Gene Regulatory Networks for Development
2015 MBL Course  Oct 11 (evening)-Oct 23 (evening)

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 11
7:45 PM, Reception and Introductions

Monday Oct 12
10:00 AM Lecture 1, Dave McClay: “Genomic causality in development and evolution: the transcriptional control system”
2:00 PM: Practical Presentation: Isabelle Peter & Bill Longabaugh, “Boolean Network Modeling”
4:00 PM: Isabelle Peter & Bill Longabaugh, Introduction to GeneTool; Hand out and discuss Boolean modeling problems
7:15 PM: Seminar: Justin Kumar: “The retinal determination GRN in Drosophila”

Tuesday Oct 13
10:00 AM Lecture 2, Isabelle Peter: “Network structure and function at GRN and subcircuit levels”
2:00 PM: Practical Presentation: Bill Longabaugh, “Introduction to BioTapestry for GRN Modeling”
4:00 PM: Staff: Hand out and discuss dry-lab problems.
7:15 PM: Seminar: Justin Kumar: “Evolution of the retinal determination GRN”

Wednesday, Oct 14
10:00 AM Lecture 3, Dave McClay: “Principles of Developmental Process”
2:00 PM: Practical Presentation: Scott Barolo, “Cis-regulatory analysis”
4:00 PM: Isabelle Peter & Bill Longabaugh, Assistance with Boolean network modeling projects
7:15 PM: Practical presentation: Isabelle Peter “Experimental approaches to solving GRNs”

Thursday Oct 15
10:00 AM Lecture 4, Isabelle Peter: “GRNs encoding body part formation and cell type specification choice”
2:00-5PM: Practical Presentation: Dave McClay & Megan Martik: Lab demonstration of embryonic spatial gene expression

**Friday Oct 16**
10:00 AM Lecture 5: Rob Phillips: “Quantitative transcriptional processes”
2:00 PM: Students work on projects ad lib
4:00 PM: Seminar: Isabelle Peter “The sea urchin embryo endomesoderm GRN”
7:15: Practical presentation: Martha Bulyk: “Using PWMs”

**Saturday Oct 17**
10:00 AM Lecture 6, Martha Bulyk: “Transcription factor function & sequence specificity”
2-5:30 PM Student presentations of Boolean modeling projects
7:15 PM: Seminar: Dave McClay “Morphogenesis”

**Sunday Oct 18**
Off all day

**Monday Oct 19**
10:00 AM Lecture 7, Scott Barolo: “Cis-regulatory structure and function”
2:00 PM Practical presentation: Ellen Rothenberg: “Import of ChIPseq analysis”
4:00 PM Students work on dry lab problems
7:15: PM Seminar: Roger Patient: “Early forays into blood and mesendoderm networks: what did they tell us?”

**Tuesday Oct 20**
10:00 AM Lecture 8, Scott Barolo: “Cis-regulatory evolution”
2:00 PM Seminar: Harinder Singh “Models of network circuits orchestrating immune cell fate choice-2”
4:00 PM: Students work on dry lab problems
7:15PM Seminar: Roger Patient: “Building networks for blood stem cell development”

**Wednesday Oct 21**
10:00 AM Lecture 9, Doug Erwin: “GRN evolution”
2:00 PM Seminar: Ellen Rothenberg: “Towards a GRN for T-cell specification”
4:00 PM Students work on dry lab problems
7:15 PM Seminar: Art Lander: "Salience, influence, and the treachery of phenotypes”

**Thursday Oct 22**
10:00 AM Lecture 10, Isabelle Peter: “Abstract models of GRNs”
2:00 PM Seminar: Art Lander: "Connecting the organization of biological networks to the costs of biological control"
4:00 PM Students work on dry lab problems

Friday Oct 23
10:00 AM Lecture 11, James Briscoe: "Dynamic modeling of circuits"
2:00 PM-6:00 PM: Staff; Class Drylab Project Presentations
6:00 PM Graduation & Finale