

## **Naturally Obsessed: the making of a scientist**

### **DISCUSSION GUIDE FOR THE GENERAL PUBLIC**

**Here's a way of bringing scientists and the general public together to explore how science can be encouraged in the 21<sup>st</sup> century. Viewing the film will give a general audience a good sense of what it's like to do science. Having a discussion afterwards will help to build a common understanding of what's involved in maintaining an ample pipeline of future scientists.**

**Questions to panelists (the organizer of the screening can invite several established scientists from local universities and technology-based companies to participate):**

Briefly describe the research goals; student/faculty makeup; and conduct of your lab. Point out the differences and similarities to the Shapiro lab shown in the film.

Among policy experts, there's controversy over whether the U.S. does or doesn't have enough scientists in the near term. But, globally the U.S. is facing very stiff rising competition – in the per capita production of new PhDs in science and technology, the U.S. has now fallen to 17th place (New York Times 5/5/04) (down from 3rd place 15 years ago). Growing opportunity in India, China and other countries is also attracting U.S.-trained scientists. Is the competition for talent affecting your science now? Or do you anticipate it will in the future?

There's a significant attrition rate among women in science. For example, almost 50% of new biology PhDs programs are women, yet they are only 39% of assistant professors; 25% of associate professors; 17% of full professors. (SCIENCE 5 Dec 2008, p.1472). From graduate school through their careers, what do you see as the particular issues that women face? What will be the effect on the future supply of academic scientists?

Most minorities are seriously underrepresented in PhD programs in the life sciences. What factors contribute to this situation? Can you point to any programs that address it?

Many organizations are sponsoring mentorship programs in high school and colleges – i.e., Howard Hughes, Biotech Institute, etc. What mentorship programs are you or your institution involved in? And what is their impact? Can you point to high school or college mentoring programs that produce good results? Effective recruitment programs?

The doubling of the NIH budget in the 1990s, followed by its leveling and even decline in the last decade, has created a dire situation: young scientists fare poorly in winning research grants and face long delays before they are funded to open their own labs and to do independent research. What advice would you offer to the Obama administration in the strengthening of science education and infrastructure? What dangers might be inherent in a science stimulus program if it is not maintained over the long run?

The recruitment, retention and upgrading of science teachers in middle school, high school and college is a serious problem. There has been a leveling of faculty positions in the university over the last 20-30 years, while there has been great growth in job opportunity in the biotech industry. There are also new needs and opportunities for trained scientists in management, teaching and communications. How do, or don't, PhD educational programs address these changing needs? What changes might be warranted?

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**QUESTIONS TO AUDIENCE**

***The moderator will pose questions to the audience following the panel discussion:***

1. In what ways did the film change your view of how science is done?
2. In what ways do you think our society promotes -- or discourages -- youthful interest and participation in science?
3. How do you see the national interest in science education? And how do we achieve it?
4. As a parent, teacher, policy expert, public servant, what do you see as factors that tend to reduce the available pool of new scientists? That discourage diversity? How can these issues be addressed?