

CSU CHEMISTS ARE HELPING US NOT GET FOOD POISONING

Anne Ju Manning

Food poisoning: Many of us have had it, and we won't soon forget it. Colorado State University chemists are trying to make it so we can avoid it in the first place.

Borrowing concepts from medical diagnostic devices, a CSU research team has created a simple, cheap set of handheld tests that can detect the presence of many water- or food-borne pathogens. If applied in the field, such tests could greatly reduce the number of expensive follow-up tests needed to keep the food supply safe from fecal contamination.

The new testing systems are innovations from the [lab of Chuck Henry](#), professor and chair of the Department of Chemistry. The research is in [Analytical Chemistry](#), a publication of the American Chemical Society (ACS), and is the subject of an [ACS news release](#). The paper includes authorship by CSU graduate students Jaclyn Adkins and Katherine Boehle, research assistant Colin Friend, undergraduate researcher Briana Chamberlain, and Bledar Bisha of the University of Wyoming.

For their study, the researchers targeted a broad class of bacteria known as fecal indicator bacteria (FIB), which cause the highest number of hospitalizations and deaths from food poisoning. It commonly enters the food supply through contaminated water used to irrigate green

vegetables like alfalfa sprouts, spinach, and lettuce.

While federal regulations require frequent testing of fruits and vegetables for contamination with fecal matter, existing processes could use improvement. Common techniques like immunoassays and polymerase chain reactions (PCR) work reasonably well, but they require expensive equipment to perform and can lead to false positives. The gold standard for bacterial detection is a lab culture, but this can take up to 48 hours to complete.

The research has been supported in part by the [Catalyst for Innovative Partnerships \(CIP\)](#), a program of the CSU Office of the Vice President for Research that funds cross-disciplinary science. Through CIP, Henry has collaborated with researchers in the Department of Microbiology, Immunology and Pathology. As a result, the food safety project has included the perspective and expertise of microbiologists, who would be most likely to use the devices in the field.

The CIP team, which includes researchers Brian Geiss and Elizabeth Ryan, is also studying antimicrobial resistance, among other projects.

Read the full article at [SOURCE!](#)



MESSAGE FROM THE CHAIR



As we welcome the end of the spring semester and prepare for the joyous occasion of graduation, I look back at a very successful year for our department.

The new “state of the art” research building is in its final stages of construction, and we are thrilled for move in to start this summer and the unveiling this fall. Please stay tuned for an invitation for our Grand Opening Celebration to be held on Thursday, October 12, 2017.

This semester has been filled with our faculty, staff, and students continuing our tradition of excellence. Assistant Professor Jamie Neilson received an NSF CAREER Award and was named both a Sloan Research Fellow and a Cottrell Scholar. Associate Professor Melissa Reynolds was named Professor Laureate, the highest academic title awarded by the College of Natural Sciences. And [Professor Frank Stermitz](#) published his last scientific paper, making six decades of contributions to the Department of Chemistry and the College of Natural Sciences.

We have also been busy hiring. This fall, we will be welcoming two new faculty members to our department. Assistant Professor of organic chemistry [Jeffrey Bandar](#) will be joining us from Massachusetts

Institute of Technology. His current research focuses on using transition metal catalysts for the enantioselective syntheses of pharmaceutically relevant small molecules. We are also pleased to welcome Assistant Professor [Joseph Zadrozny](#), who is currently working at Northwestern University. Zadrozny’s work focuses on the design of molecules and materials that may serve as the fundamental units of logic in a quantum computing system. Stay tuned for at least one more exciting announcement regarding hiring coming later this summer.

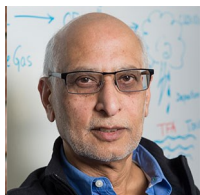
Sir William Ramsay, (1852-1916) wrote that “Nothing can be more certain than this: that we are just beginning to learn something of the wonders of the world on which we live and move and have our being.” As we learn, grow, and are faced with more exciting challenges and events, I know that we will continue to ensure that our faculty, staff, and students realize their dreams and impact the world through innovation, research, and discovery. We are excited to share our department’s remarkable accomplishments and experiences with you as all of us continue to learn the wonders of the world around us.

Enjoy your summer!

Charles S. Henry

Charles S. Henry
Professor and Chair

DEPARTMENT HIGHLIGHTS



RAVISHANKARA NAMED UNIVERSITY DISTINGUISHED PROFESSOR

A.R. “Ravi” Ravishankara, professor in the Departments of Chemistry and Atmospheric Science, has been named a [University Distinguished Professor](#), which is the university’s highest honor for faculty. Ravishankara has had a long research career spanning both government and university positions. Over four decades, he has studied the chemistry of Earth’s atmosphere as it relates to stratospheric ozone, climate change, and regional air quality.



REYNOLDS NAMED MONFORT AND LAUREATE PROFESSOR

Melissa Reynolds, associate professor in the Department of Chemistry and a faculty member in the School of Biomedical Engineering, has been named a [Monfort Professor](#) at Colorado State University. Reynolds was also recently named a 2017 College of Natural Sciences Professor Laureate, the highest academic title awarded by the College of Natural Sciences.



NEW SCHOLARSHIP GIVING OPPORTUNITIES

Rodney K. Skogerboe Scholarship: This scholarship was created by Glenn Boutilier and his wife Donna to honor Rodney Skogerboe’s career at Colorado State University and the important impact he had on the lives of his students. The purpose of the fund is to provide scholarships for graduate students in chemistry with a concentration of analytical chemistry. [Click here to give.](#)

Alex Kramer Scholarship: This fund was established by Andrew Kramer, Katherine Hunt, and family in memory of their son, Alex. The purpose of this fund is to provide scholarships for students enrolled the Department of Chemistry at CSU. [Click here to give.](#)

ASSISTANT PROFESSOR JAMIE NEILSON IS IN HIS ELEMENT



Colorado State University Assistant Professor Jamie Neilson is using chemistry to create new, innovative materials to change the way we harvest and use energy. He is also leading the charge to integrate this work into a new sustainability-focused educational program on campus.

For his myriad achievements on both of these fronts, Neilson has been recently named a Sloan Research Fellow, a prestigious award for early-career scientists and scholars working on fundamental research, as well as a Cottrell Scholar, a distinction that recognizes excellent teacher-scholars for their innovation and academic leadership.

In [his lab](#) in the Department of Chemistry, Neilson and his colleagues are using molecular-level control to discover new

functional materials, such as ones that could improve solar energy efficiency. “These fundamental studies will ultimately change the way we approach the synthesis, use, and lifecycle of materials used to store and convert different forms of energy,” Neilson said. “But changing paradigms is not easy. “Materials by design” presents “one of the grandest challenges that the physical sciences faces,” Neilson said. This is in part because the materials themselves can be a sticking point in research progress: “materials both enable and limit our ability to create technology,” he explained.

Neilson, however, has a high-energy team to help push the effort forward, including “the undergraduates that are excited to dig into research, the graduate students who truly are the amazing innovators, and my fantastic colleagues that freely share their ideas, wisdom, and coffee.”

The two-year, \$60,000 fellowship from the [Alfred P. Sloan Foundation](#) will help support all aspects of Neilson’s research. He joins 15 other Colorado State University researchers in having received the honor in the past 45 years, all in the College of Natural Sciences. Most recently, Amber Krummel, also an assistant professor in the chemistry department, was named a Sloan Research Fellow in 2015. Neilson is one of 126 researchers in this year’s class of fellows, which was announced February 21.

You can read the full article at [SOURCE!](#)

DEAF STUDENT TRAIL-BLAZING HER WAY TO A CHEMISTRY DEGREE

Evie Bangs was 5 years old when she started to lose her hearing. At age 8, her hearing plummeted, and she could no longer understand her teachers.

Now she’s about to graduate from Colorado State University. And she’s gotten here not by dwelling on what she has lost, but focusing on what she could gain – and soon, that will include a degree in chemistry from the College of Natural Sciences.

Bangs may be CSU’s first deaf chemistry major – at least in anyone’s institutional memory. It’s taken Bangs an extra year to finish her degree, in part because of the uniquely time-consuming way she must absorb challenging course material, with the help of sign language interpreters. “When I’m in my classes, it’s kind of overwhelming,” said the Estes Park native. “I realized that in order to do well grade-wise, I needed to take fewer credits.”

Bangs has also spent that extra time working toward an American Chemical Society-certified degree, which requires additional training and lab work. Bangs aspires to attend graduate school, and become a professional chemist.

For every class, as well as for group projects, Bangs is accompanied by two American Sign Language interpreters and one class transcriber from CSU’s Resources for Disabled Students (RDS). Her teachers joke that Bangs has an “entourage.”



The two interpreters are necessary due to the complexity of the material; sometimes, while one is working with Bangs to quickly make up signs for words like “stoichiometry” or “adiabatic process,” the other is continuing to listen to the instructor, so that Bangs misses as little as possible. Halfway through class, they switch roles. It’s called “teaming,” says RDS interpreter Dede Kliever, and through the years of working with Bangs, everyone – including the interpreters – has learned a lot about chemistry.

You can read more about Evie, and her journey at [SOURCE](#).

THE FUTURE OF CHEMISTRY IS HERE



For the last two years, crews have been progressing towards our grand opening date of Fall 2017 for the new [Chemistry Research Building](#). The workers and partners, including Haselden Construction, RLH Engineering, and architects Hord Coplan Macht, having been working incredibly hard to ensure the success of our new building.

We are just a few short months away from opening, and we can't wait for all of you to join us at the Grand Opening

Celebration for the new Chemistry Research and Biology Buildings. The date is set for Thursday, October 12, 2017. Keep an eye out for event details this summer! Jan Nerger, Dean of the College of Natural Sciences, spoke at the ground breaking ceremony and declared that discovery begins here, and we know that discovery of new knowledge and discovery for our students, faculty and staff will continue to expand. Remarkable discoveries are just the beginning of what these buildings

will do. The new Chemistry Research Building will be approximately 61,000 square feet, most of it dedicated to synthetic chemistry research, and will feature flexible laboratory space to encourage collaboration among researchers and students. The building will make up the second half of the gateway to [CSU's Science Mall](#), alongside the new 152,000-square-foot Biology Building.

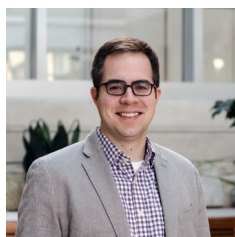
Investing in chemistry is building a home for students to learn side-by-side with leading scientists to solve global challenges. The total estimated cost of the facility is \$55.4 million, funded in part by the state legislature. Outside gifts will provide much needed equipment and other enhancements to the building. Let's invest in the Department of Chemistry and its incredible momentum to create a world-class powerhouse for the chemical sciences. If you are interested in donating toward the Chemistry Building Enhancement fund, please [click here](#).

NEW FACULTY



JEFF BANDAR TO JOIN FACULTY

[Jeffrey Bandar](#), Ph.D., will be starting his independent career at Colorado State University in August 2017 as an assistant professor in organic chemistry. His current research focuses on using transition metal catalysts for the enantioselective synthesis of pharmaceutically-relevant small molecules. At CSU, the Bandar Group aims to invent new concepts in catalysis and reaction promotion for application in chemical synthesis.



JOSEPH ZADROZNY TO JOIN FACULTY

[Joseph Zadrozny](#), Ph.D., will be starting his independent career at Colorado State University in August 2017 as an assistant professor in chemistry. At Colorado State University, Joe and his cohort will design materials and molecules that enable the control of the magnetic moments of electrons and nuclei. When realized, these systems will inspire breakthroughs in pressing challenges of magnetic resonance imaging, photocatalytic reactivity, and information processing.

SUPPORT THE DEPARTMENT

Your support of the department is incredibly valuable. Please consider making a difference to today's students, faculty, facilities, and programs—at whatever level is right for you. Thank you!

For more information on giving, contact
Simone Clasen, Executive Director of
Development and Operations
College of Natural Sciences | 1801 Campus Delivery |
Fort Collins, CO 80523-1801 | Phone: (970)491-0997 |
Mobile: (970)214-9938 | simone.clasen@colostate.edu
www.natsci.colostate.edu

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