Unmet needs in CSU genomics

- Need to provide knowledge and support to faculty who are not trained as genomicists but wish to incorporate more genomics into their research and more research into their classrooms

- Need to provide an easy-access network among faculty with similar research and educational aspirations

- Making up for the difference in access to genomics opportunities and training for both students and faculty at different campuses

- Need to provide all students opportunities to be scientists and to think scientifically as part of their undergraduate experience

- Need to provide students with conceptual links from one course to another
GATC network demographics

- Mailing list of ~45 from 18 campuses
  - Additional campuses we would welcome:
    - Bakersfield, Channel Islands, East Bay, Maritime, Sonoma

- Sandy Sharp, CSU Los Angeles, Network Chair
Progress and Plans

Faculty Development Workshops

• 3-tier Curriculum Workshop, Summer 2011
• Curriculum Workshop, Symposium 2012
• Cloud Computing Workshop, Symposium 2013
  • Nirav Merchant, University of Arizona & iPlant
• Curriculum Workshops, Symposium 2014
  • Informatics Across Curriculum Talk (Chris Kitts, Cal Poly SLO) & CaseIt! Workshop (Mark Bergland & Karen Klyczek, University of Wisconsin - River Falls)
• Curriculum Workshop, Symposium 2015
  • Incorporating genomics into research-based microbiology curriculum
• Joint Workshop with QB, Symposium 2016
  • Preparing Students in Bioinformatics: Challenges, successes, and opportunities
  • Panel discussion and breakout sessions
  • Assess attendees workshop needs
Review of 3-Tier Curriculum Development Plan

- Designed for dissemination and genomics community expansion throughout the CSU and US
- 3 vertically integrated levels
  (outlines available at: http://gep.wustl.edu/curriculum/course_materials_GEP_partners/csuperb_workshop)
  - Level 1 - GE Biology/First Year Biology (Human)
  - Level 2 - Middle/upper level biology majors short modules (Plant & Fly)
  - Level 3 - Semester/quarter course incorporating original genomic annotation by massively parallel undergrads
- Each level to incorporate both
  - biological concepts
  - increasing degrees of original student research linked to participation in the larger genomics community
- Each level to incorporate curriculum developed
  - Within the CSU and/or
  - By other consortia such as Genomics Education Partnership (Washington University)
- Integration of cross-level continuity and engagement and responsive to CA needs
Progress and Plans

Acquire projected usage info and determine ways to negotiate for reduced cost for Next-Gen (NG) Sequencing services

- BGI/Davis
- Within the CSU:
  - CSU Northridge has a MiSeq and is gearing up to accept samples
  - SFSU has a MiSeq and is gearing up to accept samples
  - SDSU has multiple NG sequencers
  - CSU East Bay has an Ion Torrent sequencer
  - MORE?
Summary of GATC/QB Workshop

Preparing students in bioinformatics: challenges, successes and opportunities

• Panel discussion; Q & A; round table; report out from tables; sharing of contact info
• 55 registrants; 38 responders to a pre-survey; ~45 attendees
• Main take-aways
  • no one good way to teach bioinformatics (black box vs algorithm);
  • many resources available already in the CSU system;
  • still need for growth;
  • good to see what companies look for in end-users vs developers;
  • Next Gen sequencing and analysis is doable in the CSU.
• Almost all attendees are interested in more joint sessions.
• Ideas for future workshops:
  • Hands-on training with specific software; e.g. training in iPlant, R
  • Workshop devoted to one or two teaching approaches/curriculum development
  • Basic programming skills
  • RNA-Seq workshop for beginners
  • Interest in renewing the QB networking group
Quantitative Biology

• First meeting in 2013

• Goal: The vision is to create a network of CSU faculty who can coordinate quantitative biology curriculum development, help disseminate existing best practices and seek funding for further growth. 4 speakers on math biology curriculum at 4 campuses

• 2014: lower division curriculum – what are needs and what are campus practices? Can we agree on standards? Indications of interest in bioinformatics

• Joint QB/GATC meeting (2016): how to introduce programming to biology majors; prepare computer scientists in biology (or communicate with biologists)
THANK YOU!

WHAT DO YOU THINK?

Comments?
Questions?