm-10:00 pm

The Society for Integrative and Comparative Biology welcomes you to San Francisco with a reception. The Welcome Reception will follow the Plenary Lecture. Light snacks and cash bar will be provided.

Thursday 4 January

Poster Session 1

Salons 8-9, 3:30 pm-5:30 pm

Even # poster authors present from 3:30 pm-4:30 pm

Odd # poster authors present from 4:30 pm-5:30 pm

DCPB Social & BART Reception

Ballroom Foyer, 8:00 pm-10:00 pm

Friday 5 January

Poster Session 2

Salons 8-9, 3:30 pm-5:30 pm

Even # poster authors present from 3:30 pm-4:30 pm

Odd # poster authors present from 4:30 pm-5:30 pm

DCE/DEDE/DAB/DNNSB Social

Thirsty Bear, 8:00 pm-10:00 pm

DVM/DCB Social

Monarch, 9:00 pm

Saturday 6 January

Poster Session 3

Salons 8-9, 3:30 pm-5:30 pm

Even # poster authors present from 3:30 pm-4:30 pm

Odd # poster authors present from 4:30 pm-5:30 pm

SICB Business Meeting

Salon 7, 5:45 pm-6:45 pm

SICB Society Meeting & Awards Presentation

DEDB/DPCB/DIZ/AMS/TCS Social

Thirsty Bear, 6:30 pm-8:30 pm

Broadening Participation Social

Thirsty Bear, 7:00 pm-9:00 pm

Sunday 7 January

Society-Wide Social in Honor of Students and Post-docs

Ballroom Foyer, 5:00 pm-7:00 pm

Join fellow SICB members for a Society-Wide Social. Cheese and fruit will be served, and a cash bar will be provided.

New this year: the SICB Storybooth!

Got any good stories about science? SICB wants to hear them!

Throughout the meeting, the SICB storybooth will be available in the Exhibit Area. Meeting participants will be able to stop by any time to record a short story about their experiences in science. The stories will be curated by the Public Affairs Committee (PAC), and selected stories will be posted throughout the year on the SICB website. If you have questions, contact PAC chair Molly Jacobs at chair.pac@sicb.org.



[1] Bompfrey et al., J. R. Soc. Interface 9, 3378-3386, 2012

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SICB and Divisional Business Meetings

Thursday 4 January

DAB Meeting, 5:45 PM – 6:30 PM, Foothill G
DNNSB Meeting, 5:45 PM – 6:30 PM, Foothill E
DCPB Meeting, 5:45 PM – 6:30 PM, Nob Hill A-B
DCB Meeting, 5:45 PM – 6:30 PM, Salons 3-4
DEE Meeting, 5:45 PM – 6:30 PM, Salons 5-6
DEDE Meeting, 5:45 PM – 6:30 PM, Nob Hill C-D
DEDB Meeting, 5:45 PM – 6:30 PM, Salons 1-2

Friday 5 January

TCS Business Meeting, 12:00 PM – 1:30 PM, Golden Gate C1
AMS Business Meeting, 12:30 PM – 1:30 PM, Nob Hill A-B
DCE Meeting, 5:45 PM – 6:30 PM, Nob Hill A-B
DVM Meeting, 5:45 PM – 6:30 PM, Salons 1-2
DIZ Meeting, 5:45 PM – 6:30 PM, Salons 3-4
DPCB Meeting, 5:45 PM – 6:30 PM, Nob Hill C-D

SICB Society Business Meeting & Awards Presentation

Saturday 6 January, 5:45 PM – 6:45 PM, Salon 7

Special Lectures

Plenary Lecture: Carl Zimmer

Wednesday 3 January, 7:30 PM – 8:30 PM, Salon 1-7
Science and Scandal: Reporting on Biology In an Age of Controversy

Bartholomew Lecture: Dr. Caroline Williams

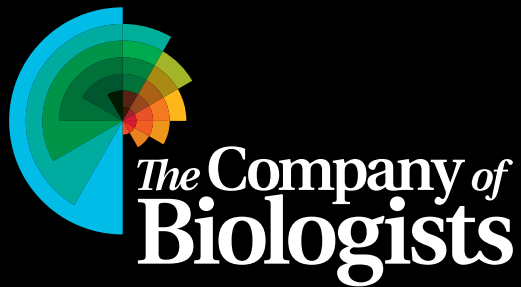
Thursday 4 January, 7:00 PM – 8:00 PM, Salon 7
Cold Truths: Evolutionary Impacts of Winter on Terrestrial Ectotherms

Bern Lecture: Dr. David Norris

Friday 5 January, 7:00 PM – 8:00 PM, Salon 7
Five Decades of Environmental Comparative Endocrinology

Moore Lecture: Dr. Katayoun Chamany

Sunday 7 January, 3:45 PM – 4:45 PM, Salon 7
From STEM to STREAMD: Responsibility, Arts, and Design for Inclusive Learning



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Symposia

Thursday 4 January

- S1: From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals (SICB wide)
Sponsors: *DEDB, DEE, DIZ, DPCB, & AMS*
Sponsored by: *The Company of Biologists and the National Science Foundation*
- S2: Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance
Sponsors: *DCB & DVM*
Sponsored by: *The Company of Biologists and and Aurora Scientific*
- S3: Evolution in the Dark: Unifying Understanding of Eye Loss
Sponsors: *DEDB, DEE, DIZ, DNNSB, DPCB, AMS, & TCS*
Sponsored by: *The Company of Biologists*

Friday 5 January

- S4: Science Through Narrative: Engaging Broad Audiences (SICB wide)
Sponsors: *DAB, DCB, DCE, DEDB, DEDE, DEE, DIZ, DNNSB, DVM & AMS*
Sponsored by: *Science World*
- S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics
Sponsors: *DAB, DCB, DNNSB & DVM*
Sponsored by: *The Company of Biologists, Photron, and the National Science Foundation*
- S6: Understanding the Evolution of Endocrine System Variation through Large-scale Comparative Analyses
Sponsors: *DAB, DCE, DCPB & DEE*
Sponsored by: *The Company of Biologists*

Saturday 6 January

- S7: Science in the Public Eye: Leveraging Partnerships
Sponsors: *DAB, DCB, DCE, DEDE, DNNSB & DVM*
- S8: Integrative Biology of Sensory Hair Cells
Sponsors: *DEDB, DNNSB & AMS*
- S9: Inside the Black Box: The Mitochondrial Basis of Life-history Variation and Animal Performance
Sponsors: *DCE & DCPB*
Sponsored by: *The National Science Foundation*

Sunday 7 January

- S10: Behavioral and Physiological Adaptation to Urban Environments (SICB wide)
Sponsors: *DAB, DCE, DCPB, DEDE & DEE*
- S11: Measuring Biodiversity and Extinction: Present and Past
Sponsors: *DEDE, DIZ & DPCB*

The Exhibits will open on Thursday 4 January, at 9:30 am. San Francisco Marriott Marquis, Salons 8-9, will be the location for coffee breaks on Thursday, Friday, and Saturday mornings from 9:30 am–10:30 am, and 3:30 pm–5:30 pm during the poster sessions.

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Workshops and Programs

Wednesday 3 January

NSF-funded Workshop: Best Practices for Using NGS-based Datasets to Determine Statistically Robust Evidence of Positive Selection and Convergent Evolution of Polar Organisms

8:00 AM – 4:00 PM, Foothill E

We will conduct a NSF-funded workshop using cross-disciplinary approaches for determining genetic adaptations in polar organisms using Next Generation Sequencing-based datasets. In particular, this workshop will focus on the following:

- 1) Establish collaborative research groups to test for genes under positive selection from diverse polar organisms using genomic and transcriptomic datasets.
- 2) Evaluate current analytical methods for determining positively selected genes and their statistical significance.
- 3) Explore current and novel methodologies for detecting genetic modifications acquired through convergent evolution in response to similar environmental conditions.
- 4) Review lab-based protocols for demonstrating the potential functions of candidate genes. Specifically, we will focus on techniques amenable to frozen or otherwise preserved samples that can be accomplished at the home institutional laboratory.

Workshop: ICB Editor's Challenge to Define Stress

8:30 AM – 4:30 PM, Foothill F

This workshop will proceed as follows. A few invited speakers will give 10-minute talks on their definitions of stress. In between each 10-minute talk, the floor will be open for 10 minutes to engage the speakers or the audience on related topics. Following all talks, all participants will work in small groups to discuss stress. Aspects of these discussions will eventually be transformed into synthetic papers, which will be reviewed for publication in Integrative and Comparative Biology.

Thursday 4 January

Public Affairs Committee / Science as Narrative Symposium Workshop: Science Through Story: An Interactive Communication Workshop for Scientists & Science Educators

12:00 PM – 1:30 PM, Salons 3-4

This workshop adapts story development techniques from filmmaking to help scientists engage broad audiences. We use examples from films to illustrate essential principles of storytelling, such as character development, narrative structure, and emergent themes. We connect these with examples from scientific research to demonstrate how storytelling principles can be used to communicate science effectively. In this interactive workshop, you will gain tools that you can use to develop a science story for any audience based on your own work or topic of interest.

The workshop was developed in collaboration with artists at Pixar Animation Studios and educators at the UC Museum of Paleontology.

Workshops and Programs

Continued

SPDAC Roundtable: “Just publish papers” vs. Outreach and Advocacy

12:00 PM – 1:30 PM, Golden Gate A

Many students go into science not just because of the beauty of science itself, but because they want to change the world, through science communication, education, or policy. But early career researcher may get career advice like “Just do good science,” or “You're wasting time doing anything that won't go in a paper.” This year's SPDAC lunchtime roundtable explores the challenges and opportunities for early career researchers who want to speak out in venues besides peer-reviewed journals. Should the classic academic motto of “Publish or perish” be changed to “Be visible or vanish” in the social media age?

Friday 5 January

Journal of Experimental Zoology (JEZ) Workshop: Discussion with the Editors of JEZ-A and JEZ-B on how to get published

12:00 PM – 1:30 PM, Salons 1-2

During this workshop, the Editor of the Journal of Experimental Zoology Part A: Ecological and Integrative Physiology, David Crews at the University of Texas at Austin, and the Editor of Journal of Experimental Zoology Part B: Molecular and Developmental Evolution, Günter Wagner at Yale University, will provide advices, tips and pointers on how to get published in their journal. Lunch will be provided.

Sketch Your Conference Notes! A Hands-on Visual Note-taking Workshop

12:00 PM – 1:30 PM, Salons 3-4

Sketchnoting, also known as visual note taking, is the practice of sketching or doodling notes while listening to a lecture with the purpose of summarizing or recording key concepts visually. Visual note taking is not detailed scientific illustration! The process of listening, identifying key points, and quickly translating them into a visual story on paper 1) increases focus during presentations, 2) helps in the retention and recollection of key concepts and complex scientific ideas, 3) creates a visual dialogue to communicate and share what was learned with the broader community, and 4) is fun! This is an introductory level workshop where you will learn about the power of visuals for learning and communication, practice simple sketching techniques, explore how fonts, colors, design and layout can help get your message across effectively, and how to overcome the challenges of time and complex material. We will also talk about different ways to sketch (from pens and watercolors to digital) and tips for building your sketching tool-kit. This hands-on workshop will include time to practice new techniques and a chance to create your first sketchnote!

NSF Update

12:00 PM – 1:30 PM, Golden Gate C2

NSF Program Officers from the Directorate for Biological Sciences will give an update on changes to submission and review of proposals in the core programs, NSF's 10 big ideas and other opportunities. Come meet your program officers, ask questions, and learn more about the National Science Foundation.

Saturday 6 January

Student Support Committee - Workshop for Graduate Students: Writing a Competitive GIAR/FGST Grant Proposal

12:00 PM – 1:30 PM, Salons 10-12

An interactive forum for graduate students to learn more about how to generate a competitive grant proposal for SICB's GIAR/FGST mechanisms of support (with broad application to any grant proposal that students might want to submit!). The workshop will include a brief information session with the nuts and bolts of the application and review process followed by an opportunity to interact with members of the Student Support Committee and previous GIAR/FGST grant recipients. Join us and we'll do our best to answer any questions that you might have!

Broadening Participation Committee Workshop: Beyond Traditional Mentors: Mentoring Moments and Networks

12:00 PM – 1:30 PM, Pacific H

Join us for an interactive session focused on getting the mentoring you want and need to thrive in your career. Designed for scientists from groups underrepresented in the SICB community, the workshop will focus on navigating your current mentoring landscape as well as creating new opportunities to get the mentoring you want and need to thrive. We will talk briefly about traditional mentoring relationships and then move on to explore the potential of creating opportunities for mentoring moments and multiple mentors. The workshop will include a brief panel as well as interactive activities designed to develop a framework for getting the mentoring you need to thrive in your career. As a result of this session, participants will complete a mentoring map and assess areas where they are receiving the mentoring they need and areas in which they need to develop more mentoring relationships. They will develop a set of tools to pursue mentoring in areas where they want support and a plan to develop their mentoring networks with concrete steps to take in the weeks following the workshop.

DEDB Workshop: Animal Cell Types: Their Origin and Evolution

6:30 PM – 9:30 PM, Foothill G

In this workshop we bring together researchers working on a variety of systems to discuss the nature and the evolutionary origin of cell types in animals. Cell types are the fundamental building blocks of animals and the evolution of animal body plan complexity is intimately linked to an increase of the number of cell types. Recent advances in functional genomics has put scalable genomic research on cell types within the reach of investigators making it urgent to clarify the nature of cell types and the evolutionary history of cell types. In addition, advances in stem cell biology suggest models for the mechanistic underpinnings of cell type identity that need to be integrated into the research program of comparative biologists. We hope to stimulate an engaged discussion about these topics with the invited speakers and the audience.

Workshops and Programs

Continued

TAL-X Workshop: Biology on a Budget - Sharable DIY Bio Lab Activities

7:00 pm-9:00 pm, Pacific H

This year's Teaching and Learning Workshop will focus on easy to Do it Yourself (DIY) citizen science, presented by Dr. Larry McPhee of Northern Arizona University. The workshop will be a two-hour round table format with drinks and desserts. Participants will have an opportunity to experience six examples from the many available fun and informative activities on Dr. McPhee's website (www2.nau.edu/lrm22/lessons).

Description: One of the significant challenges for Biology instructors is that, while they are generally well prepared academically, and the textbook is usually pretty good, they often lack a collection of inexpensive, reliable, and interesting lab activities that can reinforce the concepts introduced during lecture. Developing successful lab activities can be challenging, especially when one needs to do so on a budget, or in support of online instruction. This 2-hour hands-on workshop will enable participants to conduct several 15-minute activities, each covering an important topic in biology. These activities are designed to utilize low cost, easy to obtain materials that students can safely conduct on their own, at home or in the classroom, in small groups.

The fun and interesting activities we will do in the workshop are representative of a larger set of activities available for free online at www2.nau.edu/lrm22/lessons, under an open courseware creative commons license. This collection of labs is ever-growing, and with help from community college and university Biology instructors to offer free, high quality, low-cost activities for anyone.

Sunday 7 January

Transcriptomics Brownbag Lunch

12:00 PM – 1:30 PM, Foothill C

The transcriptomics brown bag lunch will update the SICB community on the activities and resources of the Genome to Phenome Research Coordination Network (G2P RCN). Bring your questions for discussion in a casual setting. All those interested in the application of transcriptomics to organismal biology are welcome. The G2P RCN executive committee is Karen Burnett, David Durica, Blake Joyce, Fiona McCarthy, Don Mykles, Carl Schmidt, and Jonathon Stillman.

General Information

Final Program

SICB does not assume responsibility for any inconsistencies or errors in the abstracts for contributed paper and poster presentations. We regret any possible omissions, changes and/or additions not reflected in this final program.

Speaker Ready Room

All presenters must visit the Ready Room, **Foothill D, 2nd Level**, in the San Francisco Marriott Marquis, at least one half day prior to his/her session time. It is highly recommended that you preview your presentation prior to your presentation to guarantee that it will work properly. Each presentation will be loaded onto a master file for each session. You may use your own computer, however, your fifteen minute time slot does not include time for set up and testing. There will be students and audio visual personnel to assist you and to check you in during the following hours:

Wednesday 3 January	12:00 PM – 7:00 PM
Thursday 4 January	7:00 AM – 5:00 PM
Friday 5 January	7:00 AM – 5:00 PM
Saturday 6 January	7:00 AM – 5:00 PM
Sunday 7 January	7:00 AM – 10:00 AM

Coffee Breaks

Coffee break service is available each day of the meeting. There will be a morning service from 10:00 AM – 10:30 AM and an afternoon service from 3:30 PM – 5:30 PM. The coffee breaks will be located in the Salons 8-9, Thursday-Saturday, and in the Ballroom Foyer on Sunday.

Committee Meetings/Business Meetings

Please refer to the Schedule of Events on the first page of each day's listing for committee meetings and business meetings of your division or co-sponsoring society.

Employment Opportunities

The Employment Opportunity bulletin board will be located in the SICB Registration/Information area. The Employment Opportunity board will provide a place for attendees to post "Positions Wanted," and learn about "Positions Available." Interested attendees may schedule interviews in the room set aside for that purpose. See a registration desk attendant for assistance.

Keyword Index

Refer to the keyword index located at the end of this program for easy access when looking up a specific subject matter. Each author who is presenting an abstract has supplied up to three keywords for your reference.

Registration

The SICB Registration/Information area is located in the San Francisco Marriott Marquis, at the North Registration Desk. The Registration Desk will be open during the following hours:

Wednesday 3 January	3:00 PM – 8:00 PM
Thursday 4 January	7:00 AM – 5:00 PM
Friday 5 January	7:30 AM – 4:00 PM
Saturday 6 January	7:30 AM – 3:00 PM
Sunday 7 January	7:30 AM – 2:30 PM

SICB App

Be sure to download the SICB 2018 Meeting App! You can find it in the app store. If you need help with your login or password, check with the registration desk. All meeting updates and the most current information will be pushed through to the App.

Would you like to query ICB?

We at *Integrative and Comparative Biology (ICB)* are always willing to consider solicitations for manuscripts. Although the majority of papers in *ICB* come from symposia at the annual meeting of the Society for Integrative and Comparative Biology (SICB), journal contents are beginning to diversify. Several new forms of papers are starting to appear including invited reviews, perspectives, and proceedings from meeting workshops and other events. *ICB* is also willing to consider publishing papers from symposia for other societies as well as short series of papers on a topic, not just single manuscripts.

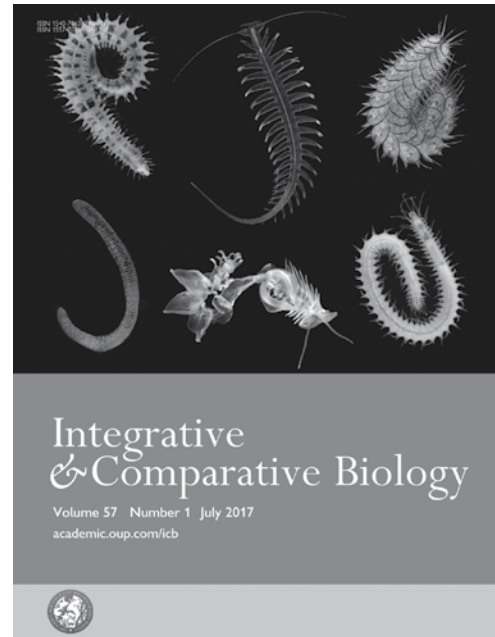
If you would like us to consider your work for publication, please send your proposal to me at editor@sicb.org, including the following information:

- A (tentative) title of your paper(s)
- A short synopsis of the planned paper or abstract of the completed work
- For symposia or series of special topics papers, a list of authors, affiliations, and tentative titles
- A short justification for the fit of the proposal or manuscript to *ICB*
- Contact information for the lead author and/or series/symposium organizer(s)

For more information on publishing in *ICB*, please view our Instructions to Authors.

Lynn B. Martin

Editor, *Integrative and Comparative Biology*



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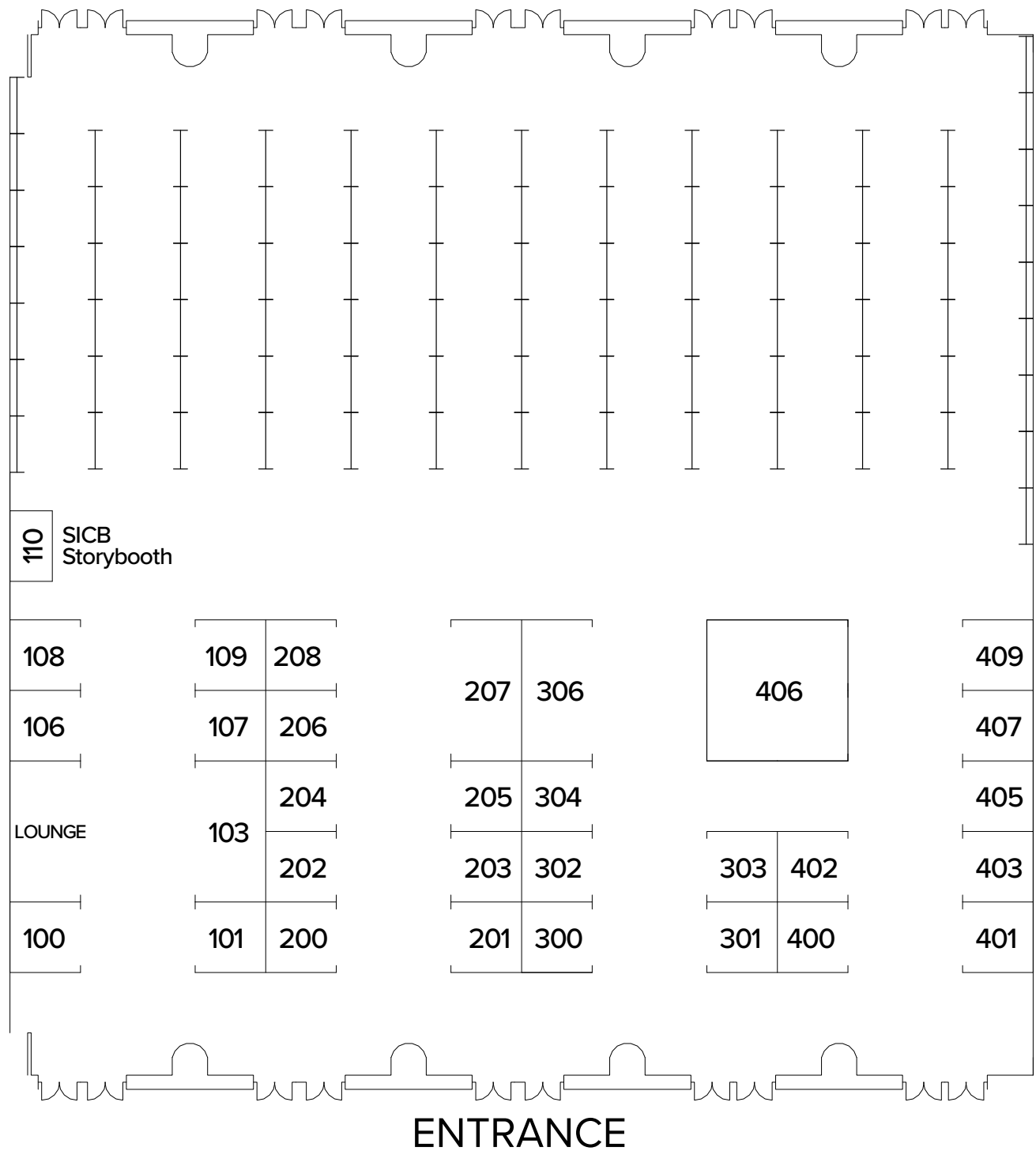


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integrativeandcomparativebiology.wordpress.com

2018 SICB Exhibitor Floorplan



Salons 8-9
San Francisco Marriott Marquis

2018 SICB Exhibitors

Exhibit Hours

San Francisco Marriott Marquis
Salons 8-9

Thursday 4 January	9:30 AM – 5:30 PM
Friday 5 January	9:30 AM – 5:30 PM
Saturday 6 January	9:30 AM – 5:30 PM

AEI Technologies

Booth: 400

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800-860-5930
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AEI Technologies manufactures single and multi-channel metabolic measurement systems providing everything you need to accurately measure energy metabolism by indirect calorimetry. Perfect for insects, amphibians, reptiles, birds, mammals, and humans. Proprietary software enables real-time data acquisition, which can be displayed tabular, graphical or exported to an excel spreadsheet.

American Microscopical Society

Booth: 109

141 E. College Avenue
Decatur, GA 30030
312-369-7395
www.amicros.org

The American Microscopical Society is an international society of biologists organized to encourage the use of microscopy. AMS publishes the journal *Invertebrate Biology* and co-sponsors the SICB Annual Meeting. The AMS booth features the annual Buchsbaum Photomicrography Contest and information on opportunities for student research fellowships.

Arbor Assays

Booth: 106

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The Biological Bulletin

Booth: 303

7 MBL Street
Woods Hole, MA 02543
508-289-7149
www.journals.uchicago.edu/bbl

The Biological Bulletin is a peer-reviewed, international interdisciplinary journal that publishes outstanding experimental research on a wide range of organisms and biological topics, with a focus on marine systems. Published since 1897, it is one of America's oldest and most respected journals.

Bone Clones, Inc.

Booth: 203

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The Company of Biologists is a not for profit publishing organisation dedicated to supporting and inspiring the biological community through scientific journals, meetings and grants. The Company publishes five specialist peer-reviewed journals: *Development*, *Journal of Cell Science*, *Journal of Experimental Biology*, *Disease Models & Mechanisms* and *Biology Open*.

Booth: 409

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Booth: 300

The Crustacean Society Booth: 208

1313 Dolley Madison Blvd, Suite 402
McLean, VA 22101
703-790-1745
www.crustaceansociety.org

The mission of the Crustacean Society is to advance the study of all aspects of the biology of the Crustacea by promoting the exchange and dissemination of information throughout the world. Join us for the Ninth International Crustacean Congress (ICC 9) in Washington, D.C. from May 22-25, 2018! Visit www.crustaceansociety.org for more information.

UW Friday Harbor Laboratories

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fhl.uw.edu

The UW Friday Harbor Laboratories offers the ideal setting to study the marine world. Faculty and researchers from the University of Washington and around the world come to FHL to study oceanography, chemistry, biology, ecology and other marine disciplines. Students find opportunities to immerse themselves in research and coursework, connecting classroom learning to the rich ecosystems thriving throughout the San Juan Archipelago.

Booth: 204

Silver Sponsor

Evogeneao Booth: 401

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Ashland, OR 97520
www.evogeneao.com

Evogeneao promotes the teaching of evolution by emphasizing its greatest lesson; that life on Earth is one big extended family. Using a unique tree of life diagram tied to the geologic time scale, original artwork and animation, and animal and plant cousin and removal relationships, Evogeneao illuminates Earth's evolutionary family.

Gene Tools, LLC Booth: 402

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541-929-7840
www.gene-tools.com

Gene Tools manufactures Morpholino oligos for blocking translation, modifying splicing or inhibiting miRNA activity. Morpholinos are used in cell cultures, embryos or, as Vivo-Morpholinos, in adult animals. Morpholinos are effective, specific, stable and non-toxic. Backed by Ph.D.-level customer support, Gene Tools designs and synthesizes Morpholinos and offers cytosolic delivery options.

Expert Digital Imaging Booth: 304

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339-440-4423
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Expert Digital Imaging is an independent distributor of high-speed and high-resolution camera equipment from various manufacturers, including the full NAC, Optronis, IOI, and Edgertronic camera lines. At EDI, we offer traditional high-speed camera systems as well as long-recording high speed systems with associated automatic image tracking software.

IO Industries Inc. Booth: 302

15940 Robin's Hill Road
London, ON N5V 0A4, Canada
519-663-9570
www.ioindustries.com

IO Industries Inc., London, ON, Canada (est. 1991), designs and manufactures digital video cameras, digital video recorders and software for applications in aerospace, defense testing, medical, scientific, machine vision, broadcast and cinema.

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Booth: 407

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Booth: 206

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2415 Eisenhower Avenue
Alexandria, VA 22314
703-292-8420
www.nsf.gov

The National Science Foundation, an independent federal agency created by Congress in 1950, supports non-medical basic research in all science and engineering fields with an annual budget of about \$7 billion. NSF funds approximately 20% of all federally supported basic research conducted by US colleges and universities.

Booth: 103

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Booth: 306

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Booth: 101

Royal Society Publishing Booth: 108

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+44 20 7451 2647
royalsociety.org/journals

Royal Society Publishing has several journals of interest to the SICB community, including *Biology Letters*. We offer high quality peer review, rapid publication and open access options. Visit booth 108 to find out more about what we've been publishing in our 353 year history. Further information at royalsociety.org/journals.

Sable Systems International, Inc. Booth: 207

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Gold Sponsor**SICB Storybooth** Booth: 110

Got any good stories about science? SICB wants to hear them! Throughout the meeting, the SICB storybooth will be available in the Exhibit Area. Meeting participants will be able to stop by any time to record a short story about their experiences in science. The stories will be curated by the Public Affairs Committee (PAC), and selected stories will be posted throughout the year on the SICB website. If you have questions, contact PAC chair Molly Jacobs at chair.pac@sicb.org

Smithsonian Tropical Research Institute (STRI) Booth: 107

9100 Panama City Pl
Washington, DC 20521
202-633-4700 x28766
www.stri.si.edu

The Smithsonian Tropical Research Institute's (STRI's) mission is to increase and diffuse knowledge about the past, present and future of tropical biodiversity and its relevance to human welfare. Find out about how to plan research at our marine and terrestrial field stations, fellowship opportunities and ongoing job searches.

The University of Chicago Press Booth: 301

1427 E 60th Street
Chicago, IL 60637
800-621-2736
www.press.uchicago.edu

Established in 1891, the University of Chicago Press is the largest American university press. The Press publishes approximately 280 books a year and has published over 11,000 books since its founding. The Journals Division publishes more than 70 journals in a wide range of academic disciplines, including the social sciences, the humanities, education, and life and physical sciences.

Vision Research (Phantom Cameras) Booth: 200

100 Dey Road
Wayne, NJ 07470
973-696-4500
www.phantomhighspeed.com

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Wednesday Schedule of Events

Events take place in the San Francisco Marriott Marquis, unless otherwise noted

EVENT	TIME	LOCATION
Speaker Ready Room	12:00 PM – 7:00 PM	Foothill D
Exhibitor Set-Up	1:00 PM – 6:00 PM	Salons 8-9
Registration	3:00 PM – 8:00 PM	North Registration Desk
SPECIAL LECTURE		
Plenary Session: Carl Zimmer Science and Scandal: Reporting on Biology In An Age of Controversy	7:30 PM – 8:30 PM	Salons 1-7
COMMITTEE & BOARD MEETINGS		
SICB Executive Committee Meeting	2:30 PM – 5:30 PM	Salon 10-12
Student Support Committee	5:30 PM – 7:00 PM	Foothill G
WORKSHOPS AND PROGRAMS		
Workshop: Best Practices for Using NGS-based Datasets to Determine Statistically Robust Evidence of Positive Selection and Convergent Evolution of Polar Organisms	8:00 AM – 4:00 PM	Foothill E
Workshop: ICB Editor's Challenge to Define Stress	8:30 AM – 4:30 PM	Foothill F
Student Worker Orientation & First Timer Orientation, "How To Get the Most Out of Your SICB Meeting" <i>*Required for students with Charlotte Mangum support</i>	5:30 PM – 6:30 PM	Salon 7
SOCIAL EVENT		
SICB Welcome Reception	8:30 PM – 10:00 PM	Golden Gate Ballroom

Thursday Schedule of Events

Events take place in the San Francisco Marriott Marquis, unless otherwise noted

EVENT	TIME	LOCATION
Registration	7:00 AM – 5:00 PM	North Registration Desk
Speaker Ready Room	7:00 AM – 5:00 PM	Foothill D
Poster Session 1 Set Up	7:30 AM – 8:00 AM	Salons 8-9
Coffee Break AM, <i>Sponsored by Wiley</i>	9:30 AM – 10:30 AM	Salons 8-9
Exhibit Hall	9:30 AM – 5:30 PM	Salons 8-9
Coffee Break PM	3:30 PM – 5:30 PM	Salons 8-9
Poster Session 1 Even Numbers Authors Present	3:30 PM – 4:30 PM	Salons 8-9
Poster Session 1 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Salons 8-9
Poster Session 1 Teardown	5:30 PM – 6:00 PM	Salons 8-9
SPECIAL LECTURE		
Bartholomew Lecture: Dr. Caroline Williams Cold Truths: Evolutionary Impacts of Winter on Terrestrial Ectotherms	7:00 PM – 8:00 PM	Salon 7
SYMPOSIUM ORAL PRESENTATIONS		
S1: From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals <i>Organizers: Erik Sperling, Kevin Kocot</i> <i>Sponsors: DEDB, DEE, DIZ, DPCB, & AMS</i> <i>Sponsored by: The Company of Biologists and the National Science Foundation</i>	7:55 AM – 3:00 PM	Salon 7
S2: Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance <i>Organizers: David Williams, Natalie Holt</i> <i>Sponsors: DCB & DVM</i> <i>Sponsored by: The Company of Biologists and and Aurora Scientific</i>	8:00 AM – 3:30 PM	Golden Gate B
S3: Evolution in the Dark: Unifying Understanding of Eye Loss <i>Organizers: Megan Porter, Lauren Sumner-Rooney</i> <i>Sponsors: DEDB, DEE, DIZ, DNNSB, DPCB, AMS, & TCS</i> <i>Sponsored by: The Company of Biologists</i>	8:00 AM – 3:30 PM	Golden Gate A
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Session 1: Complementary to S6: Understanding the Evolution of Endocrine System Variation Through Large-Scale Comparative Analyses	8:00 AM – 9:30 AM	Salons 5-6
Session 2: Evolutionary Morphology	8:00 AM – 9:30 AM	Foothill G
Session 3: Predator/Prey 1	8:00 AM – 10:00 AM	Nob Hill A-B
Session 4: Microbiome	8:00 AM – 9:45 AM	Nob Hill C-D
Session 5: Biomaterials: Aquatic	8:00 AM – 9:45 AM	Foothill E
Session 6: Feeding: Bites and Strikes	8:00 AM – 9:45 AM	Foothill C
Session 7: Sensory Biology: Receptors and the Molecular Machinery	8:00 AM – 9:45 AM	Salons 1-2
Session 8: Genomics	8:00 AM – 9:45 AM	Salons 3-4
Session 9: Temperature-Oxygen Relationships & Critical Thermal Limits	8:00 AM – 10:00 AM	Golden Gate C-1
Session 10: Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics, Part 1	8:00 AM – 9:45 AM	Golden Gate C-2
Session 11: Huey Award Best Student Presentations	8:00 AM – 9:45 AM	Salons 10-12
Session 12: Locomotion: Snaking Around	8:00 AM – 9:30 AM	Salons 13-15
Session 13: Best Student Presentations - Division of Neurobiology, Neuroethology & Sensory Biology	10:00 AM – 12:00 PM	Salons 5-6
Session 14: Evolution of Host-Parasite Relationships	10:00 AM – 12:00 PM	Foothill G

Thursday 4 January 2018

Session 15: Behavior in Multispecies Assemblages	10:30 AM – 12:00 PM	Nob Hill A-B
Session 16: Behavioral Ecology: Stress	10:15 AM – 12:00 PM	Nob Hill C-D
Session 17: Biophysical Ecology	10:15 AM – 12:00 PM	Foothill E
Session 18: Macroevolution	10:15 AM – 11:45 AM	Foothill C
Session 19: Reproductive Endocrinology	10:15 AM – 11:45 AM	Salons 1-2
Session 20: Comparative Genomics	10:15 AM – 12:00 PM	Salons 3-4
Session 21: Complementary to S4: Science Through Narrative: Engaging Broad Audiences	10:30 AM – 11:45 AM	Golden Gate C-1
Session 22: Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics, Part 2	10:15 AM – 12:00 PM	Golden Gate C-2
Session 23: Comparative Stress Endocrinology	10:15 AM – 12:00 PM	Salons 10-12
Session 24: Division of Vertebrate Morphology Best Student Presentations	10:00 AM – 12:00 PM	Salons 13-15

AFTERNOON

Session 25: Morphology: Unlocking the Vault	1:30 PM – 3:15 PM	Salons 5-6
Session 26: Evolutionary Morphology - Eyes, Teeth, Skull	2:00 PM – 3:15 PM	Foothill G
Session 27: Division of Animal Behavior: Marlene Zuk Award Session	1:30 PM – 3:00 PM	Nob Hill A-B
Session 28: Physiology in the Cold & Deep	1:30 PM – 3:30 PM	Nob Hill C-D
Session 29: Biogeography	1:30 PM – 3:00 PM	Foothill E
Session 30: Feeding in Aquatic Vertebrates	1:30 PM – 3:00 PM	Foothill C
Session 31: Neuroethology - Sensorimotor Responses	1:30 PM – 3:30 PM	Salons 1-2
Session 32: Best Student Papers - Aubrey Gorbman Award	1:45 PM – 2:45 PM	Salons 3-4
Session 33: Animal Communication - Signal Complexity	1:45 PM – 3:15 PM	Golden Gate C-1
Session 34: Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics, Part 3	1:30 PM – 3:30 PM	Golden Gate C-2
Session 35: Behavioral Thermoregulation	1:30 PM – 3:30 PM	Salons 10-12
Session 36: Locomotion: From Trees to Ground	1:30 PM – 3:30 PM	Salons 13-15

COMMITTEE & BOARD MEETINGS

SICB Nominating Committee	7:00 AM – 8:00 AM	Pacific C
Division Chairs President/President Elect	12:00 PM – 1:30 PM	Pacific C
TCS Board Meeting	5:30 PM – 10:00 PM	Pacific D
AMS Executive Committee Meeting	8:00 PM – 11:00 PM	Pacific C

BUSINESS MEETINGS

DAB Meeting	5:45 PM – 6:30 PM	Foothill G
DNNSB Meeting	5:45 PM – 6:30 PM	Foothill E
DCPB Meeting	5:45 PM – 6:30 PM	Nob Hill A/B
DCB Meeting	5:45 PM – 6:30 PM	Salons 3-4
DEE Meeting	5:45 PM – 6:30 PM	Salons 5-6
DEDE Meeting	5:45 PM – 6:30 PM	Nob Hill C/D
DEDB Meeting	5:45 PM – 6:30 PM	Salons 1-2

WORKSHOPS AND PROGRAMS

Student Postdoctoral Affairs Brown Bag Workshop: “Just publish papers” vs. Outreach and Advocacy	12:00 PM – 1:30 PM	Golden Gate A
Public Affairs Committee Workshop: Science Through Story: Strategies for Science Communication Inspired by Pixar’s Creative Process	12:00 PM – 1:30 PM	Salons 3-4

SOCIAL EVENTS

Zumba Class	6:30 AM – 7:15 AM	Juniper
Broadening Participation Meet & Greet	7:00 AM – 8:00 AM	Pacific A
DCPB Social and BART Reception	8:00 PM – 10:00 PM	Ballroom Foyer

Thursday 4 January 2018

Thursday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:55 AM – 3:00 PM **Symposium S1** *Sponsored by The Company of Biologists and the National Science Foundation* **Salon 7**

From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals

Chairs: Erik Sperling, Kevin Kocot

7:55 am	S1-1	<i>Sperling EA, Kocot KM; Stanford University, University of Alabama</i>	Introduction
8:00 am	S1-2	<i>Laumer CE; EMBL-EBI</i>	Apologies and prospects for metazoan phylogenetics in the genomic era
8:30 am	S1-3	<i>Sperling EA; SGP Collaborative Team Stanford University</i>	The Temporal and Environmental Context of Early Animal Evolution
9:00 am	S1-4	<i>Fernandez-Valverde SL, Degnan BM; Unidad de Genómica Avanzada, Laboratorio Nacional de Genómica para la Biodiversidad (UGA-LANGEBIO), University of Queensland</i>	Early evolution of gene regulatory networks in metazoan development.
9:30 am	S1-5	<i>Butterfield NJ; University of Cambridge</i>	Pumping, Swimming and Visual Predation - a Fluid Dynamic View of Early Metazoan Evolution

10:00 am **Coffee Break** *Sponsored by Wiley* **Salons 8-9**

10:30 am	S1-6	<i>Leys SP, Kahn AS, Yahel G, Bannister RJ; Univ of Alberta, Ruppin Academic Center, Institute of Marine Research</i>	Oxygen requirements of sponges and the origin of multicellular animals
11:00 am	S1-7	<i>Gold DA; California Institute of Technology</i>	The evolution and adaptation of jellyfish in Precambrian oceans
11:30 am	S1-8	<i>Ryan JF, Hernandez AM, Schultz DT, Francis WR, Koren S, Schnitzler CE, Martindale MQ, Haddock SHD; Whitney Laboratory for Marine Bioscience, Monterey Bay Aquarium Research Institute, National Human Genome Research Institute</i>	Revisiting gene content to resolve the phylogenetic position of ctenophores and sponges

12:00 pm **Lunch Break** **Salons 8-9**

1:30 pm	S1-9	<i>Tarhan LG, Droser ML, Gehling JG; Yale University, University of California, Riverside, South Australian Museum, University of Adelaide</i>	Ecological Innovation in the Late Ediacaran
2:00 pm	S1-10	<i>Paps J; University of Essex</i>	Reconstructing The Genome of The First Animal: The Impact of Novelty in the Origins of Metazoans
2:30 pm	S1-11	<i>Caron JB; Royal Ontario Museum, Canada</i>	The Origin of Phyla — Insights From the Burgess Shale

3:30 pm **Coffee Break** **Salons 8-9**

8:00 AM – 3:30 PM **Symposium S2** *Sponsored by The Company of Biologists and Aurora Scientific* **Golden Gate B**

Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance

Chairs: David Williams, Natalie Holt

8:00 am	S2-1	<i>Holt NC, Williams CD; Northern Arizona University, University of Washington, Allen Institute for Cell Science</i>	Compliance shifts the length-tension relationship in skeletal muscle
8:30 am	S2-2	<i>Powers JD, Williams CD, Daniel TL; Univ Washington, Seattle, Allen Institute Cell Science</i>	Tuning titin stiffness to optimize striated muscle contraction efficiency
9:00 am	S2-3	<i>Regnier M, Sniadecki NJ; University of Washington</i>	Multi-scale platforms to study the structure and functional of cardiomyocytes derived from human pluripotent stem cells
9:30 am	S2-4	<i>Nishikawa K; Northern Arizona University</i>	Muscle function from molecule to organism

10:00 am **Coffee Break** *Sponsored by Wiley* **Salons 8-9**

Thursday 4 January 2018

10:30 am	S2-5	<i>Wakeling JM, Ross SA, Ryan D, Dominguez S, Nigam N; Simon Fraser University</i>	Size, history-dependent and dimensionality effects on muscle contraction
11:00 am	S2-6	<i>Tijs C, Bernabei M, Maas H; Harvard University, Northwestern University, Vrije Universiteit Amsterdam</i>	Muscle Deformations Caused by Myofascial Loads
11:30 am	S2-7	<i>Eng CM, Azizi E, Roberts TJ; Brown University, Univ of California, Irvine</i>	The battle of the bulge: structural determinants of muscle gearing during dynamic contractions
12:00 pm	Lunch Break		
1:30 pm	S2-8	<i>Thompson JT, Taylor-Burt KR*, Kier WM; Franklin & Marshall College, Harvard University, University of North Carolina at Chapel Hill</i>	Structure and shape affect obliquely striated muscle function in soft-bodied invertebrates
2:00 pm	S2-9	<i>Ahn AN, Konow N, Tijs C, Biewener AA; Harvey Mudd College, UMass Lowell, Harvard University</i>	In vivo length changes in relation to intrinsic physiological properties in vertebrate skeletal muscles
2:30 pm	S2-10	<i>Sawicki GS, Sponberg S; Georgia Tech</i>	Perturbing the classical muscle work loop paradigm to unravel the neuromechanics of unsteady locomotion
3:00 pm	S2-11		Discussion
3:30 pm	Coffee Break		Salons 8-9

8:00 AM – 3:30 PM Symposium S3 *Sponsored by The Company of Biologists*

Golden Gate A

Evolution in the Dark: Unifying Understanding of Eye Loss

Chairs: Lauren Sumner-Rooney, Megan Porter

8:00 am	S3-1	<i>Porter ML; University of Hawai'i at Mānoa</i>	Eye reduction and loss – patterns across species and habitats
8:30 am	S3-2	<i>Stern DB, Crandall KA; George Washington Univ, Computational Biology Institute</i>	Convergent and Divergent Transcriptome Evolution in the Eyes of Blind Cave Crayfish
9:00 am	S3-3	<i>Wilkinson M, Garbout A, Mohun Samantha M; Natural History Museum, London</i>	The visual system of caecilian amphibians
9:30 am	S3-4	<i>Emerling CA; CNRS – Université de Montpellier</i>	Regressed but not gone: Patterns of vision gene loss in blind mammals
10:00 am	Coffee Break <i>Sponsored by Wiley</i>		Salons 8-9
10:30 am	S3-5	<i>Ma L, Castranova D, Weinstein BM, Gore A, Jeffery WR*; University of Maryland, College Park, NICHD, NIH</i>	Molecular Mechanism of Eye Loss in the Cavefish
11:00 am	S3-6	<i>Mojaddidi H, Re C, Perez J, Tacdol A, Fiser Z, Trontelj P, Protas M*; Dominican University of California, University of Ljubljana</i>	Development and genetics of eye loss in the crustacean, <i>Asellus aquaticus</i>
11:30 am	S3-7	<i>Tierney SM, Langille B, Humphreys WF, Austin AD, Cooper SJ; Hawkesbury Institute for the Environment, Western Sydney University, University of Adelaide, Western Australian Museum, South Australian Museum</i>	Massive parallel regression: genetic mechanisms for eye loss amongst subterranean diving beetles
12:00 pm	Lunch Break		
1:30 pm	S3-8	<i>Pérez-Moreno JL, Balázs G, Bracken-Grissom HD; Florida International University, Eötvös Loránd University</i>	Transcriptomic and epigenetic insights into the evolution of vision loss in cave-dwelling crustaceans
2:00 pm	S3-9	<i>Rivera AS, Arenz AL, Koyama KH, Sajuthi A, Tsang S, Carrillo-Zazueta B, Kim A, Sasaki L, Lim B; University of the Pacific</i>	Gene regulation, heterochrony, and predation: An eco/evolutionary perspective on eye loss in an ostracod crustacean.
2:30 pm	S3-10	<i>Sumner-Rooney LH, Sigwart JD, Smith L, McAfee J, Williams ST; Oxford University Museum of Natural History, Univ of California, Berkeley, Queen's University Belfast, Natural History Museum, London</i>	Repeated Eye Reduction Events Reveal Multiple Pathways to Loss in Deep-Sea Snails
3:00 pm	S3-11	<i>Schoenemann B; University of Cologne</i>	Evolution of eye reduction and loss in fossil arthropods
3:30 pm	Coffee Break		Salons 8-9

Thursday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:15 AM Session 1 Salons 5-6

Complementary to S6: Understanding the Evolution of Endocrine System Variation Through Large-Scale Comparative Analyses

Chairs: Maren Vitousek, Michele Johnson

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|---------|------------|---|--|
| 8:00 am | 1-1 | <i>Ivanov BM, Beaudoin GMJ, Webber MA, Jonhson MA; Trinity University</i> | Evolution of Androgen Receptor Distribution in <i>Anolis</i> Lizard Muscles |
| 8:15 am | 1-2 | <i>Welklin JF, Lantz SM, Kahlil S, Boersma JP, Schwabl HG, Karubian J, Webster MS; Cornell University, Tulane University, Washington State University</i> | Pairing status and female breeding status influence androgen levels and ornament expression in male Red-backed Fairy-wrens |
| 8:30 am | 1-3 | <i>Mouton JC, Wright NA, Tobalske BW, Martin TE; MTCWRU, Univ of Montana, Kenyon College, Univ of Montana, USGS</i> | Stage-specific predation risk affects morphology, performance, and survival: an experimental test. |
| 8:45 am | 1-4 | <i>Ramenofsky M, Olson S, Pan C, Boswell T; University of California, Davis, Queen's University, Newcastle University</i> | Role of photoperiod and nutritional state on the regulatory feeding mechanisms in Gambel's White-crowned Sparrow |
| 9:00 am | 1-5 | <i>Assis VR, Gardner S, Gomes FR, Mendonca MT; Univ of Sao Paulo, Auburn University</i> | Invasive Cane Toads Response to a Challenge with Sheep Red Blood Cells (SRBC): an Energetic and Immune Approach |

9:30 am Coffee Break Sponsored by Wiley **Salons 8-9**

8:00 AM – 9:30 AM Session 2 Foothill G

Evolutionary Morphology

Chair: David Blackburn

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|---------|------------|---|---|
| 8:00 am | 2-1 | <i>Brocklehurst RJ, Moritz S, Codd J, Manning PL, Brainerd EL, Sellers WI; University of Manchester, Brown University, College of Charleston</i> | Making Morphology Move: XROMM Ventilation Kinematics of Extant Archosaurs and Reconstructing Rib Motion in Fossils |
| 8:15 am | 2-2 | <i>Blackburn DC; University of Florida</i> | 3D Anatomical Data for All: The oVert Thematic Collection Network |
| 8:30 am | 2-3 | <i>Saulsbury J, Messing CG, Baumiller TK; University of Michigan, Ann Arbor, Nova Southeastern University Oceanographic Center</i> | Coelomic Skeletal Structures in Fossil and Recent Featherstars (Comatulida, Crinoidea): Diversity, Function, and Taxonomic Implications |
| 8:45 am | 2-4 | <i>Goodheart J, Bleidissel S, Schillo D, Strong E, Collins A, Cummings M, Wägele H; Univ of Maryland, College Park, University of Wuppertal, Museum Alexander Koenig, National Museum of Natural History, National Systematics Laboratory</i> | Comparative morphology and evolution of the cnidosac in Cladobanchia (Gastropoda: Heterobanchia: Nudibanchia) |
| 9:00 am | 2-5 | <i>Hodge JR, Wainwright PC; Univ of California, Davis</i> | Sociality and Foraging Strategy Interact to Affect the Evolution of Defensive Morphology |
| 9:15 am | 2-6 | <i>Weaver LN, Whitney MR, Wilson GP; University of Washington</i> | Osteohistology of Multituberculate Femora from Northeastern Montana Suggests Variation in Growth Rate Near the K-Pg Boundary |

9:30 am Coffee Break Sponsored by Wiley **Salons 8-9**

8:00 AM – 10:00 AM **Session 3**

Nob Hill A-B

Predator/Prey 1

Chair: David Cade

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|---------|------------|---|---|
| 8:00 am | 3-1 | <i>Cade DE, Friedlaender AS, Calambokidis J, Carey N, Domenici P, Potvin J, Goldbogen JA; Hopkins Marine Station, Stanford University, Marine Mammal Institute, Oregon State University, Cascadia Research Collective, CNR-IAMC-Unita Operativa di Oristano</i> | Predator-Prey Dynamics and Kinematics of Rorqual Whales and Their Prey |
| 8:15 am | 3-2 | <i>Jellison BM, Gaylord B; University of California, Davis</i> | Population-Level Variation in Behavioral Tolerance of Intertidal Snails to Ocean Acidification |
| 8:30 am | 3-3 | <i>Lowder KB, Devries MS, Kelly CB, Taylor JRA; Scripps Oceanography, UC San Diego</i> | Spiny lobster defenses here and there: effectiveness of near and far range predator defenses are compromised by ocean acidification-like conditions |
| 8:45 am | 3-4 | <i>Dougherty LF, Li J, Broeckling CD; University of Colorado, Boulder, Colorado State University, Fort Collins</i> | Chemical defenses in the bivalve family Limidae |
| 9:00 am | 3-5 | <i>Jurcak AM, Moore PA; Bowling Green State University</i> | Can you smell that predator? The effects of a common pesticide on the ability of two prey species to detect predatory stimuli |
| 9:15 am | 3-6 | <i>Beattie MC, Moore PA; Bowling Green State University</i> | Do Different Diets Fed to Bass (<i>Micropterus salmoides</i>) and Cichlids (<i>Oreochromis aureus x niloticus</i>) Influence Crayfish (<i>Orconectes virilis</i>) Behavior? |
| 9:30 am | 3-7 | <i>Kimura H, Kawabata Y; Nagasaki University</i> | Effect of initial body orientation on escape probability in prey fish escaping from predators |
| 9:45 am | 3-8 | <i>Penrod LM, Daddino A, Diamond K, Johansen JL, Steffensen JF, Domenici P; Florida Institute of Technology, Univ of San Francisco, Clemson Univ, UT Austin Marine Science Institute, Univ of Copenhagen, IAMC-CNR Oristano</i> | Take it or leave it. Fast-start modulation in the great sculpin <i>Myoxocephalus polyacanthocephalus</i> |

10:00 am **Coffee Break** Sponsored by Wiley **Salons 8-9**

8:00 AM – 9:45 AM **Session 4**

Nob Hill C-D

Microbiome

Chairs: Kevin Kohn, Melissa Pespeni

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|---------|------------|---|---|
| 8:00 am | 4-1 | <i>Darby AM, Patton SA, Gibbs AG; Univ of Nevada, Las Vegas, Nevada State College</i> | Gut Microbiome Effects on Desiccation Resistance in <i>Drosophila melanogaster</i> |
| 8:15 am | 4-2 | <i>Ketchum RN, Smith EG, Vaughan GO, McParland D, Phippen BL, Carrier TJ, Burt JA, Reitzel AM; UNC Charlotte, NYU Abu Dhabi</i> | Microbial community dynamics of a keystone urchin species in the Persian/Arabian Gulf |
| 8:30 am | 4-3 | <i>Kohl KD, Brun A, Caviedes-Vidal E, Karasov WH; Univ of Pittsburgh, Univ of Wisconsin - Madison, Universidad Nacional de San Luis</i> | Gut microbial ecology of nestling House Sparrows (<i>Passer domesticus</i>) |
| 8:45 am | 4-4 | <i>Lloyd MM, Pespeni MH*; University of Vermont</i> | Shifts in the microbiome with onset and progression of Sea Star Wasting Disease revealed through time course sampling |
| 9:00 am | 4-5 | <i>Sargent JC, Campbell JB, Harrison JF; ASU</i> | Accumulation of Gut Bacteria May Cause the Age-Related Decline of Anoxia Tolerance in Adult <i>Drosophila melanogaster</i> |
| 9:15 am | 4-6 | <i>Zylberberg M, Van Hemert C, Handel CM, Derisi JL; Univ of California, San Francisco, US Geological Survey, Univ of California, San Francisco; Chan Zuckerberg Biohub</i> | Searching for the Cause of an Epidemic of Avian Beak Deformities: a Novel Picornavirus is a Likely Culprit in Avian Keratin Disorder in Black-capped Chickadees |

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9:30 am **4-7** *Zhang B, Roberts KT, Dahlhoff EP, Wheat CW, Weisselberg S, Rank NE; Sonoma State University, UC Berkeley, Santa Clara University, Stockholm University* The Power Within: Relationship Between Endosymbiotic Bacteria and the Stress Response in a Montane Leaf Beetle

9:45 am **Coffee Break** Sponsored by Wiley **Salons 8-9**

8:00 AM – 9:45 AM **Session 5** **Foothill E**

Biomaterials: Aquatic

Chairs: Tobin Hieronymus, Petra Ditsche

8:00 am **5-1** *Reidenbach MA, Murphy EAK, Stocking JB; University of Virginia* Hydrodynamics of Algal Biofilms

8:15 am **5-2** *Burnett NP, Koehl MAR; Univ of California, Berkeley* The Strength of Kelp Tissue Depends on Age, Season, and Herbivore Activity

8:30 am **5-3** *Hieronymus T, Waugh DA, Ball H, Cooper LN; NEOMED* Balancing Structure & Materials: Torsion-Resistant Collagen Organization in the Wing Bones of Birds and Bats

8:45 am **5-4** *Shahar R, Zelzer E, Zaslansky P, Ofer L; Hebrew University, Weizmann Institute, Charité – Universitätsmedizin* Novel Form of Modeling Bypasses the Need For Osteocytes in the Adaptation of Bones to Mechanical Loading

9:00 am **5-5** *Ditsche P, Gergilewich E, Liang T, Wilga C; University of Alaska Anchorage* Big Skate (*Raja binoculata*): Crushing hard prey with cartilaginous jaws – What impact does shape have?

9:15 am **5-6** *Demartini DG, Monnier CA, Waite JH; University of California-Santa Barbara* Stiff-Balls, Stretchy-Balls, Soggy-Balls? Structure-Function Comparisons of the Protective Coatings on Load-bearing Mussel Threads

9:30 am **5-7** *Orbach DN, Rattan S, Hogan M, Crosby A, Brennan PLR; Mount Holyoke College, UMass, Amherst* Biomechanical Properties of Dolphin Reproductive Tissue

9:45 am **Coffee Break** Sponsored by Wiley **Salons 8-9**

8:00 AM – 9:45 AM **Session 6** **Foothill C**

Feeding: Bites and Strikes

Chairs: Jose Iriarte-Diaz, Andrew Clark

8:00 am **6-1** *Iriarte-Diaz J, Zeno H, Bushneva Y; Univ Illinois at Chicago* The Effect of Variation of Jaw Muscles and Cranial Morphology on the Evolution of Bite Performance of Primates

8:15 am **6-2** *Klimovich CM, Williams SH; Ohio University* Investigations into the physiological and biomechanical basis of differential success in oral rabies vaccination between skunks (*Mephitis mephitis*) and raccoons (*Procyon lotor*)

8:30 am **6-3** *Kienle SS, Hermann-Sorensen H, Costa DP, Reichmuth C, Mehta RS; Univ of California, Santa Cruz* Comparative feeding strategies and kinematics in phocid seals

8:45 am **6-4** *Konow N, Solomon J, Heiss E, Witzmann F, Giuffrida E; UMass Lowell, Friedrich Schiller University, Museum fur Naturkunde* Integration of Hyoid Protractor and Retractor Muscle Action in Tongue Control of Food during Axolotl Chewing

9:00 am **6-5** *Clark AJ, Uyeno TA; College of Charleston, Valdosta State University* How Jawless Fishes Bite with “Rasping Tongues”

9:15 am **6-6** *Ryerson WG, Tan W; Saint Anselm College* Effects of long-term captivity on strike performance in 5 species of snakes

9:30 am **6-7** *Stinson CM, Deban SM; California State Univ, Bakersfield, Univ of South Florida* Functional Morphology of Terrestrial Prey Capture in Salamandrid Salamanders

9:45 am **Coffee Break** Sponsored by Wiley **Salons 8-9**

8:00 AM – 9:45 AM **Session 7**

Salons 1-2

Sensory Biology: Receptors and the Molecular Machinery

Chair: Nathan Morehouse

8:00 am	7-1	<i>Fitak RR, Wheeler BR, Schweikert LE, Ernst DA, Lohmann KJ, Johnsen S; Duke University, University of North Carolina</i>	Candidate magnetoreception genes in the brain and retina of trout
8:15 am	7-2	<i>Palecanda S, Porter ML; University of Hawai'i at Mānoa</i>	Shifts in Opsin Expression During Larval Development in <i>Pullosquilla thomassini</i> (Crustacea, Stomatopoda)
8:30 am	7-3	<i>Gumm JM, Tinghitella RM; Stephen F. Austin State University, University of Denver</i>	Opsin expression in threespine sticklebacks that differ in male color and competition
8:45 am	7-4	<i>Speiser DI, Chappell DR, Kingston ACN; University of South Carolina</i>	Expression of G-proteins in the eyes and parietovisceral ganglion of the bay scallop <i>Argopecten irradians</i>
9:00 am	7-5	<i>Hulse SV, Mendelson TC; UMBC</i>	The Efficient Coding Hypothesis and Signal Design
9:15 am	7-6	<i>Butler-Struben HM, Crook RJ; San Francisco State University</i>	Injury Enhances Learning but does not affect Spontaneous Exploratory Behaviors in Cuttlefish
9:30 am	7-7	<i>Morehouse NI, Buschbeck EK, Zurek DB, Steck M, Porter ML; University of Cincinnati, University of Hawai'i at Mānoa</i>	The Molecular Basis of Spider Vision: New Opportunities, Familiar Players

9:45 am **Coffee Break** Sponsored by Wiley **Salons 8-9**

8:00 AM – 9:45 AM **Session 8**

Salons 3-4

Genomics

Chair: Aide Macias-Munoz

8:00 am	8-1	<i>Munro C, Siebert S, Zapata F, Dunn CW; Brown University, University of California, Davis, University of California, Los Angeles, Yale University</i>	Siphonophore Differential Gene Expression Patterns Analyzed within a Phylogenetic Context
8:15 am	8-2	<i>Chang ES, Orive ME, Cartwright P; University of Kansas</i>	Genomic Insights into the Potential for Evolutionary Conflict within Hydrozoan Colonies Formed Through Fusion of Polyps
8:30 am	8-3	<i>Schnitzler CE, Nguyen AD, Koren S, Gornik SD, Plickert G, Buss L, Phillippy A, Mullikin JC, Cartwright P, Nicotra ML, Frank U, Baxevanis AD*; U Florida, NHGRI/NIH, NUI-Galway, U Cologne, Yale U</i>	The Genomics of Hydractinia: Understanding Regeneration, Allorecognition, and Stem Cell Biology
8:45 am	8-4	<i>Macias-Munoz A, McCulloch KJ, Briscoe AD; University of California, Irvine, Harvard University</i>	Copy number variation and a role in vision for CRAL-TRIO domain genes in <i>Heliconius melpomene</i>
9:00 am	8-5	<i>Townsend JP, Sweeney AM; University of Pennsylvania</i>	The Presence of DOPA Derivatives in Ctenophore Colloblast Adhesive Suggests a Structural Role for Catechols at the Base of the Animal Tree of Life
9:15 am	8-6	<i>Tassia MG, Halanych KM; Auburn University</i>	State of the Imm-Union: Gaps and ambiguity in the evolution of metazoan immune systems
9:30 am	8-7	<i>Rosental B, Kowarsky MA, Corey DN, Ishizuka K J, Palmeri KJ, Chen S Y, Sinha R, Seita J, Quake S, Weissman IL, Voskoboynik A; Stanford University School of Medicine</i>	Evolutionary origin of the mammalian Hematopoietic and Immune systems found in a Colonial Chordate

9:45 am **Coffee Break** Sponsored by Wiley **Salons 8-9**

8:00 AM – 10:00 AM **Session 9**

Golden Gate C-1

Temperature-Oxygen Relationships & Critical Thermal Limits

Chairs: Erin Brandt, Janet Genz

8:00 am	9-1	<i>Telemeco RS, Gangloff EJ; California State University Fresno, Iowa State University</i>	High Temperature, Oxygen, and Performance: Insights from Reptiles and Amphibians
8:15 am	9-2	<i>Somo DA, Morrison PR, Richards JG; University of British Columbia</i>	Differential Temperature Sensitivity of Oxygen Uptake in Hypoxia in Marine Fishes

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8:30 am	9-3	<i>Genz J, Gilbert C, Svendsen JC; University of West Georgia, Technical University of Denmark</i>	Combined Effects of Temperature and Hypoxia on Anaerobic Metabolism and Development of Oxygen Debt in a Common Cyprinid
8:45 am	9-4	<i>Reemeyer JE, McDonnell LH, Chapman LJ; University of New Orleans, McGill University</i>	Effect of lifelong versus acute hypoxia exposure on the critical thermal maximum of <i>Pseudocrenilabrus multicolor victoriae</i>
9:00 am	9-5	<i>Brandt EE, Roberts KT, Elias DO; Univ of California, Berkeley</i>	Metabolic Rate and Critical Thermal Limits across Male and Female <i>Habronattus</i> Jumping Spider Species
9:15 am	9-6	<i>Swanson DL, Zhang Y, Oboikovitz P, Agin TJ; Univ South Dakota, Auburn Univ</i>	Seasonal flexibility of metabolism-temperature reaction norms in cold-acclimated house sparrows: A test of the climatic variability hypothesis
9:30 am	9-7	<i>Fehrenbach LA, Tracy CR, Richmond J; California State University, Fullerton, Boyd Deep Canyon Desert Research Center, USGS</i>	The Pleistodon Story: Differences in Physiology between Two Closely Related Skink Species that Differ in Habitat Aridity.
9:45 am	9-8	<i>Kingsolver JG, Umbanhowar J; Univ of North Carolina, Chapel Hill</i>	The analysis and interpretation of critical temperatures
10:00 am Coffee Break Sponsored by Wiley		Salons 8-9

8:00 AM – 9:45 AM	Session 10	Golden Gate C-2
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Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics, Part 1

Co-chairs: Brad Dickerson, Eatai Roth

8:00 am	10-1	<i>Giraldo YM, Dickinson MH; California Institute of Technology</i>	Neural basis of sun-like navigation in <i>Drosophila</i>
8:15 am	10-2	<i>Roth E, Deora T, Daniel TL; Univ of Washington</i>	Exploring the Integration of Visual and Antennal Feedback in Flying Insects with a Braitenberg Vehicle Model
8:30 am	10-3	<i>Mongeau JM, Frye MA; University of California, Los Angeles</i>	Neural Correlates of Saccade Control Algorithms in <i>Drosophila</i>
8:45 am	10-4	<i>Dickerson BH, Huda A, Dickinson MH; California Institute of Technology</i>	Visually-mediated control of <i>Drosophila</i> haltere kinematics modulates mechanosensory input
9:00 am	10-5	<i>Kathman ND, Fox JL; Case Western Reserve University</i>	Mechanosensory and visual integration in the fly central complex
9:15 am	10-6	<i>Bustamante J, Jankauski M, Daniel TL; University of Washington</i>	Closed loop Monte Carlo models of abdominal contribution to insect flight control
9:30 am	10-7	<i>Rauscher MJ, Fox JL; Case Western Reserve University</i>	Fly optomotor response dynamics are influenced by exogenously induced haltere movements
9:45 am Coffee Break Sponsored by Wiley		Salons 8-9

8:00 AM – 9:45 AM	Session 11	Salons 10-12
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Huey Award Best Student Presentations

Chair: Robert Cox

8:00 am	11-1	<i>Shah AA, Ghalambor CK; Colorado State University</i>	Do Temperature-Mediated Predator-Prey Interactions Explain Temperate and Tropical Mayfly Distributions?
8:15 am	11-2	<i>Farallo VR, Muñoz MM, Miles DB; Virginia Tech, Ohio University</i>	Niche evolution varies depending on geographic scale: Implications for climate change
8:30 am	11-3	<i>Gilbert AL, Miles DB; Ohio University</i>	The constraints, costs, and limits of phenotypic plasticity in response to climate warming: predicting phenotypes given idiosyncrasy in environmental change
8:45 am	11-4	<i>Glass JR, Stahlschmidt ZR; University of the Pacific</i>	Do complex environments drive the developmental plasticity of fitness-related traits and a tradeoff between flight and fecundity?
9:00 am	11-5	<i>Bodensteiner BL, Warner DA, Iverson JB, Milne-Zelman CL, Mitchell TS, Refsnider JM, Voves KC, Janzen FJ; Virginia Tech, Auburn University, Earlham College, Aurora University, University of Toledo</i>	Examining the role of macrogeographic variables in predicting key phenotypes in a widespread reptile: lessons from the lab and field

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9:15 am	11-6	<i>Roberts NS, Mendelson TC; Univ of Maryland, Baltimore County</i>	A potential role for reinforcement in the evolution of female preferences in the banded darter (<i>Etheostoma zonale</i>)
9:30 am	11-7	<i>Fuess LE, Palacio A, Baker AC, Mydlarz LD; University of Texas at Arlington, University of Miami</i>	Frenemies: <i>Symbiodinium</i> density negatively affects immune response in the Caribbean coral <i>Orbicella faveolata</i>
9:45 am	..... Coffee Break Sponsored by Wiley		Salons 8-9

8:00 AM – 9:30 AM **Session 12** **Salons 13-15**

Locomotion: Snaking Around

Chairs: Phillip Bergmann, Sean Gart

8:00 am	12-1	<i>Mitchel TW, Gart SW, Kim JS, Chirikjian GS, Li C; Johns Hopkins University</i>	Snakes Traversing Large Step Obstacles: Kinematics and Mechanics
8:15 am	12-2	<i>Gart SW, Mitchel TW, Li C; Johns Hopkins University</i>	Snakes traversing large step obstacles: behavior, gait, and performance
8:30 am	12-3	<i>Morinaga G, Bergmann PJ; Clark University</i>	Vertebral and axial kinematics of limb-reduced squamates
8:45 am	12-4	<i>Tingle JL, Higham TE; Univ of California, Riverside</i>	Effects of body size and morphology on sidewinding kinematics in the rattlesnake <i>Crotalus cerastes</i>
9:00 am	12-5	<i>Bergmann PJ, Morinaga G, Schaper EG, Irschick DJ, Siler CD; Clark University, UMass Amherst, Oklahoma University</i>	The evolution of snake-like body shape and its bearing on relationships between running and burrowing performance
9:15 am	12-6	<i>Delorenzo L, Irschick DJ, Bergmann P, Wagner G, Siler C; University of Massachusetts at Amherst, Clark University, Yale University, University of Oklahoma</i>	3D analysis of body elongation of Brachymeles lizards and other taxa
9:30 am	..... Coffee Break Sponsored by Wiley		Salons 8-9

10:00 AM – 12:00 PM **Session 13** **Salons 5-6**

Best Student Presentations - Division of Neurobiology, Neuroethology & Sensory Biology

Chair: Jeff Riffell

10:00 am	13-1	<i>Perelmuter JT, Sisneros JA, Forlano PM; CUNY Brooklyn College, U of Washington</i>	What does a Vocal Fish have to say about Dopamine in the Ear?
10:15 am	13-2	<i>Ernst DA, Fitak RR, Schmidt M, Derby CD, Johnsen S, Lohmann KJ; University of North Carolina, Duke University, Georgia State University</i>	A Magnetic Pulse Induces Differential Gene Expression in the Spiny Lobster Central Nervous System
10:30 am	13-3	<i>Chatterjee P, Mohan U, Dave S, Sane SP; National Centre for Biological Sciences, Tata Institute of Fundamental Research</i>	Visual and Antennal Mechanosensory feedback mediates gaze stabilization in flying moths
10:45 am	13-4	<i>Adreani MN, Ter Maat A, Gahr M; Max Planck Institute for Ornithology</i>	Breeding Changes Hearing? Context-driven Auditory Plasticity in Zebra Finches
11:00 am	13-5	<i>Kozma MT, Schmidt M, Sparks SD, Ngo-Vu H, Senatore A, Derby CD; Georgia State Univ, Univ of Toronto Mississauga</i>	Expression of variant IRs, GRs and TRP channels in chemosensory organs of Caribbean spiny lobster, <i>Panulirus argus</i> .
11:15 am	13-6	<i>Butler JM, Whitlow SM, Maruska KP; Louisiana State University</i>	Endocrine modulation via sex steroid receptor expression in the eye varies with female ovulation status in the social African cichlid <i>Astatotilapia burtoni</i>
11:30 am	13-7	<i>Curra JP, Theobald JC; Florida International University</i>	Limited Larval Feeding Leads to Smaller and Slower Adult Eyes in the Fruit Fly
11:45 am	13-8	<i>Li DH, Gilly WF; Hopkins Marine Station of Stanford University</i>	Recovery of giant-axon-mediated escape jetting after exposure to severe hypoxia in <i>Doryteuthis opalescens</i> (California market squid)
12:00 pm	..... Lunch Break		

Evolution of Host-Parasite Relationships

Chairs: Elizabeth MacDougall-Shackleton, Robin Warne

10:00 am	14-1	<i>Kelly TR, MacDougall-Shackleton SA, MacDougall-Shackleton EA; Western University</i>	Effects of experimental <i>Plasmodium</i> infection on spring migratory behavior and body condition in white-throated sparrows (<i>Zonotrichia albicollis</i>)
10:15 am	14-2	<i>Ruden RM, Adelman JS; Iowa State University</i>	Modulating disease phenotype in a wild songbird: a role for inflammation in tolerance and infectiousness
10:30 am	14-3	<i>Koch RW, Shannon RP, Goepfner S, Bolek MG; Oklahoma State University</i>	Mysterious Snail Hosts: Distribution, Host Use, and Consequences of Acanthocephalans in Freshwater Snails
10:45 am	14-4	<i>Warburton EM, Khokhlova IS, Dlugosz EM, Van Der Mescht L, Krasnov BR; Ben Gurion University of the Negev, University of Tennessee</i>	Effects of Parasitism on Host Reproductive Investment in a Rodent–Flea System: Host Litter Size Matters
11:00 am	14-5	<i>Schoepf I, Moore IT, Bonier F; Queen's University, Kingston, Virginia Tech</i>	Effects of Malarial Infection on Reproduction and Offspring Phenotype in a Wild Passerine
11:15 am	14-6	<i>Warne RW, Cravens ZM, Parrott JC, Kirschman LJ, Boyles JG; Southern Illinois University, Carbondale, Univ of Alaska, Anchorage</i>	Critical disease windows among animals with complex life histories may underlie epizootics in a changing world
11:30 am	14-7	<i>Kelly TR, Bonner SJ, MacDougall-Shackleton SA, MacDougall-Shackleton EA; Western University</i>	Exposing migratory songbirds to malarial parasites suggests costs of resistance, not of infection
11:45 am	14-8	<i>Frederick AR, Freidman CS, German DP; University of California, Irvine, University of Washington</i>	Withering-syndrome induced gene expression changes in pinto abalone, <i>Haliotis kamtschatkana</i>
12:00 pm	Lunch Break		

Behavior in Multispecies Assemblages

Chair: Peter Marting

10:30 am	15-1	<i>Lichtenstein JLL, Wright CM, McEwen B, Pinter-Wolman N, Pruitt JP; University of California Santa Barbara, University of Pittsburgh, University of California Los Angeles</i>	The multidimensional behavioural hypervolumes of two interacting species predict their space use and survival
10:45 am	15-2	<i>Marting PR, Wcislo WT, Pratt SC; Arizona State University, Smithsonian Tropical Research Institute</i>	The effect of colony transplant and resource manipulation on collective personality in an ant-plant mutualism
11:00 am	15-3	<i>Caves EM, Green PA, Johnsen S; Duke University</i>	Signaling in the Cleaner Shrimp-Client Fish Mutualism: Combining Behavior, Network Analysis, and Sensory Physiology
11:15 am	15-4	<i>Majoris JE, D'Aloia CC, Francis RK, Buston PM; Boston University, Woods Hole Oceanographic Institute</i>	Differential persistence favors habitat preferences that determine the distribution of a reef fish
11:30 am	15-5	<i>Kessler BJ, Sanko KA, Elias DO; Univ of California, Berkeley</i>	50 Shades of Prey: Plastic sensory usage in prey capture
11:45 am	15-6	<i>Okubo RP, Lahondère C, Vinauger C, Riffell JA; University of Washington</i>	Orchid Pollination By Mosquitoes
12:00 pm	Lunch Break		

Behavioral Ecology: Stress

Chair: Isaac Ligocki

10:15 am	16-1	<i>Ligocki IY, Earley RL, Hamilton IM; UC Davis, U of Alabama, Ohio State U</i>	Sex- and threat-based responses to territorial intruders in a social fish
10:30 am	16-2	<i>Borgmans G, Van Damme R; University of Antwerp</i>	The (dis)advantages of dominance in a multiple male group of <i>A. carolinensis</i>

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10:45 am	16-3	<i>Souther JL, Gunderson AR, Paganini AW, Tsukimura B, Stillman JH; San Francisco State University, Fresno State University</i>	Transducing abiotic stress to biotic stress in the porcelain crab <i>Petrolisthes cinctipes</i>
11:00 am	16-4	<i>Nunez CMV, Adelman JS, Carr HA, Jones MM; Iowa State University</i>	Social Behavior and Ecology May Interact to Shape the Gut Microbiome in Feral Horses (<i>Equus caballus</i>)
11:15 am	16-5	<i>Costa DP, Huckstadt LA, Schwarz L, Friedlaender A, Mate B, Zerbini A, Kennedy A, Gales NJ; Univ of California, Santa Cruz, Oregon State University, National Marine Fisheries Service</i>	Assessing the Potential Exposure of Migratory Animals to Disturbance
11:30 am	16-6	<i>Taff CC, Zimmer C, Vitousek MN; Cornell</i>	Feather Color Predicts Resilience to Stressors and Social Interactions in Tree Swallows
11:45 am	16-7	<i>Houslay TM, Prentice P, White SJ, Young AJ, Earley RL, Wilson AJ; University of Exeter, University of Alabama</i>	The Quantitative Genetics of Stress Coping Styles in the Trinidadian Guppy
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM Session 17

Foothill E

Biophysical Ecology

Chairs: Arianne Cease, Alex Gunderson

10:15 am	17-1	<i>Stupski SD, Schilder RJ; Pennsylvania State University</i>	Developing Biophysical Heat Budget Models in Three Hymenopteran Species
10:30 am	17-2	<i>Steves I, Berliner P, Pinshow B; Ben-Gurion Univ of the Negev</i>	Trapdoor of a Desert Wolf Spider (<i>Lycosa</i> sp.) has Little Effect on the Microclimate Inside its Burrow
10:45 am	17-3	<i>Gunderson AR, Abegaz M, Ceja A, Lam E, Souther J, Boyer K, King E, You Mak K, Tsukimura B, Stillman JH; UC Berkeley, San Francisco State</i>	Fine-scale spatial and temporal temperature variability and it's energetic consequences within intertidal boulder habitat
11:00 am	17-4	<i>Barnes CL, Hawlena D, McCue MD, Wilder SM; Oklahoma State University, Hebrew University of Jerusalem, St. Mary's University</i>	Consequences of Prey Exoskeleton Content for Predator Feeding and Digestion
11:15 am	17-5	<i>Cease AJ, Waters C; Arizona State University, Department of Primary Industries, NSW, Australia</i>	High protein plants may limit persistence of Australian Plague Locusts (<i>Chortoicetes terminifera</i>) to the outback
11:30 am	17-6	<i>Levin E, Lopez-Martinez G, Fane B, Davidowitz G; Tel-Aviv University, Israel, New Mexico State University, Las Cruces, University of Arizona, Tucson</i>	Nectarivores Use Sugar to Reduce Oxidative Damage From Flight
11:45 am	17-7	<i>Jones BC, Duval EH; Florida State University</i>	El Niño mediates a tradeoff between growth rate and insect-induced lesions in lance-tailed manakin (<i>Chiroxiphia lanceolata</i>) nestlings.
12:00 pm	Lunch Break		

10:15 AM – 11:45 AM Session 18

Foothill C

Macroevolution

Chairs: Francesco Santini, Jonathan Chang

10:15 am	18-1	<i>Santini F, Zapfe K, Frederich B, Dornburg A; Associazione Italiana per Studio Biodiversita', North Carolina State University, University of Liège, North Carolina Museum of Natural Sciences</i>	A macroevolutionary look at the history of herbivorous fishes in coral reefs
10:30 am	18-2	<i>Chang J, Alfaro ME; Univ of California, Los Angeles</i>	Building the complete ray-finned fish tree of life using taxonomy and birth-death models
10:45 am	18-3	<i>Muñoz MM, Hu Y, Anderson PSL, Patek SN; Virginia Tech, Boston College, University of Illinois, Urbana-Champaign, Duke University</i>	Strong mechanical relationships bias the tempo and mode of morphological evolution.
11:00 am	18-4	<i>Friedman ST, Price SA, Wainwright PC; Univ of California, Davis, Clemson University</i>	The Influence of Body Size on Morphological Diversification Across Fishes

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11:15 am	18-6	<i>Burress ED, Tan M; University of California, Davis, Emory University</i>	Ecological opportunity alters the timing and shape of adaptive radiation
11:30 am	18-7	<i>Goh AHY, Saranathan V; Yale-NUS College, Singapore</i>	45 Million Years of Structural Color in Fruits of <i>Elaeocarpus</i>
11:45 am Lunch Break		

10:15 AM – 11:45 AM	Session 19	Salons 1-2
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Reproductive Endocrinology

Chairs: Britt Heidinger, Kathleen Hunt

10:15 am	19-1	<i>Wrobel ER, Khan NY, Curry JE, Mendonca MT, Navara KJ; University of Georgia, Auburn University</i>	An examination of current practices of testosterone administration: comparing the effects of testosterone versus testosterone propionate implants in the hen
10:30 am	19-2	<i>Heidinger BJ, Slowinski SP, Sirman AE, Kittilson J, Gerlach NM, Ketterson ED; North Dakota State University, Indiana University, University of Florida</i>	Experimentally elevated testosterone increases telomere loss in a songbird
10:45 am	19-3	<i>Austin SH, MacManes M, Lang A, Calisi RM; UC Davis, Univ of New Hampshire</i>	The transcriptomics of parenting: uncovering sex-biased gene activity in an avian biparental system
11:00 am	19-4	<i>George EM, Navarro D, Rosvall KA; Indiana University, Bloomington, Texas A&M University-Kingsville</i>	Short-term HPG axis activation has longer-term effects on paternal care: implications for the use of GnRH challenges
11:15 am	19-6	<i>Hennin HL, Legagneux P, Gilchrist HG, Janssen MH, Bêty J, Love OP; University of Windsor, Université du Québec à Rimouski, National Wildlife Research Centre, Environment Climate Change Canada</i>	Physiological Mechanisms Driving Foraging, Fattening and Reproduction in an Arctic Seaduck
11:30 am	19-7	<i>Hunt KE, Buck CL, Willing C, Dillon D, Jørgensen MPH, Ferguson S, Matthews CJD; N Arizona Univ, Fisheries and Oceans Canada, Greenland Institute of Natural Resources</i>	Evidence of annual testosterone cycles in baleen of a male bowhead whale (<i>Balaena mysticetus</i>)
11:45 am Lunch Break		

10:15 AM – 12:00 PM	Session 20	Salons 3-4
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Comparative Genomics

Chair: Kenneth Halanych

10:15 am	20-1	<i>Phillips MB, Amemiya CT; Univ of Washington, Univ of California, Merced</i>	Chitin Within the Electrosensory Organs of Cartilaginous Fishes
10:30 am	20-2	<i>Dixon GB, Kenkel CD*; Univ of Texas, Austin, Univ of So California</i>	Investigating genes involved in the evolution of coral reproductive and symbiont transmission modes
10:45 am	20-3	<i>Chavez-Dozal AA, Soto W, Nishiguchi MK; New Mexico State University, College of William and Mary</i>	Understanding the evolution of wrinkly phenotypes in environmental and symbiotic <i>Vibrio fischeri</i>
11:00 am	20-4	<i>Costa-Paiva EM, Schrago CG, Halanych KM*; Universidade Federal do Rio de Janeiro, Auburn University</i>	Diversity of Hemerythrin and Hemocyanin Blood Pigments across Metazoa.
11:15 am	20-5	<i>Lins LSF, Helou L, Fiston-Lavier AS, Kelley J; Washington State University, Pullman, University of Montpellier</i>	Evolutionary Dynamics of the Antifreeze Protein III Gene Cluster in Polar Fish
11:30 am	20-6	<i>Ballesteros JA, Sharma P; Univ of Wisconsin, Madison</i>	The Evolution Of The Chelicerate Genome: Sorting Out Gene Expansions In Old Radiations
11:45 am	20-7	<i>Kitchen SA, Ratan A, Miller W, Baums IB; Penn State Univ, Univ of Virginia</i>	Genome synteny, divergence and introgression between Caribbean Acroporids
12:00 pm	..... Lunch Break		

10:30 AM – 11:45 AM **Session 21**

Golden Gate C-1

Complementary to S4: Science Through Narrative: Engaging Broad Audiences

Co-chairs: Eugenia Gold, Justice Morath

10:30 am	21-1	<i>Padian K; University of California, Berkeley</i>	How scientists tell stories: Narrative and “anti-narrative” in communicating research
10:45 am	21-2	<i>Morath J; Salt Lake Community College</i>	From Science Communication to a Conversation about Science.
11:00 am	21-3	<i>Van Orden T; Mercer Island School District</i>	Supporting the Problem Solving Skills of Gifted Students Through the Use of Social Stories
11:15 am	21-5	<i>Gold MEL, West AR, Gardiner AJ; Stony Brook Univ, Carnegie Museum, amyjgardiner.com</i>	<i>She Found Fossils: A Kids Book About Women in Paleontology</i>
11:30 am	21-6	<i>Rudenko A; Goddard College MFA Interdisciplinary Arts</i>	Prehistoric Body Theater: GHOSTS of HELL CREEK
11:45 am	21-6	<i>Marting PR; Arizona State University</i>	Exploring causes and consequences of colony personality in the Azteca-cecropia mutualism
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM **Session 22**

Golden Gate C-2

Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics, Part 2

Co-chairs: Tom Daniel, Daisuke Takagi

10:15 am	22-1	<i>Takagi D, Hartline DK; University of Hawai'i at Mānoa</i>	Sensing Hydrodynamic Cues and Escaping from Predators: Theoretical Strategies for Swimming Organisms and Robots
10:30 am	22-2	<i>Hardy AR, Hale ME; Univ of Chicago</i>	The role of substrate contact on pectoral fin sensory regionalization
10:45 am	22-3	<i>Mohren TL, Eberle AL, Fox JL, Daniel TL; Univ Washington, Case Western Reserve</i>	Spike timing in halteres reflects gyroscopic forces
11:00 am	22-4	<i>Lunsford ET, Liao JC; Whitney Laboratory for Marine Bioscience, University of Florida</i>	Lateral Line Afferent Neurons Decrease Spike Rate During Motor Activity in Larval Zebrafish
11:15 am	22-5	<i>Liao JC, Akanyeti O, Putney J, Yanagitsuru YR, Lauder GV, Stewart WS; Univ of Florida, Whitney Laboratory for Marine Bioscience, St. Augustine, Aberystwyth University, Georgia Institute of Technology, UC Davis, Harvard University, Eastern Florida State College</i>	Acceleration in fishes; a multi-species comparison reveals a common hydrodynamic mechanism
11:30 am	22-6	<i>Mamiya A, Tuthill JC*; University of Washington</i>	The neural code for leg proprioception in <i>Drosophila</i>
11:45 am	22-7	<i>Yarger AM, Fox JL; Case Western Reserve University</i>	Rapidly Adapting Mechanosensors Differentiate Between External and Self Motion
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM **Session 23**

Salons 10-12

Comparative Stress Endocrinology

Chairs: Scott MacDougall-Shackleton, Christine Lattin

10:15 am	23-1	<i>MacDougall-Shackleton SA, Moore IT; Univ of Western Ontario, Virginia Tech</i>	Glucocorticoids and “Stress” are Not Synonymous
10:30 am	23-2	<i>McCormley M, Champagne C, Deyarmin J, Stephan A, Houser D, Crocker D, Khudyakov J; University of the Pacific, Old Dominion University, National Marine Mammal Foundation, Sonoma State University</i>	Using endocrine profiles to discriminate stress states in marine mammals
10:45 am	23-3	<i>Berk SA, Breuner CW; University of Montana</i>	Stress, Condition, and Sexual Selection in the Mountain Bluebird, <i>Sialia currucoides</i>

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11:00 am	23-4	<i>Abegaz MF, Salas H, Gunderson AR, Tsukimura B, Stillman JH; San Francisco State Univ, California State Univ, Fresno, Univ of California Berkley</i>	Increased Density Induces Aggressive Behavior and Increased Vitellogenin Levels in Porcelain Crab Species <i>Petrolisthes cinctipes</i> and <i>Petrolisthes manimaculis</i>
11:15 am	23-5	<i>Grace JK, Angelier FA; Texas A&M Univ, CEBC-CNRS</i>	Delayed effect of early-life corticosterone treatment on adult anti-predator behavior and breeding readiness in a common passerine
11:30 am	23-6	<i>Huang V, Lubin F; University of Alabama at Birmingham</i>	Stress Experience on the Zebrafish Brain
11:45 am	23-7	<i>Lattin CR, Gallezot J-D, Carson RE; Yale University</i>	Individual variation in dopamine physiology predicts behavioral resilience to a chronic stressor
12:00 pm	Lunch Break		

10:00 AM – 12:00 PM Session 24	Salons 13-15
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Division of Vertebrate Morphology Best Student Presentations

Chair: John Hutchinson

10:00 am	24-1	<i>Ackerly KL, Mitrofanov I, Sanford CP, Krahe R, Chapman LJ; McGill University, Kennesaw State University, Humboldt-Universität zu Berlin</i>	Mismatch Between Morphology and Performance Among Elephant-nose Weakly Electric Fishes From Divergent Habitats
10:15 am	24-2	<i>Laurence-Chasen JD, Ramsay JB, Brainerd EL; University of Chicago, Westfield State University, Brown University</i>	Complex Prey Processing in a Freshwater Stingray, <i>Potamotrygon motoro</i>
10:30 am	24-3	<i>Law CJ, Slater GJ, Mehta RS; Univ of California, Santa Cruz, University of Chicago</i>	Small and Slender: Evolutionary Shifts Towards Elongate Body Plans within Mustelidae
10:45 am	24-4	<i>Miyashita T, Palmer AR; University of Alberta</i>	Testing cyclostome-based models for vertebrate ancestry
11:00 am	24-5	<i>Olberding JP, Blob RW, Mayerl CJ, Espinoza NR, Deban SM; University of California, Irvine, Clemson University, University of South Florida</i>	Frog hind limb joint contributions to jump energy across scale and temperature
11:15 am	24-6	<i>Rupp A, Sever D; Univ of Louisiana Lafayette, Southeastern Louisiana University</i>	Sexy Salamanders: Caudal Courtship Glands in Plethodontids that Lack Mental Glands
11:30 am	24-7	<i>Stover KK, Brainerd EL, Roberts TJ; Univ of California, Irvine, Brown University</i>	Not so fast food: Morphological speed limits in the domestic turkey
11:45 am	24-8	<i>Zhuang MV, Russell AP, Higham TE; Univ of California, Riverside, Univ of Calgary</i>	The Evolution of Digit Morphology in Relation to the Acquisition of the Adhesive System
12:00 pm	Lunch Break		

Thursday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:15 PM Session 25 Salons 5-6

Morphology: Unlocking the Vault

Chairs: Bonnie Kircher, Duncan Irschick

1:30 pm	25-1	<i>Peyla JF, Senft SL, Hanlon RT; College of Charleston, Marine Biological Laboratory</i>	Secrets to Squid Chromatophore Colors: Unexpected Relationships Between Pigment Granule Color and Morphology with Implications for Biophotonics
1:45 pm	25-2	<i>Kircher BK, Cohn MJ; Univ of Florida</i>	Growing apart: characterizing the development of sexual dimorphism
2:00 pm	25-3	<i>Collins KS, Edie SM, Bieler R, Roy K, Jablonski D; Univ of Chicago, Field Museum of Natural History, Univ of California, San Diego</i>	Cosmopolitan compromises and tropical trade-offs—latitudinal and morphological “range” in marine bivalves
2:15 pm	25-4	<i>Karsten KB, Cuadrado M; California Lutheran University, Zoobotanico Jerez</i>	Sexual Selection on Performance in a Size-monomorphic Mating System, <i>Chamaeleo chamaeleon</i> from Southern Spain
2:30 pm	25-5	<i>Hanken J, Turney SG, Ford LS; Harvard University</i>	Unlocking the Vault: Mass Digitization and Imaging of Historical Slide Collections for Use in Comparative Biology
2:45 pm	25-6	<i>Irschick DJ; University of Massachusetts at Amherst</i>	Creating lifelike 3D digital specimens for collections-based research
3:00 pm	25-7	<i>Suzuki TK; NARO, Japan</i>	Component-based phylogenetic comparative methods reveal evolutionary pathways toward complex adaptive traits

3:30 pm Coffee Break Salons 8-9

2:00 PM – 3:15 PM Session 26 Foothill G

Evolutionary Morphology - Eyes, Teeth, Skull

Chair: Lars Schmitz

2:00 pm	26-1	<i>Schmitz L, Higham TE; Claremont McKenna, Scripps, and Pitzer Colleges, UC Riverside</i>	Adaptive Landscape of Eye Size Evolution in Geckos
2:15 pm	26-2	<i>Ackles AL, Storch JD, Hernandez LP; George Washington University</i>	An Exploration of Morphospace Occupation of the Cypriniform Pharyngeal Jaw
2:30 pm	26-3	<i>Brink KS, Chiba K, Richman JM; University of British Columbia, University of Toronto</i>	Timing of Tooth Development and Tooth Replacement in Homodont and Heterodont Dentitions
2:45 pm	26-4	<i>Conith AJ, Kidd MR, Albertson RC; Univ of Mass Amherst, Texas A&M International Univ</i>	Evolutionary Consequences of Modularity in the Cichlid Skull
3:00 pm	26-5	<i>Felice RN, Goswami A; University College London</i>	Development Shapes Mosaic Evolution in Bird Skulls

3:30 pm Coffee Break Salons 8-9

1:30 PM – 3:00 PM Session 27 Nob Hill A-B

Division of Animal Behavior: Marlene Zuk Award Session

Chairs: Jennifer Gumm, Michele Johnson

1:30 pm	27-1	<i>Brothers JR, Lohmann KJ; University of North Carolina</i>	Magnetic Navigation and Natal Homing in Mass Nesting Sea Turtles
1:45 pm	27-2	<i>Burkhard TT, Westwick RR, Phelps SM; UT Austin</i>	Adiposity signals predict song effort in Central American singing mice
2:00 pm	27-3	<i>Escobar-Camacho D, Taylor MA, Carleton KL; University of Maryland, College Park</i>	Color vision in a cichlid: <i>Metriaclima benetos</i>

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2:15 pm	27-4	<i>Green PA, Patek SN; Duke University</i>	Communication and Combat: The Function of Ultrafast, Ritualized Striking in Mantis Shrimp
2:30 pm	27-5	<i>Hope SF, Kennamer RA, Van Montfrans SG, Hopkins WA; Virginia Tech, University of Georgia, William Fleming High School</i>	Incubation Temperature and Social Context Affect Nest Exodus Performance of Precocial Ducklings
2:45 pm	27-6	<i>Slade JWG, Watson MJ, Kelly TR, Bernards MA, Garner SG, MacDougall-Shackleton EA; Western University</i>	MHC-Mediated Mate Choice and Preen Oil as a Chemical Signal of MHC Similarity in Song Sparrows (<i>Melospiza melodia</i>)
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:30 PM	Session 28	Nob Hill C-D
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Physiology in the Cold & Deep

Chairs: Katie Marshall, Mark Garcia

1:30 pm	28-1	<i>Toxopeus J, Des Marteaux LE, Kostal V, Sinclair BJ; Western University, Czech Academy of Sciences</i>	Why Frozen Insects Die: A Tale of Metabolomics, Transcriptomics, and Cryoprotectant Manipulation in Freeze-Tolerant Crickets
1:45 pm	28-2	<i>Roberts KT, Rank NE, Dahlhoff EP, Stillman JH, Williams CM; Univ of California, Berkeley, Sonoma State Univ, Santa Clara Univ</i>	Carryover effects of cold on overwintering willow leaf beetles
2:00 pm	28-3	<i>Marshall KE, Chan BKK; University of Oklahoma, Academia Sinica</i>	Transcriptomic Responses to Freezing Stress in the Barnacle <i>Semibalanus balanoides</i>
2:15 pm	28-4	<i>Oyen KJ, Prather JF, Herndon JD, Strange JP, Dillon ME; University of Wyoming, Utah State University, USDA-ARS-Pollinating Insect Biology, Management and Systematics Research Unit</i>	A comparison of flight muscle action potentials during chill coma onset in high and low altitude bumble bees reared in common garden conditions
2:30 pm	28-5	<i>Sinclair BJ; Western University</i>	Applied comparative physiology: Finding the utility in freezing bugs
2:45 pm	28-6	<i>Garcia MJ, Teets NM; University of Kentucky</i>	Neuromuscular Performance as Measures of Thermal Tolerance
3:00 pm	28-7	<i>Thatje S; University of Southampton, National Oceanography Centre Southampton</i>	Transitions from shallow to deep-water life: physiological adaptations to life under hydrostatic pressure
3:15 pm	28-8	<i>Winnikoff JR, Haddock SHD, Thuesen EV, Wilson T; Univ of California, Santa Cruz, Monterey Bay Aquarium Research Institute, Evergreen State College</i>	Grace Under Pressure: Cloning and Hyperbaric Characterization of Pyruvate Kinase from Deep-Sea Ctenophores
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:00 PM	Session 29	Foothill E
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Biogeography

Chairs: Michael Carlo, Eric Riddell

1:30 pm	29-1	<i>Wethey DS, Woodin SA, Galaska MP, Halanych KM, Dubois SF, Arias A; Univ of South Carolina, Columbia, Lehigh Univ, Bethlehem, Pennsylvania, Auburn Univ, IFREMER, Univ of Oviedo</i>	<i>Diopatra biscayensis</i> Disjunct Population Not a Relict, Rather Human-Assisted Transport
1:45 pm	29-2	<i>Riddell EA, Carlo MA, Baldwin RF, Zamudio KR, Sears MW; University of California, Berkeley</i>	Using physiology to predict habitat suitability during the last climatic oscillation: implications for conservation
2:00 pm	29-3	<i>Czapanskiy MF, Adams J, Felis J, Kelsey EC, Hines E; San Francisco State University, US Geological Survey</i>	Quantifying the Influence of Energy Windscares on Seabird Distributions
2:15 pm	29-4	<i>Coppenrath CM, Lasala JA, Gingras M, Baldwin J; Florida Atlantic University</i>	Foraging Ecology of Florida's Nesting Leatherback Turtles: Insight from Stable Isotope Analysis
2:30 pm	29-5	<i>Carlo MA, Cuttino LA, Camper BT, Sears MW; Clemson University</i>	Plasticity of nesting behavior and embryo physiology interact as drivers of phenotypic variation in a widespread ectotherm

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2:45 pm **29-6** *Tracy CR, Gordon M, Simandle E, Noles P, Sandmeier F, Hagerty B, Fisher R, Beck M, Forister M; Univ of Nevada Reno, Paul Smiths University, Colorado St. Univ Pueblo, York Univ of Pennsylvania* Phylogeography of Toads in the *Bufo boreas* species complex

3:30 pm **Coffee Break** **Salons 8-9**

1:30 PM – 3:00 PM **Session 30** **Foothill C**

Feeding in Aquatic Vertebrates

Chairs: Aaron Olsen, Emily Kane

1:30 pm **30-1** *Olsen AM, Hernandez LP, Camp AL, Brainerd EL; Brown University, Providence, George Washington University* Closed loops of joints, rather than the joints themselves, impose the primary motion constraint in the catfish mouth expansion mechanism

1:45 pm **30-2** *Provini P, Van Wassenbergh S; Museum National d'Histoire Naturelle, Paris* Suction outflow dynamics in fishes: effects of the shape of the pharynx and pectoral region of the body

2:00 pm **30-3** *Martinez CM, McGee MD, Wainwright PC; Univ of California, Davis, Monash University* Morphological Adaptations for Evasive Prey Capture Result in More Dynamic and Efficient Suction Feeding in Cichlids

2:15 pm **30-4** *Kane EA, Ghalambor CK; Georgia Southern University, Colorado State University* An ecological specialization gradient does not lead to performance specialization in suction-feeding guppies

2:30 pm **30-5** *Matthews DG, Albertson RC; Harvard University, University of Massachusetts Amherst* Effect of Craniofacial Genotype on the Relationship between Morphology and Feeding Performance in Cichlid Fishes

2:45 pm **30-6** *Clubb BL, Clark AJ, Uyeno TA; Valdosta State University, College of Charleston* Diversity of function in hagfish feeding apparatuses

3:30 pm **Coffee Break** **Salons 8-9**

1:30 PM – 3:30 PM **Session 31** **Salons 1-2**

Neuroethology - Sensorimotor Responses

Chair: Tanvi Deora

1:30 pm **31-1** *Deora T, Campos EO, Brunton B, Daniel TL; Department of Biology, Univ of Washington, Seattle, WA* Role of Touch in Shaping Plant-Insect Pollinator Interaction

1:45 pm **31-2** *Raja SV, Ramesh L, Vats A, Sane SP*; National Centre for Biological Sciences, Tata Institute of Fundamental Research* Collective self-organization of traffic in mound-building termites

2:00 pm **31-3** *Stott TP, Olson EG, Gray JR*; University of Saskatchewan* A locust motion-sensitive visual interneuron tracks changes in the velocity of an approaching object

2:15 pm **31-4** *Park E, Wasserman SM; Wellesley College* Visuomotor reflexes differ in two *Drosophila* species

2:30 pm **31-5** *Wolff GH, Lahondère C, Vinauger C, Riffell JA; Univ of Washington* Selective Memory: Mosquitoes Learn Salient Olfactory Cues Associated with Preferred Hosts

2:45 pm **31-6** *Mukherjee R, Trimmer BA; Tufts University* Fast movements in soft-bodied caterpillars

3:00 pm **31-7** *Suver MP, Alvarez-Salvado E, Matheson AM, Sarkar S, Damiata M, Nagel KI; NYU Neuroscience Institute* Wind direction encoding in the fruit fly

3:15 pm **31-8** *Hsu CT, Bhandawat V*; Duke University* Principles underlying control of multi-jointed limbs

3:30 pm **Coffee Break** **Salons 8-9**

1:45 PM – 2:45 PM **Session 32** **Salons 3-4**

Best Student Papers - Aubrey Gorbman Award

Chairs: Laura Carruth, Sharon Lynn

1:45 pm **32-2** *Amato CM, Boyd M, McCoy KM; East Carolina University* Early Vinclozolin exposure increases the severity of penile abnormalities

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2:00 pm	32-3	<i>Spool JA, Jay MD, Riters LV; University of Wisconsin, Madison</i>	Nest cavity exploration stimulates breeding physiology and alters mRNA expression in the medial preoptic area of female European starlings (<i>Sturnus vulgaris</i>)
2:15 pm	32-4	<i>Rieger NS, Marler CA; Univ of Wisconsin</i>	Oxytocin Induces Sex-Specific Changes in Territorial Defense by Pair-Bonded California Mice
2:30 pm	32-5	<i>Zhang VY, Williams CT, Palme R, Buck CL; Northern Arizona Univ, Univ of Veterinary Medicine</i>	Relationships Between Cortisol and Activity Patterns in Free-living Arctic Ground Squirrels
3:30 pm	Coffee Break		Salons 8-9

1:45 PM – 3:15 PM **Session 33** **Golden Gate C-1**

Animal Communication - Signal Complexity

Chairs: Rindy Anderson, Damien Elias

1:45 pm	33-1	<i>Girard MB, Kasumovic MM, Elias DO*; UC Berkeley, University of New South Wales</i>	Multimodal communication in peacock spiders: Examining the role of visual and vibratory signals in <i>Maratus volans</i> courtship
2:00 pm	33-2	<i>Anderson RC, Ali SB; Florida Atlantic University</i>	Understanding Complexity in Communication Systems: Song and Aggressive Signaling in the Bachman's Sparrow
2:15 pm	33-3	<i>Johnson KE, Clark CJ; University of California, Riverside</i>	Vocal Learning in the Costa's Hummingbird
2:30 pm	33-4	<i>D'Amelio PB, Ter Maat A, Gahr M; Max Planck Institute for Ornithology</i>	How Zebra Finches Chat: From Auditory Recognition to Motivation to Answer
2:45 pm	33-5	<i>Tumulty J, Fouilloux C, Goyes Vallejos J, Bee MA; University of Minnesota, University of Connecticut</i>	Predicting and then measuring social recognition decision rules in a territorial frog
3:00 pm	33-6	<i>Vetter BJ, Mensinger AF; University of Washington, University of Minnesota Duluth</i>	Understanding the Behavior and Auditory Physiology of Flying Carp: an Integrated Approach to Invasive Species Control
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:30 PM **Session 34** **Golden Gate C-2**

Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics, Part 3

Co-chairs: Eric Tytell, Perrin Schiebel

1:30 pm	34-1	<i>Bai B, Fox J; Hathaway Brown School, Case Western Reserve University</i>	Dissecting Fly Haltere Function during Flight and Walking
1:45 pm	34-2	<i>Savoie WC, Li S, Warkentin RJ, Goldman DI; Georgia Tech</i>	Phototaxing Supersmarticle: a Locomoting Robot Made of Robots
2:00 pm	34-3	<i>Mountcastle AM, Pai SN, Helbling EF, Wood RJ; Bates College, Harvard University</i>	A wasp-inspired collapsible wing hinge dampens collision-induced body torques in a microrobot
2:15 pm	34-4	<i>Schiebel PS, Rieser JM, Hubbard AM, Chen L, Goldman DI; Georgia Institute of Technology</i>	Collisional diffraction illuminates the neuromechanical control of snake sand-slithering
2:30 pm	34-6	<i>Neveln ID, Tirumalai A, Sponberg S; Georgia Institute of Technology</i>	Just How Centralized is Cockroach Locomotor Control? Comparisons to Robotic and Computational Models.
2:45 pm	34-7	<i>Clark EG, Kanauchi D, Kano T, Aonuma H, Ishiguro A; Yale University, Tohoku University, Hokkaido University</i>	Insights into the Control Setup underlying the Resilient Decentralized Locomotion of Brittle Stars
3:00 pm	34-8	<i>Putney J, Barker R, Sponberg S; Georgia Institute of Technology, Emory University</i>	Redundancy and Consistency of Muscle Encoding Strategies in Hawk Moth Flight
3:15 pm	34-9	<i>Strebel B, Han Y, Li C; Johns Hopkins University</i>	A novel terrain treadmill to study animal locomotion in complex 3-D terrains
3:30 pm	Coffee Break		Salons 8-9

Behavioral Thermoregulation

Chairs: Ryan O'Connor, Danielle Levesque

1:30 pm	35-1	Lam EL, Gunderson AR, Tsukimura B, Stillman JH; Romberg Tiburon Center, San Francisco State Univ, California State Univ, Fresno	Variation in thermoregulation and linking whole organism behavior to thermosensory neurophysiology in the porcelain crab, <i>Petrolisthes cinctipes</i>
1:45 pm	35-2	O'Connor RS, Brigham RM, McKechnie AE; University of Pretoria, University of Regina	Thermoregulatory Patterns in Free-Ranging Populations of Two Southern African Arid-Zone Nightjars
2:00 pm	35-3	Loughran CL, Wolf BO; University of New Mexico	The Costs of Being Cool: Panting Thresholds, Thermal limits, and Evaporative Cooling in Southwestern Lizard Communities
2:15 pm	35-4	Brasmer RH, Ramirez RW, Wolf BO; University of New Mexico	Comparative Thermoregulation of White-tailed Antelope Ground Squirrels (<i>Ammospermophilus leucurus</i>) in the Mojave
2:30 pm	35-5	Ramirez RW, Coe BH, Wolf BO; University of New Mexico	Comparative Thermoregulation in Mojave Desert Rodents
2:45 pm	35-6	Talbot WA, Wolf BO; University of New Mexico	Avian thermoregulation in the heat: Nocturnal Sonoran Desert birds
3:00 pm	35-7	Gomes G, Köberle R, Von Zuben CJ, Andrade DV*; Physics Institute of São Carlos, University of São Paulo, Depto de Zoologia, IB, Universidade Estadual Paulista	Stay Cool With a Drop of Drool: Evaporative Cooling Blowfly Way
3:15 pm	35-8	Levesque DL; University of Maine	Tropical thermoregulatory phenotypes: insights into the relationship between basal metabolism and energetic outputs in mammals

3:30 pm **Coffee Break** **Salons 8-9**

Locomotion: From Trees to Ground

Chairs: Baxi Zhong, Brooke Quinn

1:30 pm	36-1	Knight KC, Lee DV; University of Nevada, Las Vegas	Grasping lizard branch locomotion: an exploration of movement, forces, and torques
1:45 pm	36-2	Moberly IT, Moon BR; Univ of Louisiana at Lafayette	Interplay between Setae and Locomotor Kinematics in an Arboreal Lizard (<i>Furcifer oustaleti</i>)
2:00 pm	36-3	Gorvet MA, Hidalgo Segura D, Avey-Arroyo J, Richardson G, Butcher MT; Youngstown State Univ, The Sloth Sanctuary	EMG Activation in the Forelimb Musculature of Three-toed Sloths (<i>Bradypus variegatus</i>)
2:15 pm	36-4	Chong B, Aydin YO, Hubbard AM, Rieser JM, Wu Y, Gong C, Rankin JW, Michel K, Nicieza A, Hutchinson JR, Goldman DI, Choset H; Carnegie Mellon University, Georgia Institute of Technology	Geometric mechanics provides insight into spine-limb coordination for locomotion of a sprawled-postured tetrapod
2:30 pm	36-5	Quinn BL, Carter AM, Hsieh ST; Temple University, Univ of Pennsylvania	Bending Rules for Terrestrial Locomotion
2:45 pm	36-6	Gatesy SM, Turner ML, Falkingham PL; Brown Univ, Liverpool John Moores Univ	CT Imaging of Dinosaur Footprints: Hidden Topography and the Origin of Track Diversity
3:00 pm	36-7	Kennedy J, Nagpal R; Harvard University	Using Drones to Visualize Formation of Damming Complexes of the North American Beaver (<i>Castor canadensis</i>)
3:15 pm	36-8	Hubel TY, Golabek K, Rafiq K, McNutt W, Wilson AM; Royal Veterinary College	Movement patterns and hunting performance in leopards

3:30 pm **Coffee Break** **Salons 8-9**

Bartholomew Lecture	Williams Caroline M; Univ of California, Berkeley	Cold Truths: Evolutionary Impacts of Winter on Terrestrial Ectotherms
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THURSDAY POSTER SESSION P1

Salons 8-9, 3:30-5:30 PM

Poster Set Up: 7:30-8:00 am; Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm; Odd # - Authors present from 4:30-5:30 pm

Undergraduate Biology Education

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|--------------|--|---|
| P1-1 | <i>Satterlie RA, Yopak K; University of North Carolina Wilmington</i> | Design-A-Nervous System |
| P1-2 | <i>Pyles RA; East Tennessee State University</i> | Adding Quantitative Skills to Comparative Vertebrate Anatomy |
| P1-3 | <i>Word KR, Duckles BM, Brooks PT, Johnson LK, Brown CT; UC Davis, Portland State University</i> | Perspectives from an intensive bioinformatics training workshop with a heterogeneous learner population: success takes many different forms |
| P1-4 | <i>Gibb AC; Northern Arizona University</i> | Teaching Using "The Martian:" A Problem-solving Based Approach to Physiology |
| P1-5 | <i>Gidmark NJ, Farina S; Knox College, Harvard University</i> | A laboratory exercise for Physiology and Comparative Anatomy teaching that leverages the power of 3D printing. |
| P1-6 | <i>Schweizer KG, Geiger C, Pillot AN, Meadows MG; Saint Francis University</i> | Bargain Jellies: Health and Survival of Moon Jellies (<i>Aurelia aurita</i>) in Hand-Built Pseudo-Kreisel Aquaria |
| P1-7 | <i>Schwalbe MAB, Howes LJ, Rokop ME; Tufts University, Boston Harbor Cruises, UMass Boston</i> | Turning Freshmen into Scientists: Analyzing Whale Watch Data in a First Year Seminar |
| P1-8 | <i>May MA, Vasquez MC, Todgham AE, Tomanek L; California Polytechnic State University, University of California, Davis</i> | It Takes a Village: Lessons from Conducting Large-scale Physiology Experiments |
| P1-9 | <i>Lent DD, Rawat M, Müller UK*; CSU Fresno</i> | A Capstone Case Study as Review for an Introductory Biology Class |
| P1-10 | <i>Ross JA; California State University, Fresno</i> | A Model for Course Backward Design: Aligning Outcomes and Assessments with Bloom's Taxonomy and Vision & Change |
| P1-11 | <i>Spain DD, Mendoza VM, Chavez BA; Dominican University of California</i> | Using a Case Study to Teach Ocean Acidification |
| P1-12 | <i>Hagey T, Warwick A, Mead L; Michigan State University</i> | A Classroom Activity Simulating Population-Level Evolution by Hand |
| P1-13 | <i>Iyengar EV, Meier PT, Hamelers RE; Muhlenberg College</i> | The Small Mammal Project: Engaging Students as Scientists |

DCB BSP: Vogel Award

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| P1-14 | <i>Katz HR, Goolsbee A, Hale ME; Univ of Chicago</i> | Performance of axial and limb-based startle behaviors through metamorphosis in <i>Xenopus laevis</i> |
| P1-15 | <i>Graham M, Jayne BC, Socha JJ; Virginia Tech, Univ of Cincinnati</i> | Gap distance affects the behavior and precision of movement of flying snakes |
| P1-16 | <i>Yoshida KT, Uyanik I, Fortune ES, Sutton EE, Cowan NJ; Johns Hopkins University, New Jersey Institute of Technology</i> | A new experimental system to test how the brain learns novel locomotion dynamics |

DVM BSP: Liem Award

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| P1-17 | <i>Caggiano EG, Cerio DG, Porter WR, Ridgely RC, Witmer LM; Ohio Univ</i> | Avian nasal salt glands: anatomy and its relevance for inferring the behavior and habitat preferences of extinct birds |
| P1-18 | <i>Capshaw G, Soares D, Carr CE; University of Maryland, College Park, New Jersey Institute of Technology</i> | A comparative analysis of phylogenetic and ecological trends in variation of salamander inner ear morphology |
| P1-19 | <i>Chabain J, Kolmann MA, Summers AP; FHL, Univ of Montpellier, Univ of Washington</i> | What's the Point? Form and Function of the Caudal Barb in Stingrays |
| P1-20 | <i>Cost IN, Middleton KM, Holliday CM; Univ of Missouri, Columbia</i> | Mechanical Performance in the Skulls of Parrots (Aves: Psittaciformes) |
| P1-21 | <i>Crawford CH, Randall ZS, Flammang BE; New Jersey Institute of Technology, Florida Museum of Natural History</i> | Variation in Pelvic Morphology of Balitorid Fishes |

- P1-22** Green TL, Gignac PM; Oklahoma State University Center for Health Sciences
Ontogeny of Cassowary and Maleo Casques: Differentiating Patterns of Cranial Ornamentation in Birds
- P1-23** Lopez WA, Hoffmann SL, Porter ME; Florida Atlantic University
Slice Slice Baby: A Cross-Sectional Analysis of Shark Pectoral Fin Radials
- P1-24** Huie JM, Evans KM, Summers AP, Kolmann MA; Univ of Washington, Univ of Minnesota
Ontogeny of jaw biomechanics in lepidophagous fishes
- P1-25** Kanasiro A, Daza JD, Bell CJ, Maisano JA, Gamble T, Bauer AM; Sam Houston State University, University of Texas at Austin, Marquette University, Villanova University
Learning to Fly: Skeletal Evolution in Gliding Geckos
- P1-26** McGrosky A, Kamilar JM, Tecot SR, Schwartz GT; Arizona State University, Univ of Massachusetts, Amherst, University of Arizona
Comparative aspects of mammalian pituitary gland anatomy and its usefulness for reconstructing life history
- P1-27** Mobley RB, Boughman JW; Michigan State University
Ecology and Evolution in the Sensory Morphospace of Threespine Sticklebacks
- P1-28** Fant JA, Olivieri RA, Ekstrom LJ; Wheaton College, MA
Does muscle morphology and composition predict function?
- P1-29** Peixoto TL, Summers AP, Kolmann MA; Univ of Washington
Plates and Ridges: Form and function of armored scales in poachers (Agonidae)
- P1-30** Pos KM, Kolmann MA, Gidmark NJ; Knox College, University of Washington, Friday Harbor Laboratories
A comparative investigation of evolutionary history versus dietary niche in shaping pharyngeal jaw skeletal structure in cyprinid fishes
- P1-31** Sang S, Tietjen K, Coates MI; University of Chicago
Getting a grip on claspers: a new description of chimaeroid cranial clasper anatomy
- P1-32** Scantlebury SS, Klohmann CA, Pakzad IY, Scott-Büchler C, Vompe AD, Fiorenza EA*, Farina SC; Cornell University, University of Washington
Linking gill raker morphology to diet in suction-feeding sculpins (Cottoidea)
- P1-33** Smith CJ, Middleton KM, Bailleul AM, Holliday CM; University of Missouri, Columbia
Bending Properties of the Lower Temporal Bar in Ducks and its Significance for Cranial Biomechanics
- P1-34** Sommerfeld N, Holzman R; Tel-Aviv University, The Inter-University Institute, Eilat
What determines capture success of copepods by fish larvae?
- P1-35** Von Hagel AA, Tsoi R, Kolmann MA, Geringer ME, Orr JW, Farina SC; Univ of Washington, Friday Harbor Labs, NOAA Alaska Fisheries Science Center, Harvard Univ
Use it or lose it: Three ways that snailfishes (Liparidae) reduce their skeleton in the deep sea
- P1-36** Wainwright DK, Lauder GV; Harvard University
Mucus matters: the complex and slippery surfaces of fish

Complementary to S1: Big and Armored: Genomic, Ecological, and Paleontological Insights into the Early Evolution of Animals Integrative and Comparative Biology

- P1-37** Kocot KM, Tassia MG, Halanych KM, Swalla BJ; University of Alabama, Auburn University, University of Washington
Phylogenomic resolution of major tunicate relationships
- P1-38** Hernandez AM, Schultz DT, Francis WR, Koren S, Schnitzler CE, Martindale MQ, Haddock SHD, Ryan JF; Whitney Laboratory for Marine Bioscience, Monterey Bay Aquarium Research Institute, National Human Genome Research Institute
Not content with sequence alone: Independent evidence for the positions of ctenophores and sponges using expanded gene content
- P1-39** Nannini KT, Eernisse DJ; California State University Fullerton
DNA Barcoding of Diverse California Polyclads Has Global Implications for These Hard-To-Identify Flatworms.
- P1-40** Spillane JL, MacManes MD, Plachetzki DC, Pankey MS; University of New Hampshire
Sequencing and Assembly of Field Collected Sponge Genomes
- P1-41** Batzel G, Lyons DC; Scripps Institution of Oceanography, UC San Diego
Elucidating the molecular mechanisms for biomineralization using the slipper-snail *Crepidula* (Gastropoda: Calyptraeidae)
- P1-41.1** Quattrini AM, Faircloth BC, Rodriguez E, McFadden CS*; Harvey Mudd College, Louisiana State University, American Museum of Natural History
Phylogenomics of class Anthozoa (Cnidaria) Using Universal Target-Enrichment Baits

Complementary to S2: Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance

- P1-42** Patel T, Rimkus B, Konow N; UMass Lowell
Influence of Recruitment Level on Jaw Muscle Operating Lengths During Chewing
- P1-43** Collias AA, Konow N, Biewener AA, Tijs C; University of Massachusetts Lowell, Harvard University
In vivo Muscle Bulging in Relation to Force Production in Rat Medial Gastrocnemius
- P1-44** Solomon JC, Konow N; University of Massachusetts, Lowell
Elastic Element Action during Food Processing in Axolotls

- P1-45** *Lai AKM, Wakeling JM, Biewener AA; Simon Fraser University, Harvard University* The functional role of human lower limb muscles during maximal sprint acceleration
- P1-46** *Danos N; University of San Diego* Pregnancy effects on muscle function.
- P1-47** *Punith LK, McKnight M, Narsipur S, Dick TJ, Sawicki GS; Georgia Tech, NC State, Univ of Queensland* Muscle-Tendon Units Can Automatically Reject Perturbations Without Feedback During Everyday Cyclic Tasks

Complementary to S3: Evolution in the Dark: Unifying our Understanding of Eye Loss

- P1-48** *Valdez J, Porter ML, Bok MJ, Wolf JB, Cronin TW*; UMBC, University of Hawaii, Bristol University* Sequence, Diversity, and Expression of Visual Opsins in the Stomatopod *Squilla empusa*
- P1-49** *Koyama KH, Arenz AL*, Rivera AS; University of the Pacific* *Euphilomedes* as a model system for studying ostracod evolution and development

Behavior and Neurobiology: Neuroanatomy & Physiology

- P1-51** *Zueva O, Khoury M, Mashanova D, Mashanov V; University of North Florida* The complex simplicity of the echinoderm nervous system
- P1-52** *Weber HE, Winters GC, Bobkova Y, Bostwick C, Kohn AB, Moroz LL; Transylvania Univ, Neurosci., Univ of Florida Whitney Lab* Uncovering the Secret Secretory Molecules of the *Octopus bimaculoides* Learning and Memory Circuit
- P1-53** *Storks L, Leal M; University of Missouri - Columbia* The Number of Neurons within the Brain of the Lizard *Anolis cristatellus*
- P1-54** *Johnson S, Krohmer RW; Saint Xavier University* Effect of Sex Steroid Hormones on Neurogenesis in the Injured Red-Sided Garter Snake Brain
- P1-55** *Chisholm KL, Papatheofanis CF, Rezk CA, Wiltse MS, Wen AH, Smodlaka H, Higham TE, Schmitz L; Scripps College, Pitzer College, WUHS Pomona* Low Retinal Convergence in the Nocturnal Leopard Gecko, *Eublepharis macularius*
- P1-56** *Khalil HH, Tutwiler AY, May LA, Awali S, Belanger RM; University of Detroit Mercy* Atrazine Exposure Affects Olfactory Sensory Neuron Morphology in The Lateral Antennules of Crayfish (*Orconectes virilis*)
- P1-57** *Serrano S, Palacios Alvarez J, Papa J, Itagaki H; Kenyon College, Thiel College* Expression of FMRFamide in the midgut of larval *Manduca sexta* (Lepidoptera: Sphingidae) over development with different diets
- P1-58** *Lammers AR, German RZ; Cleveland State University, Northeast Ohio Medical University* Bilateral asymmetry during suckling and swallowing in an infant pig model after superior laryngeal nerve lesion
- P1-60** *Cain SD, Hays-Wehle E, Hoffman G; Whitman College, Eastern Oregon University* A Morphological and Immunohistochemical Study of the Foot of the Pond Snail *Lymnaea stagnalis*
- P1-61** *Khoury M, Zueva O, Mashanov V; Univ of North Florida* Notch Signaling is Required for Brittle Star Arm Regeneration
- P1-62** *Feithen WD, Krohmer RW; Saint Xavier University* Visualization of C-FOS in the Brain of Timed-Mated Female Red-Sided Garter Snakes
- P1-63** *Garcia L, Krohmer RW; Saint Xavier University* Neuronal Plasticity in the Forebrain of the Male Checkered Garter Snake: Effect of Sex Steroid Hormones on Dendritic Spine Formation

Behavior and Neurobiology / Animal Communication

- P1-65** *Mackiewicz AG, Mensinger AF; Marine Biological Laboratory, University of Minnesota* Using passive acoustics to determine the effect of abiotic and biotic sound on Oyster Toadfish (*Opsanus tau*) vocalization rates
- P1-66** *Duque FG, Rodriguez-Saltos CA, Carruth L, Wilczynski W; Georgia State Univ, Emory Univ* High-frequency vocalizations and habitat acoustics in Andean hummingbirds
- P1-67** *Long EV, Hood KE, Hurley LM; Indiana University* Structure and context of female rejection vocalizations modify behavior in male mice
- P1-68** *Berger AN, Lohr B, Clark CJ; Univ of California, Riverside, Univ of Maryland, Baltimore County* Hearing with small ears: Costa's Hummingbird (*Calypte costae*) Audition

- P1-69** Ziadi P, Anderson R; Florida Atlantic University
Testing song type matching hypotheses in the Bachman's sparrow (*Peuceea aestivalis*)
- P1-70** Powell MD, Herman R, Ray A, Hudlin C, Davis JE; Radford University
Comparisons of the decay rate of infrasound across gradients of anthropogenic disturbance and physical obstruction
- P1-71** Oakley TH, Motta CA, Saha R, Locker-Cameron TR, Hensley NH, Rivers TJ; UCSB, Bates College, U Kansas
Waterborne Autonomous Low Light Electrostereovideography (WALL-E) to Quantify Luminous Courtship Signals of Ostracods
- P1-72** Byrd AD, Cronin TW*; UMBC
Effect of Environmental Sand Coloring on Reflectance of *Neogonodactylus oerstedii*
- P1-74** King TP, Tramontana B, Maruska KP; Louisiana State Univ
Behavior and neural activation patterns of non-redundant visual and acoustic signaling during courtship in an African cichlid fish
- P1-75** Gaglio AE, Louder MM, Hauber M, Lynch KS; Hofstra University, Hunter College
Creating a strong password: Understanding the neural basis of species recognition in brood parasites

Behavior and Neurobiology / Behavioral Ecology I

- P1-76** Watts EF, Miller TT, Meeks EJ, Amposta JP, Foltz SL, McGlothlin JW; Ohio University, Virginia Tech
Environmental Factors Effect Aggression in Brown Anoles
- P1-77** Adreani MN, Montesana L, Guedes E, Cavalli E; Max Planck Institute for Ornithology
Aggressive Behaviour Induces Oxidative Stress in a Duetting Suboscine
- P1-78** Kin K, Baiocchi T, Dillman A; Univ of California, Riverside
Dispersal vs. Repulsion: Prenol elicits diverse behavior in Entomopathogenic Nematodes
- P1-79** Mercado N, Baiocchi T; Univ of California, Riverside
Intraspecific Variation in *C. elegans* Affects Behavioral Response to an Odor Associated with Parasitized Insects
- P1-80** Braun LJ, Dillman A; Univ of California, Riverside
Entomopathogenic Nematode Infective Juveniles Stimulated by Physical Contact with Host Cuticles Have Enhanced Their Behavioral Response to Host-Specific Odors
- P1-81** Wilson TJ, Grunwald JT, Romagnolo DF, Selmin OI, Propper CR; Northern Arizona University, University of Arizona
Environmentally relevant sodium arsenite has no effect on larval zebrafish behavior
- P1-82** Jones MM, Nunez CMV; Iowa State University
Indirect Effects of Immun contraception on Male Aggression and Stress in Feral Horses
- P1-83** Richter MM, Ashley NT; Western Kentucky University
Making Hay While the Sun Shines: How an Arctic-breeding Songbird Copes With 24 Hours of Daylight
- P1-84** Grifo-Hahn LL, Kimball MG, Rudy MG, Johnson EE, Bennett DJ, Breuner CW, Malisch JL; St. Mary's College of Maryland, University of Montana, Pitzer College
Facultative Altitudinal Migration and Glucocorticoid Physiology in White-crowned Sparrows
- P1-85** Hartzell SM, Pitt AL, Davis S, Rier ST; Bloomsburg University of Pennsylvania, Trinity College, US Fish & Wildlife Service Northeast Fishery Center
Invasive rusty crayfish (*Orconectes rusticus*) are more active diurnally than a native congener (*Orconectes limosus*)
- P1-86** Prabhat A, Batra T, Kumar V; University of Delhi
Effect of Timed Food Availability on Daily Activity, Feeding and Grooming Behavior, and Testicular Growth in Zebra Finches
- P1-87** Ferguson SM, Gilson LN, Bateman PW; Curtin University
Early birds need the "worm": nectarivore flight initiation distance varies with time of day
- P1-88** Mulawa EA, Kirkwood JS, Wolfe LM, Wojda SJ, Prenni JE, Florant GL, Donahue SW; Colorado State University
Seasonal changes in endocannabinoid ligand concentrations between active and hibernating marmot (*Marmota flaviventris*)
- P1-89** Sur S, Sharma A, Kumar V; University of Delhi
Temperature Affects Photoperiod-induced Gene Expressions in the Hypothalamus, Liver and Muscle in a Migratory Songbird: Insights into Genetic Regulation of Seasonal Physiology and Behaviour
- P1-90** Huebner CD, Clark RM, Williams CM; Univ of California, Berkeley
Development of Activity Patterns in Wing-Dimorphic Crickets During Early Adulthood
- P1-91** Van Nest BN, Otto MW, Moore D; Case Western Reserve University, Corblu Ecology Group, East Tennessee State University
Effects of Circadian Time-Memory on Foraging Recruitment in Honey Bees

Evolutionary Physiology

- P1-92** *Tricola GM, Simons MJP, Vleck CM, Haussmann MF; Bucknell University, University of Sheffield, Iowa State University* Comparative insights into telomere biology
- P1-93** *Dumar ZD, Leys SP; University of Alberta* D-aspartate proposed to modulate the inflation-contraction response in the sponge *Ephydatia muelleri*
- P1-94** *Neel LK, McBrayer LD; Arizona State University, Georgia Southern University* Thermal physiology of invasive lizards changes seasonally
- P1-95** *Barts N, Tobler M; Kansas State University* Regulators or Conformers? Mechanisms of Sulfide Tolerance in an Extremophile Fish
- P1-96** *Jeong N, Meckfessel N, Stahlschmidt ZR; Univ of the Pacific* Is the tradeoff between reproduction and locomotion plastic in response to oxidative stress and food limitation?
- P1-97** *Wolinski CJ, Watson CM; Midwestern State University* Thermal physiology of the giant Hispaniolan galliwasp (*Celestus warreni*)
- P1-98** *McFarland S, Suquilanda D, Velez K, Divino J, Schultz E, Monette MY; Western CT State Univ, Univ of CT, Storrs* The Role of the Na-Cl Cotransporter in Freshwater Adaptation of Threespine Stickleback
- P1-99** *Christensen JM, Lyn S, Parker G, Vandenbrooks JM; Midwestern University* Rearing oxygen affects wing vein morphology and flight performance in *Drosophila melanogaster*
- P1-100** *Boag TH, Elder LE, Hull PM, Somero GN, Sperling EA; Stanford University, Yale University* Bidirectional temperature effects on aerobic scope limits the range-shift capacity of marine fauna
- P1-101** *Riddell EA, Roback E, Zamudio KR, Wells CE, Damm J, Sears MW; University of California, Berkeley* Functional genomics underlying variation in thermal acclimation of water loss rates in a salamander
- P1-102** *Rennolds C, Bely AE; Univ of Maryland, College Park* Functional Consequences of Tissue Loss and Regeneration in the Annelid *Pristina leidyi*
- P1-103** *Beatty AE, Marshall HB, Graze RM, Schwartz TS; Auburn University* Integrating Research in the Classroom: Causal Effects of IGF1 and IGF2 on Growth in the Brown Anole Hatchling
- P1-104** *Gearty W, Payne JL; Stanford University* Convergent body size evolution of Crocodyliformes upon entering the aquatic realm
- P1-105** *Amato V, Patton ST, Lopez J, Khalil J, Beaghy T, Raftery LA, Gibbs AG; Univ of Nevada, Las Vegas* Life History Tradeoffs in Starvation-Selected *Drosophila*
- P1-106** *Lipowska MM, Wyszowska J, Sadowska ET, Koteja P; Institute of Environmental Sciences, Jagiellonian Univ* Experimental Evolution of Stress Response: Changes in Corticosterone Level in Response to Chronic Mild Stress and Thermoregulatory Burden in Bank Voles from a Selection Experiment
- P1-107** *Elliott KH, Ellis V, Sara E, Guigueno MF; McGill Univ, Univ Lund* Oxygen Carrying Capacity Evolves in Tandem with Oxygen Demand: A Review of Hematocrit Values across the Avian Tree of Life

Evolutionary Developmental Biology

- P1-108** *Tumey CR, Noel E, Willekers S, Cota C, Bakkers J, Davidson B; Swarthmore College, Hubrecht Institute* Left-right asymmetries in tunicate embryonic gene expression
- P1-109** *Guernsey MW, Pollux BJ, Reznick DN, Baker JC; Stanford University School of Medicine, Wageningen University, Univ of California, Riverside* Prolactin expression in the placenta of pregnant *Poeciliopsis* fishes
- P1-110** *Neal SE, De Jong DM, Seaver EC; Whitney Lab for Marine Biosciences, University of Florida* Functional investigation of a rhabdomeric opsin gene in *Capitella teleta*
- P1-111** *Llosa I, Colgan W, Harris L, Leanza A, Hwang A, Debiasse M, Ryan J, Davidson B; Swarthmore College, Whitney Lab, Univ of Florida* Evolution of the heart enhancers in a chordate gene regulatory network
- P1-112** *Tan F, Jew B, Perry K, Henry J, Lyons D; Univ of California, San Diego, Univ of Illinois at Urbana-Champaign* Cellular and molecular control of axial elongation in a spiralian embryo, *Crepidula fornicata*
- P1-113** *Re C, Perez J, Tacdol A, Protas M; Dominican University of California* The Genetics Behind Pigmentation and Eye Traits in Cave Populations of the Crustacean, *Asellus aquaticus*
- P1-114** *Ahuja N, Babonis L, Martindale MQ; Whitney Lab for Marine Bioscience* Cnidocyte development and morphology in *Nematostella vectensis*
- P1-115** *Kumler WE, Koehl MAR; Univ of California, Berkeley* Evolution of multicellularity: Capture of unicellular vs colonial choanoflagellates by a passive protozoan predator

- P1-116** McCulloch KJ, Koenig KM; Harvard University
Neural and optic expression of Sp/KLF transcription factor family in the longfin shore squid, *Doryteuthis pealeii*
- P1-117** Luc H, Raczka A, Cao C, Warden M, Gross JB; University of Cincinnati, Seven Hills Academy, Summit Country Day
Utilizing *in situ* hybridization to shed light on the genetics of cave adaptation
- P1-118** Aquit S, Suzuki Y; Wellesley College
The molecular basis of a heat shock inducible color change in the tobacco hornworm, *Manduca sexta*
- P1-119** Babonis LS, Debiasse MB, Francis WH, Christianson LM, Haddock SHD, Martindale MQ, Ryan JF; University of Florida/Whitney Lab, Monterey Bay Aquarium Research Institute
Not your mama's tentacle: Molecular characterization of ctenophore colloblasts
- P1-120** Zaransky S, Gibilisco M, Watanabe A, Hoffmann S; NYIT College of Osteopathic Medicine, University College London
Postnatal Ontogeny of Inner Ear Morphology in Chicken and Alligator
- P1-121** Navon D, Olearczyk N, Karlstrom RO, Albertson RC; University of Massachusetts Amherst
Evaluating the molecular basis for diet-induced phenotypic plasticity in teleosts
- P1-122** Treibergs KA; Harvard University, Cambridge, MA
How Does a Bryozoan Colony Divide Labor Among its Modules?
- P1-123** Young EB, Kane EA; Georgia Southern University
Heritability of morphological traits across divergent environments in guppies
- P1-124** Shahid R, Gill PG, Hoffmann S; NYIT College of Osteopathic Medicine, University of Bristol
Variation in Inner Ear Morphology of Early Mammaliaforms
- P1-125** Bump P, Lowe CJ; Hopkins Marine Station of Stanford University
Remodeling and Patterning during Metamorphosis and Regeneration in the Hemichordate Worm *Schizocardium californicum*
- P1-126** Crawford AR, So C, Sharma PP; University of Wisconsin-Madison
Embryonic Development and Staging of the Harvestman *Phalangium opilio*
- P1-127** Velhagen WA; Caldwell University
Development of the Tongue and Tongue Sheath in Colubrid Snakes
- P1-128** Xu L, He L, Saito A, Wang V, Chen T, Koyama T, Suzuki Y; Wellesley College, Gulbenkian Institute
Physiological adaptation to distinct feeding strategies in *Drosophila* and *Manduca* larvae

Species & Speciation

- P1-129** Hancock ZB; Texas A&M University, College Station
Two New Species of Sand-Burrowing Amphipods of the Genus *Haustorius* (Haustoriidae) from the Northwestern Gulf of Mexico
- P1-130** Talavera JB, Collosi E, Robertson JM, Gray DA; California State University Northridge
Are Male Calls Sufficiently Divergent to Promote Reproductive Isolation?— A Test with Two Parapatrically Distributed Cricket Species
- P1-131** Cahill AE, Chenail A; Albion College, Aix Marseille Univ, Avignon Université, CNRS, IRD, IMBE, Station Marine d'Endoume
Cryptic species in the marine environment: a review of the evidence and a way forward
- P1-132** Debry RW, Wong ES, Dahlem GA; Univ of Cincinnati, Northern Kentucky Univ
Delimiting Imaginary Species in the Fly Genus *Ravinia*
- P1-133** Banker SE, Nachman MW; Univ of California, Berkeley
Patterns of adaptive introgression between sister species *Mus musculus domesticus* and *Mus spretus*
- P1-134** Hallas JM, Feldman CR, Brodie III ED, Pfrender ME, Brodie Jr ED, Parchman TL; Univ of Nevada, Reno, Univ of Virginia, Univ of Notre Dame, Utah State Univ
Adaptive Variation in the Sierra Garter Snake (*Thamnophis couchii*): Influence of Biogeography and Genetic Structure on Patterns of TTX-Resistance
- P1-135** Graham NR, Peck RW, Gillespie RG; University of California, Berkeley, Hawaii Cooperative Studies Unit, University of Hawaii at Hilo
Species Delimitation and Phylogeography of Endemic Hawaiian Parasitoid Wasps: Genus *Spolas* (Hymenoptera: Ichneumonidae)
- P1-136** Lestz L, Barnes MS, Powers KG, Langkilde T, Blackburn DG*; Trinity College, Hartford, Pennsylvania State University
Evolution of Yolk Processing in Reptiles: Evidence from the Lizard *Sceloporus undulatus*

Evolutionary Morphology

- P1-137** Kostecka LG, Wortham JL; University of Tampa
Morphology of the Grooming Appendage in Smasher and Spearer Mantis Shrimps
- P1-138** Finnegan D, Summers AP, Buser T, Kolmann MA; Western Washington University, University of Washington- Friday Harbor Laboratories, University of Oregon
Convergence in Diet and Morphology in Marine and Freshwater Cottoid Fishes

- P1-139** *Wiltse MS, Williams SE, Wen AHC, Chisholm KL, Papatheofanis CF, Rezk CA, Valenzuela JL, Cohn BA, Schmitz L; Claremont McKenna, Scripps, and Pitzer Colleges* Evolution of Visual Acuity and Trophic Specialization in Labrid and Pomacentrid Coral Reef Fishes
- P1-140** *Ng J, Harris-Weaver C, Bloom D, Lovejoy NR, Buser TJ, Summers AP, Kolmann MA; Univ of Washington, W Michigan Univ, Univ of Toronto, Oregon State Univ* Processes & mechanisms driving miniaturization in freshwater needlefishes
- P1-141** *Wood HM, Flynn BI*; Smithsonian Institution, University of Texas, Austin* You Are How You Eat: Chelicerae Orientation and the Diversification of Spiders (Arachnida: Araneae)
- P1-142** *Harris-Weaver CS, Ng J, Bloom D, Lovejoy NR, Summers AP, Kolmann MA; University of Washington, Western Michigan University, University of Toronto, Scarborough* The Evolution of Feeding Morphology in Marine & Freshwater Needlefishes
- P1-143** *Witmer LM, Porter WR, Cerio DG, Nassif JP, Caggiano EG, Griffin CA, Ridgely RC; Ohio Univ* spiceC—Selectively Perfusable Iodine-based Contrast-Enhanced CT, a rapid alternative to diceCT for 3D visualization of vertebrate soft tissues
- P1-144** *Kohlruess-Reuman PS, Gamboa MP, Ghaleb CK; Colorado State University* Birds of a Feather: The Effects of Climate Variation on Feather Morphology
- P1-145** *Borrelli ST, Chandler CH; State University of New York at Oswego* Assessment of sexual dimorphism of the terrestrial isopod *Trachelipus rathkei*
- P1-146** *Muniz Tirado A, Mooi R; Albright College, California Academy of Sciences* The hole truth: Evolutionary biology of novel features in keyhole sand dollars from the Pliocene of North America
- P1-147** *Vangorder-Braid JT, Sirman AE, Heidinger BJ; North Dakota State University* Does TA-65 influence telomere length and loss during early life in house sparrows (*Passer domesticus*)?
- P1-148** *Perisho EJ; Indiana State University* Hoot's Who: A Morphological Comparison of Eastern and Western Barred Owl Populations
- P1-149** *Werning S, O'Keefe FR, Morgan DJ; Des Moines University, Marshall University, Calvert Marine Museum* Giant babies growing very fast: New insights on plesiosaur ontogeny
- P1-150** *Edwards KM, Reznick DN; Univ of California, Riverside* Morphological Adaptation for Two Feeding Modes in Trinidadian Guppies from High and Low Predation Communities
- P1-151** *Moore AJ; George Washington University* The evolution of somitogenetic variation in birds
- P1-152** *Miyamae JA; Yale University* Waiting for Whiskers: Comparative Morphology of the Trigeminal Canal and a Scenario for the Evolution of Facial Musculature in Mammals

Huey Award Finalists

- P1-153** *Awali S, Mardini MR, Kagey JD, Belanger RM; University of Detroit Mercy* Atrazine exposure causes DNA damage and changes in cytochrome P450 expression in the hepatopancreas of crayfish (*Orconectes virilis*)
- P1-154** *Currier SL, Capelle PM, Semeniuk CAD, Heath DD, Vincelli FA, Love OP; University of Windsor, Great Lakes Institute for Environmental Research* Sex Specific Responses to Interactions Between Pre- and Postnatal Stress and Their Impact on Performance in Chinook Salmon (*Oncorhynchus tshawytscha*)
- P1-155** *Lent DD, Mendoza A; Cal State Univ Fresno* Modeling visual perception, learning, and memory of wood ants navigating in naturalistic environments
- P1-156** *Miles MC, Schuppe ER, Ligon IV RM, Fuxjager MJ; Wake Forest University* Interactions between sexual selection and morphological constraints shape signal design in woodpecker drum displays
- P1-157** *Pipes BL, Cornwell AL, Nishiguchi MK; New Mexico State University* Squid light organ pH influences bacterial composition in the *Euprymna-Vibrio fischeri* beneficial symbiosis
- P1-158** *Reimche JR, Del Carlo RE, Brodie Jr ED, Leblanc NM, Feldman CR; University of Nevada, Utah State University* Predictability of Adaptive Traits: The Mystery of TTX-Resistance in the Sierra Garter Snake (*Thamnophis couchii*)

Larval Ecology

- P1-159** *Fennell SA, Meyer NP, McAlister JS; College of the Holy Cross, Clark University* Patterns of nervous system growth associated with larval feeding structure plasticity
- P1-160** *Aprea CJ, McAlister JS; College of the Holy Cross* Discerning developmental windows of larval feeding structure plasticity
- P1-161** *Fleming CG, McAlister JS; College of the Holy Cross* Examining the effects of timing of food exposure on the expression of feeding structure plasticity

- P1-162** Barnes DK, Allen JD; College of William and Mary Effects of delayed hatching on echinoid larval development
- P1-163** Yee AK, Pernet B; California State University Long Beach Do larval settlement preferences determine local distribution patterns of the serpulid annelid *Ficopomatus enigmaticus*?
- P1-164** Weinstock JB, Collin R; Smithsonian Tropical Research Institute, Panama Larval Response to Seasonal Hypoxia in the Caribbean Sea, Bocas del Toro
- P1-165** Strathmann RR; Univ of Washington, Friday Harbor A Field Experiment Demonstrating that the Seafloor can be Very Risky for Planktonic Embryos
- P1-166** Moso EM, Enzor LA, Hankins C*, Barron MG; EPA Combined effects of acidification and hypoxia on the estuarine ctenophore, *Mnemiopsis leidyi*
- P1-167** Maciejewski M, Meyer KS, Pittoors N, Wheeler JD, Anderson EJ, Mullineaux LS; Stonehill College, Woods Hole Oceanographic Institution, Northern Michigan University, Institute of Environmental Engineering, ETH Zurich and Biology Department, Grove City College Helical swimming as an active feeding behavior in larvae of the eastern oyster
- P1-168** Danziger A, Pelletier G, Frederich M; Univ of New England Implementation of a simple low-cost nearshore plankton collection method to quantify invasive crustacean larvae
- P1-169** Fouilloux C, Goyes Vallejos J, Tumulty J; Univ of Minnesota, University of Connecticut The effects of bromeliad water quality on the presence of golden rocket frog tadpoles.
- P1-170** Navarro E, George SB; Washington State University, Georgia Southern University Do Low Salinity Events affect Feeding in Echinoderm Larvae?
- P1-171** Taylor RE, Resnikoff A, Pechenik JA, Pires A; Dickinson College, Tufts University Effects of Acidification and Salinity Stress on Development in Larvae and Juveniles of the Marine Gastropod *Crepidula fornicata*
- P1-172** Trudel JM, Choi C, Pechenik JA, Pires A; Tufts University, Dickinson College Chemical Cues for Metamorphosis in the Marine Snail *Crepidula fornicata*, and the Effects of Ocean Acidification on Cue Perception
- P1-173** Podolsky R, Conrad H*; College of Charleston, Rutgers University Genetic Variation in Resistance to Ocean Acidification in Larval Development within a Northern Population of *Arbacia punctulata*
- P1-174** Gillespie CE, Pechenik JA, Pires A; Dickinson College, Tufts University Effects of Temperature and pH in Larval and Juvenile Development in the Marine Gastropod *Crepidula fornicata*
- P1-175** Litle JW, Pires A, Pechenik JA; Pomona College, Dickinson College, Tufts University Effects of Altered pH on Juvenile Feeding Rates in the Marine Gastropod *Crepidula fornicata*
- P1-176** Lee M, Pechenik JA, Pires A; Dickinson College, Tufts University Effects of diet quality and pH on growth, mortality, and shell strength in larvae and juveniles of the marine gastropod *Crepidula fornicata*
- P1-177** Thompson CM, Popescu VD; Ohio University Climate Change Implications from an Anuran Annual Cycle Perspective

Chemical Ecology

- P1-178** Palmersheim MC, Helm BR, Royaute R, Mallinger RE, Yocum G; North Dakota State University, USDA-ARS Sub-Lethal Effects of Neonicotinoids on the Alfalfa Leafcutter Bee, *Megachile rotundata*
- P1-179** Chan JK, Thornton JA, Riffell JA; University of Washington Change is in the Air: Atmospheric Chemistry Impact on Floral Scent and Plant-Pollinator Interactions

Bioindicators & Pollution

- P1-180** Malmborg A, Guise E, O'Brien S; Radford University, University of California-Davis The Developmental Effects of Trenbolone on Reproductive Physiology in *Gambusia holbrooki*
- P1-181** Atwood AC, O'Brien S, Monceaux CJ; Radford University Optimization of EDC Detection in Aquatic Environments: LCMS Detection & Quantification of Trenbolone
- P1-182** Harris L, Carrington E; University of Washington The impacts of microplastic on the filter feeding of marine bivalves
- P1-183** Issa H, Feipel C, Tatum Parker T; Saint Xavier University The Effects of Salt Concentrations on *Solidago juncea*
- P1-184** Feipel CW, Tatum Parker T; Saint Xavier University Bisphenol A's impact on the germination and growth rate of Brassica rapa.
- P1-185** Schlussek A, Leininger EC; St. Mary's College of Maryland, New College of Florida Mixture Effects of Neonicotinoid Insecticides and Selective Serotonin Reuptake Inhibitors on *Daphnia magna*

- P1-186** Geiger CM, Schweizer KG, Pillot A, Meadows MG; Saint Francis University The Effects Moon Jellyfish Have on the Biodegradation of Oil Spills.
- P1-187** Berthelemy NJ; Weber State University, Ogden Effects of Glyphosate and Roundup on the brine shrimp *Artemia franciscana*

Symbioses

- P1-188** Gentile G, Dwaah H, Camilli S, Hall C, Riesgo A, Soriono O, Hill M, Hill A; Univ of Richmond, Univ of Virginia, Natural History Museum Development of a Model System to Study Sponge:Algal Symbioses
- P1-189** Middlebrooks ML, Curits NE, Pierce SK; Univ of Tampa, Ave Maria Univ, Univ of South Florida The symbiotic chloroplast donor of the kleptoplastic sacoglossan sea slug, *Elysia crispata*, varies throughout the Caribbean
- P1-190** Chavez-Dozal AA, Salas SS, Lami R, Nishiguchi MK; New Mexico State University, Laboratoire Arago, Banyuls sur mer Deciphering microbial communication in a beneficial mutualism: Cross species quorum sensing between *Vibrio logei* and *Vibrio fischeri* symbionts in *Sepioloa affinis* (Mollusca: Cephalopoda)

Thermobiology

- P1-191** Robinson CD, Gifford ME; University of Central Arkansas Thermally-induced signal plasticity does not reflect individual performance variation across temperatures in prairie lizards
- P1-192** McTernan MR, Anderson RA; Western Washington Univ Climate Zones and Thermoregulatory Challenges in a Geographically Widespread Lizard Species.
- P1-193** Gavira RSB, Andrade DV*; Depto de Zoologia, IB, UNESP. Rio Claro Resting Metabolic Rate and Evaporative Water Loss in Neotropical Pitvipers. Are There a Relationship with Microhabitat Use?
- P1-194** Del Rio AM, Davis BE, Kueltz D, Todgham AE; Univ of California, Davis Effects of High Temperature and Low Oxygen on Early Life Stage Chinook Salmon Survival and Physiology
- P1-195** Banahene N, Salem S, Byrne H, Glackin M, Thompson L, Faske T, Agosta S, Eckert A, Grayson K; Univ of Richmond, Virginia Commonwealth Univ Stage-Specific Responses to Heat Stress in an Invasive Forest Pest
- P1-196** May C, Hillerbrand N, Thompson L, Faske T, Parry D, Martinez E, Agosta S, Grayson K; Univ of Richmond, Virginia Commonwealth Univ, State Univ of NY, Syracuse, Bosque Estatal de Guánica Metabolic Acclimation to Temperature in Invasive Populations of Gypsy Moth (*Lymantria dispar*) from Latitudinal Extremes
- P1-198** Reid KA, Bloomquist ER, Tobalske BW, Powers DR; George Fox University, University of Montana Are hummingbird bills used in thermoregulation during hovering?
- P1-199** Anthony SE, Buddle CM, Høye TT, Hein N, Beckers N, Sinclair BJ; Western University, McGill University, Aarhus University, University of Bonn Thermal limits of spiders, mites, and pseudoscorpions from Arctic and temperate habitats
- P1-200** Clavijo-Baquet S, Cavieres G, Gonzalez A, Cattán P, Bozinovic F; Laboratorio de Etología, Ecología y Evolución, IIBCE, Montevideo, CAPES, Pontificia Universidad Católica, Facultad de Ciencias Veterinarias y Pecuarias Temperature Effects in Thermal Tolerance of the Chagas Disease Vector, *Triatoma infestans*.
- P1-201** Wilson Carter A, Sadd BM, Tuberville TD, Paitz RT, Bowden RM; Illinois State University, University of Georgia Sometimes less is more: focusing on heat waves improves estimates of turtle sex ratios
- P1-202** Walton MD, Jost JA; Bradley University Investigating the acute impacts of multiple environmental stressors on zebra mussel physiology
- P1-203** Musaitif D, Jost JA*; Bradley University Investigating the physiological effects of chronic cold exposure in the invasive zebra mussel
- P1-205** Hensley VR, Levesque DL; University of Maine Squirrels on the move: The response of Southern flying squirrels (*G. volans*) to rising ambient temperatures
- P1-206** Gominho B, Schilder R; Pennsylvania State University Heat Shock Response in the Flight Muscles of the Endothermic Hawkmoth, *Manduca sexta*
- P1-207** Collins CL, Zippay ML; Sonoma State University Physiological Performance: Survival of an Invasive Mussel in a Warming Climate

Osmotic & Ionic Regulation

- P1-208** Brown S, Nagle L, Ahearn GA; Univ of North Florida
Ocean acidification: Effect of pH on calcium uptake by gill branchiostegites of American lobster, *Homarus americanus*
- P1-209** Hamar JC, Kültz D; Univ of California, Davis
Interrogation of Tilapia Osmoregulation using CRISPR in a Cell Culture Model
- P1-210** Platt S, Wolek MJ, Lovett DL; College of New Jersey, Ewing
Hypo-Osmotic Increases in Hemolymph Levels of Methyl Farnesoate Correlate with Expression Profiles of Farnesoic Acid O-Methyltransferase in the Green Crab *Carcinus maenas*
- P1-211** Pekar KJ, Culler ME, Onthank KL; Walla Walla University
Acidified Oceans and Octopuses: How Gene Expression in *Octopus rubescens* Changes in Elevated CO₂
- P1-212** Culler MC, Evans LA, Jacobs KP, Onthank KL; Walla Walla University, Washington State University
Octopuses in a Changing Environment: How Increasing Temperature and Ocean Acidification Affect the Metabolic Physiology of *Octopus rubescens*

Muscle Physiology

- P1-213** Cyr SN, Ellerby DJ, Gerry SP, Moran CJ, Trueblood LA; La Sierra University, Wellesley College, Fairfield University
Aerobic and Anaerobic Muscle Capacity in Bluegill Sunfish Ecomorphs
- P1-214** Resner EJ, Marsh K, Gilbreth N, Bonsall K, Kumro MB, Hardy KM; California Polytechnic State University
Respiratory Behaviors and Oxygen Consumption Rates During Air Exposure and Environmental Anoxia in the Giant Acorn Barnacle, *Balanus nubilus*
- P1-215** Krajniak KG, Youngblood M, Mueth L, Krishnakumar A; Southern Illinois University Edwardsville
The effects of several pentapeptides related to FMRFamide on the isolated crop-gizzard of the earthworm, *Lumbricus terrestris*.
- P1-216** Gerald GW, Wass ED, Novinski D, Prokupek-Pickett A, Marian AD, McGinn TM; Nebraska Wesleyan University, College of Charleston
Differential gene expression and citrate synthase activity in skeletal muscle of cornsnakes (*Pantherophis guttatus*) following different modes of locomotion
- P1-217** Rzucidlo CL, Moran CJ, Gerry SP; Fairfield University
Locomotor Performance and Muscle Physiology of Tautog (*Tautoga onitis*)
- P1-218** Hermann-Sorensen H, Ruscher-Hill B, Tengler M, Bryan A, Reichmuth C, Thometz NM; University of California Santa Cruz, Alaska Department of Fish and Game, University of San Francisco
Aerobic and Anaerobic Properties of Bearded Seal Locomotor Muscle
- P1-219** Rummel AD, Swartz SM, Marsh RL; Brown University
A Comparison of the Thermal Sensitivities of Limb Muscles in a Small Bat Species and the Laboratory Mouse
- P1-220** Vega J, Ivanov BM, Johnson MA; Trinity University
The Evolution of Muscle Size: Fiber Number, Fiber Size, and Behavior in Anole Lizards
- P1-221** Young KG, Vanderboor CM, Regnault TRH, Guglielmo CG; Western University
Method for the Isolation and Growth of Skeletal Muscle Progenitor Cells of Yellow-rumped Warblers (*Setophaga coronata*)
- P1-222** Toman T, Brown S, Lowery MS; Univ San Diego
Enzyme Correlates of Aerobic and Anaerobic Metabolism in Hatchery Reared versus Wild Caught California Yellowtail *Seriola dorsalis*
- P1-223** Barrett LM, Dearolf JL, Thometz NM, Bryan A, Reichmuth C; Hendrix College, Univ of San Francisco, Alaska Department of Fish And Game, Univ of California, Santa Cruz
Fiber-type composition of bearded seal (*Erignathus barbatus*) locomotor muscle

Microbiome

- P1-224** Levorse A, Charles K, Rosa GM, Grayson K, Voyles J; University of Richmond, University of Nevada
Interactions between Two Key Amphibian Defenses to Batrachochytrium dendrobatidis in Panamanian Glass Frogs (*Espadarana prosoblepon*)
- P1-225** Leonard KL, Sandmeier FC, Tracy CR, Weitzman CL; Colorado State University-Pueblo, University of Nevada
Coinfection of *Pasteurella testudinis* and *Mycoplasma agassizii* in the Mojave Desert tortoise (*Gopherus agassizii*)
- P1-226** Perry A, Jent D, Blackford E, Tate AT; Vanderbilt University
The impact of eukaryotic microbiota on the dynamics of immune responses in flour beetles
- P1-227** Sabotin R, Tran T, Fassbinder-Orth C; Creighton University
Vitellogenin Expression in Honey Bees (*Apis mellifera*): How Viral Infections Influence Honey Bee Physiology
- P1-228** Jimenez Padilla Y, Lachance MA, Sinclair BJ; University of Western Ontario
Live Yeasts Determine development Time in *Drosophila melanogaster*

- P1-229** Kohl KD, Fontaine S, Novarro AJ; Univ of Pittsburgh, Univ of Maryland
Environmental temperature alters the gut microbiota of the eastern red-backed salamander (*Plethodon cinereus*)
- P1-230** Hernandez J, Vernasco BJ, Escallón C, Belden LK, Moore IT; Virginia Tech
Sexually transmitted microbes as a potential cost of extra-pair activity in female tree swallows
- P1-231** Brady KN, Voisin D, Welch J, Kovacs JL; Spelman College, Georgia State University
Characterizing the microbiome of honey
- P1-232** Duddlestone KD, Carlson KM, Gering SM, Buck CL; Univ Alaska Anchorage, Northern Arizona Univ
Reusing is Recycling: Ureolytic Microbes and Urea Nitrogen Salvage in Mammalian Hibernation
- P1-233** Spogen RR, Savage AE, Forsman AM*; University of Central Florida
Hoppy Microbes: characterizing inter- and intraspecific variation in the amphibian skin microbiome

DCE Best Student Poster - Lynn Riddiford Award

- P1-234** Nava Ultreras BM, Farrar V, Austin S, Lang A, MacManes M, Calisi RM; UC Davis, University of New Hampshire
Got Milk? Gene expression of prolactin and its receptor in lactating rock doves
- P1-235** Nabili P, Thorsen LS, McDonald JM, Shingleton AW; Lake Forest College
Sex-specific plasticity and the nutritional geometry of insulin-signaling gene expression in *Drosophila melanogaster*
- P1-236** Reeve RE, Crespi EJ; Washington State University
Change is more than skin deep: leptin and leptin receptor expression in the immune organs of *Xenopus* tadpoles and juveniles
- P1-237** Lopez-Ceron A, Das S, Mykles D; Colorado State University
A transcriptomic approach for the characterization and expression of Sirtuin stress genes in the decapod crustacean molting gland
- P1-238** Lipinski AR, Fontaine JJ, Bachman GC; Univ of Nebraska-Lincoln
The Influence of Environmental and Physiological Interplay on the Condition and Movement Behavior of Subpopulations Under Unpredictable Climatic Conditions
- P1-239** Carp SB, Taylor JH, French JA; University of Nebraska at Omaha
Differential Effects of Receptor-Specific Dopamine Treatment on Short and Long-Term Marmoset Pairs
- P1-240** Castro MA, Elkhoury LD, Fokidis HB; Rollins College
The role of neuropeptide Y in the regulation of the stress response and food intake in the brown anole (*Anolis sagrei*).
- P1-241** Dulal D, O'Brien S; Radford University
Effects of Nonylphenol on Behavior, Development, and Morphology of *Gambusia holbrooki*.
- P1-242** Gormally BM, Ramos S, Romero LM; Tufts University
Examining how recovery periods during chronic stress impact physiology and behavior in *Passer domesticus*
- P1-243** Farmer JL, Geduldig JG, Litwa HP, Tricola GM, Sisson ZR, Haussmann BD, Paitz RT, Haussmann MF; Bucknell University
The relationship between glucocorticoid levels at baseline and during an acute stress response
- P1-244** Madelaire CB, Lamadrid-Feris F, Silva DPN, Titon SCM, Titon Jr B, Gomes FR; Univ of São Paulo
How Corticosterone Treatment Affect Wound Healing in the American
- P1-245** Goff CG, Gabor CR; Texas State University
Applying Conservation Physiology to Examine the Effects of Temperature and CORT on Amphibians
- P1-246** Beyl HE, Breuner CW; University of Montana
Corticosteroid-binding globulin: Evaluation of methods and estimation of free CORT
- P1-247** Melovidov CA, Kirkham AL, Burns JM; Univ of Alaska, Anchorage, Univ of Alaska, Fairbanks
Body Condition and Mass Changes in Weddell Seals: Links to Reproduction and Hair Cortisol Levels
- P1-248** Lau HJ, Swanson RE, Perez JH, Cheah JC, Krause JS, Meddle SL, Wingfield JC; Univ of California, Davis, The Roslin Institute, Univ of Edinburgh
Influence of the environment on stress physiology: Seasonal differences in the stress response in migrant and resident free-living white-crowned sparrows (*Zonotrichia leucophrys*)
- P1-249** Murphy PR, Wolfe LG, Burkart EC, Roark AM; Furman University
Do Algal Symbionts Communicate With Their Anemone Hosts Using Phytoestrogens?
- P1-250** Bashar SJ, Lopez K, Fuse M; San Francisco State University
Assessing systemic responses to imaginal disc damage in the hornworm, *Manduca sexta*
- P1-251** Rodriguez AM, Taff CC, Zimmer C, Vitousek MN; Cornell University
Don't Get Your Feathers Ruffled: Exploring Candidate Mechanisms Linking Plumage Color and Stress Resilience in Tree Swallows

Biomaterials & Bioinspiration

- P1-252** Demircan AS, Meredith TL, Porter ME; Florida Atlantic University
Elasmobranch Olfactory Organ Morphology Inspires Physical Models
- P1-253** Hamzah LH, Quinn DB, Lentink D; Stanford University, University of Virginia
Passive Yaw Stability of Flapping Wings
- P1-254** Becker KB, Cruz A, Ranzani T, Wood RJ, Biewener AA; Harvard
Exploration of Infundibular Morphology Design Parameters for Optimal Sucker Strength in Cephalopods
- P1-255** Amplo HE, Flammang BE; Rutgers University, New Jersey Institute of Technology
Picky Placement: A Study of Remora Attachment
- P1-256** Naylor ER, Higham TE; University of California, Riverside
Toe pads and claws: Clinging performance in *Phyllodactylus nocticolus*, a leaf-toed gecko from southern California and the Baja Peninsula
- P1-257** Roderick WRT, Chin DD, Cutkosky MR, Lentink D; Stanford University
How birds get a grip: Characterizing claw-surface interactions in perching birds
- P1-258** Czeck G, Bland R, Barschall P, Cohen CS; SFSU
Measuring Attachment Strength in *Leptasterias* Sea Stars
- P1-259** Jayaram K, Salcedo M, Weaver J, Bartlett N, Mahadevan L, Wood RJ; Harvard University
Fabrication of insect wings ranging from millimeters to meters
- P1-260** Plecnik MM, Naik S, Van Domelen R, Ruopp R, Full RJ; Univ of California, Berkeley
Role of Geometric Constraints on Reachable Workspace of Insect Limbs
- P1-261** Deban SM; Univ South Florida
Exploring Muscle-Spring Performance in a Web-Based Simulation
- P1-262** Baumgart A, Anderson P; University of Illinois, Urbana-Champaign
Mechanical sensitivity of the cranial linkage in *Salmo salar*
- P1-263** Mason TS, Tilt L, Cieri RL, Farmer CG; University of Utah
The Pulmonary Anatomy of the Grey Parrot (*Psittacus erithacus*) Studied by Computed Tomography
- P1-264** Tucci ER, Heers AM, Lentink D; Stanford University
Parametric Analysis of a Novel Musculoskeletal Avian Flight Model
- P1-265** Sharp AC, Dutel H, Crumpton N, Fagan MJ, Evans SE; University College London, Univ of Hull
The Role of Soft Tissues in a Biomechanical Model of the Rat Cranium
- P1-266** Gardiner J, Behnsen J, Brassey C; University of Liverpool, University of Manchester, Manchester Metropolitan University
Alpha shapes: Determining 3D shape complexity across morphologically diverse structures
- P1-267** Sharma N, Yawar A, Bhullar BAS, Venkadesan M; Yale University
To move or not: Principal curvatures of articular surfaces
- P1-268** Schorno S, Gillis T, Fudge DS; University of Guelph, Chapman University
Refilling and emptying of hagfish slime glands: timeline for refilling and insights from slime exudate compositional changes
- P1-269** Khouja S, Edie S, Collins K, Jablonski D; University of Chicago
Bivalves Unhinged: Hingeplate Morphology and Lifestyle in the Veneridae
- P1-270** Summers DA, Donatelli CM, Kenaley CP; Harvard University, Tufts University, Boston College
The Material Properties of Fish Skin and Their Relevance to Ecology and Morphology
- P1-271** Galloway KA, Grubich JR, Porter ME; Florida Atlantic University, The Field Museum of Natural History
Puncture performance of red lionfish, *Pterois volitans*, spines on buccal skin from grouper, *Mycteroperca bonaci*
- P1-272** Porter ME, Kryvi H, Long JH; Florida Atlantic University, University of Bergen, Vassar College
Divergent designs: mechanical and anatomical variation along the vertebral column of two species of “dogfish” shark
- P1-273** Ahlholm PD, Mountcastle AM; Bates College
Effect of collision speed on rate of wing wear in *Bombus impatiens* bumblebees
- P1-274** Malul D, Shavit U, Holzman R; Technion, Tel Aviv University
Why do coral tentacles oscillate with a phase shift with respect to the ambient flow?
- P1-275** Montejo EA, Maia A, Taft NK; University of Wisconsin - Parkside, Eastern Illinois University
Material properties of the fin rays among the paired and median fins of shortnose gar
- P1-276** Lowe AD, Paig-Tran EW; California State University, Fullerton
Tiny Tanks of The Amazon: Mineralization and Imbrication of a Small Armored Catfish, *Corydoras panda*
- P1-277** Jorge J, Kumar A, Sutton G, Patek SN; Duke, Panther Creek HS, U Bristol
Tick-Tock Tiny Impacts: A Novel Pendulum Mechanism for Measuring the Energetics of Trap-Jaw Ant Strikes

- P1-278** Carter AW, Mountcastle AM; Bates College
Mapping resilin distribution in the wings of bees and wasps
- P1-279** Seidel R, Hosny A, Froland J*, Knoetel D, Fratzl P, Weaver JC, Baum D, Dean MN; MPIKG, Wyss Inst, Stanford U, Zuse Inst
Quantitative shape analysis and mechanics of intertesseral joints in tessellated cartilage of sharks and rays
- P1-280** Werry WD, Porter ME; Wheaton College, Florida Atlantic University
Anisotropic mechanical properties of shark skin vary with denticle density and collagen fiber angle
- P1-281** Kay DI, Erickson GM; Oklahoma State University, Florida State University
Material Property Evolution of Mineralized Dental Tissues in Gnathostomes
- P1-282** De Kat R, Feo TJ; University of Southampton, Smithsonian Institution
Flight feathers: Barb angle variation along vane width and its relation to flight.
- P1-283** Kuhn-Hendricks SM, Erickson GM; Florida State University
A Novel, Phylogenetically-Informed Approach for Investigating Material Properties in Biological Hard Materials with Implications for Biomimetic Ceramic Designs
- Functional Morphology**
- P1-284** Harrison JF, Kassi A, Adjerid K, Aviles J, Klok CJ, Vandenbrooks JM, Duell ME, Campbell JE, Alanis E, Abdo C, Pendar H, Harrison J; Arizona State University, Virginia Tech
Gravity Effects on Hemolymph and Air Distribution in the Grasshopper, *Schistocerca americana*
- P1-285** Long NP, Farina SC; Dickinson College, Harvard University
Functional Morphology of the Specialized Gill Chamber in Chaunacidae
- P1-287** Mangalam M, Fragaszy DM; University of Georgia
Joint Synergies in Nut Cracking in Wild Bearded Capuchin Monkeys
- P1-288** Carlowicz RM, Moran CM, Gerry SP; Fairfield University
Temperature effects on feeding kinematics in cunner, a hibernating labrid fish
- P1-289** Ohrenberger JA, Gidmark NJ, Farina SC; University of New Hampshire, Knox College, Harvard University
To Bend, or Not to Bend? Hinged Teeth in the Goosefish *Lophius americanus* Have Multiple Functions and Two Distinct Lever Systems
- P1-290** Crawford RM, Finnegan D, Kolmann MA, Buser T, Wells CD; University of Washington, Oregon State University
Functional Morphology and Feeding Ecology of the Anemone-Eating Mosshead Sculpin *Clinocottus (Blennicottus) globiceps*
- P1-291** Cohen HE, Kane EA; Georgia Southern University
The role of local adaptation on biting performance in Trinidadian guppies
- P1-292** Gibson JG, Anderson PS; University of Illinois at Urbana-Champaign
Kinematics and Functional Morphology of Mantisfly (Neuroptera: Mantispidae) Raptorial Strikes
- P1-293** Hidalgo F, Stinson CM, Berg O, Müller UK; CSU, Fresno, Bakersfield
Comparing suction feeders: carnivorous plants versus paedomorphic salamanders
- P1-294** Montuelle SJ, Olson R, Davis JS, Curtis H, Williams SH; Ohio University, High Point University
Pitch, Roll and Yaw: Hemimandible Movements and Symphyseal Function During Chewing in Musteloid Carnivorans
- P1-295** Sustaita D, Hernandez J, Farabaugh SM; California State University, San Marcos, San Diego Zoo Institute for Conservation Research
Comparison of predatory kinematics between adult and juvenile San Clemente Loggerhead Shrikes
- P1-296** Prakash VN, Bhargava A, Prakash M; Stanford University
Local epithelial fractures and healing dynamics facilitate extreme shape change, morphogenesis and asexual reproduction by fission in *Trichoplax adhaerens*
- P1-297** Stapp CS, Paig-Tran EM; California State University, Fullerton
Denticulation of the External Genitalia in Chondrichthyans
- P1-298** Brassey CA, Kitchener AC, Behnsen J, Gardiner JD; Manchester Metropolitan University
The Role of Sexual Selection in Shaping the Carnivoran Baculum
- P1-299** Gould FDH, Delozier K, German RZ; Northeast Ohio Medical University
Integrated changes in performance, kinematics, and muscle function during swallowing after sensory nerve lesion in infant mammals
- P1-300** Weaver JC; Wyss Institute, Harvard University
New Scanning Electron Microscopy Imaging Techniques for the Large-Scale High-Throughput Characterization of Hierarchical Biological Materials and Synthetic Constructs
- P1-301** Rahman M, Conrad BD, Fox M, Kersh ME, Polk JD; University of Illinois Urbana-Champaign
Exercise and postural effects on subchondral and trabecular bone

Friday Schedule of Events

Events take place in the San Francisco Marriott Marquis, unless otherwise noted

EVENT	TIME	LOCATION
Poster Session 2 Set Up	7:00 AM – 8:00 AM	Salons 8-9
Speaker Ready Room	7:00 AM – 5:00 PM	Foothill D
Registration	7:30 AM – 4:00 PM	North Registration Desk
Coffee Break AM	9:30 AM – 10:30 AM	Salons 8-9
Exhibit Hall	9:30 AM – 5:30 PM	Salons 8-9
Coffee Break PM	3:30 PM – 5:30 PM	Salons 8-9
Poster Session 2 Even Numbers Authors Present	3:30 PM – 4:30 PM	Salons 8-9
Poster Session 2 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Salons 8-9
Poster Session 2 Teardown	5:30 PM – 6:00 PM	Salons 8-9
SPECIAL LECTURE		
Bern Lecture: Dr. David Norris Five Decades of Environmental Comparative Endocrinology	7:00 PM – 8:00 PM	Salon 7
SYMPOSIA ORAL PRESENTATIONS		
S4: Science Through Narrative: Engaging Broad Audiences <i>Organizers: Sara Elshafie, Stuart Sumida, Bram Lutton</i> <i>Sponsors: DAB, DCB, DCE, DEEB, DEDE, DEE, DIZ, DNNSB, DVM & AMS</i> <i>Sponsored by: Science World</i>	7:45 AM – 3:30 PM	Salon 7
S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics <i>Organizers: Brett Aiello, Jessica Fox, Gary Gillis</i> <i>Sponsors: DAB, DCB, DNNSB & DVM</i> <i>Sponsored by: The Company of Biologists, Photron, and the National Science Foundation</i>	7:50 AM – 3:30 PM	Golden Gate B
S6: Understanding the Evolution of Endocrine System Variation through Large-scale Comparative Analyses <i>Organizers: Maren Vitousek, Michele Johnson</i> <i>Sponsors: DAB, DCE, DCPB & DEE</i> <i>Sponsored by: The Company of Biologists</i>	8:00 AM – 3:00 PM	Golden Gate A
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Session 37: Respiration and Ventilation	8:00 AM – 9:30 AM	Salons 13-15
Session 38: Flight: Birds, Bats, and Gliders	8:00 AM – 9:45 AM	Salons 10-12
Session 39: Conservation Biology	8:00 AM – 9:45 AM	Salons 1-2
Session 40: Wake Award - Division of Phylogenetics and Comparative Biology Best Student Presentations	8:15 AM – 9:45 AM	Salons 3-4
Session 41: Parental Care	8:00 AM – 9:30 AM	Salons 5-6
Session 42: Animal Communication: Intrinsic States and Extrinsic Signals	8:00 AM – 9:45 AM	Foothill G
Session 43: Insect Flight: Living in an Unstable World	8:00 AM – 9:45 AM	Foothill C
Session 44: Sharp Bits	8:00 AM – 9:30 AM	Nob Hill A-B
Session 45: Behavioral Endocrinology	8:15 AM – 9:45 AM	Nob Hill C-D
Session 46: Biomaterials: Baggy Skin is the New Black	8:00 AM – 9:45 AM	Golden Gate C-1
Session 47: Environmental Omics/Etics	8:00 AM – 9:30 AM	Golden Gate C-2
Session 48: Cnidarian Evo-Devo	8:00 AM – 9:30 AM	Foothill E
Session 49: Division of Comparative Biomechanics: Best Student Paper Award	10:00 AM – 12:00 PM	Salons 13-15
Session 50: Evo-Devo: From Genotype to Phenotype	10:15 AM – 12:00 PM	Salons 10-12

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Session 51: Complementary to S3: Evolution in the Dark: Unifying our Understanding of Eye Loss, Part 1	10:15 AM – 11:45 AM	Salons 1-2
Session 52: Phylogenetics	10:30 AM – 11:45 AM	Salons 3-4
Session 53: Behavioral Ecology: Development and Maternal Effects	10:00 AM – 12:00 PM	Salons 5-6
Session 54: Sensory Behavior	10:15 AM – 11:30 AM	Foothill G
Session 55: Population-Level Adaptations	10:15 AM – 12:00 PM	Foothill C
Session 56: Host-Pathogen Interactions	10:00 AM – 12:00 PM	Nob Hill A-B
Session 57: Population Genetics	10:15 AM – 12:00 PM	Nob Hill C-D
Session 58: Evo-Devo of Reproductive Traits	10:15 AM – 11:45 AM	Golden Gate C-1
Session 59: Temperature Variation and Physiological Plasticity	10:15 AM – 12:00 PM	Golden Gate C-2
Session 60: Evolutionary Ecology	10:15 AM – 11:45 AM	Foothill E

AFTERNOON

Session 61: Superfast! Power Amplification!	1:30 PM – 3:30 PM	Salons 13-15
Session 62: Host-Parasite Interactions	1:30 PM – 3:00 PM	Salons 10-12
Session 63: Complementary to S3: Evolution in the Dark: Unifying our Understanding of Eye Loss, Part 2	1:30 PM – 3:00 PM	Salons 1-2
Session 64: Division of Evolutionary Developmental Biology Best Student Presentations	1:30 PM – 3:30 PM	Salons 3-4
Session 65: Collective Behavior	1:30 PM – 3:15 PM	Salons 5-6
Session 66: Reproductive Behavior	1:30 PM – 3:15 PM	Foothill G
Session 67: Terrestrial Locomotion: Walk, Jump and Run	1:30 PM – 3:15 PM	Foothill C
Session 68: Climate Change and Communities	1:45 PM – 3:30 PM	Nob Hill A-B
Session 69: Population Differentiation	1:30 PM – 3:15 PM	Nob Hill C-D
Session 70: Swimming with the Fishes	1:30 PM – 3:30 PM	Golden Gate C-1
Session 71: Mitochondria, ROS, and Hypoxia/Anoxia	1:30 PM – 3:15 PM	Golden Gate C-2
Session 72: Sensory Biology - Multimodal Sensing and Behavior	1:30 PM – 2:45 PM	Foothill E

COMMITTEE & BOARD MEETINGS

Broadening Participation Committee Meeting	7:00AM – 8:00AM	Pacific D
Advisory Committee	7:00AM – 8:00AM	Pacific C
SICB Division Secretaries	12:00PM – 1:30PM	Pacific C
Educational Council	12:00PM – 1:30PM	Pacific D
Student/Postdoc Affairs Committee	12:00PM – 1:30PM	Pacific E

BUSINESS MEETINGS

TCS Business Meeting	12:00 PM – 1:30 PM	Golden Gate C1
AMS Business Meeting	12:30 PM – 1:30 PM	Nob Hill A/B
DCE Meeting	5:45 PM – 6:30 PM	Nob Hill A/B
DVM Meeting	5:45 PM – 6:30 PM	Salons 1-2
DIZ Meeting	5:45 PM – 6:30 PM	Salons 3-4
DPCB Meeting	5:45 PM – 6:30 PM	Nob Hill C-D

WORKSHOPS AND PROGRAMS

Sketchnotes Workshop: A hands-on visual note-taking workshop, <i>Matsuda</i>	12:00 PM – 1:30 PM	Salons 3-4
Journal of Experimental Zoology Workshop: Discussion with the Editors of JEZ-A and JEZ-B on how to get published <i>David Crews, Günter Wagner, Paul-André Genest</i>	12:00 PM – 1:30 PM	Salons 1-2
NSF Update	12:00 PM – 1:30 PM	Golden Gate C2

SOCIAL EVENTS

Zumba Class	6:30 AM – 7:15 AM	Juniper
DCE/DEDE/DAB/DNNSB Social	8:00 PM – 10:00 PM	Thirsty Bear
DVM/DCB Social	9:00 PM	Monarch

Friday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM **Symposium S4** *Sponsored by Science World* **Salon 7**

Science Through Narrative: Engaging Broad Audiences

Chairs: Sara Elshafie, Stuart Sumida

7:45 am	S4-1	<i>Elshafie SJ, Sumida S; Univ of California, Berkeley, UC Museum of Paleontology, California State Univ, San Bernardino</i>	Introduction to the Symposium, <i>Science Through Narrative: Engaging Broad Audiences</i>
8:00 am	S4-2	<i>Elshafie SJ, Bean JR, White LD; Univ of California, Berkeley, UC Museum of Paleontology</i>	Understanding and Communicating Science as a Narrative
8:30 am	S4-3	<i>Johnson KR; Smithsonian National Museum of Natural History</i>	Fossils, Lost Worlds, and the Hero's Journey
9:00 am	S4-4	<i>Kipnis A; Double Fine Productions</i>	Communication through Playful Systems: Presenting scientific research the way a game might do
9:30 am	Coffee Break		Salons 8-9
10:00 am	S4-5	<i>McIntosh RG; Industrial Light & Magic</i>	Using Narrative Film Structure and Technique to Engage an Audience
10:30 am	S4-6	<i>Rodenbeck EW; Stamen Design</i>	Inviting inquiry and exploration through data visualization
11:00 am	S4-7	<i>Rega EA; Western University of Health Sciences</i>	Visual narrative and jargon minimization in successful anatomy teaching
11:30 am	S4-8	<i>Sumida S, Jefcoat B; California State University San Bernardino, DreamWorks Feature Animation</i>	Anatomy, Animation and Visual Effects: the Reciprocal Story-telling Tools of Biology and Film-making
12:00 pm	Lunch Break		
1:30 pm	S4-9	<i>Lepito A; DreamWorks Feature Animation</i>	The Collaboration of Feature Animation and the Scientific Community
2:00 pm	S4-10	<i>Ul-Hasan S, Cheng H, Dove NC, Hagerman L, Monterrosa J, Perez T; BIOTA non-profit</i>	BIOTA: A mixed-media, symbiosis in action approach to science communication
2:30 pm	S4-11	<i>Lorditch E; American Institute of Physics</i>	Tools for Science Communication from the Intersection of Journalism and Screenwriting
3:00 pm	S4-12	<i>Loverd R, Elshafie S, Sumida S, Gerbin CS; The Science & Entertainment Exchange, UC Berkeley, CSU San Bernardino</i>	Improving Depictions of Science in Mainstream Media
3:30 pm	Coffee Break		Salons 8-9

7:50 AM – 3:30 PM **Symposium S5** *Sponsored by The Company of Biologists, Photron, and the National Science Foundation* **Golden Gate B**

Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics

Chairs: Brett Aiello, Jessica Fox

7:50 am	S5-1	<i>Aiello BR, Gillis GB, Fox JL; University of Chicago, Mount Holyoke College, Case Western Reserve University</i>	Sensory feedback and animal locomotion: perspectives from biology and biorobotics: An introduction to the symposium.
8:00 am	S5-2	<i>Fox JL; Case Western Reserve University</i>	Cross-modal influence of mechanosensory input on visually guided behaviors in <i>Drosophila</i>
8:30 am	S5-3	<i>Sponberg S; Georgia Tech</i>	Robustness, sensitivity, and necessity in "template" sensing strategies of the hawkmoth
9:00 am	S5-4	<i>Quinn DB, Kress D, Stein A, Wegrzynski M, Hamzah L, Lentink D*; Stanford University</i>	How Birds Negate Gusts and Maintain Heading by Crabbing into the Wind
9:30 am	Coffee Break		Salons 8-9
10:00 am	S5-5	<i>Aiello BR, Olsen AM, Mathis CE, Westneat MW, Hale ME; Univ of Chicago</i>	Fins, function, and physiology: the role of pectoral fin mechanosensation during swimming

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10:30 am	S5-6	<i>Tytell ED, Carr JA, Danos N, Cowan NJ, Ankarali MM; Tufts Univ, Univ San Diego, Johns Hopkins Univ, Middle East Technical Univ</i>	Using noisy work loops to identify the phase-dependent stiffness and damping of muscle in lampreys
11:00 am	S5-7	<i>Akanyeti O, Liao JC; Aberystwyth University, University of Florida</i>	The Interplay between Locomotion and Lateral Line Sensing in Swimming Fishes
11:30 am	S5-8	<i>Carryon GC, Kahn JC, Tangorra JL; Drexel University</i>	Sensory Mediated Control and Touch in Biorobotic Fins
12:00 pm	Lunch Break		
1:30 pm	S5-9	<i>Daley MA, Gordon JC, Biewener AA, Spröwitz A; Royal Veterinary College, Harvard University, Max Planck Institute</i>	Understanding the agility of running birds: Sensorimotor and mechanical factors in avian bipedal locomotion.
2:00 pm	S5-10	<i>Cox SM, Gillis GB; Pennsylvania State University, Mount Holyoke College</i>	Preparing for Impact: Sensory Feedback and Controlled Landing in Hopping Toads
2:30 pm	S5-11	<i>Webb B, Loveless J, Lagogiannis K, Wystrach A; University of Edinburgh</i>	Modelling sensory feedback and locomotor dynamics in Drosophila larvae
3:00 pm	S5-12	<i>Hartmann MJZ; Northwestern University</i>	Sensory Feedback from the Vibrissal System During Exploratory Behaviors of the Rat
3:30 pm	Coffee Break		Salons 8-9

8:00 AM – 3:00 PM	Symposium S6 <i>Sponsored by The Company of Biologists</i>	Golden Gate A
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Understanding the Evolution of Endocrine System Variation through Large-scale Comparative Analyses

Chairs: Maren Vitousek, Michele Johnson

8:00 am	S6-1	<i>Johnson MA, Husak JF, Vitousek MN, Knapp R; Trinity University, University of St. Thomas, Cornell University, University of Oklahoma, Hormonebase Consortium</i>	The Evolution of Endocrine System Variation: A Large-Scale Comparative Analysis of Androgens
8:30 am	S6-2	<i>Vitousek MN, Johnson MA, Miller ET, Downs CJ, Martin LB, Hau M; Cornell University, Trinity University, Cornell Lab of Ornithology, Hamilton College, University of South Florida, Max Planck Institute</i>	Glucocorticoid evolution: a comparative analysis across vertebrates
9:00 am	S6-3	<i>Francis CD; Cal Poly, San Luis Obispo, Hormonebase Consortium</i>	Metabolic scaling of stress hormones across birds and mammals
9:30 am	S6-4	<i>Casagrande S, Garamszegi LZ, Hau M, Goyman W; Max Planck Institute for Ornithology, Estación Biológica de Doñana-CSIC, Hormonebase Consortium</i>	Glucocorticoid changes across life history stages: a comparative approach
10:00 am	Coffee Break		
10:30 am	S6-5	<i>Fuxjager MJ, Miller ET; Wake Forest Univ, Cornell Univ, Hormonebase Consortium, www.hormonebase.org</i>	Macroevolutionary Patterning of Androgen and Glucocorticoid Levels Across the Vertebrate Phylogeny
11:00 am	S6-6	<i>Garamszegi LZ; Estación Biológica de Doñana-CSIC, Hormonebase Consortium, www.hormonebase.org</i>	Phylogeny and diversification: levels of glucocorticoid hormones and speciation rate in birds
11:30 am	S6-7	<i>Schoenle LA, Zimmer C, Miller ET, Vitousek MN; University of South Florida, Hamilton College, Cornell University</i>	Is variation in glucocorticoid regulation associated with fitness? A phylogenetic meta-analysis.
12:00 pm	Lunch Break		
1:30 pm	S6-8	<i>Wingfield JC; Univ California, Davis</i>	Environmental Endocrinology: Field and Laboratory Investigations of Mechanisms in Life Cycles.
2:00 pm	S6-9	<i>Martin LB, Flock T, Vitousek MN; Univ South Florida, Cornell U, Hormonebase Consortium</i>	Vertebrate glucocorticoid regulation varies with introduction history
2:30 pm	S6-10	<i>Guindre-Parker S, Rubenstein DR; University of Guelph, Columbia University</i>	Coping with environmental uncertainty using the avian glucocorticoid response
3:30 pm	Coffee Break		Salons 8-9

Friday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:30 AM Session 37 Salons 13-15

Respiration and Ventilation

Chairs: Michael Hedrick, Brian Sardella

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|---------|-------------|--|--|
| 8:00 am | 37-1 | <i>Gefen E, Talal S, Ayali A; Univ of Haifa-Oranim, Tel Aviv University</i> | On the Mechanistic Basis for Discontinuous Gas Exchange in Actively Ventilating Insects |
| 8:15 am | 37-2 | <i>Birk MA, Seibel BA; University of South Florida</i> | Squids Do Not Breathe Through Their Skin |
| 8:30 am | 37-3 | <i>Hedrick MS, Hillman SS; California State University, East Bay, Portland State University</i> | A Metabolic Hypothesis for the Evolution of Temperature Effects on the Arterial PCO ₂ and pH of Ectothermic Vertebrates |
| 8:45 am | 37-4 | <i>Sardella B, King M; California State University, Stanislaus</i> | Ventilation Cessation Behavior of the Mozambique tilapia: A strategy for multi-stressor tolerance? |
| 9:00 am | 37-5 | <i>Fox TP, Harrison JF; Arizona State University</i> | Respiration is a one-way street: abdominal pumping induces unidirectional flow in beetles |
| 9:15 am | 37-6 | <i>Albuquerque RL, Zani PA, Garland Jr T; Univ of California, Riverside, Univ of Wisconsin-Stevens Point</i> | Predictors of sprint speed and maximal aerobic capacity (VO ₂ max) in the lizard <i>Sceloporus occidentalis</i> . |

9:30 am Coffee Break Salons 8-9

8:00 AM – 9:45 AM Session 38 Salons 10-12

Flight: Birds, Bats, and Gliders

Chairs: Per Henningsson, Pranav Khandelwal

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| 8:00 am | 38-1 | <i>Khandelwal PC, Shankar CM, Hedrick TL; UNC, Chapel Hill, ARRS, India</i> | Take-off biomechanics in gliding lizards |
| 8:15 am | 38-2 | <i>Parslew B, Sivalingam G, Crowther W; University of Manchester</i> | Stability and Dynamics of Avian Jumping Take-Off |
| 8:30 am | 38-3 | <i>Chin DD, Roderick WRT, Wang YW, Cutkosky MR, Lentink D; Stanford University</i> | Preparing for Takeoff and Sticking the Landing: At the Interface of Flight and Surface Locomotion |
| 8:45 am | 38-4 | <i>Dakin R, Segre PS, Straw AD, Altshuler DL; University of British Columbia, University Freiburg</i> | Hummingbird evolution reveals the biomechanical organization of maneuverability |
| 9:00 am | 38-5 | <i>Hightower BJ, Wijnings P, Ingersoll R, Chin DD, Scholte R, Lentink D; Stanford University, Soroma, University of Eindhoven</i> | How Hummingbirds Hum: Acoustic Holography of Hummingbirds During Maneuvering Flight |
| 9:15 am | 38-6 | <i>Henningsson P, Jakobsen L, Hedenström A; Lund Univ, Sweden, Univ of Southern Denmark</i> | Aerodynamics of manoeuvring flight in bats |
| 9:30 am | 38-7 | <i>Walker J, Kano F, Taylor G, Biro D; University of Oxford</i> | Gaze strategy during flight in homing pigeons |

9:45 am Coffee Break Salons 8-9

8:00 AM – 9:30 AM Session 39 Salons 1-2

Conservation Biology

Chair: Diana LaScala-Gruenewald

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| 8:00 am | 39-1 | <i>Bolinger S, Averhart M, Duke-Sylvester SM, Johnson EI, Ray K; University of Louisiana - Lafayette, Audubon Louisiana, American Bird Conservancy</i> | Effects of Depredation and Storm Surge on Hatching Success of Least Tern Nests on a Renourished Southeast Louisiana Beach |
| 8:15 am | 39-2 | <i>Lascaza-Gruenewald DE, Haggitt TR, Shears NT; Univ of Auckland</i> | Small Marine Reserves do Not Provide a Safeguard Against Overfishing |
| 8:30 am | 39-3 | <i>Novak RA, Howey CAF; Pennsylvania State University, University of Scranton</i> | A Comparison of Macroinvertebrate Communities Among Vernal Pools with Varying Fire Histories |

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8:45 am	39-4	<i>Heim NA, Payne JL; Stanford University</i>	Estimating Global Extinction Threat Levels in Butterflies
9:00 am	39-5	<i>Howey CAF; University of Scranton</i>	Restoration of Timber Rattlesnake Gestation Sites: Efficacy of Daylighting Management
9:15 am	39-6	<i>Thonis AE, Lister BC; Rensselaer Polytechnic Institute</i>	Predicting Climate-Induced Distributional Shifts for Puerto Rican Anoles
9:30 am	Coffee Break		Salons 8-9

8:15 AM – 9:45 AM	Session 40	Salons 3-4
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Wake Award - Division of Phylogenetics and Comparative Biology Best Student Presentations

Chair: Lars Schmitz

8:15 am	40-1	<i>Jongsma GFM, Portik DM, Leaché AD, Fujita MK; Florida Museum of Natural History, University of Florida, University of Texas at Arlington, Burke Museum of Natural History and Culture, University of Washington</i>	Comparative Phylogeography of <i>Amnirana</i> (White-lipped Frogs) at Historical Refugia across the Upper and Lower Guinean Forests, Africa
8:30 am	40-2	<i>Ramirez MD, Cannon JT, Oakley TH; Univ of Massachusetts, Amherst, Univ of California, Santa Barbara</i>	Octopus skin 'sight' may have evolved through the co-option of a deeply homologous dispersed light sense in mollusc mantle
8:45 am	40-3	<i>Zamorano LS, Kavanaugh DH, Erwin TL; California Academy of Science, Smithsonian Institution, National Museum of Natural History</i>	Drivers of diversification in a continental radiation of ground beetles (Coleoptera: Carabidae: Lachnophorini)
9:00 am	40-4	<i>Paluh DJ, Stanley EL, Blackburn DC; Florida Museum of Natural History</i>	Convergent Evolution and Function of Hyperossification in Frogs
9:15 am	40-5	<i>Lynch LM; Oklahoma State University CHS</i>	Isolation by Pleistocene glaciers resulted in divergence of skeletal limb morphology of North American pine martens, <i>Martes americana</i> and <i>M. caurina</i>
9:30 am	40-6	<i>Picciani N, Kerlin JR, Sierra NW, Ramirez DM, Swafford AJ, Cannon JT, Jondelius U, Plachetzki DC, Daly M, Oakley TH; University of California, Santa Barbara</i>	<i>Prolific origination of eyes in Cnidaria with co-option of non-visual opsins</i>
9:45 am	Coffee Break		Salons 8-9

8:00 AM – 9:30 AM	Session 41	Salons 5-6
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Parental Care

Chair: Tony Williams

8:00 am	41-1	<i>Eberts E, Shankar A, Morado M, Tattersall G, Welch K, Curley M, Auger P; University of Toronto Scarborough, Stony Brook University, Loyola Marymount University, Brock University</i>	Using Thermal Imaging to Detect Torpor in Nesting Hummingbirds
8:15 am	41-2	<i>Williams TD, Gillespie C, Serota M; Simon Fraser Univ</i>	Complexity of Activity During Parental Care: Does This Represent "Exercise" or "Training?"
8:30 am	41-3	<i>Fox RA, Westneat DF; Transylvania University, University of Kentucky</i>	Corticosterone, Prolactin, Neophobia, and Behavioral Plasticity in Response to Brood Size Manipulations in House Sparrows (<i>Passer domesticus</i>)
8:45 am	41-4	<i>Raboin M, Elias DO; Univ Of California, Berkeley</i>	Deconstructing the mason spider mound: mound building behavior, function, and ecology in spiders
9:00 am	41-5	<i>Baldan D, Hinde CA, Lessells CM; Netherlands Institute of Ecology, Behavioural Ecology Group, University of Wageningen</i>	Foraging coordination while feeding young: behavioural mechanisms underlying negotiation over offspring care
9:15 am	41-6	<i>Delia J, Warkentin KM; Boston University</i>	Father-embryo coevolution in Neotropical glassfrogs
9:30 am	Coffee Break		Salons 8-9

8:00 AM – 9:45 AM

Session 42

Foothill G

Animal Communication: Intrinsic States and Extrinsic Signals

Chair: Greg Pask

8:00 am	42-1	<i>Pask GM, Slone JD, Millar JG, Das P, Moreira JA, Zhou X, Bello J, Liebig J, Zwiebel LJ, Ray A; Bucknell University, Univ of California, Riverside, Vanderbilt University</i>	How to Smell Your Sisters: Detection of Cuticular Hydrocarbon Pheromones in Ants
8:15 am	42-2	<i>Schrock TA; Walla Walla University</i>	Get a Whiff of This: <i>Octopus rubescens</i> responses to conspecific inking
8:30 am	42-3	<i>Raiza C, Elias DO; University of California, Berkeley</i>	Hidden Instruments of the Spider Serenade: comparative morphology of sound producing structures in jumping spiders
8:45 am	42-4	<i>Campos SM, Pruett JA, Soini HA, Novotny MV, Zúñiga-Vega JJ, Vital-García C, Hews DK, Martins EP; Indiana University, Bloomington, Universidad Nacional Autónoma de México, Universidad Autónoma de Ciudad Juárez</i>	Relationships between climate, chemical signal composition, and behavior
9:00 am	42-5	<i>Crovo JA, Johnston CE; Auburn University</i>	Dude Looks Like a Lady: Evidence of Sneaker Males in a Cyprinid Fish Species
9:15 am	42-6	<i>Alvarado SG, Bashier R, Byrne A, Blakkan D, Lee G, Fernald RD; Stanford University</i>	Blue fish, yellow fish, same fish: The epigenetic regulation of endothelin signalling contributes to yellow and blue coloration of male <i>A. burtoni</i> color morphs
9:30 am	42-7	<i>Sasson DA, Jocson D, Fowler-Finn K; University of Saint Louis</i>	The effects of temperature on reproductive communication in the treehopper, <i>Enchenopa binotata</i>
9:45 am	.....	Coffee Break	Salons 8-9

8:00 AM – 9:45 AM

Session 43

Foothill C

Insect Flight: Living in an Unstable World

Chairs: Susan Gagliardi, Michael Dillon

8:00 am	43-1	<i>Clayton GV, Kahn H, Smith NM, Dickerson AK; University of Central Florida</i>	Mosquito Takeoff Strategies from Horizontal Surfaces
8:15 am	43-2	<i>Chang SW, Koehl MAR, Dudley R, Muijres F; Univ of California, Berkeley, Wageningen University</i>	Effects of carrying a blood meal on take-off performance and flight kinematics of malaria mosquitoes (<i>Anopheles coluzzii</i>)
8:30 am	43-3	<i>Ortega-Jimenez VM, Combes SA; Univ of California, Davis</i>	Living in a Trash Can: <i>Drosophila</i> Flight Control in Turbulent Convection Cells
8:45 am	43-4	<i>Jakobi TR, Phillips N, Finnis M, Fisher A, Watkins S, Ravi S; RMIT, RVC</i>	The aerodynamic mechanisms of flapping flight in unsteady air
9:00 am	43-5	<i>Gagliardi SF, Combes SA; University of California-Davis</i>	May the wind not always be at your back: Bumblebees prefer to fly upwind
9:15 am	43-6	<i>Bomphrey RJ, Phillips N, Walker SM, Nakata T; Royal Veterinary College, University of Leeds, Chiba University</i>	Aerodynamic imaging and aeroacoustic cues for surface detection in nocturnal mosquitoes
9:30 am	43-7	<i>Dillon ME, Oyen KJ, Pimsler ML, Herndon JD, Strange JP, Lozier JD; Univ of Wyoming, Univ of Alabama, Utah State Univ</i>	Geographic variation in bumble bee morphology: evidence for the influence of heterothermy and flight on insect size clines
9:45 am	.....	Coffee Break	Salons 8-9

8:00 AM – 9:30 AM

Session 44

Nob Hill A-B

Sharp Bits

Chairs: Maya deVries, Lisa Whitenack

8:00 am	44-1	<i>Anderson P; Univ Illinois, Urbana-Champaign</i>	Fangs, Stingers and Spines: Common mechanical principles across biological puncturing tools
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8:15 am	44-2	<i>Krentzel D, Angielczyk K; Univ of Chicago, Field Museum</i>	The elegance of ever-growing incisors: biomechanics and ecomorphology of unique rodent dentition and musculature as the drivers of diversification
8:30 am	44-3	<i>Whitenack LB, Kolmann MA; Allegheny College, Univ of Washington</i>	Leveraging Extant Shark Tooth Shape to Examine Paleozoic Selachian Morphospace
8:45 am	44-4	<i>Devries MS; Scripps Institution of Oceanography, UC San Diego</i>	Leaving room for two at the dinner table: morphology and competition govern the diet breadth of sympatric spearing and smashing stomatopods
9:00 am	44-5	<i>Kolmann MA, Huie J, Evans K, Summers AP; University of Washington, University of Minnesota</i>	View to a keel: aggression, armor, and scale-feeding in piranhas
9:15 am	44-6	<i>Hulsey CD, Meyer A; Univ of Konstanz, Germany</i>	The Genomic Architecture of a Key Innovation and Evolution of Dental Divergence in East African Cichlid Fishes
9:30 am Coffee Break		Salons 8-9

8:30 AM – 9:45 AM	Session 45	Nob Hill C-D
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Behavioral Endocrinology

Chairs: Ryan Paitz, Cory Williams

8:30 am	45-2	<i>Guoynes CD, Marler CA; UW Madison</i>	Parental communication with newborn pups and the effects of oxytocin in the California mouse (<i>Peromyscus californicus</i>)
8:45 am	45-3	<i>Williams CT; Univ of Alaska Fairbanks</i>	Seasonal Reproductive Tactics: Annual Timing and the Capital to Income Breeder Continuum
9:00 am	45-4	<i>Henschen AE, Whittingham LA, Dunn PO; Univ of Wisconsin, Milwaukee</i>	Resistance to oxidative stress mediates the acute stress response in common yellowthroats
9:15 am	45-5	<i>Singleton JM, Garland Jr T; Univ of California, Riverside</i>	Corticosterone, endurance capacity, and home range size in Desert Iguanas (<i>Dipsosaurus dorsalis</i>)
9:30 am	45-6	<i>Freeman NE, Norris DR, Strickland D, Newman AEM; University of Guelph, Retired Chief Park Naturalist, Algonquin Provincial Park</i>	Carry-over Effects of Early-life Food Availability on Stress Physiology and Survival: A Supplementation Experiment in a Winter Breeding Passerine
9:45 am Coffee Break		Salons 8-9

8:00 AM – 9:45 AM	Session 46	Golden Gate C-1
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Biomaterials: Baggy Skin is the New Black

Chairs: Molly Grear, Ted Uyeno

8:00 am	46-1	<i>Feo TJ, McCoy DE, Harvey TA, Prum RO; Smithsonian Institution, NMNH, Harvard Museum of Comparative Zoology, Yale University</i>	Super Black is the New Black: Structural Absorption by Barbule Microstructures of Super Black Bird of Paradise Feathers
8:15 am	46-2	<i>Stapp CS, Paig-Tran EM; California State University, Fullerton</i>	Regional Variance in the Structural Properties of Smooth-eye Poacher (<i>Xeneretmus leiops</i>) Scales: A Biomechanical Inspiration for Puncture-Resistant Armor
8:30 am	46-3	<i>Van Breugel F, Dickinson M; University of Washington, Caltech</i>	Super-hydrophobic diving flies and the kosmotropic waters of Mono Lake
8:45 am	46-4	<i>Adjerid K, Sood N, De Vita R, Socha J; Virginia Tech, Pulaski County High School</i>	Variation in Young's modulus of tracheal tubes in the beetle (<i>Zophobas morio</i>)
9:00 am	46-5	<i>Grear ME, Motley MR, Summers AP; University of Washington, Friday Harbor Laboratories</i>	Nonlinear Mechanics of Marine Mammal Skin
9:15 am	46-6	<i>Uyeno TA, Clark AJ; Valdosta State University, College of Charleston</i>	Baggy Skins with Benefits: How Loose Fitting Integuments can be Adaptive
9:30 am	46-7	<i>Patel RG, Kennedy EBL, Clubb BL, Uyeno TA, Clark AJ; College of Charleston, Valdosta State University</i>	Comparative Biomechanics of Diverse Hagfish Skins
9:45 am	..... Coffee Break		Salons 8-9

Environmental Omics/Etics

Chair: Christina Vasquez

8:00 am	47-1	Leach WB, Peres R, Macrander J, Reitzel AM; University of North Carolina, Charlotte, University of Hawaii Cancer Center	Transcriptomic changes in response to a diel light-dark cycle in <i>Nematostella vectensis</i> , an estuarine anemone
8:15 am	47-2	Chou H, Funk DH, Jima DD, Buchwalter DB; North Carolina State Univ, Stroud Water Research Center	The Daily Scorcher: Life History and Transcriptomic Responses of the Mayfly <i>Neocloeon triangulifer</i> to Chronic Daily Forays into Uncomfortably Warm Temperatures
8:30 am	47-3	Vasquez MC, Tomanek L; Cal Poly San Luis Obispo	Exposure of <i>Mytilus</i> mussels to Multiple Stressors Reveals Non-predictive Interaction Effects
8:45 am	47-4	Deyarmin J, McCormley M, Champagne C, Stephan A, Houser D, Crocker D, Khudyakov J; Univ of the Pacific, Nat. Marine Mammal Foundation; Old Dominion Univ, Sonoma State Univ	Stress-omics: A non-targeted multi-omics approach to discriminate stress states in a marine mammal
9:00 am	47-5	Li J, Levitan BB, Gómez-Jiminéz S, Kültz D; Univ of California, Davis, Centro de Investigación en Alimentación y Desarrollo (CIAD)	Ecological proteomics of three-spine sticklebacks (<i>Gasterosteus aculeatus</i>) with a standardized gill DIA assay
9:15 am	47-6	Chin BA, Place SP; California State University, Sonoma	Characterizing the role of DNA methylation patterns in the California mussel, <i>Mytilus californianus</i>
9:30 am	.....	Coffee Break	Salons 8-9

Cnidarian Evo-Devo

Chair: Stefan Siebert

8:00 am	48-1	Nakanishi N, Martindale MQ; Univ of Arkansas, Univ of Florida	Ancient neuropeptides are not necessary for life cycle transition in a sea anemone
8:15 am	48-3	Siebert S, Farrell JA, Cazet J, Abeykoon Y, Monroy R, Juliano CE; Univ of California, Davis, Harvard University	Towards a single cell molecular map for Hydra
8:30 am	48-4	Matsumoto Y, Miglietta MP; Texas A&M University	Reverse development in <i>Turritopsis dohrnii</i> : Model system for regeneration, cellular plasticity and aging
8:45 am	48-5	Steinworth BM, Martindale MQ; University of Florida Whitney Laboratory for Marine Bioscience	Upside down but not inside out: molecular control of embryogenesis in the jellyfish <i>Cassiopea xamachana</i>
9:00 am	48-6	Song H, Jacobs DK*; University of California, Los Angeles	The T-box gene family and their differential expression pattern in the jellyfish <i>Aurelia</i>
9:15 am	48-7	Babonis LS, Martindale MQ; University of Florida, Whitney Lab	Early specification of ectodermal cells in the pharynx and mesenteries of the sea anemone <i>Nematostella vectensis</i>
9:30 am	.....	Coffee Break	Salons 8-9

Division of Comparative Biomechanics: Best Student Paper Award

Chair: Shelia Patek

10:00 am	49-1	Harvey C, Baliga VB, Lavoie P, Altshuler DL; University of British Columbia, University of Toronto	How elbow deflection affects the aerodynamic performance and stability of gliding gulls at varying turbulence conditions
10:15 am	49-2	Ingersoll R, Lentink D; Stanford University	How neotropical hummingbird versus bat species generate lift to hover
10:30 am	49-3	Cerkvenik U, Van De Straat B, Gussekloo SWS, Van Leeuwen JL; Wageningen University	How parasitic wasps steer ovipositors and avoid buckling during probing
10:45 am	49-4	Othayoth R, Li C; Johns Hopkins University	Cockroaches change locomotor modes to traverse beam obstacles of varied stiffness
11:00 am	49-5	Noel A, Hu DL; Georgia Institute of Technology	How cats groom

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11:15 am	49-6	<i>Hoffmann SL, Porter ME; Florida Atlantic University</i>	Asynchronous pectoral fin rotation during yaw turns in the bonnethead shark, <i>Sphyrna tiburo</i>
11:30 am	49-7	<i>Han Y, Li C; Johns Hopkins University</i>	Cockroach and Robot Locomotion Reveals the Need to Integrate Sensory Feedback with Body Mechanics to Traverse Complex 3-D Terrains
11:45 am	49-8	<i>Hutchinson BL, Southward SC, Bayandor J; Virginia Tech, State University of New York at Buffalo</i>	Amplitude Effects on Thrust Production for Undulatory Swimmers
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM	Session 50	Salons 10-12
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Evo-Devo: From Genotype to Phenotype

Chairs: Matthew Rockman, Prashant Sharma

10:15 am	50-1	<i>Hill AL, Hall C, Rivera A, Posfai D, Rodriguez M, Garcia J; Univ of Richmond, Univ of Virginia, Univ of the Pacific, Duke Univ</i>	Patterning the freshwater sponge aquiferous system: Wnt signaling and Pax networks
10:30 am	50-2	<i>Rockman MV, Zakas C; New York University</i>	The Genetic Basis for Larval Life-History Dimorphism in the Polychaete <i>Streblospio benedicti</i>
10:45 am	50-3	<i>Setton EVW, Sharma PP; University of Wisconsin-Madison</i>	Is the function of the <i>Wnt-1</i> co-receptor <i>arrow</i> conserved in segmentation of insects and arachnids?
11:00 am	50-4	<i>Chung AK, Cox CL, Cox RM; Georgia Southern University, University of Virginia</i>	Age and Tissue Specificity of Sex-biased Gene Expression and the Development of Sexual Dimorphism
11:15 am	50-5	<i>McGirr JA, Martin CH; Univ of North Carolina, Chapel Hill</i>	“Different different but same”: Parallel gene expression between trophic specialists despite divergent genotypes and morphologies
11:30 am	50-6	<i>Hulett RE, Srivastava M; Harvard University</i>	Where is my mind: Nervous system regionalization in the acoeel <i>Hofstenia miamia</i>
11:45 am	50-7	<i>Sharma PP, Nolan ED; University of Wisconsin-Madison</i>	Shared Expression Patterns of Paralogous Genes Support a Derived Placement of Scorpiones in the Arachnid Tree of Life
12:00 pm	Lunch Break		

10:15 AM – 11:45 AM	Session 51	Salons 1-2
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Complementary to S3: Evolution in the Dark: Unifying our Understanding of Eye Loss, Part 1

Co-chairs: Sonke Johnsen, Katie Thomas

10:15 am	51-1	<i>Thomas KN, Vecchione M, Johnsen S; Duke University, NOAA Systematics Lab</i>	Now you see me, now you don't: Cephalopod visual ranges and implications for deep-sea visual ecology
10:30 am	51-2	<i>Notar JC, Johnsen S; Duke University</i>	Do (Eyeless) Sea Urchins Have Color Vision?
10:45 am	51-3	<i>Bagge LE, Kier WM, Johnsen S; Duke, Univ of North Carolina at Chapel Hill</i>	The ultrastructure of transparent shrimp
11:00 am	51-4	<i>Schweikert LE, Fitak RR, Grace MS, Johnsen S; Duke University, Florida Institute of Technology</i>	Dermal Photoreception May Provide Sensory Feedback for Dynamic Coloration
11:15 am	51-5	<i>Johnsen S, Osborn KJ, Thomas KN, Robison BH; Duke Univ, Smithsonian Inst, MBARI</i>	From the Moon in the Sky to the Deep Blue Sea: Using Lunar Optics to Understand the Blackness of Mesopelagic Fish
11:30 am	51-6	<i>Burress PBH, Niemiller ML, Chakrabarty P; Louisiana State University, University of Alabama in Huntsville</i>	Phylogenomics of the Cave-, Spring-, and Swampfishes of North America (Percopsiformes: Amblyopsidae)
11:45 am	Lunch Break		

10:45 AM – 11:45 AM	Session 52	Salons 3-4
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Phylogenetics

Chair: Steve Bond

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10:45 am	52-3	<i>Debić S; University of Zagreb</i>	Chasing Diversity: Phylogenetic Assessment of Central Philippine Sea Pens
11:00 am	52-4	<i>Bond SR, Baxevanis AD; NHGRI, NIH</i>	Recursive Dynamic Markov clustering: A novel approach for classifying protein families
11:15 am	52-5	<i>Larkin KL, Gosliner TM; California Academy of Sciences</i>	Through a veil of uncertainty: Resolving phylogenetic relationships of Indo-Pacific Arminid nudibranchs
11:30 am	52-6	<i>Markello KM, Mooi R; California Academy of Sciences</i>	Hooked on Feather Stars: Using novel characters and molecular barcodes to uncover crinoid diversity in the Philippines
11:45 am Lunch Break		

10:00 AM – 12:00 PM Session 53	Salons 5-6
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Behavioral Ecology: Development and Maternal Effects

Chair: Dan Warner

10:00 am	53-1	<i>Hooper AW, Berger RW, Crocker DE; Sonoma State University, Point Blue Conservation Science</i>	Effects of maternal age on offspring behavior and growth efficiency in northern elephant seals (<i>Mirounga angustirostris</i>)
10:15 am	53-2	<i>Pruett JE, Warner DA; Auburn University</i>	The Influence of Maternal Nesting Behavior and Nest Microhabitat on Embryo Development and Offspring Fitness Across Early-life Stages.
10:30 am	53-3	<i>Jung J, McDaniel JG, Warkentin KM; Boston University</i>	Ontogenetic Adaptation in Information Use for Escape-Hatching Decisions: Older Embryos Selectively Accept More False Alarms
10:45 am	53-4	<i>Chaby LE, Liberzon I; University of Michigan</i>	Thanks for being flexible: Cognitive flexibility training can attenuate the effects of a rodent trauma model on fear learning and memory
11:00 am	53-5	<i>Voisinet MP, Vasquez MC, Elowe C, Crocker DE, Tomanek L; CA Polytechnic State Univ, SLO, Sonoma State Univ</i>	Changes in the proteome of northern elephant seal pups during the postweaning fast
11:15 am	53-6	<i>Cadney MD, Hiramatsu L, Thompson Z, Zhao M, Kay JC, Singleton JM, Albuquerque RL, Schmill MP, Garland Jr T; Univ of California, Riverside</i>	Effects of Early-Life Exposure to Western Diet and Voluntary Exercise on Adult Activity Levels, Exercise Physiology, and Associated Traits in Mice
11:30 am	53-7	<i>Hellmann JK, Bell AM; University of Illinois, Urbana-Champaign</i>	Sex-specific effects of maternal and paternal experience with predation risk in threespined sticklebacks
11:45 am	53-8	<i>Stein LR; Colorado State University</i>	Integrating personal information and maternal effects across populations in Trinidadian guppies
12:00 pm Lunch Break		

10:15 AM – 11:30 AM Session 54	Foothill G
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Sensory Behavior

Chairs: Nichols Roberts, Jason Hodin

10:15 am	54-1	<i>Foster JJ, Radford AN, Temple SE, Wilby D, Roberts NW*; University of Lund, University of Bristol</i>	The polarization of light as a feeding cue for fish
10:30 am	54-2	<i>Cavagnaro JW; Villanova University</i>	Color Evolution and UV Reflectance in Diurnal Geckos: Influence of Visual System and Background
10:45 am	54-3	<i>Kingston ACN, Chappell DR, Speiser DI; University of South Carolina</i>	Molecular, Structural, and Functional Complexity of the Sensory Organs of Chitons
11:00 am	54-4	<i>Bedore CN, Hueter RE, Johnsen S; Georgia Southern University, Mote Marine Laboratory, Duke University</i>	Visual Ecology of the White Shark and Shortfin Mako
11:15 am	54-5	<i>Hodin J, Ferner MC, Ng G, Gaylord B; Friday Harbor Labs, U of Washington, Romburg Tiburon Center, SFSU, Bodega Marine Lab, UC Davis</i>	Desperately Seeking Shoreline: Brief turbulence exposure induces echinoderm larvae to settle on lower quality substrates

11:30 am Lunch Break

10:15 AM – 12:00 PM Session 55

Foothill C

Population-Level Adaptations

Chair: Don Miles

10:15 am	55-1	Martin BT, Munch S, Hein AM; NOAA, Univ of California, Santa Cruz	The Automatic Discovery of Ecological Theory from Data
10:30 am	55-2	Flores DV, Janzen FJ; Iowa State University	Epigenetic dimorphism and predisposition to sex under temperature-dependent sex determination
10:45 am	55-3	Frederich M, Logan L; Univ of New England, Biddeford	Population-specific morphology, behavior, and stress tolerance in the invasive green crab, <i>Carcinus maenas</i>
11:00 am	55-4	McElroy EM, Heuring C, Williams D; College of Charleston, Texas Christian University	Colonization success in a specialist: morphology, diet and genetics of introduced populations of the ant-eating Texas horned lizard, <i>Phrynosoma cornutum</i> .
11:15 am	55-5	Miles DB; Ohio University	Becoming small or growing apart different: heterogeneous patterns of body size variation and sexual size dimorphism in response to climate warming
11:30 am	55-6	Liguori AL; Stony Brook University	Population level differences in life history responses to long-term pH stress in <i>Tigriopus californicus</i>
11:45 am	55-7	Delaney DM, Janzen FJ; Iowa State Univ	Can Offspring Dispersal Ability Influence Maternal Investment Strategies?

12:00 pm Lunch Break

10:00 AM – 12:00 PM Session 56

Nob Hill A-B

Host-Pathogen Interactions

Chairs: Jamie Voyles, Daniel Becker

10:00 am	56-1	Siple BN, Bullard SA, Halanych KM; Auburn University	The evolution of blood parasitism in trematodes: What's VAP (venom allergen-like protein) got to do with it?
10:15 am	56-2	Voyles J, Perez RG, Rollins-Smith L, Reinhart L, Woodhams D, Richards-Zawacki C; Univ of Nevada, Vanderbilt University, Univ of Massachusetts, Univ of Pittsburgh	Understanding Shifts in Amphibian Host Defenses Following Outbreaks of Chytridiomycosis
10:30 am	56-3	Wilson CA, Field KA, Reeder DM, Lilley TM; Bucknell University, University of Liverpool	Pathogen prevalence in little epauletted fruit bats in South Sudan and Uganda
10:45 am	56-4	Zikeli SL, Rankins ST, Ditchkoff SS, Zohdy SM; Auburn University	Oh Deer, What's Eating You? Alabama White-Tailed Deer as Reservoirs for Vector-Borne Disease
11:00 am	56-5	Zilz ZL; Western Washington University	Has the Relationship Between a Sperm-eating Ciliate and its Sea Star Host Changed Post-Sea Star Wasting Disease Die Offs?
11:15 am	56-6	Becker DJ, Teitelbaum CS, Murray MH, Rozier RS, Lipp EK, Hernandez SH, Altizer SM, Hall RJ; Montana State University, University of Georgia	Disentangling the contributions of intraspecific and exogenous sources of infection on <i>Salmonella</i> transmission dynamics in urbanized white ibis
11:30 am	56-7	Flies AS; University of Tasmania	Fluorescent recombinant proteins as a versatile solution for immunology in non-traditional species
11:45 am	56-8	Grieves LA, Kelly TR, Bernards MA, MacDougall-Shackleton EA; University of Western Ontario	Sick birds don't smell: Assessing the impact of haematozoan infection on avian preen oil chemical composition

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 57

Nob Hill C-D

Population Genetics

Co-chairs: Chris Martin, Elizabeth Henry

Friday 5 January 2018

10:15 am	57-1	<i>Henry ER, Butler MB; University of Hawai'i at Mānoa</i>	Population Structure of Two Native Hawaiian Damselflies
10:30 am	57-2	<i>Judson JM, Bronikowski AM, Janzen FJ; Iowa State University</i>	Population Genetic Structure in a Widespread Reptile, the Painted Turtle (<i>Chrysemys picta</i>)
10:45 am	57-3	<i>Clark MI, Akopyan M, Bradburd GS, Vega A, Robertson JM; California State University, Northridge, Cornell University, Michigan State University, AMBICOR</i>	Evolutionary history of red-eyed treefrogs (<i>Agalychnis callidryas</i>) in a hotspot of color pattern diversity
11:00 am	57-4	<i>Hantak MM, Page RB, Anthony CD, Kuchta SR; Ohio University, Texas A&M University, John Carroll University</i>	Evaluation of the Genetic Structure of a Color Polymorphic Salamander, <i>Plethodon cinereus</i>
11:15 am	57-5	<i>Hanson HE, Kilvitis HJ, Schrey AW, Martin LB; University of South Florida, Armstrong State University</i>	<i>Epigenetic Potential in Native and Introduced Populations of House Sparrows</i>
11:30 am	57-6	<i>Mansur Z, Owens C, Burks RL, Hayes KA; Howard University, Southwestern University, National Museum of Natural History</i>	Multiple Paternity in <i>Pomacea canaliculata</i> (Ampullariidae) from the La Plata Basin, Uruguay
11:45 am	57-7	<i>Martin CH; University of North Carolina at Chapel Hill</i>	The cascading effects of divergent performance demands on the evolution of trophic specialists within a Caribbean pupfish radiation

12:00 pm **Lunch Break**

10:15 AM – 11:45 AM	Session 58	Golden Gate C-1
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Evo-Devo of Reproductive Traits

Chair: Mihaela Pavlicev

10:15 am	58-1	<i>Kawaguchi M, Harada A, Yasumasu S; Sophia Univ</i>	Formation of seahorse brood pouch
10:30 am	58-2	<i>Kahrl AF; Stockholm University</i>	Understanding the evolution of extreme variation in sperm morphology between snakes and lizards
10:45 am	58-3	<i>Pavlicev M; Cincinnati Children's, University of Cincinnati</i>	Menstruation and parturition: secondary serial homologa?
11:00 am	58-4	<i>Stewart JR, Thompson MB; East Tennessee State University, University of Sydney, Australia</i>	The Yolk Organ of Scincid Lizards
11:15 am	58-5	<i>Blackburn DG; Trinity College</i>	Yolk Cellularization and Amniote Egg Evolution
11:30 am	58-6	<i>Stewart TA, Upham NS; Yale University</i>	Why so Many Mammae, Mommy? Testing the One-Half Rule in Mammals

11:45 am **Lunch Break**

10:15 AM – 12:00 PM	Session 59	Golden Gate C-2
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Temperature Variation and Physiological Plasticity

Chairs: Michael Finkler, Wes Dowd

10:15 am	59-1	<i>Tanner RL, Sousa WP, Stillman JH; Univ of California, Berkeley; Romberg Tiburon Center for Environmental Studies, San Francisco State Univ, Univ of California, Berkeley</i>	Transgenerational thermal tolerance plasticity may play a role in maintaining seasonal differences between populations of <i>Phyllaplysia taylori</i> with climate change
10:30 am	59-2	<i>Burgos L, Taylor E; California Polytechnic State University, San Luis Obispo</i>	Effects of Acclimation and Recent Thermal History on the Critical Thermal Maximum of a Small Diurnal Lizard, <i>Sceloporus occidentalis</i>
10:45 am	59-3	<i>Gleason LU, Strand ES, Hizon BJ, Dowd WW*; California State University, Sacramento, Loyola Marymount University, Washington State University</i>	Post-settlement plasticity of thermal tolerance and energetic constraints in juvenile mussels (<i>Mytilus californianus</i>)
11:00 am	59-4	<i>Rivera HE, Tarrant AM; Woods Hole Oceanographic Institution</i>	Contributions of parental effects vs. local adaptation to increasing thermal tolerance of larvae of the cnidarian model organism, <i>Nematostella vectensis</i> .

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11:15 am	59-5	<i>Haro D, Burke RL, Pauly GB, Liwanag HEM; California Polytechnic State University, Hofstra University, Natural History Museum of Los Angeles County</i>	Reversible plasticity of whole body physiological parameters in an invasive lizard <i>Podarcis siculus</i>
11:30 am	59-6	<i>Finkler MS; Indiana Univ Kokomo</i>	Exposure to fluctuating temperatures at different intervals during incubation influences embryonic growth and hatchling morphology in <i>Chelydra serpentina</i> .
11:45 am	59-7	<i>Wilmsen SM, Romano-Olivia DC, Rector SE, Martin AS, Dzialowski EM; University of North Texas</i>	The Effect of Acclimation to a Fluctuating Temperature on CO ₂ Production During and After Exercise in the Desert Tarantula <i>Grammastola rosea</i>
12:00 pm	Lunch Break		

10:15 AM – 11:45 AM	Session 60	Foothill E
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Evolutionary Ecology

Chair: Jeffrey Dudycha

10:15 am	60-1	<i>Stephens JQ, Hund AK, Ibrahim AS, Wicker VM, Tsunekage T, Levin II; Agnes Scott College, University of Colorado</i>	Does incubation behavior influence nestling telomere length? An egg cross-foster experiment in barn swallows
10:30 am	60-2	<i>Mauro AA, Havird JC, Ghalambor CK; Colorado State University</i>	Plasticity's Role in Adaptation to a Novel Environment
10:45 am	60-3	<i>Chelini MC, Yeager J, Brock K, Edwards DL; University of California, Merced</i>	Ecological Adaptations Drive Diversity in Degree of Sexual Size Dimorphism in the Common Side-blotched Lizard, <i>Uta stansburiana</i>
11:00 am	60-4	<i>Goepfner SR, Pearce ME, Beaty LE, Luttbeg B; Oklahoma State University, Trent University</i>	Transgenerational Responses of Snails to Fish Predators
11:15 am	60-5	<i>Bhave RS, Reedy AMR, Sears HA, Kahrl AF, Cox RM; Univ of Virginia, Stockholm University</i>	Do back-pattern morphs in female brown anoles differ in morphology, behavior, and natural selection?
11:30 am	60-7	<i>Reinke BA, Lawing AM; Texas A&M University</i>	The Evolution of Wing Colorfulness in a Butterfly Group
11:45 am	Lunch Break		

Friday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:30 PM **Session 61** **Salons 13-15**

Superfast! Power Amplification!

Chairs: Benjamin Perlman, Zeynep Temel

1:30 pm	61-1	<i>Scales JA, Bloom SV, Deban SM; CSU, Stanislaus, Univ of South Florida</i>	Correlated morphological evolution of ballistic tongue projection in plethodontid salamanders
1:45 pm	61-2	<i>Perlman BM, Pouresfandiari P, Dankovich Iv LJ, Azizi E; Univ of California, Irvine, Univ of Maryland, College Park</i>	Does an anatomical latch amplify power during a frog jump?
2:00 pm	61-3	<i>Wood HM, Parkinson DY, Griswold CE, Gillespie RG, Elias DO; Smithsonian Institution, Lawrence Berkeley National Laboratory, California Academy of Sciences, University of California, Berkeley</i>	Repeated Evolution of Power-Amplified Predatory Strikes in Trap-Jaw Spiders
2:15 pm	61-4	<i>Han SI, Astley HC, Blackledge TA; University of Akron</i>	Slingshot Motion of the <i>Hyptiotes</i> Spider Created by External Power Amplification in the Web
2:30 pm	61-5	<i>Gibson JC, Booher DB, Economo EP, Suarez AV; University of Illinois at Urbana-Champaign, University of California Los Angeles, Okinawa Institute of Science and Technology</i>	Kinematics, Evolution and Functional Morphology of Miniature Trap-Jaw Ant (<i>Strumigenys</i> spp.) Mandible Strikes
2:45 pm	61-6	<i>Kuan KC, Shih MC, Chiu CI, Chi KJ*, Li HF; National Chung-Hsing University, Taiwan</i>	Fast Strike of Twisted Mandible in Termite Soldiers of <i>Pericapritermes nitobei</i>
3:00 pm	61-7	<i>Temel FZ, Sutton GP, Patek SN, Wood RJ; Harvard Univ, Univ of Bristol, Duke Univ</i>	Trap-jaw ant-inspired jaw-jumping mechanisms explore energetics of insect jumping
3:15 pm	61-8	<i>Patek SN, Sutton GP, Kuo CY, Temel FZ, Wood RJ; Duke, Bristol, Harvard</i>	Elastic energy delivery and power amplification of trap-jaw ant strikes
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:00 PM **Session 62** **Salons 10-12**

Host-Parasite Interactions

Chairs: Carol Fassbinder-Orth, Henry John-Alder

1:30 pm	62-1	<i>Fassbinder-Orth CA, Killpack TL, Goto DS, Rainwater EL, Shearn-Bochsler V; Creighton University, Salem State University, USGS National Wildlife Health Center</i>	High costs of infection: Alphavirus infection reduces digestive function and bone and feather growth in nestling house sparrows (<i>Passer domesticus</i>)
1:45 pm	62-2	<i>Williams JD; Hofstra University</i>	Parasitism by trematodes negatively impacts byssal thread production and attachment strength of mussels
2:00 pm	62-3	<i>Moore ME, Hill CA, Kester KM, Kingsolver JG; Univ of North Carolina, Chapel Hill, Virginia Commonwealth Univ</i>	Lose/Lose Scenario: High Average and Fluctuating Temperatures Result in Parasitoid Death, but Fail to Save their Insect Hosts
2:15 pm	62-4	<i>Sandmeier FC, Weitzman CL, Tracy CR; Colorado State University-Pueblo, University of Nevada, Reno</i>	Cooler thermal regimes and higher lymphocyte numbers are associated with lower levels of pathogen (<i>Mycoplasma agassizii</i>) in Mojave desert tortoise populations
2:30 pm	62-6	<i>Pollock NB, John-Alder HB*; Univ of Texas Arlington, Rutgers University</i>	Sex- and age-specific ectoparasitism in eastern fence lizards (<i>Sceloporus undulatus</i>): individual consistency and effects of season
2:45 pm	62-7	<i>Weitzman CL, Sandmeier FC, Snyder SJ, Tracy CR; University of Nevada, Reno, Colorado State University – Pueblo, Bard College at Simon's Rock</i>	A Tale of Two "Pathogens": Disease Not Predicted by Infection or Co-infection
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:00 PM

Session 63

Salons 1-2

Complementary to S3: Evolution in the Dark: Unifying our Understanding of Eye Loss, Part 2

Chairs: Todd Oakley, Zen Faulkes

1:30 pm	63-1	<i>Ellis EA, Oakley TH; Univ of California, Santa Barbara</i>	Unexpected Opsin Diversity in an Eyeless, Vertically Migrating, Halocyprid Ostracod
1:45 pm	63-2	<i>Faulkes Z, Segura S, Garcia L, Terry J, Terry M; University of Texas Rio Grande Valley</i>	Blind sand crabs have visual opsins
2:00 pm	63-3	<i>Gross JB, Berning D, Adams H; University of Cincinnati</i>	The genetic lesions associated with regression: A genome-wide search for destructive mutations in the cavefish genome.
2:15 pm	63-4	<i>Oakley TH, Juarez BH, Speiser DI; UC Santa Barbara, Iowa State, U of South Carolina</i>	Macroevolution of Ostracod Eyes and Body Size Along the Ecogeographical Gradient of Ocean Depth
2:30 pm	63-5	<i>Donohue MW, Cohen J, Valdez-Lopez JC, Cronin TW; University of Maryland Baltimore County, University of Delaware</i>	A Lesson from the Mind's 'Eye': Cerebral Photoreception in Mantis Shrimp
2:45 pm	63-6	<i>Dong EM, Allison WT; University of Alberta</i>	Exploring the Evolutionary Origins of Vertebrate Vision in the Degenerating Eye of Pacific Hagfish.
3:30 pm	.....	Coffee Break	..... Salons 8-9

1:30 PM – 3:30 PM

Session 64

Salons 3-4

Division of Evolutionary Developmental Biology Best Student Presentations

Chairs: Julia Bowsher, Yui Suzuki

1:30 pm	64-1	<i>Powers AK, Kaplan SA, Boggs TE, Gross JB; Univ of Cincinnati, Northeast Ohio Medical School</i>	Two unusual mechanisms explain cranial bone fragmentation in cavefish
1:45 pm	64-2	<i>Rock AQ, Stephenson TB, Dubuc TQ, Martindale MQ; Whitney Laboratory for Marine Bioscience, University of Florida, Centre for Chromosomal Biology, National University of Ireland Galway</i>	The maternally expressed Hox gene Ax6a is required for gastrulation and the formation of bilateral symmetry in the cnidarian <i>Nematostella vectensis</i> .
2:00 pm	64-3	<i>Armstrong AF, Grosberg RK; Univ of California, Davis</i>	The beginning of the end: gene expression changes in the evolution of non-feeding larvae
2:15 pm	64-4	<i>Sears CR, Gross JB; Univ of Cincinnati</i>	The RNA Architecture of Life in the Dark: A Transcriptomic Assessment of Varying Photic Conditions in the Blind Mexican Cavefish, <i>Astyanax mexicanus</i>
2:30 pm	64-5	<i>Colgan WN, Llosa I, Harris L, Leanza A, Hwang A, Debiasse M, Ryan J, Davidson B; Swarthmore College, Whitney Lab, Univ of Florida</i>	Evolution of Chordate Heart Gene Regulatory Networks
2:45 pm	64-6	<i>Carrillo-Baltodano A, Meyer N; Clark University</i>	Decoupling Brain from Nerve Cord Development in the Annelid <i>Capitella teleta</i>
3:00 pm	64-7	<i>Chavan AR, Griffith OW, Maziarz J, Pavlicev M, Tzika A, Milinkovitch M, Fishman R, Koren L, Wagner G; Yale Univ, Cincinnati Children's Hospital, Univ of Geneva</i>	Evolution of embryo implantation was enabled by the origin of decidual cells in eutherian mammals
3:15 pm	64-8	<i>Salinas-Saavedra M, Martindale MQ; Whitney Laboratory for Marine Bioscience, University of Florida</i>	Is the maintenance of cell polarity coupled to stable cell-cell adhesion? Insights from early branching metazoan embryos.
3:30 pm	.....	Coffee Break	..... Salons 8-9

1:30 PM – 3:15 PM

Session 65

Salons 5-6

Collective Behavior

Chair: Aaron Corcoran

1:30 pm	65-1	<i>Corcoran AJ, Hedrick TL; Univ North Carolina, Chapel Hill</i>	Scaling of Flocking Dynamics with Body Size in Shorebirds
1:45 pm	65-2	<i>Robart AR, Watts HE; Washington State University</i>	Social Environment Influences Response to Declining Food Availability in a Facultative Migrant

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2:00 pm	65-3	<i>Wacker DW, Wotus C, Greer AJ, Hartley RS; University of Washington Bothell, Seattle University</i>	Song sparrows (<i>Melospiza melodia morphna</i>) holding territories under large nocturnal crow roosts show reduced aggression
2:15 pm	65-4	<i>Strom MS, Ebensperger LA, Hayes LD; New Mexico State University, Pontificia Universidad Católica de Chile, University of Tennessee, Chattanooga</i>	Habitat-specific fitness benefits of sociality in <i>Octodon degus</i>
2:30 pm	65-5	<i>Peters JM, Peleg O, Mahadevan L; Harvard University</i>	Collective thermoregulation by morphing honeybee swarms
2:45 pm	65-6	<i>Crall JD, De Bivort BL; Harvard University</i>	Circadian Behavioral Dynamics in Bumblebee Colonies are Disrupted by a Neonicotinoid Pesticide
3:00 pm	65-7	<i>Dutta B, Monaenkova D, Goodisman MD, Goldman DI; Georgia Institute of Technology</i>	Prey and mound disassembly, manipulation and transport by fire ant collectives
3:30 pm Coffee Break		Salons 8-9

1:30 PM – 3:15 PM	Session 66	Foothill G
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Reproductive Behavior

Chair: Jacob Lasala

1:30 pm	66-1	<i>Lasala JA, Hughes C, Wyneken J; Florida Atlantic University</i>	Potential for marine turtle promiscuity to counteract extreme environmental effects
1:45 pm	66-2	<i>Liotta MN, Abbott JK, Rios-Cardenas O, Morris MR; Ohio University, Lund University, Instituto de Ecologia</i>	Tactical Dimorphism as a Potential Indicator of Intra-locus Tactical Conflict in the Swordtail <i>Xiphophorus multilineatus</i>
2:00 pm	66-3	<i>Poorboy DM, Bowers EK, Bowden RM, Sakaluk SK, Thompson CF; Illinois State University, University of Memphis</i>	Effects of territory quality on reproductive allocation in female house wrens (<i>Troglodytes aedon</i>)
2:15 pm	66-4	<i>Beck ML, Açkay C, Sewall KB; Rivier University, Koc University, Virginia Tech</i>	An Experimental Manipulation of Badge Size in Song Sparrows: Consequences for Male Aggression and Hormone Profiles in Urban and Rural Habitats
2:30 pm	66-5	<i>Austin M, Iturralde P, West K, Dunlap A; University of Missouri, St. Louis</i>	The Best Laid Plans: Testing the Generality of Experimentally Evolved Oviposition Preference
2:45 pm	66-6	<i>Wright CM, Tibbetts EA, Pruitt JN; University of California, Santa Barbara, University of Michigan</i>	Exploring the effects of queen personality on fitness and colony success in paper wasps
3:00 pm	66-7	<i>Ishimatsu A, Mai VH, Martin KLM*; Nagasaki University, Pepperdine University</i>	Patterns of Fish Reproduction at the Interface Between Water and Air
3:30 pm Coffee Break		Salons 8-9

1:30 PM – 3:15 PM	Session 67	Foothill C
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Terrestrial Locomotion: Walk, Jump and Run

Chair: Clint Collins

1:30 pm	67-1	<i>Styga JM, Houslay TM, Wilson AJ, Earley RL; University of Alabama, University of Exeter-Penryn</i>	Ontogeny of the Morphology-performance Axis in the Amphibious, Self-fertilizing Hermaphroditic Fish (<i>Kryptolebias marmoratus</i>)
1:45 pm	67-2	<i>Grider-Potter N, Zeininger A; Arizona State University, Duke University</i>	Head stability and neck function during locomotion in <i>Varecia variegata</i>
2:00 pm	67-3	<i>Farley GM, Harrison JS, Wise MJ, Sutton GP, Patek SN; Duke University, Roanoke College, University of Bristol</i>	Leaping larvae: hydrostatic jumpers at the mm-scale
2:15 pm	67-4	<i>Kinsey CT, McBrayer LD; Georgia Southern University</i>	The Role of Forelimbs in Bipedal Running Lizards
2:30 pm	67-5	<i>Schwamer MJ, Lin DC, McGowan CP; University of Idaho, Washington State University</i>	Muscle Dynamics in Jumping Kangaroo Rats (<i>D. deserti</i>)
2:45 pm	67-6	<i>Collins CE, Hunter SL, McGowan CP; University of Idaho</i>	Biomechanical and performance tradeoffs in bipedal and quadrupedal turning strategies of Desert Kangaroo Rats

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3:00 pm **67-7** *Baier DB, Moritz S, Carney RM, Garrity B; Providence College, Brown University, University of South Florida, Boston University* Finding the Invisible Joint: Developing a Joint Coordinate System for the Alligator (*Alligator mississippiensis*) Coracosternal Joint

3:30 pm **Coffee Break** **Salons 8-9**

1:45 PM – 3:30 PM Session 68 Nob Hill A-B

Climate Change and Communities

Chairs: Roger Anderson, Nadejda Mirochnitchenko

1:45 pm **68-1** *Seroy SK, Grünbaum D; University of Washington* Individual and population level effects of ocean acidification on a model predator-prey system: bryozoan – nudibranch interactions in the Salish Sea

2:00 pm **68-2** *Mirochnitchenko NA, Stuber EF, Fontaine JJ; Nebraska Cooperative Fish & Wildlife Research Unit, University of Nebraska, US Geological Survey* Spatial mismatches between phylogenetic and functional diversity in Nebraska grassland bird communities

2:15 pm **68-3** *Anderson R, McMahon Q; Western Washington University* Food availability, feeding rate and body condition in desert lizards in contrasting climate conditions

2:30 pm **68-4** *Berke SK, Dorgan KM, Robertson A, Bell S, Caffray T, Weldin E, Budai S, Parker R, Gadeken K, Clemo W, Keller EL; Siena College, Dauphin Island Sea Lab, Univ of South Florida* Long-Term Changes In Infaunal Communities Following The Deepwater Horizon Event.

2:45 pm **68-5** *Pandori LLM, Sorte CJB; University of California, Irvine* The Weakest Link: Climate Change Vulnerability across Life Stages of Marine Invertebrates

3:00 pm **68-6** *Iyengar EV, Mayol M; Muhlenberg College* Comparative ecology of the native banana slug (*Ariolimax columbianus*) and a comparably-sized invasive species of terrestrial slug (*Arion rufus*) in Washington state

3:15 pm **68-7** *Sorte CJB, Bernatchez G, Pandori LLM, Silbiger NJ, Wallingford PD; Univ of California, Irvine, Cal State Univ, Northridge* Warming Tolerances and Predicted Distributional Shifts Differ by Species in a Diverse Intertidal Mussel Guild

3:30 pm **Coffee Break** **Salons 8-9**

1:30 PM – 3:15 PM Session 69 Nob Hill C-D

Population Differentiation

Co-chairs: Joel Havird, Nathan Whelan

1:30 pm **69-1** *Myers BM, Clark CJ, Burns KJ; San Diego State University, University of California, Riverside* Behavior and Morphology Indicate an Allen's (*Selasphorus sasin*) x Rufous (*Selasphorus rufus*) Hummingbird Hybrid Zone Centered in Southern Oregon

1:45 pm **69-2** *Havird JC, Noe GR, Link L, Torres A, Sloan DB; Colorado State Univ* Do Mitonuclear Interactions Prevent Hybridization in a Lineage with a History of Mitonuclear Coevolution?

2:00 pm **69-3** *Judy CD, Brumfield RT, Graves GR; National Museum of Natural History, SI, Louisiana State University* Morphological and Genetic Variation across a Narrow Hybrid Zone between Jamaican Endemic Streamertail Hummingbirds (*Trochilus polytmus* and *T. scitulus*)

2:15 pm **69-4** *Green B, Gosliner TM; California Academy of Sciences* A Tale of Two? Slugs: cryptic speciation and morphological variation in northeastern Pacific *Flabellina*

2:30 pm **69-5** *Michaelides SN, Kolbe JJ; University of Rhode Island* Independent Introductions and Sequential Founder Events Shape Genetic Differentiation and Diversity of the Invasive Green Anole (*Anolis carolinensis*) on Pacific Islands

2:45 pm **69-6** *Whelan NV, Siple BN, Galaska MP, Helms BH, Johnson PD, Halanych KM; US Fish and Wildlife Service, Auburn University, Lehigh University, Troy University, Alabama Department of Conservation and Natural Resources* Populations of Round Rocksnail (*Leptoxis ampla*), a Federally Threatened Freshwater Snail, Are Surprisingly Distinct

3:00 pm **69-7** *Griesemer CD, Grosberg RK, Morgan SG; University of California, Davis* Things Fall Apart: The Challenges in Maintaining Sibling Cohesion During Larval Dispersal in Marine Environments

3:30 pm **Coffee Break** **Salons 8-9**

1:30 PM – 3:30 PM

Session 70

Golden Gate C-1

Swimming with the Fishes

Chairs: Anabela Maia, Michael Fath

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| 1:30 pm | 70-1 | <i>Lucas KN, Tytell ED, Lauder GV; Harvard University, Tufts University</i> | The distribution of thrust and drag on a bluegill sunfish during steady swimming |
| 1:45 pm | 70-2 | <i>Maia A, Hellwig M; Eastern Illinois University, University of Rhode Island</i> | Median Fin Function in Juvenile Pallid Sturgeon |
| 2:00 pm | 70-3 | <i>Foster KL, Standen EM; Univ of Ottawa</i> | Fin and body neuromuscular coordination changes during walking and swimming in <i>Polypterus senegalus</i> |
| 2:15 pm | 70-4 | <i>Whitlow KR, Oufiero CO; University of Chicago, Towson University</i> | Escape response performance of gymnotiform and closely related body-caudal fin swimmers |
| 2:30 pm | 70-5 | <i>Fath M, Ripley D, Winwood-Smith H, Tytell ED, Johansen JL, Steffensen JF, Domenici P; Tufts University, University of Manchester, University of Queensland, University of Texas, Marine Science Institute, University of Copenhagen</i> | The Effects of Unsteady Flow on the Kinematics of Pectoral Fin Swimming in the Tube-snout (<i>Aulorhynchus flavidus</i>) |
| 2:45 pm | 70-6 | <i>Wainwright DK, Di Santo V, Lauder GV, Wang J, Dong H; Harvard University, University of Virginia</i> | Tuna finlet function and performance: kinematics, physical models, and fluid dynamics |
| 3:00 pm | 70-7 | <i>Block BA, Gleiss A, Cromie M, Dimitrov M, Schallert R, Wilson S, Dale J; Stanford U</i> | Geared for the Open Ocean: The Biomechanics of Swimming in Bluefin Tunas |
| 3:15 pm | 70-8 | <i>Lauder GV, Akanyeti O, Castro-Santos T, Disanto V, Dong H, Goerig E, Liao J, Wainwright DK; Harvard Univ, Aberystwyth University, USGS SO Conte Anadromous Fish Research Center, Univ of Virginia</i> | Comparative Undulatory Kinematics in Swimming Fishes: Quantitative Database from a Diversity of Species |
| 3:30 pm | ..... | Coffee Break | Salons 8-9 |

1:30 PM – 3:15 PM

Session 71

Golden Gate C-2

Mitochondria, ROS, and Hypoxia/Anoxia

Chairs: Ione Hunt Von Herbing, Emily King

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| 1:30 pm | 71-1 | <i>Graham JL, Bauer CM, Heidinger BJ, Ketterson ED, Greives TJ; North Dakota State Univ, Adelphi Univ, Indiana Univ</i> | Accelerated aging as a cost of early reproduction in a wild, free-living songbird |
| 1:45 pm | 71-2 | <i>Mohamed A, Stowers S, Weikel A, Colon E, Clark K, Dameron M, Redmond S*; Radford University</i> | Vespa amino acid mixture enhances the proton motive force leading to oxidative stress which is reversible by antioxidants and uncouplers |
| 2:00 pm | 71-3 | <i>Barts N, Nieves N, Tobler M; Kansas State University</i> | Metabolic Physiology of Extremophile Fish Inhabiting Hydrogen Sulfide-Rich Environments |
| 2:15 pm | 71-4 | <i>Zajic DE, Podrabsky JE; Portland State University</i> | The role of γ -aminobutyric acid metabolism in survival of anoxic and desiccated annual killifish embryos |
| 2:30 pm | 71-5 | <i>Campbell JB, Andersen MK, Overgaard J, Harrison JF; Arizona State University, Aarhus University</i> | Non-conventional anoxia tolerance: adult <i>Drosophila</i> outlive larvae despite inferior ATP and hemolymph [K ⁺] maintenance |
| 2:45 pm | 71-6 | <i>King EE, Stillman JH, Williams CM; Univ of California, Berkeley</i> | Metabolic Response to Progressive Hypoxia in an Invasive Freshwater Snail |
| 3:00 pm | 71-7 | <i>Hunt Von Herbing I, Schroeder-Spain K; University of North Texas, Texas A&M University Corpus Christi</i> | Hb Polymerization in Red Blood Cells of Marine Fishes: A case of phenotypic plasticity and environmental sensing? |
| 3:30 pm | ..... | Coffee Break | Salons 8-9 |

1:30 PM – 2:45 PM Session 72 Foothill E

Sensory Biology - Multimodal Sensing and Behavior

Chair: Sharri Zamore

1:30 pm	72-1	<i>Zamore S, Socha JJ; Virginia Tech</i>	Head wagging and visual acuity in flying snakes (<i>Chrysopelea</i>)
1:45 pm	72-2	<i>Zurek DB, Echeverri SA, Long SM, Jakob E, Morehouse NI; University of Cincinnati, University of Pittsburgh, University of Arizona Tucson, University of Massachusetts Amherst</i>	How Male Courtship Displays Manipulate Female Gaze In Colorful Jumping Spiders
2:00 pm	72-4	<i>Swafford AJM, Oakley TH; UC Santa Barbara</i>	Multimodal Sensorimotor System in Unicellular Zoospores of a Fungus
2:15 pm	72-5	<i>Kalyanasundaram P, Willis M; Case Western Reserve University</i>	Odor arrival side discrimination in <i>Manduca sexta</i>
2:30 pm	72-6	<i>Mangalam M; University of Georgia</i>	Haptic Perception in Motor Control, at Land, in Water, in Air, and in Space, of a Fish's Fin, a Flamingo's Neck, a Monkey's Tail, a Snake's Spine, and a Bat's Wing
3:30 pm	.....	Coffee Break	Salons 8-9

7:00 PM – 8:00 PM BERN Salon 7

Bern Lecture	<i>Norris DO; University of Colorado at Boulder</i>	Five Decades of Environmental Comparative Endocrinology
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FRIDAY POSTER SESSION P2

Salons 8-9, 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am; Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm; Odd # - Authors present from 4:30-5:30 pm

Reproductive Physiology

- | | | |
|--------------|---|---|
| P2-14 | <i>Valle S, Kieffer N, Eagleman D, Deviche P; Arizona State University</i> | Effects of Altered Energy Balance on Reproductive Development in the Male House Finch (<i>Haemorrhous mexicanus</i>): The Role of Metabolic Fuels |
| P2-15 | <i>Brusch IV GA, Kaminsky B, Lourdaís O, Denardo DF; Arizona State University, Centre d'Etudes Biologiques de Chizé, France</i> | The Relationship Between Maternal Hydration and Immune Function: Impacts on Egg and Offspring Quality |
| P2-16 | <i>Bond EC, Forsgren KL; California State University, Fullerton</i> | Structural Complexity of Copulatory and Associated Reproductive Structures within the Family Embiotocidae (Teleostei) |
| P2-17 | <i>Shero MR, Adams GP, McCorkell RB, Kirkham AL, Burns JM; University of Alaska, Anchorage, University of Saskatchewan, University of Calgary</i> | Weddell seal Reproductive Phenology Challenges the Notion that All Pinnipeds have Embryonic Diapause |
| P2-18 | <i>Khurshid S, Ziauddin L, Hall IC; Benedictine University</i> | Endocrine regulation of reproduction in amphibians |
| P2-19 | <i>Curry JE, Navara KJ; University of Georgia</i> | Effects of Increased Omega-6 and Omega-3 Fatty Acids on Primary Sex Ratio in Japanese Quail, <i>Coturnix japonica</i> |
| P2-20 | <i>Rouzbehani M, Horr DM, Ivanov BM, Payne AA, Vega J, Wang H, Johnson MA; Trinity University</i> | Physiological Traits Predict Behavioral Activity in Female Lizards |
| P2-21 | <i>Hoopman AR, North HA*, Rajamohan A, Bowsher JH; North Dakota State University, USDA-ARS</i> | Toxicity Assessment of Glyphosate on Honey Bee (<i>Apis Mellifera</i>) Spermatozoa |
| P2-22 | <i>Josefson CC, Sirman AE, Hood WR; Auburn University, North Dakota State University</i> | The role of maternal protein intake on partitioning of resources among offspring |
| P2-23 | <i>Deal C, Tamone ST; University of Alaska Southeast</i> | Purification and characterization of vitellogenin from ovaries of the protandric shrimp <i>Pandalus platyceros</i> |

Complementary to S4: Science Through Narrative: Engaging Broad Audiences

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|--------------|--|--|
| P2-24 | <i>Santos GP, Lepore T; Raymond M. Alf Museum of Paleontology</i> | Accessible SciComm: Utilizing Technology to Create an Inclusive and Accessible Science Narrative |
| P2-25 | <i>Schmidt C, Hessenberger DSI; University of Manitoba, Frontiers Media SA</i> | Getting Creative with Science Storytelling and Social Media |
| P2-26 | <i>Reddy MS; Univ of Virginia, Charlottesville</i> | The Bird-Feeder Project: Combining Science and Poetry to Further Interdisciplinary Dialogue |
| P2-27 | <i>Krieger D, Roberts S; PERCH, University of Pennsylvania</i> | Using the art practice of play to communicate legged robotics research concepts |
| P2-28 | <i>Walters LJ, Gibbs V; University of Central Florida</i> | Oyster Storytelling Yoga: Engaging Children and Adults to Care about Oyster Reefs and Estuaries |

Complementary to S6: Illuminating the Evolution of Endocrine System Variation Through Large-Scale Comparative Analyses

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|--------------|---|---|
| P2-30 | <i>Ryan TA, Vitousek MN; Cornell University</i> | Using a Large-scale Database to Understand Impacts of Life-history and Phylogeny on a Known Physiological Relationship: Re-examining Corticosterone and Molt in Birds |
| P2-31 | <i>Anderson-Buckingham S, Bauer C, Fudickar A, Abolins-Abols M, Atwell J, Ketterson E, Greives T; North Dakota State Univ, Adelphi Univ, Indiana Univ</i> | Differential expression of hypothalamic genes in juncos (<i>Junco hyemalis</i>) during gonadal development: implications for regulation of timing of breeding |

Hormones, Growth, and Development

- P2-32** Gifford ME, Robinson CD; University of Central Arkansas Effects of exogenous T3 exposure on embryonic and hatchling phenotypes in an oviparous lizard
- P2-33** Hawkins TM, Archer J, Davis JE; Radford University Effects of Royal Jelly in Combination With Juvenile Hormone Agonists and Antagonists on *Drosophila melanogaster*
- P2-34** Heck MJ, Hatle JD*; Univ of North Florida Neuropeptide F, short Neuropeptide F, or feeding level each can regulate oxidative damage of proteins in grasshoppers
- P2-35** Glaser FL, Cordova KL, Hack NL, Journey ML, Resner EJ, Hardy KM, Beckman BR, Lema SC; Cal Poly, San Luis Obispo, NOAA Northwest Fisheries Science Center Response of the insulin-like growth factor (IGF) system to nutritional stress in juvenile copper rockfish *Sebastes caurinus*
- P2-36** Chabria T, Massena K, Funk A, Danisewicz E, Thom Z, Mass S; State University of New York at New Paltz Interaction of BHT with BPS in Planaria
- P2-37** Paitz RT, Campbell NA, Angles R, Bowden RM, Casto JM; Illinois State University Does mother really call the shots?: Rapid in ovo and in vitro metabolism of testosterone in bird eggs
- P2-38** Keer S, May CM, McMenamin S, Hernandez LP; George Washington University, Boston College The role of thyroid hormone in skeletogenesis of zebrafish
- P2-39** Finerty CJ, Warriner TR, Heath DD, Semeniuk CAD, Love OP; University of Windsor, GLIER University of Windsor A Transcriptomics Approach to Examining the Effects of Pre-natal Cortisol and Increased Water Temperatures on Performance in Chinook Salmon (*Oncorhynchus tshawytscha*)
- P2-40** Rosero M, Fuse M; San Francisco State University Assessing changes in the Juvenile Hormone downstream signal, Kruppel Homolog 1, after damage-induced developmental delays in the tobacco hornworm, *Manduca sexta*.
- P2-41** Kanarsh PI, Rosero MA, Zavaleta JA, Fuse M; San Francisco State University Developing a method of imaginal disc transplants in the hornworm, *Manduca sexta*
- P2-42** Zavaleta JA, Rosero M, Fuse M; San Francisco State University Regulation of allometric growth after imaginal disc damage in the tobacco hornworm, *Manduca sexta*

Hormones and Stress

- P2-43** Rahman MDS, Hernández E, Vázquez O, Rangel V, Cantú E; University of Texas Rio Grande Valley Impacts on global warming on gonadal functions in Atlantic sea urchin
- P2-44** Fuller RG, Romero LM; Tufts University Correlations between temperature, glucocorticoid levels, and post-captivity escape behavior in the eastern painted turtle, *Chrysemys picta picta*
- P2-45** Daddino AB, Diamond KM, Penrod L, Johansen JL, Steffensen JF, Domenici P; Univ of San Francisco, Clemson Univ, Florida Institute of Technology, UT Austin Marine Science Institute, Univ of Copenhagen, IAMC-CNR Oristano Does the Form of Stress Matter? A Comparison of Pacific Sand Lance (*Ammodytes hexapterus*)
- P2-46** Uehling JJ, Taff CC, Vitousek MN; Cornell University Natal environment influences adult stress responsiveness in free-living birds
- P2-47** Swanson RE, Krause JS, Perez JH, Wingfield JC, Lau HJ, Meddle SL, Snell KRS; Univ of California, Davis, Univ of Edinburgh 11 β -Hydroxysteroid Dehydrogenase Antagonists Administered Centrally and Peripherally Affect Stress Physiology in Wild and Captive White-Crowned Sparrows (*Zonotrichia leucophrys gambelii*)
- P2-48** Ibarra M, Roberts B, Loya A, Okwunwanne Z, Soto PL, Harris BN*; Texas Tech University, Louisiana State University Relationship among corticosterone, object recognition performance, and brain neuropathology in an APP^{swe}/PS1^{dE9} mouse model of Alzheimer's disease
- P2-49** Simpson DY, Telemeco R, Langkilde T, Schwartz TS; Univ of Auburn, Pennsylvania State University Corticosterone response of female fence lizards (*Sceloporus undulatus*) exposed to high temperatures
- P2-50** Jugan J, Dunckel K, Chambers DL; Saint Mary's College of California Endo- and Ectoparasitism Associated with Elevated Androgens and Corticosteroids in Male Cost Range Fence Lizards (*Sceloporus occidentalis bocourti*)
- P2-51** Vernasco BJ, Horton BM, Ryder TB, Moore IT*; Virginia Tech, Millersville University, Smithsonian Institute Characterizing the androgen response to the acute stress of capture and restraint in free-living male wire-tailed manakins, *Pipra filicauda*.

- P2-52** Németh Z, Graves E, Ramenofsky M; University of Debrecen, Univ of California, Davis Can Respiratory Rate Be a Useful Tool for Assessing the Adrenocortical Stress Response in the Field?
- P2-53** Cruz P, Black T, Fofah O, Ortiz C, Barthell J, Agosto J, Giray T, Abramson C; Univ Puerto Rico Rio Piedras, Oklahoma State Univ, Univ Central Oklahoma The Effect of Uncontrollable Stress on Plasticity and Stress Related Gene Expression in the Honey bee, *Apis mellifera*
- P2-53.1** Cummings CR, Kahn NY, Murray M, Ellison TJ, Welch CN, Hernandez SM, Navara KJ; University of Georgia The Effects of Urbanization on Stress and Immunity in White Ibis (*Eudocimus albus*)

Host-Parasite Interactions/Host Pathogen Populations

- P2-54** Leung N, De Ley I, Paine T; University of California, Riverside Molecular Barcoding and Pathogenicity of Unknown *Phasmarhabditis* (Nematoda) Species from Earthworms
- P2-55** Campbell MJ, Harper GR; Hendrix College Evolution of Hemorrhagic Potential in *Arenaviridae*: A Bioinformatics Analysis of Old and New World Arenaviruses
- P2-56** Perez AC, Chandler CH; State University of New York at Oswego Determining the frequency of Wolbachia infections within three wild-caught terrestrial isopod species (*Porcellio laevis*, *Porcellio scaber*, and *Trachelipus rathkei*)
- P2-57** Boateng AA, Yeung NW, Kim JR, Hayes KA; Howard University, Bernice Pauahi Bishop Museum Intermediate Hosts of *Angiostrongylus cantonensis* in Invasive Hawaiian Land Snails from the Island of Maui
- P2-58** Liu RM, Zylberberg M, Van Hemert C, Handel CM, Derisi JL; University of California, Santa Barbara, University of California, San Francisco, US Geological Survey, Alaska Science Center Elucidating the cause of epidemic beak deformities across species: *Poecivirus* in North American birds with Avian Keratin Disorder
- P2-59** Shannon RP, Bolek MG; Oklahoma State University Trypanosome Isolation From Frog Blood Using Anion Exchange Chromatography
- P2-60** Huey B, Gies RA*, Batac F, Beck J, Cohen CS; Romberg Tiburon Center, San Francisco State University, CA Dept of Fish & Wildlife - Office of Spill Prevention & Response, Oikonus Ecosystem Knowledge Identification of Acanthocephalan Parasites from Southern Sea Otters and Sea Birds: A Comparison of Molecular and Morphological Methods
- P2-61** Hulbert AC, Garcia J, Refsider JM; Auburn University; Lake Erie Center, University of Toledo The Relationship Among Parasites, Algal Growth, and Immune Activity in Freshwater Turtles
- P2-62** Robbins K, Maslakova SA, Von Dassow G; Oregon Institute of Marine Biology, University of Oregon A microsporidian infests oocytes of the ribbon worm *Maculaura alaskensis*
- P2-63** Conn CE, Martinson EO, Werren JH, Kovacs JL; Spelman College, University of Georgia, University of Rochester Investigating the role of horizontal gene transfer in adaptation to hematophagy
- P2-64** Goepfner SR, Koch RW; Oklahoma State University Life history traits of a freshwater snail with acanthocephalan and trematode infections
- P2-65** Martin GG, Stamnes S, Fields N, Sidebottom R; Occidental College Hemocyte nodule formation and efficiency in the Vetigastropod, *Megathura crenulata*

Metabolism

- P2-66** Cravens ZC, Boyles JG; Dept of Zoology, Southern Illinois Univ, Carbondale Shedding Light on Refueling Rates in an Insectivorous Bat Community
- P2-67** Sargent BA, Boyden HM, Smiley JT, Roberts KT, Rank NE, Dahlhoff EP*; Santa Clara University, White Mountain Research Center, Sonoma State University Effects of decadal climate change on population dynamics and metabolic physiology of a montane willow beetle
- P2-68** Karjasevic A, Milano L, Nagle FS, McCue MD, Hatle JD; Univ of North Florida, St. Mary's Univ Texas Dietary restriction increases oxidation of some branched-chain amino acids in grasshoppers
- P2-69** Reagan E, Yacoub L, Muñoz-Garcia A; Ohio State University at Mansfield The Link Between Cellular Metabolism and Resource Allocation to Reproduction: The Role of Sirtuins in the Regulation of Organ Activity
- P2-70** Maresh JL, Corl A, Costa DP, Law CJ; West Chester University, Univ of California, Berkeley, Univ of California, Santa Cruz Predictors of Metabolic Rates in Aquatic Mammals
- P2-71** Stephan A, Ky-Fries K, Ngo A, Pujade Busqueta L, Abdollahi E, Sandhu G, Crocker D, Khudyakov J; University of the Pacific Metabolic Gene Expression in Blubber of Fasting Elephant Seals
- P2-72** Mody M, Maan R*, Banerjee R, Deyarmin J, Heckman R, Holser R, Costa D, Khudyakov J; University of the Pacific, University of California, Santa Cruz Blubber Proteome Response to Fasting in Adult Female Elephant Seals

- P2-73** Alfaro G, Harfush M, Crocker D; Sonoma State University, Centro Mexicano de la Tortuga
Physiological Analysis on the Diving Capacity of the Olive Ridley Sea Turtle, *Lepidochelys olivacea*
- P2-74** Welling EM, Burnett LE, Denson M, Watson A, McElroy E; College of Charleston, South Carolina Department of Natural Resources
Specific dynamic action in juvenile cobia, *Rachycentron canadum*: a fast-growing marine fish
- P2-75** Weikel A, Colon E, Redmond S; Radford University
The effects of Vespa Amino Acid Mixture (VAAM) and 2,4 Dinitrophenol (DNP) on mitochondrial metabolic reactions and the production of ATP
- P2-76** Ellison AD, Pace DA; Cal State Univ, Long Beach
Determining the Relationship of Protein Metabolism and Phenotypic Plasticity in Larvae of the Sand Dollar, *Dendraster excentricus*
- P2-77** Bhardwaj E, Berg O, Müller UK, Bushoven JT; CSU Fresno
Can metabolite profiling help explore what causes the small genome in bladderwort?
- P2-78** Rippamonti JD, Dzialowski EM; University of North Texas
The Role of Thyroid Hormone on Development of Endothermy in White Leghorn Chickens (*Gallus gallus*)

Digestion & Energetics

- P2-80** Richards HM, Watson CM; Midwestern State University
Digestive Efficiency and Physiology of the Texas horned lizard (*Phrynosoma cornutum*) in North Texas
- P2-81** Cannedy JP, Watson CM, Shipley M; Midwestern State University
The effects of nicotine concentration on the physiology and performance of the tobacco hornworm, *Manduca sexta*
- P2-82** Arias L, Atwood A, Dudley E, Davis JE; Radford University
Modulation of vegetative growth by frass derivatives from Madagascar Hissing Cockroaches (*Gromphadorhina portentosa*)
- P2-83** Jahan I, Colombo RE, Maia A; Eastern Illinois University
Effect of Increased Temperature in Freshwater Fish Energetics
- P2-84** Patton ST, Clay DY, Jacobs EP, Marias M, Gibbs AG; Nevada State College, UNLV, SUNY Fredonia, Georgetown Univ
Effects of Diet on Genetically Obese *Drosophila*
- P2-85** Gibbs AG, Benito S, Nevaquaya V; Univ of Nevada, University of Science and Arts of Oklahoma
Starvation recovery in starvation-selected *Drosophila*
- P2-86** Gibbs AG, Parmar N, Patel P, Hardy CM; UNLV
Divergent responses to experimental selection for starvation resistance
- P2-87** Plasman M, McCue MD*, Reynoso VH, Terblanche JS, Clusella-Trullas S; Stellenbosch University, South Africa and Universidad Autónoma de Tlaxcala, St. Mary's University, Universidad Nacional Autónoma de México, Stellenbosch University
Temperature alters Digestive Energetics and Fuel Selection in a Lizard
- P2-88** McGuire LP, Fuller NW, Haase CG, Silas KA, Olson SH; Texas Tech Univ, Montana State Univ, Wildlife Conservation Society
Regional Variation in Hibernation Phenotype: *Myotis velifer* Hibernation at Southern Latitudes and Implications for White-Nose Syndrome

Sexual Selection

- P2-89** Huyghe K, Van Eeckhoven J, Van Damme R; Univ of Antwerp, Univ of Leeds
Male phenotypes produced by artificial intra- or intersexual selection in guppies
- P2-90** Conroy LP, Roff DA; University of California, Riverside
Effects of Mating Status on Female Preference in the Cricket *Gryllus firmus*
- P2-91** Khalil S, Welklin JF, McGraw KJ, Webster MS, Karubian J; Tulane Univ, Cornell Univ, Arizona State Univ
Exploring the Link Between Circulating Carotenoids and Signal Expression in the Red-backed Fairywren
- P2-92** Menon A, Swaddle JP, Cristol DA; College of William & Mary
The Effects of Mercury on Sperm Quality and Fertility in the Male Zebra Finch
- P2-93** Hall HR, Kahrl AF, Johnson MA; Trinity University, Stockholm University
The Evolution of Testis and Sperm Morphology in *Anolis* Lizards
- P2-94** Henson KE, Carter AJR; California State University, Long Beach
Effect of Previous Exposure to a Female of a Single Phenotype on Subsequent Male Mate Choice in *Drosophila melanogaster*

- P2-95** *Hutchinson JR, Sumner-Rooney L, Regnault S; Royal Veterinary College, Structure & Motion Lab, Oxford University Museum of Natural History* Convergent Evolutionary Origins of the “Predigits” of Mammals
- Cladistics & Phylogenetics**
- P2-96** *Smirnoff DS, Gosliner TM; California Academy of Sciences* First Molecular Phylogeny of the Nudibranch Family Goniodorididae with an Examination of the Monophyly of Its Main Genera
- P2-97** *Ledesma D, Scarpetta S; University of Texas* A fossil alligator lizard from southern California
- P2-98** *Grande TC, Wilson MVH*, Borden WC; Loyola University Chicago, University of Alberta, Saginaw Valley State University* The 'Living Fossil' Acanthomorph Fish Genus *Polymixia*: Osteology, Phylogeny, Diversity, and Systematic Position
- P2-99** *Torres Jarin JM, Gosliner TM; San Diego State University, California Academy of Sciences* Dancing with Dorids: Phylogenetic Systematics of Discodorid Nudibranchs in the Genus *Rostanga*
- P2-100** *Suydam RC, Santagata S; Dartmouth College, Long Island University* Morphological Diversity and Phylogeny of Antarctic Bryozoans
- P2-101** *Mincey KA, Melton AE, Hall ND, Goertzen LR, Boyd RS; Auburn University, University of Florida* Plastid genome variation within the nickel hyperaccumulator *Streptanthus polygaloides* (Brassicaceae) and its phylogenetic implications
- P2-102** *Cabrera C, Debiasse M, Ryan JF; Whitney Laboratory for Marine Bioscience, University of Florida, University of Miami* Reanalyses of sponge homeobox genes suggest *Hox* and *ParaHox* genes arose after sponges diverged from other animals.
- P2-103** *Provencher CA, Plachetzki DC, Pankey S; University of New Hampshire* Phylogenetic Focusing Reveals the Evolution of Eumetazoan Opsins
- P2-104** *Ohdera AH, Ames CL, Dikow RB, Hernandez AM, Busby B, La S, Pirro S, Medina M, Collins AG, Ryan JF; Pennsylvania State University, National Museum of Natural History, Smithsonian Institution, Data Science Lab, Whitney Laboratory for Marine Bioscience, University of Florida, National Center for Biotechnology Information, Simon Fraser University* Box, stalked and upside-down? Draft genomes from diverse jellyfish (Cnidaria, Acraspeda) lineages: *Alatina alata* (Cubozoa), *Calvadosia cruxmilitensis* (Staurozoa), and *Cassiopea xamachana* (Scyphozoa)
- P2-105** *Whelpley JM, Paulay G, Ryan JF; Whitney Laboratory for Marine Bioscience, University of Florida, Florida Museum of Natural History* Phylogenomic analysis of 21 species of sea cucumber (Holothuroidea: Echinodermata) and the development of target-enrichment baits for exon capture
- P2-106** *Ryan JF, Debiasse MB; Whitney Laboratory for Marine Bioscience, University of Florida* Phylotocol: Promoting transparency and overcoming bias through publicly posted, a priori methodological protocols in phylogenetics
- P2-108** *Hellwig MD; University of Rhode Island* Inferring Gene Ontology from Phylogenetic Species Displacement
- P2-109** *Debiasse M, Francis W, Thuesen E, Haddock S, Ryan J; University of Florida, Whitney Lab for Marine Bioscience, Ludwig-Maximilians-Universität München, Evergreen State College, Monterey Bay Aquarium Research Institute* DEEPC: The deep, dark, genomic secrets of ctenophores
- P2-110** *Cannon JT, Kingston ACN, Kocot KM, Eernisse DJ, Oakley TH, Speiser DJ; University of California, Santa Barbara, University of South Carolina, University of Alabama, California State University, Fullerton* Phylogenomic evidence that chiton “shell eyes” may have recently evolved from shell eyespots
- P2-111** *Thompson EM, Hill RI; University of the Pacific* Testing species hypothesis in *Speyeria* butterflies
- P2-112** *Amundson LM; California Academy of Sciences* A phylogenetic approach to assessing morphological and molecular divergence in ground beetles of genus *Promecognathus* (Coleoptera: Carabidae: Promecognathini)
- P2-113** *Wynd BM, Demar DG, Wilson GP; Virginia Tech, Univ of Wash* Diversity of Chondrichthyes through the uppermost Cretaceous Hell Creek Formation of Garfield County, Montana, with implications for the Cretaceous-Paleogene mass extinction in freshwater environments
- Comparative Genomics**
- P2-114** *Nyung JL, Everson CN, Roy SW; San Francisco State University* A Bioinformatics Approach to Uncovering the Role of Alternative Splicing in Plants

- P2-115** Manahan DN, Simison WB, Russack J, Henderson JB; Univ of Southern California, California Acad of Sciences De novo genome assembly and annotation of the red-eared slider (Reptilia: Emydidae: *Trachemys*): Advancing our understanding of hybridization and introgression
- P2-116** Vaccaro-Garska KM, Kocot KM, Janosik AM; University of West Florida, University of Alabama Sexual dimorphism in *Coronis scolopendra* (Stomatopoda): do males and females see the world differently?
- P2-117** Macrander J, Panda J, Janies DA, Daly M, Reitzel AM; Univ of North Carolina at Charlotte, Ohio State University Venomix: A Simple Bioinformatic Pipeline for Identifying and Characterizing Toxin Gene Candidates from Transcriptomic Data.
- P2-118** Dwivedi V, Tripathi C, Mishra H, Khurana H, Lal R; Dyal Singh College, University Of Delhi Comparative Genomics of *Thermus* spp. and Enzymatic Potential of *Thermus parvatiensis*, Isolated from a Hot Water Spring Located Atop the Himalayan Ranges, India
- P2-119** Clifton B, Jayaswal V, Jimenez J, Nguyen K, Magie R, Yeh SD, Ranz JM; University of California, Irvine, University of Sydney, National Central University Significant Structural and Sequence Variation within a Recent Species-Specific Gene Expansion with an Influence on Sperm Competition: *Sdic*
- P2-120** Ivanina AV, Sokolova IM; UNCC, University of Rostock Species-specific differences of immune- and biomineralization-related transcriptome in two oysters' congeners
- P2-121** Henderson EC, Clark CJ, Brelsford A; Univ of California, Riverside Genome-wide Analysis of Differentiation in a Pair of Hybridizing Hummingbirds
- P2-122** Kustra MC, Macrander J, Reitzel AM, Martindale MQ, Skerget S, Karr TL; Univ of Virginia, Univ of North Carolina, Charlotte, Univ of Florida, Whitney Lab, Translational Genomics Research Inst, Kyoto Inst of Technology Conservation of Proteins in the Evolution of Animal Sperm: a Cnidarian Perspective
- P2-123** Concepcion GT, Peluso P, Bump P, Gonzalez P, Lowe CJ, Rokshar DS, Rank DR; Pacific Biosciences, Hopkins Marine Station - Stanford Univ, PUniv of California, Berkeley De novo Assembly of the highly heterozygous *Schizocardium californicum* genome using DNA isolated from Sperm
- P2-124** Clardy TR; King Fahd Univ of Petroleum and Minerals Photophore structure in larval *Vinciguerria mahabiss* Johnson and Felts 1984 (Stomiiformes: Phosichthyidae)
- P2-125** Barreira SN, Baxevanis AD; National Institutes of Health Exploring the Role of Large Tandem DNA Repeats in the Context of Regeneration

Population Genetics

- P2-127** Brewer VB, Mabry KE, Sewall KB; New Mexico State University, Virginia Polytechnic Institute and State University Effects of Urbanization on Song Sparrow Genetic Structure
- P2-128** Jaffe NJ, Cohen CS; San Francisco State University Comparing Phylogeography of a Direct-Developing Sea Star at Multiple Mites Differentially Affected by Sea Star Wasting Disease
- P2-129** Rawson P, Rice L, Lindsay S; University of Maine, Orono Molecular and Morphological Analysis of Bivalve Shell Borers in the Genus *Polydora* from the Eastern U.S.
- P2-131** Rivera HE, Cohen AL, Baums IB, Tarrant AM, Thompson JR, Devlin-Durante M, Barkley HC, Drenkard E, Mollica NR, Young C; Woods Hole Oceanographic Inst, Pennsylvania State Univ, Massachusetts Inst of Technology Genetic connectivity of *Porites lobata* in the marine protected areas of the central Equatorial Pacific
- P2-132** Gray LA, Cohen CS; MacAlester College, San Francisco State University, Romberg Tiburon Center Genetic Variation in Elongation factor 1-alpha in *Leptasterias* Associated with 'Sea Star Wasting Disease'
- P2-133** Ayyagari S, Caballero S, Hines E, Cohen CS; San Francisco State University, Universidad de los Andes Assessing Genetic Diversity in the Irrawaddy Dolphin (*Orcaella brevirostris*)
- P2-134** Thill VL, Teglas MB, Feldman CR; Univ of Nevada, Reno You Lose, Spidey! Evidence for Resistance to Black Widow Spider Venom in Sympatric Lizards
- P2-135** Goswami P, Treidel LA, Williams CM; UC Berkeley Differences observed in timeline of investment in reproduction or muscle maintenance with morph and sex in a wing polymorphic cricket, *Gryllus lineaticeps*
- P2-136** Haye PA, Segovia NI, Gallardo-Escárate C; U Católica del Norte, Depto Biología Marina, INCAR, U de Concepción Seascape Genomics in the Tunicate *Pyura chilensis*

- P2-137** Schraiber JG; Temple University
Assessing the Relationship Between Ancient and Modern Populations
- P2-138** Wolf CJ, Sasser KT, Senner NR, Cheviron ZA; Univ of Montana
Phylogeography of *Peromyscus maniculatus* across the Colorado Front Range
- Population Ecology**
- P2-139** You Mak KT, Juhl AR, Mak K; Barnard College of Columbia University, Lamont-Doherty Earth Observatory of Columbia University
Effects of crude oil on the balance of autotrophy and heterotrophy in the Hudson River Estuary
- P2-140** Thatje S, Smith KS, McClintock JB, Moksnes PO, Havenhand JN, Aronson RB; University of Southampton, University of Exeter, University of Alabama at Birmingham, University of Gothenburg, Florida Institute of Technology
Bathyal king crabs face no thermal barrier to emergence in Antarctica
- P2-141** Dunn PO, Whittingham LA; Univ of Wisconsin - Milwaukee
Effects of Changing Wind Speed on the Breeding Success of an Aerial Insectivore
- P2-142** Tokash AT, Roosenburg WM; Ohio University, Athens
Within and Among Year Variation in Reproductive Output from Two Populations of the Diamond-backed Terrapin, *Malaclemys terrapin*
- P2-143** Pavlick CR, Emily BR, Erika MJ, Rivera-Figueroa V, Salaguinto TC, Fernandez A, Hranitz JM, Gonzalez VH, Petanidou T, Tcheulin T, Barthell JF; Bloomsburg University, University of Massachusetts, Salem College, University of Puerto Rico, Whitman College, University of Baltimore
Removal of a Specialist Pollinator on Field Bindweed Reveals Competitive Release for a Generalist Pollinator
- P2-144** Lopez T, George SB; Georgia Southern University
Is Offspring Fitness Linked to Seasonal Changes in a Local Salt Marsh?
- P2-145** Sanchez K, Seitz M, Timko S, Thompson L, Grayson K; Univ of Richmond
Population Structure of the Red Backed Salamander near the Southern Range Edge
- P2-146** Sridharan VK, Jackson D, Hein AM, Danner EM, Lindley ST; Univ of California, Santa Cruz, Eastern Resources Group, Inc., National Marine Fisheries Service
Abstracting Micro-Scale Fish Movements into a System-Scale Migration Model for an Engineered Urban Estuary
- Community Ecology**
- P2-147** Torjman BZ, Iyengar EV; Muhlenberg College
Ecological Ramifications of Snail Shell Use by Hermit Crabs
- P2-148** Stockey RG, Sperling EA; Stanford University
How Well Do Environmental Parameters Preserved In The Geologic Record Describe Benthic Ecological Niches?
- P2-149** Burgad AA, Adams GL, Adams R; University of Central Arkansas
Patterns of beta diversity and spatial structure of stream fish communities in two stream networks
- P2-150** Brown ER, Pavlick CR, Petanidou T, Tcheulin T, Gonzalez VH, Agosto-Rivera JL, Hranitz JM, Barthell JF; University of Massachusetts Amherst, Bloomsburg University of Pennsylvania, University of the Aegean, University of Kansas, University of Puerto Rico
Temporal Niches of Two Pollinating Bees of Field Bindweed (*Convolvulus arvensis*, Convolvulaceae)
- P2-151** Fernandez A, Petanidou T, Tcheulin T, Gonzalez VH, Hranitz JM, Agosto J, Barthell JF; University of Maryland, Baltimore County, University of the Aegean, University of Kansas, Lawrence, Bloomsburg University of Pennsylvania, University of Puerto Rico, Rio Piedras
Pollen Dynamics of Field Bindweed and Competitive Release in Pollen Loads of a Generalist Pollinator in the Mediterranean
- P2-152** Lindsay S, Deon H, Holmes S, Miller E, Silverbrand S, Rawson P; University of Maine, Orono
Surveying Benthic Invertebrate Communities Associated with Oyster Aquaculture Sites in Maine
- P2-153** Westerman EL, Dijkstra JA, Harris LG; University of Arkansas, Fayetteville, University of New Hampshire
Climate change, sex, and community state changes in the Gulf of Maine
- P2-154** Vizina RM, Bergsma GS; University of California, Monterey Bay
Comparison of the Ecological Communities that Reside in High Lichen vs. Low Lichen Oak Woodlands
- P2-155** Dunckel K, Jugan J, Chambers DL; Saint Mary's College of California
Impact of Community Dynamics on Osmobiosis in Tardigrades (Phylum Tardigrada)
- P2-156** Harrison T, Goto R, Boyle M, O'Foighil D; University of Michigan, Kyoto University, Smithsonian Marine Station
How do seven commensal bivalves share the same stomatopod host?

- P2-157** Wells CD, Rautu TS, Sebens KP; University of Washington, Friday Harbor Laboratories The role of chemical signals in locating prey of *Dermasterias imbricata* and size-dependent predation on *Metridium farcimen*
- P2-158** Perryman DC, Pandit MM, Grindstaff JL; Oklahoma State University Effects of Supplemental Feeding on Nesting Success of Eastern Bluebirds, *Sialia sialis*

Biophysical Ecology

- P2-159** Hoyven Cisneros IN, Shankar A, Powers DR; George Fox University, Stony Brook University Patterns of Nighttime Body-Temperature Regulation in Hummingbirds
- P2-160** Miller LP, Dowd WW; San Jose State University, Washington State University A Multi-Modal Sensor System for Monitoring Individual Mussels in Rocky Intertidal Habitats
- P2-161** Navarro AJ; University of Maryland, College Park Environmental and Evolutionary Drivers of Thermal Physiology in a Widespread Lungless Salamander
- P2-162** Camper BT, Cuttino LA, Carlo MA, Sears MW; Clemson University Geographic variation in acclimatory capacity of embryos in response to changing nest temperatures
- P2-163** Dahlhoff VC, Larkin BG, Jackson M, Woods HA; University of Montana, MPG Operations Thermal advantages of large colony size in the western tent caterpillar *Malacosoma californicum pluviale*
- P2-164** Gearhart C, Pinshow B*, Korine C; Ben-Gurion University of the Negev Variation in Evaporative Water Loss among Kuhl's Pipistrelles along an Extreme Climate Gradient in Israel

Complementary to S5: Sensory Feedback and Animal Locomotion: Perspectives from Biology and Biorobotics

- P2-165** Sullivan CM, Carr JA, Tytell ED; Emmanuel College, Tufts University Muscle responds differently to lengthening perturbations depending on both activation and perturbation phase
- P2-166** Blum KP, Lamotte D'Incamps B, Zytnicki D, Ting LH*; Emory, Georgia Tech, Université Paris Descartes Force Encoding in Muscle Spindles during Stretch of Passive Muscle
- P2-167** Astley HC; University of Akron Traversing Tight Tunnels – Implementing an Adaptive Concertina Gait in a Biomimetic Snake Robot
- P2-168** Tomkinson IK, Rieser JM, Schiebel PE, Pazouki A, Goddard Z, Pulliam J, Negrut D, Goldman DI; Georgia Tech, California State University, Los Angeles Improving performance of a snake-like robot in heterogeneous terrain by managing effects of head collisions
- P2-169** Loveless J, Lagogiannis K, Webb B; University of Edinburgh, King's College London Neuromechanical Modelling of Larval *Drosophila* Exploratory Behaviour
- P2-170** France LA, Taylor GK; University of Oxford Mechanics and Guidance of Avian Perching Flight
- P2-171** Chadda A, Pratt B, Daniel T, Hsing I; Hong Kong Univ Sci Tech, Univ Washington Abdominal mechanosensors encode body flexion in the hawkmoth *Manduca sexta*
- P2-172** Harris MD, Daniel TL, Roth E; Univ of Washington Moths Regulate Body Attitude and Gaze to Stabilize Small- and Wide-field Visual Cues
- P2-173** Gagnon YL, Nilsson DE; Lund University Could scallops have polarization vision?
- P2-174** Tuttle LJ, Robinson HE, Chan C, Takagi D, Strickler JR, Lenz PH*, Hartline DK; University of Hawai'i at Mānoa, University of Wisconsin-Milwaukee Predator-Prey Interactions between Evasive Copepods and Larval Fish

Muscle and Movement

- P2-175** Evans EE, Hwang Y, Sueda S, Uyeno TA; Valdosta State University, Texas A&M University Estimating Whole Body Flexibility in Pacific Hagfish
- P2-176** Young CM, Moran CJ, Gerry SP; Fairfield University Effects of temperature on the escape response of cunner
- P2-177** Young VKH, Baeza JA, Blob RW; Saint Mary's College, Clemson University Limb Bone Scaling of Functionally Divergent Turtle Clades
- P2-178** Rose CS, Aleagha O, Modolo C, Hoguet N; James Madison Univ Xenopus tails are unique in combining whip-like lateral undulations and vertical extension and flexion
- P2-179** Wilson LT, Coughlin DJ; Widener University Thermal Sensitivity of the Mechanics of Red Skeletal Muscle in Rainbow Trout
- P2-180** Brown CE, Deban SM; University of South Florida Jumping in Arboreal Salamanders: The Role of the Hind Limbs
- P2-181** Diamond KM, Schoenfuss HL, Blob RW; Clemson Univ, St. Cloud State Univ Do the best come first? Locomotor performance over the course of migration events in the amphidromous goby fish, *Sicyopterus stimpsoni*

- P2-182** Boerma DB, Breuer KB, Swartz SM; Brown University
Both Symmetrical and Not: Complex Wingbeat Kinematics Enable Rapid Recovery from Aerial Stumbles in Bats
- P2-183** Paez VM, Cooper T, Vold T, Mendelson III JR, Goldman DI; Georgia Institute of Technology, Zoo Atlanta
Initial Observations of Surface Sand Swimming in Plestidon Reynoldsi
- P2-184** Hatch ST, Cieri RL, Brainerd EL; University of Utah, Brown University
XROMM analysis of axial skeletal kinematics during terrestrial locomotion in the savannah monitor, *Varanus exanthematicus*
- P2-185** Sansone AM, Mayerl CJ, Blob RW; Clemson University
Tails as rudders in swimming turtles: performance implications of sexual dimorphism
- P2-186** Garner AM, Keith AJ*, Schnarrenberger A, Astley HC, Niewiarowski PH; University of Akron
The Effects of Running Orientation on Gecko Locomotor Performance
- P2-188** Stevens LM, Mayerl CJ, Blob RW; Clemson University
Ontogeny of swimming stability and turning performance in the freshwater pleurodire turtle, *Emydura subglobosa*
- P2-189** Crofts SB, Crawford C, Bonnan M, Flammang BE; UIUC, NJIT, University of Stockton
Skeletal morphology of swimming lizard tails
- P2-190** Mistick EA, Clark CJ; Univ of British Columbia, Univ of California, Riverside
Kinematic control of the wing trill in Allen's hummingbirds (*Selasphorus sasin*)
- P2-191** Harris M, Ahmad A, Pace CM; Le Moyne College
Flat On Its Back: Righting Mechanics of the Brown Marmorated Stink Bug.
- P2-192** Huh KM, Wright NA, Tobalske BW; Tulane University, Kenyon College, University of Montana
Sexual Difference in the Escape Flight of the Calliope Hummingbird (*Selasphorus calliope*)
- P2-193** Gellman ED, Burke T, Ntim-Addae N, Nwako J, Ellerby DJ; Wellesley College
Intermittent propulsion during volitional swimming in bluegill sunfish
- P2-194** Kelsay TS, Deban SM; University of South Florida
Temperature sensitivity of swimming in salamanders
- P2-195** O'Reardon AB, Olberding JP; University of South Florida, University of California, Irvine
Arboreal frogs don't let any angle slow them down
- P2-196** Smiley A, Zhong K, Dudley R; University of California, Berkeley, Museum of Vertebrate Zoology, University of California, Berkeley
Comparative Forward Flight Performance in Four Species of Colombian Hummingbirds
- P2-197** Kuo S, Patel B, Orr C, Ward C; University of Missouri, Columbia, University of Southern California, Los Angeles, University of Colorado School of Medicine
Functional Morphology of the Anthropoid Primate Hindfoot
- P2-198** Lim MHL, Chan CM, Ahn AN; Harvey Mudd College, Claremont
Leg spring stiffness varies with foot strike pattern and shoe type during running in humans
- P2-199** Blob RW, Wilson JA, Marsicano CA, Panko LJ, Smith RMH; Clemson Univ, Univ of Michigan, CONICET-Univ de Buenos Aires, Northwestern Univ, Univ Witwatersrand, Iziko South African Museum
Locomotor Kinematics of Fossil Dinocephalian Therapsids Reconstructed from Three-dimensional Footprint Morphology
- P2-200** Jackson BE; Longwood Univ
Effects of large size on 3D flight performance in eastern carpenter bees, *Xylocopa virginica*
- P2-201** Clifton GT, Gravish N; Univ of California, San Diego, UCSD
Large-scale automated tracking of ant running kinematics and foot contact dynamics
- P2-202** Feilich KL, Di Santo V, Lauder GV; University of Michigan, Harvard University
How Not to Measure Fish Acceleration Kinematics: An Exploration of Possible Approaches
- P2-203** Williams M, Jackson BE; Longwood Univ
Kinematic Variation During Wild Blue Jay Landing Flights
- P2-204** Dimitrov MA, Block BA; Stanford University
The Biomechanical Role of Tunas' Unique Bony Peduncular Keel and Great Lateral Tendon in Thunniform Locomotion
- P2-205** Richards LM, Levine KK, Rivera G*; Creighton Univ
The effects of foreleg loss on locomotor performance in the darkling beetle *Zophobas morio*
- P2-206** Davis AL, Miller LA; Univ of North Carolina, Chapel Hill
Force Generation by the Horseshoe Crab (*Limulus polyphemus*)
- P2-207** McLaughlin GA, Miller LA; University of North Carolina at Chapel Hill
Visualization of Vortex Wake produced by Moon Jellyfish (*Aurelia aurita*) and Upside Down Jellyfish (*Cassiopea*)
- P2-208** Stricklen B, Ballester A, Bond L, Gould F, German R; Northeast Ohio Medical University
Integration of Respiration and Swallowing Performance after Sensory Nerve Lesion in Infant Pigs

P2-209	Wang WS, Shih MC, Chi KJ*; National Chung-Hsing University	Dynamics and Ecological Consequences of Violent Sperm Discharge in Liverworts
P2-210	Van Wassenbergh S, Aerts P; Muséum National D'Histoire Naturelle, Univ of Antwerp	Optimization of a new, biplanar X-ray video system for analyzing 3D kinematics and hydrodynamics of animals
P2-211	Lepiane KL, Clark CJ; University of California, Riverside	The Effect of the Leading-edge Comb on Owl Flight Sounds
P2-212	Jacobs C, Holzman R; Tel Aviv University	New Insights Into Power During Pivot Feeding in Syngnathid Fishes
P2-213	Murphy CT, Caspers PB, Lapseritis JL, Martin WN; Naval Undersea Warfare Center Division Newport	Laser Doppler vibrometry and high speed videography for measurement of seal whisker vibrations in two planes of motion
P2-214	Baxter CA, Pepper RE; University of Puget Sound	Single Versus Group Feeding Patterns in <i>Vorticella convallaria</i>
P2-215	Sowards SH, Cieri RL, Farmer CG; University of Utah	Computational fluid dynamics modeling of pulmonary airflow patterns in a <i>Python regius</i>
P2-216	McInroe B, Goldman DI, Full RJ; University of California, Berkeley, Georgia Institute of Technology	Substrate Volume Fraction Predicts Burrowing Dynamics in Sand Crabs
P2-217	Ridge NC, Cieri RL, Farmer CG; University of Utah	Computational Simulation of Pulmonary Airflow in <i>Pogona vitticeps</i> (Bearded Dragon)
P2-218	Sethi A, Sellers KC, Cost IN, McGeachie F, Middleton KM, Holliday CM; University of Missouri	3D Fiber Tracking of Jaw Muscles Reveals a Diversity of Muscle Architectures in the Heads of Reptiles.
P2-219	Carr JA, Sullivan CM, Tytell ED; Salem State University, Emmanuel College, Tufts University	Twitch Kinetics as a Function of the Length-Tension Relationship of Skeletal Muscle
P2-220	Moran CJ, Gerry SP; Fairfield University	Locomotor musculature tolerance of acute temperature change in two species of labrids
P2-221	Dansereau KT, Bonacker KL, Kinney SR, Krans JK; Western New England University	Efficacy of transient RNAi against the largest gene in <i>Drosophila</i> , the titin analog sallimus (a giant sarcomere associated protein)
P2-223	Therault J, Bahlman J, Shadwick R, Altshuler D; Univ of British Columbia	Work loop dynamics of the pigeon (<i>Columba livia</i>) humerotriceps and its potential role for active wing morphing
P2-224	Vargeese JJ, Orsbon CP, Ross CF, Gidmark NJ; Knox College, University of Chicago	Large bite forces maintained across gapes may evade length-tension constraints due to the muscular dynamics in the masticatory system of the primate <i>Macaca mulatta</i> .
P2-225	Buchalski B, Swanson B, Gutierrez E; Gonzaga University	Population-dependent Variation of Weapon Performance in Rhinoceros Beetles
P2-226	Nguyen KN, Venkadesan M; Yale University	Ensemble mechanics of myosin motors and material properties of the sarcomere
P2-227	Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM; Brown University	Significance of hip kinematics for interpreting articular soft tissue function in <i>Alligator mississippiensis</i>
P2-228	Napoli JG, Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM; Stony Brook University, Brown University	<i>In- and Ex-Vivo</i> Analysis of the Structure and Function of the Tendon of Sutton in <i>Alligator mississippiensis</i>
P2-229	Turner ML, Falkingham PL, Gatesy SM; Brown University, Liverpool John Moores University	Avian Subsurface Foot Kinematics on Deformable Substrates
P2-230	Zhao D, Sachdeva V, Revzen S; University of Michigan, Ann Arbor	Modeling Multilegged Locomotion: the Friction Dominated Limit
P2-231	Castillo ER, Lieberman DE; Hunter College, CUNY, Harvard University	Lordosis variability and shock transmission in the human lumbar spine
P2-232	Jindrich DL, Qiao M; California State University San Marcos, University of North Carolina at Chapel Hill	Quantifying Joint Function Using Mechanical Analogs: Strut, Motor, Spring and Damper
P2-233	Hodson-Tole E, Wakeling J; Manchester Metropolitan University, Simon Fraser University	Complexity of Myoelectric Signals is Influenced by Mechanical Demands of Locomotion
P2-234	Sachdeva V, Zhao D, Revzen S; University of Michigan	Cockroaches always slip a lot
P2-235	Bittner B, Revzen S; Univ of Michigan, Ann Arbor	What do nematode swimming gaits optimize?
P2-236	Elias ARC, Tobalske BW, Harlander AM; Univ of Montana, Missoula, Univ of Guelph	Effects of steep descending on hindlimb kinematics in a ground-dwelling bird

- P2-237** Zhang D, Gabaldon J, Rocho-Levine J, Van Der Hoop J, Moore M, Shorter KA*; University of Michigan, Dolphin Quest Oahu, Aarhus University, Woods Hole Oceanographic Institution
Putting on the brakes: the effect of drag loading on the maneuverability of bottlenose dolphins
- P2-238** Müller UK, Li G, Berg O, Van Leeuwen JL; CSU Fresno, Chiba University, Wageningen University
Bladderwort Suction Feeding – Insights from Mathematical Models
- Behavior and Neurobiology/Social Behavior**
- P2-239** Elkhoury LD, Castro MA, Fokidis HB; Rollins College, Winter Park
Fighting for food: Does food insecurity influence agonistic behavior in the brown anole (*Anolis sagrei*)?
- P2-240** Zerulla TC, Stoddard PK; Florida International University
Social Behavior Differences Between Males Exhibiting a Color Polymorphism in the Eastern Mosquitofish (*Gambusia holbrooki*)
- P2-241** Solla AK, O'Rourke CF, Renn SCP; Reed College
Role of Male Dominance Fights on Female Mate Choice in a Cichlid Fish
- P2-242** Curtis KM, Moore PA, Martin III AL; Saginaw Valley State University, Bowling Green State University
The effects of population structure on crayfish aggression
- P2-243** Gandhi MP, MacKay S, Bergman D; San Jose State University, Grand Valley State University
Chronic Effects of Nonylphenol on Crayfish Aggression
- P2-244** Klock A, Macrander J, Reitzel AM; Univ North Carolina Charlotte
Toxin Expression and Effects on Predator and Prey in Two Model Sea Anemone Species
- P2-245** Edsinger E, Ono N, Pnini R, Ilsley G, Miller J; Marine Biological Laboratory, Woods Hole, Okinawa Enetech, Okinawa Institute of Science and Technology
Social tolerance in the Friendly Octopus, *Octopus laqueus*.
- P2-246** Vo K, Stankowich T; California State University, Long Beach
Effects of Mammalian Aposematic Pattern Variation on Predator Response
- P2-247** Sabol A, Solomon N, Keane B, Dantzer B; Univ of Michigan, Miami Univ
Social network bonds related to mating strategy, parentage, and the microbiome in prairie voles (*Microtus ochrogaster*)
- P2-248** Renn SCP, Coyle KP, Roberts NB, Roberts RB; Reed College, NC State Univ
The Intestinal Environment as an Evolutionary Adaptation to Mouthbrooding in *Astatotilapia burtoni*: Cell Turnover and Microbiome
- P2-249** Renn SCP, O'Malley T*, Gray M; Reed College, Madison High School
An Arduino based robotic system to quantify Brood Care Motivation in the mouth-brooding cichlid *A. burtoni*.
- P2-250** Kwok R, Buckner A, Renn SCP; Reed College
Decreased Telomerase Activity in Conjunction with Life Stress in *Astatotilapia burtoni*
- P2-251** Wolford DM, Davis JE; Radford University
Studying Behavioral Interactions between Various Species of Ants and an Entomopathogenic Fungus, *Ophiocordyceps unilateralis*
- P2-252** Perkins H, Heitmann A*, Aspbury AS, Gabor CR; Texas State University
Synergistic effects of Roundup and corticosterone on antipredator responses of *Incilius nebulifer* tadpoles
- P2-253** Ortega-Jimenez VM, Cuellar R*, Vaystub J, Combes SA; Univ of California, Davis
How Do Unsteady Flows Influence Ecological Interactions?
- P2-254** Darwish ZL, Cunningham KM, Strasser R; University of Nebraska Omaha
Influence of Rearing Condition on Adult Social Behavior in Zebra Finches
- P2-255** Driscoll RMH, Hurd PL, Renn SCP; Reed College, Univ Alberta, Edmonton
Evidence for differential aromatase gene promoter methylation in a cichlid with pH-influenced sex determination
- P2-256** Baran NM, Streebman JT; Georgia Institute of Technology
Species Differences in Aggressive Behavior, Neural Activity, and Brain Gene Expression in Lake Malawi Cichlid Fish
- P2-257** Michael MJ, Bubak AN, Renner KJ, Swallow JG; University of Colorado Denver, University of South Dakota
Aggressive Decisions by Pavement Ants (*Tetramorium caespitum*) During the Formation of Wars with Neighboring Colonies
- P2-258** Dunning JL, Maze SE, Atwood EJ, Murphy KK, Prather JF*; Univ Wyoming
Neural Pathways Linking Sensory and Motor Brain Regions in Female Songbirds
- Behavior and Neurobiology / Neuroethology**
- P2-259** Liu Y, Norekian T, Gillette R; University of Illinois at Urbana-Champaign, Arizona State University
Hacking the Sensory Peripheral Nervous System in a Predatory Mollusc

- P2-260** Field K, Forester C, Augustus A, Maruska K; Louisiana State Univ
Effects of Maternal Care and Energetics on Neural Activation Patterns in the African Cichlid, *Astatotilapia burtoni*
- P2-261** Sprayberry JDH; Muhlenberg College
The Impact of Polluting Scent on Olfactory Processing in Bumblebees
- P2-262** Godfrey RK, Gronenberg W; University of Arizona
Trail-following behavior and antennal lobe anatomy in Dolichoderine ants
- P2-263** Prokkola JM, Alioravainen N, Lemopoulos A, Hyvarinen P, Vainikka A; Univ of Eastern Finland, Natural Resources Institute Finland (Luke)
Fishing for a Fast Pace-of-life: Does Vulnerability to Angling Have Heritable Effects on Physiology and Repeatable Behavior in *Salmo trutta*?
- P2-264** Duell ME; Arizona State University
Size or skill? Learning abilities conserved in miniaturized stingless bees
- P2-265** Gonzalez-Gomez PL, Echeverria V, Estades CE, Wingfield JC; Univ of California, Davis, Univ de Chile
Overlapping of Molt and Breeding: an Allostatic Load Perspective
- P2-266** Tanner MK, Sanders EJ, Ibrahim O, Bubak AN, Lailvaux S, Swallow JG, Greenwood BN; University of Colorado Denver, University of Colorado Anschutz Medical Campus, University of New Orleans
Effects of Physical Activity on Behavior in House Crickets
- P2-267** Zeb AJ, Payne AA, Johnson MA; Trinity University
Evolution of neuromuscular junction size and muscle use in *Anolis* lizards
- P2-268** Alto SI, Strother JA; Oregon State University
Effects of elevated environmental CO₂ on the swimming kinematics of zebrafish larvae (*Danio rerio*)
- P2-269** Maynard RH, Warnert R, Lent DD; Cal State Univ Fresno
Visual navigation in the carpenter ant, *Camponotus esigi*.
- P2-270** Willis MA, Sane S; Case Western Reserve University, National Institute of Biological Sciences
Wing-beat induced flows and odor tracking in insects.
- P2-271** Güell BA, Warkentin KM; Boston University
Does accelerated development impair predator-detection and escape-hatching of phyllomedusid treefrog embryos?
- P2-272** Almanzar A, Warkentin KM; Boston University
How development changes escape-hatching success in snake attacks: a video analysis of red-eyed treefrog embryo behavior and performance
- P2-273** Talley JL, Thompson J; Air Force Research Laboratory, University of Florida
Scene Statistic Effects on Sensor Stabilization in the Damselfly *Ischnura ramburii*
- P2-274** Manchester CW, Gray JR; University of Saskatchewan
Response of a locust motion sensitive neuron, flight muscle activity and wing asymmetry during flight steering
- P2-275** Yang Y, Servedio M, Richards-Zawacki CL; Univ of Pittsburgh, Univ of North Carolina, Chapel Hill
Learned color bias in a polymorphic poison frog: implications for trait evolution and speciation
- P2-276** Lake JS, Zornik E; Reed College
Vocal Recognition Between Two Closely Related Species of African Clawed Frogs
- P2-277** Dever K, Carr J, Girard J, Calzarette D, Remsen D, Gage G, Chugunov I, Weissbourd B, Cordeiro M, Miao J, Marvel-Zuccola J, Newstein P; Marine Biological Laboratory, Woods Hole, Backyard Brains
Octocams: A simple scalable system for short-term to lifecycle monitoring of behavior in aquaria.

Saturday Schedule of Events

Events take place in the San Francisco Marriott Marquis, unless otherwise noted

EVENT	TIME	LOCATION
Poster Session 3 Set Up	7:00 AM – 8:00 AM	Salons 8-9
Speaker Ready Room	7:00 AM – 5:00 PM	Foothill D
Registration	7:30 AM – 3:00 PM	North Registration Desk
Coffee Break AM	9:30 AM – 10:30 AM	Salons 8-9
Exhibit Hall	9:30 AM – 5:30 PM	Salons 8-9
Coffee Break PM	3:30 PM – 5:30 PM	Salons 8-9
Poster Session 3 Even Numbers Authors Present	3:30 PM – 4:30 PM	Salons 8-9
Poster Session 3 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Salons 8-9
Poster Session 3 Teardown	5:30 PM – 6:00 PM	Salons 8-9

SYMPOSIA ORAL PRESENTATIONS

S7: Science in the Public Eye: Leveraging Partnerships <i>Organizers: Martha Merson, Nick Hristov, Louise Allen</i> <i>Sponsors: DAB, DCB, DCE, DEDE, DNNSB & DVM</i>	7:45 AM – 3:30 PM	Golden Gate B
S8: Integrative Biology of Sensory Hair Cells <i>Organizers: Duane McPherson, Billie Swalla</i> <i>Sponsors: DEDB, DNNSB & AMS</i>	7:50 AM – 3:30 PM	Golden Gate A
S9: Inside the Black Box: The Mitochondrial Basis of Life-history Variation and Animal Performance <i>Organizers: Karine Salin, Wendy Hood</i> <i>Sponsors: DCE & DCPB</i> <i>Sponsored by: The National Science Foundation</i>	7:55 AM – 3:00 PM	Salon 7

CONTRIBUTED PAPER ORAL PRESENTATIONS

MORNING

Session 73: Insect Flight: Wings, Control and Power	8:00 AM – 9:30 AM	Salons 13-15
Session 74: Adhesion: Not Slippery When Wet	8:00 AM – 9:45 AM	Salons 10-12
Session 75: Morphology: Postcranial	8:00 AM – 9:30 AM	Salons 1-2
Session 76: Terrestrial Locomotion: Gait and Posture	8:00 AM – 10:00 AM	Salons 3-4
Session 77: Maternal Stress Endocrinology	8:00 AM – 9:45 AM	Salons 5-6
Session 78: Ecomorphology: Feeding and Diet	8:00 AM – 9:30 AM	Foothill G
Session 79: Immune Trade-Offs	8:00 AM – 9:45 AM	Foothill C
Session 80: Predator/Prey 2	8:00 AM – 9:45 AM	Nob Hill A-B
Session 81: Ventilation & Circulation	8:00 AM – 9:30 AM	Nob Hill C-D
Session 82: Life History Evolution	8:00 AM – 9:45 AM	Golden Gate C-1
Session 83: Coral Reef Systems	8:00 AM – 9:30 AM	Golden Gate C-2
Session 84: Conservation Genetics	8:00 AM – 9:30 AM	Foothill E
Session 85: Locomotion on Variable Substrates	10:00 AM – 12:00 PM	Salons 13-15
Session 86: Adhesion: Sticky When Dry	10:15 AM – 11:45 AM	Salons 10-12
Session 87: Sensory Biology - Active and Environmental Sensing	10:00 AM – 12:00 PM	Salons 1-2
Session 88: Plasticity	10:30 AM – 11:45 AM	Salons 3-4
Session 89: Environmental Stress Endocrinology	10:15 AM – 11:45 AM	Salons 5-6
Session 90: Complementary to S10: Behavioral and Physiological Adaptation to Urban Environments, Part 1	10:00 AM – 12:00 PM	Foothill G
Session 91: Immunity	10:15 AM – 11:45 AM	Foothill C
Session 92: Mate Selection	10:30 AM – 12:00 PM	Nob Hill A-B
Session 93: Thermobiology of Endotherms	10:15 AM – 12:00 PM	Nob Hill C-D

Session 94: Plasicity and Evolution	10:15 AM – 11:45 AM	Golden Gate C-1
Session 95: Reef Communities	10:15 AM – 11:45 AM	Golden Gate C-2
Session 96: Neurobiology & Anatomy	10:15 AM – 12:00 PM	Foothill E

AFTERNOON

Session 97: Bird Flight: Wing Morphing and More	1:30 PM – 3:00 PM	Salons 13-15
Session 98: Ecomorphology: Locomotion	1:30 PM – 3:00 PM	Salons 10-12
Session 99: Rhythm and Behavior	1:30 PM – 3:15 PM	Salons 1-2
Session 100: Muscle Physiology	1:30 PM – 3:30 PM	Salons 3-4
Session 101: Behavioral Ecology: Seasonality and Hormones	1:30 PM – 3:15 PM	Salons 5-6
Session 102: Complementary to S10: Behavioral and Physiological Adaptation to Urban Environments, Part 2	1:30 PM – 3:30 PM	Foothill G
Session 103: Evolution of Developmental Processes	1:30 PM – 3:30 PM	Foothill C
Session 104: Complementary to S11: Measuring Biodiversity and Extinction - Present and Past	1:30 PM – 3:15 PM	Nob Hill A-B
Session 105: Comparative Endocrinology	1:30 PM – 3:30 PM	Nob Hill C-D
Session 106: Reproductive Physiology	1:30 PM – 3:30 PM	Golden Gate C1
Session 107: Larval Ecology	1:30 PM – 3:30 PM	Golden Gate C2
Session 108: Neuroethology - State-Dependence and Neurobiology	1:45 PM – 3:30 PM	Foothill E

COMMITTEE & BOARD MEETINGS

SICB Editorial Board	12:00 PM – 1:30 PM	Pacific I
DPOs and Symposium Organizers for Tampa Meeting	12:00 PM – 1:30 PM	Pacific H
Development Committee	12:00 PM – 1:30 PM	Pacific A
Editorial Board Meeting Journal of Experimental Zoology Part A: Ecological and Integrative Physiology	12:00 PM – 1:30 PM	Golden Gate C3

BUSINESS MEETINGS

SICB Society Meeting & Awards Presentation	5:45 PM – 6:45 PM	Salon 7
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WORKSHOPS AND PROGRAMS

Broadening Participation Committee Workshop: Beyond Traditional Mentors: Mentoring Moments and Networks	12:00 PM – 1:30 PM	Pacific H
Student Support Committee Brown Bag Workshop: Writing a Competitive GIAR/FGST Grant Proposal	12:00 PM – 1:30 PM	Salons 10-12
DEDB Workshop: Origination of Cell Types, <i>Wagner</i>	6:30 PM – 9:30 PM	Foothill G
TAL-X Workshop: Biology on a Budget: Sharable DIY Bio Lab Activities, <i>Larry McPhee</i>	7:00 PM – 9:00 PM	Pacific H

SOCIAL EVENTS

Zumba Class	6:30 AM – 7:15 AM	Juniper
DEDB/DPCB/DIZ/AMS/TCS Social	6:30 PM – 8:30 PM	Thirsty Bear
Broadening Participation Social	7:00 PM – 9:00 PM	Thirsty Bear

Saturday 6 January 2018

Saturday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM Symposium S7 Golden Gate B

Science in the Public Eye: Leveraging Partnerships

Chairs: Martha Merson, Nick Hristov

7:45 am	S7-1	<i>Merson MW; TERC</i>	Introducing Science in the Public Eye: Leveraging Partnerships--Credible Collaborators
8:00 am	S7-2	<i>Watkins TB; National Park Service</i>	Science Outreach and Engagement in National Parks
8:30 am	S7-3	<i>Allen LC, Char C, Wright T, Hristov NH, Merson M; Winston-Salem State University, Char Associates, TERC</i>	Beyond the Brown Bag: Designing Effective Professional Development for Informal Educators
9:00 am	S7-4	<i>Verbeke MC, Pattison S; Institute for Learning Innovatin, ILI</i>	Meeting in the Middle: Connecting Your Science Research with the Public's Interests
9:30 am	S7-5	<i>Yu K, Armendariz A, Ma J, King D; Exploratorium</i>	"I have a GREAT idea for an exhibit!" – Adapting scientific research for museums

10:00 am Coffee Break Salons 8-9

10:30 am	S7-6	<i>Towns BJ, Gill KS*; Center for Design Innovation, UNCSCA, Tributary Land Design</i>	Play to Learn, Learn to Play: the role of design in creating places for learning.
11:00 am	S7-7	<i>Harrower JT; Univ of California, Santa Cruz</i>	Seeking symbiosis: Linking art and science through symbiotic interactions
11:30 am	S7-8	<i>Strohecker C, Hristov NI*; College of Design, University of Minnesota, UNC Center for Design Innovation, Winston-Salem State University</i>	Designing for Broad Understanding of Science

12:00 pm Lunch Break

1:30 pm	S7-9	<i>Parrish JK, Burgess H, Weltzin J, Fortson L, Wiggins A; University of Washington, US Geological Survey, University of Minnesota, University of Nebraska</i>	Elevating the Science in Citizen Science: Five Steps to Rigorous Public Involvement in Scientific Research
2:00 pm	S7-10	<i>Marquardt S; US Fish and Wildlife Service</i>	On the Cutting Edge of Research to Conserve At-Risk Species
2:30 pm	S7-11	<i>Storksdieck M, Risien J; Oregon State University</i>	Developing a Broader Impacts Identity: It's All About You(r Strengths)!

3:30 pm Coffee Break Salons 8-9

7:50 AM – 3:30 PM Symposium S8 Golden Gate A

Integrative Biology of Sensory Hair Cells

Chairs: Duane McPherson, Billie Swalla

7:50 am	S8-1	<i>McPherson DR; SUNY at Geneseo, NY</i>	Introduction to the Symposium
8:00 am	S8-2	<i>McPherson DR; SUNY at Geneseo, NY</i>	Sensory Hair Cells: an Overview
8:30 am	S8-3	<i>Schlosser G; National University of Ireland Galway</i>	Sensational innovations - The evolution of cranial sense organs in vertebrates
9:00 am	S8-4	<i>Manni L, Anselmi C, Pennati R, Mercurio S, Gasparini F; University of Padova, University of Milan</i>	Development and Function of Secondary Mechanoreceptor Cells in Tunicates
9:30 am	S8-5	<i>Baker CVH; University of Cambridge</i>	The development and evolution of vertebrate lateral line electroreceptors
10:00 am	Coffee Break		Salons 8-9
10:30 am	S8-6	<i>Stolfi A; Georgia Institute of Technology</i>	The effect of nutrition on life-history trade-offs across species

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11:00 am	S8-7	<i>Jahan I, Fritsch B*; University of Iowa</i>	How to build a beetle: Larval environment, performance, and sexual signals
11:30 am	S8-8	<i>Bermingham-McDonogh O; University of Washington</i>	Swimming kinematics and performance through early life history of fishes
12:00 pm	Lunch Break		
1:30 pm	S8-9	<i>Eatock RA; University of Chicago</i>	Ion channels in vestibular hair cells and afferents shape the receptor potential, synaptic transmission and spike patterning
2:00 pm	S8-10	<i>Pan B, Holt JR; Boston Children's Hospital, Harvard Medical School</i>	TMC1 Function in Hair Cell Mechanotransduction
2:30 pm	S8-11	<i>Li Y, Tan X, Tang J, Beisel KW, Lovas S, He DZ*; Beijing Tongren Hospital, Creighton University</i>	Evolutionary Insight Into Functional and Structural Changes of Prestin, the Motor Protein of Cochlear Outer Hair Cells
3:30 pm	Coffee Break		

Salons 8-9

7:55 AM – 3:30 PM **Symposium S9** *Sponsored by the National Science Foundation*

Salon 7

Inside the Black Box: The Mitochondrial Basis of Life-history Variation and Animal Performance

Chairs: Karine Salin, Wendy Hood

7:55 am	S9-1	<i>Salin K, Hood W; University of Glasgow, University of Auburn</i>	Introduction
8:00 am	S9-2	<i>Sokolova IM, Sokolov EP, Ivanina AV; Universität Rostock, University of North Carolina at Charlotte</i>	Mitochondria from Hell: The Role of Mitochondrial Mechanisms In Stress Tolerance Of Animal Extremophiles
8:30 am	S9-3	<i>Treberg JR; University of Manitoba</i>	Peering Inside the Black Box: Comparing Mitochondrial Electron Leak in Vertebrate Muscle
9:00 am	S9-4	<i>Salin K, Villasevil E, Anderson G, Selman C, Chinopoulos C, Metcalfe N; University of Glasgow, Semmelweis University</i>	Mitochondrial responses to environmental change: mechanisms and consequences.
9:30 am	S9-5	<i>Jimenez A; Colgate University</i>	'The same thing that makes you live can kill you in the end': exploring the effects of growth rates and longevity on cellular metabolic rates and oxidative stress.
10:00 am	Coffee Break		
10:30 am	S9-6	<i>Hood WR, Zhang Y, Mowry AV, Hyatt HW, Kavazis AN; Auburn Univ</i>	Re-evaluating life history trade-offs within the context of mitochondrial hormesis
11:00 am	S9-7	<i>Austad SN; University of Alabama at Birmingham</i>	The Comparative Biology of Mitochondrial Function and the Rate of Aging
11:30 am	S9-8	<i>Bize P; University of Aberdeen</i>	Effects of the Mitochondrial and Nuclear Genomes on Adaptation to the Environment and Phenotype of Mammals
12:00 pm	Lunch Break		
1:30 pm	S9-9	<i>Montooth KL, Buchanan JL; University of Nebraska-Lincoln</i>	A Mitochondrial Contribution to Immune Function and Life-History Tradeoffs
2:00 pm	S9-10	<i>Scott GR; McMaster University</i>	Mitochondrial physiology and respiratory performance in high-altitude natives
2:30 pm	S9-11	<i>Chung DJ, Sparanga GC, Chicco A, Schulte PM*; University of British Columbia, University of Colorado, Denver, Colorado State University</i>	Thermal Acclimation and Intraspecific Variation in <i>Fundulus heteroclitus</i> Mitochondrial Performance and Lipid Remodeling is Consistent with Homeoviscous Adaptation
3:00 pm	S9-12	Discussion	
3:30 pm	Coffee Break		

Salons 8-9

Saturday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:30 AM Session 73 Salons 13-15

Insect Flight: Wings, Control and Power

Chairs: Johan Melis, Mark Badger

8:00 am	73-1	<i>Badger M, Chang U, Combes S; University of California, Davis</i>	Down in the mouth: Consequences of mandible-loading for flight stability in blue orchard bees (<i>Osmia lignaria</i>)
8:15 am	73-2	<i>Feaster JO, Battaglia F, Bayandor J; State University of New York at Buffalo</i>	The Effect of Morphologically Representative Corrugation on Hovering Bee Flight
8:30 am	73-3	<i>Walker SM, Chabokdast A; University of Leeds, University of Oxford</i>	Amplification and transmission of muscle strains in the dipteran flight motor
8:45 am	73-4	<i>Melis JM, Lindsay T, Dickinson MH; California Institute of Technology</i>	Mapping steering muscle activity to 3-dimensional wing kinematics in fruit flies
9:00 am	73-5	<i>Gau JF, Gravish N, Sponberg S; Georgia Institute of Technology, Univ of California, San Diego</i>	Elasticity and Resilience of the Hawkmoth Thorax Reduces Power Requirements
9:15 am	73-6	<i>Faruque IA, Mujires FT, MacFarlane KM, Kehlenbeck A, Humbert JS; Oklahoma State University, Wageningen University, University of Maryland, College Park, Aurora Flight Sciences, University of Colorado, Boulder</i>	Integrated Sensorimotor Target Extraction Techniques in Untethered <i>Drosophila</i> Flight Control

9:30 am Coffee Break Salons 8-9

8:00 AM – 9:45 AM Session 74 Salons 10-12

Adhesion: Not Slippery When Wet

Chairs: Takashi Maie, Doug Fudge

8:00 am	74-1	<i>George MN, Carrington E; Univ of Washington, Seattle</i>	Mussel Byssus Attachment in a Patchy Ocean: pH and Dissolved Oxygen at the Substrate-Adhesive Interface Diverges from Oceanic Conditions in Mussel Aggregations
8:15 am	74-2	<i>Guenther RJ, Miklasz K, Carrington EC, Martone PT; University of Washington, University of British Columbia</i>	Macroalgal spore dysfunction: Ocean acidification delays and weakens adhesion
8:30 am	74-3	<i>Bagheri H, Gendt AB, Cummings SD, Subramanian S, Berman SM, Peet MM, Aukes DM, He X, Fisher RE, Marvi H; Arizona State University, BASIS Chandler</i>	Octopus Sucker Adhesion and Suction Performance Under Various Environmental Conditions
8:45 am	74-4	<i>Maie T, Giustiniani B, Christy R; Lynchburg College</i>	Adhesive Performance of the Pelvic Sucker in a Waterfall-Climbing Gobiid, <i>Sicyopterus japonicus</i>
9:00 am	74-5	<i>Smith AM, Papaleo C, Reid CW, Bliss JM; Ithaca College, Bryant University, Women & Infants Hospital of Rhode Island, Warren Alpert Medical School of Brown University</i>	How Lectins Make Slug Mucus Into a Potent Glue; RNA-Seq Suggests a Central Role for Lectin Variation and Oligomerization
9:15 am	74-6	<i>Bernards MA, Schorno S, McKenzie E, Winegard TW, Oke I, Plachetzki D, Fudge DS*; Univ of Guelph, Univ of New Hampshire</i>	Unraveling skein deployment in hagfish slime: Insights from transcriptomics and in vitro assays
9:30 am	74-7	<i>Chaudhary G, Fudge DS, Ewoldt RH; University of Illinois at Urbana-Champaign, Chapman University</i>	Self-similar mechanics of hagfish slime

9:45 am Coffee Break Salons 8-9

8:00 AM – 9:30 AM Session 75

Salons 1-2

Morphology: Postcranial

Chairs: Eva Herbst, Sarah Marshall

8:00 am	75-1	<i>Marshall SK, Spainhower KB, Butcher MT; Youngstown State Univ</i>	Post-cranial morphology in the Xenarthra: Hind limb structure and function
8:15 am	75-2	<i>Griffin C, Angielczyk K; Virginia Tech, Field Museum of Natural History</i>	The Evolution of the Dicynodont Sacrum, and Constraint on the Axial Column in Crown Mammalia
8:30 am	75-3	<i>Minicozzi M, Stuart F, Finden A, Gibb AC; Northern Arizona University</i>	What are the Anatomical Determinants of Body Shape in Cyprinodontiform Fishes?
8:45 am	75-4	<i>Luger AM, Ollevier A, Herrel A, Adriaens D; Ghent University, CNRS/MNHN</i>	A Tale of Tails: Variation in Morphology Linked to Tail use in Chamaeleonidae
9:00 am	75-5	<i>Herbst E, Smithson TR, Clack JA, Doube M, Hutchinson JR; Royal Veterinary College, Univ Museum of Zoology</i>	Bony Lesions in Early Tetrapods and the Evolution of Bone Healing
9:15 am	75-6	<i>Munteanu VD, Hedrick BP; Clemson University, Harvard University</i>	Hit the Ground Running – How Locomotor Mode Affects Post-Cranial Morphology in Carnivorans
9:30 am	Coffee Break		Salons 8-9

8:15 AM – 10:00 AM Session 76

Salons 3-4

Terrestrial Locomotion: Gait and Posture

Chairs: Michael Granatosky, Krijn Michel

8:15 am	76-2	<i>Granatosky MC, Laird MF, Hanna JB, Stilson KT, Schultz JA, Wall CE, Ross CF; Univ of Chicago, West Virginia School of Osteopathic Medicine, Duke Univ</i>	Stride Variability Underlies Gait Transitions in Tetrapods
8:30 am	76-3	<i>Kvalheim M D, Revzen S; University of Michigan</i>	Testing an extended “Posture Principle”
8:45 am	76-4	<i>Isaacs MR, Lee DV; University of Nevada, Las Vegas</i>	A toolkit that reveals costly mechanisms in human walking gaits.
9:00 am	76-5	<i>Lee DV, Isaacs MR, Comanescu TN; University of Nevada, Las Vegas</i>	Step length constraints influence compliance during human walking
9:15 am	76-6	<i>Shield S, Patel A; University of Cape Town</i>	Rapid Gait Termination in Humanoids on Surfaces of Varying Friction
9:30 am	76-7	<i>Usherwood JR, Self Davies ZT, Smith BJH; Royal Veterinary College</i>	Work minimization accounts for footfall phasing in slow quadrupedal gaits, and phases used by primates allow more controlled forefoot placement.
9:45 am	76-8	<i>Michel KB, Cuff AR, Allen VA, Hutchinson JR; Royal Veterinary College</i>	Locomotion in Nile crocodiles: Kinematic effects of speed and posture
10:00 am	Coffee Break		Salons 8-9

8:00 AM – 9:45 AM Session 77

Salons 5-6

Maternal Stress Endocrinology

Chairs: Ben Dantzer, Michael Sheriff

8:00 am	77-1	<i>Graham MA, Earley RL, Baker JA, Foster SA; Clark University, University of Alabama</i>	Regional Differentiation of the Stress Axis in Wild Maternal Stickleback Fish and Transgenerational Effects
8:15 am	77-2	<i>Ensminger D, Langkilde T, Owen D, MacLeod K, Sheriff M; Penn State University</i>	Effects of Maternal Stress on Maternal and Offspring Behavior
8:30 am	77-3	<i>Westrick SE, Van Kesteren F, Boutin S, Humphries MM, Lane J, McAdam AG, Dantzer B; Univ of Michigan, University of Alberta, McGill University, University of Saskatchewan, University of Guelph</i>	Impact of maternal stress on stress reactivity and coping styles in a wild mammal
8:45 am	77-4	<i>Warriner TR, Semeniuk CAD, Pitcher TE, Love OP; GLIER, Univ of Windsor</i>	Adaptive stress: maternal stress as a modulator of salmon offspring survival and performance under climate change

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9:00 am	77-5	<i>Heppner JJ, Langkilde T, Owen DAS, Sheriff MJ; Pennsylvania State University</i>	Effects of Maternal Stress on Performance Behavior of Lizard Offspring
9:15 am	77-6	<i>Morey KC, Dantzer B, McAdam A, Boonstra R, Humphries MM, Boutin S, Newman AEM; University of Guelph, University of Michigan, University of Toronto Scarborough, McGill University, University of Alberta</i>	Epigenetic transmission of maternal stress in a wild mammal
9:30 am	77-7	<i>Zimmer C, Taff CC, Ardia DR, Winkler DW, Vitousek MN; Cornell University, Franklin and Marshall College</i>	Negative Feedback Efficacy Predicts Stress Resilience during Incubation in the Tree Swallow

9:45 am **Coffee Break** **Salons 8-9**

8:00 AM – 9:30 AM **Session 78** **Foothill G**

Ecomorphology: Feeding and Diet

Chairs: Rita Mehta, Bruce Jayne

8:00 am	78-1	<i>Larabee FJ, Schultz TR, Powell S; NMNH, Smithsonian Institution, George Washington University</i>	<i>Morphometrics and Functional Morphology of Fungus-growing Ants</i>
8:15 am	78-2	<i>De Meyer J, Belpaire C, Van Wassenbergh S, Herrel A, Maes GE, Dirks RP, Boeckx P, Bervoets L, Covaci A, Malarvannan G, Dhaene J, Adriaens D; Univ of Ghent, Institute for Forest and Nature Research (INBO), Museum National d'Histoire Naturelle, Univ of Leuven, Univ of Leiden</i>	Head Shape Dimorphism in European Eels ... the What, How and Why Story
8:30 am	78-3	<i>Grossnickle DM; University of Chicago</i>	Jaw Rule: Mammalian Jaw Morphologies Correlate with Diet and Evolve Toward Trait Optima
8:45 am	78-4	<i>Mehta RS, Law CJ, Duran E, Richards E, Santillan I; University of California, Santa Cruz</i>	Effects of Diet on the Evolution of Bite Force in Adult Musteloids
9:00 am	78-5	<i>Higgins BA, Law CJ, Mehta RS; Univ of California, Santa Cruz</i>	Functional Ecology of the California Moray Eel (<i>Gymnothorax mordax</i>): Dietary Breadth and Bite Force Over Ontogeny.
9:15 am	78-6	<i>Jayne BC, Voris HK, Ng PKL; University of Cincinnati, Field Museum of Natural History, National University of Singapore</i>	How Big is too Big? Using Crustacean-eating Snakes to Test How Anatomy and Behavior Affect Prey Size and Feeding Performance

9:30 am **Coffee Break** **Salons 8-9**

8:00 AM – 9:45 AM **Session 79** **Foothill C**

Immune Trade-Offs

Chairs: Travis Wilcoxon, Robert Srygley

8:00 am	79-1	<i>Cyr JL, Gawriluk TR, Rada B, Watford W, Seifert AW, Ezenwa VO; University of Georgia, University of Kentucky</i>	Neutrophil Function, Humoral Defense, and Tissue Regeneration in Mammals
8:15 am	79-2	<i>Tylan C, Assis B, Avery J, Langkilde T; Pennsylvania State University</i>	Associations between male-typical ornamentation in female fence lizards, and cell-mediated immunity
8:30 am	79-3	<i>Wilcoxon TE, Mihalkanin E, Brinegar J, Chesko S, Seitz J, Nuzzo JT; Millikin University, Illinois Raptor Center</i>	Correlations between early-life stressors and physiological condition in juvenile birds of prey.
8:45 am	79-4	<i>Srygley RB; USDA-Agricultural Research Service</i>	Immune Activation Induced by Microbe-like Challenges Slows Migrating Insects
9:00 am	79-5	<i>Steffenson MM, Geminden R, Visser G; St. Edward's University, Adams State University</i>	Stimulated immune response to <i>Escherichia coli</i> lipopolysaccharides in two subspecies of honeybee (<i>Apis mellifera</i>)
9:15 am	79-6	<i>Vaziri GJ, Adelman JS; Iowa State University</i>	Host-Parasite Interactions and the Acute Phase Immune Response in a Songbird
9:30 am	79-7	<i>Roberts B, Bogan J, Hoffman M, Terrell K; Memphis Zoo, Central Florida Zoo, Orianne Center for Indigo Conservation</i>	Lack of Complement Protein Defense Against Both Primary and Opportunistic Pathogens in Eastern Indigo Snakes (<i>Drymarchon couperi</i>)

9:45 am **Coffee Break** **Salons 8-9**

8:00 AM – 9:45 AM Session 80 Nob Hill A-B

Predator/Prey 2

Chair: Zach Chejanovski

8:00 am	80-1	<i>Moore TY, Larson JG, Sanchez Paredes CM, Davis Rabosky AR; University of Michigan, Universidad Peruana Cayetano Heredia</i>	3-D quantification and characterization of snake anti-predator behavior in the Peruvian Amazon
8:15 am	80-2	<i>Ruiz CA, Pimienta MC, Theobald JC*; Florida International University</i>	Pursuit flight patterns in long-legged flies
8:30 am	80-3	<i>Cox CL, Davis Rabosky AR, Curlis JD, Watson CM; Georgia Southern University, University of Michigan, Midwestern State University</i>	Convergent evolution of startle coloration in snakes
8:45 am	80-4	<i>Chejanovski ZA, Kolbe JJ; Univ of Rhode Island</i>	Mechanisms underlying increased body size in lizards due to urbanization and urban predators.
9:00 am	80-5	<i>Wood TC, Kelley RE, Moore PA; Bowling Green State University, University of Michigan</i>	Non-consumptive Effects as Drivers of Physiological Change in a Tri-trophic Interaction
9:15 am	80-6	<i>Venable CP, Langkilde TL; Penn State University</i>	Choice may influence native predator consumption of invasive prey
9:30 am	80-7	<i>Hosek KE, Zippay ML; Sonoma State University</i>	Under Pressure: The Physiological Response of <i>Mytilus edulis</i> to Multiple Stressors
9:45 am	Coffee Break		Salons 8-9

8:00 AM – 9:30 AM Session 81 Nob Hill C-D

Ventilation & Circulation

Chairs: Hunter King, Lindsay Waldropp

8:00 am	81-1	<i>Lane SJ, Shishido CM, Moran AL, Tobalske BW, Woods HA; Univ of Montana, Univ of Hawai'i</i>	Pore things! Cuticular gas exchange by Antarctic sea spiders
8:15 am	81-2	<i>Cieri RL, Farmer CG; University of Utah</i>	Computational fluid dynamics modeling of pulmonary airflow in monitor lizards (<i>Varanidae</i>)
8:30 am	81-3	<i>King H, Ocko S, Mahadevan L; University of Akron, Stanford University, Harvard University</i>	Solar-powered ventilation in African termite mounds
8:45 am	81-4	<i>Salcedo MK, Combes SA, Mahadevan L; Harvard University, Univ of California, Davis</i>	Active hemolymph flow in insect wings: characterization of uniform, bi-directional and pulsatile flow in a wing network
9:00 am	81-5	<i>Battista NA, Miller LA; College of New Jersey, University of North Carolina at Chapel Hill</i>	A fully coupled fluid-structure-muscle-electrophysiology model in heart development
9:15 am	81-6	<i>Waldrop LD, He Y, Miller LA; New Mexico Tech, Univ of North Carolina at Chapel Hill</i>	Using uncertainty analysis to explore the effects of variation on a functional system
9:30 am	Coffee Break		Salons 8-9

8:00 AM – 9:45 AM Session 82 Golden Gate C-1

Life History Evolution

Chair: Lars Schmitz

8:00 am	82-1	<i>Josefson CC, Hood WR; Auburn University</i>	Life history trait co-variation patterns within the house mouse (<i>Mus musculus</i>) differ from across species predictions
8:15 am	82-2	<i>Turko A, Wright P, Currie S, Blewett T, Taylor S, Rossi G, Standen E*; University of Guelph, Mount Allison University, University of Alberta, Brevard County Environmentally Endangered Lands Program</i>	Life history trade-offs depend upon habitat quality in an amphibious mangrove fish
8:30 am	82-3	<i>Zani PA, Nelson BA, Luo CH; Univ Wisconsin-Stevens Point</i>	Life-History Shift in Storage across Latitudes in Side-Blotched Lizards Suggests Climate Is Not Limiting at Higher Latitudes

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8:45 am	82-4	<i>Gerringer ME, Andrews AH, Huss GR, Nagashima K, Popp BN, Gallo ND, Clark MR, Linley TD, Jamieson AJ, Drazen JC; University of Hawai'i at Mānoa, NOAA Fisheries, Pacific Islands Fisheries Science Center, Scripps Institution of Oceanography, University of California San Diego, La Jolla</i>	Life history of abyssal and hadal fishes from otolith analyses
9:00 am	82-5	<i>Clark RM, Treidel LA, McCue MD, Zera AJ, Williams CM; Univ of California, Berkeley, Saint Mary's University, Univ of Nebraska-Lincoln</i>	Energetics of a Life-History Trade-Off in the Wild
9:15 am	82-6	<i>Wittman TN, Cox RM; Univ of Virginia</i>	Promiscuity and Parasites: Mating System Predicts the Survival Costs of Parasitism Across Taxa
9:30 am	82-7	<i>Mitchell AE, Martin TE; University of Montana</i>	Patterns and Causes of Tropical Montane Life Histories: An Observational and Experimental Study Using Birds
9:45 am	Coffee Break		Salons 8-9

8:00 AM – 9:30 AM	Session 83	Golden Gate C-2
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Coral Reef Systems

Chair: *Dianna Padilla*

8:00 am	83-1	<i>Matsuda SB, Gates RD; Hawaii Inst of Mar. Biol.</i>	Too hot to handle: How algal and bacterial microbial communities influence the thermal tolerance of corals
8:15 am	83-2	<i>Buccella LA, Fallot K, Eaton K, Coffroth MA*; University at Buffalo</i>	Symbiont Composition and Density Change within Three Octocoral Species across a Bleaching Event in the Florida Keys
8:30 am	83-3	<i>Baums IB, Devlin-Durante M; Pennsylvania State University</i>	Probing mechanisms of coral acclimatization
8:45 am	83-4	<i>Winstead D, Ohdera A*, Medina M, Lajeunesse TL; Pennsylvania State University</i>	<i>Symbiodinium</i> proliferation inside a cnidarian host vessel are competitive and dynamic
9:00 am	83-5	<i>Maruyama S, Weis VM; Oregon State University</i>	The role of symbiont glycans and host immunity in the recolonization of the model cnidarian <i>Aiptasia</i> with heat-stressed <i>Symbiodinium</i>
9:15 am	83-6	<i>Tivey TR, Adpressa DA, Mandelare PE, Parkinson JE, Loesgen S, Weis VM; Oregon State University</i>	Novel glycan biosynthesis manipulation of <i>Symbiodinium</i> impacts onset of cnidarian-dinoflagellate symbiosis
9:30 am	Coffee Break		Salons 8-9

8:00 AM – 9:30 AM	Session 84	Foothill E
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Conservation Genetics

Chairs: *Andrew Mohan, Leva Roznere*

8:00 am	84-1	<i>Adams CIM, Hoekstra LA, Muell MR, Janzen FJ; University of Otago, Iowa State University</i>	Estimating aquatic reptile density under field conditions using environmental DNA in Iowa, United States of America.
8:15 am	84-2	<i>Thomas SG, Johnson J; Western Kentucky University</i>	Landscape Genetics of California Tiger Salamanders: Inferences from multiple methods
8:30 am	84-4	<i>Roznere I, Sinn BT, Watters GT; Ohio State University, West Virginia University</i>	Transcriptomics in Conservation Biology: A Case Study with Freshwater Mussels
8:45 am	84-5	<i>Mahon AR, Resh CA, Galaska MP; Central Michigan University, Lehigh University</i>	Applying 'next generation' genomic tools for investigating aquatic invasive species
9:00 am	84-6	<i>Hotaling S, Giersch JJ, Finn DS, Tronstad LM, Muhlfeld CC, Weisrock DW; Washington State University, USGS Northern Rocky Mountain Science Center, Missouri State University, University of Wyoming, University of Kentucky</i>	Conservation Genomics of an Alpine Stonefly Threatened by Climate Change
9:15 am	84-7	<i>Halsey MK, Ray DA, Bradley RD, Stevens RD; Texas Tech University</i>	Present-Day Species Distributions of Pocket Gophers in Texas
9:30 am	Coffee Break		Salons 8-9

10:00 AM – 12:00 PM	Session 85	Salons 13-15
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Locomotion on Variable Substrates

Chair: *Chen Li*

10:00 am	85-1	<i>Jacquemetton CP, Gupta A, He C, Ward AB, Mehta RS; University of California, Los Angeles, Harker High School, BASIS Independent Silicon Valley, Adelphi University, University of California, Santa Cruz</i>	Overcoming the Incline: The kinematics of <i>Echidna nebulosa</i> on wet pebble substrate
10:15 am	85-2	<i>Hall JK, McGowan CP, Lin DC*; Washington State University, University of Idaho</i>	Comparison between hopping on solid and sand substrates
10:30 am	85-3	<i>Pravin S, Han E, Jaeger HM, Hsieh ST; Temple University, University of Chicago</i>	Foot Geometry and Kinematics of Impact Significantly Affect Force Generation in Granular Media
10:45 am	85-4	<i>Bagheri H, Jayanetti V, Burch HR, Marvi H; Arizona State University</i>	<i>Basilisk Lizards Transition Strategies from Land to Water</i>
11:00 am	85-5	<i>Taylor-Burt KR, Gillespie K, Biewener AA; Harvard University</i>	Aquatic takeoffs require faster leg muscle contractions than terrestrial takeoffs in mallard ducks
11:15 am	85-6	<i>Butler MA, Rivera JA, Sung HW; University of Hawaii</i>	Morphological correlates of jumping and swimming performance in Paupuan microhylid frogs
11:30 am	85-7	<i>Reynaga CM, Eaton C, Strong G, Azizi E; Univ of California, Irvine, Colby College</i>	Hindlimb mechanics and motor pattern response to varying compliant substrates in the Cuban tree frog
11:45 am	85-8	<i>Thoms G, Li C*; Johns Hopkins University</i>	Body vibrations induced by legged locomotion help traverse complex 3-D obstacles
12:00 pm	..... Lunch Break		

10:15 AM – 11:45 AM Session 86 Salons 10-12

Adhesion: Sticky When Dry

Chairs: *Tim Higham, Austin Garner*

10:15 am	86-1	<i>Garner AM, Klittich MR, Piechowski JM, Maksuta D, Buo C, Stefanovic SR, Niewiarowski PH, Dhinojwala A; Univ of Akron</i>	Recovery Ability of Gecko Adhesive Toe Pads After Fouling with Water or Dirt
10:30 am	86-2	<i>Klittich MR, Garner AM, Maksuta D, Niewiarowski PH, Dhinojwala A; University of Akron</i>	Impact of Surface Chemistry on Gecko Self Cleaning
10:45 am	86-3	<i>Higham TE, Rödder D, Thielen M, Speck T; Univ of California, Riverside, Museum Koenig, Univ Freiburg</i>	Comparative adhesive capacity and morphology of day geckos (<i>Phelsuma</i>) in relation to native plant surface microstructure
11:00 am	86-4	<i>O'Donnell MK, Deban SM; University of South Florida</i>	Scaling of Clinging Performance in Plethodontid Salamanders
11:15 am	86-5	<i>Hernandez AM, Farrell BD; Harvard University</i>	The Claw's the Limit: Understanding the Importance of Different Beetle Tarsal Structures in Relation to Landing Attachment
11:30 am	86-6	<i>Gilet T, Labousse S, Lambert P, Compere P, Gernay SM; U Liege, Corwave, U Libre de Bruxelles</i>	Multiscale tarsal adhesion kinematics of freely-walking dock beetles
11:45 am	..... Lunch Break		

10:00 AM – 12:00 PM Session 87 Salons 1-2

Sensory Biology - Active and Environmental Sensing

Chairs: *Vladimir Mashanov, Allen Mensinger*

10:00 am	87-1	<i>Mashanov V, Khoury M, Ambrose A, Mashanova D, Zueva O; University of North Florida</i>	Neural regeneration in an echinoderm
10:15 am	87-2	<i>Early CM, James HF, Witmer LM; Ohio Univ, Smithsonian NMNH</i>	The bill-tip organ: probing at tactile sensitivity in birds
10:30 am	87-3	<i>Van Wert JC, Rogers LJ, Mensinger AF; Marine Biological Laboratory, University of Minnesota Duluth</i>	The Effect of Self-generated Movement on Lateral Line Sensitivity in the Toadfish, <i>Opsanus tau</i>
10:45 am	87-4	<i>Dow EG, Rodriguez-Lanetty M; Florida International University</i>	A Cnidarian-Specific Ionotropic Glutamate Receptor Lineage Functional Immune Response

Saturday 6 January 2018

11:00 am	87-5	Mekdara PJ, Schwalbe MAB, Tytell ED; Tufts University	Neomycin, Streptomycin, and Cobalt Chloride are Ototoxic to All Hair Cells in the Fish Lateral Line System
11:15 am	87-6	Havens LT, Speiser DJ; University of South Carolina, Columbia	Assessing an automatable protocol for electrophysiological measurement of spectral sensitivity
11:30 am	87-7	Beatini JR, Proudfoot GA, Gall MD; Vassar College	Effects of Presentation Rate and Onset Time on Auditory Brainstem Responses in Northern Saw-whet Owls
11:45 am	87-8	Gignac PM, Kley NJ; Oklahoma State University Center for Health Sciences, Stony Brook University	High-resolution diceCT imaging for comparative neuroanatomical studies

12:00 pm **Lunch Break**

10:30 AM – 11:45 AM Session 88

Salons 3-4

Plasticity

Chairs: Angela Jones, Dale Stevens

10:30 am	88-1	Casasa S, Moczek AP; Indiana University, Bloomington	The role of ancestral phenotypic plasticity in evolutionary diversification: population density effects in horned beetles
10:45 am	88-2	Jones AJ, Bourdeau PE; Humboldt State University, Arcata	Morphological Variation in Aboral Spines in the Forcipulate Sea Star, <i>Pisaster ochraceus</i> , Across Developmental and Environmental Gradients
11:00 am	88-4	Webb SJ, Taylor JRA; Scripps Institution of Oceanography, UCSD	Settling to the Bottom: Importance of Temperature and Calcification for Adult Phases of Tuna Crabs
11:15 am	88-5	Singh AL, Gonzales LA, Paluh DJ, Blackburn DC; Florida Museum of Natural History	Variation in the Bony Labyrinth (Inner Ear) of Anurans
11:30 am	88-6	Smolinsky AN, Middleton KM; Univ of Missouri, Columbia	Muscle- and impact-dominated activities differentially affect bone morphology and mineral apposition in young outbred mice

12:00 pm **Lunch Break**

10:15 AM – 11:45 AM Session 89

Salons 5-6

Environmental Stress Endocrinology

Chairs: Loren Beck, Haruka Wada

10:15 am	89-1	Thompson MA, Langkilde T, Tracy CR; California State University, Fullerton, Pennsylvania State University, Boyd Deep Canyon Desert Research Center, Univ of California, Riverside	Effect of Water Restriction on Baseline CORT and Thermoregulation in Desert Iguana (<i>Dipsosaurus dorsalis</i>)
10:30 am	89-2	Naylor MF, Grindstaff JL; Oklahoma State University	Birds on Birth Control: Does Exposure to 17 α -Ethinylestradiol Influence Corticosterone Levels in Male and Female Zebra Finches (<i>Taeniopygia guttata</i>)?
10:45 am	89-3	Newman AEM, Stohart MR; University of Guelph	Does city life make a difference? Stress physiology and microbiome structure in urban grey squirrels.
11:00 am	89-4	Henson JH, Sims CG, Schoech SJ; University of Memphis, University of Arkansas at Monticello	Stress Physiology and Body Condition of Mallards (<i>Anas platyrhynchos</i>) Changes Across Fall and Winter
11:15 am	89-5	Neyer AA, Bachman GC; University of Nebraska-Lincoln	Glucocorticoid response of ornate box turtles to extreme temperature exposure.
11:30 am	89-6	Falso PG, Noble CA, Adame LC, Rodriguez SA, Nguyen MN, Westhead ML, Hayes TB; Slippery Rock University, Univ of California, Berkeley	Native and Invasive Amphibians: A Comparison of Stress and Associated Immune Function Following Agrochemical Exposure

11:45 am **Lunch Break**

10:00 AM – 12:00 PM Session 90

Foothill G

Complementary to S10: Behavioral and Physiological Adaptation to Urban Environments, Part 1

Co-chairs: Davide Dominoni, Jay Nelson

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10:00 am	90-1	<i>Ul-Hasan S, Malloy ME, Hofmeister JK, Sstrom MJ; University of California, Merced, Merced, CA, Scripps Institution of Oceanography, UC San Diego</i>	Anthropogenic impacts on the morphology and ecology of venomous marine gastropod species <i>Californiconus californicus</i>
10:15 am	90-2	<i>Schmidt C, Kinnunen R, Garroway CJ; University of Manitoba</i>	Effects of Urbanization on Genetic Variation: Implications for Adaptability in Response to Rapid Environmental Change
10:30 am	90-3	<i>Kinnunen RP, Schmidt C, Garroway CJ; University of Manitoba</i>	City Traits as Predictors of Avian Diversity and Life History Traits
10:45 am	90-4	<i>Sepp T, Giraudeau M, McGraw K, Kaasik A; Arizona State University, University of Tartu</i>	Does City Living Lead to Slower Pace of Life: Urban Impacts on Avian Life-History Evolution
11:00 am	90-5	<i>Campbell-Staton SC, Winchell K; University of Montana, University of Massachusetts</i>	Temperature-mediated shifts in performance and gene expression between populations of the Puerto Rican crested anole in natural and urban habitats
11:15 am	90-6	<i>Hudson SB, Smith GD, Durso AM, French SS; Utah State University</i>	Selection Across an Urban-Rural Landscape in Side-blotched Lizards <i>Uta stansburiana</i>
11:30 am	90-7	<i>Smith GD, Hudson SB, French SS; Dixie State University, Utah State University</i>	A Country Lizard Will Survive: Urban and Rural Individuals Respond Differently to Climatic Variation
11:45 am	90-8	<i>Nelson JA, Thorarensen H; Holar University College, Towson University</i>	Using extant fishes to predict the future of freshwater fishes facing climate disruption
12:00 pm	Lunch Break		

10:15 AM – 11:45 AM	Session 91	Foothill C
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Immunity

Chairs: Kristen Sprayberry, Timothy Sullivan

10:15 am	91-1	<i>Madelaire CB, Cassettari BO, Gomes FR; University of São Paulo</i>	Immunomodulation by testosterone and corticosterone in toads: experimental evidences from transdermal application
10:30 am	91-2	<i>Scalf CS, Ashley NT; Western Kentucky Univ</i>	Transcriptomic Response to Immune Challenge in Zebra Finch (<i>Taeniopygia guttata</i>) using RNA-seq
10:45 am	91-3	<i>Rios-Sotelo GR, Northup D, Buecher D, Voyles JL; Univ of Nevada, Univ of New Mexico</i>	Skin Secretions May Provide Bats with Innate Immune Defenses Against <i>Pseudogymnoascus destructans</i>
11:00 am	91-4	<i>Frank CL, Ingala MR, Beglin LJ, Hudson AJ, Nishat N; Fordham Univ, American Museum of Natural History</i>	The Effects of Cutaneous Wax Esters, Triacyl- and Monoacylglycerols on the Susceptibility to White-nose Syndrome
11:15 am	91-6	<i>Sullivan TJ, Neigel JE; University of Arkansas, University of Louisiana at Lafayette</i>	A case-control study of immune related sequence polymorphism in the blue crab <i>Callinectes sapidus</i>
11:30 am	91-7	<i>Sprayberry KM, Tylan C, Sheriff M, Owen D, MacLeod K, Langkilde T; Penn State University</i>	History of stress affects cell-mediated immunity in a lizard
11:45 am	Lunch Break		

10:30 AM – 12:00 PM	Session 92	Nob Hill A-B
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Mate Selection

Chair: Erica Westerman

10:30 am	92-1	<i>Westerman EL, Kronforst MR, Olson-Manning C; University of Arkansas, University of Chicago, Augustana University</i>	Behavior before beauty: signal weighting during mate selection in the butterfly <i>Papilio polytes</i>
10:45 am	92-2	<i>Hurd PL; Univ of Alberta</i>	Sexual selection, and isotocin neural phenotype differences in a cichlid with alternative male morphs
11:00 am	92-3	<i>Labarbera K, Hayes KR, Lacey EA; UC Berkeley</i>	Environmental variation along an elevation gradient is associated with variation in extra-pair paternity, but not the use of a sexually selected signal, in dark-eyed juncos
11:15 am	92-4	<i>Shahandeh MP, Pischedda A, Turner TL; Univ of California, Santa Barbara, Barnard College, Columbia University</i>	The genetic evolution of reproductively isolating male pheromone preference in <i>Drosophila simulans</i> and <i>sechellia</i>

Saturday 6 January 2018

11:30 am	92-5	<i>Steenweg RJ, Hennin HL, Legagneux P, Gilchrist HG, Crossin GT, Love OP; Dalhousie Univ, Univ of Windsor, Univ de Québec à Rimouski, Environment and Climate Change Canada, NWRC</i>	Mate Guarding in a Diving Seaduck: Energetic Costs And Reproductive Benefits
11:45 am	92-6	<i>Rogers DC; University of Kansas</i>	Anostracan mate searching behaviour
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM	Session 93	Nob Hill C-D
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Thermobiology of Endotherms

Chairs: Anusha Shankar, Donald Powers

10:15 am	93-1	<i>Powers DR, Bloomquist ER, Tobalske BW; George Fox University, University of Montana</i>	Budgeting Body Heat by Hummingbirds during Hovering at Moderately High Temperature
10:30 am	93-2	<i>Shankar A, Morales AC, Urgiles GMU, Cordova GKC, Cisneros INH, Tinoco BA, Graham CH, Powers DR; Stony Brook University, McGill University, Universidad del Azuay, George Fox University</i>	From Shallow to Deep: A Torpor Spectrum in Hummingbirds
10:45 am	93-3	<i>Balk MA, Burger JR, Fristoe TS, Khaliq I, Hof C, Smith FA; National Museum of Natural History, University of North Carolina, Washington University, St. Louis, Senckenberg Biodiversity and Climate Research Centre, University of New Mexico</i>	Constraints and trade-offs in endotherm thermal regulation: implications for climate adaptations
11:00 am	93-4	<i>Yegian AK, Castillo ER, McCabe CM; Harvard University, Hunter College, CUNY, Duke University</i>	Are primates low energy? Testing the heat dissipation hypothesis for mammalian field metabolic rate scaling
11:15 am	93-5	<i>Smith EK, Wolf BO; University of New Mexico</i>	Are there limits to the heat dissipation limit theory? In desert birds, water is the missing ingredient
11:30 am	93-6	<i>Ohrnberger SA, Hambly C, Speakman JR, Valencak TG; University of Veterinary Medicine Vienna, University of Aberdeen, Chinese Academy of Sciences</i>	Golden hamsters raise large litters, produce loads of milk but suffer from heat stress
11:45 am	93-7	<i>Weitzner EL, Pearson LE, Burns JM, Liwanag HEM; Cal Poly, University of Alaska Fairbanks, University of Alaska Anchorage</i>	Sealing in the Heat: Modeling Heat Loss Throughout Development in Harp Seals
12:00 pm	Lunch Break		

10:15 AM – 11:45 AM	Session 94	Golden Gate C-1
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Plasticity and Evolution

Chair: Ben Dantzer

10:15 am	94-1	<i>Dantzer B, Westrick SE, Monaghan P, Boutin S, Humphries MM, Lane JE, McAdam AG, Van Kesteren F; University of Michigan, University of Glasgow, University of Alberta, McGill University, University of Saskatchewan</i>	How does maternal stress affect offspring oxidative signaling and telomeres in wild North American red squirrels?
10:30 am	94-2	<i>Prokkola JM, Hyvarinen P, Alioravainen N, Lemopoulos M, Vornanen M, Vainikka A; Univ of Eastern Finland, Natural Resources Institute Finland</i>	Food Availability and Genetic Background as Determinants of Partial Migration in Freshwater Brown Trout
10:45 am	94-3	<i>Sparkman A, Chism K, Bronikowski A, Brummett L, Combrink L, Davis C, Holden K, Kabey N, Miller D; Westmont College, Iowa State University, Pennsylvania State University</i>	Differences in Developmental Phenology and Maternal Egg Provisioning in Two Sympatric Viviparous Snakes
11:00 am	94-4	<i>Wang AZ, Husak JF; University of St. Thomas</i>	Effects of Specialized Exercise Training on Innate and Adaptive Components of the Immune System.
11:15 am	94-5	<i>Young RC, Kitaysky AS, Drummond HM; Universidad Nacional Autónoma de México, University of Alaska Fairbanks</i>	Intergenerational telomere dynamics in the blue-footed booby (<i>Sula nebouxi</i>)
11:30 am	94-6	<i>Caplins SA; University of California, Davis</i>	Individual Plasticity for Larval Type in a Sea Slug

11:45 am Lunch Break

10:15 AM – 11:45 AM Session 95 Golden Gate C-2

Reef Communities

Chairs: Amanda Kahn, Brendan Cornwell

10:15 am	95-1	<i>Weinnig AM, Deegan DF, Cordes EE; Temple University</i>	Physiological Response of a Cold-Water Coral (<i>Lophelia pertusa</i>) to the Combined Stressors of Climate Change and Hydrocarbon Influence
10:30 am	95-3	<i>Armstrong EJ, Hill RW, Roa JN, Tresguerres M, Stillman JH, Inaba K, Morita M; Univ of California, Berkeley, Mich State Univ, Scripps Inst Oceanography, UCSD, Univ of Tsukuba, Shimoda</i>	Acid Secretion in Giant Clams Facilitates Burrowing Into Coral Reefs
10:45 am	95-4	<i>Huffmyer AS, Gates RD; University of Hawaii, Institute of Marine Biology</i>	Thermal Conditioning and Heterotrophic Feeding Enhances Resilience in Juvenile Corals
11:00 am	95-5	<i>Kahn AS, Matveev E, Law LK, Yahel G, Leys SP; Univ of Alberta, Ruppin Academic Center</i>	The Role of Biodiversity in Benthic-Pelagic Coupling by Glass Sponge Reefs
11:15 am	95-6	<i>Collin R, Driskell AC, Venera-Pontón DE, Boyle MJ; Smithsonian Inst</i>	Larval Barcoding of “Minor” Metazoan Phyla in Mega-Diverse Tropical Oceans
11:30 am	95-7	<i>Padilla DK, Volkenborn N, Gurr S, Milke L, Meseck S, Rugila A, Redman D, Dixon M, Veilleux D, Liguori A, Rosa M; Stony Brook University, NOAA Northeast Fisheries Science Center</i>	Population Differences In Response To Ocean Acidification In Blue Mussels

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 96 Foothill E

Neurobiology & Anatomy

Chair: Mark Willis

10:15 am	96-1	<i>Satterlie RA; University of North Carolina Wilmington</i>	Steering Function of the Tail in the Pteropod Mollusc <i>Clione limacina</i>
10:30 am	96-2	<i>Porter ML, Steck M*, Roncalli V, Lenz P; University of Hawai'i at Mānoa, Pacific Biosciences Research Center</i>	Molecular Characterization of Copepod Phototransduction
10:45 am	96-3	<i>Winters GC, Bostwick CJ, Weber HE, Kohn AB, Moroz LL; Univ Florida, Transylvania Univ</i>	Molecular organization of Octopus brains reveals insight into unique memory centers
11:00 am	96-4	<i>Feller KD, Sutton G, Gonzalez-Bellido PT; University of Cambridge, University of Bristol</i>	Neural control in a striking crustacean, <i>Squilla mantis</i> (Stomatopoda)
11:15 am	96-5	<i>Chou A, Cronin TW; University of Maryland, Baltimore County</i>	An additional ellipsoid body-like neuropil in the stomatopod central complex?
11:30 am	96-6	<i>Liu P, Wang X, Yeung D, Cheng B; Pennsylvania State University</i>	Flight Control of Landing Maneuvers in Bluebottle Flies
11:45 am	96-7	<i>Hughes DF, Gignac PM, Greenbaum E, Khan AM; University of Texas at El Paso, Oklahoma State University</i>	Field-Based Brain Tissue Preservation Methods and Comparative Multi-Scale Structural Analyses Reveal the Cranial Diversity of Chameleons

12:00 pm Lunch Break

Saturday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:00 PM Session 97 Salons 13-15

Bird Flight: Wing Morphing and More

Chairs: Anthony Lapsansky, Laura Matloff

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| 1:30 pm | 97-1 | <i>Matloff LY, Chang E, Stowers AK, Feo TJ, Thomson C, Lentink D; Stanford University, Smithsonian Institution</i> | Multi-element wings: How coordinated feather motion enables avian wing morphing |
| 1:45 pm | 97-2 | <i>Cheney JA, Stevenson JPJ, Durston NE, Usherwood JR, Windsor SP, Bomphrey RJ*; Royal Veterinary College, University of Bristol</i> | Avian gliding flight: wing configurations in and out of ground effect |
| 2:00 pm | 97-3 | <i>Deetjen ME, Lentink D; Stanford University</i> | High-Speed Surface Reconstruction of Flying Birds Using Structured Light |
| 2:15 pm | 97-4 | <i>Lapsansky AB, Igoe J, Tobalske BW; University of Montana</i> | Effects of added payload on wingbeat kinematics in a flap-bounding bird |
| 2:30 pm | 97-5 | <i>Kikuchi D, Maeda M, Shiomi K, Tanaka H; Tokyo City Univ, Tokyo Institute of Technology, National Institute of Polar Research</i> | Not ornament but aerodynamic device? New hypothesis for the horn of rhinoceros auklet |
| 2:45 pm | 97-6 | <i>Chang E, Matloff LY, Stowers AK, Lentink D; Stanford University</i> | Feathered wings: how underactuated wings morph to widen the performance envelope of gliding flight |

3:30 pm Coffee Break Salons 8-9

1:30 PM – 3:00 PM Session 98 Salons 10-12

Ecomorphology: Locomotion

Chairs: Natasha Mhatre, Aja Carter

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| 1:30 pm | 98-1 | <i>Edwards DD, Moore PA; Bowling Green State University</i> | Predicting the big from the small: hydrodynamically influenced changes in stonefly nymph morphology are related to watershed dynamics |
| 1:45 pm | 98-2 | <i>Funkhouser C, Walsh M; Univ of Texas at Arlington</i> | Effects of flow regimes on morphology and swimming performance |
| 2:00 pm | 98-3 | <i>Mhatre N, Sivalingham S, Mason A; University of Toronto, Scarborough</i> | Posture Controls The Mechanical Segregation Of Signals In The Body Of The Black Widow Spider |
| 2:15 pm | 98-4 | <i>Carter AM, Hsieh ST, Dodson P, Sallan L; University of Pennsylvania, Temple University</i> | Vertebral ecomorphology and transitions to land in a diverse clade of early tetrapods |
| 2:30 pm | 98-5 | <i>Jasinski SE, Carter AM, Dodson P; University of Pennsylvania</i> | Significance of the Scapula for Variation and Attachment of Extrinsic and Intrinsic Musculature within Felids (Mammalia: Felidae) |
| 2:45 pm | 98-6 | <i>Yuan ML, Wake MH, Wang IJ; University of California, Berkeley</i> | Phenotypic Integration and Convergence of Claw Morphology in Caribbean <i>Anolis</i> Lizards |

3:30 pm Coffee Break Salons 8-9

1:30 PM – 3:15 PM Session 99 Salons 1-2

Rhythm and Behavior

Chair: James Newcomb

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| 1:30 pm | 99-1 | <i>Duback VE, Thomas RI, Huyck TL, Mbarani IM, Bernier KR, Cook GM, Pankey MS, Watson WH, Newcomb JM*; University of New Hampshire, New England College</i> | Localization and Expression of Circadian Clock Transcripts in the Brain of the Nudibranch <i>Melibe leonina</i> |
| 1:45 pm | 99-2 | <i>Kane SA, Dakin R, Lu Y, Fang R; Haverford College, Smithsonian Conservation Biology Institute</i> | Courtship display dynamics and iridescent structural color in peacocks and related ocellated pheasant species |

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2:00 pm	99-3	<i>Sewall KB, Nardini C, Koppen J, Beck ML; Virginia Tech, College of New Jersey, Rivier College</i>	Lead exposure compromises song learning and bill coloration in male zebra finches
2:15 pm	99-4	<i>Wilsterman K, Ballinger M, Williams CM; Univ of California, Berkeley</i>	Winter dormancy in insects and mammals: A new, comparative framework
2:30 pm	99-5	<i>Tarrant AM, Helm RR, Reitzel AM, Rivera HE; Woods Hole Oceanogr. Inst, UNC Charlotte</i>	Daily Environmental Cycles Entrain Robust Gene Expression Patterns in the Sea Anemone <i>Nematostella vectensis</i>
2:45 pm	99-6	<i>Cook GM, Gruen AE, Morris J, Pankey MS, Senatore A, Katz PS, Watson WH, Newcomb JM; New England College, University of New Hampshire, University of Toronto, University of Massachusetts, Amherst</i>	Circadian Clock Proteins in the Nudibranch Mollusks <i>Hermisenda crassicornis</i> , <i>Melibe leonina</i> , and <i>Tritonia diomedea</i> .
3:00 pm	99-7	<i>Hein AM, Gil MA*; NOAA; Univ of California, Santa Cruz, Univ of California, Davis</i>	Measuring and modeling the escape response of wild fish
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:30 PM	Session 100	Salons 3-4
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Muscle Physiology

Chairs: Jennifer Dearolf, Anthony Hessel

1:30 pm	100-1	<i>Richards CT, Eberhard EA; Royal Veterinary College</i>	A jumping frog musculoskeletal simulation powered by living muscle tissue
1:45 pm	100-2	<i>Martin KS, Kahrl AF, Ivanov BM, Johnson MA; Karolinska Institutet, Stockholm University, Trinity University</i>	Copulation rates in anole lizards are correlated with muscle damage
2:00 pm	100-3	<i>Herndon CJ, Fenton FH; Georgia Institute of Technology</i>	Not all heartbreak is the same: a cross-species analysis of cardiac electrical instabilities
2:15 pm	100-4	<i>Rogers EJ, Sommers AS, McGuire LP; Texas Tech University</i>	Summer Variation in Fat Storage and Lipid Oxidative Capacity in the Brazilian Free-tailed Bat
2:30 pm	100-5	<i>Del Carlo RE, Reimche JS, Hague MTJ, Brodie Jr ED, Leblanc N, Feldman CR; Univ of Nevada, Univ of Virginia, Utah State Univ</i>	Performance costs of adaptive resistance to tetrodotoxin in the Newt-Snake coevolutionary arms race
2:45 pm	100-6	<i>Hessel AL, Nishikawa KC; Northern Arizona University</i>	A role for titin in the activation-dependent shift of the force-length relationship in skeletal muscle.
3:00 pm	100-7	<i>Carter W, Whiteman J, Cooper-Mullin C, Newsome S, McWilliams S; University of Rhode Island, University of New Mexico</i>	Fatty acids in muscle differ in turnover rates and response to exercise in Zebra Finch
3:15 pm	100-8	<i>Dearolf JL, McLellan WA, Pabst DA, Hermanson JW; Hendrix College, Univ of North Carolina at Wilmington, Cornell University</i>	Regional variation in the fiber-type profile of the bottlenose dolphin diaphragm
3:30 pm	Coffee Break		Salons 8-9

1:30 PM – 3:15 PM	Session 101	Salons 5-6
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Behavioral Ecology: Seasonality and Hormones

Chair: Iris Levin

1:30 pm	101-1	<i>Barnes BM, Williams CT, Buck CL, Sheriff MJ, Richter MM, Krause JS; Univ of Alaska Fairbanks, Northern Arizona Univ, Penn State Univ, Western Kentucky Univ, Univ of California, Davis</i>	Sex-dependent phenological plasticity in an arctic hibernator
1:45 pm	101-2	<i>Kajiura SM, Waldron JM; Florida Atlantic University</i>	Seasonal Abundance and Spatial Distribution of Blacktip Sharks (<i>Carcharhinus limbatus</i>) in Southeast Florida
2:00 pm	101-3	<i>Sanchez ER, Tracy CR; California State University, Fullerton, Boyd Deep Canyon Desert Research Center, University of Nevada, Reno</i>	Do Sex and Season Affect Thermoregulatory Behaviors of the Common Chuckwalla (<i>Sauromalus ater</i>)?
2:15 pm	101-4	<i>Fletcher QE, Webber QMR, Menzies AK, Collis MA, Willis CKR; University of Winnipeg</i>	The Evolutionary Potential of Hibernation Phenology in Little-brown bats

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2:30 pm	101-5	<i>Levin II, Fosdick BK, Tsunekage T, Aberle MA, Bergeon-Burns CM, Hund AK, Safran RJ; Agnes Scott College, Colorado State University, Virginia Polytechnic Institute and State University, Indiana University, University of Colorado</i>	Demonstrating causality among features of the integrated phenotype: changes in social interactivity and hormones are associated with experimental manipulation of a signal trait
2:45 pm	101-6	<i>Cook EG, Lovern M, Leal M; Univ of Missouri, Columbia, Oklahoma State University</i>	Investigating the potential for testosterone to mediate territorial aggression in female <i>Anolis</i> lizards
3:00 pm	101-7	<i>Tang-Martinez Z, Braude S; University of Missouri-St. Louis, Washington University</i>	Re-examining the Testosterone and Immunosuppression Hypothesis: Why Some of the Evidence Casts Doubts
3:30 pm	.....	Coffee Break	Salons 8-9

1:30 PM – 3:30 PM Session 102 Foothill G

Complementary to S10: Behavioral and Physiological Adaptation to Urban Environments, Part 2

Co-chairs: Christopher Thawley, Elizabeth Addis

1:30 pm	102-1	<i>Battles AC, Kolbe JJ; University of Rhode Island</i>	Costs and benefits of urbanization on lizard locomotor performance
1:45 pm	102-2	<i>Thawley CJ, Kolbe JJ; University of Rhode Island</i>	When the Lights Go Up in the City: Artificial Light at Night Impacts Reproduction in Brown Anoles (<i>Anolis sagrei</i>)
2:00 pm	102-3	<i>Webb AC, Knapp C, Iverson J, Denardo D, French S; Utah State University, John G. Shedd Aquarium, Earlham College, Arizona State University</i>	The effects of tourism and food provisioning on the physiology of Exuma Rock Iguanas (<i>Cyclura cyclura</i>)
2:15 pm	102-4	<i>Addis EA, Price K, Kittridge C, Damby Z; Gonzaga University</i>	Country Life May Not Be Stress-Free: Fecal Glucocorticoids in Yellow-Bellied Marmots along a Rural-Urban Continuum
2:30 pm	102-5	<i>Putman BJ, Blumstein DT, Pauly GB; University of California Los Angeles, Natural History Museum of Los Angeles County</i>	Anthropophobia and Lizard Responses to Urbanization in Southern California
2:45 pm	102-6	<i>Tiatragul S, Pavlik NG, Hall JM, Warner DA; Auburn University, University of New Mexico</i>	Nest-site selection in urban dwelling anoles could help embryos beat the heat.
3:00 pm	102-7	<i>Johnson D, Stahlschmidt ZR; Univ of the Pacific</i>	City limits: Determinants of thermal maxima in an urban ant community
3:15 pm	102-8	<i>Injaian AS, Taff CC, Patricelli GL; Univ of California, Davis, Cornell Lab of Ornithology</i>	Experimental Anthropogenic Noise Impacts Parental Behavior, and Nestling Growth and Oxidative Stress in a Non-urban Bird
3:30 pm	.....	Coffee Break	Salons 8-9

1:30 PM – 3:30 PM Session 103 Foothill C

Evolution of Developmental Processes

Chairs: Christine Bohmer, Mihaela Pavlicev

1:30 pm	103-1	<i>Koenig KM; Harvard University</i>	Early Eye Development in the Squid <i>Doryteuthis pealeii</i> and the Evolution of Morphogenesis
1:45 pm	103-2	<i>Camacho J, Tabin CJ, Abzhanov A; Harvard University, Harvard Medical School, Imperial College London</i>	Exploring adaptive and novel traits of bat faces through morphometrics and developmental genetics
2:00 pm	103-3	<i>Böhmer C; Muséum National d'Histoire Naturelle Paris</i>	From Genes to Fossils: Investigating the Evolution of Axial Patterning in Tetrapods through Deep Time
2:15 pm	103-4	<i>Corbet M, Joyce C, Sur A, Renfro A, Meyer NP*; Clark University</i>	Function of BMP signaling in the annelid <i>Capitella teleta</i> and implication for nervous system evolution
2:30 pm	103-5	<i>Keer S, Hernandez LP; George Washington University</i>	Earliest development of the palatal organ in zebrafish
2:45 pm	103-6	<i>Mitchell JM, Nichols SA; University of Denver</i>	Novel Cell Adhesion Mechanisms in Sponge Tissues
3:00 pm	103-7	<i>Lowe J, Minor P, Andrade Lopez J, Green S; Stanford University, Caltech</i>	Patterning contrasting body plans with deeply conserved developmental programs.

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3:15 pm **103-8** *Santibanez-Lopez CE, Nolan ED, Setton EVW, Sharma PP; Univ Wisconsin-Madison* Gene expression in appendages of *Centruroides sculpturatus* clarify the evolutionary origin of the scorpion pectine

3:30 pm **Coffee Break** **Salons 8-9**

1:30 PM – 3:00 PM **Session 104** **Nob Hill A-B**

Complementary to S11: Measuring Biodiversity and Extinction - Present and Past

Co-chairs: Elizabeth Sibert, Francesca Leasi

1:30 pm **104-1** *Leasi F, Sevigny J, Laflamme EM, Hochberg R, Norenburg JL, Thomas KW; University of New Hampshire* Disentangling biodiversity in the growing field of environmental genomics: role of traditional taxonomists

1:45 pm **104-2** *Florio J, Fisher B, Tsutsui N; California Academy of Sciences, Univ of California Berkeley ESPM* Monitoring insect diversity in backyard swimming pools with citizen scientists

2:00 pm **104-3** *Maslakova SA, Schwartz ML, Moss ND, Dillenburg B, Robbins K, Collin R, Zattara E, Howland C, Norenburg J; Oregon Institute of Marine Biology, Univ of Oregon, Univ of Washington, Smithsonian Tropical Research Institute* Nemertean diversity of Bocas del Toro, Panama

2:15 pm **104-4** *Schumm MP, Edie SM, White AE, Collins KS, Price TD, Jablonski D; University of Chicago* Global Patterns of Functional Diversity and Community Assembly in Marine and Terrestrial Systems

2:30 pm **104-6** *Sibert EC; Harvard University* Rapid diversification of open ocean fish and marine communities following the K/Pg mass extinction

2:45 pm **104-7** *Valentine SA, McCauley DJ, Atwood TB; Utah State University, Univ of California, Santa Barbara* Extinction Vulnerability of Different Trophic Levels in Mammalian Species across Time

3:30 pm **Coffee Break** **Salons 8-9**

1:30 PM – 3:30 PM **Session 105** **Nob Hill C-D**

Comparative Endocrinology

Chairs: Diana Hews, Bobby Fokidis

1:30 pm **105-1** *Seddon RJ, Hews DK*; Indiana State Univ* Do Plasma Levels of α -MSH or Steroid Hormones Correlate across Lizard Populations Varying in Melanization?

1:45 pm **105-2** *Booth AR, Zou E; Nicholls State University* Impact of Molt Disrupting BDE-28 on Epidermal Ecdysteroid Signalling in the Blue Crab, *Callinectes sapidus*

2:00 pm **105-3** *Roegner ME, Chen HY, Watson RD; University of Alabama at Birmingham* Regulation of intracellular Ca^{2+} signaling in molting glands of the blue crab, *Callinectes sapidus*.

2:15 pm **105-4** *Sirman AE, Kucera AC, Vangorder-Braid JT, Lendvai AZ, Heidinger BJ; North Dakota State University, University of Debrecen* Does IGF-1 influence growth and cellular aging in house sparrows (*Passer domesticus*)?

2:30 pm **105-5** *Bentz AB, George EM, Rosvall KA; Indiana University* Tissue-specific Gene Regulation Corresponds with Seasonal Plasticity in Female Testosterone and Aggression

2:45 pm **105-6** *Shyamal S, Das S, Mykles DL, Durica DS; Univ of Oklahoma, Colorado State University* Ecdysteroid Signaling in the Crustacean Molting Gland: A Transcriptomic Approach

3:00 pm **105-7** *Schuppe ER, Fuxjager MJ; Wake Forest University* Comparative assessment reveals widespread capacity for androgenic signaling across peripheral tissues

3:15 pm **105-8** *Fokidis HB; Rollins College* Some order from chaos: systematic review and meta-analysis reveal an emerging framework for understanding steroid responses to energy challenges?

3:30 pm **Coffee Break** **Salons 8-9**

Reproductive Physiology

Chairs: Sherry Tamone, Ned Place

1:30 pm	106-1	Tamone SL, Levy T, Bower E, Sagi A; University of Alaska Southeast, Ben Gurion University of the Negev	Expression of vitellogenin (Vg) gene from the hepatopancreas and gonad of the protandric shrimp <i>Pandalus platyceros</i>
1:45 pm	106-2	Irvine SQ, Jacobson RE, Siler EM; Univ of Rhode Island	Connecting Water Temperature to Cell Signaling and Reproductive Physiology in <i>Ciona intestinalis</i>
2:00 pm	106-3	Zhao M, Saltzman W; Univ of California, Riverside	Being A Single Mother California Mouse
2:15 pm	106-4	Kimmit AA, Ketterson ED; Indiana Univ, Bloomington	Differences in Female Reproductive Timing May Contribute to Divergence in Seasonally Sympatric Populations
2:30 pm	106-5	Chinn SM, Monson DH, Tinker MT, Staedler MM, Crocker DE; Sonoma State Univ, USGS, UC Santa Cruz, Monterey Bay Aquarium	Lactation and Resource Limitation Affect Stress Responses, Thyroid Hormones, Immune Function and Antioxidant Capacity of Sea Otters (<i>Enhydra lutris</i>)
2:45 pm	106-6	Salas HK, Sayavong N, Gunderson AR, Stillman JH, Tsukimura B; California State University Fresno, San Francisco State University	Effects of thermal stress on Vitellogenin levels in the hemolymph of the anomuran crab <i>Petrolisthes cinctipes</i>
3:00 pm	106-7	Place NJ, Brieño-Enriquez MA, Cohen PE, Sinopoli JT, Albertini DF, Laird DJ, Holmes MM; Cornell University, Center for Human Reproduction, Univ of California, San Francisco	Do Oocyte-Stem Cells Contribute to Protracted Fertility in Naked Mole-Rats?
3:15 pm	106-8	Shero MR, Kirkham AL, Costa DP, Burns JM; University of Alaska, Anchorage, University of California, Santa Cruz	Iron Mobilization During Lactation Draws from Aerobic Dive Capacities in Weddell seals: A Previously Unexplored Cost to a Capital-Breeding System
3:30 pm	.....	Coffee Break	..... Salons 8-9

Larval Ecology

Chair: Bruno Pernet

1:30 pm	107-1	Koehl M, Perotti E, Sischo D, Hata T, Hadfield M; Univ of California, Berkeley, Univ of Hawaii	Effects of Currents, Waves, and Biofilms on Motion of Tubeworm Larvae Swimming Above or Below Surfaces
1:45 pm	107-2	Bogan SN, McMahon JB, Pechenik JA, Pires A; Sonoma State University, Tufts University, Dickinson College	Latent and Interactive Effects of Ocean Acidification and Nutrition Across the Larva to Juvenile Development of an Intertidal Gastropod
2:00 pm	107-3	Yund PO; The Downeast Institute	Regional Scale Connectivity Among Barnacle Populations in the Gulf of Maine Inferred from the Phenology of Larval Release and Settlement
2:15 pm	107-4	Emler R, Shanks A; Univ Oregon	Winter spawning by marine invertebrates on the Oregon coast – time series analyses over three consecutive years
2:30 pm	107-5	Weinstock JB, Morello SL, Conlon LM, Xue H, Yund PO; The Downeast Institute, School of Marine Science, University of Maine	Tidal Shifts in the Vertical Distribution of Bivalve Larvae: Vertical Advection vs. Active Behavior
2:45 pm	107-6	Richardson EL, Allen JD; College of William & Mary	The road to stardom: linking larval food environment with juvenile recruitment success in echinoderms
3:00 pm	107-7	Lizárraga D, Pernet B*; California State University Long Beach	Large inedible particles may reduce feeding performance of echinoderm larvae in nature
3:15 pm	107-8	Shishido CM, Woods HA, Tobalske BW, Lane SJ, Moran AL*; Univ of Hawaii, Univ of Montana	Thermal Sensitivity of Metabolism and Development Across the Life Cycle of the Giant Antarctic Sea Spider <i>Ammothea glacialis</i>
3:30 pm	.....	Coffee Break	..... Salons 8-9

Neuroethology - State-Dependence and Neurobiology

Chair: Megan Gall

1:45 pm	108-1	<i>Gall MD, Baugh AT, Bee MA; Vassar College, Swarthmore College, University of Minnesota</i>	The Difference a Day Makes: Effects of Oviposition on Peripheral Auditory Sensitivity
2:00 pm	108-2	<i>Ronald KL, Hurley LM; Indiana University</i>	Female Signaling: Non-Redundant Multimodal Cues in the House Mouse <i>Mus musculus</i>
2:15 pm	108-3	<i>Schmill MP, Cadney MD, Hiramatsu L, Albuquerque RL, Louis MP, Castro A, Thompson Z, Kay JC, Buenaventura D, Ramirez J, Garland Jr T; Univ of California, Riverside</i>	Conditioned Place Preference of Mice Selectively Bred for High Voluntary Wheel Running
2:30 pm	108-4	<i>Liu Y-C, Grasse B; University of Utah, Marine Biological Laboratory</i>	Electrical Coupling Characteristics of Chromatophore Muscles in Hatchling Squid <i>Sepioteuthis lessoniana</i>
2:45 pm	108-5	<i>Gunn TR, Bedore CB; Georgia Southern University</i>	Environmental and Physiological Regulation of Stingray Camouflage
3:00 pm	108-6	<i>Chappell DR, Speiser DI; Univ of South Carolina, Columbia</i>	Does the visual system of the eyed chiton <i>Acanthopleura granulata</i> function as an optical tripwire?
3:15 pm	108-7	<i>Parkinson RH, Little JM, Gray JR; University of Saskatchewan</i>	A sublethal dose of a neonicotinoid insecticide impairs motion detection and avoidance behaviour in <i>Locusta migratoria</i>
3:30 pm	.....	Coffee Break	Salons 8-9

SATURDAY POSTER SESSION P3

Salons 8-9, 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am; Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm; Odd # - Authors present from 4:30-5:30 pm

Complementary to Symposium S7: Science in the Public Eye: Leveraging Partnerships

- P3-14** *Bolden IW, Seroy SK, Roberts EA, Schmeisser L, Koehn JZ, Rilometo C, Odango E, Barros C, Sachs JP, Klinger T; University of Washington, Pacific Resources for Education and Learning* Climate-related community knowledge networks as a tool to increase learning in the context of environmental change
- P3-15** *Merson MW, Parker-Geisman A; TERC, Independent Consultant* Research Briefs: Advantages, Limitations, and Possibilities

Complementary to Symposium S8: Integrative Biology of Sensory Hair Cells

- P3-17** *Jung J, Güell BA, Warkentin KW; Boston University* Inner Ear Development Across Onset and Improvement of Escape-Hatching Ability in Red-Eyed Treefrogs: a Confocal and μ CT Analysis
- P3-18** *Koo AI, Petersen C, Hurley L; Vassar College, Indiana University, Bloomington* Localizing the source of context-dependent serotonin release in the inferior colliculus.

Behavior and Neurobiology/Sensory Biology

- P3-19** *Cerio DG, Witmer LM; Ohio Univ* Visual Fields of Dinosaurs and their Extant Relatives: Bony Evidence and Soft-Tissue Reconstruction
- P3-20** *Gripshover ND, Jayne BC; University of Cincinnati* Visual Contrast Affects Perch Choice of Brown Tree Snakes (*Boiga irregularis*)
- P3-21** *Longden KD, Reiser MB; HHMI Janelia Research Campus* Wavelength-specific spontaneous flight control in *Drosophila*
- P3-22** *Liu Y, Murray JA, Cain SD; U Illinois at Urbana-Champaign, California State U East Bay, Eastern Oregon U* See through sea star eyes: a study on the optic cushion of *Pycnopodia helianthoides*
- P3-23** *Hall BE, Bedore CN; Georgia Southern University* Comparative visual morphology of sharks
- P3-24** *Howell KA, Richards-Zawacki CL; University of Pittsburgh* Does larval color vision contribute to the development of adult mate preferences?
- P3-25** *Salazar B, Duncan A, Brandley N; Colorado College, College of Wooster* The conspicuousness of band-winged grasshoppers to predators and conspecifics
- P3-26** *Ellis EA, Patel R, Hensley NM, Cronin TW, Oakley TH; Univ of California, Santa Barbara, Univ of Maryland, Baltimore County* Are We On The Same Wavelength? Color and perception do not match in luminous ostracods
- P3-27** *Duncan AB, Brandley NC, Salazar BA; Colorado College* Visual Acuity Across Grasshoppers: Do Body Size and Behavior Matter?
- P3-28** *Clark JM, Speiser DI; Univ of South Carolina, Columbia* Restoration of visual performance during eye regeneration in the Florida fighting conch (*Strombus alatus*)
- P3-29** *Harris OK, Wolfe C, Speiser DI; University of South Carolina* Behind blue eyes: Structural color in the bay scallop *Argopecten irradians*
- P3-30** *Mekdara PJ, Ames AM, Murray JA, Cain SD; Tufts University, University of Washington, California State University East Bay, East Oregon University* Multiple Sensory Organs Employ Active Ciliary Suction in Nudibranchs
- P3-31** *Kane SA, Van Beveren D, Dakin R; Haverford College, Smithsonian Conservation Biology Institute* Biomechanics of the peafowl's crest: a potential mechanosensory role for feathers during social displays
- P3-32** *Knowlton E, Gaffin D; University of Oklahoma* Wolf Spider (*Schizocosa avida*) Vibratory Communication: Female Receptor Responses to Male Courtship

- P3-33** Lubeck LA, Lunsford ET, Haehnel-Taguchi M, Liao JC; Whitney Laboratory for Marine Bioscience, University of Florida, Frieberg University
Live-imaging reveals organization of efferent neurons in the zebrafish lateral line system
- P3-34** Krotinger AK, Perks KE, Bodznick D; Wesleyan University, Marine Biological Laboratory, Columbia University
Adaptive Sensory Filtering in the Hindbrain Mechanosense Nucleus of *Leucoraja erinacea*
- P3-35** Suriyampola PS, Martins EP; Indiana University, Arizona State University
Shifting the Primary Sensory Modality Leads to Persistent Changes in Sensory, But Not Social Behavior in Adult Zebrafish *Danio rerio*
- P3-36** Nickles KR, Hu Y, Majoris JE, Buston PM, Webb JF; University of Rhode Island, Boston College, Boston University
Pre- and Post-Settlement Ontogeny of the Lateral Line System of a Caribbean Reef Goby, *Elacatinus lori*

Complementary to Symposium S9: Inside the Black Box: The Mitochondrial Basis of Life

- P3-37** Bury S, Cichoń M, Bauchinger U, Sadowska ET; Institute of Environmental Sciences, Jagiellonian University
Snakes Maintained in Cold Compared to Warm Environment Revealed Higher Oxidative Damage
- P3-38** Sokolov EP, Sokolova IM*; Universität Rostock
Effects of compatible osmolytes on mitochondrial functions of a marine osmoconformer
- P3-39** Stier A, Romestaing C, Schull Q, Lefol E, Robin JP, Roussel D, Bize P; University of Glasgow, University of Lyon, University of Strasbourg, University of Sherbrooke
Measuring mitochondrial function in birds using red blood cells: a case study in the king penguin and perspectives in ecology and evolution
- P3-40** Taylor HA, Zhang Y, Kash M, Kavazis AN, Roberts M, Hood WR; Auburn University
Response of Hepatocytes to ROS Exposure: Temporal Variation in Oxidative Stress Response Signaling Pathways

Cell & Molecular Physiology

- P3-41** Ambrose AF, Zueva O, Mashanov V; Savannah State University, University of North Florida
Cell Proliferation in the Regenerating Arm of the Brittle Star *Ophioderma brevispinum*
- P3-42** Fabela FF, Chapman JT, Owens JD, Randles S, Villatoro R, May MA, Vasquez MC, Todgham AE, Tomanek L; Cal Poly San Luis Obispo
Ciliary Response in *Mytilus californianus* to Food Availability and Sirtuin Inhibition
- P3-43** Chapman JT, Owens JD, Fabela FF, Randles S, Villatoro R, May MA, Vasquez MC, Todgham AE, Tomanek L; Cal Poly San Luis Obispo
Effect of Thermal Stress and Food Availability on Particle Transport in the Gill of *Mytilus californianus*
- P3-44** Jacobson RE, Siler EM, Morgan JR, Irvine SQ; University of Rhode Island, Microtissues Inc.
3D Culture of *Ciona intestinalis* Tissue
- P3-45** Vasadia D, Place SP; California State University, Sonoma
Characterization of thermoregulated miRNAs and their role in the heat shock response of the Antarctic notothenioid fish, *Trematomus bernacchii*
- P3-46** Tsai OH, Yap KN, Williams TD; Simon Fraser University
Birds and Mammals Differ in the Effect of Dietary Nitrate on Hemoglobin and Hematocrit
- P3-47** Hopper LM, Duncheon EJ, Allen HC, Champagne AM; University of Southern Indiana, Ohio State University
Patterns of Cutaneous Water Loss and Stratum Corneum Lipid Interactions During the Development of Japanese Quail
- P3-48** Ali RS, Welch KC; University of Toronto
Glucose Transporter Regulation in Response to Recently Ingested Carbohydrate in the Ruby-throated Hummingbird, *Archilochus colubris*.
- P3-49** Archer JT, Davis JE; Radford University
The Effects of Vespa Amino Acid Mixture on Mitochondrial Defect Induced Locomotion Disorders in *Drosophila melanogaster*
- P3-50** Winward J, Ragan C, Jimenez AG; Colgate University, Purdue University Northwest
Cellular metabolic rates and oxidative stress profiles in primary fibroblast cells isolated from virgin females, moms, and male Sprague-Dawley rats.
- P3-51** Coughlin DJ; Widener University, Chester, PA
Analysis of Gene Expression in Rainbow Smelt: Assembly of a Non-Model Organism Transcriptome Using Trinity
- P3-52** Petersheim JI, Llewellyn HJ, Surmacz CA, Hranitz JM; Bloomsburg University
Motor Responses in Honey Bees are Impaired Following Exposure to Sublethal Doses of Imidacloprid
- P3-53** Root LT, Con P, Cnaani A, Kültz D; Univ of California, Davis, Inst of Animal Sciences, Agricultural Research Org,
Comparative intestinal proteome response to salinity stress in three tilapiine spp.
- P3-54** Benrabaa SA, Das S, Mykles DL; Colorado State University
Transcriptomics of Halloween and ecdysone-responsive gene expression in the crustacean molting gland

- P3-55** Rifai NM, Das S, Mykles DL; Colorado State University
Transcriptomics of Cyclic Nucleotide Phosphodiesterase Gene Expression in the Decapod Crustacean Molting Gland
- P3-56** Barreto KM, Francia MR, Claudio I, Fanfan N, Segarra A, Barthell JF, Abramson C, Giray T, Agosto-Rivera JL; Univ of Puerto Rico, Univ of Central Oklahoma
Immunofluorescence Staining Method Optimization for Honeybee Brains

Comparative Biochemistry

- P3-57** He JY, Wictor EP, Thomas EO; Univ of the Pacific
Analysis of Venom Proteins in *Corydoras* Catfish
- P3-58** Pouv AK, Ohanian A, Pace DA; California State University, Long Beach
Using the Aerobic Enzyme, Citrate Synthase, to Understand Biogeographic Dispersal Potential in Echinoid Larvae
- P3-59** Bockus AB, Labreck CJ, Camberg JL, Seibel BA; Louisiana Universities Marine Consortium, Univ of Rhode Island, Univ of South Florida
Exploring the use of trimethylamine oxide as an alternative to heat shock protein 70 with acute elevated temperature in elasmobranchs
- P3-60** Duncheon EJ, Hopper LM, Allen HC, Champagne AM; University of Southern Indiana, Ohio State University
Disordered Skin Lipids Increase Cutaneous Water Loss in Pigeons at High Temperatures
- P3-61** Levitan BB, Gómez-Jiménez S, Li J, Kültz D; Univ of California, Davis, Centro de Investigación en Alimentación y Desarrollo (CIAD)
Unique Proteome Dynamics in Livers of a Warm-adapted Population of Threespine Sticklebacks
- P3-62** Torres TD, Ruiz R, Watson CM, Shipley M; Midwestern State University
Assimilation of fatty acids present in milkweed species (*Asclepias*) by specialist insect herbivores

Immunity/Immune-Based Trade-Offs

- P3-63** Hansen BK, Mba Medie F, Sharma-Kuinkel BK, Fowler VG, Rader J; Duke Univ
Host Genetics Contribute to Susceptibility to Infection, and Outcome of Disease in the *Crif1* Knockout Mouse
- P3-64** Falvo CA, Webb A, French SS, Aubry LM; Colorado State University, Utah State University
Immunity and Growth Trade-offs Vary with Elevation in a Hibernating Small Mammal, *Urocyon armatus*
- P3-65** Wolf SE, Rosvall KA; Indiana University
How maternal stress affects juvenile telomere dynamics: an experimental test in tree swallows (*Tachycineta bicolor*)
- P3-66** Grindstaff JL, Sanders T; Oklahoma State University
Effects of Maternal and Developmental Immune Activation on Telomere Attrition
- P3-67** Sanders TL, Wolf SE, Rosvall KA; Oklahoma State University, Indiana University
Telomere Length Predicts Life History Trade-Offs in Wild Female Tree Swallows *Tachycineta bicolor*
- P3-68** Gardner S, Assis VR*, Mendonca MT; Auburn University, Auburn, Univ of Sao Paulo
RNA-Seq Provides Primers to Assess Immune Response to LPS in the Invasive Cane Toad (*Rhinella marina*)
- P3-69** Virgin EE, Webb AC, Hudson SB, French SS; Utah State University
Inter and intra-clutch variation of egg immunity in Side-blotched lizards (*Uta stansburiana*)
- P3-70** Kernbach ME, Unnasch TR, Gervasi SS, Martin LB; University of South Florida, Monell Chemical Senses Center
Effects of Acute and Chronic Stress Exposure on Avian Responses to West Nile Virus
- P3-71** Love AC, Grisham K, Durant SE; Oklahoma State University, University of Arkansas
Can Social Cues of Infection Activate Innate Immune Responses?
- P3-72** Little-Jackson NA, Ivanina A; Johnson C. Smith University, Univ of North Carolina, Charlotte
Compartmentalization of *Crassostrea virginica* hemocytes functions and their modulation by anoxia
- P3-73** Ashford MA, Bowden RM, Palackdharry SM, Vogel LA; Illinois State University, University of Cincinnati
Formation of ILF-like Structures in Hatchling *T. scripta*
- P3-74** Benowitz-Fredericks ZM, Field K, Seyoum EK, Hatch SA, Kitaysky AS; Bucknell Univ, Inst Seabird Research & Conservation, Univ Alaska Fairbanks
Transient elevations of corticosterone induce persistent changes in gene expression in growing kittiwakes
- P3-75** Smith WA, Gelaf-Romer T, Renteria S, Thwin A, Noonan B, Anderson P, Cohen L, Winston S, Zaman M, El Naggag K, Rosengaus R; Northeastern University, Johns Hopkins University, Great Falls College
Maternal Effects of Aseptic and Septic Injury on Embryonic and Larval Gene Expression in the Tobacco Hornworm, *Manduca sexta*
- P3-77** Farthing S, Montalvo A, Norman K, Scott S, Crozier J, Jorgensen D; Roanoke College
The Role of Tissues and Organs in the Immune Response of the American Lobster to Acute Bacterial Infection

Behavior and Neurobiology/Reproductive Behavior

- P3-78** Henry M, Stonecipher J, Goldina A; Elizabethtown College Behavioral response to same-sex pheromones by the invasive crayfish *Orconectes rusticus*
- P3-79** Powers MJ, Hill GE, Weaver RJ, Burton RS; Auburn University, Scripps Institution of Oceanography, University of California, San Diego Hybrid Viability and Mate Choice in Highly Geographically Separated Populations of *T. californicus* copepods
- P3-80** Vidal JM, Fuller RC, Anderson PS; University of Illinois, Urbana Champaign The generation of a repetitive, rapid head-flicking behavior in a killifish and its implications for signaling.
- P3-81** Pellicano AJ, Gaglio AE, Lynch KS; Hofstra University, New York Comparison of mechanisms underlying differences in multimodal courtship displays in two species of cowbirds
- P3-82** Cupp Jr PV; Eastern Kentucky University Mate-Guarding and Pair-Bonding Behavior in Green Salamanders, *Aneides aeneus*
- P3-83** Burton EB, Curry RL; Villanova University, Department of Biology Extrapair parentage in a rapidly moving chickadee hybrid zone: confounding factor for analysis of fitness consequences of interbreeding?
- P3-84** Unfried LN, Champagne AM, Bandoli JH; University of Southern Indiana Advances in the timing of reproduction in two species of cavity nesting birds in response to climate change
- P3-85** Parkinson KJL, Hennin HL, Janssen MH, Gilchrist HG, Love OP; University of Windsor, Environment and Climate Change Canada Does environmental variation influence incubation patterns in an Arctic seaduck?
- P3-86** Marshall H, Mitchell T, Schwartz TS, Warner D; Auburn University Multiple Paternity in *Anolis sagrei*
- P3-87** Steenweg RJ, Legagneux P, Crossin GT, Gilchrist HG, Kyser TK, Love OP; Dalhousie Univ, Univ du Québec à Rimouski, Environment and Climate Change Canada, NWRC, Queen's Univ, Univ of Windsor Flexibility in the Pairing Phenology of Arctic-Breeding Common Eiders
- P3-88** Orr TJ, Hayssen V; University of Utah, Smith College Misconceptions about conception and other fallacies

Comparative and Reproductive Endocrinology

- P3-89** Malmborg AG, Davis JE, Jeanson-Moore E, Monceaux C; Radford University Endocrine Disrupting Chemicals in Amazonian Waterways
- P3-90** Lynn SE, Kern MD; College of Wooster Corticosterone secretion in response to early life cooling: do age, duration of cooling, and nutritional status matter?
- P3-91** Hines SM, Shuman-Goodier M, Singleton G, Propper C; Mohave Community College, Lake Havasu City, Northern Arizona Univ, International Rice Research Institute Exposure to the herbicide, butachlor, affects development of the thyroid gland in *R. marina* tadpoles
- P3-92** Davidson BA, Wenker E, Malisch JL; St. Mary's College of Maryland Fat Score Predicts Acute Stress-induced Hyperglycemia in White-throated Sparrows
- P3-93** Khan NY, Wrobel ER*, Navara KJ; University of Georgia Comparing the effects of beeswax versus silastic testosterone implants on elevation of plasma testosterone and reproductive condition in laying hens
- P3-94** Hennin HL, Dey CJ, Bety J, Gilchrist HG, Legagneux P, Williams TD, Love OP; University of Windsor, Great Lakes Institute for Environmental Research, Université du Québec à Rimouski, National Wildlife Research Centre, Simon Fraser University Pre-Breeding Fattening Mediates Investment in Clutch Size in a Capital-Income Breeding Seaduck
- P3-95** Converse AK, Genuise HM*, Thomas P; University of Texas Marine Science Institute Characterization of a Membrane Androgen Receptor's Apoptotic Response in *Danio rerio* Ovarian Follicle Cells
- P3-96** Van Der Walt M, French SS; Washington State University, Utah State University Measuring Reproductive Function and Stress in Polar Bears (*Ursus maritimus*) Using Hair and Serum Hormone Concentrations
- P3-97** Merrell EA, Allyn V, Mulawa EA, Donahue SW, Florant GL; Colorado State University A Seasonal Comparison of Leptin levels in Bone marrow adipocytes, Blood, and Cerebrospinal fluid in Golden-Mantled Ground Squirrels (*Callospermophilus lateralis*) and Yellow-Bellied Marmots (*Marmota flaviventris*).

- P3-98** Freund DR, Murphy TG; Trinity University
The effect of testosterone on dominance and status signaling in the female American goldfinch (*Spinus tristus*)
- P3-99** Cunha AAP, Partridge CG, Dixon B, Knapp R, Neff BD; University of Western Ontario, Grand Valley State University, University of Waterloo, University of Oklahoma
Effect of Prolactin and 11-ketotestosterone Manipulation on Parental Care Behavior and Immune Response in Male Bluegill Sunfish (*Lepomis macrochirus*)
- P3-100** Ligocki IY, Farrar V, Munson A, Viernes RC, Cannon RE, Sih A, Calisi RM; UC Davis
Reproductive consequences of a changing world: effects of the pesticide bifenthrin on mosquitofish reproductive behavior
- P3-102** Krause JS, Reid AMA, Perez JH, Bishop V, Cheah JC, Wingfield JC, Meddle SL; Univ of California, Davis, Roslin Institute, Univ of Edinburgh
Hepatic corticosterone binding globulin (CBG) mRNA expression across life history stages in migratory and nonmigratory subspecies of White-crowned sparrow

Behavior and Neurobiology/Neuroethology II

- P3-103** Castillo CR, Baltzley MJ; Western Oregon University
Variation in GABA-Immunoreactive Neurons Across Three Stylommatomorpha Gastropods
- P3-104** Bostwick CJ, Moroz TP, Moroz LL; Univ of Florida, Whitney Lab
Identifying cAMP-dependent genes and how plasticity induces alterations in the nervous system of the sea hare *Aplysia californica*
- P3-105** Gilly WF, Kier WM, Drake OV, Gregg L; Stanford Univ, Univ North Carolina, Chapel Hill, Cal Poly San Luis Obispo
Excitability of Transverse Tentacle versus Arm Muscle Fibers in the Squid, *Doryteuthis opalescens*
- P3-106** Breda JB, French KA, Kristan WB, Todd KL; Westminster College, Univ of California, San Diego
Homologous neurons play similar roles in reproductive-behavior circuits
- P3-108** Bashier R, Alvarado S, Fernald R; Stanford University
Neural substrates within two color morphs of *Astatotilapia burtoni*
- P3-109** Tripp JA, Bass AH; Cornell University
Galanin Neuron Distribution and Activation in a Fish with Alternative Reproductive Tactics
- P3-110** Noor J, Alkhouk A, Monzon R, Krohmer R; Saint Xavier University
Association of Spinophilin Expression with Dendritic Spine Formation in Hormone Treated Brains of the Red-Sided Garter Snake (*Thamnophis sirtalis parietalis*)
- P3-111** Monzon R; Saint Xavier University
Detection of Spinophilin (Neurabin-II/PP-1) and Glyceraldehyde 3-Phosphate Dehydrogenase (GAPDH) mRNA Transcripts in Brain Regions of the Red-Sided Garter Snake *Thamnophis sirtalis parietalis*
- P3-112** Rice A, Fuse M; San Francisco State University
The Cockroach Neuropeptide, Leucopyrokinin (LPK), Inhibits Sensitization in the Tobacco Hornworm, *Manduca sexta*
- P3-113** Baas-Thomas N, Steele T, Zornik E; Reed College
Investigating the Plasticity of Sexually Differentiated Vocalizations in Adult *Xenopus laevis*
- P3-114** Sanders EJ, Bubak AN, Renner KJ, Swallow JG; University of Colorado Denver, Anschutz Medical Campus, University of South Dakota
Mating-Receptivity in Female Dipterans is Mediated by Daily Fluctuations of Dopamine Levels
- P3-115** Abdallah S, Harracksingh AN, Messak K, Senatore A; University of Toronto Mississauga
In-vitro molecular and biophysical properties of the "presynaptic" Cav2 calcium channel homologue from *Trichoplax adhaerens*, an animal that lacks synapses.

Behavior and Neurobiology/Behavioral Ecology II

- P3-116** Jones TK, Conner WE; Wake Forest University
Active acoustic interference elicits echolocation changes in heterospecific bats
- P3-117** Horr DM, Payne AA, Johnson MA; Trinity University
Sex-Specific Effects of Temperature and Social Behavior on the Dynamic Body Color of the Green Anole Lizard
- P3-118** Lefauve MK, Hernandez LP; George Washington University
Behavioral Baselines in Goldfish *Carassius auratus*
- P3-119** Le MT, Garvin CM, Francis CD; California Polytechnic State University, SLO
The influence of natural sounds on California ground squirrel (*Otospermophilus beecheyi*) vigilance and predator detection.
- P3-120** Metzler EJ, Rivera Figueroa V, Salaguinto TC, Gonzalez VH, Petanidou T, Tschewilin T, Agosto Rivera JL, Hranitz JM, Barthell JF; Salem College, University of Puerto Rico, Whitman College, University of Kansas, University of the Aegean
Foraging Behaviors Support Dietary Niche Separation of a Generalist Bee and Specialist Bee on Field Bindweed

- P3-121** McAlpine-Bellis EA, Garrison GE, Gilbert Smith S, Klein JRV, Utsumi KL, Diamond KM, Eifler D, Eifler M; University of California, Berkeley, University of California, Davis, University of Kansas, Clemson University, Erell Institute
Where to Find the Best Bugs: A Study of Habitat Use Among Lizard Species with Different Movement Strategies
- P3-122** Brown K, McCann MK, Biggar E, Ziatek S, Pumilio J, Jimenez AG; Colgate University
The utilization of soundscape ecology to measure and track changes to biodiversity in the forests surrounding Colgate University
- P3-123** Wicksten MK; Texas A&M University
Deep Discoverer Gives a New View of Deep Decapods
- P3-124** Payne AA, Horr DM, Johnson MA; Trinity University
Use It and Lose It? Behavioral and Energetic Costs of Lizard Tail Autotomy
- P3-125** Ohlinger BD, Klinger TS, Davis GT, Hranitz JM; Bloomsburg University of Pennsylvania
Innate Flower Color Choice and Flower Constancy in a Solitary Bee and a Social Bee
- P3-126** Samuels TJ, Philson CS, Foltz SL, Ray A, Davis JE; Radford University
The PASSER Project: Inducing Neophobia through Presented Stimuli via a Computer Enabled Feeder
- P3-127** Brown E, Fernandez A, Metzler E, Pavlick C, Rivera-Figueroa V, Salaguino T, Gonzalez V, Agosto-Rivera J, Hranitz JM, Petanidou T, Barthell JF; Univ Massachusetts, Univ Maryland Baltimore County, Salem College, Bloomsburg Univ, Univ Puerto Rico, Río Piedras, Whitman College
Carpenter Bee Foraging Patterns at Chasteberry Bushes (*Vitex agnus-castus* L.) on the Greek Island of Lesbos
- P3-128** Molloy AR; Whitman College
Sensory modalities used in predator avoidance by frugivorous and nectarivorous bats
- P3-129** Heuermann TM, Polekoff S, Curry RL; Villanova University
Variation in boldness and exploratory behavior as components of personality within and between black-capped and Carolina chickadees
- P3-130** Rep MA, Jacobs MW, Bayer S; McDaniel College, University of Maine - Darling Marine Center
Intraspecific competition of juvenile green crabs (*Carcinus maenas*) depending on predator population density and resource availability
- P3-131** Snyder RK, Ospina-L AM, Warkentin KM; Susquehanna University, Universidad del Quindío, Boston University
When Does Flooding Induce Hatching? Behavioral Decisions of Red-Eyed Treefrog Embryos Under Moderate Hypoxia
- P3-132** Hawkins CE, Palia ST, Folks CC, Swaddle JP; College of William & Mary
Investigating the effects of anthropogenic noise disturbance on songbird social networks
- P3-133** Brown KN, Jacobs MW; McDaniel College
How do Large Conspecific Predators Affect the Behavior of Juvenile *Carcinus maenas*?
- P3-134** Wanamaker SM, Crespi EJ; Washington State University
Behavior mitigates the effects of increased temperature in a plethodontid salamander
- P3-135** Chandrasegaran K, Singh A, Laha M, Quader S; National Centre for Biological Sciences, Reed College, Nature Conservation Foundation
Playing it safe? Behavioral responses of mosquito larvae encountering a fish predator

Complementary to Symposium S10: Behavioral and Physiological Adaptation to Urban Environments

- P3-136** Butler JM, Whitlow SM, Maruska KP; Louisiana State University
Exposure to Anthropogenic Noise during Mouth Brooding Impacts Maternal Care Behaviors and Juvenile Development in an African Cichlid Fish
- P3-137** Rivera-Figueroa V, Loubriel D, Johnson M, Tscheulin T, Petanidou T, Oskay D, Gonzalez VH, Hranitz JM, Barthell JF, Agosto-Rivera JL; University of Puerto Rico, Dickinson College, University of the Aegean, Namik Kemal Üniversitesi
Comparison of the Circadian Rhythms of Two Bee Pollinators, a Generalist and a Specialist, of Field Bindweed.
- P3-138** Backman IR, Abreu D, Choi FN, Helmuth BS; Saint Michael's College, Northeastern University
The effect of repeated exposure and local adaptation on lethal temperatures of *Littorina littorea* from the Gulf of Maine
- P3-139** Lane S, Sewall K, Brewer V; Virginia Polytechnic Institute and State University
Urbanization impacts nestling corticosterone but not offspring growth in song sparrows
- P3-140** Ziegler AK, Gudmundsson A, Rissler J, Isaksson C; Lund University
Urbanization and its impacts on birds: Disentangling the effects of three major urban pollutants on avian physiology
- P3-141** Kumar J, Malik S, Bhardwaj SK, Rani S*; University of Lucknow, CCS University Meerut
Night light alters the perception of day length in migratory redheaded bunting: implications for avian migrant conservation

Ecomorphology

- P3-143** Hearst LW, Miller AL; University of Tampa
Evolution of Eye Size in Scorpions
- P3-144** Swenson AS, Kirkton SD, Waters JS; Providence College, Union College
Using X-ray Microtomography to Visualize and Quantify the Nest Architecture of Acorn Ant Colonies
- P3-145** Pakzad IY, Klohmann CA, Scantlebury SS, Scott-Büchler C, Vompe AD, Fiorenza EA, Farina SC; Cornell University, Univ of Washington
Identifying Ecological Correlates of Respiratory Microstructure Morphology in Sculpins (Cottoidea)
- P3-146** Liu LG, Le Piane K, Clark CJ; University of California, Riverside
Barred Owl (*Strix varia*) Feather Pennulae and Their Role in Reducing Structural Noise in Flight
- P3-147** Kinsey CT, McBrayer LD; Georgia Southern University
Morphological Variation as a Function of Habitat Preference in Phrynosomatid Lizards
- P3-148** Ditsche P, Hoffmann F, Kaehlert S, Kesel A, Gorb S; University of Alaska Anchorage, University of Applied Science Bremen, University of Kiel
“Spoiler”-legs help stream mayfly larvae to stay on the ground
- P3-149** Rader JA, Hedrick TL; UNC Chapel Hill
3D Shape Variation in Bird Wings: How Useful are Spread Wing Collections?
- P3-150** Dean MN, Bizzarro JJ, Clark B, Underwood CJ, Johanson Z; MPIKG, UC Santa Cruz and NMFS, Core Res. Labs, NHM, Birkbeck Coll., Dept Earth Sci., NHM
Large batoid fishes frequently eat stingrays despite skeletal damage

Evolutionary Morphology

- P3-151** Gonzalez SJ, Carmo OMS, Fang JT, Kretschmar AC, Feezell MK, May MA, Vasquez MC, Todgham AE, Tomanek L; Cal Poly San Luis Obispo
Changes in the Clearance Rate of *Mytilus californianus* in Relation to Food Availability and Heat Stress
- P3-152** Reutter M, Bakiasi G, Bonner E, Frederick J, Spiegel E, Okumura M, Davis GK; Bryn Mawr College
Local adaptation of the pea aphid photoperiod response
- P3-153** Casasa S, Zattara E, Moczek AP; Indiana University, Bloomington
Transcriptomic underpinnings of developmental plasticity and their evolution: insights from *Onthophagus* horned beetles
- P3-154** Feezell MK, Kretschmar AC, Gonzalez SJ, May MA, Vasquez MC, Todgham AE, Tomanek L; Cal Poly San Luis Obispo, UC Davis
The effect of food availability on siphon opening in the California mussel
- P3-155** Yacoub L, Reagan E, Muñoz-Garcia A; Ohio State University at Mansfield
The link between cellular metabolism and resource allocation to reproduction: phenotypic plasticity of organ size
- P3-156** Glass J, Stahlschmidt ZR; Univ of the Pacific
Developmental plasticity of sexually selected traits in complex environments
- P3-158** Verner KA, Nauman EA, Main RP*; Purdue University
Taxonomic Variation in Adaptive Skeletal Plasticity to Mechanical Load: Preliminary Hypotheses.
- P3-159** Varney RM, Speiser DI, Kocot KM; Univ of Alabama, Univ of South Carolina
The genome of the chiton *Acathopleura granulata*: preliminary work toward understanding biomineralization of teeth as tough as tank armor
- P3-160** Cooper AN, Morris JS, Cunningham CB, Potts WK, Carrier DR; University of Utah, Wofford College, Swansea University
Social Dominance in Male House Mice (*Mus musculus*): Muscle and Bone Mass Distribution
- P3-161** Rozin RE, Cost IN, Holliday CM; University of Missouri-Columbia
Feeding Biomechanics in Gallinaceous Birds and its Significance for Avian Cranial Evolution
- P3-162** Cohen KE, Hernandez LP; George Washington University
Morphological ontogeny of the epibranchial organ of Hypophthalmichthys molitrix (Silver carp)
- P3-163** To KHT, Gignac PM; Oklahoma State University, Center of Health Sciences
Examining the Musculoskeletal Ontogeny of Cranial Kinesis in Birds Along the Precocial-altricial Spectrum
- P3-164** Laird MF, Granatosky MC, Iriarte-Diaz J, Reed D, O'Higgins P, Ross CF; University of Chicago, University of Illinois at Chicago, Hull York Medical School, University of York
Covariation in primate facial form and jaw movement
- P3-165** Kuehn AL, Main RP, Lee AH, Simons ELR; Midwestern Univ, Purdue Univ
The Effect of Growth Rate and Biomechanical Loading on Bone Laminarity in the Emu Skeleton

- P3-166** *Provini P, Höfling E; Museum National d'Histoire Naturelle, Paris, Universidade de São Paulo* Evolution of Hopping and Arboreality in Neotropical Birds
- P3-167** *Grider-Potter N; Arizona State University* Dietary influences on head and neck range of motion in Neotropical bats
- P3-168** *Strom J, Rembert K, Mulawa E, Donahue S, Ghalambor CK*; Colorado State University* Trinidadian guppies have evolved repeated reductions in bone density following the colonization of low predation streams, but why?
- P3-169** *Sullivan SP, Holliday CM, Bailleul AM, Middleton KM; Univ of Missouri* Digital Reconstruction of the Avian Pectoral Girdle with Implications for Furcula Function
- P3-170** *Nicholas BP, Summers AP, Kolmann MA; Oregon State University, University of Washington* Diversification of Feeding Morphology in Marine and Freshwater Pufferfishes
- P3-171** *Böhmer C, Plateau O, Cornette R, Abourachid A; Muséum National d'Histoire Naturelle Paris* What is a Long Neck? The Effects of Scaling Relationships between Skeletal Dimensions and Body Size in Birds
- P3-172** *Rehorek SJ, George JC, Suydam R, McBurney DM, Thewissen JGM; Slippery Rock Univ, North Slope Borough, Barrow, NEOMED, Rootstown* Whale tears: Source and Function
- P3-173** *Chase HT, O'Brien E, Tobalske BW; University of Montana* Birds and Bone: Trabecular Morphology in the Avian Shoulder
- P3-174** *Camarillo H, Tobler M; Kansas State University* Functional Consequences of Morphological Variation in Sulfide Spring Fishes
- P3-175** *Croghan JA, Roosenburg WM, Williams SH; Ohio University* Inter- Versus Intraspecific Variation in Testudine Crania Using a Population of Diamondback Terrapins (*Malaclemys terrapin*)
- P3-176** *Laurent CM, Ahmed SI, Cook RB, De Kat R; University of Southampton* Inside a Feather II: 3D quantification of laminar layup in a bird feather shaft.
- P3-177** *Manafzadeh AR; Brown University* Post-hatching development of hind limb articular morphology in the common quail
- P3-178** *Wilken AT, Middleton KM, Sellers KC, Cost IC, Holliday CM; University of Missouri-Columbia* Finite Element Analysis of the Savannah Monitor, *Varanus exanthematicus*, and its Implications for Lepidosaur Cranial Kinesis
- P3-179** *Alberto AA, Garland Jr T, Freeman PA; University of California Riverside, University of Nebraska Lincoln* Evolution of Hindlimb Bone Dimensions and Muscle Masses in House Mice Selectively Bred for High Voluntary Wheel-Running Behavior
- P3-180** *Hellert SM; Indiana University* Understanding the Causes of Phenotypic Integration Patterns in Birds Limbs
- P3-181** *Gabler MK, Lohr AJ, Koopman HN; Univ North Carolina, Wilmington* How uniform are mammalian adipocytes? Adipocyte size in the blubber of odontocetes
- P3-182** *Struble MK, Gardner J, Gibb A; Northern Arizona University, Montana State University* The Evolution of Grasping Behavior in Birds and Associated Pedal Adaptations
- P3-183** *McNamara GPJ, Kircher BK, Cohn MJ; Univ of Florida* Digit Development in *Anolis sagrei*
- P3-184** *Gartner SM, Mehta RS; Univ of California, Santa Cruz* Organ Topology and Their Scaling Patterns in Moray Eels
- P3-185** *Bond L, Stricklen B, Gould F, German R; Northeast Ohio Medical University* Coordination of Swallowing and Respiration for Various Feeding Methods in Infant Pigs
- P3-186** *Heck C, Woodward H; Oklahoma State Univ CHS, Tulsa* The Extent of Metaplastic Hard Tissue in the Limbs of the Nine-Banded Armadillo (*Dasybus novemcinctus*)
- P3-187** *Dobkowski KA, Kobelt J, Crofts SB, Dethier MN; University of Washington, Montclair State University, University of Illinois - Urbana-Champaign* Juvenile Clam Failure Across Ontogeny
- P3-188** *Dickson K, Estess E, Farwell C, Forsgren K, Fujioka K, Kitagawa T, Malik A, Schuller K; California State Univ Fullerton, Monterey Bay Aquarium, National Research Inst of Far Seas Fisheries, Univ Tokyo* Ontogenetic Changes in the Counter-Current Heat Exchangers Required to Elevate Slow-Oxidative Muscle and Visceral Temperatures in Pacific Bluefin Tuna, *Thunnus orientalis*
- P3-189** *Agosto LM, Bentley V, Helm BR, Holthusen J, Rinehart JP, Yocum GD, Greenlee KJ, Bowsher JH; UCF, Aurora Univ, NDSU, Biological Sciences, USDA-ARS Animal Metabolism, USDA-ARS Insect Genetics and Biochemistry* Physiological and molecular regulation of metamorphic commitment in the solitary bee *Osmia lignaria*

- P3-190** Voss KM, Mehta RS; University of California, Santa Cruz
The Scaling of Eight Arms in Californian Octopuses: Does Arm Length Inform Predator-Prey Interactions?
- P3-191** Gula C, Bowsher J, Yocum G, Heidinger B; North Dakota State University, USDA-ARS
Aging and Body Size in Solitary Bees
- P3-192** Farnkopf IC, Usip SE, McBurney DL, Thewissen JGM; Kent State University, Northeast Ohio Medical University
Ontogeny of the respiratory tract in dolphins
- P3-193** Ford KL, Albert JS; University of Louisiana at Lafayette
The long and short of it: Patterns of snout differentiation in four species of electric fishes
- P3-194** McLean CJ, Garwood RJ, Brassey CA; Manchester Metropolitan University, University of Manchester
A Geometric Morphometric Analysis of the Raptorial Appendage of the Whip Spider *Damon variegatus* (Arachnida, Amblypygi)
- P3-195** Long JH, Fjellidal PG, Kryvi H; Vassar College, Institute of Marine Research, University of Bergen
Tapering the tube: development of the cranial and caudal ends of the notochord of Atlantic salmon, *Salmo salar*.

Adaptations

- P3-196** Jurestovsky DJ, Mead JI; East Tennessee State University, TN, Mammoth Site at Hot Springs, SD
Making Identifications Using Snake Cranial Bones
- P3-197** Roop SR, Pruett J, Saathoff MM, Addis EA; Gonzaga University, Auburn University
Maternal Nest-Site Selection and Hatching Success in a Northern Population of Painted Turtles (*Chrysemys picta*)
- P3-198** English LT; University of Texas at Austin
Crocodile Fight Club: Late Ontogenetic Development of Osteoderms and Their Role in Social Behavior
- P3-199** Divito KR, Jue NK, Trusiak S, Obergfell C, Bucklin A, O'Neill RJ; UConn, California State University
Bloom or Bust: Genomic analysis of *Salpa thompsoni* in a rapidly changing environment
- P3-200** Manna TJ, Tong L, Bán M, Aidala Z, Moskát C, Hauber ME; CUNY Hunter College and the Graduate Center, University of Debrecen, Bloomfield College, Eötvös Loránd University, University of Illinois, Urbana-Champaign
Cognitive Interference Reduces Egg Rejection Accuracy in Cases of Multiple Parasitism
- P3-201** Watts RC, King RW, Baker JA, Foster SA; Clark University
Possible Mutation Accumulation in Unexpressed Plastic Phenotypes: Insights from Threespine Stickleback
- P3-202** Drupa SA, Lordan EJ; Loudoun County High School
Hot Bog: The adaptation of *Daphnia magna* to near-lethal temperatures
- P3-203** Keogh J, Baker JA, King RW, Foster SA; Clark University
Temporal Patterns of Armor Evolution in Threespine Stickleback Fish Following Establishment of a Non-Native Predator, the Northern Pike
- P3-204** Hall MR, Berg O, Müller UK; CSU Fresno
Trap activity and efficiency in *Utricularia vulgaris*
- P3-205** Duffy JL, Watson CM; Midwestern State University
Does differences in toepad and claw morphology among Mediterranean House Gecko (*Hemidactylus turcicus*) populations correspond to properties of their substrate?
- P3-206** Ballinger MA, Lin J, Longo T, Heyer GP, Phifer-Rixey M, Ferris KG, Nachman MW; Univ of California, Berkeley, Monmouth Univ, Univ of California, Davis
Phenotypic Variation between Temperate and Tropical Populations of House Mice
- P3-207** Bittner NKJ, Nachman MW; Univ of California, Berkeley
Desert adaptation and water consumption in the house mouse *Mus musculus*
- P3-208** Adineh S, Ross J*; California State University, Fresno
Fitness Benefits of Paternal Mitochondrial Transmission in Intra-Species Hybrids
- P3-209** Yasumasu S, Sano K, Nagasawa T, Kawaguchi M; Sophia Univ, Josai Univ, Jikei Univ
Co-evolution of fish hatching enzyme and its substrate
- P3-210** Sarikaya DP, Davis SL, Tarakji A, Kochummen AA, Khan NY, Sheehy H, Begun DJ; Univ of California, Davis
Metabolic traits and starvation response in *Drosophila melanogaster* clinal populations
- P3-211** Haridy Y; Univ of Toronto, Mississauga
Dental adaptations in monophyodont squamates; a histological study of the agamid *Pogona vitticeps*

Molecular Evolution

- P3-212** Fodor ACA, Makabe K, Jeffery WR, Satoh N, Swalla BJ; University of Washington, University of Tokushima, Station Biologique, Roscoff France, Okinawa Institute for Science and Technology
- The SHARK gene *cymric* is truncated in the ascidian *Molgula occulta*
- P3-213** York JM, Imani S, Zakon HH; University of Texas at Austin
- Tetramerization and sequence evolution of potassium channels of weakly electric fishes
- P3-214** Selcer KW; Duquesne University
- Evolution of the Egg-Yolk Precursor Protein Vitellogenin in Sauropsids: Variation in Phosvitin Serine Composition and Codon Usage.
- P3-215** Sano K, Ohno S, Izuha A, Imai K, Kawaguchi M, Yasumasu S; Josai University, Sophia University
- Neofunctionalization of duplicated hatching enzyme genes in the teleost evolution
- P3-216** Santibanez-Lopez CE, Kriebel R, Ballesteros JA, Sharma PP; Univ Wisconsin-Madison
- Evolution of three-dimensional structure of the calxin family peptides in the scorpion venom
- P3-217** Bogan SN, Ingraham M, Place SP; Sonoma State University
- Regulatory Origins of a Lost Inducible Heat Shock Response in Antarctic Fishes
- P3-218** Russell AG, Chandler CH; SUNY Oswego
- XY or ZW? Sex-Reversal and Cytogenetics Capture Conflicting Pictures of *Trachelipus rathkei* Heterogamety
- P3-219** Guerra VI, Byrne M, Hart MW; Simon Fraser University, University of Sydney
- Characterization of Gonad Transcriptomes of Two Sea Stars with Differing Modes of Reproduction
- P3-220** Westfall AK, Schwartz TS, Oaks JR; Auburn University
- The Evolution of Viviparity and the Insulin Signaling Network in *Sceloporus* Lizards
- P3-221** Perez JK, Cohen CS; Romberg Tiburon Center for Environmental Studies, San Francisco State University
- Phylogeographic Variation in *Leptasterias* Clades Relative to Sources of Estuarine Outflow
- P3-222** Muenzen K, Monroy J, Finseth F; Claremont Colleges
- Insights into the molecular evolution of the PEVK region of the giant muscle protein titin
- P3-223** Wong YY, Le PH, Senatore A; University of Toronto Mississauga
- Transcriptome Analysis of *Trichoplax adhaerens* Provides Insight into the Evolution of Synaptic and Paracrine Cell-cell Signaling
- P3-224** Mah JL, Leys SP; University of Alberta
- 'Neural' Genes in Sponges: RNA-seq of a Sponge Sensory Structure
- P3-225** Ritschard EA, Fitak RR, Johnsen S; Los Andes University, Bogota, Colombia, Duke University
- Sensory insights from the molecular evolution of GPCRs in the *Octopus bimaculoides* genome
- P3-226** Papetti C, Babbucci M, Harms L, Lucassen M, Dettai A, Auvinet J, Heindler FM, Patarnello T, Negrisolo E; University of Padova, Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Institut de Systematique, Evolution, Biodiversité, Université Paris 6, Sorbonne Universités Cassan
- The Evolution of Mitochondrial Genomes of Notothenioid Fish
- P3-227** Schultz DT, Eizenga J, Christianson LM, Francis WR, Corbett-Detig RB, Green RE, Haddock SHD; Univ of California, Santa Cruz, Monterey Bay Aquarium Research Institute, University of Southern Denmark
- Novel ORFs and Synteny Rearrangement of the *Beroe forskalii* Ctenophore Mitochondrial Genome

Evolutionary Ecology

- P3-228** Warner DA, Pearson PR; Auburn University
- Natural selection on thermal reaction norms of lizard embryos
- P3-229** Socki F, Price SL, Doering G, Burroughs RW, Moreau CS; Ohio Wesleyan University, The Field Museum, University of Chicago
- Three-dimensional Modeling and Morphometric Analysis of the Elaborate Soldier Heads in Turtle Ants (*Cephalotes*)
- P3-230** Saathoff MM, Roop S, Pruett J, Hoekstra L, Janzen FJ, Addis EA; Gonzaga University, Auburn University, Iowa State University
- Variation in Maternal Investment across the Range of the Painted Turtle (*Chrysemys picta*)
- P3-231** Wicker VM, Hund AK, Ibrahim AS, Stephens JQ, Tsunekage T, Levin II; Agnes Scott College, University of Colorado
- The effects of nest mites on variation in nestling telomere length
- P3-232** Schaper EG, Morinaga G, Siler CD, Bergmann PJ; Clark University, Oklahoma University
- Microspatial Niche Partitioning in Semi-fossorial Lizards (Sincidae: *Brachymeles*)
- P3-233** Mitchell TS, Warner DA; Auburn University
- The Effect of Density and Timing of Hatching on Early Life Phenotypes and Survival of Anole Lizards

- P3-234** McBrayer LD, Orton RW, Kinsey CT; Georgia Southern University
Habitat management affects traits tied to individual fitness: parasites, signals, and performance
- P3-235** Singh S, Glass J, Stahlschmidt ZR; Univ of the Pacific
Dry dilemma: How does water availability influence dispersal capability?
- P3-236** Stevens II DR, Baker JA, Foster SA; Clark University
The effects of invasive pike on stickleback anti-predator morphology
- P3-237** Sanchez N, Speiser DI, Boggs C; University of South Carolina
The Visual Ecology of the Mormon Fritillary, *Speyeria mormonia*, Across an Elevational Gradient
- P3-238** Clark AD, Beatty AE, Schwartz TS; Auburn University
Exploration of the Insulin/insulin-like Signaling Pathway in Non-Model Organisms via Primary Culture Experiments
- P3-239** Taylor L, Finnegan S; University of California, Berkeley
Isotopic Analysis of Fossil Whale Barnacles to Reconstruct Prehistoric Whale Migration: Preliminary Results
- P3-240** Cloutier R, Grande T*, Duclos K; Univ of Quebec, Rimouski, Loyola Univ Chicago, Univ of Calgary, Alberta
Modular Organization of the Weberian Apparatus
- P3-241** Biedak N, Baker JA, Foster SA; Clark University
Quantification of Phenotypic Variation in Newfoundland Populations of Threespine Stickleback

Complementary to Symposium S11: Measuring Biodiversity and Extinction

- P3-242** Davis-Berg EC, Rock MO, Ramirez I, Wilson BA; Columbia College Chicago, University of Illinois at Chicago, Garfield Park Conservatory, Liberty Public Schools
Succession and climate change – can molluscs be indicators?
- P3-243** Ceja AY, Gunderson AR, Stillman JH; Univ of California, Riverside, Univ of California, Berkeley, San Francisco State Univ
What makes a crab move, and where does it go? Modeling predicts shifts of an intertidal population distribution and abundance in response to warming
- P3-244** Hekkala ER, Amato GA, Norell M, Russello M, Gatesy J; Fordham University, AMNH, American Museum of Natural History, University of British Columbia
An Extinct Crocodile Provides Keys to Understanding to Origins of *Crocodylus*

Biodiversity

- P3-245** Salaguinto TC, Rivera V, Gonzalez VH, Rivera JL, Tscheulin T, Petanidou T, Hranitz JM, Barthell JF; Whitman College, University of Puerto Rico, University of Kansas, University of the Aegean
Nectar Dynamics of *Convolvulus arvensis* in the Mediterranean Ecoregion
- P3-246** Schwartz ML, Maslakova SA, Partridge M*, Stebbins M, Tilahun T, Holman M, Norenburg J; University of Washington, Oregon Institute of Marine Biology, University of Oregon
Nemertean Diversity at Carrie Bow Cay, Belize
- P3-247** Wang X, Kong L*, Chen J, Matsukuma A, Li Q; Key Laboratory of Mariculture, Ministry of Education, Ocean University of China, Institute of Geology and Paleontology, Linyi University
Integrative Taxonomy of Meretrix Species (*Bivalvia*: Veneridae) from the Northwestern Pacific
- P3-248** Kovacs JL, Gaillard E; Spelman College, University of North Carolina
Investigating the effects of urbanization on bird biodiversity: Testing three biodiversity hypotheses using citizen science data
- P3-249** Townsend JP, Tassia MG, Damian-Serrano A, Whelan NV, Halanych KM, Sweeney AM; University of Pennsylvania, Auburn University, Yale University, US Fish and Wildlife Service
A Colorful, Deep Sea Ctenophore Species From the Northwest Atlantic Ocean
- P3-250** Barragan Y, Lauretta D, Rodriguez E; Universidad Autónoma de Baja California Sur, Museo Argentino de Ciencias Naturales Bernardino Rivadavia, BAmerican Museum of Natural History
Revision of the Genus *Actinostella* (Cnidaria: Actiniaria: Actinioidea) from Tropical and Subtropical Western Atlantic and Eastern Pacific: Redescriptions, Synonymies and Sister Species
- P3-251** Garcia-Hernandez JE, Ccondor-Lujan B, Padua A, Azevedo F, Alfaro M, Klautau M, Schizas N; University of Puerto Rico - Mayaguez, Universidade Federal do Rio de Janeiro, Instituto de Biologia
Diversity of calcareous sponges (subclass Calcinea) from Puerto Rico: Genetic and Morphological Evidence
- P3-252** San Juan PA, Hendershot JN, Daily GC, Fukami T; Stanford University
Land use change influences avian gut microbiomes

Conservation Biology

- P3-253** Jones DG, Hazard LC; Montclair State Univ, New Jersey
Salinity Aversion in Adult and Larval Wood Frogs
- P3-254** Monuki KS, Sorte CJB, Bracken MES; Univ of California, Los Angeles, Univ of California, Irvine
Mussel Condition Across Environmental Stress Gradients in New Zealand

- P3-255** Weigand NM, Tonra CM, Wagner RD, Popescu VD; Ohio University
Evaluating potential effects of proximity to roadways in a road-naïve population of turtles
- P3-256** Smoot SC, Zohdy S, Schwartz TS; Auburn University
Population genetics of mouse lemurs and their ecto-parasites in Ranomafana National Park
- P3-257** Diaz MI, Smith RJ, Shuman-Goodier M, Singelton GR, Almazan L, Propper CR, Hadi B; Northern Arizona University, International Rice Research Institute
Amphibians as Ecosystem Service Providers in Filipino Rice Fields
- P3-258** Reese T, George S; Georgia Southern University
Juvenile Fiddler Crab and Mussel Mound Density Related to Creek Proximity in Salt Marshes
- P3-259** Kight H, George S; Georgia Southern University
Are varying characteristics of saltmarsh sediments contributing to differences in protein content of juvenile fiddler crabs?
- P3-260** Niederhauser JM, Anderson RC; Florida Atlantic University
Habitat Variation in Relation to Bachman's Sparrow Nest Success and Nestling Condition
- P3-261** Stevens AK, Harris KP; University of Central Florida
Oyster Reef Restoration and Living Shoreline Stabilization: Impacts on Infaunal Communities in Shallow-water Estuaries
- P3-262** Sauer AR, Esposito L; San Jose State University, California Academy of Sciences
Communicating Science: Creating a Field Guide of the Vizcaino Biosphere Reserve for Community Outreach
- P3-263** Wibbels T, Navarro E, Rosas M, Montano J, Bevan E, Najera B, Illescas F, Pena LJ, Burchfield P; University of Alabama at Birmingham, Gladys Porter Zoo, CONANP, MX
Evaluation of Preprogrammed UAV Surveys for Studying the Ecology and Conservation of the Kemp's Ridley Sea Turtle During the 2017 Nesting Season.
- P3-264** Forsburg ZR, Gabor CR; Texas State University, San Marcos
Is artificial light at night a stressor for *Rana berlandieri*?
- P3-265** Nolan PM, Van Skoik B, Hart T; The Citadel, University of Oxford
Non-invasive monitoring of penguin colony health.

Biogeography

- P3-266** Hernandez C, Weinberg RB, Cohen CS; San Francisco State University, Romberg Tiburon Center
COI haplotype diversity of three populations of the invasive colonial tunicate *Didemnum vexillum* in the Pacific Northwest
- P3-267** Alfonso YU, Nunez LP, Fong A, Torres J; Florida Museum of Natural History, Univ of Florida, Centro Oriental de Ecosistemas y Biodiversidad (BIOECO), Museo de Historia Natural "Tomas Romay", University of Kansas
Evolutionary history of the Antillean gecko *Tarentola americana* (Phyllodactylidae) based on mitochondrial and nuclear DNA sequences

Coral Reefs

- P3-268** Quigley KM, Willis BL, Kenkel CD*; Aust. Inst of Mar. Sci., James Cook Univ, AUS, Univ of So California
Symbiont shuffling as a parental effect in a vertically transmitting coral
- P3-269** Kitchen SA, Von Kuster G, Miller W, Baums IB; Penn State Univ
STAG: Standard Tools for Acroporid Genotyping

Environmental Effects on Development

- P3-271** Shidemantle GI, Falso MJS, Beeching SC, Pasquale VE, Campbell ZI, Falso PG; Slippery Rock University
Assessment of Exposure to the Pesticide Imidacloprid on Amphibian Development
- P3-272** Mass SM, Funk A, Wills N*, Pinsky B, Massena K, Chabria T, Minicozzi M, Mynarska I, Moody T, St John P; SUNY New Paltz
The cytoskeleton, endocrine disruption and regeneration
- P3-273** Funk A, Wills N, Pinsky B, Minicozzi M, Mass S; SUNY New Paltz, Northern Arizona University
Disrupting Microtubule Polymerization in Regenerating Planaria
- P3-274** Moody T, Fagan A, StJohn P, Mass M; SUNY New Paltz
Quantifying the Retention of BPA in Regenerating Planaria
- P3-275** Sifuentes-Romero I, Tezak BM, Milton SL, Wyneken J*; Florida Atlantic University
Hydric environmental effects on turtle development and sex ratio
- P3-276** Massena K, Funk A, Wills N, Chabria T, Pinsky B, Danisewicz E, Thom Z, Mass S; SUNY New Paltz
Preservatives that synergize with xenoestrogens: effects of co-administration of BHT and BPA on regeneration in Planaria
- P3-277** Tezak BM, Sifuentes I, Wyneken J; Florida Atlantic Univ
Molecular mechanisms behind sex determination in turtles: is moisture playing a role?

Sunday Schedule of Events

Events take place in the San Francisco Marriott Marquis, unless otherwise noted

EVENT	TIME	LOCATION
Speaker Ready Room	7:00 AM – 10:00 AM	Foothill D
Registration	7:30AM – 2:30PM	North Registration Desk
Coffee Break AM	9:30 AM – 10:30 AM	Ballroom Foyer
SPECIAL LECTURE		
Moore Lecture: Dr. Katayoun Chamany From STEM to STREAMD: Responsibility, Arts, and Design for Inclusive Learning	3:45 PM – 4:45 PM	Salon 7
SYMPOSIA ORAL PRESENTATIONS		
S10: Behavioral and Physiological Adaptation to Urban Environments <i>Organizers: Jenny Ouyang, Davide Dominoni</i> <i>Sponsors: DAB, DCE, DCPB, DEDE & DEE</i>	7:45 AM – 3:30 PM	Salon 7
S11: Measuring Biodiversity and Extinction: Present and Past <i>Organizer: Julia Sigwart</i> <i>Sponsors: DEDE, DIZ & DPCB</i>	8:20 AM – 3:30 PM	Salons 14-15
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Session 109: Digestion and Energetics	8:00 AM – 10:00 AM	Salons 1-2
Session 110: Bioindicators and Pollution	8:00 AM – 9:30 AM	Salons 3-4
Session 111: Metamorphosis and Regeneration	8:15 AM – 9:30 AM	Salons 5-6
Session 112: Complementary to S1: From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals	8:15 AM – 9:45 AM	Salons 10-11
Session 113: Genetics of Adaptation	8:00 AM – 9:45 AM	Foothill G
Session 114: Locomotion and Navigation	8:00 AM – 9:45 AM	Nob Hill A-B
Session 115: Developmental Endocrinology	8:00 AM – 9:30 AM	Nob Hill C-D
Session 116: Bird Morphology	8:00 AM – 9:15 AM	Foothill E
Session 117: Morphology: Heady Matters	8:00 AM – 9:15 AM	Pacific H
Session 118: Muscle and Tendon	8:00 AM – 9:30 AM	Pacific I
Session 119: Sexual Dimorphism and Sexual Selection	8:15 AM – 9:45 AM	Pacific J
Session 120: Evolutionary Physiology - Oxygen	8:00 AM – 9:45 AM	Salons 12-13
Session 121: Scaling and Other Complexities of Metabolic Rate Estimation	10:30 AM – 12:00 PM	Salons 1-2
Session 122: Awesome Biomechanics: From Righting to Fighting	10:00 AM – 12:00 PM	Salons 3-4
Session 123: Morphogenesis and Organogenesis	10:15 AM – 11:45 AM	Salons 5-6
Session 124: Complementary to S1: From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals	10:15 AM – 11:45 AM	Salons 10-11
Session 125: Adaptation	10:15 AM – 12:00 PM	Foothill G
Session 126: Behavioral Ecology and the Environment	10:15 AM – 12:00 PM	Nob Hill A-B
Session 127: Symbiotic Relationships	10:15 AM – 12:00 PM	Nob Hill C-D
Session 128: Complementary to Symposium S9: Inside the Black Box: The Mitochondrial Basis of Life-History Variation and Animal Performance	10:15 AM – 12:15 PM	Foothill E
Session 129: Fluids: Low Reynolds Number	10:15 AM – 11:30 AM	Pacific I
Session 130: Sexual Selection	10:15 AM – 11:45 AM	Pacific J
Session 131: Evolutionary Physiology	10:15 AM – 12:00 PM	Salons 12-13

AFTERNOON

Session 132: Bioinspiration: Cats' Paws and Catapults	1:30 PM – 3:30 PM	Salons 1-2
Session 133: Ocean Acidification	1:45 PM – 3:15 PM	Salons 3-4
Session 134: Aquatic Locomotion: It is a Fluke	1:30 PM – 3:15 PM	Salons 5-6
Session 135: Complementary to S2: Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance: Less Than a Cell to Behavior	1:30 PM – 3:30 PM	Salons 10-11
Session 136: Social Behavior	1:30 PM – 3:00 PM	Nob Hill A-B
Session 137: Undergraduate Biology Education	1:30 PM – 3:30 PM	Nob Hill C-D
Session 138: Filter Feeding	1:30 PM – 2:45 PM	Foothill E
Session 139: Body Size, Ontogeny and Scaling	1:30 PM – 3:30 PM	Pacific H
Session 140: Osmotic Stress and Ionic Regulation	1:30 PM – 3:30 PM	Pacific I
Session 141: Energetics of Diving, Flying, Running and Breeding	1:30 PM – 3:30 PM	Pacific J
Session 142: Evo: Eco-Morpho	1:30 PM – 3:00 PM	Salons 12-13

COMMITTEE & BOARD MEETINGS

Executive Committee	7:00 AM – 9:00 AM	Foothill C
Group Meeting: Science in the Public Eye symposium, <i>Merson - Stack</i>	9:00 AM – 12:30 PM	Foothill F
Public Affairs Committee	12:00 PM – 1:30 PM	Hotel Restaurant

WORKSHOPS AND PROGRAMS

Animal Genome to Phenome RCN: Transcriptomics Brownbag	12:00 PM – 1:30 PM	Foothill C
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SOCIAL EVENTS

Zumba Class	6:30 AM – 7:15 AM	Juniper
Society-wide social in honor of students and post-docs	5:00 PM – 7:00 PM	Ballroom Foyer

Sunday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM

Symposium S10

Salon 7

Behavioral and Physiological Adaptation to Urban Environments

Chairs: Jenny Ouyang, Davide Dominoni

7:45 am	S10-1	<i>Ouyang J, Dominoni D; University of Nevada, Reno, Netherlands Institute of Ecology, NIOO-KNAW</i>	Introduction to symposium: Behavioral and physiological adaptation to urban environments
8:00 am	S10-2	<i>Bonier F, Martin PR; Queen's University</i>	Environmental challenges, species interactions, and urban adaptation
8:30 am	S10-3	<i>Lefebvre L, Ducatez S, Sayol F, Sol D; McGill University, University of Sydney, Autonomous University of Barcelona</i>	Are Urban Species City Specialists or Habitat Generalists?
9:00 am	S10-4	<i>Lapedra O; Harvard University</i>	Behavioral adaptations to urban environments: an integrative perspective from individuals to species
9:30 am	Coffee Break		Ballroom Foyer
10:00 am	S10-5	<i>Zollinger SA, Brumm H; Max Planck Institute for Ornithology</i>	Effects of Experimental Traffic Noise Exposure on Avian Health and Fitness
10:30 am	S10-6	<i>Kleist NJ, Guralnick RP, Cruz A, Lowry CA, Francis CD*; Univ of Colorado, Univ of Florida, Cal Poly, San Luis Obispo</i>	Anthropogenic noise, psychological stress and fitness: disrupted glucocorticoid signaling among breeding songbirds
11:00 am	S10-7	<i>French SS, Smith GD, Hudson SB, Durso AM; Utah State University, Dixie State University</i>	Town and Country Reptiles: Physiological Trade-offs Across a Changing Landscape
11:30 am	S10-8	<i>Hutton P, McGraw KJ; Arizona State University</i>	People, please power down the party: relative effects of human presence at night on metabolism, disease, and condition in rural v. urban finches
12:00 pm	Lunch Break		
1:30 pm	S10-9	<i>Garroway CJ, Fletcher QE, Balzer E, Ferry C, Kinnunen R, Schmidt C, Solmundson K; U Manitoba, U Winnipeg</i>	Eastern Grey Squirrel Colour Morphs and Urban Adaptation
2:00 pm	S10-10	<i>Salmón P, Watson H, Nord A, Herrera-Duenas A, Isaksson C*; Lund University</i>	Oxidative stress physiology and survival in the urban environment
2:30 pm	S10-11	<i>Kernbach ME, Miller JM, Unnasch TR, Martin LB; University of South Florida</i>	Light Pollution Increases Host Competence to West Nile Virus in a Reservoir Species
3:00 pm	S10-12	<i>Snell-Rood Emilie C, Kobiela Megan E; University of Minnesota</i>	Potential for adaptation of pollinators to roadside habitats: effects of sodium and heavy metals
3:30 pm	Coffee Break		Ballroom Foyer

8:30 AM – 3:30 PM Symposium S11 Salons 14-15

Measuring Biodiversity and Extinction: Present and Past

Chair: Julia Sigwart

8:30 am	S11-1	<i>Bennett KD; University of St Andrews</i>	Intersection of Quaternary climate oscillations and the generation of biodiversity: crucial or irrelevant?
9:00 am	S11-2	<i>Padian K; University of California, Berkeley</i>	Measuring and comparing extinction events: reconsidering diversity crises and concepts
9:30 am	Coffee Break		Ballroom Foyer
10:00 am	S11-3	<i>Edie SM, Collins KS, Huang S, Roy K, Valentine JW, Jablonski D; U of Chicago, Senckenberg Biodiversity and Climate Research Center, U of California, San Diego, U of California, Berkeley</i>	Extinction, climate, and the dynamics of biodiversity: Analyses of living and fossil marine bivalves
10:30 am	S11-4	<i>Mander L; The Open University</i>	Modern and Ancient Plant Biodiversity: what use are Pollen Grains?
11:00 am	S11-5	<i>Yeung NW, Hayes KA; Bernice Pauahi Bishop Museum, Howard University</i>	Extinction of the hyperdiverse Hawaiian land snail fauna: What remains and what are we doing to save it?
11:30 am	S11-6	<i>Rabosky Daniel L; University of Michigan</i>	Speciation, extinction, and the assembly of global vertebrate diversity
12:00 pm	Lunch Break		
1:30 pm	S11-7	<i>Sigwart Julia D; UC Berkeley, Queen's University Belfast</i>	Measuring biodiversity and extinction: can global patterns help the species discovery process?
2:00 pm	S11-8	<i>Okamura B, Hartigan A, Naldoni J; Natural History Museum, Universidade Federal de São Paulo</i>	Extensive uncharted biodiversity: the parasite dimension
2:30 pm	S11-9	<i>Wheeler QD; College of Environmental Science and Forestry</i>	Blank Canvas: The Case for Descriptive Taxonomy
3:00 pm	S11-10	<i>Winston JE; Smithsonian Marine Station</i>	21st Century Biological Nomenclature—the Power of Names
3:30 pm	Coffee Break		Ballroom Foyer

Sunday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:45 AM **Session 109**

Salons 1-2

Digestion and Energetics

Chairs: Joseph Heras, Susan Weiner

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| 8:00 am | 109-1 | <i>Leigh SC, Papastamatiou YP, German DP; University of California, Irvine, Florida International University</i> | Omnivorous Sharks? An Analysis of Bonnethead Shark Digestive Physiology Provides Evidence for Seagrass Digestion and Assimilation |
| 8:15 am | 109-2 | <i>Heras J, Chakraborty M, Emerson JJ, German DP; Univ of California, Irvine</i> | The monkeyface prickleback (<i>Cebidichthys violaceus</i>) genome and transcriptomes as a source for understanding digestion and metabolism in an herbivorous fish |
| 8:30 am | 109-3 | <i>German DP, Herrera MJ, Heras J; Univ of California, Irvine</i> | Can you stomach it? Comparative transcriptomics of the stomachs of prickleback fishes (Stichaeidae) consuming different diets |
| 8:45 am | 109-4 | <i>Gatica-Sosa C, Brzęk P, Magallanes ME, Karasov WH*, Caviedes-Vidal E; Univ San Luis, Univ Biaystok, Univ Wisconsin-Madison</i> | Intestinal α -Glucosidase Transcriptional Responses During Ontogeny and Diet Adjustment in Altricial Birds |
| 9:00 am | 109-5 | <i>Lacey LM, Benowitz-Fredericks ZM, Hatch SA; Bucknell Univ, Institute for Seabird Research and Conservation</i> | Role of Nest Microclimate and Food Availability in Chick Development and Reproductive Success in Black-Legged Kittiwakes (<i>Rissa tridactyla</i>) |
| 9:15 am | 109-7 | <i>Weiner SA, Harjo T, Woods WA, Starks PT; Roosevelt University, Tufts University</i> | Are subordinate roles a conditional strategy? An energy budget of the female roles of <i>Polistes dominula</i> |
| 9:30 am | 109-8 | <i>Roberts EA, Carrington E; Univ of Washington</i> | Incorporating structural biomaterials into a bioenergetics framework: an empirical test with marine mussels |
| 9:45 am | Coffee Break | | Ballroom Foyer |

8:00 AM – 9:30 AM **Session 110**

Salons 3-4

Bioindicators and Pollution

Chair: Melanie Guigueno

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| 8:00 am | 110-1 | <i>Cunningham BE, Breitenbach KK, Adams NL; California Polytechnic State University, San Luis Obispo</i> | The release of zinc oxide sunscreens into marine environments and their effects on developing <i>Strongylocentrotus purpuratus</i> embryos |
| 8:15 am | 110-2 | <i>Steele AN, Belanger RM, Moore PA; Bowling Green State University, University of Detroit Mercy</i> | Ground Water or Surface Flow: Which Polluted Water Causes More Detrimental Effects in Crustaceans Placed in Stream Mesocosms? |
| 8:30 am | 110-3 | <i>Goodchild CG, Love AL, Metz A, Durant SE; Oklahoma State University</i> | Does exposure to crude oil alter self-maintenance behaviors and immune function in birds? |
| 8:45 am | 110-4 | <i>Guigueno MF, Head JA, Peters L, Hanas AM, Letcher RJ, Fernie KJ; McGill University, University of Manitoba, Environment and Climate Change Canada</i> | Early-life Exposure to a Commonly-used Flame Retardant in Japanese Quail: Effects on the Thyroid System, Growth, and Metabolic Rate |
| 9:00 am | 110-5 | <i>Bergamini RR, Greenhalgh-Adam CD, Propper CR; Northern Arizona University</i> | Site-specific Evaluation of Body Shape Response to Contamination in a Model Fish Species, <i>Gambusia affinis</i> |
| 9:15 am | 110-6 | <i>Fetke JK; University of Cincinnati</i> | Characterization of the gene expression profile of ER alpha and Vitellogenin in the Fathead Minnow: implications for population effects |
| 9:30 am | Coffee Break | | Ballroom Foyer |

8:15 AM – 9:30 AM Session 111 Salons 5-6

Metamorphosis and Regeneration

Chair: Brian Nedved

8:15 am	111-1	<i>O'Bryant SM, Martinez-Acosta VG*</i> ; Univ of the Incarnate Word	Cellular and Molecular Characterization of Head Regeneration in <i>Lumbriculus variegatus</i> .
8:30 am	111-2	<i>Hadfield MG, Freckelton ML, Nedved BT</i> ; University of Hawai'i at Mānoa	Metamorphosing larvae of <i>Hydroides elegans</i> (Polychaeta): the first 30 minutes on the bottom
8:45 am	111-3	<i>Nedved BT, Freckelton ML, Hadfield MG</i> ; Kewalo Marine Laboratory, University of Hawai'i at Mānoa	Bacterial induction of metamorphosis of <i>Hydroides elegans</i> (Polychaeta): A new twist in the tailocin tale
9:00 am	111-5	<i>Moss ND, Maslakova SA</i> ; Oregon Institute of Marine Biology, University of Oregon	Regeneration Identifies Developmental Flexibility in the Piliidium Larva
9:15 am	111-6	<i>Freckelton ML, Nedved BT, Hadfield MG</i> ; University of Hawai'i at Mānoa	Searching for the mechanism: enzymatic interrogations of outer membrane vesicles involved in the metamorphosis of <i>Hydroides elegans</i> (Polychaeta)
9:30 am	Coffee Break		Ballroom Foyer

8:15 AM – 9:45 AM Session 112 Salons 10-11

Complementary to S1: From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals

Chairs: Erik Sperling, Kevin Kocot

8:15 am	112-2	<i>Macrander J, Sachkova MY, Moran Y, Reitzel AM</i> ; Univ of North Carolina at Charlotte, Hebrew University of Jerusalem	The starlet sea anemone (<i>Nematostella vectensis</i>) as an emerging model organism for venom studies.
8:30 am	112-3	<i>Evans SE, Droser MD, Gehling JG</i> ; University of California, Riverside, South Australia Museum	Growth of the Ediacara Macrofossil <i>Dickinsonia costata</i> : Highly Regulated and Complex Development in one of Earth's Earliest Animals
8:45 am	112-4	<i>Drake JL, Whitelegge JP, Jacobs DK</i> ; University of California, Los Angeles	Using data mining and mass spectrometry sequencing to derive a consensus coral 'biomineralization toolkit'
9:00 am	112-5	<i>Myers CE, Bergmann KD, Sun CY, Tamre E, Marcus MA, Boekelheide N, Knoll AH, Gilbert P</i> ; University of New Mexico, Massachusetts Institute of Technology, University of Wisconsin-Madison, Harvard University, Advanced Light Source, Lawrence Berkeley National Laboratory, Colby College	Exceptional preservation of glycine-rich proteins and ultrastructure in Cretaceous bivalves
9:15 am	112-6	<i>Boag TH, Elder LE, Hull PM, Sperling EA</i> ; Stanford University, Yale University	Oxygen, temperature, and the cold cradle of animal evolution: a paleophysiological perspective on the Ediacaran fossil record
9:30 am	112-7	<i>King RW</i> ; Clark University, Worcester MA	Paleohabitat Modeling of Marine Threespine Stickleback Glacial-Age Refugia
9:45 am	Coffee Break		Ballroom Foyer

8:00 AM – 9:45 AM Session 113 Foothill G

Genetics of Adaptation

Chair: Michael Logan

8:00 am	113-1	<i>Logan ML, Curlis JD, Gilbert AL, Miles DB, Chung A, McGlothlin JW, Cox RM</i> ; Smithsonian Tropical Research Institute, Georgia Southern University, Ohio University, Virginia Tech	Genetic constraints on adaptation to rapid environmental change
8:15 am	113-2	<i>Gamboa MP, Sillett TS, Funk WC, Ghalambor CK</i> ; Colorado State University, Migratory Bird Center, Smithsonian Conservation Biology Institute	The Genomic Basis of Adaptive Phenotypic Divergence in Bill Morphology of Channel Island Song Sparrows

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8:30 am	113-3	<i>Ferris KG, Ballinger M, Heyer G, Phifer-Rixey M, Bi K, Suzuki TA, Nachman MW; UC Davis, UC Berkeley, Monmouth University</i>	The genetic basis of adaptation to extreme climates in house mice across the Americas
8:45 am	113-4	<i>Allen PE, Cui Q, Miller CW; University of Florida</i>	Adaptive plasticity and genetic differences in mouthpart length across a broad landscape in a cactus-feeding bug
9:00 am	113-5	<i>Mack KL, Ballinger MA, Phifer-Rixey M, Nachman MW; Univ of California, Berkeley, Monmouth Univ</i>	Adaptive variation in gene regulation in mice
9:15 am	113-6	<i>Perry G, Bergey C, Johnson S, Koenig A, Sullivan S, Boufana B, Craig P, Castillo Y, Mahanty S, Garcia H; Penn State U, U of Salford</i>	Human Tapeworm Functional and Evolutionary Genomic Adaptations to Cooking-Related Heat Stress
9:30 am	113-7	<i>Fischer EK, Song Y, Hughes KA, Zhou W, Hoke KL; Stanford University, Colorado State University, Florida State University</i>	Convergence, divergence, and connectivity in transcriptional mechanisms of repeated evolution
9:45 am	Coffee Break		Ballroom Foyer

8:00 AM – 9:45 AM	Session 114	Nob Hill A-B
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Locomotion and Navigation

Chair: Noah Bressman

8:00 am	114-1	<i>Ehrlich DE, Schoppik D; New York University, Langone Medical Center</i>	Independent Control of Volitional and Reflexive Movements in Larval Zebrafish Locomotion
8:15 am	114-2	<i>Bressman NB, Simms M, Ashley-Ross MA; Wake Forest University</i>	Where do fish go when stranded on land? Terrestrial orientation and navigation of the mangrove rivulus, <i>Kryptolebias marmoratus</i>
8:30 am	114-3	<i>Wilshin SD, Bartlam H, Hubel T, Hailes S, Wilson A; Royal Veterinary College, University College London</i>	Zebra can navigate between resources without having to use the same track every time, tracks in the right direction will do
8:45 am	114-4	<i>Leitch KJ, Van Breugel F, Dickinson MH; California Institute of Technology, University of Washington</i>	Long-distance navigation of <i>Drosophila melanogaster</i> in the field
9:00 am	114-5	<i>Patel RN, Cronin TW; University of Maryland, Baltimore County</i>	Navigating the Benthic Reef: Path Integration and Landmark Orientation in a Mantis Shrimp
9:15 am	114-6	<i>Kamran M, Dittman AH, Pollock AM, Noakes DLG; Oregon State University, Northwest Fisheries Science Center, National Marine Fisheries Service, NOAA, Oregon State University, Oregon Hatchery Research Center</i>	Smells like home: Using olfactory learning and conditioning assays to select odorants for olfactory imprinting and homing in Pacific salmon
9:30 am	114-7	<i>Hamda NT, Hein A, Martin B, Danner E; NOAA Southwest Fisheries Science Center; Univ of California, Santa Cruz</i>	Quantitative Classification of Animal Behaviours from Time-series Tracking Data: Machine Learning Techniques
9:45 am	Coffee Break		Ballroom Foyer

8:00 AM – 9:30 AM	Session 115	Nob Hill C-D
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Developmental Endocrinology

Chairs: A. Kelsey Lewis, Kyle Selcer

8:00 am	115-1	<i>Lewis AK, Cohn MJ; University of Florida</i>	Structural defects of the external genitalia induced by the environmental fungicide vinclozolin
8:15 am	115-2	<i>Hu Y, McMenamin SK; Boston College</i>	Parsing the roles of thyroid hormones in developmental regulation: a survey of phenotypic features in hypothyroid zebrafish.
8:30 am	115-3	<i>Tsang ME, Hayes TB; University of California, Berkeley</i>	Variation in the Effects of Endocrine Disruptors on Sex Differentiation in Male African Clawed Frogs (<i>Xenopus laevis</i>)
8:45 am	115-4	<i>Hoffman AH, Finger JW, Wada H; Auburn University</i>	The Effects of Developmental Stress on Future and Transgenerational Stress Tolerance

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9:00 am	115-5	<i>Selcer KW; Duquesne University</i>	Vitellogenin as a Biomarker for Endocrine Disruption in Tetrapods: Evaluation of Its Utility and Potential.
9:15 am	115-6	<i>Gopinathan A, Shyamal S, Durica DS; VIT University, Univ of Oklahoma</i>	Studies on ecdysteroid hormone, its receptor gene (EcR) & its expression related to growth & reproduction in decapod crustaceans
9:30 am	Coffee Break		Ballroom Foyer

8:00 AM – 9:15 AM	Session 116	Foothill E
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Bird Morphology

Chairs: Alida Bailleul, Ashley Heers

8:00 am	116-1	<i>Bailleul AM, Holliday CM; University of Missouri</i>	Retracing the evolution of the otic joint in birds and fossil theropods through histology: new insights on streptostyly
8:15 am	116-2	<i>Heers AM, Tucci ER, Lentink D; Stanford University</i>	A musculoskeletal model of the avian flight apparatus: spring-like qualities of the pectoralis and supracoracoideus muscles
8:30 am	116-3	<i>Baumgart SL; Univ of Chicago</i>	Does Body Mass Constrain Avian Wing Shape or Sternum Shape?
8:45 am	116-4	<i>Louis LD, Bowie RCK, Dudley R; Univ of California, Berkeley</i>	Morphological adaptations to hovering in a remarkable radiation of Old World nectarivorous birds: the sunbirds (Nectariniidae)
9:00 am	116-5	<i>Eliason CM, Hackett SJ; Field Museum of Natural History</i>	Splashing into water: cranial and biomechanical diversity in a cosmopolitan radiation of birds
9:30 am	Coffee Break		Ballroom Foyer

8:00 AM – 9:15 AM	Session 117	Pacific H
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Morphology: Heady Matters

Chairs: Stacey Farina, Diego Vaz

8:00 am	117-1	<i>Dutel H, Sharp AC, Gröning F, Selles De Lucas V, Watson PJ, Evans SE, Fagan MJ; University of Hull, University College London, University of Aberdeen</i>	The role of soft tissues in the skull biomechanics of two lizards
8:15 am	117-2	<i>Holliday CM, Cost IN, Sellers KC, Middleton KM; University of Missouri</i>	Using Ternary Plots to Convey 3D Jaw Muscle Orientation in Space and Time
8:30 am	117-4	<i>Farina SC, Long NP; Harvard University, Dickinson College</i>	The multifunctional urohyal and sternohyoideus of flatfishes (Pleuronectiformes)
8:45 am	117-6	<i>Sellers KC, Middleton KM, Holliday CM; Univ of Missouri</i>	Biomechanics and Evolution of the Crocodyliform Skull
9:00 am	117-7	<i>Santana SE, Arbour JH, Curtis AA; University of Washington</i>	Echolocation and Diet Shaped Cranial Evolution During the Ecological Diversification of Bats
9:30 am	Coffee Break		Ballroom Foyer

8:15 AM – 9:30 AM	Session 118	Pacific I
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Muscle and Tendon

Chairs: Michael Rosario, Danielle Adams

8:15 am	118-2	<i>Nguyen A, Balaban JP, Azizi E, Talmadge RJ, Lappin AK; California State Polytechnic Univ, Pomona, Univ of California, Irvine</i>	Fatigue Resistant Jaw Muscles Facilitate Long-lasting Courtship Behavior in the Southern Alligator Lizard (<i>Elgaria multicarinata</i>)
8:30 am	118-3	<i>Spainhower KB, Metz AK, Barkett EM, Yusuf AR, Butcher MT; Youngstown State Univ</i>	Hanging Out: Fiber Type Distribution and Energy Metabolism in Sloth Forelimb Muscles

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8:45 am	118-4	<i>Sleboda DA, Roberts TJ; Brown University</i>	Diversity in connective tissue morphology across vertebrate muscle
9:00 am	118-5	<i>Rosario MV, Roberts TJ; Brown University</i>	The ability of tendons to buffer energy during eccentric contractions depends on lengthening dynamics
9:15 am	118-6	<i>Adams DA, Fish FE, Zue R, Bart-Smith H; West Chester University, Pennsylvania, University of Virginia</i>	Properties and functions of tendons in the cetacean peduncle
9:30 am	Coffee Break		Ballroom Foyer

8:15 AM – 9:45 AM	Session 119	Pacific J
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Sexual Dimorphism and Sexual Selection

Chair: Christine Miller

8:15 am	119-1	<i>Robinson CD, Gifford ME; University of Central Arkansas</i>	Selection on a sexually dimorphic color patch in the prairie lizard, <i>Sceloporus consobrinus</i>
8:30 am	119-2	<i>Levell ST, Reznick DN; Univ of California, Riverside</i>	Intergenomic Conflict: Understanding Maternal Investment and Post-Zygotic Mate Choice
8:45 am	119-3	<i>Cespedes AM, Lailvaux SP; Univ of New Orleans</i>	Conflict and the evolution of sexual dimorphism in whole-organism performance
9:00 am	119-4	<i>Emberts Z, St Mary CM, Herrington T, Miller CW; University of Florida, Gainesville</i>	Losing a leg up on the competition: consequences of losing a sexually-selected weapon
9:15 am	119-5	<i>Miller CW, Moore AJ; University of Florida, University of Georgia</i>	Bug Battles: Previous Experience with Females Affects Male Contest Escalation and Outcome
9:30 am	119-6	<i>Gray LN, White BA, Wang LJ; Univ of New Mexico, Univ of California, Berkeley</i>	Dewlap size and seasonality: revisiting the Fitch-Hillis Hypothesis in Mexican anoles
9:45 am	Coffee Break		Ballroom Foyer

8:00 AM – 9:45 AM	Session 120	Salons 12-13
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Evolutionary Physiology - Oxygen

Chair: Lars Tomanek

8:00 am	120-1	<i>McKenna AJ, Santamaria J, Van Bruekelen F; Univ of Nevada, Las Vegas</i>	A Direct Test of the Aerobic Capacity Model for the Evolution of Endothermy
8:15 am	120-2	<i>Velotta JP, Senner NR, Wolf CJ, Schweizer RM, Cheviron ZA; University of Montana</i>	Convergent Evolution of Physiological and Genomic Responses to Hypoxia in <i>Peromyscus</i> Mice
8:30 am	120-3	<i>Schweizer RM, Velotta JP, Ivy CM, Scott GR, Cheviron ZA; University of Montana, McMaster University</i>	Selection on a master regulator of oxygen homeostasis contributes to adaptive hypoxia signaling in deer mice
8:45 am	120-4	<i>Kraskura K, Nelson J; Univ of California, Santa Barbara, Towson University</i>	Fitness components of individual fish that experience hypoxic dead zones under normoxia and hypoxia
9:00 am	120-5	<i>Vandenbrooks JM, Parker G, Zaffino A, Harrison JF; Midwestern University, Arizona State University</i>	Life history traits affect the response of insects to variation in atmospheric oxygen
9:15 am	120-6	<i>Tomanek L, Vasquez MC; California Polytechnic State University</i>	Sirtuins: Regulators of the Response to Heat and Hypoxia Stress in <i>Mytilus</i> Mussels
9:30 am	120-7	<i>Schachat SR; Stanford University</i>	Phanerozoic pO_2 and the early evolution of terrestrial animals
9:45 am	Coffee Break		Ballroom Foyer

10:30 AM – 12:00 PM	Session 121	Salons 1-2
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Scaling and Other Complexities of Metabolic Rate Estimation

Chairs: Marshall McCue, Tricia Neptune

10:30 am	121-1	<i>Bigman JS, Wegner NC, Dulvy NK; Simon Fraser University, Southwest Fisheries Science Center, National Marine Fisheries Service</i>	Vertebrate-wide scaling of metabolic rate and respiratory surface area
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10:45 am	121-2	<i>McCue MD, Barton M, Terblanche JS; St. Mary's University, Stellenbosch University</i>	Improving Respirometry Equations for Robust Estimates of Metabolic Rate Across Diverse and Extreme Experimental Gas Conditions
11:00 am	121-3	<i>Rangel RE, Johnson DW; California State University Long Beach</i>	Effects of Temperature and Mass on the Metabolic Rate of a Sedentary Reef Fish, The Bluebanded Goby (<i>Lythrypnus dalli</i>)
11:15 am	121-4	<i>Burford BP, Carey NJ, Goldbogen JA; Hopkins Marine Station of Stanford University</i>	Does grouping reduce the standard metabolic rates of squid?
11:30 am	121-5	<i>Neptune TS, Watson CM; Midwestern State University</i>	Divergence of the physiological phenotype: variation in metabolic rate among <i>Anolis oculatus</i> ecotypes on Dominica
11:45 am	121-6	<i>Hall JM, Warner DA; Auburn University</i>	Embryological development and global change: how do reptile embryos respond to thermal stress in urban environments?

12:00 pm **Lunch Break**

10:00 AM – 12:00 PM **Session 122** **Salons 3-4**

Awesome Biomechanics: From Righting to Fighting

Chair: *Mary Stoddard*

10:00 am	122-1	<i>O'Donnell DJ, Hristov NI, Chadwell BA, Ashley-Ross MA; Wake Forest University, Center for Design Innovation, Ohio University Heritage College of Osteopathic Medicine</i>	The Mechanics of Righting Behavior in Theraphosid Spiders
10:15 am	122-2	<i>Rubin AR, Mayerl CJ, Blob RW; Auburn University, Clemson University</i>	Biomechanical Factors Influencing Successful Self-Righting in Upside-down Pleurodire Turtles
10:30 am	122-3	<i>Pepper RE; University of Puget Sound</i>	Dispersal of seeds from splash-cup plants
10:45 am	122-4	<i>Carrier DR, Cunningham C; University of Utah, Swansea University</i>	The effect of foot posture on capacity to apply free moments to the ground: implications for fighting performance in great apes
11:00 am	122-5	<i>Cheu AY, Bergmann PJ; Clark University</i>	Basilisk Olympics: Multiple modes of locomotion influences the degree of functional constraint in a trait
11:15 am	122-6	<i>Balaban JP, Azizi E; Univ of California, Irvine</i>	Elastic energy storage broadens the thermal performance range of accelerating lizards
11:30 am	122-7	<i>Wehrle BA, Traverne M, Herrel A, Krajnovic M, Tadic Z, German DP; Univ of California, Irvine, CNRS-MNHN, Univ of Zagreb</i>	Interplay of gut length, diet, and ecology in lacertid lizards
11:45 am	122-8	<i>Stoddard MC, Yong EH, Akkaynak D, Sheard C, Tobias J, Mahadevan L; Princeton University, Nanyang Technical University, Interuniversity Institute of Marine Sciences, University of Bristol, Imperial College London, Harvard University</i>	Evolution of Avian Egg Shape: Morphospace, Mechanics and Flight

12:00 pm **Lunch Break**

10:15 AM – 11:45 AM **Session 123** **Salons 5-6**

Morphogenesis and Organogenesis

Chair: *Thom Sanger*

10:15 am	123-1	<i>Sanger TJ, Lachance D, Harding L, Kyrkos J, Czesny B, Mata C, Stroud JT; Loyola University Chicago, Senn High School</i>	The Mechanisms of Thermal Stress Induced Craniofacial Malformation in Lizards
10:30 am	123-2	<i>Johnson GR, Donovan-Maiye R, Maleckar MM*; Allen Institute for Cell Science</i>	A novel conditional model of cell organization: building an integrated cell
10:45 am	123-3	<i>Abramyan J; University of Michigan, Dearborn</i>	Heterochrony in Eye Development and its Effect on Jaw Formation

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11:00 am	123-4	<i>Mohagheghian EM, Wang NW; Univ of Illinois at Urbana-Champaign</i>	Quantifying Compressive Forces Between Living Cell Layers and Within Tissues Using Elastic Round Microgels
11:15 am	123-5	<i>Bogantes VE, Halanych KM, Boyle MJ; Auburn University, Smithsonian Marine Station at Fort Pierce</i>	Larval development of <i>Pseudopolydora</i> sp. (Spionidae, Annelida) from Florida
11:30 am	123-6	<i>Yarbrough AM, Martin KLM; Pepperdine University</i>	Effects of Increased Air and Water Temperatures on the Embryonic Development of the California Grunion

11:45 am **Lunch Break**

10:15 AM – 12:00 PM **Session 124** **Salons 10-11**

Complementary to S1: From Small and Squishy to Big and Armored: Genomic, Ecological and Paleontological Insights into the Early Evolution of Animals

Chairs: Erik Sperling, Kevin Kocot

10:15 am	124-1	<i>Swalla BJ; Univ of Washington, Seattle</i>	Molgulid Tales
10:30 am	124-2	<i>Johnson AB, Lambert JD*; Univ of Rochester</i>	Elongating animal body plans: the role of Notch/delta signaling in mollusc posterior growth
10:45 am	124-3	<i>Butler AD, Eitel M, Wörheide G, Carlson SJ, Sperling EA; Stanford University, Ludwig-Maximilians-Universität, Munich, University of California, Davis</i>	Phylogenomic Analysis of Brachiopoda and Phoronida: Implications for Morphological Evolution, Biomineralization, and the Cambrian Radiation.
11:00 am	124-4	<i>Li Y, Halanych KM; Auburn University</i>	Comparative genomics of seep-dwelling tubeworm (Siboglinidae: Annelida) endosymbionts
11:15 am	124-5	<i>Nanglu K, Caron JB; University of Toronto, Royal Ontario Museum</i>	New Burgess Shale polychaete reveals the origin of the annelid head
11:30 am	124-6	<i>Sheppard KA, Caron JB, Rival DE; Queen's University, University of Toronto</i>	On the Hydrodynamics of Anomalocaris Tail Fins
11:45 am	124-7	<i>Dougan KE, Rodriguez-Lanetty M; Florida International University</i>	Comparative Transcriptomics Reveals Extensive Diversity of Insulin-like Peptides in Corals

12:00 pm **Lunch Break**

10:15 AM – 12:00 PM **Session 125** **Foothill G**

Adaptation

Chair: Mikhail Matz

10:15 am	125-1	<i>Matz MV, Haller BC, Trembl EA; Univ of Texas at Austin, Cornell University, Univ of Melbourne</i>	Predicting coral adaptation and extinction in the Coral Triangle.
10:30 am	125-2	<i>Gleason LU, Burton RS; California State University, Sacramento, Scripps Institution of Oceanography, University of California, San Diego</i>	Regional patterns of thermal stress and constitutive gene expression in the marine snail <i>Chlorostoma funebris</i> in northern and southern California
10:45 am	125-3	<i>Colby RS, Velotta JP, Schultz ET*; Univ of Connecticut, Univ of Montana</i>	The presence and evolution of Na ⁺ , K ⁺ -ATPase paralog-switching in a euryhaline fish, the Alewife
11:00 am	125-4	<i>Lockwood BL, Gupta T, Scavotto R; University of Vermont</i>	Disparate patterns of thermal adaptation between life stages in temperate vs. tropical <i>Drosophila melanogaster</i>
11:15 am	125-5	<i>Rohner N; Stowers Institute for Medical Research</i>	Cavefish Metabolic Adaptation: Hungry, Fat, and Healthy
11:30 am	125-6	<i>Hague MTJ, Brodie Jr ED, Brodie III ED; University of Virginia, Utah State University</i>	Trade-off between predatory and locomotor ability in a geographic mosaic of coevolution with toxic prey
11:45 am	125-7	<i>Brzek P, Selewestruk P, Gebczynski A, Ksiazek A, Sadowska J, Nedergaard J, Konarzewski M; Univ of Bialystok, Stockholm Univ</i>	Physiological and Behavioral Correlates of Selection for High Swim-Induced Peak Metabolic Rate in Laboratory Mice: Implications for the Aerobic Capacity Model of the Evolution of Endothermy

12:00 pm **Lunch Break**

Behavioral Ecology and the Environment

Chair: Callin Switzer

10:15 am	126-1	<i>Miles MC, Cheng S, Fuxjager MJ; Wake Forest University</i>	Differential evolution of gestural display complexity across the tropical-temperate divide
10:30 am	126-2	<i>Rosenthal MF, Kessler B, Meza P, Elias DO; University of California, Berkeley</i>	Examining Microhabitat Structure and its Use by Wolf Spiders
10:45 am	126-3	<i>Philson CS, Filipowicz JP, Foltz SL, Ray A, Davis JE; Radford University</i>	The PASSER Project: Using Microcomputer-Integration to Conduct Detailed Studies of Behavior-Environment Interactions
11:00 am	126-4	<i>Fey SB, Vasseur DA, Logan ML, Alujevic K, O'Connor MI, Clusella-Trullas S; Reed College, Yale University, Smithsonian Tropical Research Institute, Centre for Invasion Biology, Stellenbosch University, University of British Columbia</i>	Resolving Constraints and Opportunities for Behavioral Rescue in Response to Rapid Environmental Change
11:15 am	126-5	<i>Goldberg JF, Fraser DF, Reznick DN; Univ of California, Riverside, Siena College</i>	Behavioral Adaptations of Trinidadian Killifish to Experimental Introduction of an Intraguild Predator
11:30 am	126-6	<i>Switzer CM, Russell AL, Papaj DR, Combes SA, Hopkins R; Harvard Univ, Univ of Pittsburgh, Univ of Arizona, Univ of California, Davis</i>	Pollen out all the stops: How bumble bees modify sonication behavior in response to pollen rewards
11:45 am	126-7	<i>McEntire KD, Maerz JC, Howard JS; University of Georgia</i>	Integrating Modeling and Fieldwork to Explore How Behavior Moderates Salamander Sensitivity to Climate
12:00 pm	..... Lunch Break		

Symbiotic Relationships

Chair: Brendan Cornwell

10:15 am	127-1	<i>Klomp maker AA, Robins CM, Fraaije RHB; University of California, Berkeley, Oertijdmuseum</i>	Parasitism in Crustaceans: Trends in Deep Time, Influence of Host Abundance, and Effect on Host Body Size
10:30 am	127-2	<i>Veglia AJ, Hammerman N, Rivera C, Lucas M, Galindo Estronza A, Corgosinho P, Schizas N; Univ of Puerto Rico, Mayaguez</i>	Characterizing population structure of coral associated crustaceans from mesophotic and shallow habitats in the Caribbean
10:45 am	127-3	<i>Chan AN, Gonzalez-Guerrero LA, Iglesias-Prieto R, Burmester EM, Rotjan RD, Baums IB; Penn State, Billion Oyster Project, New York, Boston Univ</i>	A Facultatively Symbiotic Coral is More Thermotolerant than Its Algal Symbiont
11:00 am	127-4	<i>Reyes ML, Barbosa J, Parker B, Gerardo N; Emory University, University of Rochester</i>	Impact of temperature, morphology and symbionts on aphid reproduction and survival
11:15 am	127-5	<i>Cornwell BH; Univ of California, Davis</i>	Exploring the role of geographic isolation, host species, and selection in shaping the genetic structure of <i>Symbiodinium</i> sp. along the Pacific coast of North America
11:30 am	127-6	<i>Scioli JA, Felder DL; University of Louisiana at Lafayette</i>	Does the evolution of symbiotic lifestyles affect diversification rate in marine crustaceans?
11:45 am	127-7	<i>Nakata N, Ellingson RA, Krug PJ; Cal State LA, UCLA</i>	When Photosynthetic Animals and Crunchy Algae Coevolve: Host and Herbivore Traits Interactively Determine Lineage Diversification in Sea Slugs
12:00 pm	..... Lunch Break		

Complementary to Symposium S9: Inside the Black Box: The Mitochondrial Basis of Life-History Variation and Animal Performance

Chairs: Antonine Stier, Yufeng Zhang

10:30 am	128-2	<i>Ge Z, Toomey M, Hill GE; Auburn University, Washington University, Saint Louis</i>	Red ketocarotenoids found inside mitochondria in <i>Haemorrhous mexicanus</i>
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10:45 am	128-3	<i>Stier A, Tschirren B, Metcalfe N, Monaghan P; University of Glasgow, University of Exeter</i>	Prenatal environment as a modulator of mitochondrial function: new insights from an avian model
11:00 am	128-4	<i>Treidel LA, Chung DJ, Williams CM; UC Berkeley, University of British Columbia</i>	Mitochondrial performance differs in concordance with life history strategies and energetic demands in the wing-polymorphic cricket, <i>Gryllus firmus</i>
11:15 am	128-5	<i>Rodriguez J, Velazco L, Haddad R, Montgomery J, Lauri M, Montelongo M, Ross J*; CSU Fresno</i>	Mitochondrial dysfunction influences development and nuclear allele segregation in intra-species hybrids
11:30 am	128-6	<i>Zhang Y, Taylor H, Kash M, Kavazis AN, Roberts MD, Hood WR; Auburn Univ</i>	Induced ROS exposure improves mitochondrial performance in hepatocytes
11:45 am	128-7	<i>Park NP, Zhang Y, Hood WR, Kavazis AN; Auburn University</i>	Oxidative DNA Damage and Repair in response to induced ROS exposure in Mice
12:00 pm	128-8	<i>Yap KN, Powers DR, Tsai OH, Williams TD; Simon Fraser University, George Fox University</i>	Do physiological adjustments to high foraging effort affect reproduction?
12:15 pm	Lunch Break		

10:00 AM – 11:30 AM Session 129

Pacific I

Fluids: Low Reynolds Number

Chairs: Arvind Santhanakrishnan, Olaf Ellers

10:00 am	129-1	<i>Lamont EI, Emlet RB; Oregon Institute of Marine Biology, University of Oregon</i>	The unique setular morphology of thoracic appendages on barnacle cyprids – form and function
10:15 am	129-2	<i>Kasoju VT, Ford MP, Santhanakrishnan A; Oklahoma State University</i>	Leaky Flow Through Bristled Wings of Tiny Insects
10:30 am	129-3	<i>Santhanakrishnan A, Kasoju VT, Senter M, Armel K, Miller LA; Oklahoma State University, Univ of North Carolina, Chapel Hill</i>	How Tiny Insects Get Far: Intermittent Parachuting with Bristled Wings
10:45 am	129-4	<i>Cordeiro M, Edsinger E*; Roger Williams University, Marine Biological Laboratory</i>	Why are cephalopod eggs so big? Testing viscosity and the functional limits of swimming in pygmy squid hatchlings.
11:00 am	129-5	<i>Samson JE, Ray DD, Garnier SJ, Porfiri M, Miller LA; UNC Chapel Hill, NJIT, NYU</i>	Using computer vision tools to detect collective pulsing patterns in xeniid corals
11:15 am	129-6	<i>Ellers O, Johnson AS, Motokawa T; Bowdoin College, Tokyo Institute of Technology</i>	Do general theories of locomotion apply to underwater walkers?
11:30 am	Lunch Break		

10:15 AM – 11:45 AM Session 130

Pacific J

Sexual Selection

Chair: Alejandro Rico-Guevara

10:15 am	130-1	<i>Wilcox SC, Clark CJ; Univ of California, Riverside</i>	Sexual selection for flight performance in hummingbirds
10:30 am	130-2	<i>Kustra MC, Kahrl AF, Reedy AM, Cox RM; Univ of Virginia, Stockholm Univ</i>	Local Density of Conspecifics Affects Sperm Phenotypes in Wild <i>Anolis sagrei</i> Lizards
10:45 am	130-3	<i>Agan JW, Lovern MB, Grindstaff JL, Fox SF; Oklahoma State University</i>	How Orange Bars in Juvenile Male Collared Lizards, <i>Crotaphytus collaris</i> , May Affect Their Fitness
11:00 am	130-4	<i>Lopez N, Stankowich T; CSU Long Beach</i>	Correlated Evolution of Antlers and Tusks in Cervids
11:15 am	130-5	<i>O'Brien DM, Allen CE, Van Kleeck MJ, Hone D, Knell R, Knapp A, Christiansen S, Emlen DJ; University of Montana, University of Hawai'i at Mānoa, Queen Mary University of London</i>	The Evolution of Extreme Structures: Inferring Function from Pattern
11:30 am	130-6	<i>Rico-Guevara A, Hurme KJ; Univ of California, Berkeley, University of Connecticut</i>	Intrasexually Selected Weapons
11:45 am	Lunch Break		

Evolutionary Physiology

Chair: Teri Orr

10:15 am	131-1	<i>Twining CW, Lawrence P, Winkler DW, Flecker AS, Brenna JT; Cornell University, University of Texas-Austin, Dell Medical School</i>	Taking the Short- or Long-chain Route: Conversion Efficiency of Alpha Linolenic Acid to Long-chain Omega-3 Fatty Acids in Aerial Insectivore Chicks
10:30 am	131-2	<i>Holden KG, Sparkman AM, Miller DA, Bronikowski AM; Iowa State University, Westmont College, Pennsylvania State University</i>	Seasonal variation in baseline and stress-induced physiology in the western terrestrial garter snake (<i>Thamnophis elegans</i>)
10:45 am	131-3	<i>Lenard AN, Gifford ME; University of Central Arkansas</i>	Biochemical Mechanisms Influencing Countergradient Variation in Lizard Development
11:00 am	131-4	<i>Orr TJ, Kitanovic S, Schramm KM, Skopec MM, Wilderman PR, Halpert JR, Dearing MD; University of Utah, Weber State University, University of Connecticut</i>	The Role of Cytochrome P450 2B (CYP2B) in Facilitating Dietary Specialization in Mammalian Herbivores
11:15 am	131-5	<i>Watson CM, Burggren WW, Wolinski CJ, Cox CL; Midwestern State University, University of North Texas, Georgia Southern University</i>	Variation and evolutionary dynamics of squamate metabolism.
11:30 am	131-6	<i>Herrera MJ, Heras J, German DP; University of California, Irvine</i>	Digestive specialization in pricklyback fishes (Family Stichaeidae): Liver Transcriptome and Metabolic Rate
11:45 am	131-7	<i>Louis MP, Castro AA, Cadney MD, Kazzazi L, Garland Jr T; University of California, Riverside</i>	Four weeks of wheel access alters lean, fat, and relative organ masses in adult female house mice
12:00 pm	..... Lunch Break		

Sunday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:30 PM Session 132 Salons 1-2

Bioinspiration: Cats' Paws and Catapults

Chairs: Li Wen, Ruijie (Roger) Zhu

1:30 pm	132-1	<i>Wolf Z, Jusufi A, Vogt D, Lauder G; Harvard University</i>	Creating and exploring an active-swimming soft-robotic apparatus for studying fish locomotion
1:45 pm	132-2	<i>Xu NW, Dabiri JO; Stanford University</i>	External Control of Jellyfish Swimming and Validation of Turning Kinematics
2:00 pm	132-3	<i>Zhexin X, Domel A, Wenguang S, Knubben E, Weaver J, Bertoldi K, Wen L*; Beihang University, Harvard University, Festo Corporate Bionic Department</i>	A Bio-inspired Soft Robotic Gripper Inspired by the Cephalopod Tentacles
2:15 pm	132-4	<i>Howe SP, Astley HC; University of Akron, Biomimicry Research and Innovation Center</i>	Examining Turn Kinematics in Fish for the Control of Biomimetic Fish Robots
2:30 pm	132-5	<i>Pavlov V, Rosental B, Hansen NF, Beers JM, Parish G, Rowbotham I, Block BA; Standord University, Monterey Bay Aquarium</i>	Hydraulic control of tuna fins: A hint for optimal engineering design
2:45 pm	132-6	<i>Zhu R, Zhong Q, Quinn DB, Zhu J, Bart-Smith H; Univ of Virginia</i>	Effects of Tail Planform Shape on Stability and Propulsive Performance of Bio-Inspired Swimming
3:00 pm	132-7	<i>Wonderly WR, Demartini DG, Monnier CA, Waite JH; University of California, Santa Barbara</i>	Between the Melanin Nanosheets with a Naked Polychaete
3:15 pm	132-8	<i>Tao Y, Kainan H*, Di Sato V, Yufei H, Ziyu R, Lauder G, Wen L; Beihang University, Harvard University</i>	A Bioinspired Robotic Fish Fin with Mechanosensation Using Conductive Liquid-Metal-Infused Soft Actuators
3:30 pm	Coffee Break		Ballroom Foyer

1:45 PM – 3:15 PM Session 133 Salons 3-4

Ocean Acidification

Chairs: Valentina Di Santo, Hilary Hayford

1:45 pm	133-1	<i>Di Santo V; Harvard University</i>	Ocean Acidification and Warming Affect Cartilage Mineralization in Little Skate <i>Leucoraja erinacea</i>
2:00 pm	133-2	<i>Hayford HA, George MN, Carrington E; University of Washington</i>	Experimental Ocean Acidification Inhibits Snail Growth
2:15 pm	133-3	<i>Birk MA, McLean EL, Seibel BA; University of South Florida, University of Rhode Island</i>	Hypoxia Tolerance Unaffected by Ocean Acidification in Active Squids
2:30 pm	133-4	<i>Zakroff CJ, Mooney TA; Woods Hole Oceanographic Institution</i>	Impacts, Variability, and Resiliency in Hatchling Squid, <i>Doryteuthis pealeii</i> , Paralarvae after Chronic Embryonic Exposure to Acidification and Warming
2:45 pm	133-5	<i>Enzor LA, Moso E, Hankins C, Barron MG; US Environmental Protection Agency</i>	Short term Exposure to Elevated pCO_2 and Hypoxia Affects the Cellular Homeostasis of Grass Shrimp, <i>Palaemonetes pugio</i>
3:00 pm	133-6	<i>Dale KE, Mehta RS; Univ of California, Santa Cruz</i>	Morphology affects dispersal of eel larvae in the Eastern Pacific
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:15 PM Session 134 Salons 5-6

Aquatic Locomotion: It is a Fluke

Chairs: Christopher Mayerl, Frank Fish

1:30 pm	134-1	<i>Sutherland KR, Gemmell BJ, Colin SP, Costello JH; University of Oregon, University of South Florida, Roger Williams University, Providence College</i>	Individual zooid kinematics underlying agility and maneuverability in the siphonophore <i>Nanomia bijuga</i>
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1:45 pm	134-2	<i>Donatelli CM, Porter ME, Summers AP, Tytell ED; Tufts University, Florida Atlantic University, University of Washington</i>	The relationship of vertebral column morphology to body mechanics and 3D kinematics of elongate fishes.
2:00 pm	134-3	<i>Mayerl CJ, Blob RW; Clemson University</i>	How flowing water influences hydrodynamic stability in turtles
2:15 pm	134-4	<i>Tobalske BW, Lane SJ, Woods HA, Shishido CM, Moran AL; Univ Montana, Univ Hawai'i, Mānoa</i>	Ecological Limits and Locomotor Advantages Associated with Gigantism in Polar Sea Spiders
2:30 pm	134-5	<i>Caviedes-Solis IW, Leache AD; University of Washington</i>	Evolution of Swimming in Tree Frogs
2:45 pm	134-6	<i>Segre PS, Cade DE, Calambokidis J, Fish FE, Friedlaender AS, Potvin J, Goldbogen JA; Stanford University, Cascadia Research Collective, West Chester University, University of California, Santa Cruz, Saint Louis University</i>	The role of flippers, flukes, and body flexibility in blue whale maneuvering performance.
3:00 pm	134-7	<i>Fish FE, Muthukrishnan R, Hauser N; West Chester Univ, Whale Research Centre, Cook Islands</i>	Fluke Flexibility during Propulsion in Neonate and Adult Humpback Whales
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:30 PM	Session 135	Salons 10-11
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Complementary to S2: Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance: Less Than a Cell to Behavior

Co-chairs: Chris Tijs, Nikolai Konow

1:30 pm	135-1	<i>Cass JA, Daniel TL; Univ of Washington</i>	Flow and diffusion together mediate substrate delivery into the crowded lattice of contractile filaments
1:45 pm	135-2	<i>Malingen SA, Cass JA, Daniel TL; Univ of Washington</i>	Viscous shearing in the sarcomere
2:00 pm	135-3	<i>Ross SA, Nigam N, Wakeling JM; Simon Fraser University</i>	A Modeling Framework to Evaluate Muscle Performance During Cyclic Contractions
2:15 pm	135-4	<i>Dominguez SA, Ryan DS, Nigam N, Wakeling JM; Simon Fraser University</i>	Unsteady Nonlinear Elasticity Modelling Skeletal Muscle in 3D
2:30 pm	135-5	<i>Tijs C, Konow N, Biewener AA; Concord Field Station, Harvard University, Dept Biol. Sci. U Mass Lowell</i>	Cyclical Work done by a Compartmentalized Muscle
2:45 pm	135-6	<i>Libby T, Chukwueke C, Sponberg S; University of Washington, Georgia Institute of Technology</i>	Load-dependent muscle work tunes perturbation response with changing running frequency.
3:00 pm	135-7	<i>Rubenson J, Salzano MQ, Cox SM, Piazza SJ; Penn State University</i>	Developmental Plasticity of Musculoskeletal Structure and Locomotor Function in Guinea Fowl (<i>Numida meleagris</i>)
3:15 pm	135-8	<i>Whitney CW, Daley MA, Nishikawa K; Northern Arizona University, Royal Veterinary College</i>	Predicting in vivo muscle force in running guinea fowl using a muscle model based on the winding filament hypothesis
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:00 PM	Session 136	Nob Hill A-B
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Social Behavior

Chair: Nick Keiser

1:30 pm	136-1	<i>O'Connor MP, O'Donnell S; Drexel University</i>	Iterative signaling and biological system performance
1:45 pm	136-2	<i>Vallomparambath R, Gopinathan A, Yeakel J; Univ of California, Merced</i>	The Fitness Trade-offs of Predation: When to Scavenge and When to Steal
2:00 pm	136-3	<i>Stienecker SL, Moore PA; Bowling Green State University</i>	How Social and Environmental Context Shapes Fighting Behavior in Tilapia
2:15 pm	136-5	<i>Alonso V, Dillman AR; Univ of California, Riverside</i>	Morphological changes of insect-parasitic nematodes in response to different host-tissues.
2:30 pm	136-6	<i>Rehan SM; University of New Hampshire</i>	Conserved genes regulate phenotypic plasticity in an incipiently social bee

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2:45 pm	136-7	<i>Alpert JN, Schafer JL, Tringali A, Bowman R; William Jewell College, Archbold Biological Station, Avian Ecology Laboratory</i>	Factors influencing neophobia and its short-term repeatability in the Florida Scrub-Jay (<i>Aphelocoma coerulescens</i>)
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:30 PM	Session 137	Nob Hill C-D
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Undergraduate Biology Education

Chairs: Kyle Selcer, Kevin Padian

1:30 pm	137-1	<i>Kissane KC; Blinn College</i>	The effectiveness of interleaving lessons in undergraduate biology courses.
1:45 pm	137-2	<i>Selcer KW; Duquesne University</i>	Use of Endocrine Disruption as a Framework for Laboratory Instruction of Basic Biochemical Methods.
2:00 pm	137-3	<i>Jacobs MW; Project Oceanology</i>	Mud, Salt, and Inspiration: Project Oceanology and the Next Generation Science Standards
2:15 pm	137-4	<i>Pepper RE; University of Puget Sound</i>	Motivating students to read the textbook before class
2:30 pm	137-5	<i>Clifton GT, Taylor-Burt K; Univ of California, San Diego, Harvard University</i>	What is a scientist? A large-scale SICB outreach effort focusing on science literacy
2:45 pm	137-6	<i>Onthank KL; Walla Walla University</i>	Octopodium: Experiences video blogging my research on YouTube.
3:00 pm	137-7	<i>Swanson B, Ostersmith S; Gonzaga University</i>	Dancing Biology: Teaching Evolutionary Biomechanics Through the Art of Dance
3:15 pm	137-8	<i>Lazebnik MB, Kunz Kollmann E, Ledley FD; Bentley University, Boston's Museum of Science</i>	Implementing Informal Science Learning into Biology Curriculum for Non-Majors to foster Socio-Scientific Argumentations Skills
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 2:45 PM	Session 138	Foothill E
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Filter Feeding

Chair: Kakani Katija

1:30 pm	138-1	<i>Strother JA, Paig-Tran EWM, Bolla V; Oregon State University, California State University, Fullerton</i>	When is a vortex a filter? Examining the filtering apparatus of mollusid fishes using computational fluid dynamics.
1:45 pm	138-2	<i>Cohen KE, Hernandez LP, Crawford CH, Flammang BE; George Washington University, New Jersey Institute of Technology</i>	Secrets in master filtering: Using μ CT and 3D PIV to model Silver carp filter feeding
2:00 pm	138-3	<i>Bolla V, Paig-Tran EWM*; California State University Fullerton</i>	New insights into manta ray feeding using a non-clogging, self-cleaning filter
2:15 pm	138-4	<i>Katija K, Sherman A, Sherlock R, Robison B; Monterey Bay Aquarium Research Institute, Moss Landing</i>	DeepPIV Reveals How Mucus Houses of Deep Sea, Giant Larvaceans are Built
2:30 pm	138-5	<i>Espinosa-Gayosso A, Ghisalberti M, Shimeta J*, Ivey GN; Univ of Western Australia, Univ of Melbourne, RMIT Univ</i>	Predicting the Variation of Particle Capture Rates in Aquatic Ecosystems
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:30 PM	Session 139	Pacific H
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Body Size, Ontogeny and Scaling

Chairs: Bryan Helm, Kelsey James

1:30 pm	139-1	<i>Helm BR, Rinehart JP, Yocum GD, Greenlee KJ, Bowsher JH; NDSU, Biological Sciences, USDA-ARS Insect Genetics and Biochemistry</i>	Flight biomechanics of developmentally-induced size variation in the solitary bee <i>Osmia lignaria</i> .
1:45 pm	139-2	<i>Ingle DN, Porter ME; Florida Atlantic University</i>	Mechanical behavior of vertebral trabecular bone varies ontogenetically in the Florida manatee
2:00 pm	139-3	<i>James KC, Natanson LJ; Univ Rhode Island, National Marine Fisheries Service, NEFSC, NOAA</i>	Morphological Variation of Batoid Vertebral Centra and Ramifications for Elasmobranch Age and Growth

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2:15 pm	139-4	<i>Baliga VB, Mehta RS; Univ of British Columbia, Univ of California, Santa Cruz</i>	The interplay between life history patterns and phenotypic convergence in cleaner wrasses
2:30 pm	139-5	<i>Jordan P, Kenaley CP*; Boston College</i>	Body-Size Evolution in Ray-finned Fishes (Actinopterygii): Tempo, Mode, and Ecological Correlates
2:45 pm	139-6	<i>McKenna KZ, Nijhout HF; Duke University</i>	The impact of protein malnutrition on growth and scaling in the rat <i>Rattus norvegicus</i>
3:00 pm	139-7	<i>Assis BA, Avery JD, Langkilde TL; Pennsylvania State University</i>	Costs Associated with Male-typical Traits on Female Lizards: Reduced Offspring Survival and Growth
3:15 pm	139-8	<i>Cuff AR, Otero A, Allen VA, Michel KB, Sumner-Rooney L, Pol D, Hutchinson JR; Royal Veterinary College, Museo de La Plata, Oxford University Museum of Natural History, Museo Paleontológico Egidio Feruglio</i>	Ontogenetic changes in the body plan of the sauropodomorph <i>Mussaurus</i> and their implications for locomotion
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:30 PM	Session 140	Pacific I
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Osmotic Stress and Ionic Regulation

Chairs: Jehan-Herve Lignot, Shelly McCain

1:30 pm	140-1	<i>May MA, Rawson PD; California Polytechnic State University, University of Maine</i>	Ornithine Metabolism and the Osmotic Stress Response in Mytilids
1:45 pm	140-2	<i>Marshall CA, Earley RL, Ghalambor CK; Colorado State University, University of Alabama</i>	Salinity, Stress, and Metabolism: Integrated physiological correlates of osmoregulation in Trinidadian swamp guppies (<i>Poecilia picta</i>) along a salinity gradient
2:00 pm	140-3	<i>McCain SC, Earley RL; University of Alabama, Tuscaloosa</i>	Age-dependent responses to an extreme salinity gradient in a euryhaline fish
2:15 pm	140-4	<i>Rind K, Rodriguez-Barrucg Q, Nicolas D, Cucchi P, Lignot JH*; University of Montpellier, La tour du Valat</i>	Morphological and physiological traits of the Mediterranean sticklebacks living in the Camargue wetland (Rhône river delta).
2:30 pm	140-5	<i>Theuerkauff D, Lambert S, ARivera-Ingraham G, Mercky Y, Sucre E, Lignot JH; University of Montpellier, University of Mayotte</i>	Mangroves as biofilters: how do crabs physiologically react to enhanced ammonium inputs?
2:45 pm	140-6	<i>Dymowska AK, Seibel BA; University of South Florida</i>	Ammonium excretion in the pelagic red crab, <i>Pleuroncodes planipes</i>
3:00 pm	140-7	<i>Koester JA, Helliwell KE, Taylor AR; University of North Carolina Wilmington, Marine Biological Association</i>	Characterization of Na ⁺ channel homologs from two marine phytoplankton
3:15 pm	140-8	<i>Moffitt M, Natesan S, Rehman F, Ahearn GA; University of North Florida, Cornell University</i>	Preliminary Study: Invertebrate Primary Cell Culture on 3D Collagen Matrices
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:30 PM	Session 141	Pacific J
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Energetics of Diving, Flying, Running and Breeding

Chair: Nicole Thometz

1:30 pm	141-1	<i>Dick MF, Welch KC; University of Toronto, Scarborough</i>	Oxidation of dietary sugars in ruby-throated hummingbirds
1:45 pm	141-2	<i>Myrka AM, Welch Jr KC*; University of Toronto Scarborough</i>	Evidence of High Transport and Phosphorylation Capacity for Both Glucose and Fructose in the Ruby-throated Hummingbird (<i>Archilochus colubris</i>)
2:00 pm	141-3	<i>Brusch IV GA, Kaminsky B, Lourdaís O, Denardo DF; Arizona State University, Centre d'Etudes Biologiques de Chizé</i>	Internal Source of Metabolic Substrates Used for Reproduction Varies Based on Female Hydration State: Muscle as an Internal Water Depot.

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2:15 pm	141-4	<i>Bryla A, Dzialo M, Demoranville K, Sadowska ET, Trost L, Pierce BJ, McWilliams SR, Bauchinger U; Jagiellonian University, University of Rhode Island, Max Planck Institute for Ornithology, Sacred Heart University</i>	Dietary Unsaturated Fatty Acids Affect Oxygen Delivery System In Migratory Birds
2:30 pm	141-5	<i>Hagan RH, Szuter EM, Rosselot AE, Holmes CJ, Siler SC, Rosendale AJ, Jennings EC, Xiao Y, Watanabe M, Romick-Rosendale LE, Rasgon JL, Benoit JB*; University of Cincinnati</i>	Dehydration-Induced Phenotypic Shifts in Mosquitoes Increase Blood Feeding
2:45 pm	141-6	<i>Thometz NM, Reichmuth C; University of San Francisco, University of California, Santa Cruz</i>	Physiological Adaptations for Diving in the Bearded Seal
3:00 pm	141-7	<i>Costa DP, Huckstadt LA, Villegas-Amtmann S; Univ of California, Santa Cruz</i>	The Importance of Body Size in Diving Mammals: Small Marine Mammals Compensate
3:15 pm	141-8	<i>Loudon C, Bradley TJ; Univ of California, Irvine</i>	Blood Feeding Increases Body Temperature and Running Speed in the Insect <i>Rhodnius prolixus</i>
3:30 pm	Coffee Break		Ballroom Foyer

1:30 PM – 3:00 PM	Session 142	Salons 12-13
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Evo: Eco-Morpho

Chair: *Kristy MacLeod*

1:30 pm	142-1	<i>Penney BK, Ehresmann KR, Jordan KJ, Rufo G; Saint Anselm College</i>	A microcomputed tomographic investigation of spicule networks in dorid nudibranchs
1:45 pm	142-2	<i>Stanley EL, Paluh DP, Blackburn DC; Florida Museum of Natural History, University of Florida</i>	Diversification of dermal armor in squamates
2:00 pm	142-3	<i>MacLeod KJ, Langkilde TL, Sheriff MJ; Pennsylvania State University</i>	Maternal stress in eastern fence lizards does not adaptively program offspring to a stressful environment
2:15 pm	142-5	<i>Gresham JG, Earley RL; University of Alabama, Tuscaloosa</i>	Fitness consequences of heterozygosity in a self-fertilizing fish
2:30 pm	142-6	<i>Ewers-Saucedo C, Pappalardo P; Zoological Museum of the Christian-Albrechts University, Odum School of Ecology, University of Georgia</i>	The adaptive potential of phylogenetically conserved larval development in marine invertebrates
2:45 pm	142-7	<i>Sergey B; University of Vladimir</i>	Hidden Asymmetry in Shape of Biological Patterns
3:30 pm	Coffee Break		Ballroom Foyer

3:45 PM – 4:45 PM	MOORE	Salon 7
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Moore Lecture	<i>Chamany Katayoun; Eugene Lang College for Liberal Arts, The New School</i>	From STEM to STREAMD: Responsibility, Arts, and Design for Inclusive Learning
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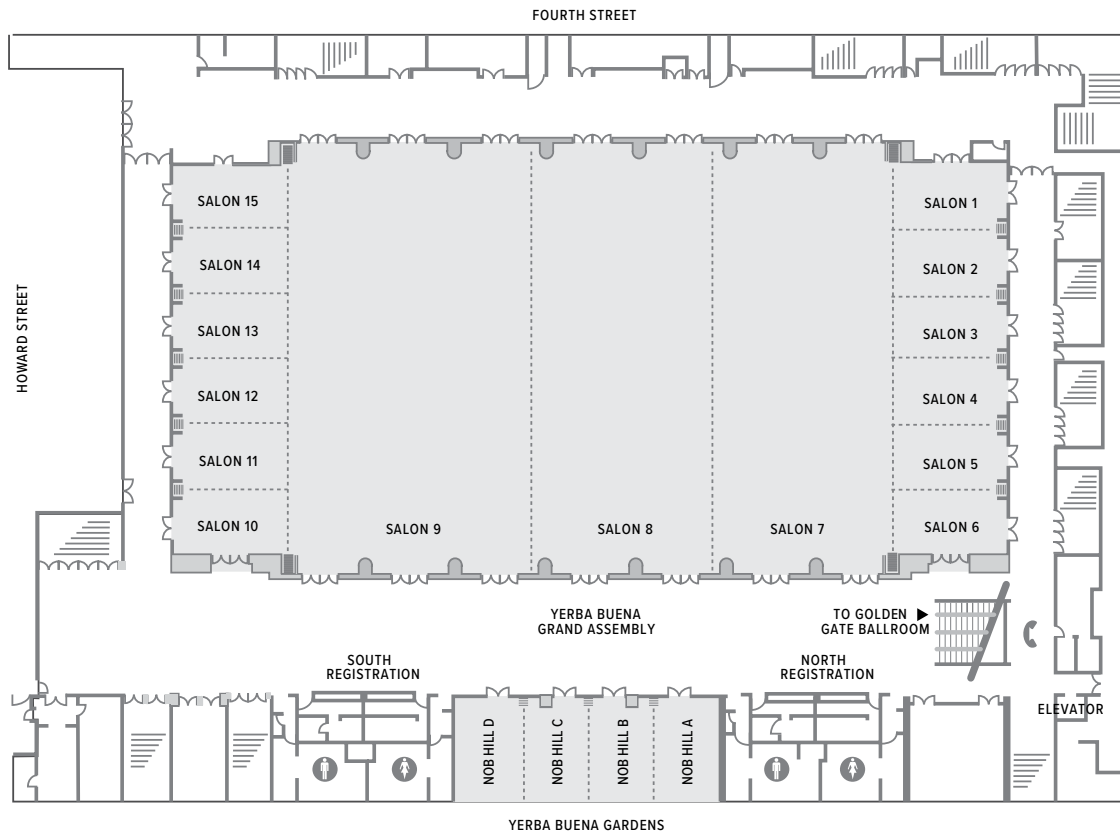
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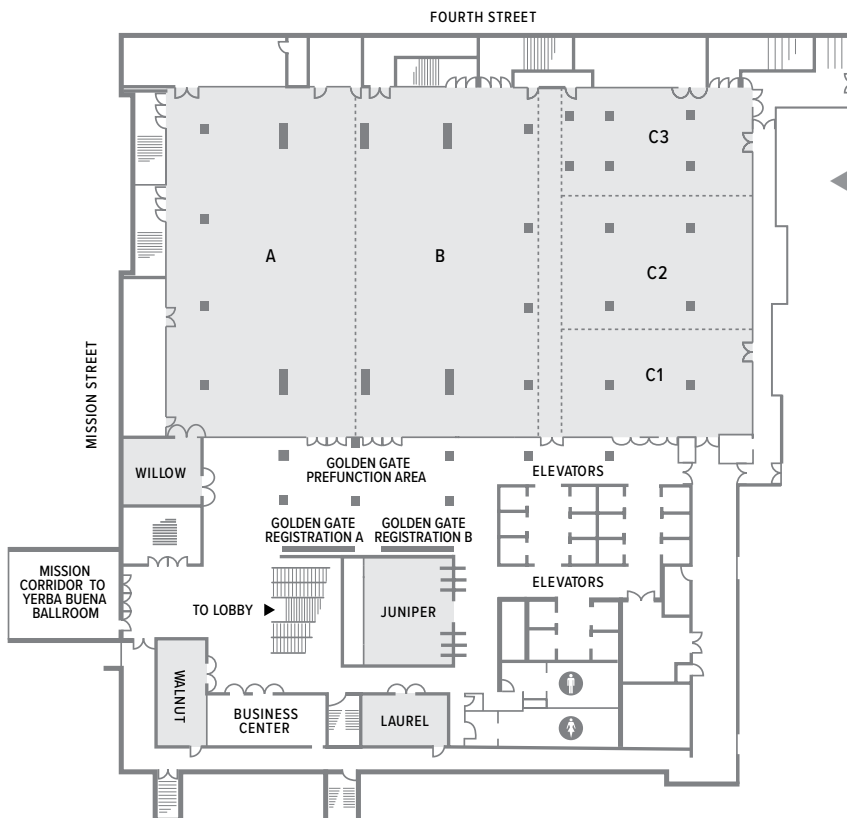
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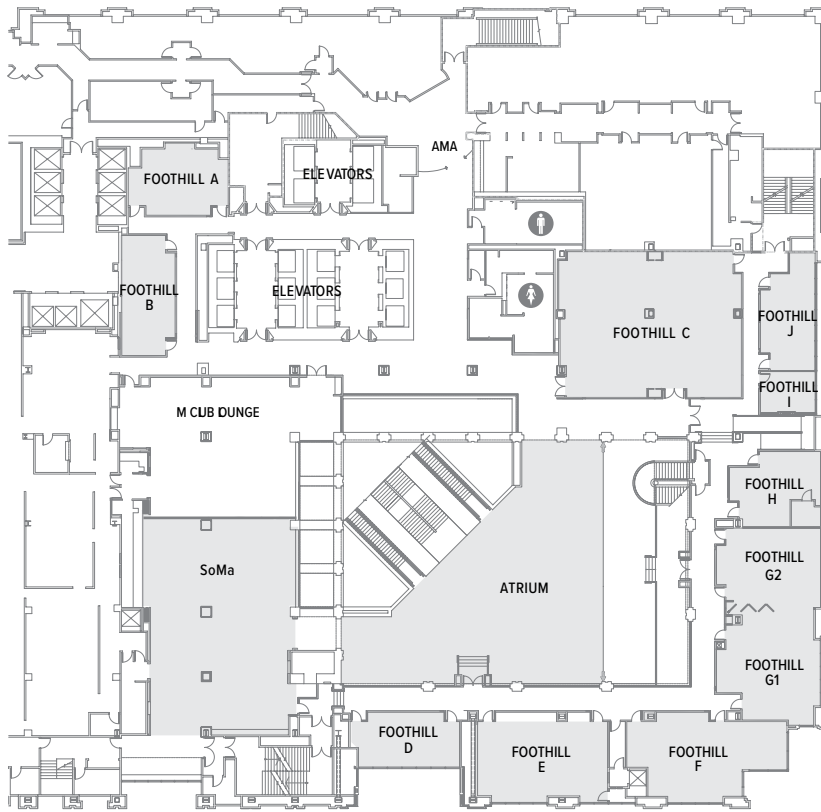


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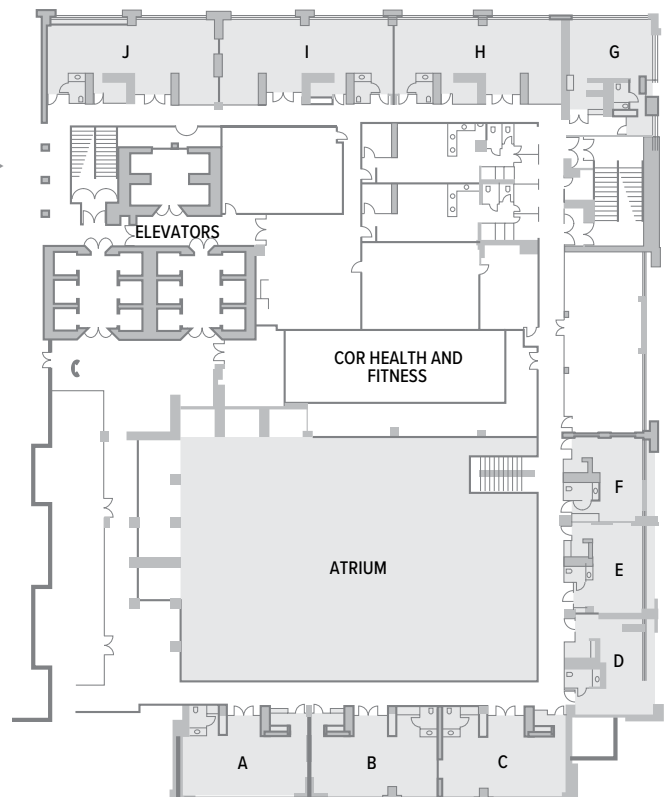


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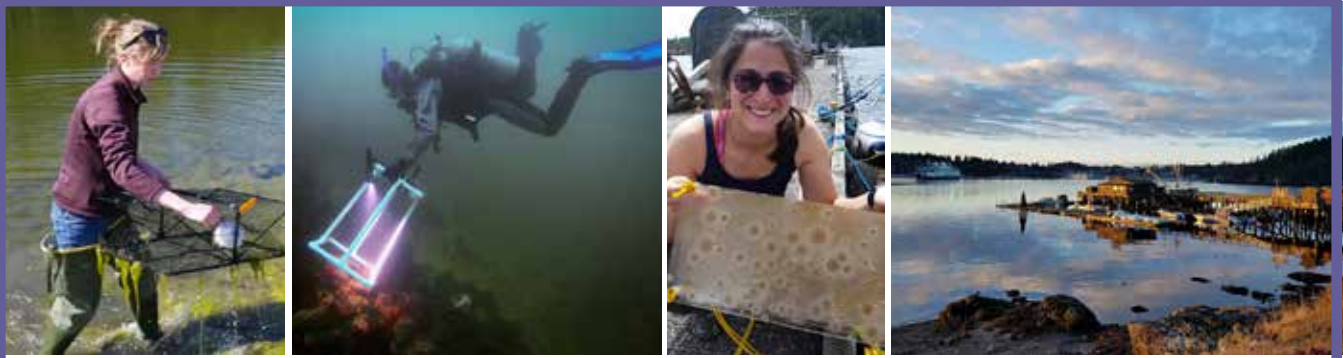
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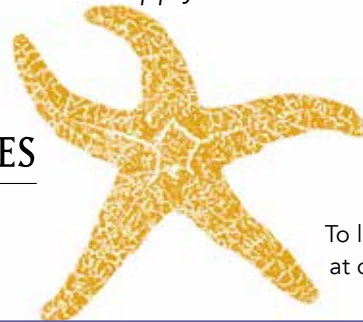
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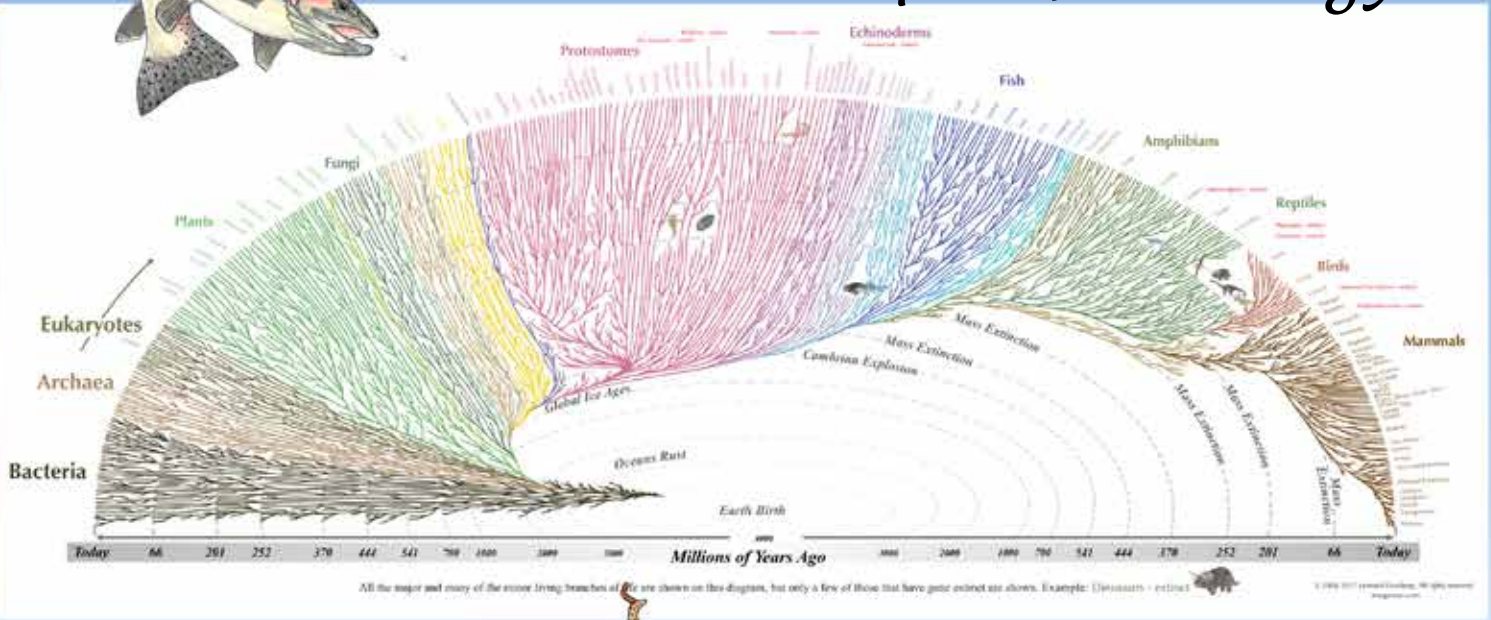


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