The K-12 Minority Outreach Fellowship has changed the way I conduct myself as a physiologist in my community. Through this fellowship I learned about making connections with scientists at all levels. From the very young K-12 students, who are still undecided about life in general let alone their scientific skills, to the senior faculty - members who are making an impact in their community by being involved in various scientific outreach activities. This fellowship forced me to get out of my comfort zone and to push myself to make a bigger impact in the lives of young people. It has been very rewarding and it has allowed me to solidify my passion for outreach.

Experimental Biology 2011
During Experimental Biology 2011 in Washington, DC I got my first opportunity to work with high school students on an activity focused on the physiology of digestion. In this activity, students were given a very brief description of the physiology of the digestive tract. They were then instructed to use this knowledge to build an anatomically correct, working model of a human digestive tract. It was such a fun experience for the students and for myself! I was in charge of walking around the room and assisting the students, without telling them what to do. At first, a lot of them seemed very overwhelmed about what they were asked to do. However, they started discussing and planning amongst themselves and eventually determined what they would do. It was so rewarding to see the expressions on their face when they finally got it! Being part of this initial experience really helped me get fired up about the upcoming year. I was not only involved in this activity, but I also attended the Workshop for High School Teachers and Students were Dr. Robert Carter was the Key Note speaker. Here I met Dr. Jessica Ibarra, one of the 2010-2011 Minority Outreach Fellows who really helped me get ideas about what to expect during the coming year.

Furthermore, during the EB 2011 meeting I was able to network with scientist in my field. I was paired with my mentor Dr. Stanley Hillyard who introduced me to a fellow postdoc working on questions similar to my interests. We spoke about possible collaborations, and we still keep in touch to this day.

Science Teaching Forum 2011
Attending the Science Teaching Forum at Airlie was one of my MOST favorite activities this year. I felt so lucky to have gotten the opportunity to be part of this awesome experience in such a beautiful place. As a Physiologist in Residence at Airlie I was able to spend an entire week amongst the most creative and innovative middle school science teachers. I was amazed at all of the different ways that teachers try to reach their students and get them to enjoy learning about science. Furthermore, along with them, I was able to learn about how to flip the classroom to make it more of an active learning environment instead of a teacher-focused environment.

Each day, we learned about different ways to engage students in their learning. It was
such a valuable experience for me since I was about to start my new job as an Assistant Professor at the University of La Verne, a small liberal arts college focused on undergraduate education. I feel that this experience really made me change the way I thought about my own teaching. It certainly made my first semester as a professor teaching an introductory biology course to non-majors a much better experience. After this course I had a lot of tools to try in my own class. What I learned during this week, I know will be valuable to my own development as an educator for a long time.

SACNAS 2011
This was my first time attending the national meeting for the Society for the Advancement of Chicanos and Native Americans in Science. I had heard about the organization since I was an undergraduate student, but never had the opportunity to attend. I was truly blown away by all of the great research that minority scientists are involved with around the nation. At this meeting I was able to interact with students interested in what the American Physiological Society had to offer. I was able to share with them my own experiences as a student in physiology. For one student I was even able to help him out with his research! Our conversation led to his research interest, and we realized that we both used the same model system. He was having problems with his colony of insects at Cal State San Francisco, so I told him that we could provide him with more insects. He invited me to his poster and we made a connection!

At SACNAS I was also able to research opportunities for undergraduate students. As mentioned, in January I started my position as a professor at an undergraduate institution. AT SACNAS I was able to obtain information on a variety of programs that I will make available to my students. Furthermore, I was so impressed by this conference that this year I am taking two of my current student to the meeting to present a poster.
During SACNAS I also took advantage of what was available for minority postdoctoral scholars. I was able to reconnect with colleagues that I hadn’t seen since I had graduated with my PhD. Therefore, it was also a great experience for me for scientific networking.

Physiology Understanding Week 2011

My goal for this year was to successfully participate in the APS PhUn Week. I had wanted to participate in this event for a number of years but didn’t know where, or how to start the process. My goals for the event were twofold: 1. Work with a science teacher that didn’t already have a connection with my institution, the University of Arizona; 2. Incorporate scientists at all levels (undergraduates, graduate, postdoctoral students and faculty) in the event. I was able to meet both of my goals by collaborating with Dr. Scott Boitano, president of the Arizona Chapter of the APS. We connected with a physiology teacher, Mrs. Sheila Marquez, from Tucson Magnet High School. She had no prior experience with the University of Arizona and was ecstatic to participate in this event. Our objective was to enhance her curriculum and so we decided to base our activities around muscle physiology, which is what she already planned to teach during November.

During the event, we decided to establish 6 different stations where the students would learn about different aspects of muscle physiology for about 10 minutes before they had to switch to a different station.

We established three different stations focused on general aspects of cardiac, smooth and skeletal muscle. Another station focused on the electrical stimulus of muscle where we used an EKG and an ECG to monitor electrical stimulus. A fourth station used models to explain the gross anatomy of muscles. I provided a comparative approach to muscle physiology by demonstrating the structure and function of insect skeletal muscle.

During this event, we reached ~200 students and we had ~30 scientists volunteer to be part of the event. It was extremely successful!
Other Outreach Activities:
Being part of the APS K-12 Outreach Fellowship made me want to participate in a variety of outreach activities around my community during the year. These are just two of the major events that I was a part of.

The Arizona Insect Festival
(http://cals.arizona.edu/ento/festival/Festival/2011_Arizona_Insect_Festival.html)
This festival was geared to people in the Tucson community so that they could learn about the importance of insects in people’s daily lives and to discover the insect-based research that takes place at the University of Arizona. Our booth focused on the different development stages of our model system, Manduca sexta. We had caterpillars and moths for people to look at as well as touch while we described the different life stages of the hawkmoth as well as what our research focused on. We also had prepared specimen of different types of moths found around Southern Arizona.

2011 National Geographic BioBlitz:
Last year’s BioBlitz was held at the Saguaro National Park in Tucson Arizona. During this event I led three different groups on an insect inventory hike. During my first hike, I lead 20 4th grade science students through the Saguaro National forest where we identified 12 different species of insects. Students were in charge of locating the insects, helping in trapping and identifying. This same activity was conducted with a group of high school students and a group of people from the community of mixed ages.

Experimental Biology 2012
This year’s Experimental Biology meeting was amazing! Although I have been attending EB for a while, this year I felt like I was really part of the APS family. It surprised me how involved I have become in the society, and how many people I look forward to seeing during the meeting. This year, I serve on the Porter Physiology Development Award Committee as well as on the Comparative and Evolutionary Physiology section committee. Therefore, during EB I got to attend these committee’s business meetings, which I feel are such an important part of my development as a scientist. I participated in the PhUn Week poster session to share my experience at Tucson Magnet
High School with other physiologists. This year, I was invited to participate in a Career Panel during the Teacher and Student Workshop. There I was able to share with students my path towards becoming a physiologist. I also reunited with the teachers I met during the Science Teaching Forum. Furthermore, I was able to participate in the activities for the APS/NIDDK Travel Fellows which provided me with more network opportunities. This year I participated as a mentor for a fellow travel grant awardee, which was a very rewarding experience.

Beyond participating in these events, I also presented my research during the Scholander competition. Although I didn’t win the award, I did get a lot of good feedback for the conceptual model I am trying to develop for my first NSF Grant application. Furthermore, I was awarded with the CEPS Research Recognition Award. It was a great meeting!

**Summary**

In summary, being part of the K-12 Outreach Fellowship really helped me continue to grow as a scientist. I was pushed out of my comfort zone so that I could start developing ideas about how I could continue to make an impact in the lives of young students. This opportunity helped me develop better teaching strategies and provided me with the tools necessary to make changes in the way that I teach.

I plan to continue being involved in outreach activities. In fact, I just visited a classroom at La Sierra High School in Riverside, CA where I used some of the techniques I learned during this fellowship year to share my path to a scientific career. Being part of this fellowship has really changed how I plan to continue developing as a scientist!