NIH Workshop

Creating Nanomedicine Research Teams

May 4, 2004

Denice Denton, Dean

OUTLINE

- UW Background
- Guiding Principles
- Common Needs of ID Centers
- Issues of Concern in Team Science
- Administrative Strategies for Success
- Summary

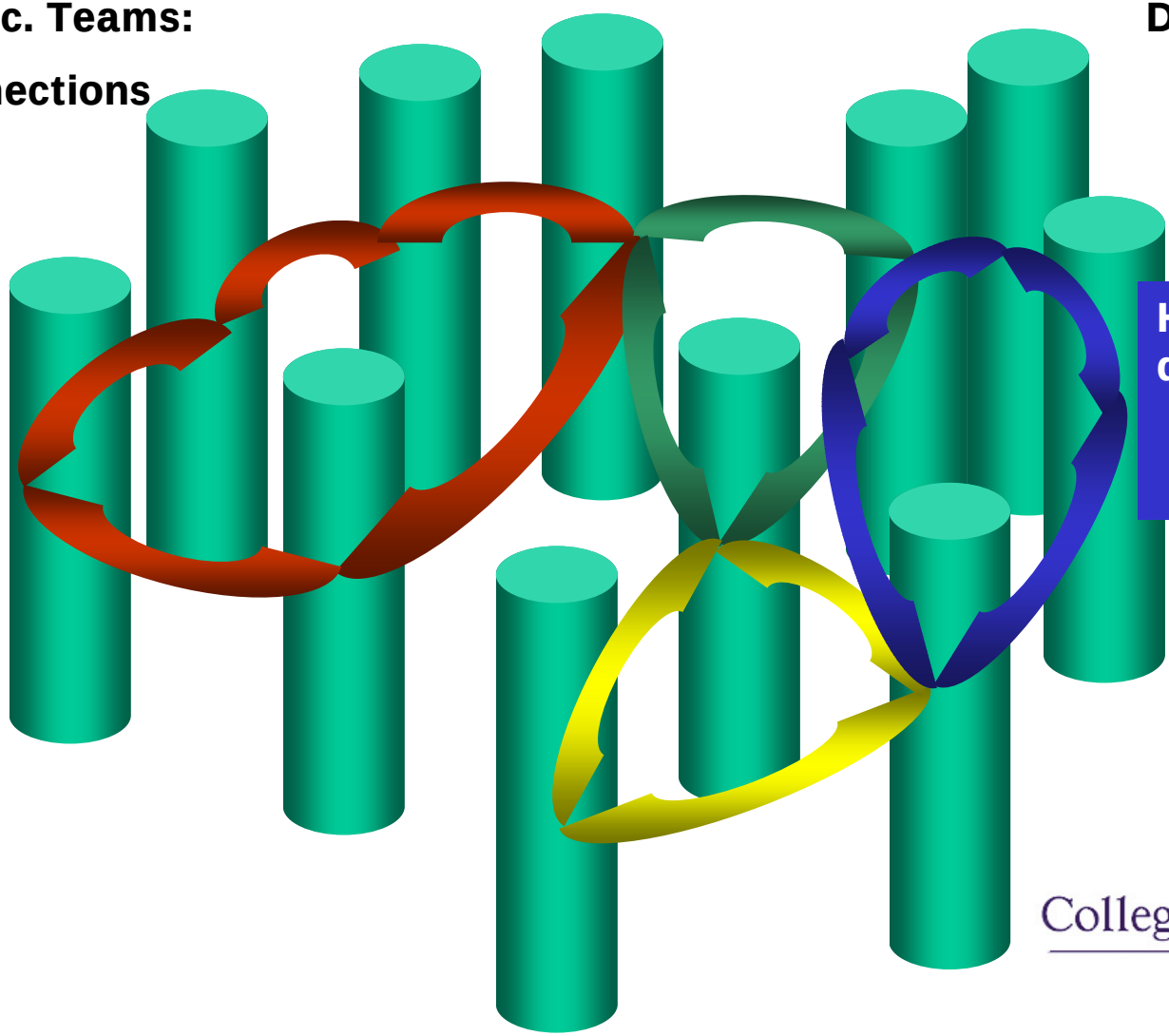
Academic Structure

Interdisc. Teams:

connections

Depts: BS degrees

Core disciplines



How new departments arise

Ex: Genome Sciences

Other units

College of Engineering

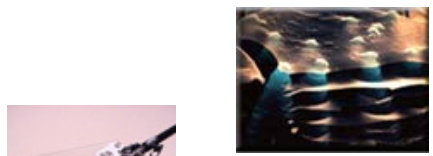
UNIVERSITY OF WASHINGTON

Center Research at the Univ. of Washington

- College of Engineering
  - $80M/yr in funded research
  - 10-15% of total is in team projects
- University of Washington
  - ~$1B extramural Funding
  - Numerous NIH, NSF and DoD ID Ctrs

Interdisciplinary Centers at the University of Washington at the Engineering/Biology Boundary

- UW Engineered Biomaterials: biomaterials that heal
  - NSF Engineering Research Center (B. Ratner, Bioeng, Director)
- National ESCA & Surface Analysis Center for Biomedical Problems: characterization of complex surfaces
  - NIH Resource Center (D. Castner, Bioeng, Director)
- Microscale Life Sciences Center: functional genomics, one cell a time (life-on-a-chip)
  - NIH Center of Excellence in Genomic Sciences (M. Lidstrom, ChemE,
  - D. Meldrum, EE, Directors)
- Center for Nanotechnology: nanoscale processes and devices
  - UW University Initiatives Fund program; NSF IGERT training program,
  - NSF NNIN (C. Campbell, Chem, Director; F. Baneyx, ChemE, Assoc. Dir.)
- Biomimetics: genetically-engineered proteins for functional nanoinorganics
  - Army Research Office Defense University Research Initiative on Nanotechnology (M. Sarikaya, MSE, Director)
- Biorobotics: minimally-invasive surgical techniques using robotics
  - Joint effort between Surgery and EE (Blake Hannaford)



Guiding Principles for Team Research

- Individual creativity should be preserved while taking advantage of the synergy of team approaches
- Leadership, management structure, and communication are essential elements
- Diversity is key!!
- Integrity, trust, and respect lay the groundwork for effective team research
- All teams need an impetus, a motivation that brings the team together and encourages collaboration (NOT just $$$$!!!!)

The Bottom Line and Diversity

- Catalyst study connecting gender diversity and financial performance for 353 Fortune 500 companies (5 industries)
- Measured Return on Investment (ROI) and Total Return to Shareholders (TRS)
- Companies with highest representation of women on their top mgmt. teams
  - 35.1% higher ROI
  - 34% higher TRS
- http://www.catalystwomen.org/publications/executive_summaries/financialperformance.pdf

Common needs

- Administrative support
  - Small teams: may be provided by unit administrative staff
  - Larger teams: need full-time, dedicated, and skilled staff
- Support structure for young faculty
  - Mechanism for individual publication
  - Seed funds
  - Access to special resources
  - Mentoring
- Administrative plan: take care of problems EARLY!
- Evaluation/assessment plan: set goals, measure success
- IP management plan
- Phase-in and phase-out mechanisms: ramp-up period; finite lifetime

Factors That Make Team Research Paradigms Succeed or Fail

- **Leadership:** vision, enthusiasm, commitment to diversity, true team spirit
- **Communication:** time, effort, technology, training
- **Management structure:** integrate leadership and communication, agile and adaptive
- **Team-friendly env:** integrity, trust, respect, sharing
- **Flexibility:** Team composition will change!
- **Institutional commitment:** space, administrative support, faculty investment

Issues of concern for team science

- Young investigators and career development
- Intellectual property management
- Metrics for success/failure
- Training environment
  - richness vs. negative impact on graduate student and post-doctoral training
- Phase-in and phase-out
- Long lead time to develop team and become productive
- Cultural differences, including differences between academia and industry
- Administrative burden to highly productive faculty
- HR, HR, HR!!!!

Administrative Strategies

- Fiscal Policy: individual subaccounts
  - Credit to each investigator
  - Indirect cost return to each department
- Fiscal Policy: partial indirect cost return to center from "core" budget; partial to administering department
- Promotion and Tenure Policy: value collaborative efforts
  - Balance between individual and team research
- Dean's Office Policy: reward structure for team efforts
  - Revenue stream from center activities directed back to team research activities

Administrative Strategies

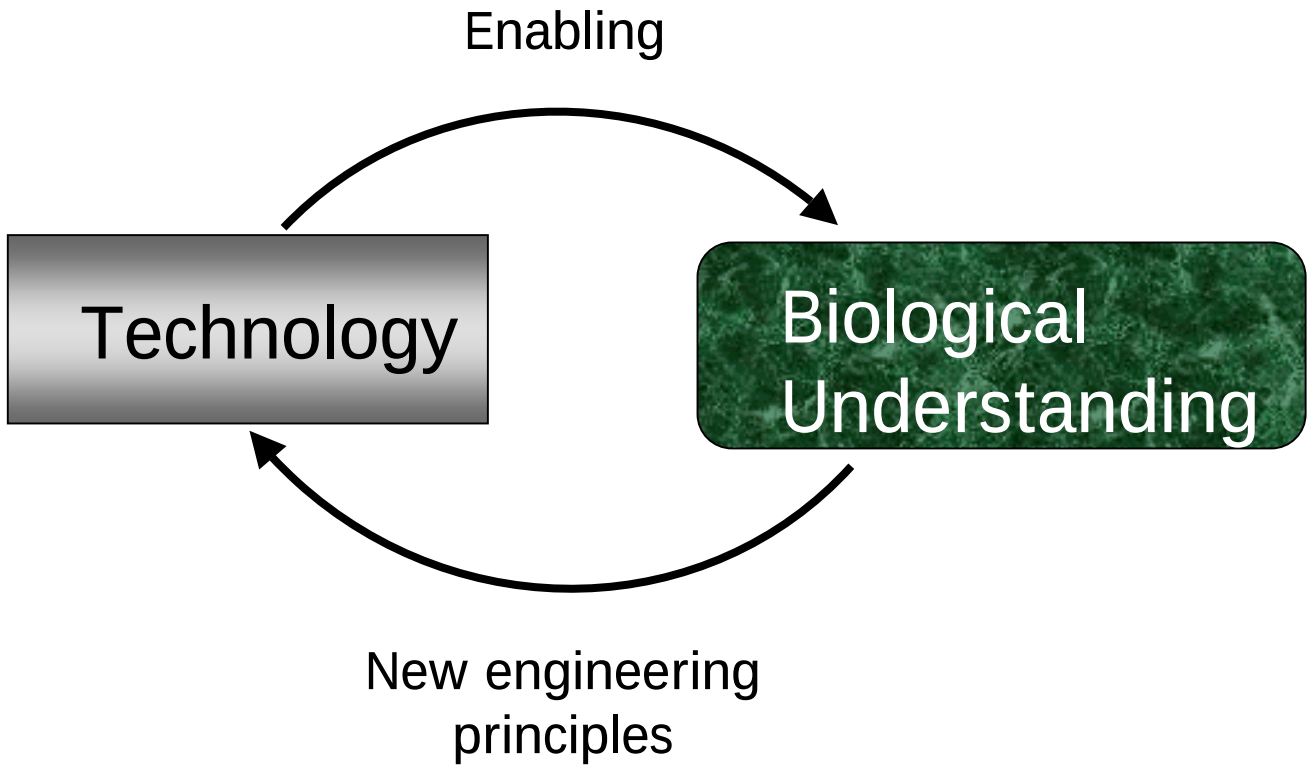
- Problem: visionary faculty often not good managers
  - Provost, Deans and Chairs need to be more involved in the early stages of the center development
- Workshops for Center Directors
  - Support group for standing Directors and faculty interested in developing centers
  - Topics
    - Administrative structures
    - Time management
    - People management (HR!)
    - Resource reallocation
    - Advisory boards
- Senior administrative staff

College of Engineering
UNIVERSITY OF WASHINGTON

Summary

- Build a strong and diverse team!
- All key issues must be addressed up front
- Support from central admin. is essential
- Involve agencies, investigators, universities in planning and implementation
- Team research can build bridges, connect units, add richness to training environment

Partnership Between Biology and Technology

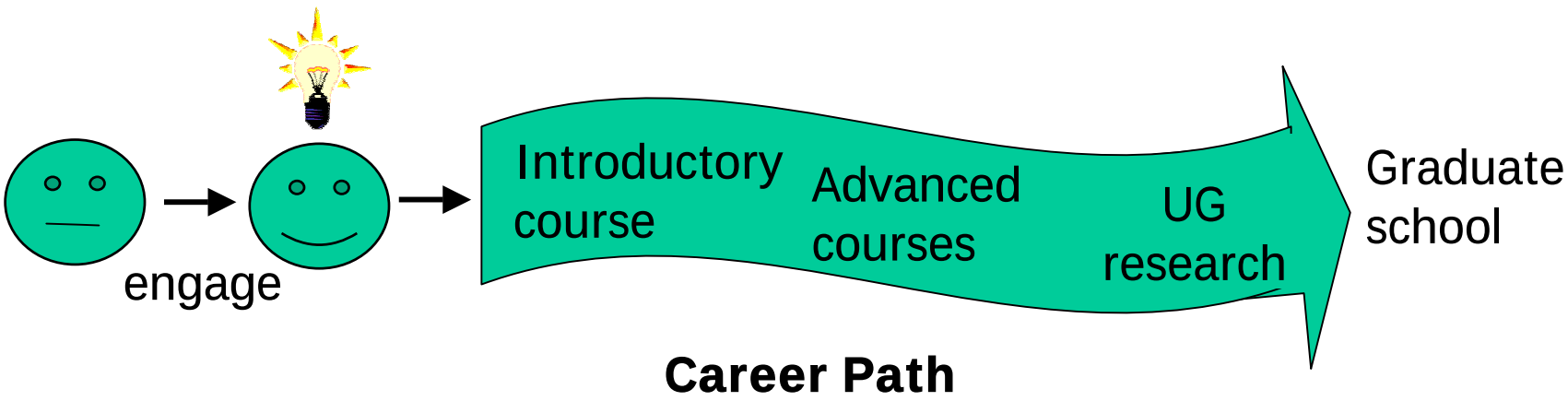


Creating a need for engineering students working at the technology/biology boundary

College of Engineering
UNIVERSITY OF WASHINGTON

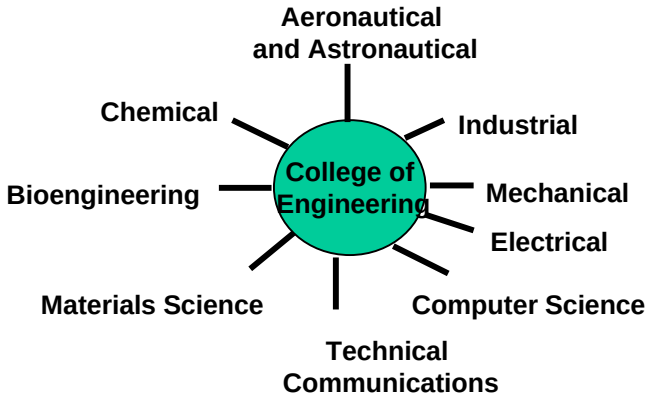
Goal

- Attract, engage, and motivate outstanding engineering and computer science students to a career at the technology/biology boundary

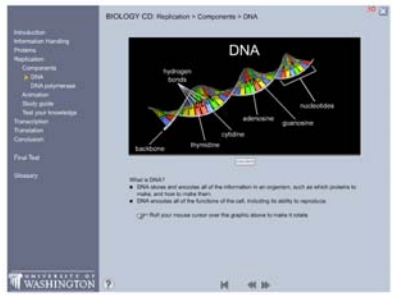


Program Elements

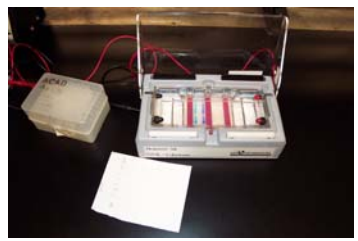
- 1) Development of life sciences-oriented pathways within the 9 engineering majors at the UW (other than Bioengr).



- 2) Development of curricular enhancements for introductory courses.

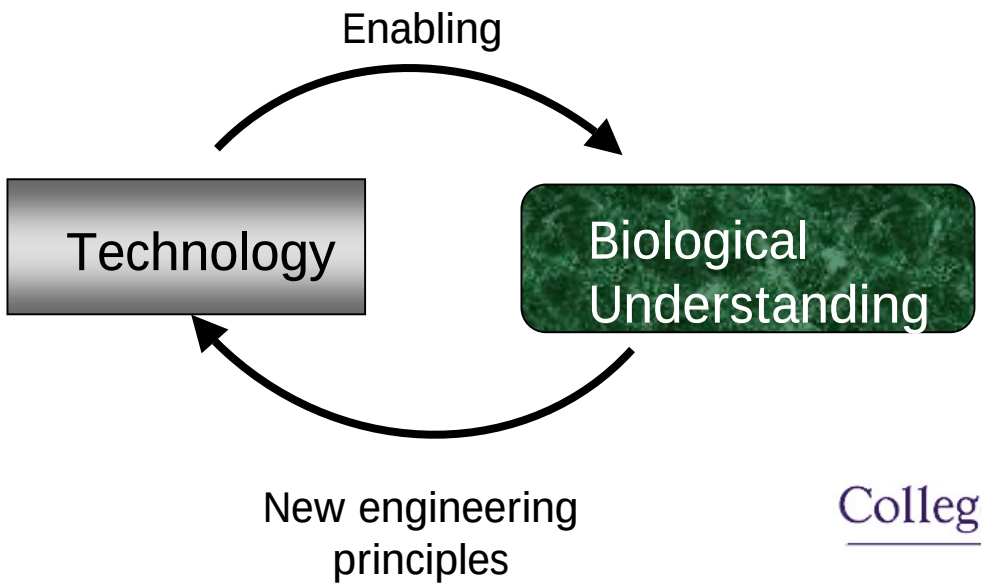


- 3) Creation of a program for undergraduate research projects focused at the life science/engineering boundary.



Projected Outcomes

- Cohort of outstanding engineering students with interest in and expertise at the engineering/life science boundary
- Exportable model for bio-oriented pathways within traditional engineering majors
- Curricular tools for exporting to other programs



College of Engineering
UNIVERSITY OF WASHINGTON