Raising the Ante
Keys to Success in Winning Larger Awards

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From global sustainability to renewable energy to the origins of life in the cosmos to forecasting and potentially mitigating economic upheavals, the largest scientific challenges—and those that may hold the greatest opportunity for transformative technological solutions into the 21st century—are interdisciplinary in nature. The skills required from a new generation of trained scientists and engineers to address these challenges have been and continue to be broadly discussed and debated.
Many pressing problems requiring solution are interdisciplinary, so there is a mismatch between current disciplinary structure and the nature of inquiry.

The university, department or school must establish metrics to reward interdisciplinary activity.

Instead of implementing interdisciplinary approaches from the perspective of a thoroughgoing reform, many universities are simply adopting the interdisciplinary labels.

- Diana Rhoten, “Interdisciplinary Research: Trend or Transition”
Other Large Scale NSF Grant programs:
• PIRE – Partnerships in International Research & Education
• EFRI – Emerging Frontiers in Research & Innovation
• ERC – Engineering Research Centers
• STC – Science & Technology Centers
• MRCT – Materials Research Centers & Teams

US Department of Education
• FIPSE – Fund for the Improvement of Postsecondary Education

National Institutes of Health
• T32, R25: Institutional grants for training and/or curriculum development in the health sciences
So You Want to Form an Interdisciplinary Team? ...

...Good Luck!

If your research depends on federal funding agencies, you have probably noticed that requests for proposals that encourage (or in some cases require) an interdisciplinary team are becoming more common. Interdisciplinary research, by definition, involves two or more disciplines that are usually considered distinct. Therefore, I am not talking about disciplines like mineralogy and petrology, where the overlaps and connections are obvious. Try instead mineralogy and biochemistry, or geochemistry and geophysics, where one can be left scratching one’s head looking for shades of grey in between two otherwise disjointed fields. Yet interdisciplinary teams are formed all the time—they are assembled typically to solve real world problems that individual disciplines can not add up to.

For example, look into the bioremediation of non-aqueous phase liquid (DNAPL) soil hydrocarbon. One would need a physical chemist and a biologist on a board, a scientific laboratory, and a detailed plan. And if that is not real enough, then throw in the ability of a long-term, close-knit, highly cooperative and productive effort is probably much lower than one would ever hope, or even imagine.

Even if the pitfalls implied above can be overcome, the battle may still be lost. This is because forming an effective interdisciplinary team is often perceived as a matter of mechanically selecting individuals with the specialties required, while also considering practical and/or proposal-enhancing factors such as the accomplishment, status, and availability of potential group members. Recent academic studies centered on the psychology of collaborative scientific endeavors are actually few and far between, but the literature on team performance in general has shown, perhaps not surprisingly, that attributes such as values, attitudes, beliefs, and personality traits are even more important to team performance than skills, competencies, and intelligence. And in these days especially, there is more to it. Society continually demands more and more from the researchers...
Before you start...

Ten questions to discuss before starting a collaboration

- What do we expect to get out of this?
- Who is going to do what and by when?
- Who will have access to our data?
- Who will give public presentations, and how much data will they reveal?
- How will we assign authorship?
- How will we decide when to publish?
- Who owns the intellectual property?
- Will we share our reagents with other labs?
- What happens if one of us leaves the project?
- What happens if one of us wants to form a separate, but related, collaboration?

Adapted from: NIH Office of Ombudsman
“The meek may inherit the earth, but not the grant dollars.”
- J. Paul Getty