

Naturally Obsessed: the making of a scientist

DISCUSSION GUIDE FOR TEACHERS

Dear teacher: This discussion guide, intended for advanced high school and college students, is a work in progress. We are interested to learn about your experiences and to have your comments and suggestions.

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Overview of the film

The documentary film, “Naturally Obsessed; the making of a scientist” compresses three years of filming in a world class research laboratory into an emotionally intense and information-packed one hour of viewing. The film reveals the real life experiences of a group of college graduates who are working towards their PhD degrees in molecular biology. The idea behind the film is to give your students an idea of the process of doing science and the chance to imagine themselves as scientists.

Background to the science

The lab studies protein molecules, the tiny “machines” that do the work of the living cell. To earn the degree, each student has to discover the precise way that a particular protein does its very specific job. The protein that is emphasized in the film is AMPK, whose job is to activate the switch that makes the cell burn fat or store fat. This basic biological discovery might eventually lead to entirely new treatments for obesity and diabetes.

To understand the problems the students face, you should understand that protein molecules are too small to be seen by microscopes that use visible light and that it’s necessary to expose them to shorter wave length x-ray beams. For the protein to be examined in an x-ray microscope, it must first be transformed into a crystal, in which many molecules are packed into a regular array. This work requires the students to master difficult feats of genetic engineering and protein chemistry. It’s an exceedingly challenging effort that can take four or five years, and it may not always work out! Not all laboratories have such an “all or nothing” challenge; many, instead, provide more small satisfactions along the way.

The personal side of doing science

You’ll see in the film that the students, Rob, Kil, and Gabe, have a growing ability to do the scientific problem solving involved in x-ray crystallography. But you’ll also see that this challenge puts each of them under a good deal of stress. They have to constantly test their resolve and question their own motivation, talent, and commitment.

Questions to consider in watching the film

As you watch the film, put yourself in the position of each of the students and also, of Larry, the professor and lab head. What are their motivations? What personal qualities help or hinder their progress? What choices do they make, and why?

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1. How do the students' experience in the film relate to experiences you may have had in a lab?
2. What do you see as some of the challenges of laboratory science?
3. What questions does this raise for you about pursuing a graduate degree?
4. Are there ways in which the film changed your idea of what scientists are like?
5. What are your impressions of how Larry mentors his students?
6. How do you expect you would react to the experience of lab research?
7. What personal qualities would help or hinder your progress?
8. If you could ask any of the characters questions about life as a scientist what would you ask them?