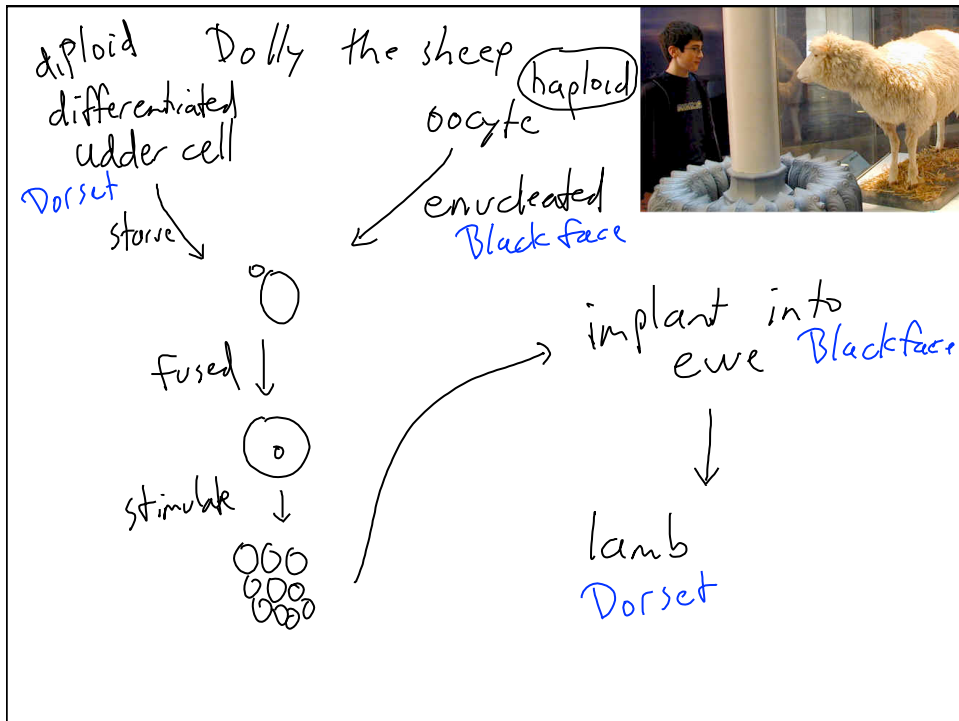


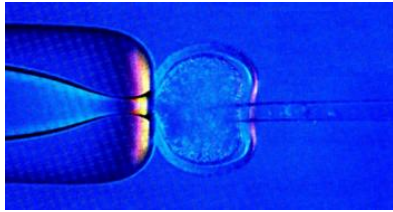
That a cell can carry with it the heritage of the species, that it can in the course of a few days or weeks give rise to a mollusk or man, is the greatest marvel of biological science. E.B. Wilson, ca 1900

The widest gap, still to be filled, between two fields of research in biology, is probably the one between genetics and embryology. It is the repeatedly stated--and thus far unsolved problem--of understanding how cells with identical genomes may become differentiated, that of acquiring the property of manufacturing molecules with new or, at least, different specific patterns or configurations. **Jacques Monod, 1947**

Lac O peron



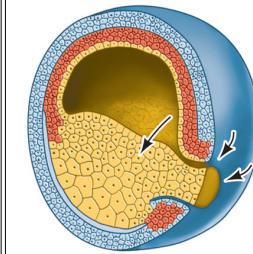
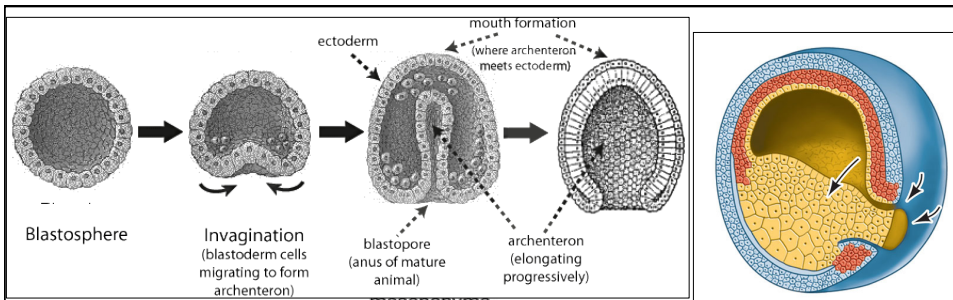
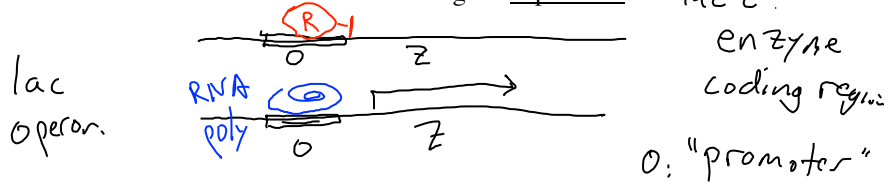
What does this tell us about development and the genome?



<http://web.ukonline.co.uk/webwise/spinneret/genes/clones.htm>  
 Nuclei from adult tissues can be totipotent (with appropriate cell-cycle manipulations and the oocyte environment).

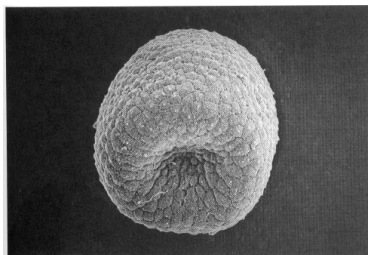


- The genome of every individual cell you have studied (except a couple) contains ALL the genes necessary for ALL cells of the animal.
- Differentiation and commitment are about gene expression.

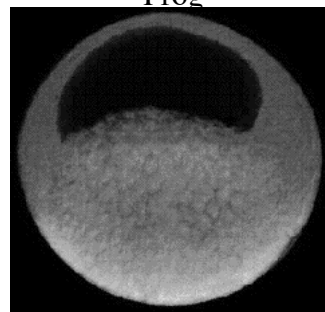


Sea Urchin

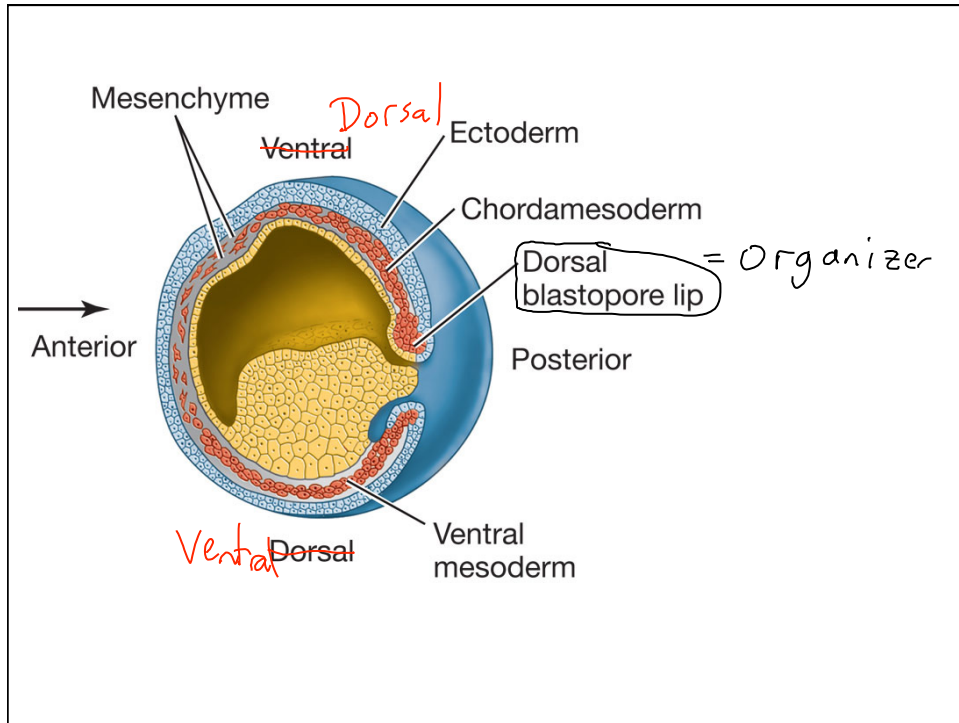
[https://www.youtube.com/watch?v=bLYtsDgVf84&feature=player\\_detailpage](https://www.youtube.com/watch?v=bLYtsDgVf84&feature=player_detailpage)



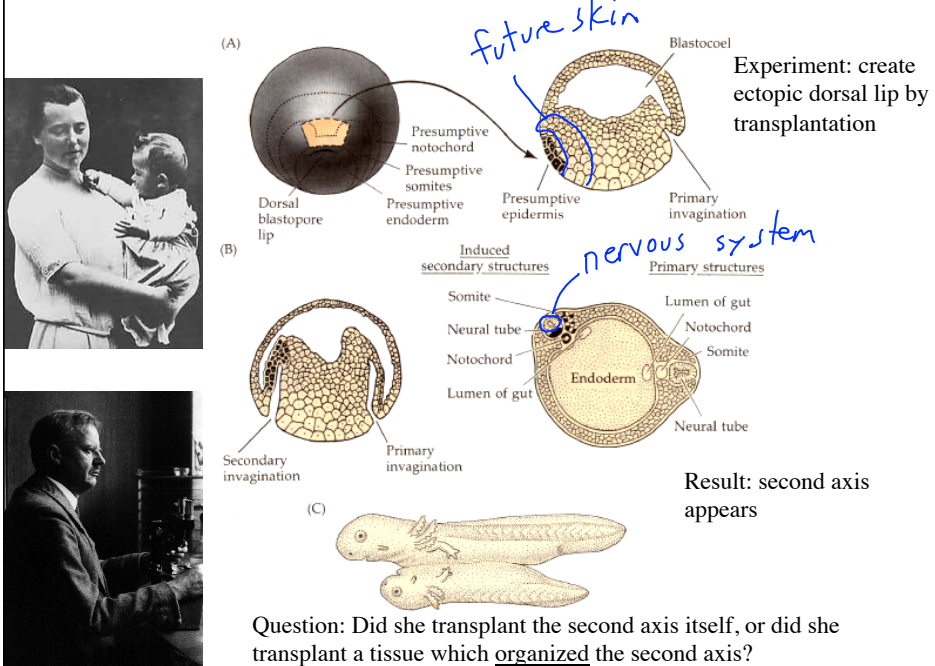
Frog

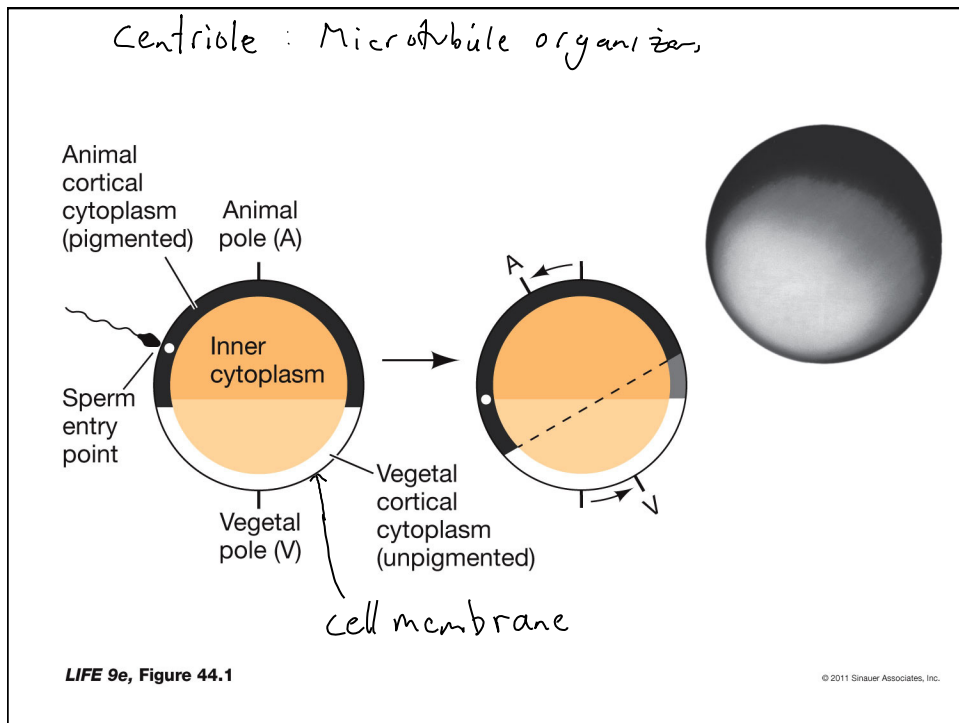
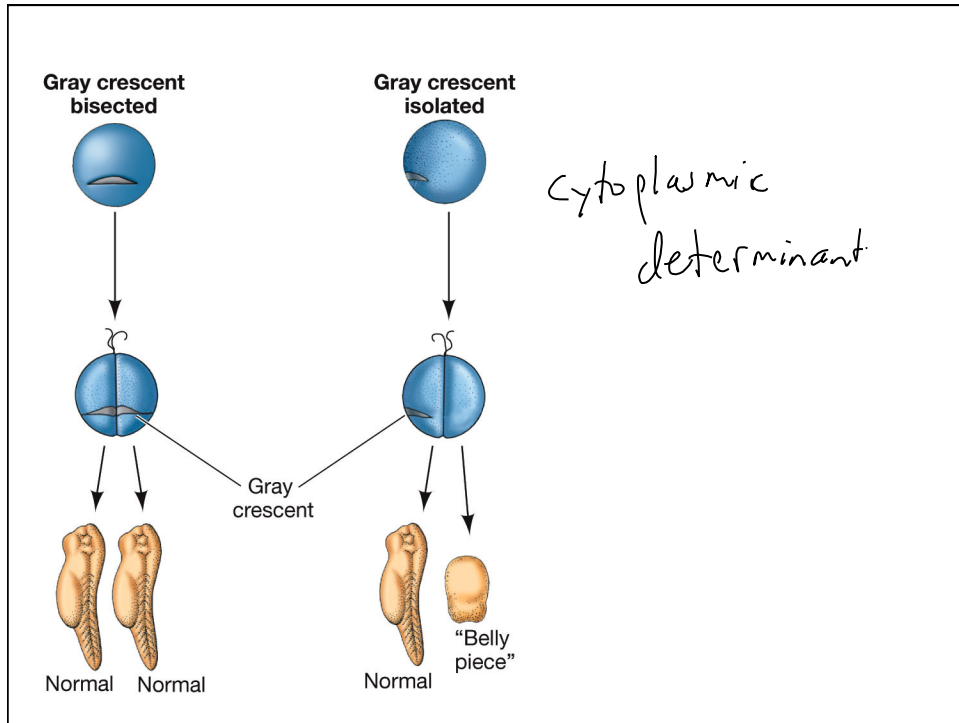


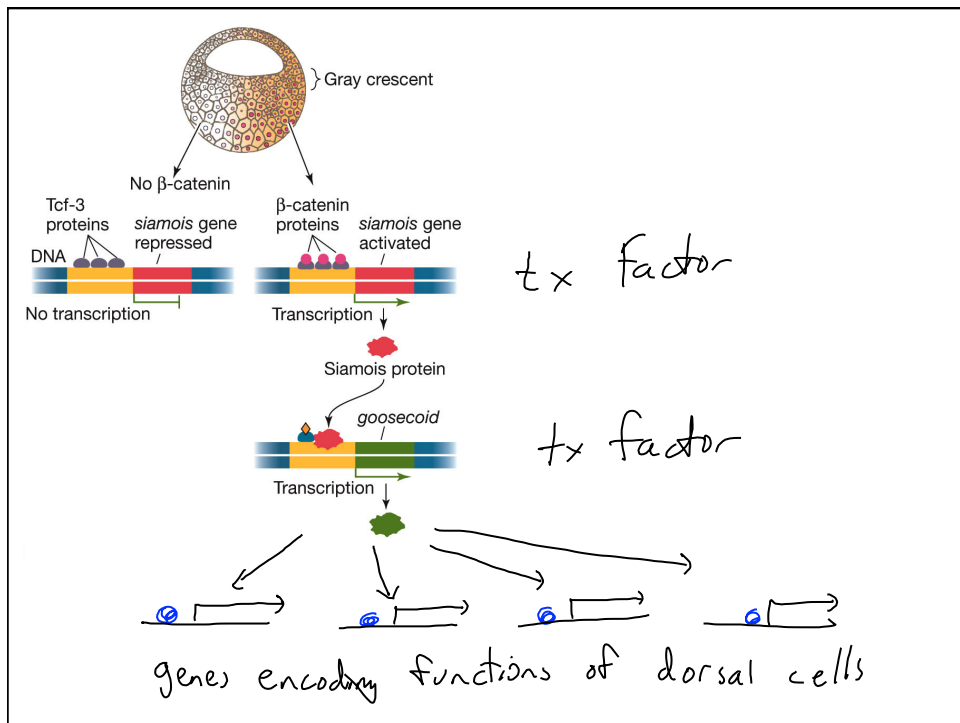
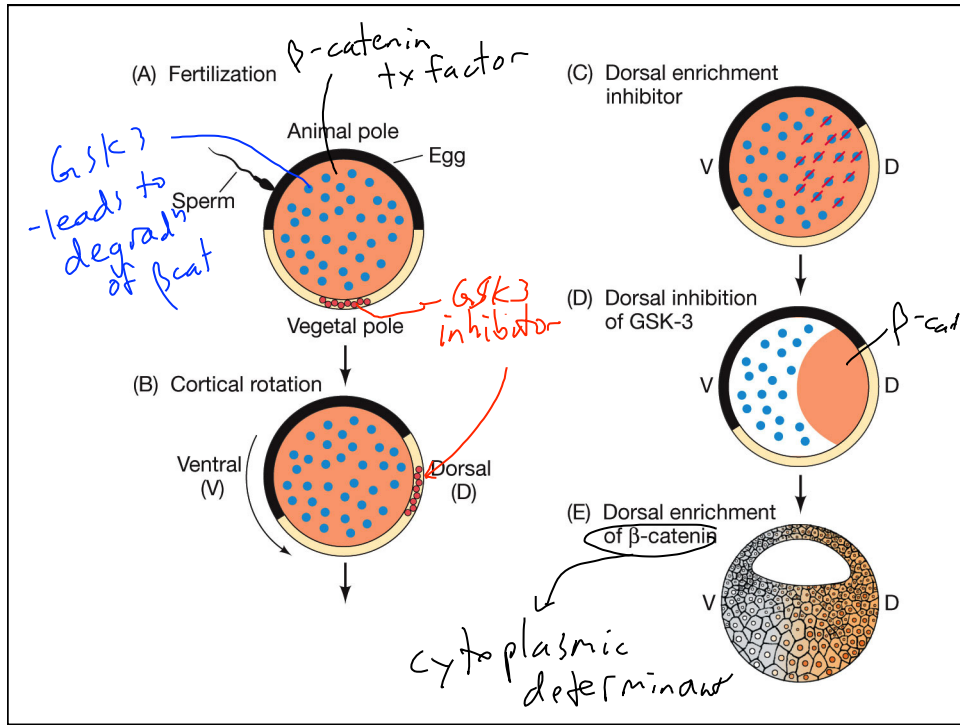
Live movie of sagittal section of frog gastrulation

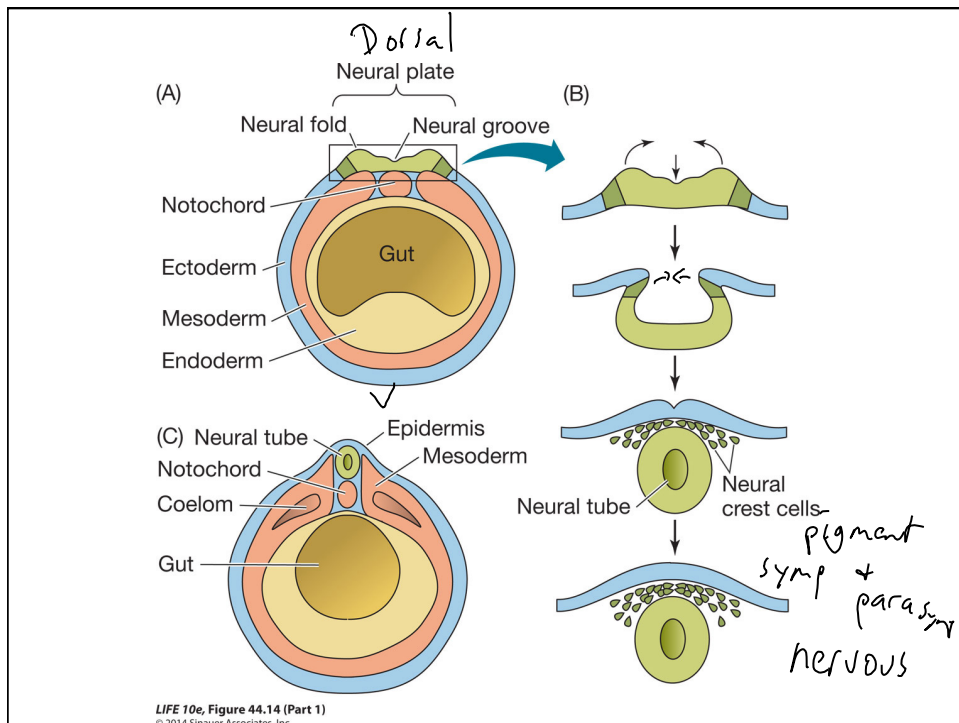
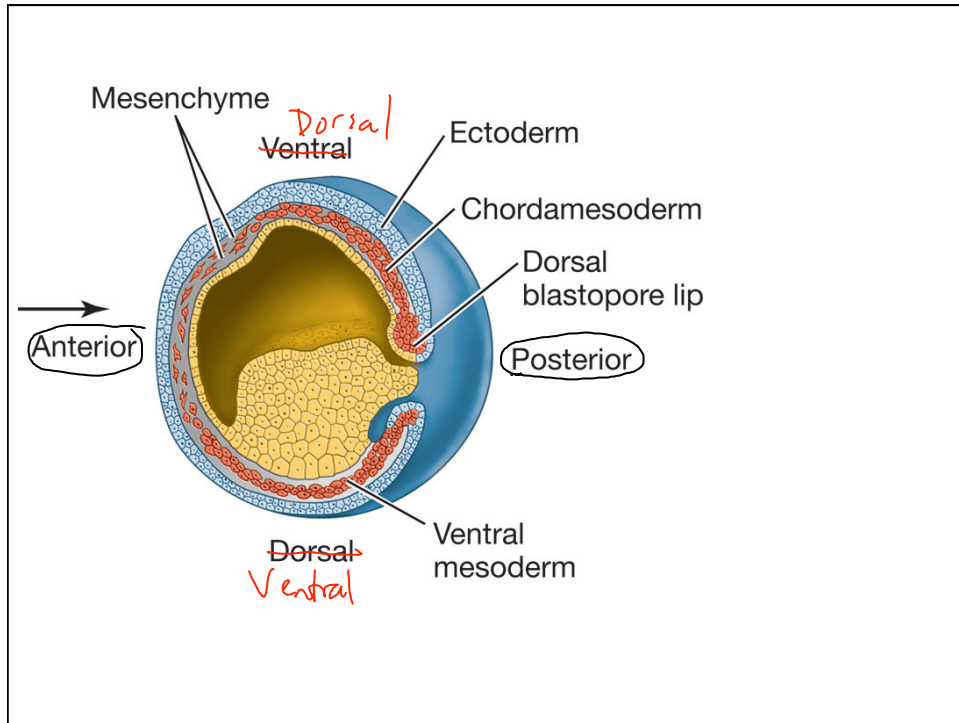


Hypothesis: The dorsal lip of the blastopore is an organizer of the embryo body plan.

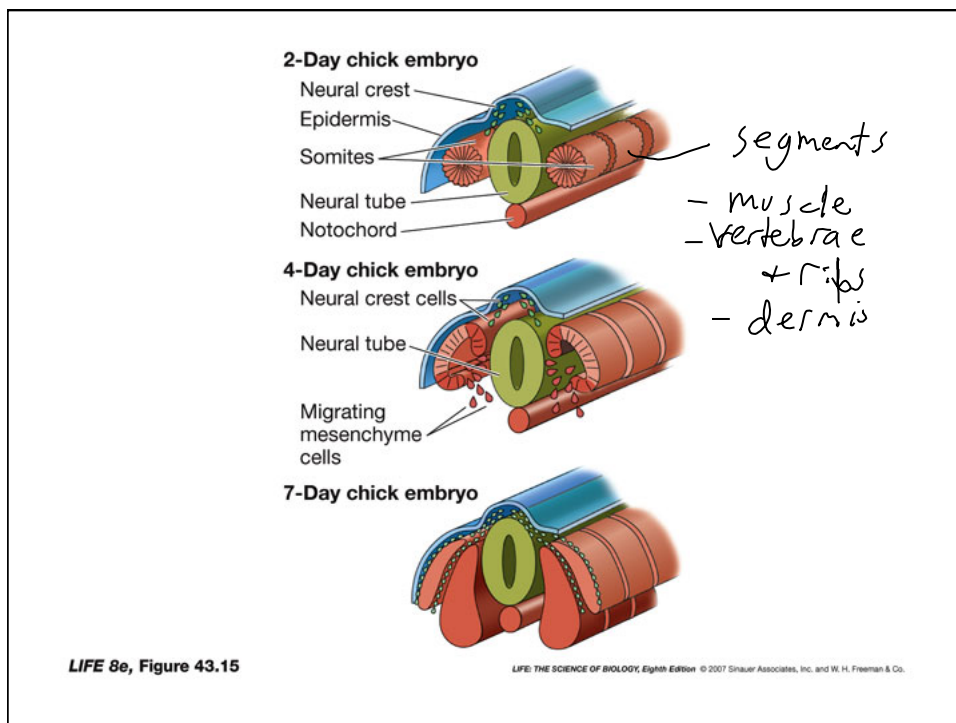
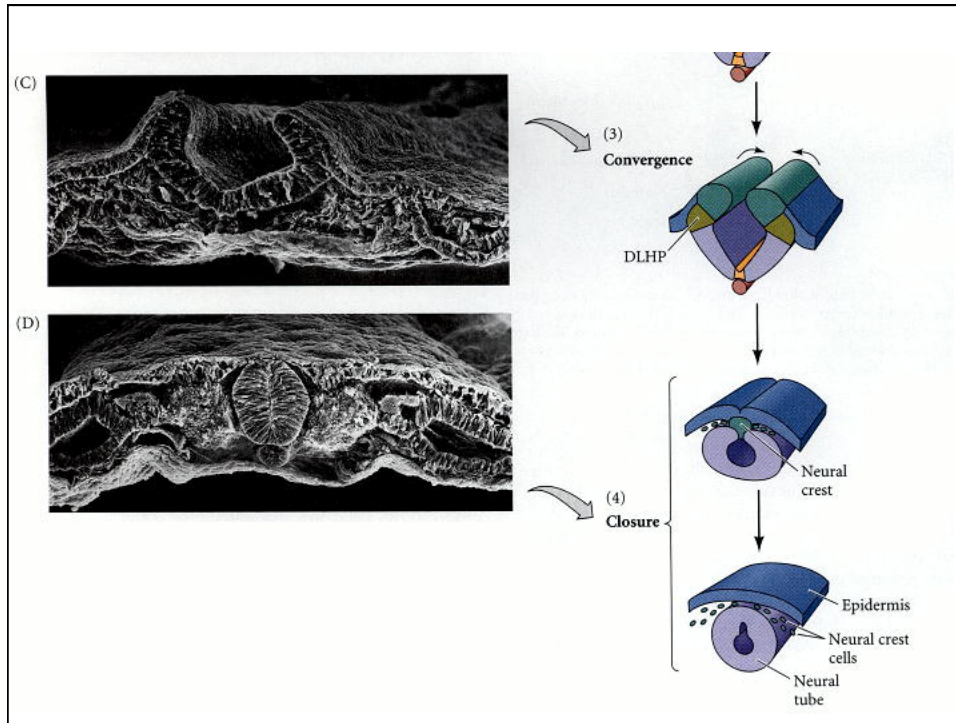


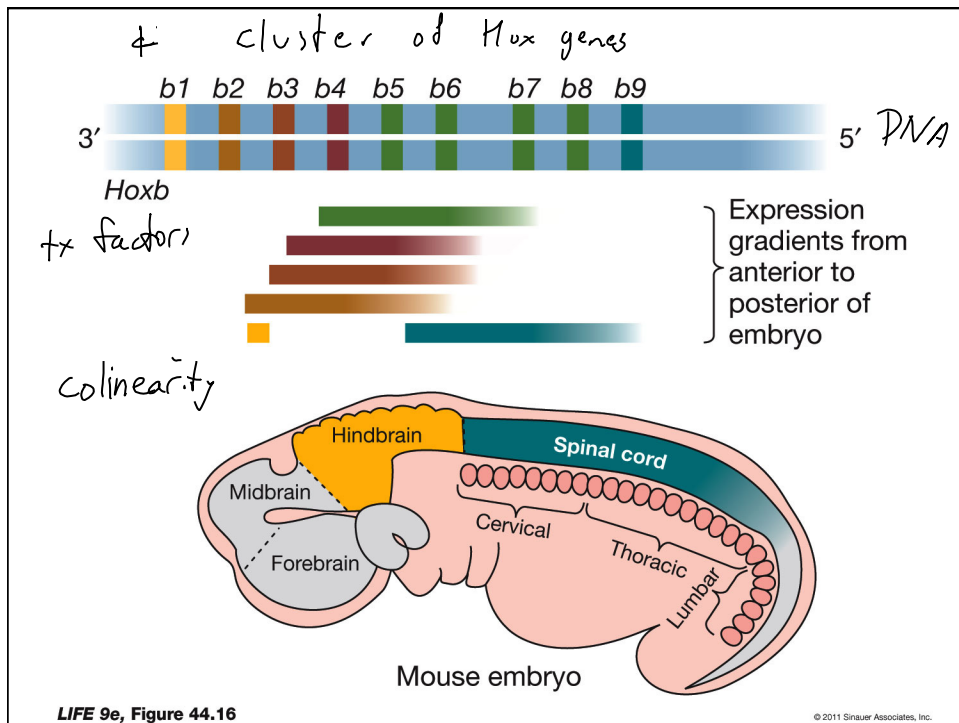
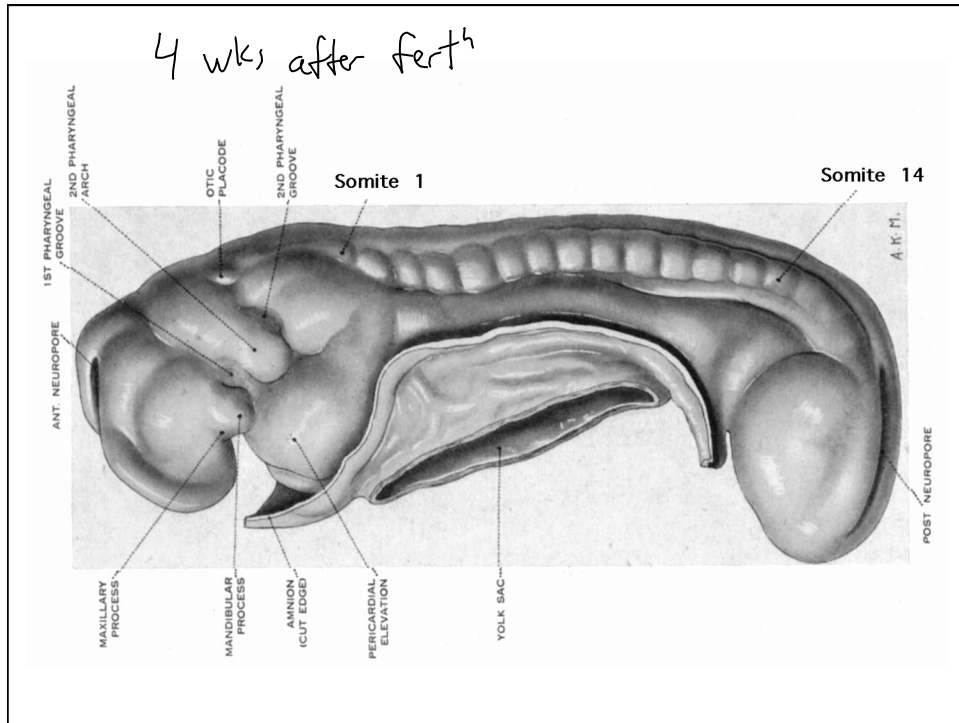




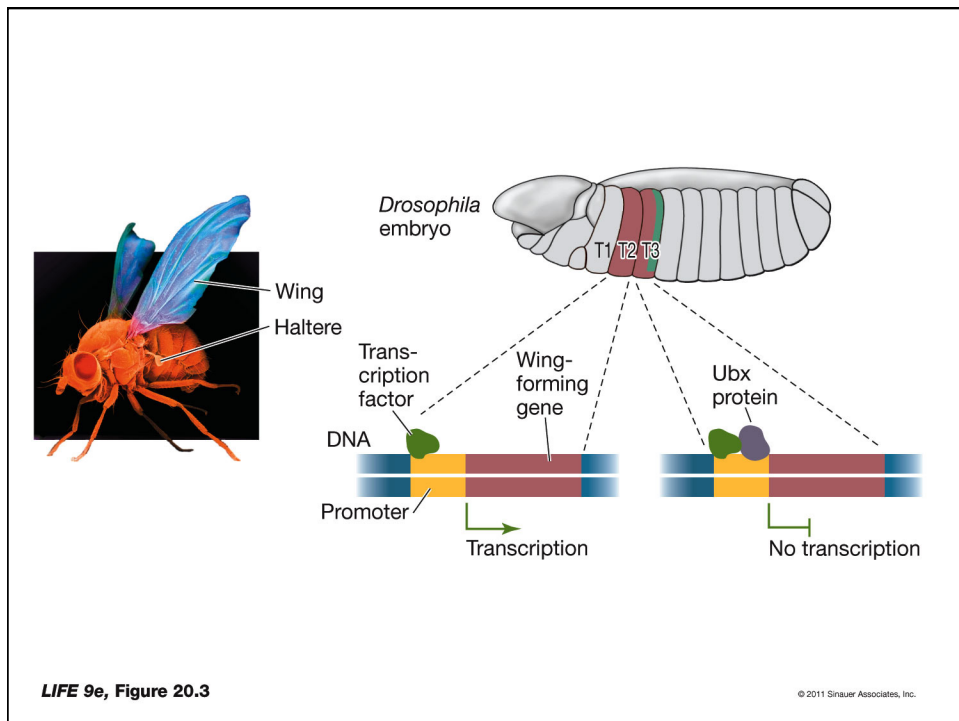
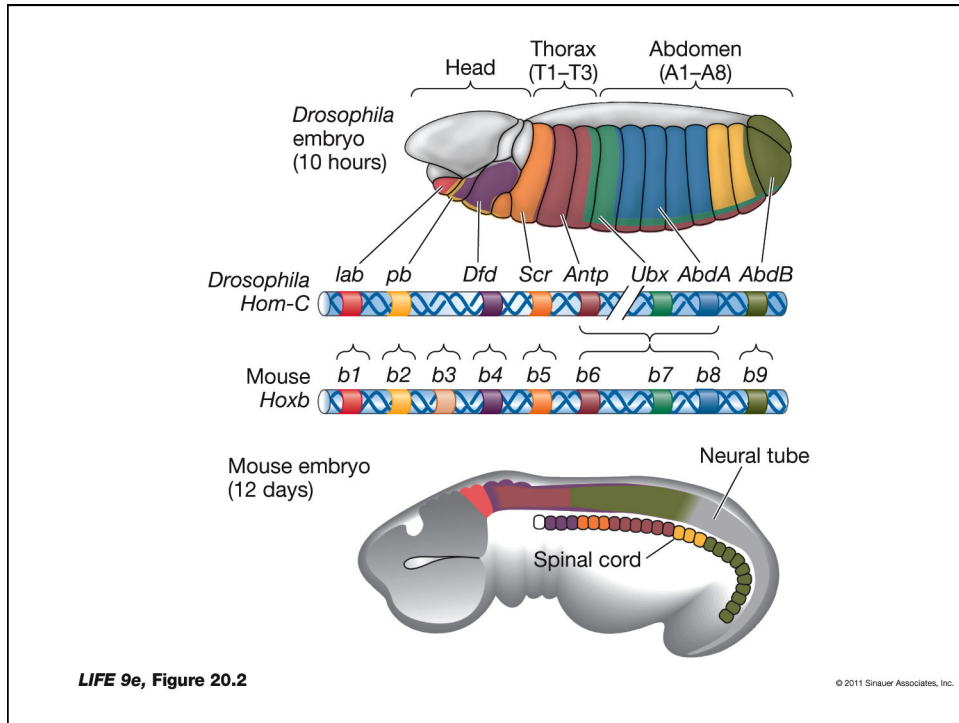


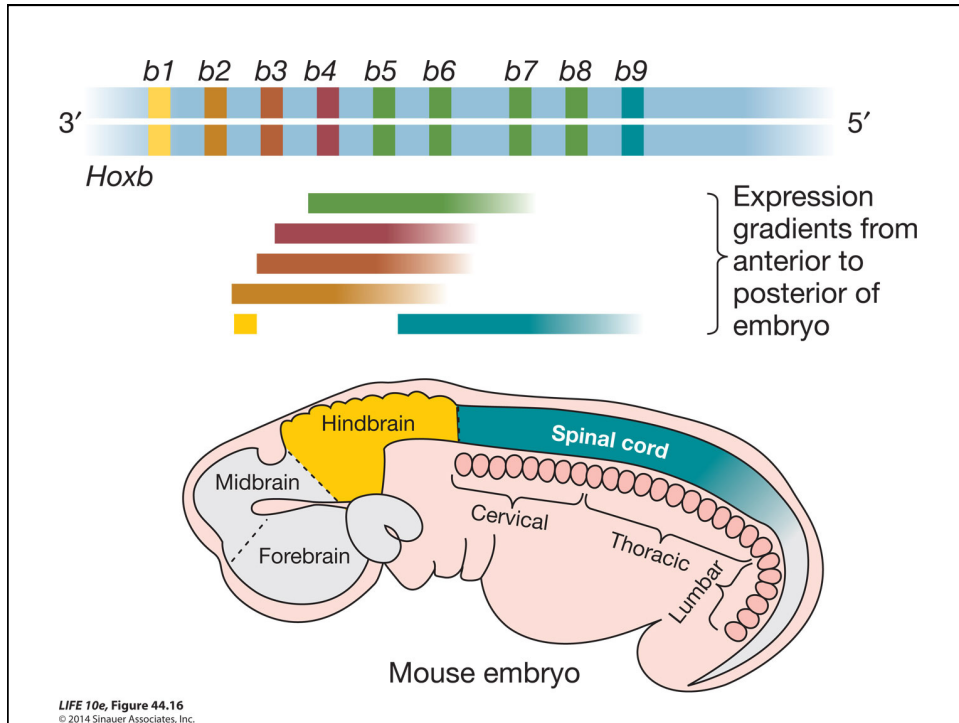


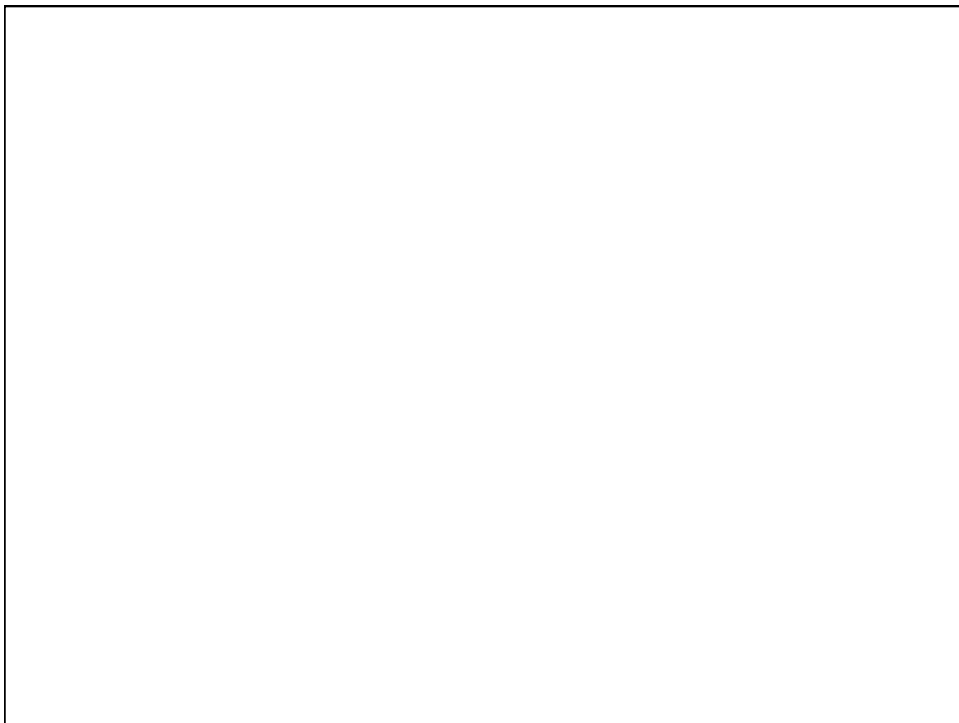
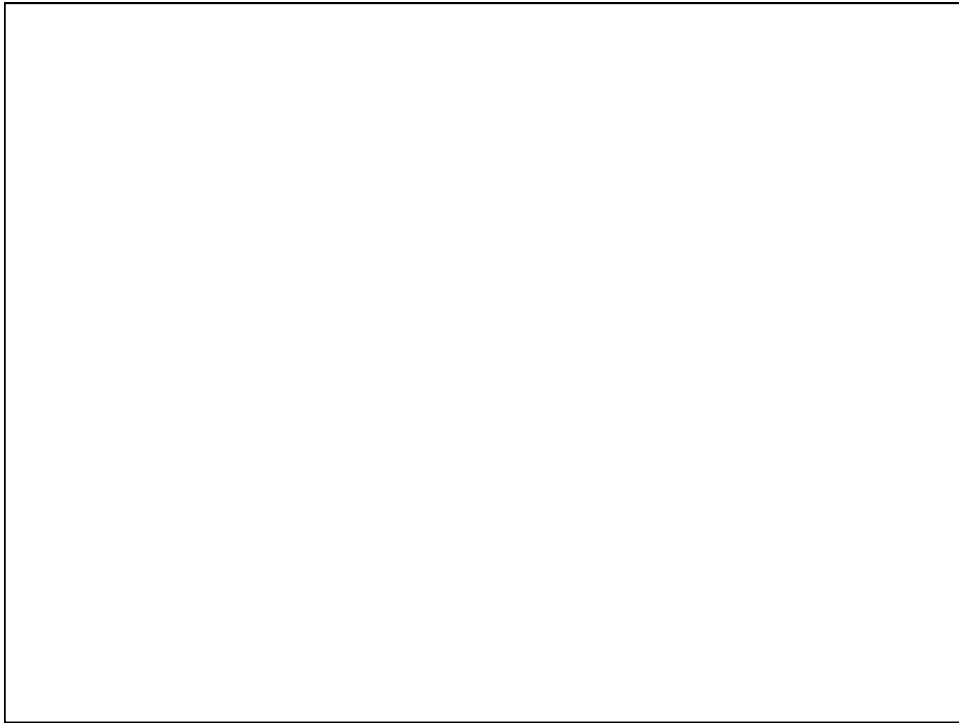


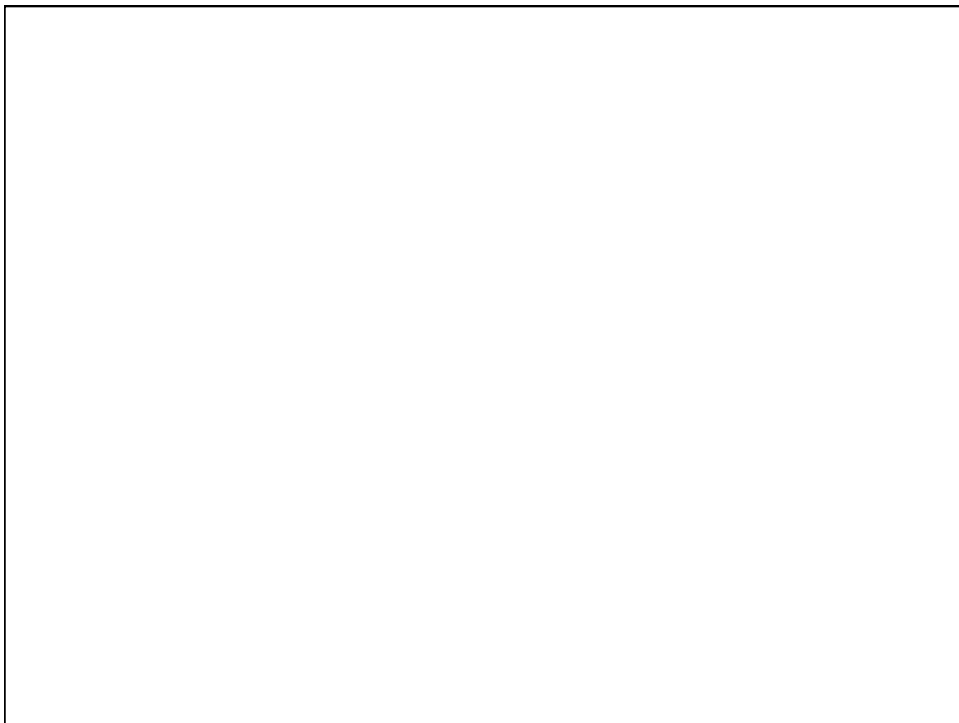
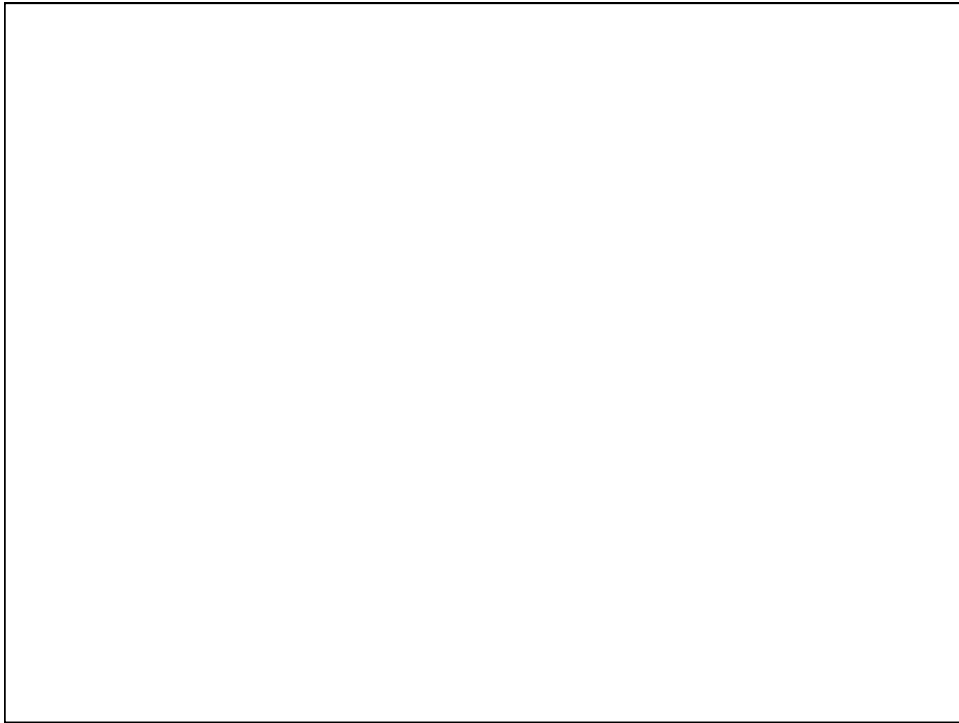












## Neurulation in human embryos

