



2019 GeoCUR Award For Excellence in Student Research

Jillian Ashton, Grand Valley State University

Geology, Nominated by: Dr. Tara Kneeshaw

Jillian Ashton is an active student in the Geology Department at Grand Valley State University who has made great strides to demonstrate her academic ability and desire to gain practical skills in the field of geology. Jillian has consistently sought out research opportunities and has voluntarily worked on a number of research projects. Notably, during summer 2019, Jillian had the opportunity to assist in collecting and analyzing data as part of ongoing research projects involving an intensive biogeochemical characterization of a unique wetland in Van Buren County, MI (Hultmark Nature Preserve) housing threatened native plants. She presented results from this study at the Geological Society of America meeting in Phoenix this past fall. Jillian continues to work on this project and recently obtained funding for radiocarbon dating of the wetland sediment and is also examining porewater geochemistry profiles of the wetland. In addition, Jillian will also collect and analyze water quality samples as part of the “Grand River Expedition” during summer 2020. This expedition is a once-in-a-decade, 14-day sampling of the entire length of Michigan’s Grand River by canoe/kayak. Jillian’s record of active involvement in research is notable and sets her apart from her peers. Jillian is no doubt an excellent student researcher with an exciting career ahead.

Marie Nivia Mapuana Gibson, New Mexico State University

Geological Sciences, Nominated by: Dr. Nancy J. McMillan

Marie Gibson arrived at NMSU in August, 2018, with a passion for minerals. Her research involves zoning of watermelon tourmalines, a variety of pegmatitic tourmaline with pink cores and green rims. The project has two goals. First, Marie is interested in assessing core-rim major and trace element variations in tourmalines from locations around the globe. She is also interested in comparing the core-rim variations in multiple tourmalines from a single pegmatite. Her question is: what do these compositional differences tell us about pegmatite evolution? The second goal of the project is to apply Laser-Induced Breakdown Spectroscopy (LIBS) to mineral zoning. LIBS is a laser ablation, optical emission technique that collects information about concentrations of every element in every laser shot. Although it is prohibitively expensive to calibrate and quantify the concentration of each element, the multivariate statistical technique Principal Component Analysis provides a tool for analysis of core-rim variations.

Marie has excelled at every step of this project. She purchased samples at the Tucson Gem and Mineral Show carefully and methodically, considering the size, quality, cost, and source of each sample. She will use two different analytical techniques, LIBS and electronic microprobe, as well as multivariate statistics. She wrote a successful \$2500 proposal to the NMSU College of Arts and Sciences' Discovery Scholars Program. Her abstract "A compositional analysis of zoned watermelon tourmalines using Laser-Induced Breakdown Spectroscopy (LIBS)" was presented at the 2019 Geological Society of America (GSA) meeting and final results will be presented at the 2020 GSA meeting.

Ben Magnin, DePauw University

Geosciences, Nominated by: Dr. Ken Brown

The Department of Geosciences at DePauw University would like to nominate senior geology major Ben Magnin for the GeoCUR Excellence in Student Research Award. Ben stands out among his peers by conducting undergraduate research on a variety of topics that have led to eight presentations at national conferences (seven at Geological Society of America conferences). Specifically, Ben has worked with Dr. Sandra Brake at Indiana State University to understand the role of *Euglena mutabilis* (a eukaryotic microorganism present in biofilms in acid mine drainage environments) in forming iron-rich stromatolites and in potentially impacting the development of life on early Earth and extraterrestrial planetary bodies. He also worked with Dr. Brake on a mineralogic study and trace-element analysis of sphalerites present in Mississippi Valley-type deposits in central Tennessee. As a Science Research Fellow at DePauw, Ben worked with Dr. Scott Wilkerson on projects involving the 3-D structural analysis of a complex fault-related fold and the interpretation of three seismic reflection lines in SE New York state (including depth-converting and restoring their cross-sectional interpretations). Although Ben had not yet had a class in structural geology, he quickly ramped up on various technical structural geology concepts. In fact, this particular research experience highlights a strength that permeates all of Ben's research projects: Ben's ability to pick things up quickly and to implement these newly learned skills in an effective and highly productive manner that leads to publishable research. Ben is an excellent candidate for this honor.

Camille Smith, University of Tennessee at Chattanooga

Biology, Geology and Environmental Science, Nominated by: Dr. Amy Brock-Hon

Camille has been working to characterize sediments from small arid depressions atop a mesa in southern Nevada. She has worked over two semesters to prepare samples and analyze for soluble salts, texture, elemental and mineralogical composition through INAA+ICP-OES, scanning electron microscopy and electron microprobe analyses. Her work will help to answer key questions about the genesis and evolution of these features and the record of surficial and tectonic activities that they may hold. She is a diligent and thorough researcher who has contributed greatly to the research process. Camille is nominated for this award because she is an outstanding undergraduate student doing research in the Geology program at UTC.

Hannah Veldhuizen, Indiana State University

Earth and Environmental Systems, Nominated by: Dr. Jennifer Latimer

Hannah has been a model student in our program who demonstrates tremendous potential as a research scientist and geologist. As an undergraduate student, Hannah has completed five different research projects in the Biogeochemistry and Paleolimnology research labs at Indiana State University. Hannah has studied nutrient and E. coli pollution in local streams, the bioavailability of lead in urban soils, and phosphorus burial during Cretaceous ocean anoxic events. Hannah received a GSA research grant to study phytoremediation using sorghastrum nutans and arbuscular mycorrhizal fungi, a project she designed and carried out on her own. She has also contributed to many other projects, and she is the author or co-author of 10 published abstracts. Hannah has presented her research at national and regional conferences, and her abstract was selected for presentation at CUR's Posters on the Hill in 2020. Hannah is currently writing a manuscript based on her microplastics research which documented the presence of microplastics in the stomachs of archived fish. She discovered that microplastics have been ingested by fish for decades. Hannah will begin graduate school in Fall 2020, and we are excited to see all that she will accomplish.