Dear WISE Supporters,

We hope that you’ve had as exciting a fall as we have had here at WISE! This semester we’ve launched a number of new programs and welcomed some new faces (pg. 11). In September, we ushered in the first cohort of young women participating in the STEM Pipeline Mentorship Program (pg. 5), and also launched a pilot version of the STEM Outreach and Community Engagement Program (pg. 2). We are so excited to see the work of WISE grow to reach a broader and more diverse set of students in southern Arizona and hope you enjoy reading more about our work in this newsletter.

As the calendar year comes to a close, it provides an opportune time to reflect on all of those who we rely on to make our work possible. Our work throughout 2015 has been supported by generous financial contributions from the Marshall Foundation, the UA Commission on the Status of Women, the UA Student Engagement Strategic Investment Fund, Freeport MacMoRan, SPIE, and a number of private individual donors. Countless others have volunteered their time and expertise to help make our events and programs successful. With this support we have been able to bring innovative STEM programming to nearly 700 students in southern Arizona in 2015! From Expanding Your Horizons Conferences (pg. 7) to optics demonstrations (pg. 3) to schoolyard biodiversity inventories (pg. 4), we’re working to expand our programming through strategic partnerships that highlight the depth and breadth of STEM fields and careers.

As 2015 comes to a close, please think about contributing to our efforts to increase interest and diversity in STEM fields. If you’d like to make a financial contribution to support our work, please see the back page of this newsletter or visit www.uafoundation.org/give/sbs/sirow-wise. Or if you’d like to volunteer your time or expertise to assist our programs in some way, please contact us at sbs-wisemup@email.arizona.edu. We look forward to expanding our programming in 2016 with your continued support!

Sincerely,
Dr. Jill Williams
Director, Women in Science and Engineering Program

Community Outreach
Each year, WISE works with local school districts and community organizations to deliver programs that aim to pique K-12 student interest in STEM fields by offering hands-on workshops and demonstrations.

Student Engagement
WISE offers UA students the opportunity to build on and enhance their academic training through directed engagement with local STEM programs. Through our for-credit internship program and new student engagement course, students can earn academic credit while contributing to STEM educational initiatives.

Campus Outreach
WISE offers programs to support and encourage students in STEM fields at the University of Arizona. Through workshops, trainings, speakers series, and scholarships we aim to increase awareness of the important contributions of women and people of color in STEM fields, while also inspiring and encouraging the next generation of STEM innovators.

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- New Faces at WISE (pg. 11)
In the spring of 2015, WISE was awarded funding from the Marshall Foundation and the UA Student Engagement Strategic Investment Fund to launch the STEM Outreach & Community Engagement Program. Through this program, UA students are trained on issues of diversity and social justice in the sciences, receive training on sound pedagogical strategies for engaging K-12 youth in STEM fields, and are placed with a local school or school-based program to assist in the development and implementation of STEM educational initiatives. This fall, 20 UA students and 144 K-12 students were directly impacted by this program and we are poised to expand this impact to reach an additional 10 UA students and 450 K-12 students in the spring semester. So far, program participants have had positive things to say about their experiences! Here’s what two participants had to say....

Megan Lubbers
UA Electrical and Computer Engineering Major

Did being a student intern help you generate any career goals?

Being an intern has given me multiple opportunities to share my knowledge from my college education thus far to make a positive impact on the Tucson community...It is always a rewarding experience to see the kids become more curious and interested in science and other STEM fields. These experiences have helped me realize that whether or not I become an engineer, I want my life's work to focus on bettering the lives of others.

Briefly describe a challenging moment for you and how you overcame it?

One of the most challenging moments during my time with the middle school students was when I was presenting my challenge activity to the students. The activity was for the kids to find a way to cut a postcard so that they could fit their entire body through it. One of the most challenging parts came when the kids were so close to solving the challenge, yet I had to restrain myself from giving them the answer. It was difficult to come up with helpful hints that kept them motivated without ruining the experience of them discovering the answer on their own. It was also equally challenging to get the uninterested kids involved because some of the students flat-out didn’t believe the challenge was possible or were too willing to give up after on the challenge after one failed attempt. This taught me that part of a teacher’s job is to be a cheerleader for her students with the goal helping the students believe in themselves. I became as animated and enthusiastic as I could to let the kids know that I believed in them and wanted them to succeed.

What skills did you cultivate while you were an intern in the engineering classes?

From my experience working with the middle school students, my communication skills have improved as a result of the necessity of finding alternative explanations for the topics being in class. I also learned how to formulate appropriate questions that further engage the students in the scientific experiments that they were performing.

Patricia Vogel
Engineering Teacher at Mansfeld Middle School

How has having a student intern enriched the experiences of students in your class?

Having a student intern from WISE has enriched the experiences of students in my class in multiple ways. Our intern is an extra set of eyes, ears, and hands when working on the variety of projects in the room. Students can go to either me or our intern for help on any challenge that they are experiencing during a project or activity. If they are not confident in themselves they enlist the help of our intern to check on their progress and help out when needed.

What skills have you seen Megan develop during her time working with your class?

Megan has developed many skills in the short semester that she has been here in our classroom. I have seen her open up and become more comfortable jumping into situations that may to an outsider come across as awkward. She has learned to take those once awkward situations and turn them into learning experiences by pushing through and getting to know students. Megan has also developed more than one activity for the students to do at the end of a unit that utilize the core STEM values of inquiry and experimentation. The students enjoyed the activities and have asked to use them in other classrooms when they finish an assignment early. In addition to this, I have seen Megan’s confidence develop as she learns that not only she CAN help students, but she’s GOOD at helping them. Her way of explaining things to middle school aged children is natural and relatable. Overall I am extremely happy that we had the opportunity for her to join us for the semester.
The fall semester of 2015 brings a new collaboration between Women in Science and Engineering (WISE) and Women in Optics (WiO) of the UA College of Optical Sciences; two groups that focus on supporting diversity in STEM fields. With the help from UA College of Optical Sciences Professor Russell Chipman, WISE was awarded a International Society for Optics and Photonics grant to supply optics demonstrations for outreach events such as Expanding Your Horizons and Laser Fun Day. Part of this collaboration is to train undergraduate students to present optics demonstrations. Once they are trained, these students will be able to take various optics demonstrations to local schools to teach elementary/middle school students basic principles of light.

Christine Bradley, NASA Space Grant recipient and WiO member, hosted workshops on presenting Optics demonstrations to a group consisting of eight UA undergraduate students this semester. These students were taught reflection and refraction, IR cameras, polarization, 3D imaging, and spectrum of light. Once they learned the basics, they presented at outreach events such as WISE’s Expanding Your Horizons and Introduce a Girl to Photonics Week. EYH is a conference for students in middle school and high school that contains workshops from different groups on campus, one of which is WiO. Traditionally the workshops are created and presented by outside clubs. Through these training sessions, WiO is providing the resources to the undergraduate students to gain the knowledge, practice, and confidence needed to present at such events.

October 4, 2015 was the start of Introduce a Girl to Photonics Week. Through the generous donation of IEEE to both WiO and WISE a total of 5 Light Blox kits were received for an event during that week. On October 8th, both groups met at Amphi Middle School to present a demonstration to all of Scott Weilers’ classes, reaching more than 200 students. The Light Blox kits are designed to discuss topics such as color mixing, reflection, refraction, and the spectrum of light.

WiO and WISE are excited about all of the possibilities this partnership brings as we increase our capacity to offer hands-on optics programming for local students!

If you’re an educator interested in having our optics outreach team visit your school, contact Jill Williams at jillmwil@gmail.arizona.edu.
Schoolyard Biodiversity Inventories Program Expands!
Fiona Smeaton, Fall 2015 Programmatic Intern

In the spring of 2015, WISE partnered with the Arizona-Sonora Desert Museum and the National Park Service to bring biodiversity inventories to Tucson area schools. Through the Schoolyard Biodiversity Inventories Program (SBIP), students use an application called iNaturalist to conduct biodiversity inventories on their school campuses. This app allows students to upload pictures of different species to a global database where they are mapped and identified.

SBIP focuses on teaching young students about biodiversity by showing them that it can be right in their backyard. It combines technology with natural sciences to really engage students. This process teaches students how to explore an outdoor area and ask scientific questions, develop hypotheses and make inferences about their surroundings, all while having a great time taking pictures and being outside!

During the spring semester, I did pilot inventories at Manzo and Borton elementary schools. I then worked with staff from the Desert Museum and National Park Service to host a three-day workshop for teachers as part of the STEMAZing Project’s (stemazing.org) summer institutes. 20 teachers attended this workshop and learned about biodiversity and how to conduct inventories at their schools.

With connections made at the STEMAZing institute, I’ve been able to work with teachers at three new schools (Tucson Country Day School, Vesey Elementary, and Tucson High School) and return to Borton to do inventories this semester. With assistance from passionate educators at these schools and staff from the Desert Museum and National Parks Service, I’ve also been able to expand the SBIP curriculum to include an introduction to biodiversity, data collection activities, and an analysis of the data we collect. This more comprehensive program, allows students to have a better understanding of not only what biodiversity means but also how to find it and why it is important to support in an urban environment.

All of the students that I have worked with at these schools are so passionate about the environment even if they don’t realize they are. They are all so excited to explore their schoolyards to find new species and are amazed when they see the pictures they took plotted on a map of their schoolyard on the iNaturalist website. They are all eager to learn that the data that they collected on their campus is part of this scientific database that is studied by real professional biologists, botanists and environmentalists. It gives them a sense of how important this work is and lets them know that they can keep studying their passion of the environment when they grow up. SBIP lets students know that anyone who has a curiosity for how the world functions and cares about protecting its species and resources can really make a difference.
With generous funding from the UA Commission on the Status of Women, WISE launched the STEM Pipeline Mentorship Program this fall. This program aims to foster the entry and retention of women in STEM fields by offering a structured mentorship program for female high school, undergraduate, and graduate students. Program participants attend 5 workshops and 2 social events over the course of the year in order to learn concrete skills on how to succeed along their academic journey and into the workforce, all while building relationships with other women committed to increasing interest and diversity in STEM!

The STEM Pipeline Mentorship Program started out the fall semester with a welcome lunch in early September. At this event, participants worked in groups to brainstorm different topics they were most interested in having covered at program workshops. We then had three workshops: Goal Setting for Academic Success, STEM Majors and Careers, and Making the Most of Research Opportunities. During these workshops, panels of UA students, faculty members, researchers, and local STEM professionals talked about their own experiences and gave advice to program participants.

So far, this program has successfully brought a diverse group of students together to learn from each other and women who have been successful in STEM fields and careers. One graduate student had this to say about the STEM Major and Careers Workshop:

“It was really great to hear all the different perspectives, and especially to see and hear how each person’s point of view differed or stayed the same across the board. It really reinforces the idea that we really can do anything we want, as long as we know we want to do it.”

We’re looking forward to continuing this program in the spring semester with workshops on Funding STEM Education and Being Empowered and Empowering Others in STEM. We’ll then finish off the school year with a year-end social!

Big thanks to the following women who served as panelists during the fall semester!

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<tr>
<th>Juliana Gil-Loaiza</th>
<th>Hannah Sassi</th>
<th>DaNel Hogan</th>
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<td>Dr. Vanessa Huxter</td>
<td>Jennifer Schilling</td>
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<td>Dr. Diana Liverman</td>
<td>Dr. Carol Bender</td>
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<td>Cat Merrill</td>
<td>Daniella Della Giustina</td>
<td>Molly Flynn</td>
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Save the Date
April 28, 2016
River Park Inn in Downtown Tucson

Join us in celebrating individuals and organizations that work to increase interest and diversity in the fields of science, technology, engineering, and mathematics throughout southern Arizona. Nominations for the 2016 Science and Engineering Excellence Awards will be accepted beginning in February 2016.

Featuring Keynote Speaker, Dr. Diana Liverman, Co-Director of the University of Arizona’s Institute of the Environment

Sponsorship: If you would like to sponsor this event please see the sponsorship page at http://wise.arizona.edu/seebanquet-sponsorship or contact Jill Williams at JillMWilliams@email.arizona.edu
Expanding Your Horizons Visits Sahuarita and Amphitheater Middle Schools

By Karen Ruggaard, Community Outreach Intern

Expanding Your Horizons (EYH) is one of many programs WISE puts on to increase the interest and diversity in the STEM (science, technology, engineering, and math) fields. EYH targets middle school students (particularly girls and under-represented minorities) in response to research showing that students often disengage from science, math and technology at this age. The afternoon conference for 5th-8th grade students features interactive workshops and a keynote speaker to excite them about STEM fields.

This fall we had the opportunity to bring EYH to not one, but two middle schools in southern Arizona!

On October 17th, EYH took place at Sahuarita Middle School. A generous grant from Freeport-McMoRan allowed the event to be entirely free for all students. We had the privilege to welcome Image-Processing Lead Scientist and Co-investigator for NASA’s OSIRIS-Rex Asteroid Mission, Daniella Della Giustina, as our keynote speaker down in Sahuarita. She excited the students about asteroids and encouraged them to never give up when math and science may seem difficult. Over 200 students registered for the event and each got to attend 2 workshops out of the 14 different workshops offered. Some workshop highlights included building take-home terrariums with graduate students from the Soil, Water, and Environmental Science department, learning how to save a life with chest compression only CPR taught by members from University EMS, and discovering 3D drafting with a real 3D printer demonstration from the Society of Women Engineers.

On November 14th, EYH took place at Amphitheater Middle School with the help of Scott Weiler and Girl Power. Our keynote speaker was DaNel Hogan, Director of The STEMAZing Project for the Office of the Pima County School Superintendent. DaNel taught students just how cool physics can be and shared some of the awesome things she’s been able to do because of science. Some workshop highlights included making homemade silly putty with UA’s Chemistry Club, discovering how the chemistry of blue prints works with UA’s Material Sciences Department, and learning about aliens and exo-planets with the UA Lunar and Planetary Lab. Every child left the events with a smile and newfound knowledge about how great science can be! It was such a rewarding experience to have been able to organize and plan both EYH events as a WISE intern this semester!

Karen Ruggaard is a sophomore in the Honors College majoring in Engineering Management. For more information about how to get involved with Expanding Your Horizons or internship opportunities with WISE, visit our webpage wise.arizona.edu!
Thank you Izlar Custom Photography for taking photographs at the October Expanding Your Horizons Conference.
Interested in Diversity & Science?

Check out the new STEM Diversity & Outreach Workshop (GWS 397S) where you get to learn about issues of diversity and social justice in the sciences and then work with local schools to get k-12 kids excited about science!

Contact Jill Williams (jillmwilliams@email.arizona.edu) or visit our website at http://wise.arizona.edu/stem-outreach-and-student-engagement-program for more information
Lauren Edwards  
Neuroscience and Cognitive Science Major  
Received the Helen S. Schaefer Scholarship  
Lauren Edwards currently works in Dr. Mary Alt's speech lab where she examines parental ratings of attention in Central Executive performance on working memory tasks. Her research focuses on three groups of children: those with bilingualism, typical development, and specific language impairment (SLI).

Giselle Aceves  
Accounting Major, Marketing Minor  
Received the Harriet Silverman Scholarship  
Giselle Aceves has loved and excelled in math since a young age. Attending the University of Arizona is the first step in achieving her long term goal of becoming an accountant.

Adele Koutia  
Neuroscience and Cognitive Science and Physiology Majors; Music Minor  
Received the Jo Ann Troutman Scholarship  
Adele Koutia has always been interested in Neuroscience, specifically learning and memory. She is currently doing her honors thesis work on spatial memory and how the ability to navigate and remember places people have been declines with age.

Savannah Smith  
Biomedical Engineering Major  
Received the Silverman Scholarship  
Savannah Smith wants to apply her determination to help future medical industries by earning a degree in biomedical engineering. Her goal is to work with genetic as well as tissue engineering; she would love to work with creating new organs in hope of giving people a second chance.

Meagan Bethel  
Conservation Biology Major  
Received the Harriet Silverman Scholarship  
Meagan Bethel is passionate about the protection of endangered species within the Sky Island Region. She is an avid horsewoman and martial artist as well as a talented artist. Meagan is honored to have received the WISE, Harriet Silverman Scholarship for 2015-2016 and hopes to live up to her benefactor's name.

Narda Garcia  
Math Major  
Received the Harriet Silverman Scholarship  
Narda Garcia would like to explore a career in aerospace engineering. She hopes that one day she will be successful enough to provide a student with a scholarship of her own.

Riley Matulewic  
Biochemistry and Molecular and Cellular Biology Major  
Received the Harriet Silverman Scholarship  
Riley Matulewic plans on attending pharmacy school after undergrad in hopes of becoming either a pharmacist or pharmacologist.
New Faces at WISE!

Kristen Gautier-Downes is the Program Coordinator for both the Southwest Institute for Research on Women (SIROW) and the Women in Science and Engineering (WISE) program. She graduated from the University of California Santa Cruz with a BA in 2012. While a student she worked in Student Life planning social and educational events based on themes of social justice and environmental consciousness.

Before joining SIROW and WISE, she worked at the American Red Cross developing community partnerships and teaching kids and adults emergency preparedness skills.

Karen Ruggaard is a sophomore at the University of Arizona majoring in Engineering Management. She loves working with kids and hopes to get today’s youth excited about science technology, engineering, math, and medicine through her work with WISE. When she’s not helping get young people excited about STEM fields and careers, Karen enjoys traveling, crafting, and eating!

During the fall of 2015, Karen served as the WISE Community Outreach Intern. In this role, she was in charge of managing all of the logistics for the Expanding Your Horizons Conferences from soliciting workshop presenters to registering students to working with school staff to make sure we had what we needed to make these events successful.

The littlest new face around the WISE office this semester has been baby Beckett. WISE Director, Jill Williams, welcomed Beckett in early September and he quickly became a fixture around the office. Beckett’s favorite hobbies are eating, sleeping, and conspiring with his mom on how to foster diversity in STEM fields.

One of the primary reasons women leave the STEM workforce is the challenge of balancing work and family commitments. Jill is very thankful to have a workplace that makes this always tough task easier by welcoming Beckett into the office! (Beckett is headed to daycare in January, but will still make guest appearances at WISE events.)
Support Us

The Women in Science and Engineering Program relies on the dedication and support of community members to do the work we do to increase interest and diversity in STEM fields. If you are interested in making a financial contribution to support our work, we are able to accept donations through the University of Arizona Foundation. Gifts can be made on a one-time or recurring basis, anonymously, publicly, or on behalf of a third party. To make a donation electronically, please visit www.uafoundation.org/give/sbs/sirow-wise. Donations can also be mailed directly to the address below. Please make checks out to UA Foundation-WISE.

Women in Science and Engineering Program
University of Arizona
925 N. Tyndall Ave.
Tucson, AZ 85721

WISE Wish List

Here are some ideas of what gifts of various sizes would do for WISE:

$50  Funds printing one color poster that highlights the important work done by our interns.
$100  Supplies pizza for a professional development workshop for students.
$250  Allows us to host a fieldtrip to Biosphere 2 for program participants.
$500  Funds a travel grant to support student participation at academic and professional conferences.
$1000  Buys lunch for 150 Expanding Your Horizons Conference participants.
$1500  Funds a year-long mentorship program for high school, undergraduate, and graduate students.
$2500  Enables us to bring in 4 guest speakers for a series on science, engineering, and social justice.

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