Systems and Synthetic Biology

27th of June – 1st of July 2011

Instructors:
Pedro Beltrao (Postdoc UCSF, pedrobeltrao@gmail.com) - PB
Julio Saez-Rodriguez (group leader,EBI, www.ebi.ac.uk/saezrodriguez) - JSR
Thomas Lemberger (Chief Editor, Molecular Systems Biology, http://www.nature.com/msb/) - TL

Course Plan

Monday (PB)
9:00 to 10:00: Introduction to the course
10:00 to 12:00: Introduction to Bioinformatics, Supervised /Unsupervised Machine learning
12:00 to 13:00: Lunch Break
13:00 to 17:00: Practical course 1 - Introduction to Programming part 1 (Please, bring 1 laptop per two students!)

Tuesday (PB)
9:00 to 12:00: Introduction to *Omics, Pros/Cons of different high-throughput methods
12:00 to 13:00: Lunch Break
13:00 to 17:00: Practical course 2 - Programming part 2 (Please, bring 1 laptop per two students!)

Wednesday (PB)
9:00 to 12:00: Design principles of regulatory signaling networks I: Topology and dynamics
12:00 to 13:00: Lunch Break
13:00 to 17:00: Design principles of regulatory signaling networks II: Spatial dimension

Thursday (TL, PB)
10:00 to 12:00: Introduction to Systems Biology an editor's perspective.
12:00 to 13:00: Lunch Break
13:00 to 14:00: Discussion about publishing
14:00 to 15:00: The academic track
15:00 to 17:00: Problem set 1 - Writing an abstract

Friday (PB, JSR)
9:00 to 12:00: Synthetic Biology
12:00 to 13:00: Lunch Break
13:00 to 14:00: Introduction to computational modeling
14:00 to 17:00 Practical course 3 - Computational Modeling (Please, bring 1 laptop per two students!)

Reading Material

References for the different sub-sections will be given during the week. Please read the following short commentary papers **before** Monday (27th of June):

1. Can a biologist fix a radio?--Or, what I learned while studying apoptosis. Lazebnik Y. Cancer Cell. 2002 Sep;2(3):179-82.
2. Q&A: Systems biology. James E. F. Jr. Journal of Biology. 2009.
3. The meaning of Systems Biology. Marc Kirschner. Cell 2005