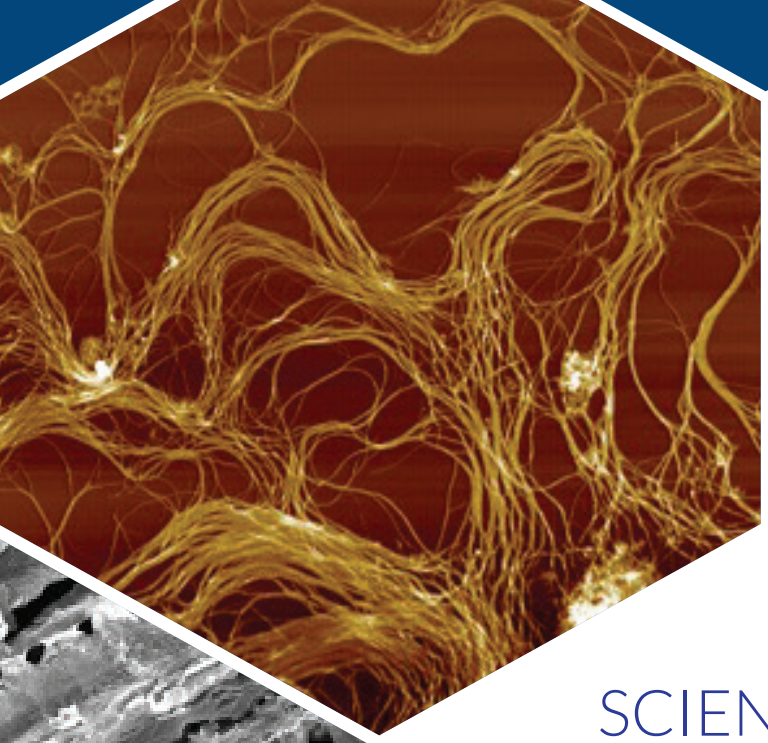
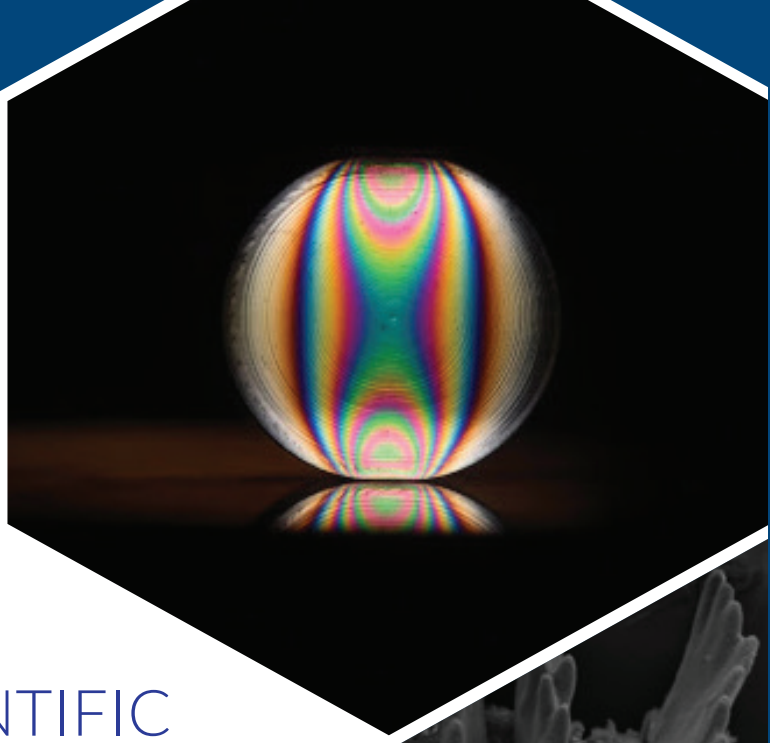
KINSC

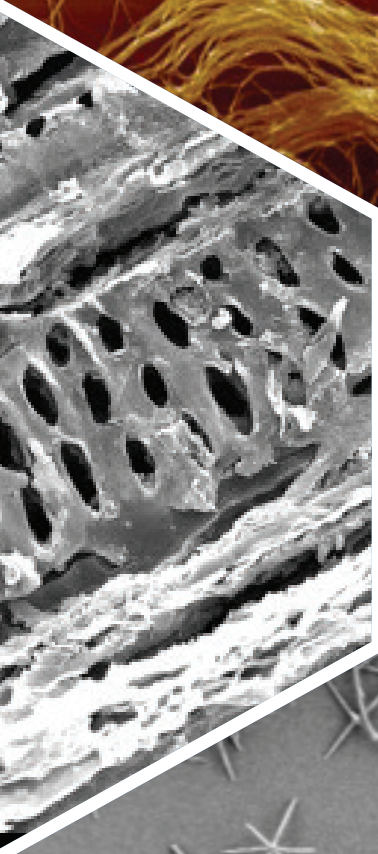
2018

HAVERFORD COLLEGE

The Marian E. Koshland Integrated Natural Sciences Center



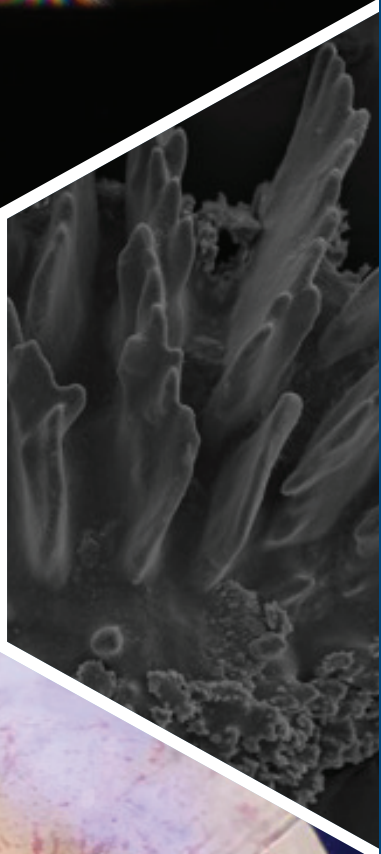


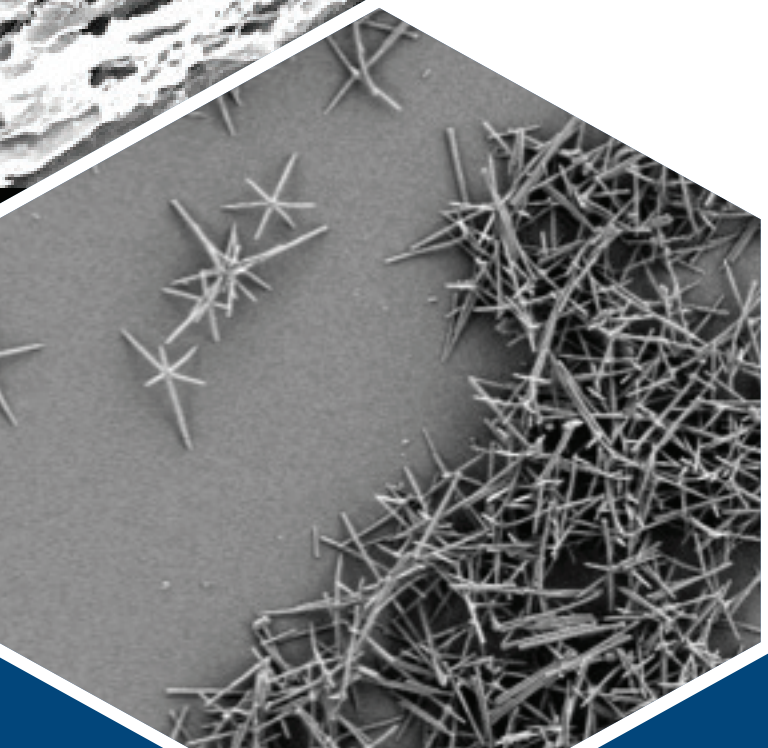


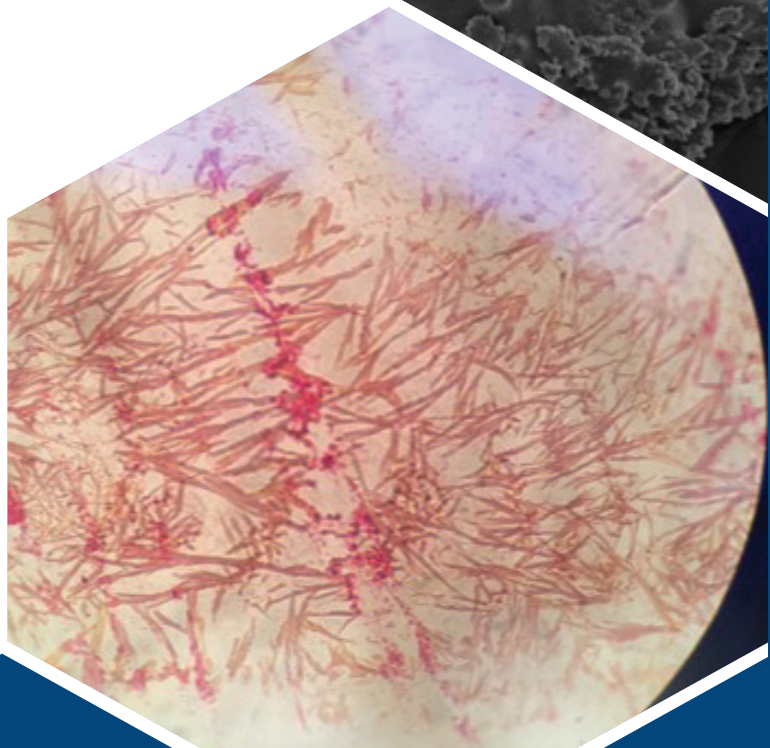
SCIENTIFIC IMAGING CONTEST

The KINSC Scientific Imaging Contest is an annual contest for student-submitted images from experiments or simulations that are scientifically intriguing as well as aesthetically pleasing.

To see the award winners, visit:
http://hav.to/2no







MAJOR PROGRAMS
Astronomy
Astrophysics
Biology
Chemistry
Chemistry – ACS Certified
Computer Science
Environmental Studies (NEW!)
Geology (at Bryn Mawr)
Interdisciplinary Physics
Mathematics
Physics
Psychology

MINOR PROGRAMS
Astronomy
Chemistry
Chemistry – ACS Certified
Computer Science
Environmental Studies
Health Studies
Mathematics
Neuroscience
Physics
Psychology
Statistics

CONCENTRATIONS
Biochemistry
Biophysics
Computer Science
Geoarcheology (at Bryn Mawr)
Geochemistry (at Bryn Mawr)
Mathematical Economics
Mathematics Education
Scientific Computing

DEGREE PARTNERSHIPS
4+1 Bioethics with UPenn
4+1 Engineering with UPenn
3+2 Engineering with CalTech

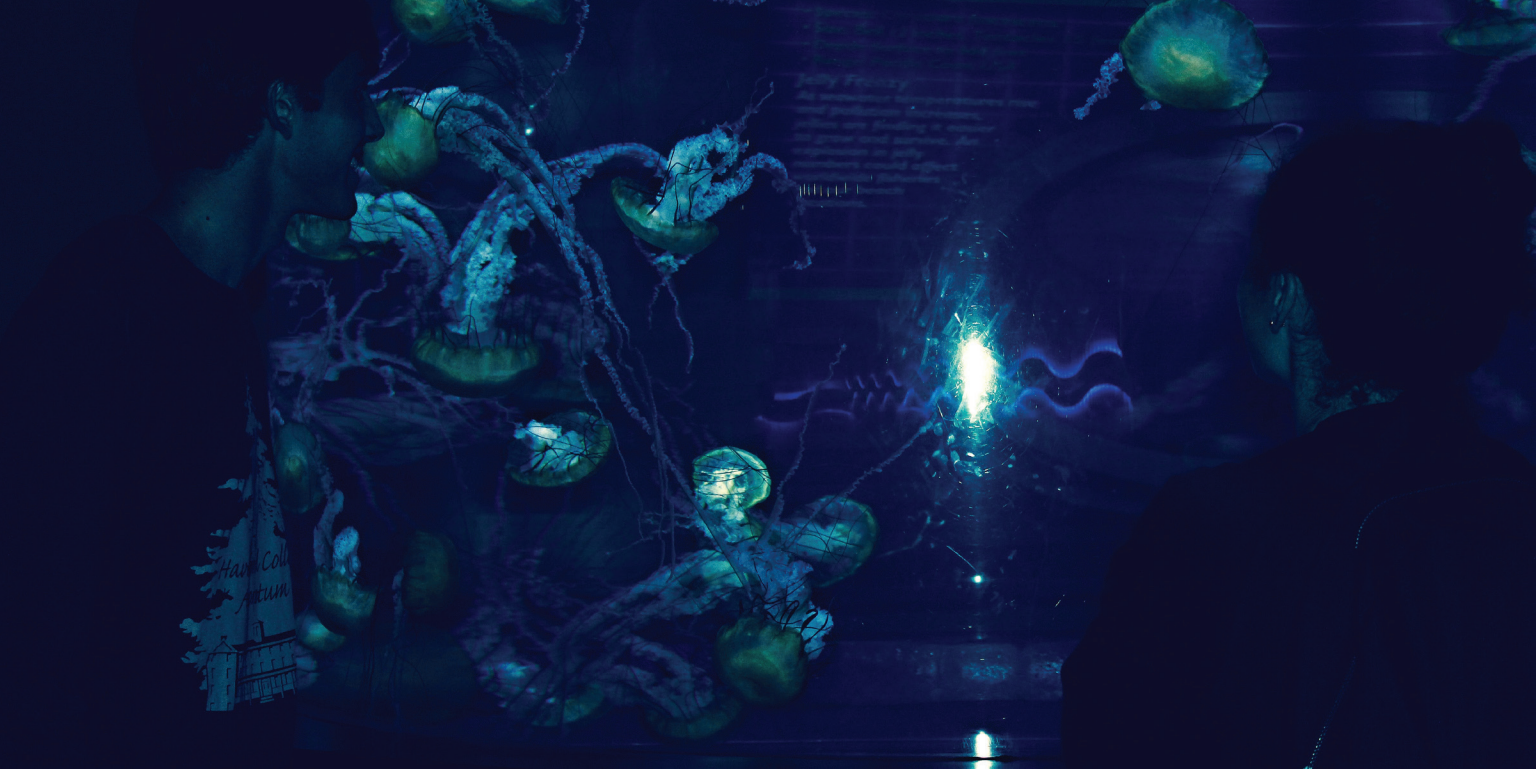
The Marian E. Koshland Integrated Natural Sciences Center **(KINSC)** catalyzes and facilitates programs that maintain Haverford's position at the leading edge of academic excellence in the sciences.

To achieve this end, the KINSC promotes scientific scholarship involving close collaboration between faculty and students and provides opportunities for these activities to expand beyond the borders of the Haverford campus.

The KINSC is unique among Haverford's three academic centers in that **it is both a building and a program**. The 185,000 square foot building is the epicenter of natural science research at Haverford. It was constructed to facilitate sharing of ideas, instruments, and expertise across disciplines and to contribute to a climate of cooperative problem solving and investigation.

The KINSC includes the departments of Astronomy, Biology, Chemistry, Physics, Psychology, Mathematics and Statistics, and Computer Science. To supplement the efforts of the departments, the KINSC **supports interdisciplinary interactions**. In addition to directly funding students and faculty, the Center supports academic activities initiated with outside grants and individual faculty awards.

The KINSC funds individual research projects and sponsors symposia, seminars, curricular initiatives, student conference and research travel, courses, and scholarly projects that go **beyond the bounds of a single discipline** and involve students and faculty from multiple departments.



The range of programs supported by the KINSC is limited only by the imagination of the Haverford science community.

Currently, the KINSC supports the following activities:

- Summer research opportunities for students, on campus or at other institutions
- Fall research symposium, showcasing work by students from Haverford, Bryn Mawr, Swarthmore, and other area colleges
- Travel for students to pursue research during the academic year with collaborators in labs within the U.S.A. or abroad
- Travel for students to attend conferences, to present research or to gain experience applicable to future careers (in collaboration with the Green Fund)
- Student and faculty training in new science-related techniques
- Special projects initiated by science faculty
- Events such as research talks, film screenings, and panels
- Annual career panel for science majors, in collaboration with the Center for Career and Professional Advising
- Annual Student Scientific Imaging Contest
- Mentoring and Student Teaching Program (MAST)
- Research and travel for students from groups underrepresented in the sciences, through the Access and Achievement Fund.

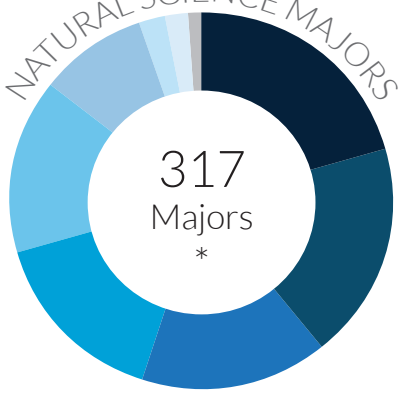
We are committed to supporting a wide variety of creative ideas in the sciences; students should not feel limited by the categories listed.

KINSC BY THE NUMBERS

Student research opportunities are funded through the KINSC and through individual faculty grants from the NSF, NIH, etc.

2018

- **3** students received KINSC training funding to attend the Applied CS with Google workshop at Bryn Mawr College during winter break 2018.
- **10** students received summer funding through the Frances Velay Women's Science Research Fellowship
- **13** students received funding f to perform research in locations such as: Lima, Peru; Copenhagen, Denmark; Berkeley, CA; Santa Barbara, CA; Gainsville, FL; Philadelphia, PA; and Arlington, VA.
- **16** students received funding as KINSC Summer Scholars
- **65** students received conference travel funding to attend and/or present their work at 26 different conferences and meetings around the world.
- **112** students performed summer research with faculty in the KINSC
- **122** students performed academic year research with faculty in the KINSC



- **3** Astronomy Majors
- **6** Environmental Studies Majors
- **7** Astrophysics Majors
- **29** Physics Majors
- **48** Mathematics Majors
- **49** Psychology Majors
- **50** Chemistry Majors
- **59** Biology Majors
- **66** Computer Science Majors

*This figure captures juniors and seniors who have declared a major in the sciences. Students do not declare majors until the end of the sophomore year.

27

On-campus faculty supervising student researchers

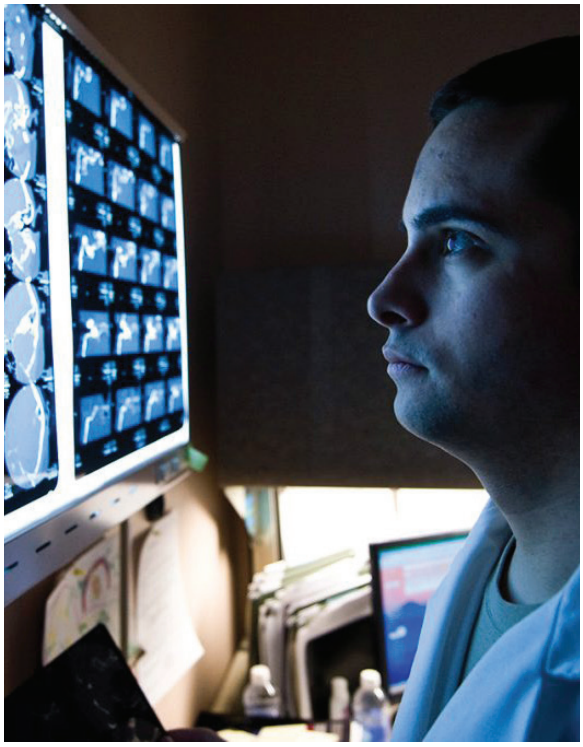
100%

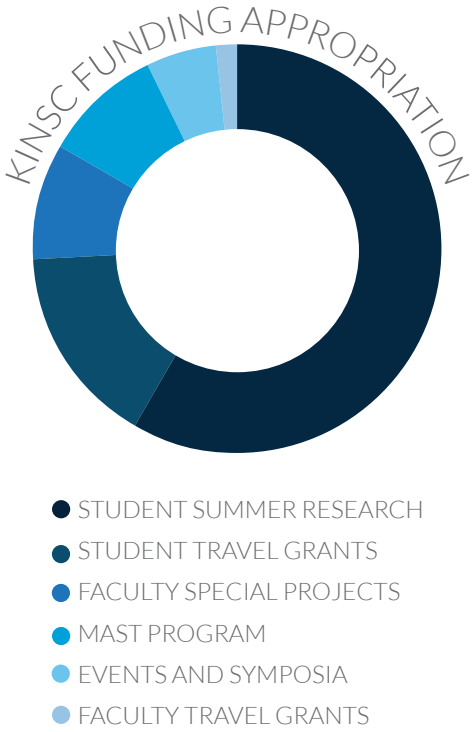
Science majors who graduate with research experience

$5.5 M

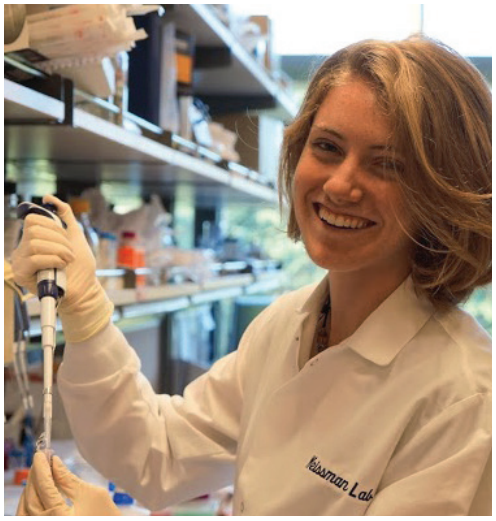
External funding for research by our natural science faculty

2017-18 KINSC FUNDING INITIATIVES





STUDENT RESEARCH



KINSC SUMMER SCHOLARS

In 2018, the KINSC supported 23 students **for 10-week summer research projects** at Haverford and at other colleges and universities across the country. Thirteen of these students worked with faculty on-campus, while ten worked off-campus in locations such as Scotland, Canada, Florida, Pittsburgh, Massachusetts, Washington State, as well as in the Philadelphia area. Selected student profiles from the 2018 Summer Scholars are featured on pages 16–18.

STUDENT RESEARCH FUND

The Student Research Fund provides **travel support for research conducted outside the Philadelphia area**. The KINSC funds domestic or international student research during breaks in the academic year. Preference is given to those applying for support related to senior thesis research. Students traveling to present their research may also receive support from the Louis Green Fund, administered by the Provost's Office.

ACCESS AND ACHIEVEMENT ENDOWED FUND

The Access and Achievement Endowed Fund **supports diversity in the sciences** and provides an additional source of funding for science students from underrepresented groups to attend conferences, perform research, take off-campus courses, attend workshops, and participate in activities that will enhance their scientific experience as students at Haverford. Ten students received funding for research through the Access and Achievement Endowed Fund in 2018.

INTERNATIONAL TRAVEL STIPENDS

KINSC faculty maintain collaborations with scientists at other institutions throughout the world, creating **opportunities for our students to travel abroad in the course of their research**. International travel stipends are provided by the KINSC or through external funding for faculty projects. In 2017–18, six Haverford students traveled internationally to perform research.

- **Benjamin Soloway '18** traveled to the University of Delft, Netherlands, to attend the 21st Annual Conference on Quantum Information Processing.

- **Isabella Gordon '19** traveled to Lima, Peru, to work on her senior thesis project on cultural child psychology and parenting.

- **Ann-Victoria Isaac '18** traveled to the University of Copenhagen in Denmark for research on "X-ray Crystallography of Calmodulin-Peptide Target Complexes".

- **Richard Phillips '18** traveled to Sydney, Australia, to attend the 34th International Conference on Machine Learning (ICML).

- **Gerrit Farren '20** conducted summer research at Imperial College in London to work on his project "Constraining Cosmological Models via the Kinetic Sunyaev-Zeldovich Effort."

- **Xiwen Jia '19** traveled to the University of Toronto, Canada, for her summer research project on the engineering of CH3NH3PbI3 perovskite crystals.

2017-18 STUDENT CONFERENCE TRAVEL

Conferences students attended with funding from the KINSC:

- 13th International Zebrafish Conference, University of Wisconsin–Madison
- 255th American Chemical Society National Meeting & Exposition, New Orleans, Louisiana
- 2018 Ocean Sciences Meeting, Portland, OR
- 21st Annual Conference on Quantum Information Processing, Delft, Netherlands
- 231st Meeting of the American Astronomical Society, Washington, D.C.
- 34th International Conference on Machine Learning (ICML), Sydney, Australia
- 62nd Annual Biophysical Society Meeting, San Francisco, CA
- ABRCMS, Phoenix, AZ
- ACM Richard Tapia Celebration of Diversity in Computing, Atlanta, GA
- American Society for Cell Biology – European Molecular Biology Organization Meeting, Philadelphia, PA
- APA Convention, Washington, D.C.
- Applied CS with Google, Bryn Mawr, PA
- Eastern Analytical Symposium, Plainsboro, NJ
- Emerging Researchers National Conference in STEM, Washington, D.C.
- Experimental Biology 2018 Annual Meeting, San Diego, CA
- Gulf Coast Undergraduate Research Symposium, Houston, TX
- Joint Math Meetings, San Diego, CA
- MAA Mathfest, Chicago, IL
- Mid-Atlantic Regional Zebrafish Conference, New York, NY
- Midwest Sports Analytics Conference, Pella, IA
- Principles of Programing Languages 2018, Los Angeles, CA
- Society for Neuroscience Annual Meeting, Washington, D.C.
- Southeastern Regional Meeting of the American Chemical Society, Augusta, GA
- Synergistic Discovery and Design (SD2) Working PI Meeting, Arlington, VA
- The International Conference for High Performance Computing, Networking, Storage, and Analysis, Denver, CO
- The International Pulsar Timing Array (IPTA), Albuquerque, NM

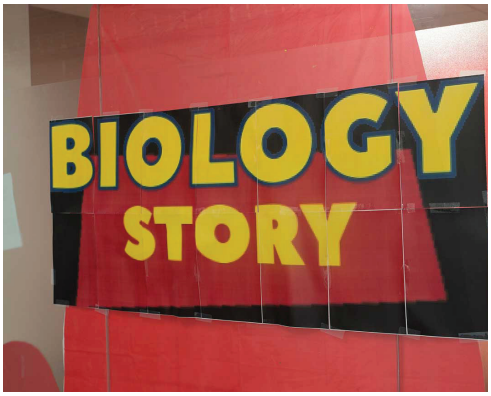
4TH ANNUAL PUBLIC POLICY FORUM

The KINSC co-sponsored this annual event for current Tri-College students interested in pursuing social sector careers. Students presented their policy-related research and had opportunities to speak with alumni about their questions and findings. The day included alumni panel discussions on topics including education, immigration, international development, health, criminal justice and incarceration, and environmental policy. Annie Karni '04, White House Reporter for POLITICO, facilitated a keynote conversation with Vince Warren '86, Executive Director of the Center for Constitutional Rights.

APRIL FOOLS' DAY

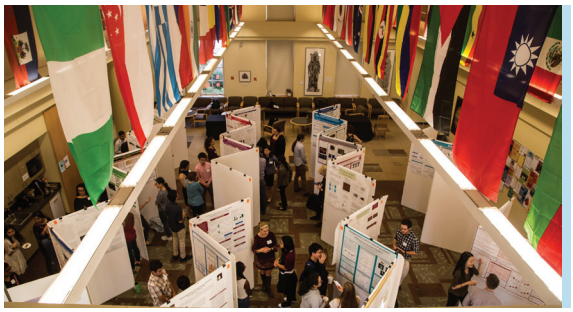
A KINSC TRADITION

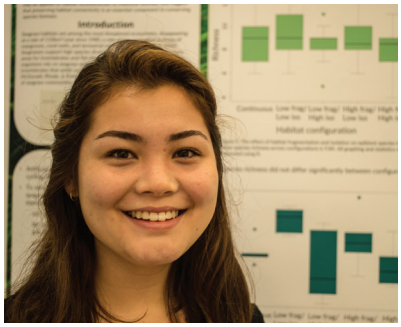
Students celebrated April Fools' Day by decorating the KINSC in a variety of themes. This year, the building was transformed into scenes from TV shows and movies including *Game of Thrones*, *Toy Story*, and *Stranger Things*.



2018 FALL RESEARCH SYMPOSIUM

Every year, the KINSC hosts a fall research symposium showcasing the summer work of students from Haverford, Bryn Mawr, Swarthmore, and other area colleges.





OUT OF THE CLASSROOM

Students from Kristen Whalen's "Advanced Topics in Biology of Marine Life" class spent a week over winter break exploring tropical coral ecosystems in Roatán, Honduras.

When people say that Haverford students are immersed in their studies, they usually mean it figuratively. But for five of the students in Kristen Whalen's "Advanced Topics in Biology of Marine Life" course who traveled to Roatán, Honduras, early in January for a field study exploring tropical coral ecosystems, the immersion was literal.

At least two times a day, the students—along with Whalen, Post-Doctoral Investigator Jamie Becker, and former Visiting Assistant Professor of Biology Matt Carrigan—hopped on a private boat to snorkel in the clear, turquoise waters of the Caribbean Bay, only occasionally donning wet suits due to the warm waters, to explore coral diversity and identify fish, turtles, invertebrates, and algae on the second largest coral reef on Earth, known as the Mesoamerican Barrier Reef.

"It was the first time I had snorkeled at a barrier reef and I learned a lot about the inhabitants—we saw octopi, squids, sea turtles, eagle rays, scorpion fish, nudibranch, flamingo tongues, and more," said biology major and environmental studies minor Laura Donahue '19. "One of the days we went snorkeling at a fantastic part of the reef … and we ended up swimming through a Trichodesmium bloom. Trichodesmium is an important diazotrophic cyanobacteria that I studied all summer, so that was a really exciting moment for me."

Whalen, an assistant professor of biology, organized the trip with support from the Center for Peace and Global Citizenship, the Koshland Integrated Natural Sciences Center, and the Provost's Office as a way to bring the previous semester's classroom work to life for her students. "Advanced Topics in Biology of Marine Life" is an interdisciplinary seven-week course that explores human impacts on the oceans and challenges students to form scientific understandings of those problems plaguing the ocean, as well as communicate feasible solutions. During the course students dive into the primary literature and interpret data in order to generate a rational approach to solving global problems.

Caribbean coral reefs are arguably the most impacted by human influence, from reef decline due to rising ocean temperatures and acidification, pollution from agricultural run-off or ocean plastics, or threats from invasive species from distant oceans. After first teaching the course in fall 2017, Whalen decided that students needed first-hand experience with these ecosystems and the problems that plague them. She hoped to attract both students interested in the fields of marine biology, conservation, and policy, and those who had never seen the ocean before.

INTO THE DEEP END

“I remember the first time I snorkeled on a coral reef. I was 12 years old and it was so powerful, I decided to become a marine scientist,” said Whalen. “I want Haverford students to have the same opportunities I had to become inspired and emboldened to make a change in the world.”

Thus the trip to Honduras was born. For seven days over winter break, the Haverford cohort stayed at Anthony’s Key Resort, which was established more than 50 years ago within a marine protected area adjacent to the nonprofit Roatán Institute of Marine Science and is dedicated to conservation and education. Before their daily dives, the students met in an on-site classroom for lectures about the flora and fauna they would encounter underwater that day.

“At the Roatán Institute for Marine Science, students and scientists have been tracking the health of the reefs for decades now and working with the local community to help put in place measures to allow the reefs to thrive and humans to sustainably make a living from the ocean,” said Whalen, noting that its conservation efforts, including protection from overfishing and banning plastics, make it one of the last places to see the sorts of coral reefs that were once prevalent all over the Caribbean more than 30 years ago. “Anthony’s Key Resort is dedicated to educating students and the public about marine health, and offers classrooms, wet labs, and dive boats to study marine organisms both in the classroom and on the reef.”

“We spent every day learning something new about the reef in lecture or in the water,” said Donahue. “It was amazing because we would listen to a lecture about coral identification and then get to snorkel and practice the identification a few hours later. ... Almost every topic that we covered during the class—from marine microplastics to over-fishing to invasive species—was present in Roatán.”

There was also plenty of time for fun, too. The Bi-College crew—which also included Elly Overton ’19, Scott Pollara ’19, Juliana Benitez ’20, and Shelby Hoogland BMC ’19—swam with dolphins who are a part of the resort’s Dolphin Conservation Program, visited the nearby Ethnic Honduran Art Exhibit Center, went paddle boarding, and took a guided tour of the Animal Sanctuary and Rescue Center to see such native Honduran wildlife as jaguars and monkeys. They enjoyed meals of local sustainable seafood and ate breakfasts of traditional *balaedas*—a thick tortilla filled with mashed fried red beans and cheese.

"We snorkeled in tongue and groove reefs and over huge drop-offs, as well as in 15 feet of water in the back reef where sea grass environments are punctuated with giant coral heads," said Whalen. "We also did a night snorkel, which was a first for all the students. We saw octopi, lobsters, pufferfish, squirrelfish, and much more—all of which are hidden during the day."

It was, in fact, a trip of firsts: it marked the first time Whalen had taken her students on a field study trip; the first time Scott Pollara had ever snorkeled; and the first time Juliana Benitez ever swam in the ocean. It was a shared adventure, but it was also educationally rich and inspiring.

That was the point, says Whalen; she wanted her students not only to learn about a unique marine environment, but to be inspired to help protect and conserve it.

"This is the first time in 20 years that I have not lived next to the ocean, so field experiences like this re-inspire my passion and rejuvenate my soul," said Whalen. "Engaged learning experiences make the knowledge in the classroom more accessible to students and create lasting educational and emotional impacts on their lives. Haverford is about opening students' minds to new experiences and ways of thinking, and trips of this nature provide new perspectives by immersive learning that cannot be achieved any other way."

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—ASSISTANT PROFESSOR KRISTEN WHALEN

ENVIRONMENTAL STUDIES: The first year

By Michael Weber '19

Alexandra Morrison '18 in the field in Alaska, analyzing a large oil residue sample that was released into the coastal environment in Prince William Sound following the 1964 Alaska earthquake. Morrison conducted her senior research, examining persistent oil residues in the marine environment, with Associate Professor of Chemistry and Chair of the Environmental Studies Program Helen White. (Photo by Helen White.)

A minor since 2011, environmental studies is now a Bi-Co major with two new professors and expanded course offerings.

Environmental studies courses have existed in the Tri-College Consortium for over a decade, and the Tri-Co environmental studies minor program was founded in 2011. Following years of interest in the minor program, which combines insights from disciplines that include anthropology, biology, and literature, and more, Haverford and Bryn Mawr Colleges have taken the steps to establish an innovative new Bi-College environmental studies major.

While the ongoing minor requires six courses, the major requires 11, including a 100-level introductory course, four 200-level courses, five elective courses available in a variety of different departments, and one senior capstone course.

"One of the core principles of this major and departmental program is that the humanities and arts and social sciences and natural sciences are co-equal partners in this," said Associate Professor of Environmental Studies Jon Wilson, who has been supporting the Tri-Co ES minor since 2011. "It's not just interdisciplinary, where it would be like biology and chemistry or political science and sociology, it's interdivisional. … We expect students who graduate from the program to be as comfortable reading a science paper as they are reading a poem."

Building on an already diverse set of academic disciplines inherent to the minor, the faculty team for the major program now includes an anthropologist, a biologist, a chemist, a geologist, an English scholar, a political scientist, and a social scientist. These and other affiliated professors make possible a wide breadth of course electives that make the major broad in its foundations—required 200-level classes include lab work components as well as critical reading and writing components—and deep in its specializations.

"The student gets the chance to be broad and deep, and for us, that was the way to extend the minor into a new major," said Wilson. "I think it offers the maximum amount of freedom for students to think about what they want to learn for the world they're going to inherit, but it also asks of the students to take on … a deep responsibility for their own education."

Kaitlin Reese '20, who was part of the first cohort of Haverford students to declare an environmental studies major last spring, was drawn to the new major after developing her interests in applied math. In the Bryn Mawr math course "Math Modeling and Sustainability," Reese and classmates worked with the Philadelphia Office of Sustainability to determine which city-owned building rooftops were most suitable for solar panels. Her "Plants and People" course taught by Jon Wilson afforded her the opportunity to travel to Trinidad and Tobago to study plant diversity with funding support from the Center for

Peace and Global Citizenship, the Koshland Integrated Natural Science Center, and the John B. Hurford '60 Center for Arts and Humanities.

"Both of these courses allowed me to pursue an education in environmental studies inside and outside of the classroom, which I think is what predominantly drew me to the major," said Reese, who was originally planning on a math major and ES minor before the ES major was developed. "I think the minor provides a strong foundation for someone who knows they are interested in a certain subset of environmental [studies], such as political science or biology as they relate to the environment. However, the major allows students passionate about the environment to pursue a broader range of intersections between different disciplines."

The trend set by the environmental studies program, explains Associate Professor of Chemistry and Provost Fran Blase, could be a sign of what's to come in liberal arts education.

"We are tackling, in a lot of fields, really complex and difficult problems that can't always be solved through one particular lens. Environmental studies certainly crystallizes a multi-faceted inquiry," said Blase. "I'm a chemist, and environmental chemistry has been around a long time. … It's not like this is brand new, but the challenges we face right now with the environment are quite daunting. Bringing together researchers in scholarly fields like the humanities, the social sciences, and natural sciences for a multi-pronged approach is relevant and absolutely necessary."

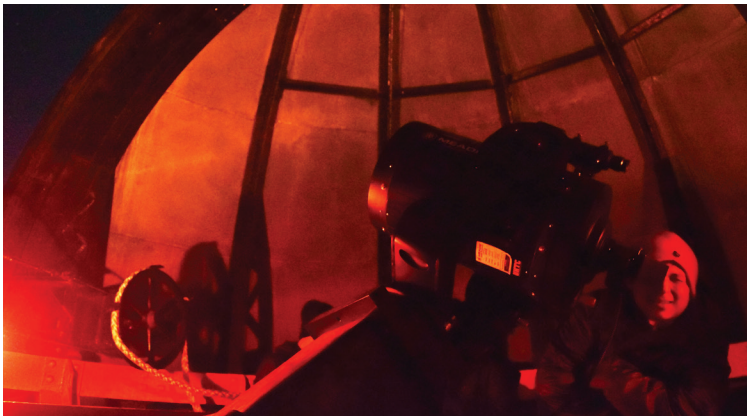
Interest in the new major is already robust, with 18 majors between Bryn Mawr and Haverford across the Classes of 2019–2021. In line with the department's goals, the students interested in the programs bring their own differing interests in the field to common coursework, and the result, says Wilson, is a unique academic environment.

"Teaching a group of interdisciplinary students who are equally engaged from multiple perspectives is a real joy," he said. "It enlightens and enlivens the classroom environment, and watching the students interact with each other, watching them collaborate and argue and discuss, it's inspiring."

Sharing Science with the Community

OUT-OF-THIS-WORLD FUN

The Strawbridge Observatory at Haverford College houses 12-inch and 16-inch Schmidt-Cassegrain telescopes which are actively used by students in Haverford astronomy classes. Student volunteers host public observing events throughout the year and invite the public to learn more about astronomy and physics. Our students give tours and answer astronomy-related questions and lead discussions and hands-on activities for visitors of all ages.



MAST PROGRAM

The Mentoring And Student Teaching program is a long-standing outreach program at Haverford College. The program provides laboratory experiences and writing tutorials for 20-25 Philadelphia area middle school students who come from backgrounds traditionally underrepresented in the sciences.

The young students come to the Haverford campus for five Saturdays in the spring semester and spend the day engaging in scientific experiments and science communication. Haverford and Bryn Mawr College students prepare the course curricula and work with the middle school students in small groups. Haverford College faculty act as advisers for this program.

BREAKING DOWN BARRIERS IN STEM FOR STUDENTS WHO ARE BLIND OR VISUALLY IMPAIRED

The national conversation about making STEM fields more inclusive may be entering mainstream discourse, but for students like Daniel Gillen ’17, who is blind, it remains difficult to find resources aimed at helping educators make their classrooms more accessible for visually impaired students. Gillen’s solution? To develop those resources himself.

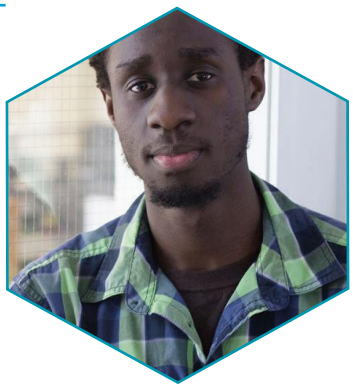
In a paper recently published in *The Physics Teacher*, the physics and music double major and co-authors Megan Holt ’14, Visiting Assistant Professor of Physics and Astronomy Kevin Setter, Physics Laboratory Instructor and Observatory Coordinator Paul Thorman, and Professor of Physics and Astronomy Suzanne Amador Kane aimed to provide much-needed advice, methods, and resources for making physics courses accessible for students who are blind or visually impaired.

“When Daniel first arrived at Haverford, we were all surprised and dismayed to learn how little help was out there when we reached out to educators nationwide to learn about current best practices,” said Kane. “Daniel wound up having to be an active player in inventing methods for how to learn physics alongside us as he was learning the actual physics in his courses.”

Drawing on methodology developed by Holt in her senior thesis on physics education at Haverford, Kane and the rest of the physics department worked together with Gillen to dismantle and rework aspects of STEM learning that were previously inaccessible to him.

Traditionally, pedagogical approaches to the physics classroom have been primarily visual, with a focus on complex and abstract theory and concepts. This new paper offers concrete ways of making physics courses more non-visual, emphasizing the importance of incorporating screen-reading software, which converts on-screen content into speech and/or Braille output.

STUDENTS IN THEIR OWN VOICES



Aspiring wildlife veterinarian Trevor Esilu '21 spent a summer conducting research on the canine version of the Insulin-Like Growth Factor 1 hormone at Penn Vet.

"This internship has opened my eyes to the types of questions and approaches that vets take to understand a phenomenon or problem, and study it. Essentially, it has been a golden opportunity to combine my interests in vet medicine and research."

Jointly sponsored by the Marian E. Koshland Integrated Natural Sciences Center and the Center for Peace and Global Citizenship, biology major and Spanish and environmental studies double minor Amelia Keyser Gibson '18 spent a summer exploring food sustainability in Trinidad and Tobago, working with Green Market Santa Cruz.

"Farming and food production do not receive as much attention as they should within the climate change discussion, but are becoming increasingly important as suburban sprawl has taken over land previously used as farmland, and as we have become removed from where our food is produced due to the accessibility of grocery stores. It is becoming increasingly important for communities to shift their food priorities back towards [foods] that can be grown locally, instead of shipped halfway across the world."

Thanks to funding from the Primary Care Pre-Medical Internship Program, chemistry major Benjamin Frost '19 shadowed healthcare providers in his hometown of Oconomowoc, Wisc., as they examined patients, provided diagnoses, and prescribed medications—mostly to a community of individuals and families who cannot afford the premiums of health insurance.

"The exciting thing about this internship is that I get to see some of the factors impacting people's access to care in my immediate community. Through this experience, I hope to gain awareness of these factors so that I can provide better care if I do become a physician."

Biology major and health studies minor Juliana Benitez '20 reached out to Professor of Biology Rob Fairman and Associate Professor of Biology Rachel Hoang, who were both eager to take her on as a research intern. Researching alongside two professors meant Benitez got to explore multiple sides of the field. While Fairman's focus is protein buildup in the brains of individuals with dementia, Hoang studies evolutionary development in fruit flies.

"These internships allow me to learn in-depth material about protein science and evolutionary development that is pertinent to my major. They also let me forge mentoring relationships with professors in the department I'm majoring in."

Pre-med biology major Jharna Jahnavi '19, who also minors in neuroscience and health studies, spent the summer exploring the world of clinical research in the division of neurology at the Children's Hospital of Philadelphia.

"The lab itself is a neurovascular imaging lab that looks at cerebral hemodynamics using biomedical optics. Essentially, this means that we use near-infrared lasers to detect the oxygenation and blood flow in the brain. My fascination and continued interest with this lab is how incredibly interdisciplinary our work is. I have worked not only with neurologists, neurosurgeons, cardiothoracic surgeons, and other healthcare professionals, but also with post-doc physicists, computer scientists, medical students, and other undergraduates."

Physics major Daniel Van Beveren '20 spent a summer conducting on-campus research in the lab of Professor of Physics Walter Smith. The junior is continuing an ongoing study of the electrical properties of modified DNA strands, and in particular is focusing his research on how well the strands conduct electricity when illuminated with a laser.

"Science, it turns out, is not a mechanical process. Proposing a theory or designing an experiment both take creativity, which is a faculty that can only be sharpened by actually using it. I've found a great opportunity to do that here. Answering this sort of question can help lay the groundwork for the use of DNA strands as wires in microscopic, 3D, self-assembling electrical circuits. This idea sounds pretty far-fetched, and it's definitely not in the immediate future, but it has shown real promise and become an important topic in nanoscience."

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Student Advisory Committee

This committee is appointed each year and meets regularly with the Program Coordinator and annually with the Steering Committee as a whole.

Xiwen Jia '19
Yixuan Zhou '20

COVER: CORAL REEF
By: Patrick Montero
Students from Kristen Whalen's "Advanced Topics in Biology of Marine Life" class spent a week over winter break exploring tropical coral ecosystems in Roatán, Honduras.

KINSC

For more information about studying in the natural sciences at Haverford College, please visit:

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