



ALLEGANY COLLEGE
of MARYLAND

FOR IMMEDIATE RELEASE
May 22, 2019

FOR MORE INFORMATION
Kristin Kehrwald
301-784-5152
kkehrwald@allegany.edu

ALLEGANY COLLEGE OF MARYLAND TO OFFER PHAGEHUNTERS COURSE:
Only Community College in State to Offer Class

CUMBERLAND, Md. (May 22, 2019) –When was the last time you dug in the dirt for viruses? Took a field trip to use an electron microscope? Or named a bacteriophage as part of a national research project?

For freshmen and sophomores enrolled in Allegany College of Maryland, that answer could be this upcoming academic year. ACM's Biology Department has been recently accepted into the innovative **Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science** program (SEA-PHAGES).

The international program, which is jointly administered by Howard Hughes Medical Institute (HHMI) and the University of Pittsburgh, offers students the opportunity to conduct real-world research in the field of bacteriophage genomics. The [SEA-PHAGES](#) project is comprised of more than 100 participating colleges and universities. ACM, one of only three participating colleges in the state, is the only community college in Maryland to offer the course.

Bacteriophages, also called phages, are so prolific in nature that many remain undiscovered and unstudied. They only live and reproduce in bacteria. Phages may be grown quickly and manipulated to study and modify their bacterial hosts. Because of these qualities, phages are used to fight bacterial infections and have many potential applications such as treating diseases or reducing drug resistance.

ACM's two-semester experience, [PhageHunters](#), offers students the chance to potentially discover a previously unknown bacteriophage, learn cutting-edge molecular biologic techniques, apply bioinformatics (the use of computer software and scientific methodology to understand data) to identify genes in DNA sequences and possibly co-author a scientific publication.

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In addition to classroom instruction, students will attend two discovery-based lab experiences per week, visit UMBC to view bacteriophages under an electron microscope and present at the Maryland Collegiate STEM Conference. They may have the opportunity to attend and present their research at the annual SEA-PHAGES Symposium, a national meeting of research students and faculty members.

Interested students (who enroll in the **PhageHunters** course with permission of ACM's biology instructors) will be placed in special sections of Biology 101 in the fall and Biology 102 in the spring. Students who have previously earned Biology 101 and 102 credits may join ACM's research program by taking the **PhageHunters** labs as Biology 299 for two credits each semester.

During fall semester labs, students will collect environmental samples (by digging in the dirt or bailing water from streams) and isolate bacteriophages. After purifying and characterizing the phages, students will extract DNA for further analysis and sequencing. In spring semester labs, they will use bioinformatics methods to interpret their phage's DNA sequence data. After quality control checks, [analyzed sequences](#) will be submitted to the National Center for Biotechnology Information GenBank database.

Howard Hughes Medical Institute provides the SEA-PHAGES program curriculum. ACM professors will attend trainings at UMBC and the HHMI. An ACM micro-grant is being used to offset the costs of additional required equipment and supplies for the **PhageHunters** program.

“We’re excited to be selected for this program. As educators, we know that a student’s buy-in—their feeling of having project ownership—is critical to their persistence in STEM,” explained ACM Biology Professor Donna Brunelli. “SEA-PHAGES [curriculum] makes upper-to-graduate level research accessible. It’s authentic ‘real-world’ research that grabs their interest and connects them to the larger scientific community early in their college career.”

Brunelli is joined by Associate Professor Michele Barmoy (Biology), Assistant Professor Michael Hands (Chemistry), Professor Steve Heninger (Physics) and Science Lab Coordinator Joy Freidenbloom in leading the **PhageHunters** project at ACM.

The SEA-PHAGES program appears to be particularly impactful at the community college level. The article “An inclusive Research Education Community (iREC): Impact of the SEA-PHAGES program on research outcomes and student learning” from the December 2017 Proceedings of the National Academy of Sciences of the United States of America found small additional gains in project ownership at community colleges relative to other

institutions. The article’s authors surmised that community colleges “that typically do not have robust investigator-driven activities” especially benefit from the program’s structure. They also found that “SEA-PHAGES students enrolled in a consistently higher number of science courses than students taking traditional laboratory courses.”

Prospective and current ACM students are encouraged to enroll early for the **PhageHunters** course. Because the course requires instructor permission, students should call 301-784-5255 or visit www.allegany.edu/phagehunters for more information.

PHOTO CAPTION==Shown is an artist’s rendering of a bacteriophage infecting bacterium. Beginning in fall 2019, Allegany College of Maryland’s two-semester PhageHunters course will provide community college students with the dynamic opportunity to conduct real-world research in bacteriophage genomics. The innovative program is jointly administered by the Howard Hughes Medical Institute and the University of Pittsburgh.

ABOUT ALLEGANY COLLEGE OF MARYLAND

Ranked among the top 20 community and technical colleges in the country by the Brookings Institution, Allegany College of Maryland (ACM) offers world-class education in a caring environment that transforms lives, strengthens communities and celebrates life-long learning. Serving more than 3,000 credit and 7,000 continuing education and workforce students annually, ACM offers over 80 associate degree, certificate, and letters of recognition programs at affordable rates. To learn more, visit allegany.edu or call 301-784-5000.