

# NEWSLETTER



*Biology 119: Freshmen Seminar in the time of COVID-19*

## *Dean's Message*

DR. CHARLENE WOLF-HALL

Classes for the 2020-2021 Academic Year have concluded and only final exams are left. So much success to highlight from a very challenging year. This extra-long issue wraps up what felt like an extra-long semester.

Next week is finals week. As you are studying or grading reflect on how much you have achieved this spring, this year, and during your entire time at SDSU. You have overcome unique obstacles that only you and your peers and no one before has had to overcome. You are an achiever with a unique experience to build upon.

Commencement is the weekend of May 8-9. The ceremony for the College of Natural Sciences is at 10:00 a.m. on May 8. More information about commencement appears [here](#). I am so glad we get to have an in person celebration, even if it is still not what we might consider normal. You have achieved so much and I am excited to celebrate with you. After you graduate, please keep in contact with us and share your experiences.

Summer will bring a grand showcase of biological activity across the land. We can emerge from our pandemic isolation and enjoy the sunshine together. So much to celebrate. A very bright future is ahead.

## *Celebrating Work Anniversaries*

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*April 2021*

Sally Krueger - 49 years  
Carol Doyle - 16 years  
Amanda Appel - 11 years  
Kimberly Johnson Maier - 5

# Awards & Recognition



## Honors Convocation Award Recipients from the College of Natural Sciences

### FACULTY

Community Builder Award: **Dr. Nicole Grove**, Chemistry & Biochemistry

### STUDENTS

Excellence in Leadership Award: **Thane Henschel**, Human Biology

Honors Community Builder Award: **Keri Pappas**, Human Biology

Honors Land Grant Mission Award: **Kaylan Untiedt**, Biology

### COMPLETED HONORS INDEPENDENT STUDIES

**Moriah Flanagan**, Microbiology & Biotechnology

**Thane Henschel**, Human Biology

**Katherine Lucas**, Biology & Chemistry Education

**Abdullah Maruf**, Physics & Mathematics

**Timothy Paris**, Chemistry, Biochemistry, & Psychology

**Cheyenne Trautman**, Chemistry

**Kaylan Untiedt**, Biology

## Department of Chemistry & Biochemistry Summer Undergraduate Research Fellowships

Tanaka Fellowship Recipient: **Meg Sheehan**

East Fellowships: **Jacqueline Laddusaw**, **Mick Schwinghamer**, **Megan Schulte**, **Quenton Steffen**

Each fellowship comes with a \$5,000 stipend, supply funds, & travel funds to present research results at a national ACS or ASBMB meeting. Thank you to our generous donors who support undergrad research!

**Nicole Grove**, Chemistry & Biochemistry, was nominated for "Teacher of the Year" ... by the College of Ag, Food & Environmental Sciences Students' Association! Their advisor wrote, "While you aren't eligible to win this particular college award, I still wanted to let you know that the students recognized your hard work and shared their appreciation to you through this process."

## URSCAD Awards

(Undergraduate Research, Scholarship and Creative Activity Day)

*Joseph F. Nelson Undergraduate Research Mentorships:* **Javi Adividya**, Microbiology; **Camryn Blackwell**, Human Biology; **Emma Martin**, Community / Regional Planning; **Jadyn Perry**, Biology; **Eliza Peters**, Human Biology

*Schultz-Werth Awards:* **Katelyn Bettin**, Biology; **Abdullah Al Maruf**, Physics & Math; **Timothy Paris**, Chemistry & Biochemistry & Psychology; **Bailey Pickering**, Human Biology

# Awards & Recognition

## URSCAD Awards, continued

### ***Biology & Microbiology Award-Winning Posters***

#### Experimental / Capstone Category

**Abigail Hobbs** - Undergraduate Anatomy Student Perceptions of Four Online Anatomy Vendors

**Theodore (TJ) Jacoby, Shayanti Minj** - Microbial diversity Before and After Pasteurization

**Hailey Axemaker** - Functional Characterization of Sucrose Transporters Involved in Tripartite Interactions of *Medicago truncatula* with Rhizobia and Arbuscular Mycorrhizal Fungi

#### Review Category

**Ellen White, Tanner Smith, Shelby Olson, & Kayla Washington** - Overcoming Social and Biological Hurdles to Administer the COVID-19 Vaccination to the Pine Ridge Native American Reservation

**Collin Olevson** - Electrical Stimulation Treats Disorders of Excitable and Non-Excitable Tissues: A Literature Review

**Thomas Ebrahem, Jaclyn Meier, Caitlin Bright, & Rondae Nave** - Safety and Efficacy of Three Variant Vaccines Within Different Age Groups

### ***Chemistry & Biochemistry Award-Winning Posters***

**Abigail Morgan** - Anti-proliferative Activity of Estrone-Triazole Hybrid Analogs for Treatment of Colorectal Cancer

**Avori Bastemeyer** - An Analysis of Human Genes Involved in Viral Pathogenesis

**Diedre Cross** - Molecular Modeling for Designing Estrone Analogs Targeting Breast Cancer

**Caitlynn McGregor** - COVID-19 Among Abdominal Solid-Organ Transplant Patients: Preliminary Experience from South Dakota's Sole Multi-Organ Transplant Center

### ***Physics Award-Winning Posters***

**Abdullah Al Maruf** - Electronic, structural, and magnetic properties of TiCoSn Heusler alloy

**Nicholas Carlson** - Effect of Fe doping on the hysteresis properties of Mn<sub>47</sub>Co<sub>3</sub>Ni<sub>40</sub>In<sub>10</sub> alloy

**Zachary Lehmann** - Suppression of first-order transition and large magnetocaloric effect in Mn<sub>50-x</sub>Ni<sub>40</sub>In<sub>10+x</sub>

## URSCAD Judges

Thank you to all our faculty volunteers for your efforts to review and award the top posters in our departments. Your time has allowed us to recognize our students as they show evidence of their achievement in our college.

#### Biology & Microbiology

**Anne-Marie Hoskinson**

**Bishnu Karki**

**Jessica Mediger**

**Madhav Nepal**

**Scott Pedersen**

#### Chemistry & Biochemistry

**Jihong Cole-Dai**

**Melody Jewell**

**Julie Leibold**

**Sara Madsen**

**Matt Miller**

**Jay Shore**

#### Geography & Geospatial Sciences

**Danielle Haskett-Jennings**

#### Physics

**Parashu Kharel**

## Faculty Senate

Congratulations to Dr. **Ruanbao Zhou**, who was elected to serve on Faculty Senate!

With his addition, the three senators representing Natural Sciences for AY21-22 are Dr. **Madhav Nepal** (President-Elect), Dr. **Judy Vondruska**, and Dr. Ruanbao Zhou.

# Student Spotlight: Allison Bjornstad

## DEPARTMENT OF BIOLOGY & MICROBIOLOGY

When Allison Bjornstad first came to SDSU in 2016, she came all the way from Washington state. "When I was applying for college, I knew I wanted to go out of state for my schooling to experience a new area and culture," Bjornstad said. She found SDSU on a reciprocity list, but it was a visit to Brookings that finalized her decision. "I really liked the layout of the biology program here. SDSU offered a lot of different classes that covered a lot of areas I was interested in within the field. This was important to me because while I knew I loved science, I wasn't sure which avenue I wanted to pursue yet. After visiting SDSU I fell in love with the people and the campus."



"This is a hard one as I've taken a lot of really good classes here at SDSU," she said when asked about her favorite class. "I would say my favorite was molecular and microbial genetics. It wasn't necessarily my favorite subject, but the way Dr. Brözel taught the course really brought the information to life. It was an incredibly informative course, and I had a lot of fun taking it. My favorite course subject was definitely vertebrate zoology which I took at Massey University while studying abroad in New Zealand."

Now her time at SDSU is coming to a close and she has an exciting next step lined up. Bjornstad will spend this summer in Peru conducting research, which has been a dream since she was a child. "I will be participating in the Wildlife Health research program as a research assistant. If there is data that is not being currently worked with but is being collected, I can have the chance to analyze and work with that at the end of the summer as well. The main daily tasks will be to collect samples from the wildlife as well as observational data. We will then take the samples and test them using DNA tests for viruses and bacteria."

She will get to interact with many different animal groups, including bats, birds, small mammals, and carnivores. Alongside that work, she will also help track mercury levels to trace the impacts of local gold mining along the Rio Madre de Dios. Each researcher is responsible for paying their own room and board, plus training. Bjornstad is currently fundraising \$5,000 for these costs, and you [can help out here](#).

What is she looking forward to most about this summer? "Just being in the jungle. It has been my dream ever since I was four years old to work with animals in the Amazon. I used to have my walls covered in pictures of wildlife and I would spend my time in the library at elementary school reading about the jungle. I am still shocked that my dream is coming true! I can't wait to hear how loud the jungle is, to feel the humidity, and to be surrounded by an environment that is almost constantly evolving and changing."

"The best advice I can give is to try everything that sounds even slightly interesting to you," she said, regarding words of wisdom for underclassmen. "Go join all the clubs you think could be fun, take courses outside of your four-year plan to branch out and try new subjects that might be interesting, and above all else find the time to study abroad. There is always a way to fit in time for study abroad and there are a lot of fundraisers or scholarships to help pay for it. I cannot stress enough how much I loved my time traveling and learning in a different country and I know that it made me a stronger, kinder, and a more confident person."

## All About Allison

### Undergraduate degrees:

South Dakota State University  
Class of 2020 - Microbiology B.S.,  
Human Biology B.S., Chemistry  
minor

### Graduate Degree:

South Dakota State University  
Class of 2021 - Human Biology M.S.

### Hometown:

Puyallup, Washington

### Favorite Professor:

"My favorite professor is Dr. Pedersen. I worked with Doc while on dissection team and again this semester while taking advanced anatomy. He has always been helpful and supportive. I have gotten some great advice from Doc over the years. He was almost more excited than me when I told him I got the position in Peru!"

Science  
@SDState



# Research Spotlight: Dr. Vondruska & Students

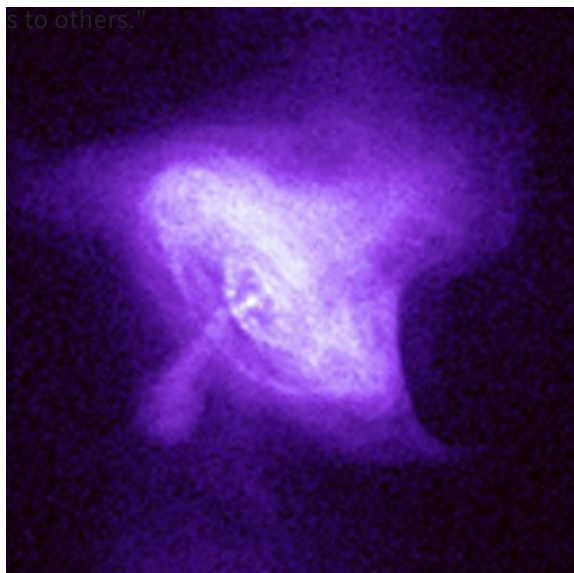
## ASTRONOMY STUDENTS SEARCH FOR PULSARS

Dr. **Judy Vondruska**, Department of Physics, and three of her astronomy students took part in a 7-week virtual training program through the Greenbank Radio Observatory this semester to become certified to analyze data searching for pulsars. Each week consisted of a one-hour class and about one hour of homework. The training culminated in the completion of 5-levels of certification before access was granted to the telescope data.

*"I would definitely recommend this project to other students," Jax Wysong said. "Aside from my interest in the subject, as a student interested in a career of research, I think it is very important to partake in any sort of research as often as possible. You never know what experience or personal gain could come out of it and having it on resumes or applications makes a difference."*

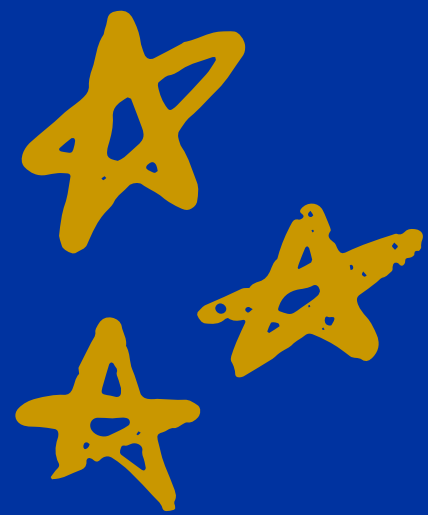
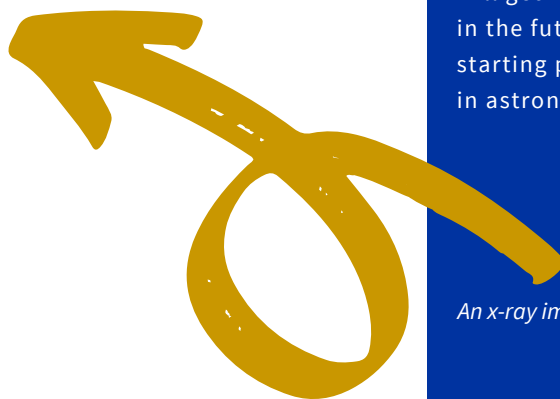
Once students complete an analysis of 50 data sets, they are eligible to apply to take part in additional undergraduate projects, get a paid registration to the American Astronomical Society summer meeting, and can apply for an in-person capstone experience at the Greenbank Observatory. **Jax Wysong** (Freshman, Physics/Math major), **Jaden Marks** (Senior, Biology major), and **William Renson** (Freshman, Physics major) took part in the program.

"Skills that I learned from this experience include working with a group, to even presentation skills. Each week we would have group meetings to ask questions or discuss our progress with other members of the Collaboratory. I am glad to be able to have strengthened this social skill," Wysong said. "Once the training was over, our group gave a presentation to the physics department about our experience. This was great as well because I do not get to practice this



Credit: NASA/CXC/SAO

skill often, but I understand how important it is to be able to confidently present research or projects to others."



## What are pulsars?

A pulsar is a rapidly rotating compact star (usually a neutron star) emitting radiation at regular intervals. Due to their strong magnetic fields, pulsars funnel jets of particles along their magnetic poles producing large amounts of energy. These beams of particles and light can sweep in the direction of the Earth, appearing to alternate between high and low energy, much like a beam of light from a lighthouse.

- J. Vondruska

"The most important thing I learned from this experience was that jumping in and learning a new set of skills that will allow me to contribute to research in a field I'm interested in isn't as daunting as I thought before," Marks said. "Realizing that provides me with much more motivation to get involved with other research in not just astronomy, but any other field as well. I hope that more students will get involved with this project in the future, as it provides a great starting point for getting involved in astronomy research!"

An x-ray image of the pulsar at the center of the Crab Nebula

# Department Head Interviews

OPEN SEMINARS ON MAY 4, 6, & 7

Please join us next week as three candidates interview for the open Department Head of Biology & Microbiology position! All are welcome and encouraged to tune into the Zoom seminars listed below and submit feedback comments.

## Dr. Joseph Shostell

*Tuesday, May 4th*

*Public seminar: 10:30am*

*[Link to join](#) seminar on Zoom*

*[Link to view](#) recording afterward*

*[Link to submit](#) feedback comments*



## Dr. Jerod Skyberg

*Thursday, May 6th*

*Public seminar: 10:30am*

*[Link to join](#) seminar on Zoom*

*[Link to view](#) recording afterward*

*[Link to submit](#) feedback comments*

## Dr. Radhey Kaushik

*Friday, May 7th*

*Public seminar: 10:30am*

*[Link to join](#) seminar on Zoom*

*[Link to view](#) recording afterward*

*[Link to submit](#) feedback comments*



## Other Ongoing Searches in CNS

One tenure-track faculty position in the Geography & Geospatial Sciences Department: interviews have concluded and a hire will be announced soon

One tenure-track position in the Biology & Microbiology Department: interviews will begin soon

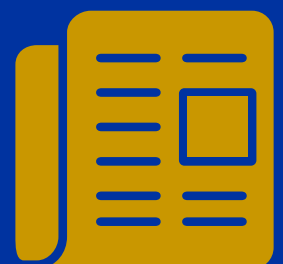
## Media Coverage of the College

[Honors Convocation Award Recipients](#)

[SDSU recognizes students works at URSCAD](#)

[View all past newsletters here](#)

[More media coverage on the next page](#)

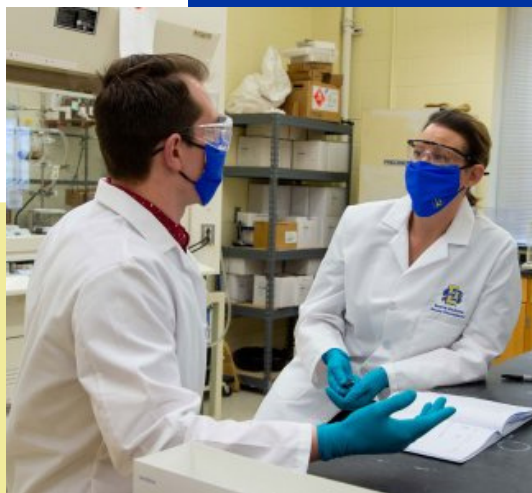


# Media Coverage of CNS

## RESEARCH UPDATES

### **SDSU chemistry research featured on journal cover:**

"Having your research on the cover of a prestigious journal is a milestone in a faculty member's career—it's something South Dakota State University assistant professor Rachel Willand-Charnley and undergraduate researcher Tim Paris already have under their belts."



### **New ice core data tracks climate-changing eruptions:**

"This is the most accurate chronology of volcanic eruptions produced thus far, according to Cole-Dai, who has done ice core research for more than 20 years. 'This is the highest-quality volcanic record because of the high-resolution chemical measurements and exceptionally accurate time scale—this has never been done before.'"

### **SDSU biology professor receives Fulbright to Norway:**

"Professor Charles Fenster of South Dakota State University's Department of Biology and Microbiology has received an award from the Fulbright scholar program to do research in Trondheim, Norway. Fenster, who is director of the Oak Lake Field Station, will begin his seven-month stint at the Norwegian University of Science and Technology in February 2022."



## ADDRESSING SOUTH DAKOTA'S RURAL DOCTOR SHORTAGE



### **Grandma influenced plans to enter rural family medicine:**

Our very own Keri Pappas, Human Biology B.S., will speak at Commencement on May 8th! "Eleven years ago, when her grandmother was forced to move from her hometown of Lemmon because of inadequate medical care, Pappas made the commitment to go into rural family medicine."

**Mitchell's Smith sets eye on medical school, rural health:** "My main goal is to end up in a rural area," Smith, a soon-to-be South Dakota State University graduate now bound for the Sanford School of medicine at the University of South Dakota in Vermillion, told the Mitchell Republic in a recent interview."



# Open PRAIRIE Data

MARCH 2020

Data across the whole College of Natural Sciences:

- 2,657 downloads at 304 institutions in 105 countries
- 8 new works posted, for a total of 904
- *Deep Eutectic Solvents Synthesis, Characterization and Applications in Pretreatment of Lignocellulosic Biomass* was the most frequently downloaded piece at 151 downloads. This thesis is by past PhD student Ganesh Degam, who was an advisee of Dr. Doug Raynie.

*What is "Open PRAIRIE"?*

The **Open Public Research Access Institutional Repository & Information Exchange** tracks publications from within Natural Sciences throughout the year, showing where and when articles were opened all around the world.



## Grants Awarded in CNS

MARCH 2020

**Robert McTaggart**, PI • Physics • Society of Physics Students •  
Ultrathin PTAA Layer and Phenylhydrazinium Iodide for Defect  
Passivation and Enhanced Charge Carrier Mobility in Perovskite  
Solar Cell



# Student Club Spotlight: BMGSA

BIOLOGY & MICROBIOLOGY GRADUATE STUDENTS' ASSOCIATION

During the spring semester, the Biology-Microbiology Graduate Student Association (BMGSA) hosted a seminar series through Zoom. Students were given the opportunity to present their research to peers and three faculty judges, Drs. Butzin, Brözel, and Pedersen. Presentations were evaluated based on engagement, clarity, content, tone, and time management. Each award recipient earned a \$300 stipend to cover conference registration fees.



## **BMGSA Conference Award Seminar Participants**

**Back:** Bhawandeep Kaur, Ruqayyah Amaratunga, Katelyn Hurley, Trevor Van Den Top, Dr. Volker Brozel (BMGSA advisor), Armaan Kaur Sandhu

**Front:** Namrata Maharjan, Aastha Acharya, Salina Tripathi, Tanim Islam, Tahmina Hossain, Prajakta Jadhav

**Not pictured:** Camille Massmann, Jaya Yakha, Ahana Majumder, Surbhi Gupta

From fifteen participants, four recipients were chosen, including Katelyn Hurley, Namrata Maharjan, Trevor Van Den Top, and Tahmina Hossain.

Despite the inability to meet in person, BMGSA officers were thrilled with the level of participation and engagement in the Zoom seminar series. On average, 25 students attended the presentations. One faculty judge commented, "With Covid, we have been living in restrictive times; and so, a vibrant success story such as this competition is all the more welcome and needed!"

## Club Info

**What:** BMGSA

### Club Leadership

- President: Bikram Kumar Das
- VP: Katelyn Hurley
- Secretary: Bhawandeep Kaur
- Treasurer: Ahana Majumder
- Historian & Safety Officer: Tahmina Hossain
- Social Chair: Aastha Acharya
- Faculty Advisor: Volker Brözel

**How to Join:** students can join the club by paying an annual fee of \$5

**BMGSA extends deep gratitude toward the participants, viewers, and judges. Check out the “Bio Micro Graduate Student Association” Facebook page for future events!**

# *Then & Now: Urban Geography*



Last semester, Kimberly Johnson Maier's Urban Geography students spent time in Downtown Brookings, recreating old photos. This allowed them to see how Brookings' cultural landscape changed over time.

The course, GEOG 461, covers the geography of cities, including types, functions, and distribution of cities all across the world. There is also a special emphasis on the planning of cities in the U.S.

Current students, if you are interested in taking this class, there's still room this fall!



Main Street, Brookings, pictured in the 1920s. (courtesy of Brookings Public Library)