

# A Guide to Mentoring Student Researchers



# Mentoring Students

- What makes an undergraduate researcher's experience most worthwhile is the relationship they form with their faculty mentor.



# Why work with students?

- Students become colleagues and learn the culture and practice of the discipline
- Students often bring enthusiasm, unique insights, curiosity, suggestions, and tough questions
- When given opportunities, students learn to think critically, produce solid ideas, and work hard to solve problems
- Research helps students define their academic and career goals
- Mentoring offers an effective pedagogical tool



# What makes a good mentor?

- In a national study, undergraduate research students indicated that a good mentor is someone who is knowledgeable about the research project, enthusiastic, available, and patient. (Mabrouk and Peters, 2000)



# What makes a good mentor?

- The American Chemical Society (ACS) points out the importance of positive relationships, specifically between faculty mentors and students. From the ACS Code of Conduct:
  - *"Chemical professionals should regard the tutelage of students as a trust conferred by society for the promotion of the students' learning and professional development. Each student should be treated fairly, respectfully, and without exploitation."*
  - Source:  
[http://portal.acs.org/portal/acs/corg/content?nfpb=true&pageLabel=PP\\_ARTICLEMAIN&node\\_id=1095&content\\_id=CNBP\\_023290&use\\_sec=true&sec\\_url\\_var=region1&uid=6d0e1497-dd95-4fc8-a7a6-bac02f495b27](http://portal.acs.org/portal/acs/corg/content?nfpb=true&pageLabel=PP_ARTICLEMAIN&node_id=1095&content_id=CNBP_023290&use_sec=true&sec_url_var=region1&uid=6d0e1497-dd95-4fc8-a7a6-bac02f495b27)



# Attributes of a Good Mentor

- Professional
- Friendly and approachable
- Available (office hours, via email)
- Organized
- Ability to gauge the knowledge, skills, and abilities of student assistants
- Flexible
- Engaging
- Open-minded



# Components of a Good Project

## A good research project:

- Is well thought out and planned
- Is intellectually stimulating
- Leads to creating new knowledge, developing new ideas, and building new skill sets
- Allows the student to progress as the project progresses
- Has clearly defined and communicated goals



# Starting the Project

- Have clear procedures and job duties established
- Have a list of achievable goals in place
  - Should take into account student's lack or limited knowledge
  - Should be flexible enough to change as the research progresses
- Discuss project rules and expectations from the start
- Discuss intellectual property, research ethics, and compliance
- Set up frequent meeting times (ideally weekly) to discuss the project's progress



# Starting the Project

- Prior to beginning a project, it is recommended for faculty to discuss the follow with students (as applicable)
  - Appropriate citation/references of sources. Avoiding plagiarism
  - Authorship, publication practices, and responsibilities
  - Data acquisition, management, ownership, and sharing
  - Research misconduct (including data fabrication and falsification)
  - Conflicts of Interest (personal, professional, financial, etc.)
  - Supervisory and mentoring relationships and responsibilities
  - Responsibilities in collaborative research
  - Human subjects and/or animal protection (when relevant)



\*Much of this content is located in the various PEERRS modules:  
<http://www.umflint.edu/research/peerrs.htm>

# Offering Encouragement

- Allow students to share ideas openly and honestly
- Allow mistakes to happen (use your own experiences to relate to them as much as possible)
- Teach students how to manage multiple duties (recognizing their balance of work, school, home demands, etc.)
- Combat student anxiety by reassuring them of their skills and abilities to succeed



# Offering Encouragement

- Allow students to demonstrate their competencies (i.e. co-present at a conference, present on their own, submit manuscripts for publication)
- Promote students' accomplishments both internally (i.e. your department) and externally (i.e. colleagues outside the University, professional affiliations)



# Providing Feedback

- Offer feedback throughout the project; and in a TIMELY manner
- Pay close attention to the students' work and progression
- Offer specific insight
- Be supportive, but offer constructive criticism as needed
- Address issues as they arise
- Allow independence as student progresses
- Refine project goals as the project progresses



# Building External Relationships

- Suggest others who can assist students in areas you cannot.
- Introduce students to faculty and other graduate students with similar interests (on campus, at meetings/conferences, etc.)
- Help students connect their work with professionals who can provide meaningful career perspectives.
- Coordinate communities of researchers through informal discussion groups, projects, or social gatherings with students, faculty, and professionals who share similar interests.



# References

- Mabrouk, P.A.; Peters, K. CUR Quarterly 2000, 21, 25-33. "Student Perspectives on Undergraduate Research (UR) Experiences in Chemistry and Biology."
- Suedkamp Wells, K. & Fagen, A. (January, 2002). A little advice from 32,000 graduate students. Chronicle of Higher Education [On-line]. Available: <http://chronicle.com/jobs/2002/01/2002011401c.htm>
- Zachary, L.J. (2000). The mentor's guide: Fostering effective learning relationships. San Francisco, CA: Jossey-Bass.



# Contact Us

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