NEW ONLINE MASTERS STUDENTS FOR SPRING 2020:
Spenser Bailey, VA; Josh Barbara, WI; Isabella Berg, NE; Rebecca Best, NE; Susanne Bressi, PA; Jaclyn Casey, PA; Justin Chang, IL; Deanna-Marie Gonzales, TX; Sarah Goodman, CO; Abdul Hamid, NY; Cristina Hillje, TX; Katarzyna Jones, CA; Stefanie Jordan, CA; Haley Judd Pulito, NC; Nora Kabbara, CA; Torri Kling, CO; Herral Lakhani; Rebecca Lash, ME; Elisabeth Lashbrooks, NJ; Lucas Malimanek, MN; Jordan McAllister, ID; Christina Meadows; Katherine Melton Simpson, VA; Thanh Nguyen, IA; Allison Nocera, PA; Deborah Oliveira, CA; Peter Jerome Ishmael Paulino, CA; Anna Schlaak, MN; Victoria Simek, MS; Rebekah Villalta, CA; David Wedlake, SC; Erica Woytcke, MN; Ashley Yount, IN

NEW ONLINE FACULTY
Dr. Benjamin (Ben) Pélissié joins the Biology department this spring and will be teaching Biological Statistics and Organic Evolution. He grew up in South-Western France, between the Lot and the Dordogne valleys, in a very small town, playing rugby, swimming and fishing. He received his bachelor’s degree in Entomology and Ecology from the University of Toulouse, where he also first joined a research lab and started working on insects (the European corn borer at the time). As he was getting his first experiences as an undergraduate researcher, he discovered an interest in evolution and genetics. This led him to move further south to Montpellier, in order to get his master’s and PhD degrees in Evolutionary Biology (on sexual selection hermaphrodites). He then worked as a postdoctoral researcher in France where he studied the desert locust for two years, in Brazil to collect wasp pollinators of fig trees for two more years, and finally to the United States (University of Wisconsin-Madison) to work on the genomics of the Colorado potato beetle.

His research incorporates population genetics and genomics, evolutionary ecology and experimental approaches to better understand how organisms respond to environmental changes and how adaptation generates biodiversity. His focus is mainly on rapid evolution in insect pests, especially the Colorado potato beetle’s formidable capacity to adapt rapidly to new pesticides, new host plants and new climatic niches. When he is not working, he likes to play with his son, read, take pictures and run the trails. Whenever they can, he and his family go hiking, camping and traveling to new places.
A Biology Professor's research was highlighted by the University of Nebraska Kearney news this fall. Below is an excerpt from the article on Dr. Surabhi Chandra, Associate Professor in the Department of Biology, entitled "UNK research project targets national opioid epidemic". For the full article click on the link: http://unknews.unk.edu/2019/10/15/unk-research-project-targets-national-opioid-epidemic/

UNK researchers Mahesh Pattabiraman, left, and Surabhi Chandra are trying to develop a painkiller that's as effective as opioids, without the risk of addiction. (Photos by Corbey R. Dorsey, UNK Communications)

By TYLER ELLYSON
UNK Communications

KEARNEY – Roughly two-thirds of all drug overdose deaths involve opioids, which kill an average of 130 people in the United States each day.

Of those opioid-related deaths – more than 47,000 in 2017 alone – about a third are caused by pain medications legally prescribed to patients.

The U.S. is in the midst of an "epidemic of prescription opioid overdoses," according to the Centers for Disease Control and Prevention, which notes that the amount of opioids prescribed and sold in the
country has quadrupled since 1999, leading to a fivefold increase in the number of overdose deaths over that time.

“The opioid crisis is a major issue that’s ruining families,” said Mahesh Pattabiraman, an associate professor of chemistry at the University of Nebraska at Kearney. “There’s an urgent need for potent analgesics that can replace opioids as the gold standard of pain medication.”

Opioids, a class of legal and illegal drugs found naturally in the opium poppy plant, contain chemicals that relax the body and relieve pain. Prescription opioids – some made directly from the plant and others produced by scientists using the same chemical structure – are most often used to treat moderate to severe pain. These powerful and highly addictive painkillers include hydrocodone (Vicodin), oxycodone (OxyContin and Percocet), morphine, codeine and fentanyl, a synthetic opioid 50 to 100 times more potent than morphine.

“It’s the best pain medication out there, and that’s why people are still prescribing opioids,” said Surabhi Chandra, an associate professor of biology at UNK. “But at the same time there’s a lot of abuse going on with opioids and they have so many side effects related to them.”

Approximately 2 million Americans either abuse or are dependent on prescription opioids, according to estimates from the CDC, which puts the annual economic burden of prescription opioid misuse in the U.S. at $78.5 billion.

Pattabiraman and Chandra are working on a potential solution to this national problem.

The husband-and-wife research team believe another compound, incarvillateine (INCA), derived from the Chinese herb Incarvillea sinensis, can be as effective as opioids, without the risk of addiction.

Opioids are effective painkillers because they bind to and activate opioid receptors in the brain, spinal cord and other organs, blocking pain signals sent from the brain to the body and releasing large amounts of dopamine.

INCA has been widely used in traditional medicine to treat rheumatism and pain, according to Pattabiraman, but it doesn’t work through the opioid pathway. Instead of binding...
to opioid receptors, which can lead to addiction, Pattabiraman and Chandra are trying to develop synthetic analogs of the natural INCA compound that favor adenosine receptors.

“If we can make analogs of those structures, we can potentially identify a strong anti-pain compound that will not induce addiction,” Pattabiraman said, noting that a drug working through the adenosine pathway has the potential to also be used in cancer treatments.

The idea of studying INCA was conceived by Pattabiraman when he realized its structural core is identical to the compounds he synthesizes as a photochemist. Chandra, a pharmacologist by training, studies the molecular/receptor aspects in cells and the analgesic effects in mice.

The research project, specifically focused on alternative pain management for the elderly population, also includes several UNK undergraduate students each semester and one graduate student who joined the team last spring.

Luke Hamilton, a Bridgeport native currently pursuing a master’s degree in biology, believes the project could be enormously beneficial for millions of Americans with untreatable chronic pain conditions.

“If our hypothesis is correct, these compounds could serve as the basis for the development of drugs that would prevent pain without the risk of addiction that is so dangerous with opioids,” said Hamilton, who plans to pursue a neuroscience career at an academic medical center.

Pattabiraman and Chandra admit there’s “a lot of ground to cover” when it comes to understanding the INCA compound and how it reacts with adenosine receptors, but they’re optimistic about the project’s future.

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**CONGRATULATIONS**

**December 2019 Graduates:**

Susan Bain, Michael Buck, Laeticia Compas, Bradley Ebner, Lauren Hatton, Sarah Herrington, Catherine Lahren, Brittany Laney, Angela Mallas, Riannon Mashore, Jennifer McCann, Ashley Parsons, Ashley Quick, Miranda Reinson (Thesis), Garrett Rowles (Thesis), Cathrena Samodurov, Cheyanne Shere, Bernadette Smith, Jacalyn Speicher, Sonja Stampfler, Dana Trimble, David Zorn

Four graduates were able to make the journey to Kearney for the UNK Fall Commencement ceremony on December 20th held in the Health and Sports Center. Eighteen guests including graduates, their families, and Biology faculty, attended the Department breakfast before the ceremony to honor our graduates.
(pictured left, from left to right: Dr. Paul Twigg, Professor and Graduate Program Chair; Dr. Janet Steele, Professor and Director MSE Math/Science Education Online Program; Angela Mallas; Catherine Lahren; Bernadette Smith; Dr. Julie Shaffer, Professor and Biology Department Chair; and Dr. Austin Nuxoll, Assistant Professor and Director MS Biology Online Program)

(pictured right: Bernadette Smith is hooded on stage at graduation ceremony by faculty members, Dr. Charles Rowling, Associate Professor, Political Science Department; and Dr. Brenda Eschenbrenner, Associate Professor, Accounting and Finance Department)

Photo by Corbey R. Dorsey, UNK Communications

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Publications, Meetings, Grants

Meetings


Publications


Continue to send us updates on any meetings, publications, grants, or awards that you have been involved with. Please email details to msbiology@unk.edu.
Greetings from the Director’s Desk! I hope everyone enjoyed the holiday break and is excited to start another semester! We had our highest enrollment ever this past fall semester and I would like to thank everyone for spreading the word about the program. Word of mouth from current and past students remains one of the leading ways students hear about our program.

As you are beginning this spring semester, I wanted to mention a couple of changes to the course schedule. Some of you may have noticed that we removed Microbial Diversity from the spring offerings. We will be offering this course this coming summer with a new instructor, Dr. Gregory Pec. Dr. Pec joined the department this past fall. We are also offering Environmental Biology in the summer session instead of fall 2020. You should look for other new topics courses offered this summer including History of Cancer, Neglected Tropical Diseases, and The Human Microbiome. As always, for any of our course offerings each semester, I encourage you to visit the following webpage, where you can view course descriptions and syllabi for all of our online course offerings, www.unk.edu/academics/msbio/Course_Descriptions.php.

I would also like to introduce a new faculty member in the biology department, Dr. Benjamin Pélissié. Dr. Pélissié will be teaching Biostatistics and Organic Evolution this spring. Plan to see some other great new graduate courses from him in the near future.

As classes get underway, do not hesitate to contact me if you have any questions or concerns. You can reach me by email at nuxollas@unk.edu or call me at 308-865-8602. I hope everyone has a great semester!

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**Faculty News**

**Dr. Brandon Luedtke** and his wife welcomed their 3rd child on August 12th. Odell Eugene weighed 8lbs 14oz and was 21½ inches long. He is well loved by his sisters Lincoln, age 6, and Carsen, age 4. (pictured right)
Brittney Adams (December 2017 thesis graduate) began a new position at Bayer U.S. - Crop Science as a Production Manager in Waco, NE.

Jennifer Cain (May 2017 graduate) was highlighted in The Horse magazine for her masters research with *S. Vulgaris* parasite in horses, for full article see [https://thehorse.com/179789/large-strongyle-s-vulgaris-still-a-risk-for-u-s-horses/](https://thehorse.com/179789/large-strongyle-s-vulgaris-still-a-risk-for-u-s-horses/). Earlier this year she was also in The Horse as the Graduate Student Spotlight [https://thehorse.com/168858/uk-graduate-student-spotlight-jennifer-cain-ms/](https://thehorse.com/168858/uk-graduate-student-spotlight-jennifer-cain-ms/).

Lisa Duncan (December 2017 graduate) earned the rank of Associate Professor of Biology at Frank Phillips College in Borger, Texas beginning November 2019.

Moose Henderson (December 2012 graduate) has been selected as a Research Assistant Professor at Michigan Technological University in Houghton, MI. He completed his PhD at this university in 2018. He recently published 3 books (2 are scientific reference books and 1 is a popular audience guide book) which brings his total authorship to five books. In addition, some of his wildlife images will be on exhibit in the National Geographic of Kazakhstan exhibit.

Timothy McGuire (December 2008 graduate) will begin a new biology faculty position in January 2020 at Delta College, University Center MI. He previously was a high school biology teacher at Bullock Creek High School in Midland, MI for 18 years.

Megan Stevenson (current distance student) began a new job in November 2019. She is the Chief Education Officer for Preferred Systems, Inc. and is in charge of the entire continuing education program for real estate across all 50 states.

Rebecca Waters (December 2018 graduate) has been accepted into the University of Alabama Birmingham’s School of Nursing. She will start the Accelerated Masters of Nursing Pathway program in January 2020.

Please let us know what is going on in your lives; email us your news at msbiology@unk.edu.

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**Office Space**

**Spring 2020 Deadlines:**
January 13<sup>th</sup> – Spring 2020 classes begin
January 17<sup>th</sup> – Last day to add/drop class on MyBlue with no penalty
January 20<sup>th</sup> – Martin Luther King, Jr. holiday, all classes dismissed and UNK offices closed
January 23<sup>rd</sup> – E-bill notifications sent to Lopermail account
February 1<sup>st</sup> – Last day to apply for May graduation
February 13<sup>th</sup> – Tuition & Fees due in full
March 13th – Last day to drop a course on MyBlue (no refund at this time)
March 22nd–29th – Spring break, all classes dismissed
April 3rd – Comprehensive Exams (for graduating students) are due to the Biology Dept
April 6th – Early Registration for Summer and Fall 2020 classes begins for all currently enrolled students
April 15th – Summer 2020 graduation application opens on MyBlue
April 27th – General Registration for Summer and Fall 2020 classes begins for all admitted students
May 4th–7th – Finals Week
May 8th – Commencement ceremony at 10:00 am in the Health and Sports Center
May 11th – Summer 2020 semester begins
May 12th – Deadline for faculty to submit final grades for spring classes

**Students planning to graduate this May 2020 must apply for graduation on MyBlue.** Even if you do not plan to attend the ceremony you must apply in order to receive your degree. The deadline to apply for May graduation is **February 1st**. There is a $25 application fee which can be paid on-line during the application process. Commencement ceremony will take place at 10:00 am on May 8th in the Health and Sports Center. Please consider making the trip to Kearney to walk in graduation and if you do, please let the Biology Department know so we can plan some special events for you.