1. A narrative statement (1 page), which describes your perspective on being a successful mentor and how you work to foster a culture of student scholarship at Mason.

As a scientist and a professor, I know that having a teacher who is excited by science is one of the key factors in motivating students to choose a scientific degree and profession. My goal is to be one of those teachers for my students, and to convey my knowledge but more importantly my passion for science to both undergraduate and graduate students at George Mason University. For me, there are two very different aspects to teaching science. One aspect is teaching in the classroom, and the second is the one-on-one apprenticeship experience of teaching someone in the lab to do cutting-edge research. Thus, in addition to teaching in the class I have intensively taught more than 30 undergraduates in my laboratory.

“Apprenticeship training” of scientists: The training of scientists requires an apprenticeship period, defined as a significant amount of time spent in one-on-one, side-by-side training with a qualified practitioner. This training is an accepted method of study for graduate students to become researchers. I feel strongly, however, that undergraduate research opportunities are the most powerful outreach program to introduce students to what research is really like, and to show them that they can contribute to science. I also know, as a person who used to hire entry-level scientists within the biotechnology industry, that this kind of training and experience is required for undergraduate students to acquire significant practical job-skills for a scientific workplace and to secure a good job on graduation.

Undergraduate Research: All students have to have extensive in-lab training in how to practically perform and conceptually design experiments. This experience is truly integrating for the students. They have to use their mathematical and chemistry knowledge to calculate their solution concentrations and pH, practice sterile technique, and manipulate extremely small volumes of liquid with reproducible accuracy. They have to integrate their genetics and microbiology classes with their cell biology class when considering host-pathogen interactions. In the students’ lab classes in their curriculum, all the “prep” steps have been done for them, and the experiments are all planned out. Students are always shocked to realize that they have to put in several hours of work and careful thinking before they can begin their experiments in my lab. It is highly rewarding for me, to watch a student develop lab confidence and critical thinking skills. Providing an undergraduate research experience is a costly endeavor, both in time and resources. There is no buy-out or course FTE provided for this activity (whether it is done on a volunteer basis by the student, or through individualized study credits), and very little fiscal support, thus it has become a personal volunteer activity for which I spend my personal time and personal funds, but I believe the return to the students is immense.

Paying it forward: On a personal level, I feel that this investment in the future generation of scientists is “paying it forward” to the scientific community. When I was an undergraduate, several professors gave an opportunity to do research in their labs and I feel obligated to repay them by doing the same for my students. Since coming to George Mason, I have had the pleasure and privilege of mentoring more than 30 undergraduates in my laboratory.