

RMI MENTOR GUIDELINES

OVERVIEW

One of the key characteristics to a successful mentoring experience is the willingness to guide, instruct and assist students to reach their research objectives. Beyond serving as an advisor or supervisor on a research project, the mentor takes an active interest in the student's academic and professional development as a budding scientist and scholar. The ideal mentor-mentee relationship is based on a positive working relationship that supports the development of the student as a junior member of the research community.

Key goals of the mentorship experience include:

- The student gains a good understanding of your discipline and area of research
- Greater fluency with the terminology and culture of the field
- Greater facility with inquiry-based learning and the scientific method
- Enhanced confidence and skill

MENTORING STUDENTS IN THE SCIENCES

The culture that surrounds the student doing scientific research often involves working in a laboratory as part of a team. Assessing your student in advance and helping him or her to acclimate as quickly as possible to your laboratory environment will set the stage for a constructive research experience.

- Meet with your student during the first week to discuss project and expectations. Take the time at this initial meeting to clearly define your expectations and make sure the logic and rationale of the project is clear to your student.
- Develop and adhere to a schedule of regular meetings with your student (and co-mentors, if applicable). Ideally, meetings should occur at a fixed time at least once per week.
- If you are not on campus for a period of time, continue to keep in touch with your student via e-mail or phone.
- Make an effort to get to know your student on an informal basis by sharing lunch at least once over the course of the term. In addition to developing a more personal relationship, you can use this time to advise your student about graduate school and career development.
- When selecting a graduate student or post-doc to directly supervise your student, take into account gender, culture and language differences.

ORIENTING STUDENTS TO YOUR RESEARCH

- Use the first week to explain the project, consider relevant background literature and review techniques, including computer software. Make sure your student receives any necessary formal training in laboratory safety, in accordance with your institution's requirements.
- Ask students about research methods they may have used in the past and question them about their understanding of methods they will use while training with you.
- Develop a tentative schedule for completion of various aspects of the project, and discuss the hours your student is expected to maintain.
- Clearly explain the basics of keeping a laboratory/field notebook and other records.
- Outline your student's role in lab meetings and any other required meetings or seminars.
- If a post-doctorate or senior graduate student is assigned to co-mentor and supervise the student, explain this, and clearly outline the role of the graduate student or post-doctorate as co-mentor.
- Make sure the student clearly understands the role of other individuals in the lab. The student should know to whom various questions should be addressed and ought to feel comfortable relying on a lab colleague for certain types of assistance.
- Hold your student to high standards but don't forget he/she is a novice.

FORMULATING A ROLE FOR THE STUDENT IN YOUR LAB

- It is helpful to supply students with some materials to familiarize them with your field of research as well as your lab's research goals. Continue to encourage them to read relevant materials that arise during the course of the term.
- Your student should conduct work that relates to a specific aim of the research goals of your lab. Identify a project with a clearly definable goal and scope.
- Whenever possible, include your student in the formulation of the underlying hypotheses and expected outcomes of the experiments. Make sure students are thoroughly trained in the appropriate set of techniques and understand their relevance to the project.
- It is important that your student understands the project's relevance to the broader scientific goals of the lab, as well as the lab's overall contributions to its scientific field. This can be discussed in regular meetings with the student while reviewing

His/her progress in the lab or the assigned literature.

- Anticipate alternate approaches or parts of the project to assign to your student in the event that he or she becomes stuck on the original assignment. Considering alternatives in advance will help ensure that the student has a meaningful lab experience and relatively little “downtime.”

ASKING QUESTIONS

It is essential that your student learns how to ask questions that will yield a greater understanding of the work conducted in your lab. Suggest that your student write down questions and bring them to share during regular meetings.

- Stress the importance of asking appropriate questions, particularly during critical periods, in order to move the research forward.
- Strive to create an atmosphere that makes a student feel empowered to ask questions, and reassure your student that it’s okay to ask all kinds of questions.

Do not make him or her feel inferior while learning to formulate better
- questions. There is no such thing as a “bad” or “dumb” question, particularly in research.
- Do not hesitate to ask hard questions of your student but do not forget that he or she is still a novice in your discipline and may lack some basic academic preparation.

METHODOLOGIES

- Ask students explicitly about research methods they may have used in the past and question them about their understanding of methods they will use in the summer program. Discuss various methods of scientific investigation with your student.
- Keep in mind that students with limited research experience may not be familiar with diverse methods of inquiry.
- Cite examples of the kinds of methods and techniques that can be used to address research questions.
- Instructing a student in laboratory techniques should include an explanation of the techniques, not simply a demonstration.
- Following the demonstration and explanation, ask the student to perform the procedure while you look on. This will:
 - ensure that the student understood your instructions
 - provide an opportunity for on-the-spot corrections

- help both you and the student feel more confident about the student's ability to perform the procedure independently

COMMUNICATING EFFECTIVELY

Successful navigation of the mentor-protégé relationship requires the establishment of effective communication from the start. As a mentor, it is important to be sensitive to issues of race, ethnicity, culture, gender and academic preparation.

- Do not make assumptions about prior knowledge by under- or overestimating academic skills and abilities. Regularly encourage your student to speak up if there is something that is not understood, then take the necessary steps to fill in any gaps in knowledge.
- Your student may come from an environment that provides a “hands-on” style of mentoring with very specific direction. The student may be reluctant to admit that he or she is not accustomed to acting independently.
- Do not hesitate to give critical feedback when necessary but temper it with kindness.
- Promptly communicate to program administrators any problem that may arise with your student so they may resolve the issue as quickly as possible.
- Acknowledge that students may have difficulty understanding foreign-born speakers with pronounced accents and assure them that it is okay to ask the speaker to repeat what is not understood.
- Ask your student about his or her hometown. Learning about your student's origins and sharing information about your own will naturally foster mutual understanding.

SUMMARY OF EXPECTATIONS FOR MENTORS

- Design a manageable project that can be accomplished over the course of the quarter.
- Meet at least once a week with your student to monitor progress and provide guidance.
- Review the data your student will use in a presentation (for the annual UCSC student research day, for example). If possible, help your student prepare the presentation.
- If you experience any difficulty with your student, bring it to the attention of the RMI director as soon as possible so they may help to resolve the issue.

- Give your student an appraisal at the final meeting of the program. It is very important for students to receive constructive criticism of their performance. Be honest (but kind) in reviewing your student's strengths/weaknesses.
- Offer advice about course selection, career choices and graduate program options.
- Complete and return survey(s) about your student and the program.

AT THE CONCLUSION OF THE MENTORSHIP TERM

- Provide RMI with a written evaluation and share your impressions of the student.
- Let your student know if you are available for advice and counseling in the future.
- Tell us about your experience; your comments and suggestions about the RMI and your experience as a mentor are highly valued. Please provide us with any feedback and suggestions you may have for improving the program or improving student training opportunities.

Resources

The Leadership Alliance Guide to Mentoring Students in Summer Programs

"This brochure is designed to assist the faculty mentor to understand the purpose of the [summer research programs] and the expectations of their summer interns. We hope this guide will help faculty and students make the most of this opportunity to learn, share and teach one another."

<http://www.theleadershipalliance.org/Portals/0/PublicDocs/LAMentor.pdf>

Elements of Effective Mentoring (free download from Mentoring.org)

"The *Elements of Effective Practice for Mentoring* holds the key to success in producing high-quality relationships. *Elements* provides six evidence-based standards for practice that incorporate the latest research and best-available practice wisdom." www.mentoring.org/downloads/mentoring_1222.pdf

MentorNet

"MentorNet is the premiere and most experienced web-based e-mentoring program in the world. Every year we match thousands of students, postdocs, and early career researchers in engineering and science on hundreds of campuses to mentors in the professions for one-on-one guided relationships.."

<http://www.mentornet.net>

University of Washington Graduate School Mentorship Program

How to Obtain the Mentoring you Need: <http://www.grad.washington.edu/mentoring/students>

How to Be a Good Mentor [for faculty]: <http://www.grad.washington.edu/mentoring/faculty>

THANK YOU

Thank you for your support of diversity and equity in higher education. Your role as a mentor is invaluable to broadening participation in STEM fields, improving diversity on our campus, and to the future career of your student!

ACKNOWLEDGEMENTS

The RMI gratefully acknowledges that the above information has been adapted with permission from the Leadership Alliance Mentor Guide for summer programs. To view the original document in its entirety, please visit: www.theleadershipalliance.org/Portals/0/Uploads/Documents/Public/mentor_guide_complete.pdf