SIB Training Grant Course Requirements

To allow students coming from different backgrounds or enrolled in different degree programs to participate in the training program, we have redesigned our course requirements to be more flexible. We have replaced a set list of courses with a menu that will allow inclusion of students from any PhD program in the biomedical sciences while allowing them to meet their own program requirements. Students can petition for waivers in special cases. Students must take a course in each of the following four areas listed below. Other courses are taken as will benefit the student’s interests and the requirements of their degree program. All students would additionally have to take PIBS 503 (Research Ethics) and a student seminar.

**Integrative Biology**
- Physiology 510
- Or Neuroscience 602
- Or Physiology 555
  - Systems and Integrative Physiology
  - Principles of Neuroscience (Integrative)
  - Method and Logic in Biomedical Science

**Cell and Molecular Function**
- Physiology 576,577
- Or CDB 530
- Or Neuroscience 601
- Or Biological Chemistry 550
  - Cell Physiology
  - Cell Biology
  - Principles of Neuroscience (Cell and Molecular)
  - Protein Structure and Function

**Genetics and Molecular Biology**
- Human Genetics 541
- Or MCDB 427
  - Molecular Genetics
  - Molecular Biology

**Quantitative and Computational Science**
- Physiol/Bioinf 520
- Or Bioinformatics 527
- Or Bioinformatics 525
- Or Biostatistics 501
  - Computational Systems Biology in Physiology
  - Introduction to Bioinformatics and Computational Biology
  - Foundations in Bioinformatics and Systems Biology
  - Introduction to Biostatistics

**SIB Workshop (no academic credit)**
In lieu of a traditional journal club, the program includes an interactive workshop. Students, faculty and guests meet for two hours once a month during the Fall and Winter semesters. We meet from 5-7pm and enjoy a light dinner. Each year, we jointly pick a specific topic for study that includes relevant journal articles that are used as a springboard for replicating and expanding existing computational models. Recent topics were: 1) prediction of body weight and body composition in mice based on changes in their dietary fat and sugar content, and 2) dual oscillator models of insulin secretory patterns from pancreatic islets. The students work between the monthly meetings in groups of 2-3, with advice from a faculty member, to prepare a presentation of a selected article and replicate the data using MatLab scripts. Proficiency in writing code with MatLab is not a prerequisite, but a commitment to learn and actively participate is expected. Students should plan to attend each of the nine monthly meetings. To provide year to year continuity, share their developing expertise and broaden the overall training experience in systems biology, we expect our trainees to participate in the workshop for one additional year beyond the time they are funded from the grant.