Responsible Conduct of Research, Scholarship, and Creative Activities

Collaborative Research

Updated February 2014

Objectives

- Think about your research team(s)
  - What is the value of conducting research as a team effort?
  - What are the challenges of team work?
  - What characteristics of research team members should you understand better in order to improve collaboration?
  - What do you contribute to a collaborative working atmosphere, and how could you contribute more effectively?

Objectives, *continued*

- Consider a problem that you want to investigate. What expertise and skills are needed to research that problem? Identify one or more potential collaborators whose expertise and skills complement what you have to offer.
- Describe a topic that represents a major challenge for researchers in your discipline. Indicate ways in which a collaborative, interdisciplinary approach could be especially useful in addressing that challenge.

Quiz

There is no quiz for this topic.

Why Collaborate?

- The most important, complex, and challenging problems require attention from interdisciplinary teams of researchers using a variety of theoretical and methodological approaches
- The quality of research is enhanced when investigators from multiple disciplines share theoretical perspectives and research methods
- Collaboration amongst investigators helps to improve everyone's expertise and skills as research team members learn from each other

Examples of Challenging Research Problems: Grand Challenges in Engineering, National Academy of Engineering

Make solar energy economical • manage the nitrogen cycle • advance health informatics • prevent nuclear terror • advance personalized learning • provide energy from fusion • provide access to clean water • engineer better medicines • secure cyberspace • engineer the tools of scientific discovery • develop carbon sequestration methods • restore and improve urban infrastructure • reverse-engineer the brain • enhance virtual reality

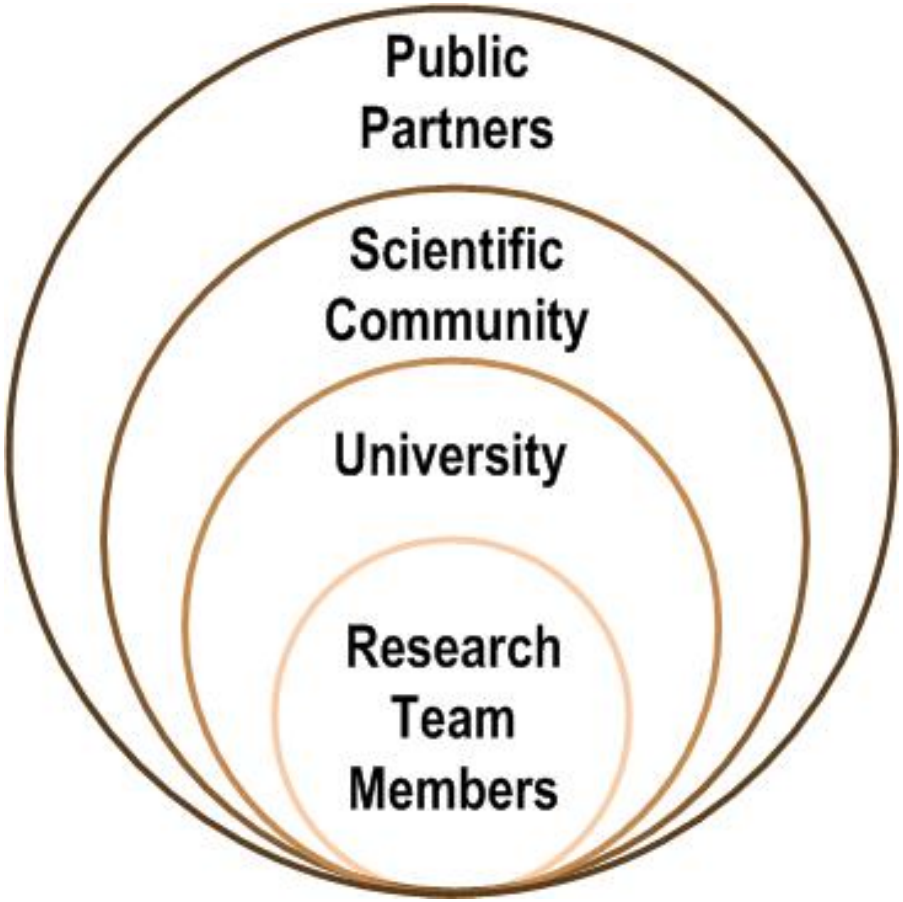
http://www.engineeringchallenges.org/cms/challenges.aspx

Example: International Consortium Completes Human Genome Project, National Human Genome Research Institute, 4/14/03

"The International Human Genome Sequencing Consortium, led in the United States by the National Human Genome Research Institute (NHGRI) and the Department of Energy (DOE), today announced the successful completion of the Human Genome Project more than two years ahead of schedule. … The international effort to sequence the 3 billion DNA letters in the human genome is considered by many to be one of the most ambitious scientific undertakings of all time. … The International Human Genome Sequencing Consortium included hundreds of scientists at 20 sequencing centers in China, France, Germany, Great Britain, Japan and the United States."

http://www.genome.gov/11006929

Collaborate With Whom?



Collaborate With Whom:

Research Team Members

- Collaboration should characterize research teams in any setting, including labs or projects that are associated with only one academic unit
- Research team members may include faculty, staff, postdoctoral fellows, graduate students, and undergraduate students

Collaborate With Whom:

Other Investigators at MSU

- Interdisciplinary and cross-disciplinary research is highly valued and extensively practiced at MSU and elsewhere
- Consult the MSU expertise database (http://scholars.opb.msu.edu/) to identify other scholars with similar interests

How To Get Involved: The Office of Research Facilitation and Dissemination @ MSU (http://resfacil.msu.edu)

This office provides:

- Grant-writing assistance for approved cross-disciplinary, all-university, or multi-department proposals
- Information regarding open grant competitions and requests for proposals (RFPs)
- Free Wiki and blog hosting for project and proposal development
- Direct training on grant writing
- Travel support for faculty visits to federal and other grant officers for discussion of possible projects

Collaborate With Whom:

The Scientific Community

- MSU scholars frequently collaborate with colleagues from other universities and from industry in both small-scale studies and large-scale multi-site projects
- Critical components of such collaborations include:
  - Communication – technology-assisted meetings) can be substituted for in-person meetings
    - Skype (www.skype.com)
    - ReadyTalk (www.readytalk.com)
    - Elluminate (www.elluminate.com)
  - Shared understanding of roles, responsibilities, data management, and data ownership

Collaborate With Whom:

The Scientific Community, *continued*

When pursuing international collaborations, establish explicit written expectations and funding for:

- Travel
- Communication plans
- Cross-cultural respect
- Authorship and data ownership
- Infrastructure

Source: *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (2nd ed., p 208-209, (2006), Burroughs Wellcome Fund & Howard Hughes Medical Institute

Best Practices: Collaboration Among Research Universities: A Model From The US Midwest (1/31/09)

"Throughout its 50-year history, the consortium of prominent research universities in the American Midwest known as the Committee on Institutional Cooperation (CIC) has sought to create a "union of strengths" … With the recent launch of several large-scale, high-profile initiatives (a shared fiber-optic network; an agreement with Google to digitize 10 million library volumes; and a shared digital repository called HathTrust), the CIC has demonstrated its understanding that in today's networked world, no university can expect to achieve greatness while standing alone."

B. McFadden Allen, *GlobalHigherEd*, http://globalhighered.wordpress.com/2009/01/31/collaboration-among-research-universities/

Collaborate With Whom:

Public Partners

Collaboration may involve:

- Accepting requests from public agencies or organizations to conduct research on problems that challenge the community
- Involving community representatives on a research advisory board or the research team to help assure that research solutions are likely to be workable in real-life
- Sharing research results with the public so that findings can be shared with the people who are most in need of the information

Collaborate With Whom:

Public Partners

- Involving community is the "MSU Way," facilitating the MSU land-grant mission

> "As the nation's founding Land Grant University, MSU has long been committed to both generating new knowledge and applying that knowledge to address fundamental problems facing communities, nations, and the world."

- Go to the MSU Office of Outreach and Engagement (http://outreach.msu.edu/default.aspx) for more information about research collaborations between MSU and public partners

Collaborate With Whom:
Collaboration Agreements

- Some agreements to collaborate are informal. Others are formal and require approval by Contracts & Grants and/or Office of the General Counsel
- Some agreements may be part of grant awards, sub-contracts, or other funding activities
- Still others are part of University-public research partnerships (http://outreach.msu.edu/default.aspx)
- Educational collaboration agreements are often facilitate by the Office of the Provost and/or International Studies and Programs (if international)

Effective Collaboration

"Collaboration is a major responsibility – one that is not to be entered lightly. It will take time, effort, and the nurturing of relationships."

Setting Up Collaborations, *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (2nd ed., p.202), (2006), Burroughs Wellcome Fund & Howard Hughes Medical Institute.

Effective Collaboration:

Role of the Principal Investigator (PI)

The PI must provide leadership with respect to:

- Clear written expectations about the roles and responsibilities of each research team member
- A management plan that specifies the chain of command for important project components
- Adequate training and supervision
- Compliance with applicable policies and regulations

Steneck, N. (2006-HTML Version). *ORI Introduction to the Responsible Conduct of Research*, http://ori.dhhs.gov/education/products/RCRintro/

Effective Collaboration:

Responsibilities of Collaborators

Personal qualities of a good collaborator

- Honesty
- Openness
- Fairness
- Hard-working
- Respect
- Reliability

Source: *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (2nd ed., p. 207), (2006), Burroughs Wellcome Fund & Howard Hughes Medical Institute

Effective Collaboration:

Sharing Credit

- Authorship – discuss plans at the outset of the collaboration and review periodically
- Patents
  - Discuss likely ownership of potential discoveries and shared work
  - Determine who will manage patent applications and maintain patents that are received

Source: *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (2nd ed., p 206), (2006), Burroughs Wellcome Fund & Howard Hughes Medical Institute

Effective Collaboration:

Interpersonal Relationships

- Research teams are likely to be diverse
  - Interdisciplinary
  - Multi-cultural, multi-ethnic, multi-national
  - Differing levels of research experience
  - Differing levels of education
- Best practices
  - Get to know your colleagues and learn to appreciate their diverse attributes
  - Respect their contributions, interests, and needs
  - Educate each other

Effective Collaboration:

Desirable Work Habits

Some of the adages from *All I Really Need to Know I Learned In Kindergarten* (Robert Fulgham, 2003, Random House) hold true when applied to the research environment:

- Share everything
- Play fair
- Don't hit (hurt) people
- Put things back where you found them
- Clean up your own mess
- Don't take things that aren't yours
- Say you're sorry when you hurt somebody

Sources

- *On Being a Scientist: A Guide to Responsible Conduct in Research*, 3rd edition, 2009, page ix, http://www.nap.edu/catalog.php?record_id=12192#toc
- Steneck, N. (2006-HTML Version). *ORI Introduction to the Responsible Conduct of Research*, http://ori.dhhs.gov/education/products/RCRintro/
- *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (2nd ed., p. 207), (2006), Burroughs Wellcome Fund & Howard Hughes Medical Institute.

Sources, *continued*

- Cohen, C.M., & Cohen, S.L. (2005). *Lab Dynamics: Management Skills for Scientists*, Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press.
- Klomparens, K., Beck, J., Brockman, J. and Nunez, T. (2008). *Setting Expectations and Resolving Conflicts in Graduate Education*. Washington D.C.: Council of Graduate Schools Publications.