SC/BIOL 4061,SC/BCHM 4061 Molecular and Cellular Principles of Animal Development Winter term, 2014

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Topic outline

1) Introduction to Molecular Analysis of Development
   -Descriptive embryology
   -Genetics and molecular biology
2) Programs and Regulatory Elements in DNA
3) Transcriptional Circuits- epigenetic regulation of gene expression
4) Gastrulation and early development- axis specification and formation
5) Features of Major Model Organisms- Mouse, Chick, Drosophila
6) Techniques for the study of Mouse Development: gene targeting technology
7) Receptors, Ligands
8) Cell-cell communication, Signaling Networks, Induction and Competence
9) Molecular Co-ordination of Cell Division and Differentiation (Myogenesis)
10) Focus on Paraxial Mesoderm, Somitogenesis and Patterning
11) Cell Death in Development
12) Lineage Generation
    - Embryonic and Adult Stem cell properties and lineage commitment
13) Cell Type Specification, Induction of pluripotency in stem cells (iPS)
14) Patterning in 1 and 2 Dimensions
15) Molecular and cellular basis of 3D Patterning
    - Heart development
16) Developmental mechanisms of evolutionary conservation and change

Evaluation

1 Test (prior to Reading week -date Thurs 13th Feb)	30%
1 Essay (HARD COPY due date 27th March)	30%
1 Test (Final in exam period date -TBA)	40%

Course Text: (*10th edition available in York bookstore)*
Developmental Biology
Companion web site: www.devbio.com
Scott F.Gilbert
Sinauer Associates, Inc
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