Descargas otorgadas

Segundo Semestre 2018-2019

Dr. Sean Locke
Departamento de Biología

"Reconciliation of conflicting evolutionary histories of parasitic flukes (Platyhelminthes, Digenea)"

The proposed works builds on a recent collaboration with a colleague in the biology department (Locke,Van Dam et al. Int. J. Parasitol. in press) using next generation sequencing (NGS) to robustly assess evolutionary relationships among digeneans. Digeneans comprise more than 20 000 species of parasitic worms, many of which affect the health of humans, agricultural animals and wildlife. To date, taxonomic studies using the NGS tools we applied have mostly been limited to better studied organisms, such as vertebrates. Higher taxonomy of digeneans still rests on traditional Sanger-sequencing work from 2003. However, our work shows conflicting evolutionary patterns in DNA from the mitochondrion and the nucleus, some of which calls into question the current taxonomic framework. Thus, the timing is ripe for testing existing taxonomy with data-rich NGS methods. Release time will allow me to write and submit manuscripts based on the results of analysis of samples that have already been collected, identified and submitted to a sequencing facility. Undergraduate student contributions to this work may include sequence analysis and parasitological necropsy, which develop desirable skills in analytic and organismal biology.

Dr. Francisco García-Moreno
Departamento de Estudios Hispánicos

"Continuación del proyecto de documentación de restos del Ferrocarril de Circunvalación de Puerto Rico en el Ramal de Cabo Rojo"

Se propone continuar el proyecto de reconocimiento del tramo de ferrocarril de Lajas a Filial Amor en su ramal de Cabo Rojo y la documentación de los restos arqueológicos mediante el recogido de coordenadas, toma de fotografías, mediciones, descripción de la ruta y los remanentes y creación de mapas con la plataforma Google Earth. Además, se propone la comparación de vestigios en la ruta con los planos de 1904, 1905 y 1907 hallados en el Archivo Nacional de Puerto Rico, la descripción que del ramal hace William H. Armstrong en su manuscrito de 1912 y las fotos aéreas de Puerto Rico del *Porto Rico 1930 Aerial Image*

Database de 1930. A estos documentos se añaden los planos de la American Rail Road del Ramal de 1926 hallados en el Archivo Digital Nacional.

Dr. Mark Jury
Departamento de Física

"Hurricane Maria Intensification"

This project will study the intensification of Hurricane Maria near Puerto Rico in September 2017. The project will utilize operational hurricane datasets to: study why the initial intensification east of Martinique was under-forecast, study why the south-side of Hurricane Maria intensified on passing Puerto Rico, and compare operational models from various external and in-house sources. The work will be done in collaboration with the San Juan National Weather Service, Meteo-France Martinique, and University of Antilles Guadeloupe. UPRM students will be involved in data analysis and scientific reporting via FISI 4999. In addition, a graduate student will consider emergency management and preparedness improvements.

Dr. Sergiy Lysenko
Departamento de Física

"Photoinduced Dynamics in Phase-Change Vanadium Oxides"

This proposal is based on two current projects conducted by Sergiy Lysenko (PI) and funded by DoD and NSF. We are currently at the final stage of the development of a state-of-the-art optical apparatus (scatterometer) for ultrafast surface spectroscopy: NSF Award# DMR-1531627, "MRI: Development of Angle-Resolved Light Scattering System for Ultrafast Surface Spectroscopy." This project is fully active and will be active during the second semester of 2018-2019 academic year also, but until March 2019. Also during the last several years our research on ultrafast dynamics of quantum materials has been funded by DoD ARL ARO agency: Award# W911NF-15-1-0448, "Nonlinear Plasmon, Rayleigh Scattering and Terahertz Dynamics in Phase-Change Correlated Oxides". This project is active under non-cost · extension until August 31, 2019.

During the second semester of 2018-2019 academic years we are going to complete these two projects. We will finalize the alignment and programming of the light scattering setup (NSF MRI project) to study phase change materials and test it with vanadium oxide samples. We will finalize the installation and programming of the CCD cameras for 3D scattering field imaging, and will install the optical delay line. The Aerotech"linear motorized stage will be used to build optomechanical delay. We will install and program additional computer-controlled motorized "filter wheel" in the light input side of the vacuum chamber. This is the commissioning phase of NSF MRI project. The research activities for DoD project will be focused on investigations of nonequilibrium dynamics of phase-change vanadium oxides. We are planning to investigate nonequilibrium dynamics in V305, V407 and V02 materials at the fundamental timescales of atomic and electronic motion, and to train STEM students in the area of ultrafast science and condensed matter physics. We will continue time-resolved

ultrafast measurements of reflection, transmission and scattering at cryogenic temperatures of the samples in order to find possibilities for creating artificial or transient metastable quantum phases in these materials by light, and to elucidate elusive and metastable phases on ultrashort time scales. Special attention will be focused on the photoinduced phonon dynamics and excitation of surface plasmons and on influence of photoinduced and internal misfit strain in correlated oxides on ultrafast phase transition dynamics.

Dr. Kenneth Hughes
Departamento de Geología

"*Landslide Susceptibility Modeling in Puerto Rico in the Wake of Hurricane María''*

Puerto Rico often experiences landslides in its mountainous interior during high intensity rainfall events. These natural phenomena result in the destruction of roadways, buildings, and loss of human life. In addition, landslides are also responsible in the delivery of very large volumes of sediment to the fluvial network, which can provoke additional environmental and societal issues. Hurricane María highlighted the importance of landslides across Puerto Rico. In collaboration with the U.S. Geological Survey and the U.S. Department of Agriculture, I led a group of students that catalogued and digitized an inventory of all landslide sites across PR after María. The final inventory is currently being quality checked but includes over 40,000 sites. This dataset is a valuable tool because it will allow the elaboration of a much needed revised landslide susceptibility map for Puerto Rico. In Puerto Rico, the map used by the Junta de Planificación to evaluate site susceptibility to landslides is an outdated and very coarse resolution hand-drawn map from 1979. Law #24 of 2008 is the "Ley del Protocolo para la Mitigación de Riesgos por Deslizamientos de Terreno de Puerto Rico" and requires that the JP in addition to other agencies in collaboration with the UPR-Mayagüez develop a new landslide hazard map for the 78 municipalities of PR. In collaboration with these agencies and the USGS, I have been using our inventory to carry out a significant part of the law requirements and seek to finalize the endeavor with the aid of institutional release time.

Dr. Eric Lamore
Departamento de Inglés

"Contextualizing Abigail Field Mott's 1829 Abridged Edition of Olaudah Equiano's Interesting Narrative: Books, Letters, and Newspapers from the Archive"

In my Reading African American Autobiography: Twenty-First-Century Contexts and Criticism, I wrote a chapter analyzing Abigail Field Mott's 1829 abridged edition of Olaudah Equiano's Interesting Narrative. Equiano's Interesting Narrative was a best-selling autobiography that assisted in eradicating Great Britain's transatlantic slave trade, yet Mott edited her text for African American students enrolled at the New York African Free School, an institution that educated the children of freed black New Yorkers. Because many scholars do not know about this rare edition, my current project is a critical edition of Mott's book. I have submitted a proposal for this book to Dr. John Ernest and Dr. Joycelyn K. Moody, editors

of the West Virginia University Press Regenerations Series. I respectfully request a research release to study several archival documents edited and written by Mott, several archival letters written and received by Samuel and William Wood (the publishers of Mott's book), a plethora of newspapers published in the 1820s by the American Colonization Society, children's books published by the Woods, and peer-reviewed scholarship on nineteenth-century resettlement projects and Quakers' endorsements of these projects. I found or downloaded these texts while I was a Visiting Scholar at the University of Chicago. This intellectual work will strengthen my introduction to the critical edition by placing Mott's 1829 book in new historical, political, and print contexts.

Dra. Ricia Anne Chansky
Departamento de Inglés

"*Stage Two: Narratives of Hurricane María and Its Aftermath in Puerto Rico"*

I respectfully request release time for the spring 2019 semester to continue a large-scale research project that utilizes oral history as a methodology to study the impacts of Hurricane María and its aftermath on the people of Puerto Rico. The work is being completed under the auspices of the Voice of Witness program and in collaboration with the Humanities Action Lab (HAL), a research group led by Columbia University, Rutgers University, and The New School. This project includes the training of 100 undergraduate students in the fall and fifty in the spring in the best practices of oral histories. Selected collected narratives will be published by Haymarket Books, the leading social justice press in the US, while others will be included in the international, traveling exhibition curated by HAL. The secondary objectives of this project are to facilitate a rehabilitation of agency in students disempowered by a natural disaster and the ongoing fiscal crisis; promote the voices of Puerto Ricans in order to encourage listening and witnessing; record history, traditions, and cultures of Puerto Rico; teach internal and external readers about Puerto Rico; create a ground-up, people's history of Hurricane María in Puerto Rico; collect data that interrogates the relationship between Puerto Rico and the US, as exemplified by the federal government's response to the hurricane and its aftermath; and, articulate questions of national identity in the contemporary US. In this interdisciplinary project, the research product—auto/biographical narratives—fulfills multiple functions: literary narrative, historical record, sociological data, pedagogical tool, etc.

Dra. Sandra Soto
Departamento de Inglés

"Forcing the Gates: A Testimonial History of the Center for University Access at the University of Puerto Rico-Mayagüez"

The Center for University Access (CUA) is a social justice in education program for regional low-income youth. For eleven years, our early intervention and long-term multisector partnership has supported middle-, high-school and post-secondary education participants from subsidized housing projects and adjacent neighborhoods in Mayagüez. Each semester, we work with approximately 100 school-level and 50 post-secondary participants from

communities whose poverty rate stands at 80% or higher. They are all aspiring or current first-generation college students.

In Puerto Rico, nearly 60% of Puerto Rican youth currently living below the federal poverty level. Of this cohort, 48% of males and 38% of females do not finish high school. While the retention rate of Puerto Rico public schools is less than 50%, 96% of CUA school-level participants has remained in school or has graduated from high school. More than 100 CUA school-level participants have successfully completed high school. Moreover, post-secondary admission rates for CUA participants are exceptionally high at 100%. More than 50 CUA participants have been admitted to higher education institutions; more than half of them at UPRM.

The proposed research project seeks to construct a testimonial history of the CUA participants and stakeholders, in order to document the CUA's social justice in education mission at UPRM and its impact on impoverished youth's access to education, retention, persistence and graduation in the community of reference of our campus. These new data will also complement existing quantitative data. We have in our longitudinal database. The research team will compose a testimonial history of the CUA's trajectory by collecting extensive life stories of participants, parents, teachers and stakeholders. The testimonials will also be instrumental to our fund-seeking efforts, to ensure the continuity of our services.

Dr. Alejandro Vélez
Departamento de Matemáticas

"New trends of boundary value problems of nonstandard growth over general domains"

The main goal of this research proposal is to investigate the solvability, global regularity theory, and multiplicity results for new generalized classes of nonlinear elliptic and parabolic problems with nonstandard growth conditions on a wide class of domains. As a consequence, we strive to extend and generalize de regularity theory to a more general class of differential equations over non-smooth domains, opening the door for a deeper study of new boundary value problems with multiple nonlinearities of nonstandard growth structure over a huge variety of regions and domains (something not investigated before).