Undergraduate research in MCB

Some thoughts from one professor

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What I think undergraduate research is

• Undergraduate research provides an opportunity to learn not only content but how knowledge is constructed in the discipline.

• Learn and apply the tools used to create knowledge.

• Undergraduate research provides insight into how professionals in the discipline work and think.
Cell biology in a class
An example of adhesion

Figure 19-8c Molecular Biology of the Cell 6e (© Garland Science 2015)

Diagram showing the process of adhesion in cell biology.
Cell biology in the lab

It’s fun
But it’s work
And you need to read
And you need to think
And you slowly create knowledge
My learning objectives in hosting an undergraduate researcher

• Be able to design and perform the experiments associated with your project

• Interpret the data

• Assess whether experimental results support or refute a hypothesis

• Modify hypotheses in light of new experimental results

• Design new experiments to test new hypotheses

• Understand the significance of your project in the larger context of the field.

• Be able to discuss and write about your project
What undergraduate research provides

- Deeper insight into a specific problem or topic
- An opportunity to practice the science, not just learn it.
- A better view of science as a creative process
- A more integrated view of the scientific method instead of snapshots of different examples. Here, you can see the whole process including successes and failures.
- Firsthand experience of ambiguity in science.
- Learning patience and the power of persistence in problem solving
- Learning how to describe your research to others orally and in writing.
What undergraduate research does not provide

- Instant gratification
What I’m looking for in an undergraduate researcher

- Serious students who are eager to learn the art and practice of science. This includes bench work, reading, writing and talking about the project.

- Students who see the research experience as more than learning techniques.

- Determined students
What often happens…

Science is hard. Thinking about the unknown is exciting but hard.

Experiments take practice before they work.

The scientific method is not intuitive or innate. It requires constant practice and continuous reinforcement throughout life.

Delayed gratification sometimes leads to frustration.
Need to punch through the disappointments

Your comments are very important! Please use this space to explain any of your responses above or to comment on the strengths or weaknesses of this course or instructor.

Class sucks, lab sucks, organic chemistry

SUCKS!
Sound advice for students of all ages:

“Talent is insignificant. I know a lot of talented ruins. Beyond talent lie all the usual words: discipline, love, luck, but, most of all, endurance.”

James Baldwin
Cell biology in the lab

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