



MODULE: SCIENTIFIC COMMUNITY

OVERVIEW

Learning Objectives

At the conclusion of this module, you will be able to:

- [Interpretation] Describe a scientific conference, list its benefits as well as potential types of sponsors
- [Interpretation] Identify appropriate strategies for interacting with other members of your scientific community at gatherings such as conferences and meetings
- [Interpretation] Identify the elements of the peer review process and the benefits of this process to researchers and the larger scientific community
- [Interpretation] Describe the nature of research funding, including sources of research sponsorship and the expected outcomes of research
- [Application] Prepare a list of questions or other interactions that might be of use at a conference related to a particular research field
- [Evaluation] Review a research article and evaluate its strengths and weaknesses as well as the completeness
- [Interpretation] Describe the importance of funding to the research process

Materials for this Module

- Handout 1: The Peer Review Process
- Video: Peer Review in Three Minutes: <https://www.youtube.com/watch?v=rOCQZ7QnoNO>
- Handout 2: Participation in Scientific Meetings and Conferences
- Handout 3: Research Funding

Introduction

In addition to learning and practicing the skills directly associated with consuming and conducting research, a key element required to realize the benefits of research is the effective participation within the scientific community. Successful researchers must be able to communicate with members of their research community in order to disseminate their findings, drive progress, and find new opportunities. Research community functions include the peer review process, by which members of a particular community assist with the critique of their colleagues' research prior to publication or conference presentation. The dissemination, or sharing of research, often takes place at regional meetings and national/international conferences. Becoming an effective participant at such meetings enables researchers to expand their networks, identify new opportunities for collaboration, and share their work. Of



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course, before research can be conducted, scientists and engineers often need to secure funding to support the research and researchers involved in a particular project. The materials in this module provide an overview of these elements.



Assignment(s) for this Module

This module has three assignment options for Deliverable 1. Ask your mentor which options to complete, then complete the corresponding questions. You should still read through all three handouts so that you'll be familiar with the three elements of the Scientific Community.

Option A: Peer Review Process

An important part of the Scientific Community is giving and receiving feedback from your peers. Peer Review is an important process in scientific research in which a researcher's work is first judged by a group of his/her peers before it can be shared with the scientific community at large. You can think of Peer Review as the screening process for the spread of sound research contributions across the scientific community. Review Handouts 2 and 3, use Handout 1 on Peer Review to complete the assignment.

It is helpful to practice critiquing the work of yourself and others to find weaknesses, strengths, and opportunities. In this assignment you will act as the reviewer to provide constructive feedback.

- Read a journal article assigned by your mentor. Find two strengths of the research described, and two weaknesses or gaps. Do you agree with the author's conclusions?
- Using the same journal article, assess the materials and methods, and make a list of missing details as well as helpful details.
- If your mentor does not assign an article, consider reviewing these (Institutional access required):
 - <https://link.springer.com/content/pdf/10.1007/s10439-017-1909-2.pdf>
 - <https://royalsocietypublishing.org/doi/pdf/10.1098/rsta.2010.0002>

Deliverable 1 - Option A: Document your responses to the questions above.

Option B: Participation in Scientific Meetings or Conferences

An important part of the Scientific Community is meeting your peers and discussing current trends and topics. Scientific meetings (e.g. workshops or conferences) have various sizes and scopes and occur all over the world,



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throughout the year. These meetings are special events designed to bring together everyone in a particular research field in one place to communicate advances and recent developments in the field. Review Handouts 1 and 3, use Handout 2 "Participation in Scientific Meetings and Conferences" to learn more about the purpose and operation of these meetings to complete this assignment.

Discuss your area of research with your mentor and identify relevant scientific communities at your school, relevant regional or national conferences, or upcoming events on your own campus. Find online resources for past conferences and find information on research that was presented. Imagine that you were in attendance and formulate ways in which you might have interacted with the researchers who presented.

- Identify a presentation that is directly related to your line of research. Also identify a presentation that is tangential to your research.
- Formulate some potential questions that you could pose to the presenting researchers. Consider how you might participate as a member of the audience during the "Question and Answer" portion of the presentation. How might you be able to interact with the researchers in a more formal setting, such as during a networking break at the meeting?
- Identify an upcoming event at your school (i.e., a guest lecturer symposium or presentation). Do some introductory examination of the topic and come up with a plan as to how you might be an active part of the research community during the event.

Deliverable 1 - Option B: Document your responses to the questions above.

Option C: Identifying Funding Opportunities

An important part of the Scientific Community is understanding **who funds research** (like the work in the program you are currently participating) and **why they fund research**. Review Handouts 1 and 2, use Handout 3 "Research Funding" to learn more about the purpose and expectations of research funding and complete this assignment.

- Identify one source of funding that supports your mentors' work. What type of funding is it (government, industry, philanthropic, state, etc.)?
 - Hint: The source of funding can be found on the eqpoint.info webpage as well as at the end of the research articles.
- Using journal articles that you have found in your research, name one source of government funding, one source of philanthropic funding, and one source of industry funding that supports research like yours.

Deliverable 1 - Option C: Document your responses to the questions above.

Five-Minute Reflection:

1. Come up with one question to discuss with your mentor (maybe a concept you are unclear on, something you found interesting, etc.)
2. What information did you feel was the most informative? Least?
3. Of the three elements covered in this module relating to Scientific Community, which one are you able to best consider for your own development at this stage in your career as a researcher? Explain.

Deliverable 2: Document your responses to the Five-Minute Reflection.



Mentee Deliverables:

- Deliverable 1 - Option A: Peer Review Process (Overview).
- Deliverable 1 - Option B: Participation in Scientific Meetings or Conferences (Overview).
- Deliverable 1 - Option C: Identifying Funding Opportunities (Overview).
- Deliverable 2 : Save a copy of your responses to the Five-Minute Reflection (Overview).

Discussion with Mentor:

- Discuss your understanding of the peer review process
- Discuss options available to you for participating as a member of the scientific community either at your own campus or another meeting
- Discuss available types of funding for your area of research, and strategies for securing funding
- Discuss topics from the Five-Minute Reflection

Summary:

- Peer Review is an important part of research. It allows an article to be objectively analyzed for weaknesses, strengths, and opportunities so that it can be improved prior to publication.
- Scientific meetings are the places where you connect with your profession. It allows you the opportunity for technical exchange, socialization, and networking for advisors, researchers, or collaborators.
- Research can be funded by governments, companies, private donors, or foundations in order to facilitate research on a particular focus, product development, new knowledge, and/or patents.

Checklist

Prior to Meeting with your Mentor:

- Review Handout 1: Peer Review
- Review Handout 2: Scientific Meetings or Conferences
- Review Handout 3: Research Funding
- At the direction of your mentor, complete one or more of the deliverable assignments associated with the elements of the Scientific Community.
- Watch Video: Peer Review in Three Minutes
- Complete the Five-Minute Reflection