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## Updates from Dean Charlene Wolf-Hall

June is such a lovely month with flowers everywhere and warm temperatures. I hope you all are getting to enjoy the summer. With June comes new student orientation (NSO), and we are a busy college with that activity as you can see in the NSO update (page 5).

We also completed the college's search for our next Associate Dean for Research. It is with great pleasure that I introduce Dr. Radhey Kaushik as the newest Associate Dean. This hire completes the college level administrative leadership team that now includes the Department Heads, Associate Deans, and

Development Director. We will have more updates on implementation of the colleges' research strategic plan in future newsletters.

Our summer courses are all online this year in part due to the COVID-19 pandemic. If we compare summer 2019 to summer 2020 (see table below), we are moving in a good direction for growing summer enrollment. This data along with the NSO numbers bodes well as we approach fall.

We are halfway through 2020. Thanks to you all for making our college adaptable, inclusive, and successful as we continue our way through this remarkable year.

### Celebrating Work Anniversaries

for

### June 2020

Thank you for all your hard work & dedication!

- Mandy Orth – 13 years
- Wanlong Li – 11 years
- Nina Herrera – 9 years
- Yongchang Ye – 1 year



### Summer Students

Summer Course Enrollments	2019	2020	1 Year Change
Number of Summer Course Sections (Banner Report)	133	127	-6
Summer Course Enrollment	962	1,308	+346
Average Enrollment/Section	7	10	+3
Range of Enrollment/Section	0-55	0-57	--
<b>Number Undergrads Advised by CNS</b> <i>(June data pull from Connect State; includes all pre-professional students)</i>	1005	1164	+159
Number of Freshmen Advised	219	369	+150
Number of Sophomores Advised	187	191	+4
Number of Juniors Advised	190	194	+4
Number of Seniors Advised	409	410	+1

# Awards & Recognition

*Cheers to all on your well-deserved success!*

*AOCS (American Oil Chemists Society) –  
3<sup>rd</sup> place Student Award in the  
Biotechnology Division*

**Andrea Zavadil**

Biology & Microbiology

*Bio-Micro Department – Tom Cheesbrough  
Excellence in Teaching Award*

**Andy Ellis**

Biology & Microbiology

## Congratulations, Dr. Kaushik!

After an internal search, **Dr. Radhey Kaushik** was named Associate Dean for Research in the College of Natural Sciences! He will officially begin his new role on August 22nd.

## Congratulations, Dr. Nepal!

**Dr. Madhav Nepal** has been elected to serve as the Vice President of Faculty Senate! He will serve in this role during the AY20-21 term.

## Past Newsletters

All the CNS newsletters have been uploaded for accessibility. You can view all the past issues here: <https://bit.ly/CNSnewsletters>

*SuccessfulStudent.org College Ranking –  
“20 Best Drone Training Colleges”*

The **Geography & Geospatial Sciences Department** was recently named on successfulstudent.org as one of the top 20 drone training colleges. They came in at #9 on the list, thanks in part to the variety of laboratory research, fieldwork, and travel included throughout the curriculum.

[Click here](#) to read the full story and see all the rankings!



*Sigma Xi Award – 2<sup>nd</sup> place in the Master's  
Student Paper Category*

**Andrea Zavadil**

Biology & Microbiology

*Sigma Xi Award – 2<sup>nd</sup> place in the Master's  
Student Proposal Category*

**Camille Massmann**

Biology & Microbiology

# Science @SDState

# Student Club Spotlight: Women in STEM



The Women in STEM club was co-founded by Victoria Wilson and Caitlynn McGregor last year after they recognized a need for an organization that connects and raises awareness of young women pursuing educations in STEM here at South Dakota State University.

“STEM is a difficult field and we felt that we needed more support, so we created a student-led organization to help connect female STEM majors here on campus and inspire and raise awareness in the next generations of women in STEM,” said Caitlynn McGregor, Technology Ambassador. “We understand STEM is difficult, but want everyone to know that they aren’t alone. We help make the path

easier by offering free tutoring and homework help, information about career building, internship help, and networking. We also plan fun events to help you take a break from your studies to relax.”

Typical club meetings, held every other Wednesday evening in Wagner Hall, range anywhere from career planning, graduate school panels, resume development, and REU application information to pizza parties, Jeopardy Night, and tie-dye parties. Women in STEM also regularly coordinates meetings with other STEM-related clubs at SDSU and started the first STEM movie night led by several STEM clubs for fall finals week.

Club members volunteer at the SD Children’s Museum throughout the academic year on Sunday afternoons. In addition to helping out with “Science Sunday”, which includes teaching and playing with children and their families to help them learn about STEM, the club plans to do more outreach work on campus, in Brookings, and throughout SD. Through these activities, they hope to inspire the next generation of Women in STEM and continue growing their numbers and involvement at SDSU.

Interested in joining? Students can expect a community here on campus that is dedicated to helping them succeed in their STEM education and eventual STEM career.

## Club Info

- **What:** Women in STEM
- **When:** Every other Wednesday evening during the school year
- **Where:** Wagner Hall
- **Who:** anyone who is passionate about STEM and wants to join a supportive community that is dedicated to making known the need for females in all STEM fields and encouraging young women to consider an education in STEM
- **Club Leadership**
  - President: Victoria Wilson
  - VP: Nichole Peters
  - Science Ambassador: Hannah Ferens
  - Technology Ambassador: Caitlynn McGregor
  - Engineering Ambassador: Dayra Knoblock
  - Math Ambassador: Emily Harms
  - Faculty Advisors: Dr. Nicole Grove and Dr. Julie Leibold
- **How to join:** contact any of the officers or advisors and you will be added to the club roster



## Where did your interest in science begin?

**Xiaoyang Zhang, Ph.D.**

*Geospatial Sciences Center of Excellence and Department of Geography & Geospatial Sciences*

Science was neither prestigious nor attractive during my childhood when China was experiencing the Cultural Revolution. I was taught that less knowledge would serve our society better and more loyally, while rich knowledge could be harmful to our life. It wasn't until high school, during the time of China's Economic Reform and Opening-Up, that learning science became admirable and I was told that knowledge is power.

At that time, I had very little interest in and understanding of modern science, but learned that obtaining a college education could help me to get a decent job. After I was admitted into Peking University, the best university in China, and attended classes offered by highly respected professors, I was deeply influenced by their profound knowledge of the

sciences. Their lectures sparked my interest in geography because it relates to the world around us, and combines human activities and environmental changes.

This hit close to home and was very important to me because I grew up in rural farmland and had lived through those environmental and agricultural changes. Even though undergraduate school gave me a solid foundation, I realized that there were still so many subjects to further explore.

I did not really start to devote my interest to science until I participated in scientific research projects after I graduated from Peking University. One of the projects I participated in when I worked at the Chinese Academy of Science in the late 1980's was the investigation of the Three Gorge Dam impacts on environments along the middle-low reaches of the Yangtze River, which was to provide scientific evidences for policy making before building the dam. I was fascinated by a large amount

of scientific questions raised by a group of famous scientists. This led me to make scientific research be my career, and I decided to pursue my PhD degree at King's College London.

After that, I came to the United States and started to work on various scientific research projects supported by the National Aeronautics and Space Administration (NASA) and the National Oceanic, the Atmospheric Administration (NOAA), and the United States Department of Agriculture (USDA). These research activities turned my interest in science into a passion in science.

**Throughout these past few decades of curiosity and constant learning, my experience is that anyone can start his/her interest in science at any time and turn it into a passion in science, using that passion to continually explore the unknown from the known and to discover new things along the way.**



## Welcome, Kai!

**Parents:**

Xuan and Nicholas  
(Biology &  
Microbiology)

**Weight:** 7lbs, 10oz

**Length:** 19.75 inches

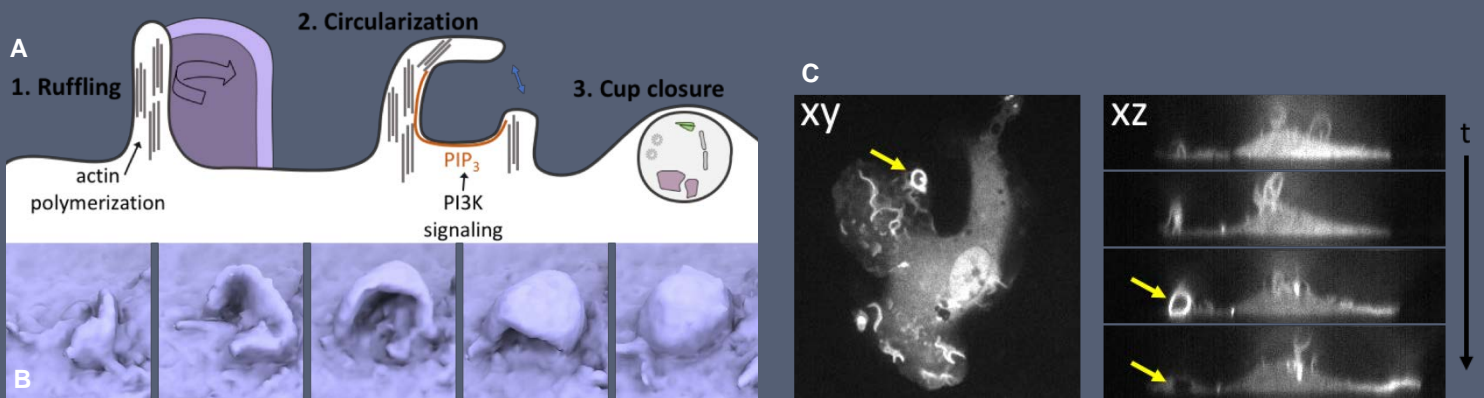
**Birthdate:** 6/15/2020

## Research Spotlight – Dr. Natalie Thieux

The Thieux Laboratory studies macrophage cell biology including the processes of macropinocytosis and lipid droplet biogenesis and degradation. Macrophages are key cells of the immune system, and yet, they are understudied relative to other immune cells such as B cells and T cells. We use various microscopy techniques to observe macropinocytosis and lipid droplet biology in macrophages. By expressing fluorescent protein chimeras we can “see” biochemistry in space and time. Macropinocytosis is characterized

by large gulps of extracellular fluids and solutes within newly formed vesicles that are 1-5  $\mu\text{m}$  in diameter. Macropinocytosis can facilitate the efficient and non-specific uptake of large-sized solutes or large quantities of solutes such as nutrients, antigens, viruses, or debris. Another tool that we use to study macrophages are CRISPR/Cas-9 whole genome screens. Using CRISPR-based techniques we can disrupt nearly every gene in the mouse genome and then sort these knockouts based on their phenotypes.

Using this we were able to identify and rank genes that positively and negatively regulate macropinocytosis as well as genes that positively and negatively regulate lipid droplet biogenesis and lipid droplet degradation. We were recently awarded an NIH R15 to study the role of genes identified by our screens in macropinocytosis. Given the recent pandemic, we have also begun a seroprevalence study to measure antibodies to Covid-19 in healthcare workers in the region.



**Macropinocytosis.** **A)** Plasma membrane organization for uptake of extracellular fluids and solutes; **B)** Our lattice light sheet micrographs show plasma membrane ruffles that circularizing and fuse with the cell surface to form macropinosomes. Elapsed time = 15 min, **C)** BTK PH domain FP chimera expressed in macrophages enables visualization of the formation of PIP3 (arrow) patches during macropinocytosis.

## Update from the CNS Student Success Team

The majority of the New Student Orientation (NSO) sessions have concluded and although we'll have a few more sessions in August – the move to virtual NSO was a success! Incoming students heard from the President, Provost, Dean Wolf-Hall as well as spending time with fellow students and our wonderful CNS advising team learning about their transition to State and registering for fall and spring classes. The CNS NSO Team advised and registered over 225 new and transfer students over 12 days this June - during these uncertain times our college is growing!

Although many summer activities have been cancelled, some of our students are serving as mentors (virtually) for High School students in Lower Brule, and the Health Professions Career Camp Team will host a virtual camp in the last week of July. Many faculty across CNS, Nursing and Pharmacy will be involved in the camp again this year as well as many of our alumni and friends. Wish them luck as they'll be endeavoring to engage, educate and entertain in new format and I know they'll have a successful outcome!

Additionally, the Student Success Team will be engaged over the next two months in planning for a safe welcome back to campus through leadership roles on the MeetState/Thumpstart team. And there is a group of faculty and staff who are brainstorming and in the early planning phase of implementing activities to welcome our new and current students back to campus in August. Look for more information about welcome back activities and ways to support and engage with students in the first weeks back on campus this fall. –Dr. Greg Heiberger, Associate Dean for Student Success

## Gardens of CNS

From the top left, clockwise:

- *Kevin Cope, Biology & Microbiology* | A pea blossom growing in his home garden and covered in dew drops on a beautiful summer morning
- *Charlene Wolf-Hall, Natural Sciences* | Newly-built, raised garden bed
- *Bob Watrel, Geography & Geospatial Sciences* | Back terrace
- *Layne Manson, Natural Sciences* | One of many tickseeds planted this spring (hope they all come back next year!)
- *Scott Pedersen, Biology & Microbiology* | Curb appeal
- *Sally Krueger, Physics* | geraniums, her mom's favorite flower and favorite color (red)

