Education, Training and Outreach

NCI Integrative Cancer Biology Program

Co-Chairs
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Objectives

• Create *new strategies and programs for disseminating the concept* of systems cancer biology to inspire future and junior scientists to pursue its study.

• Develop programs to *encourage the integration of research* approaches from various disciplines (biological, computational, statistical and mathematical science).

• With its strong network of interdisciplinary groups, the ICBP provides a means of *sharing that knowledge* with other researchers at all levels.
Summer Program for Undergraduates

- Provides a unique opportunity for sophomore or junior college students to gain an understanding and appreciation of major questions and the novel approaches being used within the ICBP Centers.

- Students are paired with a faculty-mentor from an ICBP Center based on the students' indicated research interests.

- Program includes mentored research projects and/or laboratory work (9 weeks), faculty lectures, seminars, discussions, webconferences and other activities.

- Evaluations and Follow up
  - Evaluations (Student’s performance by Mentor, Center and experience by Student)
  - Follow-up (Graduate studies and field of study)

- Applications (up 42%); awards (up 69%)
Postdoc Exchange

- Supports a one to six week visit of ICBP or TMEN-associated junior investigator to a “host” ICBP or TMEN Center.

- Goals and Objectives
  - Master and exchange techniques
  - Analyze series of samples, tasks that could not otherwise carried out in their “home” laboratory setting
  - Cross-fertilization of ideas
  - Gain a broader understanding and appreciation of major questions currently under investigation using novel approaches

- Support for travel and housing

- Awards to date: 6
Junior Investigators Meetings

• Attendees: Postdocs, Research Associates and other junior investigators (JIs)
• Meeting fully planned by JIs
• Attended by JIs from all ICBP Centers
• Goals of meeting
  • Career development: How to prepare junior investigators to be the next generation of ICBP/Systems scientists, funding opportunities.
  • Share current science
  • Form collaborations
ICBP Collaborations

- **ICBP Glioma Collaboration** - Deisboeck (UMass), Lauffenburger (MIT), TGEN
- **Computational Modeling of Cancer Biology** - Plevritis (Stanford), I. Lossos (U of Miami)
- **Developing a Systems Biology Model of Genetic/Epigenetic Signaling Networks to Predict Tumor Response to Fluoro-pyrimidine Based Radiosensitization in Rectal Cancer Patients** - Kinsella (Case), (MIT), P. Johnston (Ireland)
- **Integration of Gene Expression Signatures Tumor Phenotypes & Mathematical Modeling** - Quaranta (Vanderbilt), Nevins (Duke), Gray (LBNL)
- **Systems Pharmacology of ErbB Targeted Therapeutics** - Lauffenburger (MIT), Gray (LBNL), Sorger (Harvard), Danuser (Scripps)
- **Integrating Transcriptomics, Genomics, and Epigenomics Data to Model Drug-Resistance Mechanims to MEK Inhibitor in ICBP 12 Breast Cancer Cell Lines** - Huang (OSU), Broad, LBNL
- **Regulatory Networks in Cancer Initiation and Progression** - Lauffenburger (MIT), Quaranta (Vanderbilt); Tyson (Virginia Tech)
- **RTK signaling in single cells** - Gray (LBNL), S. Chu (LBNL), A. P. Alivisatos (LBNL)
Workshops and Symposia

Systems Biology
- 6th International Conference on Systems Biology, Boston, MA (2005)
- Sigma Xi Distinguished Lectureship by Dr. Quaranta (11 lectures) (2006-2008)
- European Commission Conference, Brussels, Belgium (2008)

Mathematical/Computational Modeling
- Mathematical Sciences Research Institute 3-day workshop
- Annual CViT international workshops hosted by the MGH ICBP
- Multi-Scale Modeling Workshop, Seattle, Washington (July 2008)

Integrative Cancer Biology

Bioinformatics
- “Biocomputational tools in cancer biology” Stanford and the Bay Area Bioinformatics Symposium (BABS)
Center-centric Selected Activities

**Huang (OSU/IU)**
- Visiting Scientists
- Junior Investigator Travel Awards
- 2nd Annual OSU-ICBP Data Integration Workshop
- Bioinformatics training

**Quaranta (Vanderbilt)**
- Annual Hands-on Workshops in Mathematical Modeling of Cancer, 2005-2008
- PubClub Webconferences
- Graduate Curriculum Module

**Gray (LBNL)**
- Math Systems Biology of Cancer Workshops
- ICBP Seminars and research meetings

**Kinsella (CWRU/UHC)**
- Working group - integration of systems biology into basic and clinical/translational programs
- Cancer Center Graduate Core Curriculum

**Plevritis (Stanford)**
- Graduate Courses in systems biology of cancer
- Workshop on computational cancer biology

**Lauffenburger (MIT)**
- Short Courses (Graduate)
- Training Courses
- 2006 SACNAS Symposia

**Golub (DFCI)**
- Training workshops - software and analysis methods
- Programs for HS-students and teachers
- Diversity Research Program

**Nevins (Duke)**
- Duke Integrated Genomics (DIG)- Bioinformatics System
- Training - Graduate and MD Fellows

**Deisboeck (MGH)**
- Annual International Tumor Modeling Workshops (3)
- CViT.org
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