

Assignments [Hartl & Jones (2005). *Genetics - Analysis of genes and genomes*, 6th ed]
Developmental Genetics I: Ch. 13 ("Genetic control of development"), pp. 552-559
DG II: pp. 559-568; Problems 13.1, 13.2
DG III: pp. 569-576, 578; "Problems 1 & 2" (p 586-7); Problems 13.4, 13.6, 13.12, 13.15
DG IV: Ch. 8 ("Human . . . chromosome behavior"), pp. 301-304, Problems 8.4, 8.8
DG V: Ch. 11 ("Molecular mechanisms of gene regulation"), pp. 478-481

Announcements

- Office hours: Rm. 401 Gould-Simpson (NE corner) or by appointment
 - THURSDAYS, 1-2:30 pm
- Study Guides, homework, quiz, Discussion sections, midterm (Apr 27), final (**May 4!**)

Development: fundamental concepts and introduction to genetic mechanisms

- **developmental genetic programs, influenced by environment**
 - importance of spatial and temporal patterns of gene expression
 - comment: fetal alcohol syndrome
- **cell proliferation and migration**
- **specialization**
 - **cell identity**
 - where am I?
 - what type of cell am I? (i.e., what biological task should I be doing?)
 - example of faulty segment identity: *Antennapedia*
 - note: differentiation is normal but inappropriate
 - http://flybase.bio.indiana.edu/images/lk/Anatomy/Head/R_Turner_Micrographs/
(click on "wild-type-head.jpg" and "antp-head.jpg")
- **differentiation**
 - example of **muscle**
- developmental **potential vs. commitment**
 - stem cells: "**totipotent**" or "pluripotent"
 - terminal differentiation
- mechanisms: cell autonomy vs. cell-cell or cell-environment interaction
 - **positional information**; induction
 - **transplantation** experiments
 - example: micromeres and stomach formation (sea urchin)
- Use of **model organisms** to study principles of developmental genetics
 - phylogenetic tree: <http://www.informatics.jax.org/silver/index.shtml> – go to Fig. 1.3
 - where are *C. elegans*, *D. melanogaster*, *Mus musculus* and *H. sapiens*?