

Q&A

What has a student taught you about science?

The Latin proverb, “By learning you will teach, and by teaching you will learn,” holds as true in science as in any other field. The biggest lessons often come from mentoring and teaching.

— EDITED BY SARAH C.P. WILLIAMS



Richard N. Zare
HHMI INVESTIGATOR
STANFORD UNIVERSITY

“I have learned from my students the importance of passion. Without a burning desire to see some project to its completion, nothing worth very much ever gets accomplished. This observation applies both to the lab and to the classroom. The power of love should never be underestimated. This human emotion has more to do with advancing knowledge than might first be suspected. It is not fear of failing but love of trying to find something new and sharing the delights of discovery with others that drives so much of what we do.”



M. Celeste Simon
HHMI INVESTIGATOR
UNIVERSITY OF PENNSYLVANIA
SCHOOL OF MEDICINE

“Just when I am overwhelmed with and frustrated by grants, paper revisions, editorial boards, and regulatory compliance, an undergraduate or graduate student shows me some exciting data or articulates an interesting new hypothesis. They remind me what a privilege it is to work in biomedical sciences and renew my enthusiasm for what we are doing. I am consistently astonished by the exceptional abilities of the first-year M.D./Ph.D. students I work with during independent study tutorials. These will be the scientific leaders in the future.”



Graham Hatfull
HHMI PROFESSOR
UNIVERSITY OF PITTSBURGH

“Well, many things but here are some key ones. First, authentic research is a powerful stimulant for awakening a life-long curiosity in our natural world—perhaps the single most important characteristic of the scientific researcher. Second, standardized tests have no predictive value for research capability. Because it’s not obvious which students have aptitude for research, we ought to give as many students as possible the opportunity to try it! Lastly, students thrive when given responsibilities for mentoring other students; to teach what they have learned. If we are going to develop a flourishing culture of scientist-educators, let’s start ‘em young!”



Darcy Kelley
HHMI PROFESSOR
COLUMBIA UNIVERSITY

“This fall, I advised entering students on ‘Frontiers of Science,’ a required course in Columbia’s Core Curriculum. Most opened the conversation with: ‘I am not a science type...’ In the U.S., the majority of students categorize themselves as ‘non-science’ as early as kindergarten. They are shut out of an entire way of thinking about their world before having a chance to find out how powerful scientific approaches are and how beautiful their universe is. What I’ve learned about science from these students is that this must be fixed.”