

COLLEGE OF ARTS AND SCIENCES

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SCIENCE SUNDAYS

AT OHIO STATE

2019-2020





📍 NEWFOUNDLAND

Evolution, Ecology and Organismal Biology PhD student **HEATHER GLON** is working to gather a globally representative collection of *Metridium*, a type of sea anemone that thrives in the northern Atlantic and Pacific oceans. By looking at relationships between genetics and geographic distribution, she hopes to understand how and why the anemones have evolved over time.

They may look like vibrant, underwater gardens, but *Metridium* is far from plant life. Covered in venomous cells, marine animals spend their days patiently waiting for fish and other small organisms to swim close enough to become trapped in these anemones' toxic tentacles.

Learn more online: go.osu.edu/metridium

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asc.osu.edu/science-sundays

ABOUT SCIENCE SUNDAYS

Science Sundays is a **FREE** public lecture series offered by The Ohio State University College of Arts and Sciences.

Speakers are leading experts in their fields dedicated to making their work interesting and accessible for audiences of all ages and backgrounds. Science Sundays brings leading-edge work directly to the public with lectures covering diverse topics in science, arts and technology that touch our everyday lives.

ABOUT ARTS AND SCIENCES

The College of Arts and Sciences is often called the academic hub of Ohio State — not just because of its size, but because it's where arts, humanities, and natural, mathematical, social and behavioral sciences can converge in unique and unexpected ways. When we combine different perspectives and expertise, we can better investigate problems through creative and scholarly inquiry, engage in community collaborations, and deliver an exceptional education for our students.

In every area of the college, our innovative faculty, students and collaborators worldwide are exploring existing and emerging global challenges. The college champions creative scholarship and performance and promotes an environment for students and faculty to inspire, discover and create on campus and beyond.

UPCOMING EVENTS

General Event Information

Each lecture is followed by a free, informal reception.

Time

Lecture: 3-4 p.m.

Reception: 4-5 p.m.

Lecture Venue

Ohio Union U.S. Bank Conference Theater
1739 N. High St., Columbus, OH 43210

Reception Venue*


Ohio Union Ohio Staters Traditions Room

**unless otherwise noted*

For more information on **SCIENCE SUNDAYS** visit:

asc.osu.edu/science-sundays

For an archive of past talks, visit: go.osu.edu/scisun-archive



SEPTEMBER 8, 2019

THE MOLECULAR MACHINERY OF HEARING

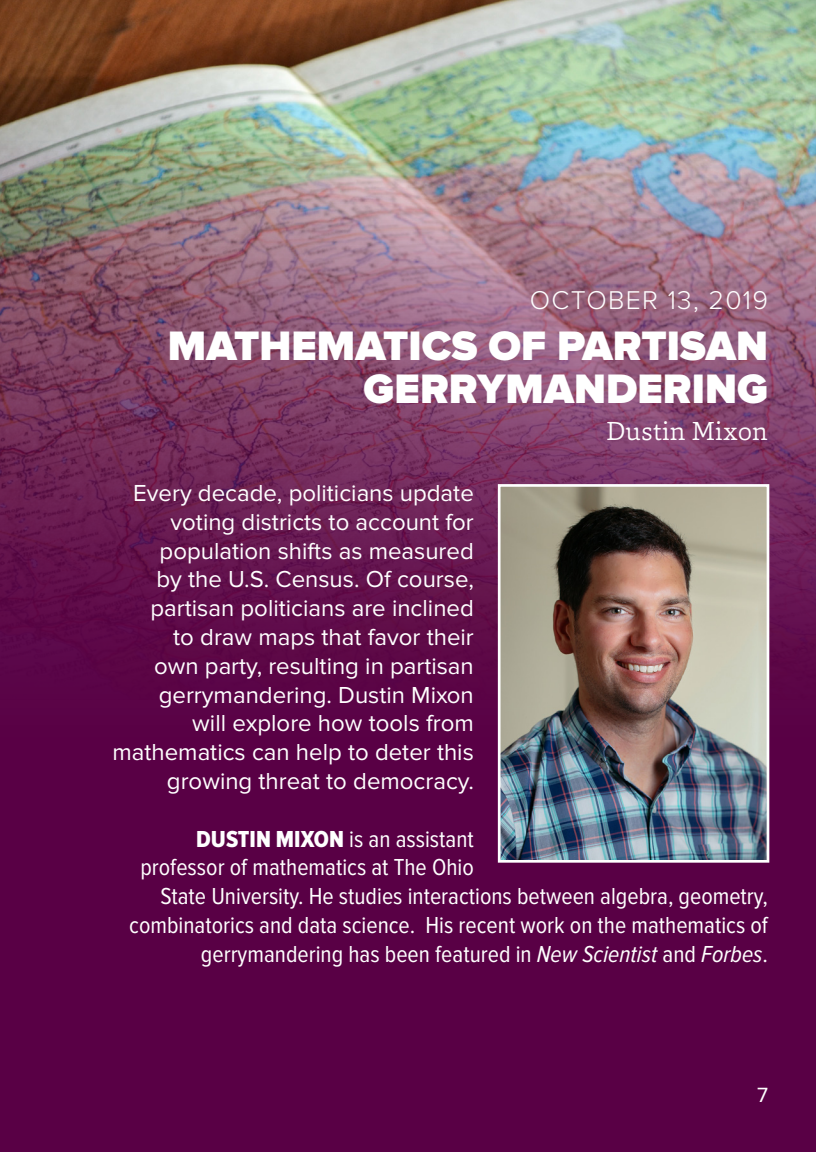
Marcos Sotomayor



The human hearing organ is exceptional in its ability to sense sound across a wide range of frequencies and intensities. The process of sound conversion into brain electrical signals that we can understand is called “mechanosensation” and is carried out by various proteins essential to hearing. In this lecture, Marcos Sotomayor will explore and present in simple terms the structures and function of these proteins.

MARCOS SOTOMAYOR is an associate professor of chemistry and biochemistry at

The Ohio State University whose research focuses on exploring the molecular mechanisms underlying hearing and brain wiring. Sotomayor has received various awards, including an Alfred P. Sloan Fellowship and Ohio State’s Distinguished Undergraduate Research Mentor award.



OCTOBER 13, 2019

MATHEMATICS OF PARTISAN GERRYMANDERING

Dustin Mixon

Every decade, politicians update voting districts to account for population shifts as measured by the U.S. Census. Of course, partisan politicians are inclined to draw maps that favor their own party, resulting in partisan gerrymandering. Dustin Mixon will explore how tools from mathematics can help to deter this growing threat to democracy.

DUSTIN MIXON is an assistant professor of mathematics at The Ohio

State University. He studies interactions between algebra, geometry, combinatorics and data science. His recent work on the mathematics of gerrymandering has been featured in *New Scientist* and *Forbes*.



NOVEMBER 17, 2019

THE STRANGE MICROBES DEEP INSIDE THE EARTH AND WHAT THEY DO

Karen Lloyd, University of Tennessee



In this lecture, Karen Lloyd will introduce the vast and diverse microbial ecosystem that was recently discovered buried deep within Earth's crust, illuminating how these microbes perform important ecosystem functions in volcanoes, hot springs and deep subsurface oceanic sediments.

KAREN LLOYD is an associate professor of microbiology at the University of Tennessee whose research applies molecular biology techniques to environmental samples to learn more about strange, uncultured microbes. She

has worked on deep oceanic subsurface sediments, deep-sea mud volcanoes and cold seeps, terrestrial volcanoes, hot springs, serpentinizing springs, Arctic marine fjord sediments and ancient permafrost.

DECEMBER 1, 2019

SUPERCONDUCTIVITY: FROM THE QUANTUM DANCE OF ELECTRONS TO LEVITATED TRAINS AND QUANTUM COMPUTERS

Nandini Trivedi

In this lecture, physicist Nandini Trivedi will explain why a piece of metal can superconduct, that is allow electricity to flow without any resistance; why superconductors make the strongest magnets; how superconducting qubits are driving the revolution for quantum computers; and, most importantly, describe open questions in quantum matter.

NANDINI TRIVEDI is a professor in the Department of Physics at The Ohio State University. She completed her undergraduate degree at the Indian Institute of Technology, Delhi and her PhD in physics from Cornell University. Her research focusses on quantum matter — the interplay of quantum mechanics and interactions to create emergent states of matter.



JANUARY 12, 2020

DIAGNOSING CANCER WITH MOLECULAR IMAGING

Amanda Hummon



Science and medicine are at an exciting crossroads. Recent developments in the clinical laboratory are being implemented in research hospitals and will soon be used to diagnose diseases across the U.S. In this talk, Amanda Hummon will illustrate some of the recent breakthroughs in molecular imaging technologies and how they are being used to help cancer patients.

AMANDA HUMMON is an associate professor of chemistry and biochemistry at The Ohio State University and a member of Ohio State's

Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute. Her research group examines protein changes that occur with the development and progression of colorectal cancer and they also develop novel molecular imaging approaches.

** Reception will be in Ohio Union Cartoon Room*

FEBRUARY 2, 2020

FOOD INSECURITY AND MENTAL HEALTH: AN UNDEREXPLORED GLOBAL HEALTH CONCERN

Barbara Piperata



Food insecurity is on the rise, affecting the nutrition and mental health of around 821 million people. Drawing on research from Nicaragua, Barbara Piperata will explore the underlying causes of the issue and how to inform policies aimed at alleviating food insecurity and improving mental health both locally and globally.

BARBARA PIPERATA is an associate professor of anthropology at The Ohio State University. Her research in Nicaragua and the Brazilian Amazon focuses on food security, lactation and, most recently, the ways socioeconomic conditions and cultural practices interact to shape the formation of the infant gut microbiome.



MARCH 1, 2020

COLLECTIONS AS DATA: COMBINING DATA SCIENCE AND THE POWER OF LIBRARY COLLECTIONS TO UNLOCK NEW UNDERSTANDING

Kate Zwaard



While the digital revolution has changed the way libraries serve their users, it's also enabled new modes of research and creativity. Kate Zwaard will explore how libraries and archives are presenting their collections so artists, researchers and the curious can interact with them in new ways.

As director of digital strategy at the Library of Congress, **KATE ZWAARD** helps the nation's oldest cultural institution use technology to enable transformational user experiences. She is a statistician by training, a software developer

by trade and deeply in love with humanity's creative and scientific work.

** Reception will be in Ohio Union Interfaith Room*

APRIL 5, 2020

GAMMA RAY BURSTS: A BRIEF HISTORY OF THE MOST POWERFUL EXPLOSIONS IN THE UNIVERSE

John Horack

Gamma-ray bursts, discovered by accident with classified satellites, were for decades a leading mystery in astrophysics. John Horack explores the breakthroughs that followed from the Gamma Ray Observatory (1991) and subsequent experiments, which showed that these are the most powerful explosions in the universe. Very recently, gravitational waves have been detected from these still-mysterious explosions.

JOHN HORACK is the inaugural Neil Armstrong Chair in Aerospace Policy at The Ohio State University, with tenured, full-professor appointments in the College of Engineering's Department of Mechanical and Aerospace Engineering department and the John Glenn College of Public Affairs. He is a 30-year veteran of the spaceflight industry.



SEASON ORGANIZERS



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SHARE YOUR THOUGHTS

Submit online at asc.osu.edu/scisun-survey or mail in this form.

We want to make Science Sundays a popular Sunday afternoon destination for science buffs of all ages. Your feedback is very important in helping us to do that. Please take a few minutes to let us know what you thought of this lecture — what you liked most, what you think could be improved.

Name: _____

Email: _____

Address: _____

Feedback: _____

Mail your survey to Arts and Sciences Marketing and Communications: Science Sundays, 154 N. Oval Mall, 1010 Derby Hall, Columbus, OH 43210

THE COLLEGE OF ARTS AND SCIENCES EMBRACES **SCIENCE AND THE ARTS.**

Find out more about the new Arts District at:
asc.osu.edu/arts-district



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