



Private Change Agents

Peter Bruns

Howard Hughes Medical Institute



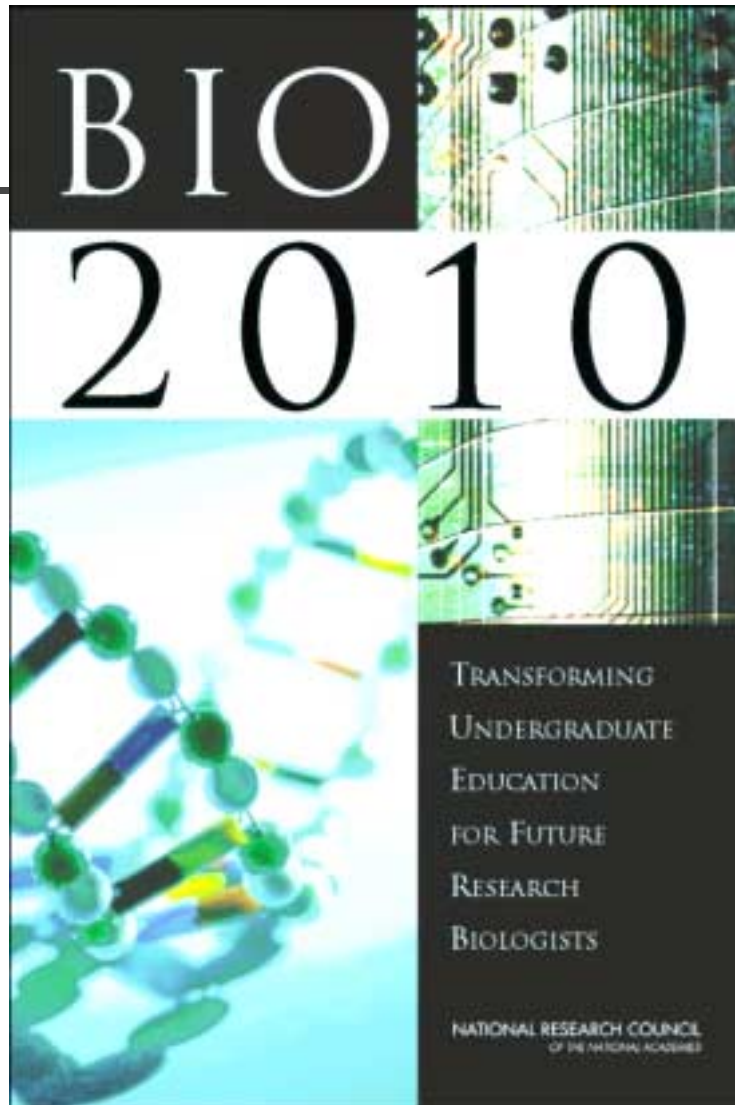
Differences

- Federal
- Private
- Differences in
 - Scale
 - Type



Two Recent Activities

- A study: *Bio2010*
- A program: HHMI Professors

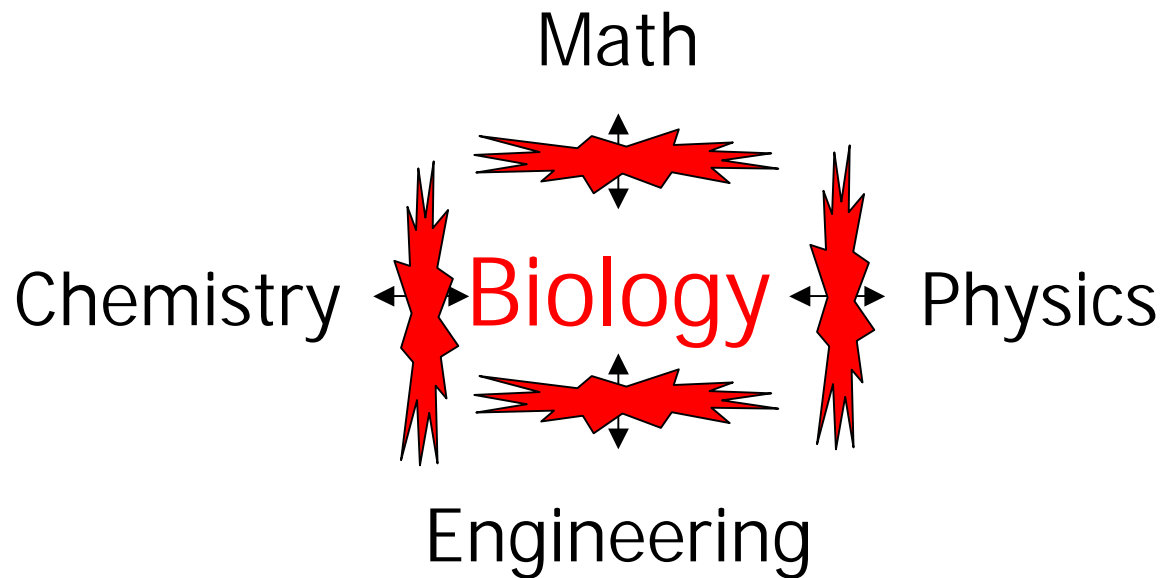


Funded by
HHMI and NIH

Prepublication version
at www.nas.edu
Search for bio 2010

Bio 2010: Findings

- The nature of contemporary bio

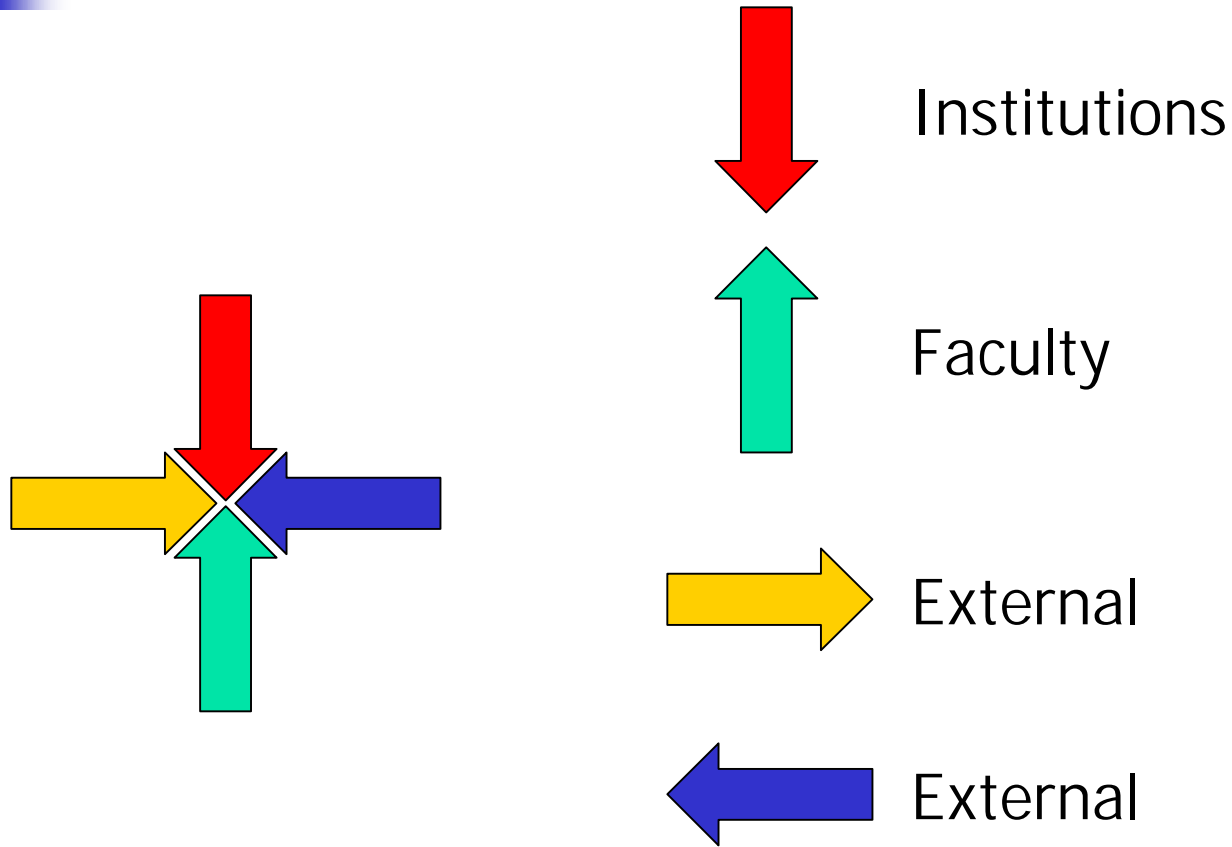




Bio 2010: Findings

- The nature of the academy
 - Dynamic research
 - Static teaching

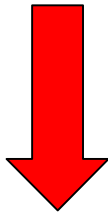
Bio 2010: Multiple Solutions





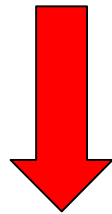
Top Down: Institutional

- University
- College
- Department





Top Down: Institutional

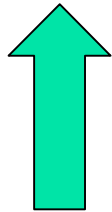


- Reward teaching, student research
- Credit interdisciplinary teaching
- Encourage mutual inclusions (bio, chem, physics, math, engineering)
- Rework bio-major requirements



Bottom Up: Faculty

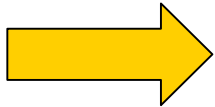
- Add quantitative material to bio courses.
- Add modules to courses
 - Case studies
 - Current examples
 - Research experiences
- Learn from the science of teaching





External: MCAT's, Med School

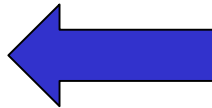
- Requirements drive majors and courses
- Static, not reflective of modern bio and bio-med





External: Teaching Institutes

- Summer
- Modeled in part after CSHL courses
- One topic at a time
 - PBL
 - Intro bio
 - Interdisciplinary courses





HHMI Professors





HHMI Professors

- 20 chosen
- Leading scientists
- Engaged educators
- \$1M over four years
- Meet together



HHMI Professors

- Research scale funding applied to education
- Find people and projects at
 - www.hhmi.org



The Professors

- Manuel Ares, Jr. UC Santa Cruz
- Utpal Banerjee UCLA
- Sarah C.R. Elgin Wash U
- Ellen Fanning Vanderbilt
- Hilary Godwin Northwestern
- Bob Goldberg UCLA
- Jo Handelsman Wisconsin



The Professors

- Graham Hatfull Pittsburgh
- Ronald Hoy Cornell
- Elizabeth Jones Carnegie Mellon
- Darcy Kelley Columbia
- Mary Lidstrom U of Washington
- Richard Losick Harvard
- Yi Lu Illinois



The Professors

- David Lynn Emory
- Rebecca Richards-Kortum Texas
- Alanna Schepartz Yale
- Tim Stearns Stanford
- Graham Walker MIT
- Isiah Warner LSU



Activities

- Student-Faculty Research Groups
 - Groups of students in faculty lab, benefits
 - Undergraduates
 - Lab staff (grad students, post docs)
 - Interdisciplinary research possible
 - RNA splicing
 - Micro arrays: molecular biology
 - Bioinformatics: computer science



Activities

- Research Courses
 - Organized course, 12-20 students
 - Authentic research, unknown results
 - Designated undergrad research lab
 - Expect to generate publications
 - Even room for high school students



Activities

- Course and curriculum development
 - Bioengineering in many areas
 - Biomedical engineering, including clinical
 - Chemical biology
 - Genomics
- Education Group (analog to research group)



Activities

- Research based ed materials
 - DVD: Project fruit fly
 - Genetics cognitive tutor
 - Interactive CD to teach molecular biology to engineers
 - FLASH based animations