

During Lunch...

Think of someone you have considered a mentor (either personally or professionally)...

What made them a good (great!) mentor?

Mentoring Undergraduates in Research



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Sponsored by GT's UROP and CETL.



“Students report that the most important aspect of their undergraduate research experience is the relationship with the mentor.”

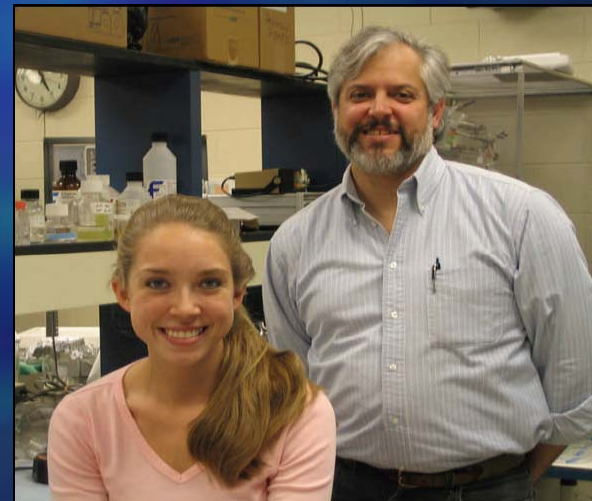
Mabrouk and Peters (2000)

What Georgia Tech Students Are Saying



Find a project that you really like" – Taylor Narewski, Public Policy Senior

"Find an advisor that you can work well with" – Michelle Tougas, recent Biology graduate, now at Duke University in master's program



Agenda

- What Makes a Good Mentor?
- Student Perspectives
- Mentor Perspectives
- Small Group Case Studies
- Final Words

Value & Importance of Mentoring

- Students become colleagues and learn the culture and practice of the discipline
- Students learn to ask questions, offer ideas, think critically, and solve problems
- Students develop confidence in their abilities
- Helps develop career focus

The Basics

- Creating Effective Projects
- Establishing Mutual Expectations
- Setting/Refining Goals
- Keeping Track of Results/Progress
- Giving Feedback
- Encouraging Success

Encouraging Success

■ Research Advising

- Results of the work are unknown – that's why its research!
- Train in methods, tools, use of equipment & supplies
- Realistic expectations

Encouraging Success, cont'd

- Working Environment
 - Schedules
 - Hierarchy of lab/group
 - How to contact you
 - Where to store items, eat lunch, etc.
 - How they will be paid, if appropriate
 - Dress code
 - Other lab/group rules

Encouraging Success, cont'd

- **Academically and Personally**
 - Encourage effective time management
 - Encourage excellence in academic performance
 - Be prepared with references for campus referral (counseling, tutoring, etc)
 - Discuss career options

Student Perspectives

Mentor Perspectives

Case Studies on Mentoring

Moderator:

Dr. Joyce Weinsheimer,
Center for the Enhancement
of Teaching and Learning

Case Study A

Susan begins the semester with energy and enthusiasm for the research project, which requires multiple data runs on a specific specimen. Halfway through the semester you notice that she has begun spending less and less time in the lab and she is not getting the data runs for the project completed.

Case Study B

Peter has always kept an excellent lab notebook, outlining his results, observations, and test conditions in a manner that can be easily read and understood. The data presented is excellent – in fact, it seems to be “too perfect”. You begin to suspect that he may be playing with the results to lead the data toward an answer that supports your hypothesis.

Case Study C

Marie has always been an excellent student and researcher in your research group. However, she lets a small comment slip into the conversation that concerns you regarding her declining grades and the time she spends with the volleyball club.

Case Study D

Each Friday your research group meets to discuss their research and any new work in the field that has recently been published. Your undergraduate faithfully attends most meetings, but he never joins in the discussion.

Resources

- “How to Mentor Undergraduate Researchers”, Council on Undergraduate Research, 2002
- “Advisor, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering” – National Academy Press, 1997.

Interest in Focused Discussions ?

Brown bags throughout the year on the following suggested topics:

- Designing Effective, Challenging, and Appropriate Projects
- Expectations
- Setting and Refining Goals
- Giving Effective Feedback
- Mentoring beyond the Research
- Etc., etc.

Contact Us!

Undergraduate Research Opportunities Program (UROP)

<http://www.undergradresearch.gatech.edu>

Dr. Karen Harwell

Director, Undergraduate Research

404-385-7325

Karen.harwell@carnegie.gatech.edu



Additional Information

Creating Effective Projects

- Goals should reach beyond the research
- Intellectual stimulation & real problem solving
- Work that leads to:
 - Creation of new knowledge
 - Development of new ideas
 - New tools
- Requires contemplation and planning
- Opportunities to do new things:
 - Riskier project in a new area
 - Complementary study
 - Shorter-term goal

Getting off to a Good Start

- Be prepared the **first** day
- Organization makes all the difference!
- Schedule regular meetings
- Discuss mutual expectations early
- Discuss lab rules & safety
- Be aware of varying abilities of students

Establishing Mutual Expectations

- Before you meet, both student and mentor should think about their expectations for the semester – *in writing*
- Discuss those at your first meeting

Establishing Mutual Expectations, cont'd

- What Mentors Should Expect:
 - Mentoring Students is an Educational Activity
 - U/G Researchers are NOT graduate students!
 - Mentors must adjust to varying levels of ability, skills, experience, etc.
 - Professionalism (attendance and punctuality, research group meeting attendance, etc.)
- What Students Expect:
 - Good relationship with Mentor
 - Achieving something significant

Setting Goals

- Student and mentor should agree upon a set of goals for the semester which may include:
 - Data collection
 - Literature review
 - Final report
 - Paper or Presentation?
 - Other
- Goals should account for initial lack of knowledge of student
- Consider the “distractions” of the academic year (spring break, exam week, etc.)

Refining Goals

- As research progresses, make adjustments to specific goals
- Allow room for the student to develop and pursue their own questions
- Help students understand that refining and revising goals in research is the norm, not the exception!

Keeping Track of Results

- Have clear mechanisms or procedures to record results
- Discuss intellectual property, credit, and research ethics
- Give feedback EARLY on the students progress and records
- Set up weekly meetings and pre-scheduled progress reports

Giving Feedback

- Be attentive
- Be specific
- Provide feedback about the work, not the individual
 - Positive *and* negative feedback
- Allow independence as student progresses
- Make notes to yourself that will aid in writing recommendation letters