

Zoology 470 – 2009

Lecture Schedule & Reading Assignments

Note: Chapter references are from Gilbert, 8th edition; unless noted. Other readings are from *Bioethics*. Please omit *Sidelights & Speculations (S&S)* sections unless instructed otherwise.

"Supplementary Readings" are available on the course web site or via Learn@UW.

DD = The Dynamics of Development tutorial: http://worms.zoology.wisc.edu/embryo_main/embryology_main.html
The new, improved site, where you should go for echinoderm materials, is: <http://worms.zoology.wisc.edu/dd2/>

Week	Lecture	Date	Lecture Topic	Readings
Introduction: The Nature and Tools of Developmental Biology				
1	1	1/21	Introduction to developmental biology	Ch. 1, pp. 3-7, 10-11, Ch. 2, pp. 25-30, Ch. 3, pp. 53-62, Ch. 10, pp. 304-306
	2	1/23	Intro (cont); genomic equivalence	Ch. 4, pp. 80-87
2	3	1/26	Genomic equivalence (cont)	Bioethics, pp. 31-45; Supplemental readings part 1
	4	1/28	Human cloning; intro to stem cells	Ch. 1, pp. 66-67; Ch. 21, pp. 684-689
	5	1/30	Human ES cells (cont) Ethics Discussion #1	Bioethics, pp. 159-175; Supplemental readings part 2
3	6	2/2	Intro to mol. bio. techniques	Supplementary materials on molecular biology; Ch. 4, pp. 90-98
	7	2/4	Mol bio (cont); intro to cell biology	Ch. 3, pp. 67-75, Ch. 6, pp. 145-158
	8	2/6	Cell biology (cont)	Ch. 6, pp. 164-168; Supplementary materials on cell biology
4	9	2/9	Gametogenesis	Ch. 2, pp. 30-31 (review of meiosis), Ch. 19, pp. 606-610; 612-618; Ch. 5, pp. 130-131; Ch. 19, pp. 620-622
Preparing to Make a Body: From Egg to Zygote				
	10	2/11	Quiz 1: Molecular Biology Techniques Gametogenesis (cont); Fertilization	Ch. 7, pp. 175-192; 199-205
	11	2/13	Fertilization (cont)	DD: sea urchin fertilization
5	12	2/16	Egg activation	Ch. 7, pp. 193-198; 205-206; Ch. 21, pp. 663-665 (+ S&S)
	13	2/18	Quiz 2: Cellular Signaling Pathways Egg activation (cont);	Ch. 10, pp. 291-292; 302-303; DD: sea urchin materials on egg activation
	14	2/20	Problem set #1 due Cleavage	Ch. 8, pp. 211-215; Ch. 2, pp. 42-45
6	15	2/23	Cleavage and the blastula	DD: sea urchin & frog materials on cleavage

Review Session: Tuesday, Feb. 24 at 4:30 pm, room TBA

Exam 1: Wednesday, Feb. 25 at 7:15 pm, room TBA

Prelude to Axis Specification – Regulation of Gene Expression

	16	2/25	Intro to Central dogma	Ch. 5, pp. 101-113
	17	2/27	Transcriptional regulation	Ch. 5, pp. 113-118 (+ S&S)
7	18	3/2	Non-transcriptional regulation	Ch. 5, pp. 125-135 (+ S&S)
	19	3/4	Example #1: Sex determination & dosage compensation	Ch. 17, pp. 529-541; Ch. 5, pp. 117-124 (+ S&S)
	20	3/6	Example #1 (cont); Example #2: Germ plasm	Ch. 19, pp. 593-606
8	21	3/9	Example #2 (cont); Intro to morphogenesis	Ch. 8, pp. 215-216
	22	3/11	Blastomere specification and gastrulation in <i>C. elegans</i>	Ch. 8, pp. 243-250
	23	3/13	<i>C. elegans</i> (cont); <i>Drosophila</i> anterior-posterior axis (intro)	Ch. 9, pp. 253-274

Spring Break: 3/14 – 3/22

Specifying the Body: Axis Specification and Gastrulation – Invertebrates

10	24	3/23	Quiz 3: Morphogenetic movements Anterior-posterior patterning in <i>Drosophila</i> : maternal genes	Ch. 9, pp. 253-274
	25	3/25	<i>Drosophila</i> : segmentation	Ch. 9, pp. 275-286
	26	3/27	Patterning and gastrulation in sea urchins Problem Set #2 due	Ch. 3, pp. 61 (bottom)- 62; Ch. 8, pp. 217-229; DD: materials on sea urchin gastrulation
11	27	3/30	Sea urchins (cont); intro. to amphibians	Ch. 3, pp. 56-58; Ch. 8, pp. 246-251
	28	4/1	Amphibian axis specification: early events	Ch. 10, pp. 291-295; 302-312

Specifying the Body: Axis Specification and Gastrulation – Chordates

	29	4/3	Amphibians: early events (cont)	Ch. 10, pp. 317-325
12	30	4/6	Amphibian axis specification: gastrulation	Ch. 10, pp. 295-302

Review session: Monday, April 6, 4:30-6 pm, TBA**Exam 2: Tuesday, April 7, 7:15-8:45 pm, TBA**

Week	Lecture	Date	Lecture Topic	Readings
	31	4/8	Gastrulation (cont); organizer	DD: materials on frog gastrulation; Ch. 10, pp. 312-316
	32	4/10	Amphibian axis specification: organizer & neural induction	Ch. 10, pp. 316-322
	33	4/13	Other vertebrates: zebrafish and chick	Ch. 11, pp. 325-347
12	34	4/15	Other vertebrates (cont): mammals	Ch. 11, pp. 348-367 (including S&S)
	35	4/17	Mammals (cont); preimplantation diagnosis Ethics Discussion #2	Ch. 21, pp. 665; Supplemental readings part 4
	36	4/20	Left-right axis specification	Ch. 11, pp. 347-348; Ch. 10, pp. 322- 323; 335-336; 364-367
13	37	4/22	Neurulation, brains, and ectoderm	Ch. 12, pp. 373-386; 397-400
	38	4/24	Mesoderm (cont); endoderm	Ch. 15, pp. 471-474, 477-486; 495-503

Building the Body: Organ Systems in Vertebrates

	39	4/27	Mesoderm (cont); endoderm	Ch. 15, pp. 471-474, 477-486; 495-503
14	40	4/29	Endoderm (cont); branching morphogenesis	Ch. 14, pp. 461-463;
	41	5/1	Neural crest Problem set #3 due	Ch. 13, pp. 407-420
15	42	5/4	Axon guidance	Ch. 13, pp. 424-440
	43	5/6	Limb patterning	Ch. 16, pp. 505-520
	44	5/8	Limb patterning (cont); wrap-up	

Review session: TBA

Exam 3: Monday, May 11, 2009 at 10:05 am