

# EDUCATION RESEARCH within COLLABORATIVE PROJECTS

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# Overview

- WSU Office of Grant and Research Development
  - Campus-wide research development support
  - College of Education initiative
  - Proposal Management Unit
- Collaborative funding opportunities
- Integration of education research in collaborative projects

# OGRD Campus-wide Services

- Productive Proposal Writing workshops:
  - 7-sessions
  - Early-career faculty
- Community Of Science:
  - Funding searches
- Targeted delivery of funding announcements
- Expertise searches



# OGRD/College of Education Initiative

- Brown bag lunch series
- Summer 1:1 consultation service
  - Targeted funding searches
- Led to hiring of a COE Research Development Coordinator



# OGRD Proposal Management Unit

- Supports development of large-scale, interdisciplinary proposals
- NSF report Rebuilding the Mosaic: Fostering Research in the Social, Behavioral, and Economic Sciences (2011): “Future research will be interdisciplinary, data-intensive, and collaborative”

## The Increasing Dominance of Teams in Production of Knowledge

Stefan Wuchty,<sup>1\*</sup> Benjamin F. Jones,<sup>2\*</sup> Brian Uzzi<sup>1,2\*†</sup>

We have used 19.9 million papers over 5 decades and 2.1 million patents to demonstrate that teams increasingly dominate solo authors in the production of knowledge. Research is increasingly done in teams across nearly all fields. Teams typically produce more frequently cited research than individuals do, and this advantage impact research, even in detail for sciences and the process of knowledge.

An acclaimed to sociology of science of the individual covery (1, 2). This tra contributions of solitar

## FACILITATING INTERDISCIPLINARY RESEARCH

Committee on Facilitating Interdisciplinary Research  
Committee on Science, Engineering, and Public Policy

NATIONAL ACADEMY OF SCIENCES,  
NATIONAL ACADEMY OF ENGINEERING, AND  
INSTITUTE OF MEDICINE  
OF THE NATIONAL ACADEMIES

# Proposal Management Unit

- Focus on larger awards (\$1 million/year +)
- Involvement of multiple Co-PIs and institutions
- Support the PI and the team from planning to submission



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\*results not typical

# Educational Research within Collaborative Projects

- Educational interests of sponsors often include:
  - STEM education: curriculum development and dissemination; teacher training; student learning
  - Increasing underrepresented groups in STEM programs and professions: recruitment and retention
  - Interdisciplinary approaches to teaching, learning, and research

# Collaborative Opportunities – e.g.

## USDA NIFA



## Cooperative Agricultural Projects (CAPs)

- Integrated Research/Education/Extension:
  - Sustainable Bioenergy
  - Agricultural and Natural Resource Science for Climate Variability and Change
  - Childhood Obesity Prevention
  - Food Security
  - Food Safety



# Collaborative Opportunities – e.g.

NSF



National Science Foundation  
WHERE DISCOVERIES BEGIN

Various mechanisms

- Solicited and Unsolicited Interdisciplinary Programs
  - Water Sustainability and Climate, SRN
- Center Competitions
- Education and Training Grants
  - IGERT; REU
- Workshops, Conferences, and Symposia

# Collaborative Opportunities – e.g.

## NASA



- NASA Innovations in Climate Education (NICE)
  - Advance the understanding of how to effectively teach global climate change concepts
  - Ensure the future diversity of a well-prepared workforce in STEM fields
- NASA Astrobiology Institute
  - Support outreach by providing content for K-12 education programs, teaching undergraduate classes, and communicating directly with the public

# Funded Collaborative Projects

## Northwest **A**dvanced **R**enewables **A**lliance

- \$40M USDA NIFA Sustainable Bioenergy project led by WSU and involving multiple partners
- Educational objectives:
  - Meet the workforce needs of the bioenergy/bioproducs economy
  - Develop a broad, integrated view of the biofuels problem among emerging scientists and engineers



# NARA Educational Objectives, cont.



- Enhance communication skills of scientists and engineers so they can better engage society in their work
- Develop the next generation of energy leaders for industry, academia, and the civic sector
- Improve biofuels literacy of teachers educating our future citizens
- Strengthen overall science literacy of students in areas particular to biofuels

# Funded Collaborative Projects



**REACCH**  
Regional Approaches  
to Climate Change -  
PNA

- \$20M USDA NIFA Climate Change project led by University of Idaho and involving WSU and OSU
  - K-12 education: Curriculum development; teacher training workshops
  - Undergraduate education: REU-style program
  - Graduate education: IGERT-style program; outreach expectation

# Active Collaborations – e.g.

## WSU Center for Environmental Research, Education, and Outreach (CEREO)

Recently funded projects:

- BioEarth – Regional Earth System Modeling
- **W**atershed **I**ntegrated **S**ystem **D**ynamics **M**odeling
  - “. . . will contribute to a larger project developing interdisciplinary graduate education at WSU which recognizes the value of academic disciplines as well as the rapidly growing need for scientists and engineers who can communicate across disciplines and understand the real and prospective interactions between their work and the world of policy.”

# Additional Research Questions – e.g.

## Does Interdisciplinarity Promote Learning? Theoretical Support and Researchable Questions

*Lisa R. Lattuca, Lois J. Voigt,  
and Kimberly Q. Fath*

Do students in interdisciplinary courses and programs learn better or learn more than those in discipline-based curricula? Advocates portray interdisciplinary courses as more engaging than disciplinary courses because they capture students' intellectual interest and help them connect information from discrete disciplines. Some argue that interdisciplinary study better prepares students for work and citizenship by developing higher-order cognitive skills such as problem-solving, critical thinking, and the ability to employ multiple perspectives (e.g., Hursh, Hass, & Moore, 1983; Newell, 1990; Newell & Green, 1982). William Newell (1994) claimed that interdisciplinary courses could increase students' ability to evaluate experts' testimony; tolerance for ambiguity; sensitivity to ethical issues and disciplinary, political, or religious bias; creative or original thinking; and humility or listening skills.

- What are the educational outcomes of interdisciplinary courses?
- How do these outcomes compare to those of students in discipline-based courses?
- What types of students experience the greatest success in interdisciplinary courses?
- What theories of learning, explicit or implicit, do instructors of interdisciplinary courses espouse?
- What kinds of guiding or organizing questions drive these courses?

# Getting Involved

- Find out about centers and thematic research areas on campus
- Build relationships
- Work with your institution to create opportunities for interaction and decrease barriers to collaboration
- Serve on interdisciplinary graduate student committees
- Informal – word of mouth, etc.