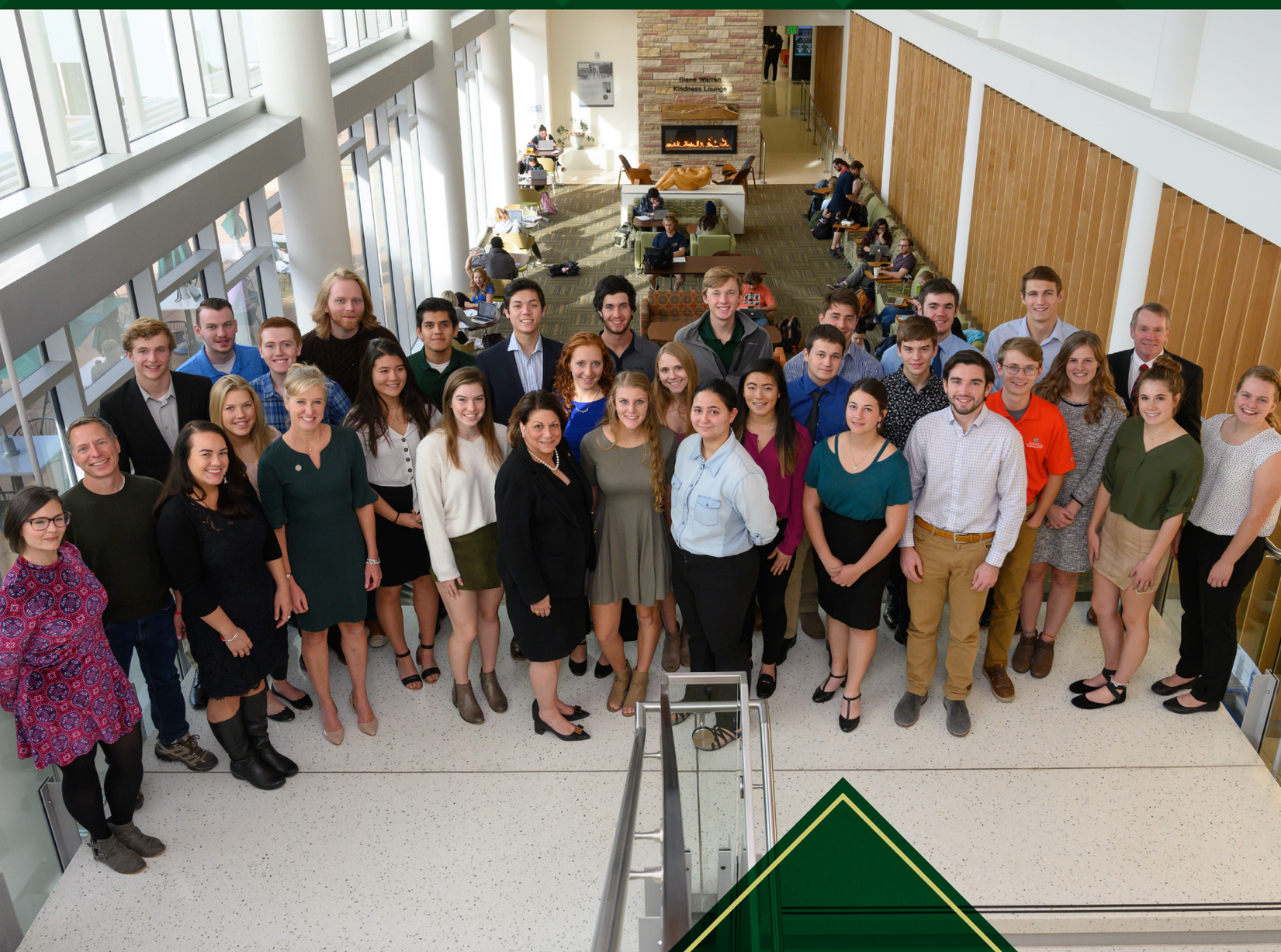
WALTER SCOTT, JR.
COLLEGE OF ENGINEERING
COLORADO STATE UNIVERSITY




WALTER SCOTT, JR. GIFT

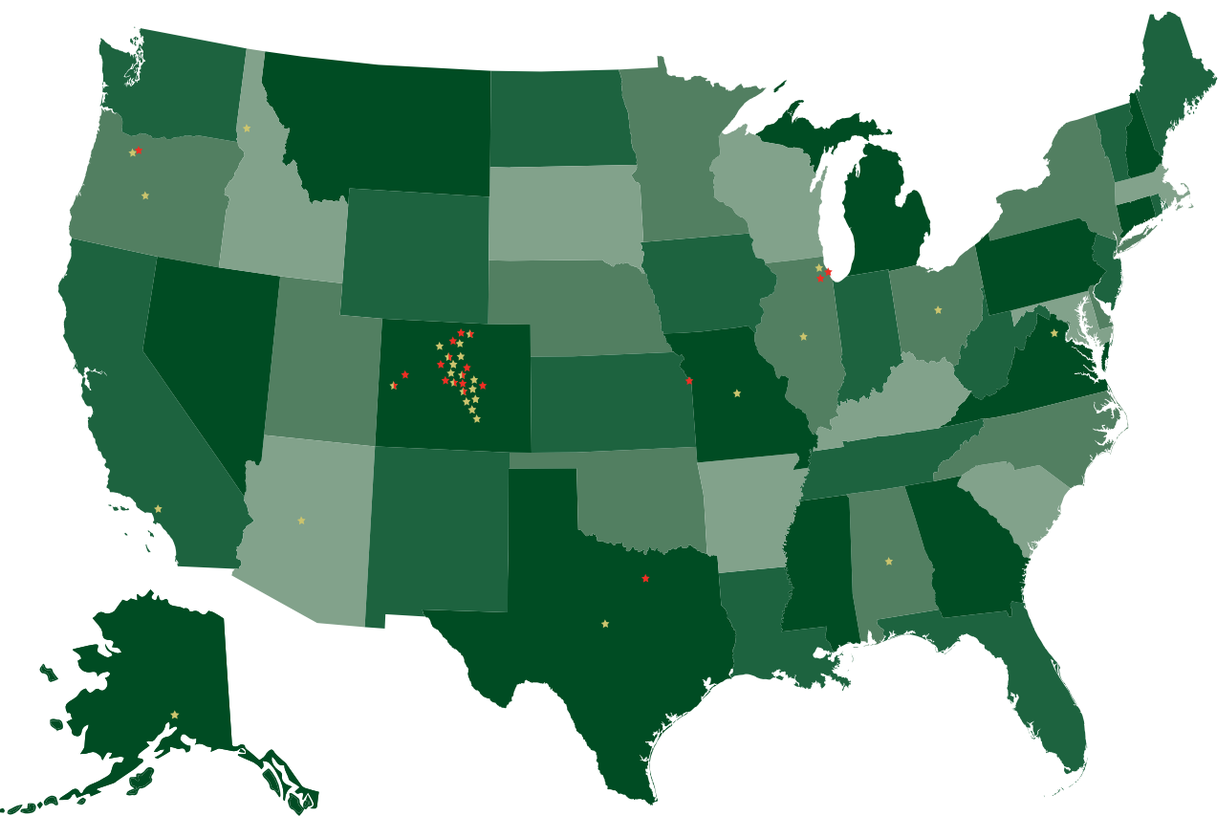
# IMPACT REPORT

2020

## WALTER SCOTT, JR.

# UNDERGRADUATE SCHOLARS

2020 marks the fourth incoming class of Scott Scholars. They are 20 of the most outstanding students from across the country who will help the college continue to build a reputation of excellence in our engineering programs and benefit from a world-class education.



★ = 2020 SCHOLARS

**15 in state:**

Aurora (2)
Boulder
Denver
Eldorado Springs
Englewood
Golden
Greeley
Grand Junction
Lakewood
Littleton
Loveland
Parachute
Thornton
Windsor

**5 out of state:**

Oregon (Portland)
Illinois (2) (Chicago & Brookfield)
Texas (Allen)
Kansas (Prairie Village)

★ = second-, third-, and fourth-year scholars

"Above all else, this scholarship is allowing me to graduate completely debt-free and has taken a large burden off my shoulders when it comes to paying for school and working to do so. So much of my first two years of college have been shaped by the finances, community, and resources made available by the generosity of this scholarship."

**– HANNAH PARK, Chemical and Biological Engineering**

"It really means a lot that someone believes in me so heavily that they would pay for the majority of my schooling. I can remain focused on my studies and enjoying my time in college. I assure you that it is not money wasted and that I'll make the most of your investment in my future."

**– CHRIS FUEG, Electrical and Computer Engineering**

"Your gift allows me to dedicate all of myself to my academics and to my extracurricular activities, without having the added stress of funding my education alone. Your gift gives me the determination to be the best engineer I can be, and it is immensely appreciated."

**– AMY KEISLING, Biomedical Engineering and Mechanical Engineering**

FALL 2017 – FALL 2020 COHORTS

# SCOTT SCHOLARS BY MAJOR

- Biomedical Engineering with CBE (14)
- Biomedical Engineering with ECE (2)
- Biomedical Engineering with ME (11)
- Chemical and Biological Engineering (12)
- Civil Engineering (4)
- Computer Engineering (6)
- Electrical Engineering (2)
- Engineering Open Option (2)
- Environmental Engineering (6)
- Mechanical Engineering (15)

## SCOTT SCHOLARS — Academic Profiles

| | FALL 2020 COHORT | INCOMING ENGINEERING AVERAGE |
|---|---|---|
| HIGH SCHOOL GPA | 4.46 | 3.95 |
| SAT AVERAGE | 1468 | 1286 |
| ACT AVERAGE | 33 | 28 |
| MALE/FEMALE | 60% female | 29.7% female |
| DIVERSITY | 30% diverse | 23% diverse |
| HONORS PROGRAM | 70% (14 out of 20) | 13%* |

*Reflects all engineering students.

**FALL 2017–2019 COHORTS**

**54/60**
**RENEWED IN FALL 2020**

**AVG. GPA**
3.64

**HONORS**
63%

## RESEARCH THEME BY AREA OF EXCELLENCE

### WATER

- Resilience of communities subjected to climate-driven sea level rise coupled with hurricane events*

### HEALTH

- Tissue engineering
- Modeling oxygen diffusion within gut tissue
- Tissue engineering and regenerative medicine
- Lab-on-a-chip, biomaterials, and carbon sequestration
- Application of network and data science techniques*
- Nanofiber factors for developing smart wound dressings
- Polymeric drug delivery systems

### ENERGY

- Heavy vehicle cybersecurity
- Automotive engineering
- Application of network and data science techniques*
- Resilience of communities subjected to climate-driven sea level rise coupled with hurricane events*
- Machine learning for computer architecture design
- Data-driven modeling and analysis of energy networks
- Development of a high-efficiency engine for ARPA-e
- Investigation of materials for energy applications

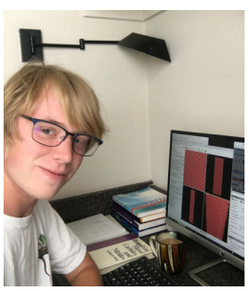
### ENVIRONMENT

- Resilience of communities subjected to climate-driven sea level rise coupled with hurricane events*
- Application of network and data science techniques*
- Mesoscale phenomena associated with extratropical cyclones or frontal systems that impact Chilean territory
- Tropical-extratropical interactions changing in a warming world
- Atmospheric chemistry and air quality
- Manipulation of microorganisms to produce medicine and stabilize waste products
- Climate dynamics and climate variability

**In multiple categories.*

## WALTER SCOTT, JR.
# GRADUATE FELLOWS

The Scott Fellows program attracts talented graduate students to assist faculty with groundbreaking research and to train the next generation of innovators.



"It is largely thanks to the Scott Foundation that I have the opportunity to pursue a Ph.D. at CSU and that I will be able to contribute to the materials science and mechanical engineering research being done by Dr. Weinberger and his colleagues. I am extremely grateful for the generous fellowship I received, and I feel that it is important for such opportunities to be available for students who seek higher education in the field of engineering."

**– BRENNAN WATKINS, Mechanical Engineering**

"The Scott Fellowship program enables CSU to compete with top universities in recruiting graduate students, which greatly impacts the quality of research done here. Brennan Watkins, the Scott Fellow in Mechanical Engineering, joins us from Gonzaga University where he will be doing materials modeling that benefits the area of energy and the environment."

**– CHRIS WEINBERGER, Associate Professor, Mechanical Engineering**

"Choosing between CSU and other schools was a difficult choice until I was offered the Scott Fellowship. I felt that CSU was seriously investing in me as a student and that I would be a valued contributor to the department, more so than other schools. I am disabled, and the cost to find/modify disabled housing is notably higher, and this eased my financial worries."

**– JAMIN RADER, Atmospheric Science**

"The Scott Fellows program is instrumental in helping CSU recruit stellar scientists, including Jamin Rader. In his first year here, Jamin has already done cutting-edge research, applying machine learning tools to better understand climate change and its societal impacts."

**– ELIZABETH BARNES, Associate Professor, Atmospheric Science**


Atmospheric Science Associate Professor Elizabeth Barnes, top left, with her team, including Scott Fellow Jamin Rader, center right, on Zoom during the pandemic.

## 2020 SCOTT FELLOWS COME FROM AROUND THE WORLD

### United States

Bozeman, Montana
Denver, Colorado
Fort Collins, Colorado
Ithaca, New York
Melbourne, Florida
Minneapolis, Minnesota
Newark, Delaware
San Luis Obispo, California
Seattle, Washington
Spokane, Washington
Tulsa, Oklahoma

### International

Chengdu, China
Concepción, Chile
Jeonju, South Korea

## WALTER SCOTT, JR.

# DISCRETIONARY FUND

The Scott Discretionary fund provides the Dean's Office with flexibility to support students and student scholarships along with opportunities to support leadership development programs, outstanding teaching, and innovative research. Support provided by the fund has created opportunities for students to participate in unique laboratory research experiences and benefit from enrichment programs and internship placement. Other donors and foundations have also provided funding that has enabled many more students to participate in the programs as a result of the Scott gift creating high-impact programs, such as the Scott Undergraduate Research Experience.

Susan Benzel, WSCOE Scott Scholars program coordinator and lead on the SURE program, authored a paper and presented it at the American Society for Engineering Education annual conference this summer, which could help other universities start research programs for undergraduate students.

**Thanks to you:**

- We provided critical financial assistance to students impacted by COVID-19 in the spring. Some students lost part-time jobs that were helping to pay rent or tuition or they had close family members lose their jobs, resulting in significant financial hardships. The emergency assistance allowed students to remain in school and complete their semester.
- Forty-four students participated in the SURE program – nearly double the number of first- and second-year students from the previous year. SURE provides a path for undergraduates to learn about applications, scientific methods, collaborations, and social impacts of being an engineer.
- We supported multidisciplinary efforts at the Columbine Health Systems Center for Healthy Aging as part of our biomedical research and teaching. The center's focus includes providing educational opportunities for undergraduate students, graduate students, and postdocs, as well as engaging the community.
- As in past years, we also supported the Colorado Science and Engineering Policy Fellowship, which seeks to develop the next generation of policy and science leaders in Colorado. Students attended an eight-week intensive internship on the legislative process, which included developing model laws and policies, collaborating with policymakers in the state Legislature, and visiting corporate and research sites throughout Colorado.


**Shubh Koradiya, a SURE student (front), works with mechanical engineering student Marley VanDeVeere to perform engine testing on algae biofuels on a U.S. Department of Energy research project led by Professor Anthony Marchese at the CSU Energy Institute.**

## 2019 – 2020

# USE OF SCOTT DISCRETIONARY FUND

- Scott Scholars program: **$117,000**
- Scott Undergraduate Research Experience program: **$23,000**
- Innovation and leadership initiatives: **$13,000**
- Publicity and promotion of college activities and accomplishments: **$12,000**
- Support for Scott Presidential Chair search: **$12,000**
- Required cost share and research proposal development: **$35,000**
- Support for student programs, scholarships, and emergency financial assistance: **$82,000**

**Utilized $44,000 in carry-forward funds from previous year.*


**SURE student Arturo Jimenez (left) works with student Zach Lustig to check drone data for an air quality research project led by mechanical engineering Assistant Professor Shantanu Jathar.**

## WALTER SCOTT, JR.

# PRESIDENTIAL CHAIRS

The two Scott Presidential Chairs to date – Jim Hurrell and Tami Bond – have been deeply engaged in research and teaching that is addressing global challenges and gaining national recognition for the college.

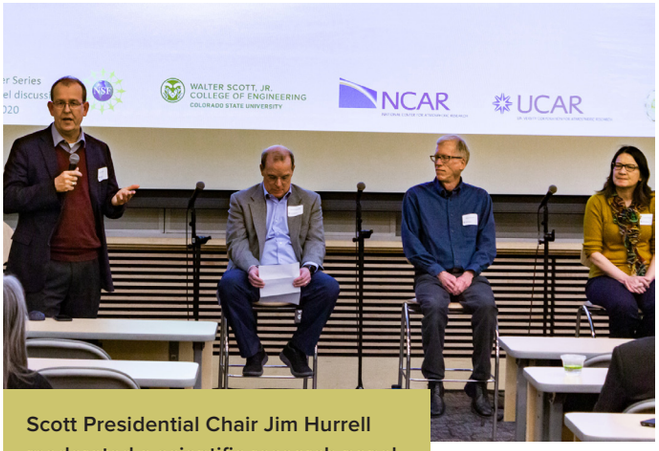
Thanks to Hurrell's previous role as director of the National Center for Atmospheric Research, the college collaborated with NCAR to bring an interactive climate exhibit to the Scott Bioengineering Building atrium in February and March. Both Hurrell and Bond participated in a March 3 panel discussion on a changing climate that drew students and faculty from across CSU as well as members of the public.

Hurrell, the Scott Presidential Chair in Environmental Science and Engineering in the Department of Atmospheric Science, will receive the inaugural American Meteorological Society Warren Washington Research and Leadership Medal in January for his "highly influential climate system research and a distinguished and impactful record of national and international leadership."

"I've had an opportunity to work with many amazing people over the years, and now that includes colleagues at CSU," Hurrell said. "Awards such as the Washington Medal reflect their support and motivation."

Bond, Scott Presidential Chair in Energy, Environment and Health in the Department of Mechanical Engineering, is leading a CSU faculty group evaluating the role of ventilation and airflow on aerosol transmission of infectious disease. The group will be working closely with the University's Facilities Management team to evaluate on-campus situations that may have particular risks related to COVID-19.

"Research will help us in responding to an emerging situation, because some knowledge may not have made it to the latest public guidance," Bond said. "But a large campus also has a lot of operational considerations, so the partnership will be really important."




**Scott Presidential Chair Jim Hurrell moderated a scientific research panel on climate change as part of an NCAR partnership that also featured Scott Presidential Chair Tami Bond, far right.**


**Two engineering students check out the NCAR exhibit in the atrium of the Scott Bioengineering Building in February. Scott Presidential Chair Jim Hurrell, who was previously director of NCAR, worked with NCAR to bring the exhibit to the college.**