

Gene Regulatory Networks

October 12-23, 2008

SUNDAY 10/12

Welcome with beer and pizza, Loeb 3rd floor lobby

MONDAY 10/13

Lecture: Introduction: The Logic of embryological development; developmental GRNs (Davidson)

Review: Embryological processes; building body plans (McClay)

Discussion: Cis-regulatory technology

TUESDAY 10/14

Lecture: Cis-regulatory design: examples from *Drosophila* (Levine)

Practical: Introduction to BioTapestry (Longabaugh)

Demo: Sea urchin embryos

WEDNESDAY 10/15

Lecture: Sea Urchin embryo GRN: explaining the developmental program

Projects: Form teams and from literature construct prospective vertebrate GRNs for endoderm specification in BioTapestry: fish, mouse; chicken, frog, *C.elegans*, *Drosophila*, etc and compare (Staff)

Demo: Gene expression perturbations and cis-regulatory methods

THURSDAY 10/16

Lecture: Linking the sea urchin GRN to differentiation and morphogenesis (McClay)

Practical: Easy computational tools for GRN subcircuit analysis-1 (Bolouri)

Discussion: GRN for differentiation and cell movement in *Ciona* heart development (Levine)

FRIDAY 10/17

Lecture: *Drosophila* mesoderm specification GRN (Stathopoulos)

Practical: Easy computational tools for GRN subcircuit analysis-2 (Bolouri)

SATURDAY 10/18

Lecture: Ciona embryo GRN (Lemaire)

Demo: Measuring transcriptional output of many genes

SUNDAY 10/19 OFF

MONDAY 10/20

Lecture: What we know of postembryonic and stem cell GRNs (Rothenberg)

Demo: Building network relations from measurements

TUESDAY 10/21

Lecture: GRNs for adult vertebrate body parts (Rothenberg)

Projects Afternoon open to complete

WEDNESDAY 10/22

Lecture: Cis-regulatory evolution (Eisen)

Practical: Methods for comparative regulatory genomics (Eisen)

THURSDAY 10/23

Lecture: Gene Regulatory Networks and the Evolutionary Process: kernel theory (Davidson)

Student Presentations: Projects

Course Banquet

FRIDAY 10/24 Depart