Developing as an Undergraduate Researcher

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Please Recognize

- You must take your participation in the laboratory seriously
- You should NOT see yourself as an observer, but rather a participant and lab member
- Do NOT underestimate your potential contributions
- You can contribute to
  - Your Lab's Project
  - Your Lab's future funding
  - The scientific literature
  - Society!!

Research Student Development

- Make sure that you enter a lab with projects that interest you!
- Faculty know that you initially know little and will help you grow
- Faculty know that it will take their time and effort to guide the growth
- You take the researcher's identity – you become "their" student
- Faculty will support "their" students now and in the future with strong letters, recommendations, and advice
- Faculty –will– have expectations for your development/performance

The Highly Successful Undergraduate Research Student

- Has Solid Personal Characteristics
  - Excited about research
  - Takes ownership of project
  - Independently pursues information
  - Responsible
  - Honest
  - Hard working
  - Academically solid
  - Persistent
  - Committed
  - Teachable
  - Team player - Contributes to lab beyond own project
  - Reacts positively to failure
  - Gets along well with others
  - Develops maturity

The Highly Successful Undergraduate Research Student

- Develops “Research Skills”
  - Learns how to formulate questions/hypotheses
  - Learns how to design experiments
  - Learns new methods as needed for project
  - Learns how to learn new methods
  - Learns how to analyze their results
  - Learns how to put results into writing (abstracts, papers, thesis)
  - Learns how to present their work

The Highly Successful Undergraduate Research Student

- Learns to Think Like a Scientist
  - Has strong command of project literature (context)
  - Takes time to ponder results/implications
  - Generates thoughtful ideas
  - Associates project with other fields
  - Develops critical thinking skills
    - Knows how to approach and solve problems
    - Actively and skillfully engaged in conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication (Scriven and Paul, 1987)
  - Identifies the next logical experiment

The Highly Successful Undergraduate Research Student

- Develops Professional Skills
  - Can clearly and concisely explain their research
  - Can present their work as posters/orals
  - Can represent the lab at conferences
  - Can behave as a young professional
  - Develops a network
- Learns about Research as a Career
  - Ethical Behavior
  - Laboratory Safety
  - Learn lab culture
  - Learns about career path
  - Learns about Graduate School
  - Takes required courses for next stage

Some Benefits to UG Research

- Academic:
  - Validates coursework
  - Intro to balancing school and research
  - Deeper Faculty contact/mentoring
- Personal:
  - Self-confidence
  - Maturity
  - Knowledge that you can have an impact
  - Generally, an increase in motivation
- Professional
  - Observe a "high level" career
  - Learn to speak like a professional
  - CV/Resume that stands out
  - Letters of recommendation
  - Publications
- Doors open into Grad School or Jobs

A Caveat – Please Recognize…

- You must have true interest/commitment
- You really can't fake performance
- You must truly care about being in the laboratory and be genuinely interested in their projects
- A Researcher can tell when a student
  - really is engaged
  - is showing up
  - is contributing