

**GENE REGULATORY NETWORKS for DEVELOPMENT**  
**2017 MBL COURSE Oct8 -Oct21**

**10AM-11:30 AM, Lectures: followed by closed discussion 11:45AM - 12:30PM**

**2PM-5:30 PM, Afternoon Events: Practical Presentations, Seminars, Problems and Projects, as indicated**

**7:15PM-8:30 PM, Evening Events: Seminars, Practical Presentations**

**Sunday Oct 8**

**7:45 PM, Reception and Introductions**

**MODULE 1: Developmental GRNs**

**Monday Oct9**

**10:00 AM Lecture 1, Isabelle Peter: “Introduction to GRNs and the genomic causality in development and evolution”**

**2:00 PM: Seminar: Amy Ralston: “Principles of Development”**

**4:00 PM Practical Presentation: Bill Longabaugh, “Introduction to BioTapestry for GRN Modeling”**

**7:15 PM Staff: Hand out and discuss dry-lab problems.**

**Tuesday Oct10**

**10:00 AM Lecture 2: Lionel Christiaen “GRNs controlling morphogenesis”**

**2:00 PM Seminar: Isabelle Peter: “Network structure and function: hierarchy, modularity, and subcircuit design”**

**4:00 PM Practical Presentation: Isabelle Peter & Bill Longabaugh, “Boolean Network Modeling” Hand out and discuss Boolean modeling problems**

**7:15 PM Seminar: Ken Cho: “Solving the Xenopus endoderm GRN”**

**Wednesday, Oct11**

**10:00 AM Lecture 3, Amy Ralston: “GRNs underlying cell fate decision in early mouse embryos”**

**2:00 PM Seminar: Lionel Christiaen: “The Ciona Heart GRN”**

**4:00 PM Bill Longabaugh & Isabelle Peter, Introduction to GeneTool;**

**7:15 PM Practical Presentation: Isabelle Peter & faculty “Experimental approaches to solving GRNs”**

### Thursday Oct 12

**10:00 AM Lecture 4, Ken Cho: “GRNs underlying vertebrate endoderm development”**

**2:00 PM Seminar: Isabelle Peter: “GRN evolution”**

**4:00 PM: Students work on modeling projects**

**7:15 PM Practical Presentation: Isabelle Peter & faculty “Experimental approaches to solving GRNs”**

## MODULE 2: Transcriptional control systems

### Friday Oct 13

**10:00 AM Lecture 5, Scott Barolo: “Cis-regulatory structure and function”**

**2:00 PM: Students work on modeling projects**

**4:00 PM Seminar: Ellen Rothenberg: “From multipotentiality to commitment: gene regulatory network for T-cell development”**

**7:15 PM Practical Presentation: Trevor Siggers: “Using PWMs”**

### Saturday Oct 14

**10:00 AM Lecture 6, Trevor Siggers: “Transcription factor function and sequence specificity”**

**2:00 PM-5:30 PM: Student presentation on Boolean modeling projects**

**7:15 PM Practical Presentation: Scott Barolo & faculty “Experimental approaches to cis-regulatory analysis”**

### Sunday Oct 15

**Off all day**

### Monday Oct 16

**10:00 AM Lecture 7, Ellen Rothenberg: “The genomics of transcription factor binding”**

**2:00 PM Practical Presentation: Scott Barolo & faculty, “Experimental approaches to cis-regulatory analysis”**

**4:00 PM Students work on dry lab problems**

**7:15 PM POSTER SESSION and RECEPTION**

## MODULE 3: Network modeling

### Tuesday Oct 17

**10:00 AM Lecture 8, John Reinitz “Predictive modeling: the Drosophila gene circuit model”**

**2:00 PM Seminar, Scott Barolo: “Cis-regulatory evolution”**

**4:00 PM Students work on dry lab problems**

**7:15 PM Practical Presentation: Scott Barolo & faculty, “Experimental approaches to cis-regulatory analysis”**

### Wednesday Oct 18

**10:00 AM Lecture 9, Isabelle Peter: “Boolean modeling of GRNs”**

**2:00 PM Seminar: John Reinitz: “Patterning processes in the Drosophila embryo”**

**4:00 PM Students work on dry lab problems**

**7:15 PM Seminar: James Briscoe: “The Sonic Hedgehog regulated transcriptional network in the vertebrate neural tube”**

### Thursday Oct 19

**10:00 AM Lecture 10, James Briscoe: “Dynamic modeling of circuits”**

**2:00 PM: Seminar: Marianne Bronner: “A GRN for neural crest development”**

**4:00 PM Students work on dry lab problems**

**7:15 PM Students work on dry lab problems**

### Friday Oct 20

**10:00 AM Lecture 11, Marianne Bronner: “Evolution of the neural crest GRN”**

**2:00-6:00 PM Class Drylab Project Presentations**

**6:00 PM Graduation & Finale**

### Saturday Oct 21

**Departure**