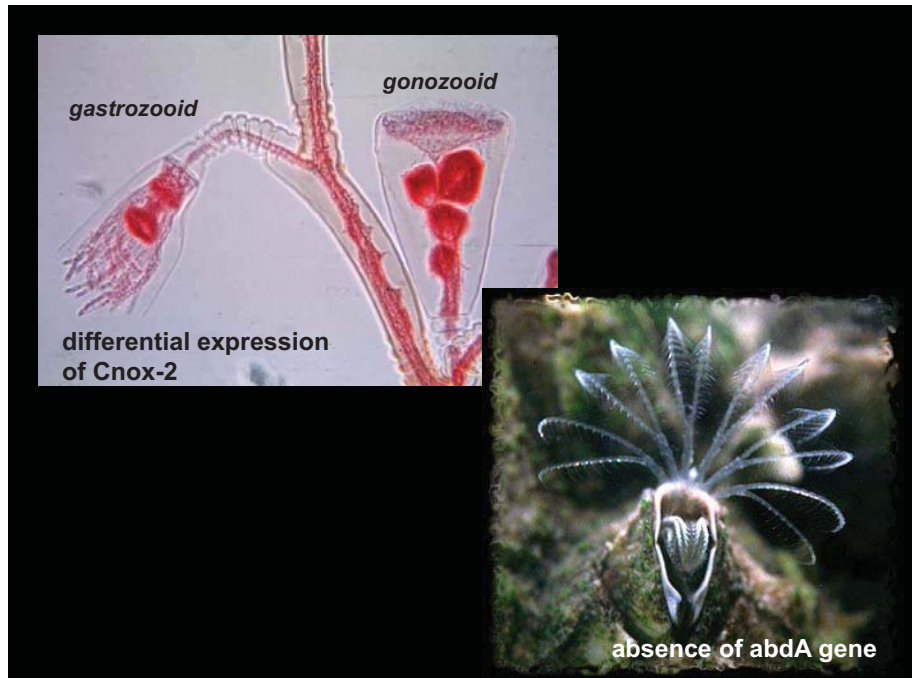
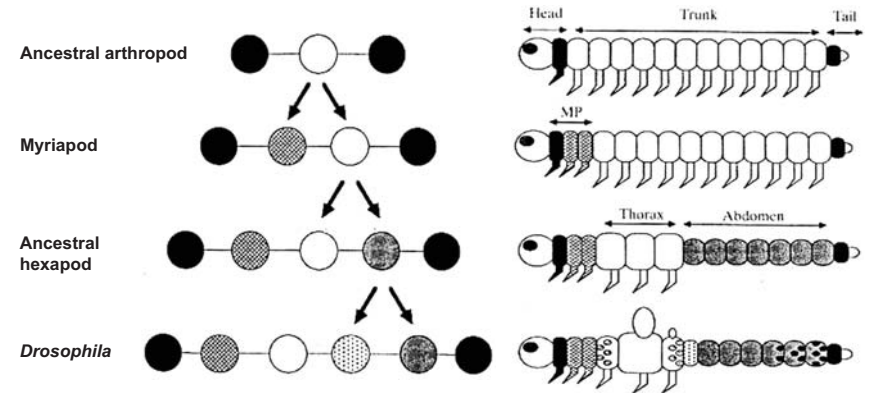
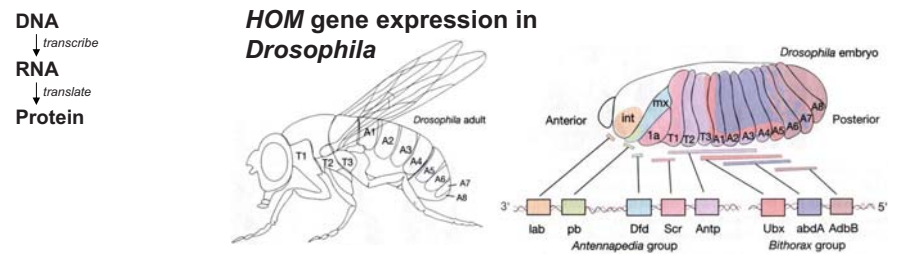
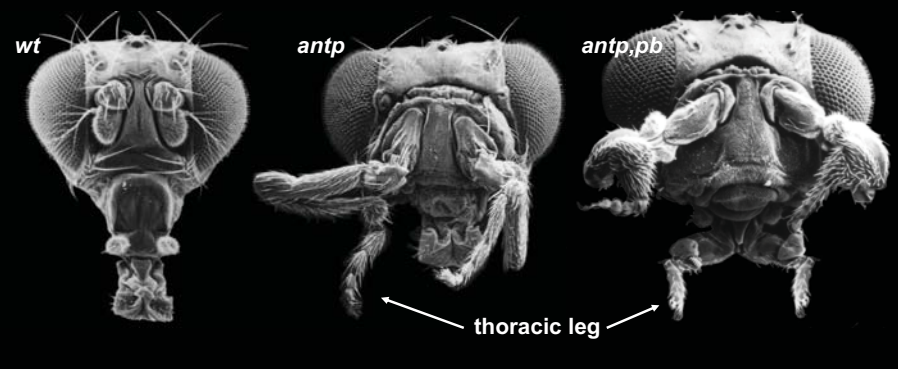
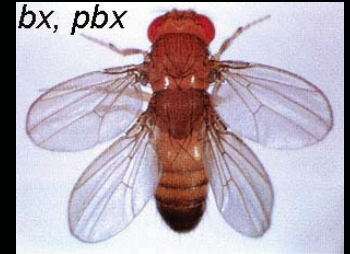


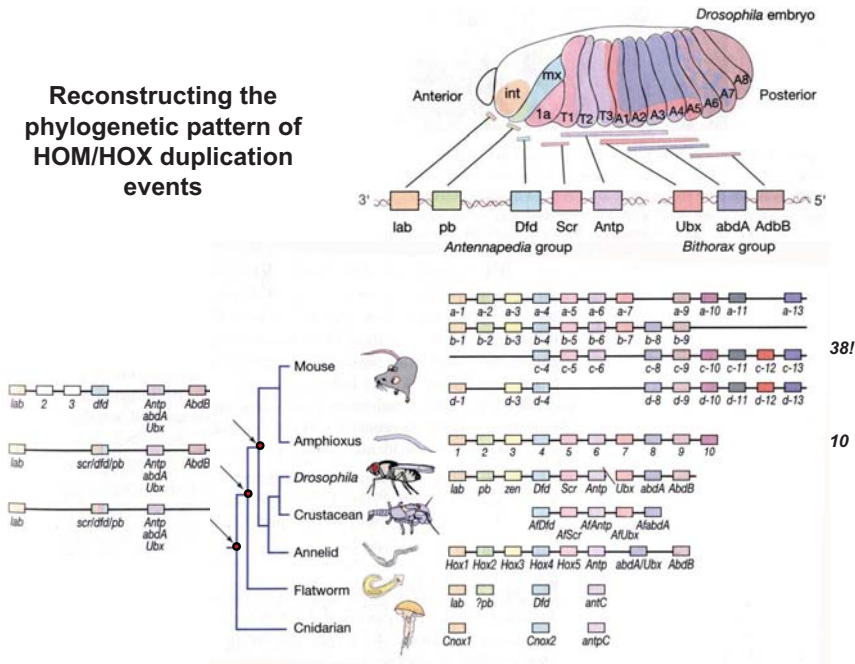
Ctenophora Urochordata Nemertea
 Echinodermata Platyhelminthes
How are phyla related?
 Kamptozoa Nematomorpha Ctenophora
When did they appear?
 Brachiopoda Porifera Annelida
How has diversity changed?
 Annelida Bryozoa
What mechanisms underlie diversification?
 Cnidaria Cephalochordata
 Nematoda Hemichordata Rotifera

1. Major regulatory genes

Ex. Homeotic mutations in *Drosophila*

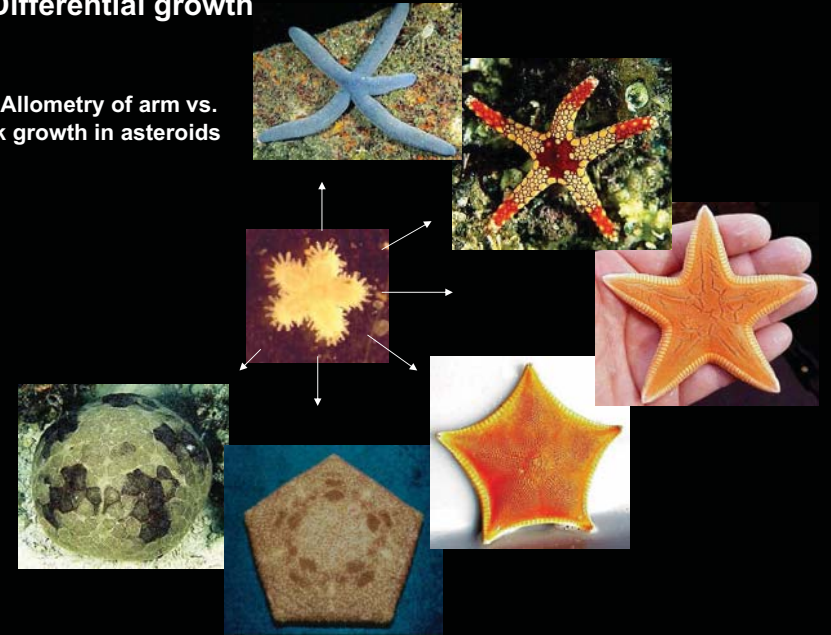


Reconstructing the phylogenetic pattern of HOM/HOX duplication events

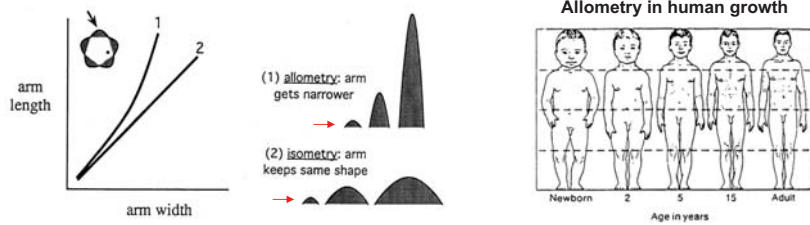


2. Differential growth

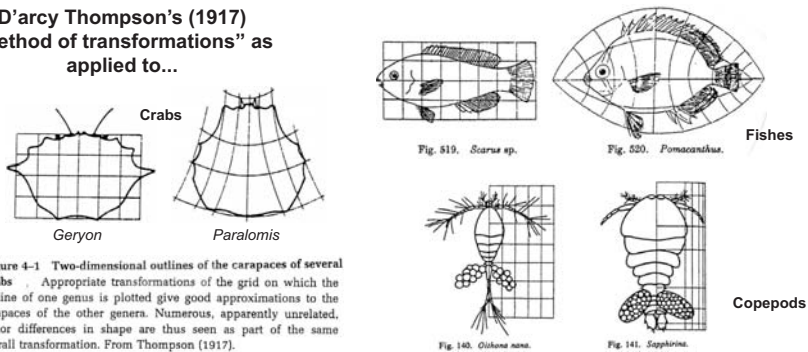
Ex. Allometry of arm vs. disk growth in asteroids



Growth: isometry vs. allometry

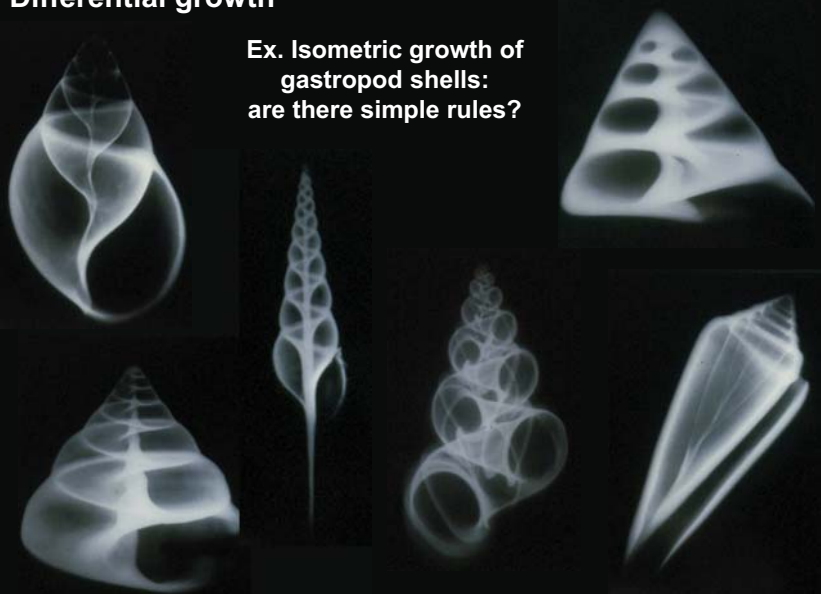


D'arcy Thompson's (1917) "Method of transformations" as applied to...

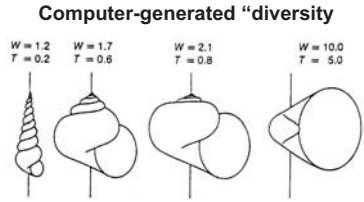
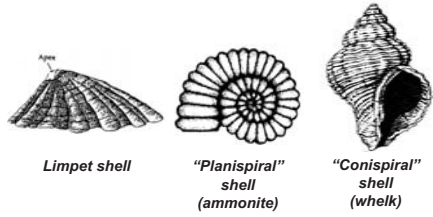


2. Differential growth

Ex. Isometric growth of gastropod shells: are there simple rules?



Modelling mollusc shell growth and diversity



Simple rules for shell growth?

