

Curriculum Vitae

Mary Setzer

Department of Chemistry

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EDUCATION

University of Alabama in Huntsville, Huntsville, Alabama: M.S. Chemistry, 2005 (GPA 3.87)
University of Alabama in Huntsville, Huntsville, Alabama: M.S. Biological Sciences, 2000 (GPA 4.00)
University of Alabama in Huntsville, Huntsville, Alabama: B.S. Biological Sciences, 1997 (GPA 3.46)
Calhoun Community College, Decatur, Alabama: A.S. 1995 (GPA 3.88)

TEACHING REPERTOIRE

- Introductory Chemistry
- General Chemistry
- Elementary Organic Chemistry
- Organic Chemistry
- Elementary Biochemistry
- Introductory Chemistry Laboratory
- General Chemistry Laboratory
- Organic Chemistry Laboratory
- Biochemistry Laboratory
- Principles of Biology
- Cellular, Molecular, and Developmental Biology
- Cellular & Molecular Biology Laboratory

TEACHING HONORS and AWARDS

- UAH Academic Affairs and Salmon Library Faculty Scholar Spotlight 2014
- UAH Student Government Association Distinguished Faculty Member Award 2006-07 and 2008-09
- UAH College of Science Teaching Excellence Award 2004-05 and 2010-11
- UAH College of Science Lecture Demonstration Competition winner 2006-07 and 2007-08

EDUCATIONAL PHILOSOPHY

Students taking chemistry frequently see the subject as drudge work that will not help them after the course ends. An effective chemistry educator must make it a primary objective to generate a spark of interest and curiosity which will help students see that chemistry is more than a collection of facts to memorize. My goal is to help them see that science reaches into all areas of their lives, and to draw their interest by bringing in the chemistry of metabolism and medicines, brain chemistry, color and pigments, food and cooking, energy, genetic diseases and their inheritance, the atmosphere, and anything else that seems to pique their curiosity. With a bit of confidence and scientific literacy, students can learn to engage in the scientific practices of questioning and investigation, which will be useful to them when faced with the need to evaluate scientific information in their day-to-day lives, such as presentation of scientific findings and arguments in the media, or in determining the benefits and risks of health and healthcare policies or procedures through research and investigation. Modern classroom technology is an important tool, and I believe we should be constantly experimenting with new options, but the focus must remain on the students' learning and not just a push to use as much technology as possible. In a traditionally difficult field where diverse students from many disciplines are faced with varying levels of challenge, it is also critical to assure the students that they are worthy and talented people without regard to their chemistry grades.

EMPLOYMENT HISTORY

2005 to present: Lecturer/Teaching Laboratory Coordinator, Department of Chemistry, University of Alabama in Huntsville

2007 to present adjunct Lecturer, Biological Sciences Department, University of Alabama in Huntsville

2001 to 2005: Chemistry Laboratory Manager, Department of Chemistry University of Alabama in Huntsville

- Develop and teach lecture and laboratory courses in Introductory, General, and Organic Chemistry
- Advise undergraduate students in Chemistry and Biological Sciences departments
- Develop laboratory procedures and manuals
- Supervise undergraduate workers and graduate teaching assistants
- Coordinate course scheduling and assignments of graduate teaching assistants
- Oversee undergraduate chemistry laboratories
- Order chemicals and supplies
- Monitor chemical waste

2000 to 2004: Adjunct Instructor, Department of Natural Sciences Calhoun Community College

- Lecture and laboratory courses in Introductory and General College Chemistry

2001 (temporary position): Chemist, Department of Chemistry University of Alabama in Huntsville, Huntsville, Alabama.

- Isolation and analysis of natural products, using chromatographic and instrumental techniques such as LC, HPLC, GC/MS, HPLC/MS
- Develop protocols and carry out biological screening of natural products using biochemical and cell based assays
- Maintain documentation and records of compounds and assay results
- Supervise undergraduate research assistants
- Field identification, collection, and extraction of tropical rainforest plants

2000 to 2001: Part-time Instructor, Departments of Chemistry and Biological Sciences, University of Alabama in Huntsville, Huntsville, Alabama.

- Lecture and laboratory courses in Introductory Chemistry, Organic Chemistry, Introductory Biology, Genetics, and Cell Biology

2000 (temporary position): Research Associate, Department of Chemical and Materials Engineering, University of Alabama in Huntsville, Huntsville, Alabama.

- Tissue culture of primary cell lines
- Preparation of specialized media
- Preparation and maintenance of frozen stocks
- Maintenance of equipment for tissue culture

1997 to 2000: Graduate Research Assistant, Department of Biological Sciences, University of Alabama in Huntsville, Huntsville, Alabama. Thesis title: Green Gold from Down Under: The Search for Phytopharmaceuticals from Paluma, North Queensland, Australia.

- Maintenance of human tumor cell lines and cytotoxicity screening
- Maintenance of microbial cultures and antimicrobial screening
- Development of new biochemical target assay procedures
- Supervision of undergraduate research assistants
- Phytochemical isolation and characterization
- Field identification, collection, and extraction of tropical rainforest plants
- Ordering of chemicals and supplies

1997 to 2000: Graduate Teaching Assistant, Departments of Chemistry and Biological Sciences, University of Alabama in Huntsville, Huntsville, Alabama

- Lecture and laboratory courses in Organic Chemistry, Introductory Biology, Genetics, and Cell Biology

1998: Visiting Scientist, Institut für Chemie, Universität Hohenheim, Stuttgart, Germany.

- Separation and isolation of plant extracts by HPLC.

1995 to 1997: Undergraduate Research Assistant, Department of Chemistry, Natural Products Research Group, University of Alabama in Huntsville, Huntsville, Alabama

- Collection and extraction of tropical plants
- Biological screening of Natural Products
 - Antibacterial screening
 - Brine shrimp lethality
- Bioactivity directed chromatographic isolation
 - Liquid (flash) chromatography
 - Preparative thin layer chromatography
- Structure elucidation using spectroscopic techniques

1995 to 1996: Stockroom Assistant, Chemistry Department, University of Alabama in Huntsville, Huntsville, Alabama

- Ordering of chemicals and supplies
- Supervision of teaching assistants
- Preparation of solutions and laboratory materials
- Assure proper waste disposal and safety practices in laboratories
- Preparation and presentation of in-class chemical demonstrations

1994 to 1995: Teaching Assistant, Chemistry and Microbiology Laboratories, Sciences and Technologies Division, Calhoun Community College, Decatur, Alabama

- Preparation of solutions and laboratory materials
- Tutorial support for students in general chemistry, biology, and microbiology
- Assure proper waste disposal and safety practices in laboratories

1991 to 1993: Programmer, Digital Engineering, Inc./United Energy Services Corp., Huntsville, Alabama

- Design and development of system and database applications, computer technical support

1985 to 1990: Database and Computer Systems Specialist, Martin Marietta Astronautics Group, Central Laboratories Support, Denver, Colorado

- Design and development of system and database applications, technical support
- Development and instruction of computer training classes

PUBLICATIONS

1. Setzer, W.N.; **Setzer, M.**, Hopper, A.L., Moriarity, D.M., Lehrman, G.K., Niekamp, K.L., Morcomb, S.M., Bates, R.B., McClure, K.J., Stessman, C.C., Haber, W.A. Cytotoxic Activity of a *Salacia* liana species from Monteverde, Costa Rica. *Planta Medica*, **1998**, *64*, 583.
2. Setzer, W.N.; **Setzer, M.**; Moriarity, D.M.; Bates, R.B.; Haber, W.A. Biological Activity of the Essential Oil of *Myrcianthes* sp. nov. "Black Fruit" from Monteverde, Costa Rica, *Planta Medica*, **1999**, *65*, 468-469.
3. Setzer, W.N.; **Setzer, M.**; Bates, R.B.; Nakkiew, P.; Jackes, B.R.; Chen, L.; McFerrin, M.B.; Meehan, E.J. Antibacterial Hydroxycinnamyl Esters from *Piper caninum* from Paluma, North Queensland, Australia. The Crystal and Molecular Structure of (+)-Bornyl Coumarate, *Planta Medica*, **1999**, *65*, 747-749.
4. Setzer, W.N.; **Setzer, M.**; Bates, R.B.; Jackes, B.R. Biologically Active Triterpenoids of *Syncarpia glomulifera* Bark Extract from Paluma, North Queensland, Australia, *Planta Medica*, **2000**, *66*, 176-177.
5. Setzer, W.N.; **Setzer, M.**; Schmidt, J.M.; Moriarity, D.M.; Vogler, B.; Reeb, S.; Holmes, A.M.; Haber, W.A. Cytotoxic Components from the Bark of *Stauranthus perforatus* from Monteverde, Costa Rica, *Planta Medica*, **2000**, *66*, 493-494.
6. **Setzer, M.** **2000**. *Green Gold from Down Under: The Search for Phytopharmaceuticals from North Queensland, Australia*. M.S. Thesis, University of Alabama in Huntsville.
7. Setzer, W.N.; Gu, X.; Wells, E.B.; **Setzer, M.**; Moriarity, D.M. Synthesis and Cytotoxic Activity of a Series of Diacetylenic Compounds Related to Falcarindiol, *Chemical and Pharmaceutical Bulletin*, **2000**, *48*, 1776-1777.
8. Setzer, W.N.; **Setzer, M.**; Peppers, R.L.; McFerrin, M.B.; Meehan, E.J.; Chen, L.; Bates, R.B.; Nakkiew, P.; Jackes, B.R. A Phytochemical Investigation of *Balanops australiana* from Paluma, North Queensland, Australia, *Australian Journal of Chemistry*, **2001**, *53*, 809-812.
9. Setzer, W.N.; Holland, M.T.; **Setzer, M.**; Moriarity, D.M.; Reeb, S.; Vogler, B.; Bates, R.B.; Haber, W.A. Bioactive Quinone-methide Triterpenoids from the Bark of *Salacia petenensis* from Monteverde, Costa Rica, *Planta Medica*, **2001**, *67*, 65-69.
10. Conrad, J.; Vogler, B.; Reeb, S.; Klaiber, I.; Papajewski, S.; Roos, G.; Vasquez, E.; **Setzer, M.**; Kraus, W. Two Novel Hydrolyzable Tannins from *Terminalia macroptera* Guill. et Perr., *Journal of Natural Products*, **2001**, *64*, 294-299.
11. **Setzer, M.**; Setzer, W.N.; Jackes, B.R.; Gentry, G.A.; Moriarity, D.M. The Medicinal Value of Tropical Rainforest Plants from Paluma, North Queensland, Australia, *Pharmaceutical Biology*, **2001**, *39*, 67-78.
12. **Setzer, M.** *Introductory Chemistry Lab Manual, Chemistry 105*. Boston: Pearson Custom Publishing, **2002**. ISBN 0-536-67899-4.
13. **Setzer, M.**; Setzer, W.N. *Laboratory Manual Chemistry 125, General Chemistry I*. Eden Prairie, MN: Outernet Publishing, **2003**. ISBN 1-58175-297-0.
14. **Setzer, M.**; Setzer, W.N. *Laboratory Manual Chemistry 126, General Chemistry II*. Eden Prairie, MN: Outernet Publishing, **2003**. ISBN 1-58175-298-9.
15. **Setzer, M.**; Setzer, W.N. *Laboratory Manual Chemistry 125, General Chemistry I. Second Edition*. Mason, OH: Cengage Learning, **2004**. ISBN 1-58175-459-0. .
16. **Setzer, M.**; Setzer, W.N. *Laboratory Manual Chemistry 126, General Chemistry II. Second Edition*. Mason, OH: Cengage Learning, **2004**. ISBN 1-58175-460-4.

17. **Setzer, M.;** Setzer, W.N. *Chemistry 105, Introduction to Chemistry Laboratory*. Eden Prairie, MN: Outernet Publishing, **2003**. ISBN 11-58175-458-2.
18. Setzer, W.N.; **Setzer, M.** *The Organic Chemistry Laboratory Experience*. Eden Prairie, MN: Outernet Publishing, **2003**. ISBN 1-58175-457-4.
19. Leahy, J.G.; Batchelor, P.J.; **Setzer, M.;** Setzer, W.N. Isolation and Characterization of a Stilbene-Degrading Strain of *Pseudomonas fluorescens*, and Production of Antioxidant Compounds by Stilbene Metabolism. *Bioscience, Biotechnology, and Biochemistry*, **2003**, 67, 2286-2287.
20. Setzer, W.N.; **Setzer, M.** Plant-Derived Triterpenoids as Potential Antineoplastic Agents, *Mini-Reviews in Medicinal Chemistry*, **2003**, 3, 540-556.
21. **Setzer, M.;** Moriarity, D.M.; Lawton, R.O.; Setzer, W.N. ; Gentry, G.A.; Haber, W.A. Phytomedicinal Potential of Tropical Cloudforest Plants from Monteverde, Costa Rica, *Journal of Tropical Biology*, **2003**, 51, 647-674.
22. Setzer, W.N.; Petty, J.L.; Schmidt, J.M.; **Setzer, M.;** Bates, R.B.; Jackes, B.R. Bioactive Lupane Triterpenoids in *Alphitonia petriei* from Paluma, North Queensland, Australia, *Current Topics in Phytochemistry*, **2004**, 6, 145-148.
23. **Setzer, M.** **2005**. *Drugs From the Cloudforest: The Phytomedicinal Potential of Tropical Cloudforest Plants from Monteverde, Costa Rica*, M.S. Thesis, University of Alabama in Huntsville.
24. Setzer, W.N.; Rozmus, G.F.; **Setzer, M.;** Schmidt, J.M.; Vogler, B.; Reeb, S.; Jackes, B.R.; Irvine, A.K. Bioactive Principles in the Bark of *Pilodistigma tropicum*, *Journal of Molecular Modeling*, **2006**, 12, 703-711.
25. **Setzer, M.;** Schmidt, J.S.; Irvine, A.K.; Jackes, B.R.; Setzer, W.N. "Biological Activity of Rainforest Plant Extracts from Far North Queensland, Australia", in *Biologically Active Natural Products for the Twenty-First Century*; Williams, L.A.D., Ed.; Trivandrum, India: Research Signpost, **2006**, pp. 21-46.
26. Setzer, W.N.; **Setzer, M.** "Antitrypanosomal Agents from Higher Plants", in *Biologically Active Natural Products for the Twenty-First Century*; Williams, L.A.D., Ed.; Trivandrum, India: Research Signpost, **2006**, pp. 47-95.
27. Agius, B.R; **Setzer, M.;** Stokes, S.L.; Walker, T.M.; Haber, W.A.; Setzer, W.N. Composition and bioactivity of essential oils of Lauraceae from Monteverde, Costa Rica, *International Journal of Essential Oil Therapeutics*, **2007**, 1, 167-171.
28. **Setzer, M.;** Setzer, W.N. *Laboratory Manual Chemistry 105, Introduction to Chemistry*. Minneapolis, MN: bluedoor, Publishing, **2013**. ISBN 978-1-59984-639-2.
29. **Setzer, M.;** Setzer, W.N. *Laboratory Manual Chemistry 125, General Chemistry I*. Minneapolis, MN: bluedoor, Publishing, **2013**. ISBN 978-1-59984-640-8.
30. **Setzer, M.;** Setzer, W.N. *Laboratory Manual Chemistry 126, General Chemistry II*. Minneapolis, MN: bluedoor, Publishing, **2014**. ISBN 978-1-59984-729-0.
31. **Setzer, M.;** Setzer, W.N. *Laboratory Manual Chemistry 105, Introduction to Chemistry Second Edition*. Minneapolis, MN: bluedoor, Publishing, **2014**. ISBN 978-1-59984-735-1.
32. **Setzer, M.;** Setzer, W.N. *Laboratory Manual Chemistry 125, General Chemistry I Second Edition*. Minneapolis, MN: bluedoor, Publishing, **2014**. ISBN 978-1-59984-736-8.
33. **Setzer, M.;** Newby, J.S.; Moriarity, D.M., Setzer, W.N. A Phytopharmaceutical Survey of Abaco Island, Bahamas, *American Journal of Essential Oils and Natural Products*, **2015**, 2(5), 10-17.
34. Shrestha, S.; **Setzer, M.;** Moriarity, D.M.; Chhetri, B.K.; Setzer, W.N. *Tabebuia bahamensis*: A Major Source of Pharmacologically Important Ursolic Acid, *Journal of Medicinally Active Plants*, **2015**, 4(3), 37-41.

PRESENTATIONS

1. **Mary Setzer**, and William N. Setzer, "Biological Activities of Plant Extracts from Monteverde, Costa Rica". 1997 Annual Meeting of the Association for Tropical Biology, San Jose, Costa Rica, June 15-20, 1997.
2. Amanda L. Hopper, **Mary Setzer**, and William N. Setzer, "Cytotoxic Activity of a *Salacia* liana species from Monteverde, Costa Rica". 5th Chemical Congress of North America, Cancun, Mexico, November 11-15, 1997.
3. **Mary Setzer**, William N. Setzer, and Glenn A. Gentry, "Antiherpes Activity of *Oreopanax xalapensis* Leaf Extract". 5th Chemical Congress of North America, Cancun, Mexico, November 11-15, 1997.

4. **Mary Setzer**, William N. Setzer, Robert B. Bates, "Gas chromatographic/mass spectral analysis of the leaf essential oil of *Myrcianthes* sp. nov. from Monteverde, Costa Rica". 14th American Chemical Society Rocky Mountain Regional Meeting, Tucson, AZ, March 15-18, 1998.
5. **Mary Setzer**. "The Medicinal Value of Tropical Rainforest Plants from Paluma, North Queensland, Australia." Sigma Xi Student Research Day, University of Alabama in Huntsville, Huntsville, AL, April 10, 1999.
6. **Mary Setzer**. "Green Gold from Down Under: Phytopharmaceuticals from North Queensland, Australia." Sigma Xi Student Research Day, University of Alabama in Huntsville, Huntsville, AL, April 10, 1999. *Physical Sciences Award winner*.
7. **Mary Setzer**, William N. Setzer. "Green Gold from Down Under: The Search for Phytopharmaceuticals from North Queensland, Australia." Joint Meeting of: American Society of Pharmacognosy, Association Française pour l'Enseignement et la Recherche en Pharmacognosie, Gesellschaft für Arzneipflanzenforschung, and Phytochemical Society of Europe, Amsterdam, The Netherlands, July 26-30, 1999.
8. William N. Setzer, **Mary Setzer**. "Drugs From the Cloudforest: The Search for New Medicines from Monteverde, Costa Rica." Joint Meeting of: American Society of Pharmacognosy, Association Française pour l'Enseignement et la Recherche en Pharmacognosie, Gesellschaft für Arzneipflanzenforschung, and Phytochemical Society of Europe, Amsterdam, The Netherlands, July 26-30, 1999.
9. **Mary Setzer**, William N. Setzer. "Green Gold from Down Under: The Search for Phytopharmaceuticals from Tropical North Queensland, Australia." 218th American Chemical Society National Meeting, New Orleans, Louisiana, August 22-26, 1999.
10. Carmen Scholz, Jennifer Schmidt, **Mary Setzer**. "Cell Growth Studies on Natural-Synthetic Block Copolymers." Frontiers in Biomedical Polymers – Symposium, May 16-19, 2001, Williamsburg, VA.
11. **Mary Setzer**, "Interaction of Quinone-Methide Triterpenes with DNA: A Quantum Chemical Investigation." Sigma Xi Student Research Day, University of Alabama in Huntsville, Huntsville, AL, April 2002. *Computational Sciences Award winner*.
12. Jennifer M. Schmidt, **Mary Setzer**, Bernhard Vogler, and William N. Setzer, "Cytotoxic Components from the Bark Extract of *Stauranthus perforatus*". 23rd IUPAC International Symposium on the Chemistry of Natural Products, Florence, Italy, July 28-August 2, 2002.
13. **Mary Setzer**, William N. Setzer, "Interaction of Quinone-Methide Triterpenoids with DNA: A Quantum Chemical Investigation". 23rd IUPAC International Symposium on the Chemistry of Natural Products, Florence, Italy, July 28-August 2, 2002.
14. William N. Setzer, **Mary Setzer**, and Jennifer M. Schmidt, "A Phytopharmaceutical Survey of Abaco Bush Medicine". 23rd IUPAC International Symposium on the Chemistry of Natural Products, Florence, Italy, July 28-August 2, 2002.
15. William N. Setzer and **Mary Setzer**, "Searching for New Medicinal Plants in the Forests of Costa Rica", invited seminar, Birmingham Botanical Gardens "Herb Day", Birmingham, Alabama; February 18th, 2004.
16. **Mary Setzer**, Jennifer Werka, Anthony K. Irvine, William N. Setzer, "Biological activity of rainforest plant extracts from Far North Queensland, Australia". 48th Annual Meeting of the Society for Economic Botany, Chicago, IL, June 4-7, 2007.

REFERENCES available upon request