

CABTRAC

September 30 – October 2011

Systems Biology and Cancer

Moderators: Jim Broach and Arnie Levine

Students

The elite quantitative cancer biologist that has all of the needed skills

Collaborative students who have basic skill set and are conversant with other disciplines.

Challenge – communication between different disciplines

Rosetta Stone for systems biology

Students (and faculty) must be familiar with the language from other disciplines.

Students (and faculty) need to speak a common language.

Virtues of training quantitative cancer biology students in collaboration

Each trained to approach problem solving from different perspectives

Collaborations will bring advances in other fields into cancer biology

Information is quickly outdated in rapidly advancing field; collaborations will overcome this.

Recruiting objectives

Recruit students with quantitative training into cancer biology programs

Physicists

Mathematicians

Computational Scientists

What are the minimal skills needed?

Trainees need deep enough understanding of the other's discipline to ask relevant questions.

Improved training in statistics that focuses on methods relevant to systems

Biologists conversant w/ physicists & computational scientists.

Need training in quantitative methods

Need training in computational methods

Need training in programming

Physicists & computational scientists conversant with biologists

Need introduction to biology of cancer

Need introduction to biological systems

Opportunity

Physicists disillusioned with the physics field

More job opportunities in biology than in physics

What does the Quantitative Cancer Biology Program Look like?

Collaborative training program

Facilitate one on one interactions

Diversity of faculty

First steps toward a quantitative cancer biology program.

Key faculty hires to fill in the gaps

Outreach to other departments/programs

Challenge

No institution will have all the needed faculty or resources

How do you overcome this?

Begin with external workshops and information sources

Bootcamp in bioinformatics

Cold Springs Harbor courses <http://meetings.cshl.edu/courses.html>

Virginia Bioinformatics Institute bioinformatics workshops

http://www.vbi.vt.edu/index.php/education_and_outreach/meetings_and_events/

http://www.vbi.vt.edu/marketing_and_communications/press_releases_view/systems_biology_as_a_clinical_approach_to_cancer

U.C. Santa Barbara Kavali Institute for theoretical physics