

Undergraduate Opportunities (UnO)



Biology Department and the Museum of Southwestern Biology, UNM



Spring 2010

Undergraduate Opportunities at The University of New Mexico

The UnO Program encourages undergraduates to consider careers in science through research experience and *near-peer* mentorships with graduate students. Each student is paired with a faculty advisor and graduate student mentor to maximize their field and laboratory research experience.



The UnO program started in the Fall of 2007 with a founding population of 5 students. Our goal then (and now) is to provide project-based research experience for students from

underrepresented backgrounds. We think the best way to get students thinking about science careers and graduate school is to start them early on research projects. So far so good; we have had 5 graduate (6 more in May 2010) and already 3 have entered graduate programs. We currently have 16 faculty mentors, 15 graduate student mentors and 16 mentees. UnO conducts weekly seminars covering a broad range of topics related to research, graduate education and careers in science. An emphasis on ethics is facilitated by Co-PI **Dr. William Gannon**. UnO is coordinated by **Dr. Sylvia Brunner**. UnO has come a long way from our founding, with 33 oral or poster presentations at local, national and international conferences (e.g. Ecological Society of America). We are now moving full steam ahead and looking toward the future.

Community Outreach

Outreach efforts extend to a number of communities and colleges. Here are a few examples: In 2007 and 2008, **Dr. Joe Cook** (PI) met with faculty and students at UNM Gallup and Diné College (Tsalie and Shiprock) to discuss training opportunities at UNM. Ten students from Southwestern Indian Polytechnic Institute (SIPI) visited the Biology Department and the Museum of Southwestern Biology (MSB) in 2008. On December 3, 2009 UnO travelled to UNM-Gallup and talked to college and high school students about research opportunities. **Theresa Hyde** (Graduate Student Coordinator) spoke with two classes about careers in science as well as training and research opportunities at UNM's main campus. Ten students and two instructors from Diné



College visited the Biology Department on 26 February 2010 to learn about opportunities available after their 2-year program. They toured the MSB and were introduced to the Biology Undergraduate

Advising team, American Indian Student Services and the Department of Civil Engineering.

The UnO Roadshow



Research has little value if no one hears about it. So as part of our community outreach initiative and near-peer mentoring, UnO students have been visiting local schools to talk about their research projects.



Albuquerque High School

On November 6, 2009, UnO students visited Albuquerque High School. Joan Newsom a AHS teacher spoke about their visit, "Three outstanding University of New Mexico biology majors volunteered to speak to half the students at Albuquerque High School about their exciting biology research. These biology majors, Jes Martin (Los Alamos), Jesse Trujillo (Raton), and David Banks-Richardson (Atlanta) spoke to groups of 100 to 150 high school students for each of the seven periods of the day. Based on the attentiveness of the students, the questions asked during the presentations, as well as oral and written comments after the presentations, (they) seemed to capture the imagination and inspire many of the high school students."



Sandia Prep

On March 5, 2010, Jessica Martin, Jessie Trujillo and David Banks-Richardson gave presentations and worked on activities with high school students in hopes of encouraging and nurturing the scientist in all of us. Students visited the classes taught by Helen Haskell. She had this to say about them, "Jes, Jess, and David have just left my classroom having done four excellent programs today. They did a superb job in communicating their science research to my students and combined it with really good and appropriate hands on activities that helped explain some of the techniques they use in the lab."



Rio Grande High School

Four students from the UnO program visited Rio Grande High School on March 26, 2010. Students presented their research to 4 class periods. MJ Vargas (Las Vegas) really got the students going when she had volunteers suit-up in her caving gear. MJ spoke about the trip "Overall, I think the students were intrigued by our presentations. Most of them probably had no idea that opportunities for a career in science are so readily available. I'm happy that we reached out to some students at Rio Grande High School because it may have helped them make the decision to come to college in New Mexico. It's a good feeling knowing that you're helping people even if they don't know it yet."

Meet the Graduate Student Coordinator

Theresa Hyde has been a coordinator with the UnO program since its inception in 2007. As part of **Dr. Blair Wolf's** lab, she is investigating the use of stable isotopes as tracers of water resource use by birds and bats in the Sonoran Desert. "I really wanted to go into biology because I love being outdoors and I've always had a curiosity about how organisms



function within their environments. Being a graduate student has taught me how to assess these questions and has provided many opportunities to work with other students on their research. There is nothing like being out in the middle of nowhere, whether it is the desert or a tropical forest, and finding something that you have never seen before and really having an appreciation for how it lives in that environment. I am really grateful for all the things I have been able to do and the friends I have made." After graduation Theresa plans to move to the Boston area to pursue her interests in biology and to learn as much as she can about the east coast flora and fauna.

Mentor Spotlight on Diana Northup

Diana studies the interactions of microbes and minerals, especially in caves. She's worked in Lechuguilla Cave and Carlsbad Cavern in NM, in lava tubes in the Azores, Hawai'i and New Mexico, and in a hydrogen sulfide-rich cave in Mexico. Her work has been featured on CNN, the Discovery Channel, NOVA (<http://www.pbs.org/wgbh/nova/caves/>), National



Geographic, NPR, and the BBC. She also teaches a UNM Freshman Learning Community, Microbes: Friends or Foes.

About mentoring, she says "I really enjoy working with high school and undergraduate students because they bring such fresh enthusiasm to doing research. Taking students in the field or seeing their expressions when they see the bands on the gel that signify that their amplification reaction worked is always fun. They're the best fountain of youth that I can imagine."

Currently Diana serves as a faculty mentor for UnO students: Matthew Garcia and MJ Vargas.

UnO's Graduating Seniors May 2010



Jessica Martin



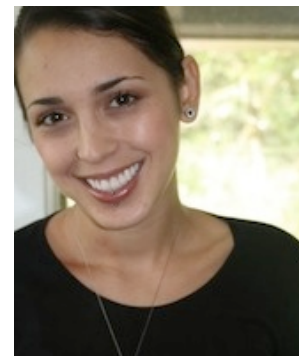
Jessica is no stranger to extreme environments; in fact, she works on desert woodrats in Death Valley. As a member of **Dr. Felisa Smith's** lab, she makes yearly excursions to "Furnace Creek" to study *Neotoma lepida*. The title of her project: "You are what you eat: the key role of mesquite in promoting survival in a extreme environment", explores the role mesquite has on the survival of *N. lepida*; specifically how mesquite is used as a food resource and protects against predation through spinescence. Jes received the Barry Goldwater Scholarship in 2009 and has presented her research at the American Society of Mammalogists and the International Biogeographical Society meetings. She hopes to join the Peace Corps before going to graduate school. Catch Jes and her band, Arroyo Deathmatch, on their west coast tour this summer.

April Tafoya



April is an Environmental Science major with big ties to the Biology Department. She has been working with **Dr. Kelly Miller** on insect systematics where she has completed a phylogenetic analysis of the genus *Hygrotus* (Coleoptera: Dytiscidae) and coauthored a species description of a subterranean member of the Dytiscidae family. April has won numerous awards for her research; Harry and Mabel Leonard Research Fellowship (2009) and first place in oral presentations at the New Mexico Alliance for Minority Participation Conference (2009). She will be graduating this spring with departmental honors and plans to continue her search for subterranean arthropods in the future. She been accepted into the Masters Program at UNM's Department of Earth and Planetary Science.

Natalie Blea



Natalie is a world traveler or perhaps a New World traveler. In the past year alone she has traveled to 3 countries in Central and South America in search of *Anolis* lizards. As part of **Dr. Steven Poe's** lab and with near-peer graduate student mentor **Mason Ryan**, she has helped describe a new species of *Anolis* similar to *Anolis polyepis* from Costa Rica. She is investigating the "Elevation of the subspecies *Anolis humilis marsupialis* to species status", where phylogenetic analysis and morphology were used to distinguish the two. She has presented her research at the *Anolis* Symposium at Harvard University (2009) and the West Coast Biological Sciences Undergraduate Research Conference (2010). Natalie plans to apply to graduate school and is interested in herpetology and conservation.



Carmela Carrasco has been to one of the most exclusive islands in the world to study symbiotic relationships between nitrogen fixing microbes and invertebrates.

Her summer project working in **Dr. Ursula Shepherd's** lab took her to Lizard Island in Australia. There she worked with **Dr. Cristina Takacs-Vesbach** to look at microbial nitrogen fixation within marine invertebrates. Carmela plans to attend graduate school in the near future.



Raphie Bishara has been working with **Dr. Tom Turner** on mesocosms in the middle Rio Grande. What is a mesocosm you ask? They are artificial tanks used as micro-environments to study

organisms in a controlled environment. In this case, mesocosms are used to study the community structure of the Rio Grande during dry-down periods. After graduation Raphie plans to apply to graduate school. While traveling with different biology classes to the neotropics, she discovered how much she likes herpetology. So she would like to find a graduate program that combines both herpetology and conservation biology.



Justin Pichardo enjoys investigating turtles and tortoises with graduate student mentor, **Ian Murray**. After graduation he hopes to continue working in the

Museum of Southwestern Biology and helping Ian. Hands-on experience with animals has peaked his interest in wildlife photography and he plans to pursue that interest further.

Interested in our program? We are now accepting applications! Check us out on the web <http://www.msb.unm.edu/UnO/education.html>

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