Collaborative research is a partnership between faculty researchers, academic institutions and external entities. Understanding the perspective of the faculty researcher in this partnership enhances our ability as research administrators to empower productive collaborations.

**Dr. Anne E. Giblin, Senior Scientist**  
Marine Biological Laboratory (MBL), Ecosystems Center  
Giblin received her B.S. in Biology in 1975 from Rensselaer Polytechnic Institute and her Ph.D. in Ecology in 1982 from the Boston University Marine Program. Following postdoctoral training at the Woods Hole Oceanographic Institution she moved to MBL in 1983 as an Assistant Scientist with Ecosystems Center where she was promoted to Associate Scientist in 1990 and to her current position of Senior Scientist in 2003. Giblin holds a graduate faculty appointment with the Graduate School of Oceanography at the University of Rhode Island and also a joint appointment in the Department of Ecology and Evolutionary Biology at Brown University. Giblin is the lead PI of the National Science Foundation’s Arctic Long-Term Environmental Research (ARC-LTER) project which is a collaboration of seven institutions.  
The MBL is a non-profit soft-money institution for research, education, and training in biology, biomedicine, and ecology.

**Dr. Robert Mayes, Research Professor**  
Director of the Institute for Interdisciplinary STEM Education (i2STEM)  
Georgia Southern University, College of Education  
Mayes received his B.S. (1979) and M.S. (1981) in Mathematics with a secondary education focus from Emporia State University and his Ph.D. in Mathematics Education from Kansas State University (1989). From 1993-2001 he assisted in developing and implementing an innovative Mathematics Education Ph.D. offered through the Mathematics Department at the University of Northern Colorado. In 2001 he returned to the WVU Mathematics Department to direct the Institute for Mathematics Learning (IML), whose mission is to improve the teaching and learning of mathematics in lower level undergraduate courses. In the summer of 2006 he joined the University of Wyoming assuming the directorship of the Science and Mathematics Teaching Center (SMTC). The mission of the SMTC is to improve the learning and teaching of science and mathematics in Wyoming and the Rocky Mountain region. August 2011 Mayes joined Georgia Southern University as a Professor of Education and Director of the Institute for Interdisciplinary STEM Education.  
The mission of the STEM institute is to establish collaborative interdisciplinary programs committed to excellence in K-20 STEM teaching and learning. A key component of this is through unique partnerships across academia, business, education and research centers in the Coastal Plain.
1. How do you communicate with partners on a collaborative project? What methods of communication have you found to work well for you when multiple collaborators are involved? Do you meet in person or do you communicate electronically (Skype, email, phone)?

**AEG:** We always have face to face meetings at least once a year for the entire project if it is very large (like the ARC-LTER). For smaller collaborative projects where everyone is local we usually meet face to face 3-4 times a year. In between, we communicate extensively by e-mail for reports, etc. and also usually do 2-3 conference calls/video calls per year (Skype or Vidyo).

**RM:** I collaborate on multiple projects with partners at other institutions, so virtual communication is required. I feel it is important to establish a common recurring meeting time to ensure sustained engagement on project tasks. So we meet weekly online using a conferencing tool which allows for two way video, audio, and ability to share files on screen. We have used Blackboard Collaborate, Google Hangout, Go to Meeting, and even Skype for different projects at different times. These weekly meetings set a deadline for tasks in the project and keep the team active. We also incorporate a significant amount of asynchronous communication as well, including e-mail, Word markup to collaborate on revision of papers, and Dropbox to share files. We do meet in person at conferences or for yearly project meetings supported by grant funding. But face-to-face meetings on national collaborations are expensive and time consuming, so they are infrequent and focus on summarizing progress on project goals and set agendas for the next year.

2. What is your approach to working with multiple collaborating institutions?

**AEG:** See #3

**RM:** It is essential to sustain the effort through providing meeting agendas where different members of the team take the lead in the discussion. Every meeting ends with action items for the next meeting assigned to members of the team. It is important to share items far enough in advance of the meeting that the team has a chance to review the item before the meeting. This is challenging when meetings are held weekly. I want a discussion of the item, not a presentation of it by the lead person. Of course any collaboration has to provide incentives to keep partners engaged. In our collaborations the awards have been support for salary and travel of course, but just as important are collaborative publications, curriculum development, and opportunities for future grant support for research and outreach.

3. When building your team, what expectations do you set in advance? Do you discuss topics such as responsibilities of each party, authorship/publication, and intellectual contribution in advance?

**AEG:** When designing the project, each person has a defined role in the project, i.e. an aspect of the work they are responsible for, specific data they will collect, or a research area where they and their staff and/or students will be working. The assumption is that they would be authors of their work and that the grant would be credited. Then there are usually synthesis papers that the PIs are all authors on. In a few cases I have been involved in collaborative projects where the PIs wanted all PIs to be on all papers but this is less usual.

**RM:** Much of the collaboration I am involved with is driven by external funding, which requires defining the role of personnel funded by the grant in advance. This is a good thing. It establishes expectations for members of the team, which is tied to their area of expertise and research or other professional interest. I expect that all members of the team will coauthors on papers and co-developers of products. They are on the team because they bring an essential expertise to the goals of the project. Their intellectual contribution is driven by their expertise as a STEM content expert, STEM educator, or research specialist.

4. When collaborating with another institution how do you define your targeted deadlines?

**AEG:** The deadlines are based upon two things – the needs of the project, which often rely on weather and other coordination, and NSF deadlines for reports. These are discussed at the annual meeting.

**RM:** As I discussed previously, we set weekly targeted deadlines through action items. We also set targeted deadlines for primary project products, such as development of an assessment, curricular tasks, or research publication. These targeted deadlines are set on a semester level, adhering to academic calendars which with faculty are familiar. Deadlines are flexible, with quality of outcome more important than deadline.

5. How do you handle a collaborating institution that doesn’t provide the documentation you need by the specified date?

**AEG:** If it is something that I need from a PI (report information, etc.) I just keep after them until I get it. If it is something from the institution, I let my institution deal with it (i.e. Center Administrator or Office of Sponsored Programs).

**RM:** This depends on the task. If they do not provide requested input on a paper or product then they are removed from the list of authors. If they are not providing expertise on a grant proposal they are removed from funded position, minimally to an advisory position on project. It is natural in collaborations for participation to ebb and flow, one reason it is so important to sustain communication and have both short and long term deadlines.

6. How do you coordinate the writing of the proposal text when multiple PIs are involved? Is there software or websites that you have found useful (or not useful) when trying to organize comments and changes to text?

**AEG:** One person has to be the primary and the rest send text to them. After that, it simply gets passed around and we use the Track Changes feature in Microsoft Word.

**RM:** I have used Google Docs with groups for joint editing, but I prefer simply using Word markup. Files are shared through Dropbox or Google Drive. One person is the chief wrangler, taking the lead in integrating comments from others into the document. I either set sequential deadlines for the writers where one has a few days to make changes before the next jumps in, or we have the author tag their Word markup version with the date and their last name. This makes it easier to track the latest version of the paper.

7. How do you determine if your collaborators will be included as subcontractors within your proposal budget or if you will treat your proposal as a true collaboration with each institution submitting their own
8. When your collaborator is to be a subawardee to your prime award, how do you approach nailing down the scope of work for the subaward? Who writes the scope of work, and do you prefer to have a very detailed scope of work in place or a more topical summary? What do you see as the benefits of your preferred approach?

AEG: We write a more topical summary. I want the collaborator to do the best science possible, sometimes great approaches and ideas are not panning out and to answer the question you have to change what you are doing.

RM: The collaborators are recruited to the project with roles in mind, so from the beginning discussions there is a sense of what the roles will be. I provide a frame for the scope of work based on recruiting them to be on the project. I ask the collaborator to provide a more detailed scope of work which brings out their interest for and talent supporting the project. I believe that scope of work should be more topical than excessively detailed. The benefits of this approach are twofold. First, the majority of grant proposals are not funded, so do not overburden the potential collaborator with requests for excessive details. Second, projects always take on their own life if funded, so need to be flexible in implementing the project to account for real-world implementation issues. This makes a detailed scope of work quickly obsolete.

9. Has there ever been a time when the collaborating institution you’re working with forms a third party collaboration with another institution? If so, how was it handled?

AEG: Not in my experience.

RM: I would have the collaborating institution include this a consulting line in their subcontract budget.

10. In your experience, what makes a successful collaborative team?

AEG: It is important to have a team where there are synergistic skills and ideas and complete buy in on the goals of the proposal. Too much overlap leads to competition while too little means everyone goes off in their own direction and are not worrying about the proposal goals.

RM: The collaborative needs to have a personal bond or connection, which is why it is important to have face-to-face meetings early in the project. These meetings should be at a neutral site if possible, and future meetings should rotate between all collaborators home sites so they are equally valued as partners. The roles of the collaborators should be clearly established from the beginning of the project. Finally sustained and frequent communication is essential for the collaborative.

11. What have been some of the challenges and or benefits with working with collaborating institutions?

AEG: The benefits are often great science, new ideas, and the ability to tackle a project you could never do alone. The challenges can be personality conflicts or strong differences of opinions that are not possible to resolve easily.

RM: One challenge of collaboration is maintaining active engagement of the partners. The collaboration may be viewed as a second priority, which one gets to after completing the priorities they are assigned by their institution. The best way to avoid this is for the collaborator to view the project task as supporting either an already assigned priority task or being a passion which the collaborator would pursue if given time and support (which the project provides). The benefits of collaboration are numerous, including peers which provide new insights into the work I do, bringing expertise to a project that I do not have and may not even exist at my institution, and moving projects from local to regional or national impact.

12. As a researcher, what are some tips that you think a research administrator would find helpful in navigating the proposal preparation responsibilities for a collaborative research proposal?

AEG: Except for the lead institution, the pieces of a collaborative that are required are pretty straightforward, so simply getting the PI to get them to you well ahead of time would be the main one.

RM: Helping the researcher to navigate the budget complications of subcontracts, consulting fees, and indirect rates on subcontracts is the first thing that comes to mind. They could also assist in identifying possible collaborators for the project, especially if it is new faculty member.

13. If you were advising a new or junior faculty member embarking on their first formal research collaboration what advice would you give that individual?

AEG: Make sure your role and responsibilities are clear ahead of time. Make sure you all agree on how authorship will be handled, especially for students. Keep communication open and let everyone know if anything needs to change.

RM: Much of the advice I would give is related to my previous responses to building successful collaborations. Search for collaborators with the appropriate expertise for the project within your own institution first. Be sure collaborators bring expertise that addresses key components of the project you are proposing, not who just bring a reputation. A request for proposals may require or strongly encourage expertise that does not exist in your current team, seek collaborators to meet these special needs. Bring collaborators on board as early in the proposal development process as possible and have them write portions of the grant related to their expertise, not just make comments on the proposal. Have frequent communication with the collaborators throughout the proposal writing process. Finally, don’t avoid budget discussions until the end, address budget early in the writing process.