The Department of Biological Sciences is launching a new program this year and we need your help to make it a success!

Summary: The Students Advancing Biological Research and Engagement (SABRE) program will provide several of our undergraduate students with an opportunity for an intensive summer research experience at WMU, while building connections between the university and the Kalamazoo community through volunteer activities. [www.mywmu.com/sabre](http://www.mywmu.com/sabre)

The SABRE program was created by Biological Sciences faculty Dr. Kathryn Docherty and Dr. Sharon Gill and the WMU Office of Development and Alumni Relations. At its core, SABRE is a crowdsourcing funding program. You may have heard of crowdsourcing before: websites like Kickstarter.com provide people from around the world with a platform to obtain monetary support for everything from art and music projects to travel to video game design. Director Spike Lee even used crowdsourcing to fund production of an entire movie!

We have taken this basic idea and applied it to an important educational and community outreach opportunity for WMU’s Biological Sciences students. Undergraduate student researchers at WMU are a valuable resource to our faculty research programs. In turn, it is through hypothesis-driven hard work and dedication to a particular question that students of the sciences truly achieve mastery and understanding of the scientific process. Students who have the time and energy to focus on a project and work closely with a faculty mentor have found this to be one of the most rewarding experiences of their undergraduate careers at WMU. In addition, undergraduate research opportunities often lead to presentations at national conferences and authorship on publications, which are excellent resume builders for any future career in the sciences.

Here’s what past students have said about their research experience at WMU:

“While classroom experiences were certainly helpful in preparing me for life post-grad, I believe the single most impactful experience I had at WMU was working in a research lab... This research opportunity was a key component in teaching me what it really meant to “study science” and, more importantly, how to think like a scientist. I believe that it is paramount for our communities to engage students in as many research opportunities as possible.” - Barbara Buehler, Class of 2012, currently at Central Michigan University College of Medicine.

“I learned a wide range of experimental techniques, improved upon my critical thinking skills, learned about effective experimental design, and strengthened my science communication skills by presenting my research during lab meetings or conferences....I see my experience of working in the laboratory at WMU as the most influential factor in my decision to pursue a career as a research scientist.” – Olivia Walser, Class of 2013, currently applying to graduate programs.
Our goal is to raise sufficient funds through crowdsourcing to support four talented Biological Sciences students during our pilot year (Summer 2014). This stipend will provide these students with an opportunity to focus on developing their skills in scientific inquiry without coursework and part-time jobs competing for their time and attention. We plan to continue and expand the program in future years, but our goal this year is to reach a total of $20,000, providing a stipend of $4000 for each of four students to work with a Biological Sciences faculty mentor and funds for research supplies and travel. One of the most exciting aspects of this program is that it is also designed to connect our students with the Kalamazoo community. Each of the students will spend at least 10 hours a week volunteering for a Kalamazoo-area organization of their choice. In September 2014, WMU will host a reception for all donors, where the SABRE scholars will discuss their research and volunteer experiences.

Please consider donating toward the SABRE program this holiday season. You can donate online through WMU’s Office of Development and Alumni Relations, and click on “Make a Gift”

www.mywmu.com/sabre

Meet the Summer 2014 SABRE candidates and learn about their research plans:

**SARA KALISZAK:** Sara will work with BIOS faculty member Dr. Cindy Linn using a rat model to study glaucoma. Glaucoma is caused by increased pressure on the optic nerve and is a leading cause of blindness for which there is no cure. Sara’s project analyzes the effects of a specific type of chemical that has been shown to prevent neurons in the retina from dying under glaucoma conditions. These studies can lead to development of new treatments for glaucoma that are not currently utilized. Sara plans on volunteering at Bronson Methodist Hospital in the Trauma and Emergency Care Department.

**KATIE WALKER:** Katie will work with BIOS faculty member Dr. Kathryn Docherty to examine the biological effects of novel engineered chemicals. Newly designed green chemicals, such as ionic liquids, are meant to have a lower environmental impact than more toxic predecessors. However, much work is needed to predict the ability of these chemicals to be broken down by microorganisms in a wastewater treatment plant. Katie’s work shows that, given the right microorganisms, it is possible to biodegrade these important chemicals in a matter of weeks and provide non-traditional clean-up solutions. Katie plans on volunteering at the Kalamazoo Youth Development Center.
NICOLE CARPP: Nicole will work with BIOS faculty member Dr. John Spitsbergen to examine how certain types of proteins, called neurotrophic factors, influence neuron survival and development. Glial cell line-derived neurotrophic factor (GDNF) is a type of neurotrophic factor expressed in skeletal muscle that is important for survival and health of motor neurons. Motor neurons are the neurons that innervate skeletal muscle and are responsible for physical activity. The goals of Nicole’s studies are to understand the processes controlling expression of GDNF in skeletal muscle and to determine the consequences of altered GDNF expression with age or neurodegenerative disease. Nicole plans to volunteer at the Kalamazoo Youth Development Center.

DEIRDRE COURTNEY: Deirdre will work BIOS faculty member Dr. David Karowe to investigate the potential effects of rising atmospheric carbon dioxide (CO₂) on the relationship between carnivorous pitcher plants (Sarracenia purpurea) and both the prey and non-prey communities that live inside them. Carnivorous plants are organisms that are particularly vulnerable to changes in atmospheric CO₂ composition and can act as an early indicator species in examining the effects of climate change. Deirdre’s studies will focus on the effects of pitcher plant (Sarracenia purpurea) nectar, color and leaf shape on prey capture, using a combined field and laboratory approach. Deirdre plans to volunteer for the Clements for Congress campaign to prepare for the upcoming November 2014 election.