



Department News
May 1, 2017

Grants:

PI: Dr. Richard Cripps
Project Title: Post-baccalaureate Research and Education Program (PREP)
Agency: NIH
Project Period: 9/30/2005 – 2/28/2022
Total Amount: \$2M

The Post-baccalaureate Research and Education Program—The Post-baccalaureate Research and Education Program (PREP) is designed to enhance the ability of individuals in the biomedical sciences to gain entry to, and succeed in, nationally recognized Ph.D. programs. PREP is aimed at individuals from under-represented populations in the sciences who have recently received a Bachelors degree and have limited laboratory experience.

PI: Dr. Eric (Sam) Loker
Project Title: Snail-related studies of transmission and control of schistosomiasis in Kenya
Agency: NIH
Project Period: 5 years
Total Amount: \$2.26M

The \$2.26M award will enable Dr. Loker and UNM colleagues, along with long-standing colleagues at the Kenya Medical Research Institute in Kenya, to pursue a series of field studies in and around Lake Victoria designed to reveal and exploit some of the biological complexities associated with transmission of the parasite *Schistosoma mansoni* to people in the area. Prevalence rates of infection in children are as high as 90% in some of the villages studied. Goals of the study are to ascertain the extent to which non-human parasites compete within the snail vector with schistosomes to limit transmission to people, and to explore the potential role of resistance in the vector snails in limiting schistosome transmission to people.

PI: Dr. Bruce Milne
Project Title: The Mandela Washington Fellowship for Young African Leaders
Agency: U.S. Department of State and The International Research & Exchanges Board is an international nonprofit organization providing leadership and

innovative programs to improve the quality of education, strengthen independent media, and foster pluralistic civil society development (IREX).

Dates: June 19, 2017 through July 30, 2017
Amount: \$150,000 (University cost-share of \$100,000)

The Sustainability Studies Program, in partnership with faculty from the College of Arts & Sciences, the School of Architecture & Planning, and the Anderson School of Management, will host 25 young Sub-Saharan African leaders in a six-week intensive summer institute this June and July. The institute will focus on sustainability in business and entrepreneurship, and will highlight innovative examples of social business, the creative economy, clean energy, food systems, the built environment, rural healthcare, and more in New Mexico. Fellows will be paired with community mentors, and will engage in service and cultural activities throughout their stay in Albuquerque. The aim of the institute is to deepen partnerships between the US and Africa, and to build a network of African leaders at the forefront of positive change in their sectors.

PI and Co-PIs: Erick Ackerman (PI, Sandia National Labs), David Hanson (Co-PI, UNM)
Key Personnel: Ronen Polsky, Philip Miller, Ron Maginell, Jerilyn Timlin (SNL) and Ben Duval (NMT)
Project Title: Multi-model monitoring of plant roots for drought & heat tolerance in the US Southwest.
Agency: Advanced Research Projects Agency-Energy (ARPA-E) Energy Department.
Dates: 2/01/2017 – 01/31/2019
Amount to UNM: \$519,395 (total award \$2,400,000)

The aim of this research is to demonstrate that inexpensive and easy to deploy microneedle and micro-gas chromatography systems developed by SNL can be used collect continuous measurements of new aspects of plant function above and below ground (turgor pressure, sugar content, electrical resistivity, and production of volatile compounds). The current funding is for proof of concept in lab and greenhouse conditions. If successful, follow-on funding may be available for deploying in field conditions.

PI and Co-PI: David Hanson (PI, UNM), John Boyer (Co-PI, Univ. of Missouri)
Project Title: Collaborative Research: Recalibrating CO₂ and water diffusion through leaves to improve models of photosynthetic responses to the environment
Agency: NSF IOS (award #IOS 1658951)
Dates: 2/1/2017-1/31/2020
Amount to UNM: \$623,013

This research challenges fundamental assumptions in the measurement of photosynthesis and water loss from leaves that have been in use for over three decades. Our approach will correct significant errors and improve analyses of photosynthetic responses and water use efficiency, especially during dry and hot conditions.

Sampling of Current Publications: (lead author in bold, in most cases)

Richard Cripps, Professor

Chechenova, MB, Maes, S, Oas, ST, Nelson, C, Kiani, KG, Bryantsev, AL, and Cripps, RM. Functional redundancy and nonredundancy between two Troponin C isoforms in *Drosophila* adult muscles. *MBoC*. 2017;28 (6)760-770.

Katina V. Krasnec, Ph.D.

Krasnec, KV, Papenfuss, AT, and Miller RD. The UT family of MHC class 1 loci unique to non-eutherian mammals has limited polymorphism and tissue specific patterns of expression in the opossum. *BMC Immunology*. 2016;17:43.

Diana Northup, Visiting Associate Professor and Professor Emerita, UNM Libraries

Lavoie, KH, Winter, AS, Read, KJH, Hughes, EM, Spilde, MN, and **Northup, DE**. Comparison of bacterial communities from lava cave microbial mats to overlying surface soils from Lava Beds National Monument, USA. *PLoS ONE*. 2017;12(2):e0169339.
Doi:10.1371/journal.pone.0169339.

Hamm PS, Caimi NA, Northup DE, Valdez EW, Buecher DC, Dunlap CA, Labeda DP, Lueschow S, Porrás-Alfaro A. 2017. Western bats as a reservoir of novel *Streptomyces* species with antifungal activity. *Appl Environ Microbiol* 83:e03057-16.
<https://doi.org/10.1128/AEM.03057-16>.

Donald Duszynski, Professor Emeritus

McAllister, C.T., D.W. Duszynski, R.N. Fisher, C.C. Austin. Four new species of *Eimeria* (Apicomplexa: Eimeriidae) from *Emoia* spp. skinks (Sauria: Scincidae), from insular Pacific with a summary of coccidia from skinks of Papua New Guinea. *Journal of Parasitology* **103**: *In press*.

Chinchilla, M., I. Valerio, D.W. Duszynski. Endogenous life cycle of *Eimeria melanomytis* (Apicomplexa: Eimeriidae) from the dusky rice rat, *Melanomys caliginosus* (Rodentia: Cricetidae) in Costa Rica. *Journal of Parasitology* **103**: *In press*.

Geru T., Tuanyuan, S., Xinming T., Duszynski D.W., Yunzhou W., Chao L., Jingxia S., Xiuling T., Xianyong L., Xun S. 2017. Transgenic *Eimeria magna* Pérard, 1925 displays similar parasitological properties to the wild-type strain and induces an exogenous protein-specific immune response in rabbits (*Oryctolagus cuniculus* L.). *Frontiers in Immunology—Mucosal Immunity* **8.2**:1-8.

Cao, Y-F., G.-Z. Shang, Y.-B. Yang, X. Zhang, D.W. Duszynski, T.-Z. Zhang, Y.-H. Zhu, J.-H. Bian. Parasites of the plateau brown frog, *Rana kukunoris* Nikolsky, 1918 (Anura: Ranidae) from

the northeast of the Qing-Tibetan plateau, with the description of a new species of *Isospora* (Apicomplexa: Eimeriidae). *Comparative Parasitology* **84**: *In press*.

Megan J. Osborne, Ph.D.

Matthews, WJ, Turner, TF, Osborne, MJ. Breakdown of a hybrid swarm between two darters (Percidae), *Etheostoma radiosum* and *Etheostoma spectabile*, with loss of one parental species. *Copeia*. 2016;104(4)873-878.

Osborne, MJ, Pilger, TJ, Lusk, JD, and Turner, TF. Spatio-temporal variation in parasite communities maintains diversity at the major histocompatibility complex class II β in the endangered Rio Grande silvery minnow. *Molecular Ecology*. 2017;26, 471-489.

Robert Waide, Professor

Weiser, M.D., S. Michaletz, V. Buzzard, Y. Deng, Z. He, L. Shen, B.J. Enquist, R.B. Waide, J. Zhou, and M. Kaspari. 2017. Toward a theory for diversity gradients: the Abundance-Adaptation Hypothesis. *Ecography* (accepted).

Blair Wolf, Professor

Albright, TP, Mutibwa, D. Gerson, AR, Smith EK, Talbot, WA, O'Neill, JJ, McKechnie, AE, **Wolf, B.** Mapping evaporative water loss in desert passerines reveals an expanding threat of lethal dehydration. *Proc Natl Acad Sci U S A*. 2017 Feb 28;114(9):2283-2288. doi: 10.1073/pnas.1613625114.

Awards:

Michelle Facette, Assistant Professor, won a seed award to further her work on the development of fluorescent protein marker lines for monitoring cell division in maize. Fluorescent proteins allow protein dynamics to be monitored prior to cell division. This research will help to understand the critical development process through live cell imaging.

The Women in STEM (WIS) awards competition was developed through a collaboration between UNM Acting President Chaouki Abdallah, Vice President for Research Gabriel Lopez, and the ADVANCE at UNM program, a five-year National Science Foundation project that promotes women STEM faculty.





Jonathon Cordova, a second year IMSD student and a mentee working in Dr. Richard Cripps's lab since 2015, is a recent recipient of the prestigious Barry Goldwater Scholarship. Mr. Cordova is a senior majoring in biochemistry. Mr. Cordova's other mentors include Dr. Maggie Werner-Washburne, Department of Biology, UNM, and Drs. Nicole Persky and Cory Johannessen, Broad Institute, MIT & Harvard, Cambridge, MA. Mr. Cordova credits his interest in pursuing a research career to his mentors saying "They have opened up my eyes to the wonders of science and it is because of them that I aspire to pursue an advanced degree".

Jocelyn Colella, Doctoral student in Biology, received first place in LoboBITES.

"Tracking the Ice Age Legacy in Modern DNA"

LoboBITES are three minute presentations on a thesis, dissertation, or other substantial research project. To be successful, students must present their research in a compelling and easily digestible way, using language and terms appropriate for a general, non-academic audience. Presentations are judged by a panel consisting of UNM and Albuquerque community members and top contestants can win up to \$1000. Jocelyn is shown here with the 2nd and 3rd place winners and Acting President, Chaouki Abdallah.



Tayli Jade Lam, Fiscal Services Tech., Accounting Department, received the UNM Sustainability award presented by the UNM Purchasing Department. Ms. Lam was recognized for having the highest "**Green Spend**" between percentage and dollars spent on all items purchased through Lobomart throughout UNM. According to Robert Ortiz, Procurement Data Manager, Procurement Services, Ms. Lam is helping with their mission of moving purchasing toward a greener and more sustainable mindset.

UNM Department of Biology

2017 ANNUAL RESEARCH DAY PRESENTATION WINNERS

Please click on this link to see a complete list of the winners.

<http://biology.unm.edu/news/2017-RD-Winners.html>