Section Director:  Jan Ryerse, Ph.D.
Doisy Hall Room R514  
314-977-7848 (office)  
314-497-8549 (cell)  
ryersej@slu.edu

Teaching Goals: To provide an overview of the processes and unifying principles involved in animal development at the tissue, cellular and molecular levels focusing on terms and concepts, experimental approaches and the evolution of ideas and directions in developmental biology.

12/1/08
The Early Stages of Embryonic Development
• Fertilization and species specificity
• Cleavage and implantation
• Twins
• Cloning and transgenics

12/2/08
Primary Embryonic Axis Formation
• Gastrulation in amphibians, birds and mammals
• The primary embryonic organizer
• The Nieuwkoop center and the molecular biology of the organizer
• Primary embryonic axis formation in humans

12/3/08
Neurulation
• Morphogenetic movements
• Molecular biology and role of sonic hedgehog
• Consequences of abnormal neurulation
• Neural crest cells – the fourth germ layer
12/4/08
Organogenesis: Eye and Limb Development
• Eye development
• pax6 and eye development
• hedgehog and cyclopia
• Limb development

12/5/08
Pattern Formation Models
• The gradient model
• The polar co-ordinate model
• The boundary model
• Embryonic development in Drosophila

12/8/08
Developmental Genetics of Pattern Formation in Drosophila
• Maternal effect and zygotic genes
• Primary embryonic axis specification in Drosophila
• bicoid as a model morphogen
• Homeotic selector genes

12/9/08Exam

Students will be provided with a detailed handout of the lecture material and directed to the reference readings listed above for additional background information. The Gilbert readings are from the 6th edition of Developmental Biology. More current information can be found in the 7th and 8th editions. Copies of the 6th edition of Developmental Biology and the Principles of Development are on reserve in the Medical School library and are also available in the reading room in the BBS office.