Team Science -- Sharing the Sandbox

Summary

- Though team-type collaborations can bring rich rewards, you’ll need thorough plans in place to avoid pitfalls.
- At the outset, spell out in writing contentious areas such as authoring.
- Find out whether your institution rewards people who are part of a team.

As research increasingly taps the expertise of multidisciplinary collaborative groups, more scientists are dealing with the challenges of team science.

While the rewards for working collaboratively abound, several areas can pose difficulties that can stymie the best of intentions. Here we highlight the main areas to consider when thinking about participating in team science and give you some tips for smoothing the way.

Pros and Cons of Teams

Before deciding whether being part of a team is right for you, consider these benefits:

- You will likely be exposed to a broader range of ideas, knowledge, and perspectives than you would otherwise.
- Your research may be better served by high levels of collaboration, e.g., it requires a broad range of expertise or is in a poorly defined area.
- If you’re a junior member of the team, you may gain better access to mentors.
- Many people report that it’s fun and intellectually stimulating to be part of a team.

And know about possible drawbacks (read options for dealing with or mitigating them in the text and sections below):

- You will have less autonomy, e.g., you may need the group’s approval to proceed in a new research direction.
- You will need to accept the group’s processes and culture, including possibly spending time in team meetings and discussions with team members.
• You may not be first author on a paper published by the team even though you led a significant part of the research.
• Reviewers may not see you as sufficiently independent to lead a major project.
• Your institution may not recognize teamwork as indicating sufficient independence for a promotion.
• A multidisciplinary application might not fit any of CSR's standing study sections.

**Being independent enough to lead a major award.** Reviewers need to believe that you are sufficiently independent to be able to lead a major project. One way to deal with this issue is to apply for a multiple-PI application.

• NIH started using the multiple-PI approach to address this very problem.
• Any team member who is playing a key role executing the studies or making crucial intellectual input into the project can be a PI.

**Institutional recognition.** Make sure you aren't compromising your chances of advancement. Even institutions that profess to encourage team science may not actually reward it. Before jumping in, find out:

• Does your institution have ways to recognize and reward a team effort?
• Will being part of a team compromise your ability to get tenure?

**Study section expertise.** None of CSR's standing study sections may have all the expertise required to review your multidisciplinary application.

Review the committee rosters online at CSR Study Section Rosters (http://www.drg.nih.gov/committees/rosterindex.asp). If you think the expertise may fall short, describe your research in terms that people who aren’t in the field can understand.

Even after you weigh all the pros and cons, your personal preference is key. You may feel that either a team or solitary approach simply suits you better. Know yourself before moving ahead.

**Making a Team Click**
Even though a science team is work- and goal-oriented, maintaining positive personal relationships is paramount. Once you decide to link in, you’ll need to be aware of the social factors that underlie a well-functioning team, such as:

- Trust
- Honest discussion
- Commitment
- Accountability

A successful team also needs good leadership, team building, a shared vision, ways to give credit, positive communications, and the ability to resolve conflict.

Below we touch on more concepts underlying teamwork, give you some concrete steps to take, and link to resources with more in-depth information.

**Spell Out Expectations**

Probably the most important action a group can take to avoid rude awakenings is to spell out expectations at the outset. Make sure all persons understand their role and responsibilities and agree as a group on expectations.

Because people are more likely to collaborate smoothly when roles and responsibilities are clear, it's a good idea to create a shared vision with a written vision statement. Discuss the vision statement as a group so the whole team sees how the pieces fit together.

Have the group set rules for areas that are ripe for future conflict, such as determining who will be first author, and make sure all parties agree. Planning ahead puts everyone’s expectations on the same page.

Here are some processes a group can put in place before embarking on the research:

- Set up a publications committee to deal with authoring and have the team agree on the rules.
  - Create a “prenuptial” agreement for major items such as who writes the manuscript and who is first author.
  - Alternatively, just have a well-defined written process.
- Create rules for other types of credit and honors, such as making public presentations.
• Address intellectual property and patent issues.

**Meet Regularly, Share Knowledge**

Effective teams meet regularly to discuss what’s going on, including details about their work.

Think about scheduling group activities, which help people see themselves as striving toward a shared goal. These can include weekly lab meetings to talk about results as well as regular journal club meetings and, less frequently, formal seminars by group members.

To promote knowledge sharing, keep the following points in mind.

**Encourage constructive criticism.** The best collaborations occur when people feel free to speak their minds even when they disagree with their fellow team members.

**Build trust.** To reach a high level of sharing, group members must show respect for one another. Members need to feel that their colleagues will act for the good of the whole team. People will not share their ideas, knowledge, or data if they feel that others are not being honest or will use shared information against them.

**Deal with conflict.** Conflict will inevitably arise, and dealing with it is critical.

It helps to think of conflict as a way to expand thinking and a potential source for igniting new research directions. Conversely, ignoring conflict will compromise trust and can undermine the research.

An effective team needs a way for people to bring up sensitive issues as they arise, so conflict does not fester. Early intervention can help resolve problems before they loom large.

**Step Out of Your Comfort Zone**

If you are thinking about joining or setting up a research team, being open-minded is essential.

People from different disciplines usually have different perspectives and problem-solving approaches. While these differences can be a source of creativity -- even groundbreaking insight -- they can also generate friction.
You'll need time and patience to listen to ideas that are at odds with your world view. It helps to be able to see a different viewpoint as a horizon-broadening opportunity rather than a barrier you must overcome.

**Collaborations Can Differ**

Groups can decide what level of collaboration they desire, depending on the needs of the research and the people involved.

With a moderate level of collaboration, each scientist may work separately on part of a research problem, with results integrated at the end.

At a higher level of collaboration, a team works together to solve problems and share objectives and data. Because they collectively make decisions on the next step, the whole team needs to stay apprised of what’s going on.

Working on a team can be both rewarding and challenging. If you decide to go down this path, learn more by talking to colleagues who have been on teams and reading the resources listed in the links below.

**Related Links**

- NIH's Collaboration and Team Science
  (https://ccrod.cancer.gov/confluence/display/NIHOMBUD/Home)

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Source: [http://funding.niaid.nih.gov/ncn/newsletters/2010/0804.htm#a01a](http://funding.niaid.nih.gov/ncn/newsletters/2010/0804.htm#a01a)