

# FRONTIERS OF SCIENCE INSTITUTE

NEWSLETTER



SUMMER 2025



**66 YEARS**  
OF EXCELLENCE



UNIVERSITY OF  
**NORTHERN**  
**COLORADO**



**FRONTIERS OF SCIENCE INSTITUTE**

## **A NOTE FROM THE DIRECTOR**

**VICTORIA DUNCAN, PHD**

**Hello!** I'm Dr. Victoria Duncan, Director of the Frontiers of Science Institute (FSI) and Assistant Director of the Math and Science Teaching (MAST) Institute at the University of Northern Colorado. It's been a joy to lead another year of FSI and to share some of the exciting highlights from this summer!

This summer, I directed my third cohort of FSI and was thrilled to see our programming continue to grow and evolve! One of the many highlights of the 2025 program includes the addition of a Graduate Assistant, Kai Davison, throughout the academic year, and an Assistant Director, Zach Hein-Silva, for the summer. Another exciting addition this summer was the work of our Greeley/D6 student intern, Nora Arriaga, who brought energy and creativity to the program while supporting both staff and participants!

The 2025 cohort shared their fresh perspectives and dedication to their research groups and classes, and it was a pleasure getting to know them over the summer. Watching students with little to no prior research experience deliver scientific talks and produce professional research products in just six weeks never ceases to amaze me!

Each year also instills a wealth of gratitude for the fantastic students, staff, alums, and supporters of FSI. We are so grateful for the community that continues to make this program possible, especially our donors and alums who dedicate their time and resources to FSI. Once again this year—the second year in a row—thanks to our generous donors, every student in the 2025 cohort received scholarships to reduce the cost of participating in FSI!

We are already planning and recruiting for next year's program, and I cannot wait to welcome the next cohort into the FSI community!

**VICTORIA L. DUNCAN, PHD**

# WHAT DID WE DO THIS SUMMER?

## STEM ENTREPRENEURSHIP CHALLENGE

Students participated in the third annual STEM Entrepreneurship Challenge, led by STEM entrepreneur and industry professional Othman Ouenes, an FSI alum. With new entrepreneurship seminars added this year, students explored how STEM ideas can become real businesses. The program wrapped up with a lively Shark Tank-style celebration, where teams pitched their startup concepts to a panel of judges.

## SUMMER CLASSES, SEMINARS, & FIELD TRIPS - OH MY!

This summer also featured an expanded lineup of STEM courses and career explorations, including:

- Applied Anatomy & Physiology
- Data Analysis and Research Statistics
- Dietetics Crash Course & Careers
- Introduction to Brewing Science
- Hands-on herpetology experiences  
- with a visit to the UNC Snake Lab!



## RESEARCH PROJECTS

Over the summer, students worked closely with UNC graduate students and faculty in small research groups, tackling projects with little to no prior research experience. Over just six weeks, they developed their skills, gained confidence, and produced scientific talks and professional poster presentations that highlighted their discoveries, creativity, and teamwork!



These courses and seminars offered collegiate-level content, hands-on lab experiences, and interactive activities.

Students also explored STEM colleges and careers and enjoyed Estes Park camping adventures and cardboard boat races.

# STUDENT RESEARCH PROJECTS

**Adriana Perez** (Greeley, CO)

*Chevron Scholar*

What is the Impact of Maternal Anemia on Infants?, Mentor: Lisa Caldwell, MS, RDN, CLC

**Bella Abebie** (Firestone, CO)

*Xcel Energy Foundation Scholar*

Brain on Bikes: Reaction Time Impact of Low Vs. High Intensity Cycling, Mentor: Kara Phillips, PI: Dr. David Hydock

**Bianca Lomba Simão** (Rio de Janeiro, Brazil)

*Xcel Energy Foundation Scholar*

Anorexia Nervosa in Adolescents: Health Impacts of Nutritional Deficiencies, Mentor: Lisa Caldwell, MS, RDN, CLC

**Caleb Smiles** (Denver, CO)

*Xcel Energy Foundation Scholar*

Synthesis of Phenoxazine Based Photocatalysts Enabled by Purification Through Column Chromatography, Mentor: Dr. Bonnie Buss

**Delilah Weins-Kelderman** (Erie, CO)

*Xcel Energy Foundation Scholar*

Antibiotic Effects on Pea Aphid Symbiont and Gene Expression, Mentor: Dr. Lani Irvin, PI: Dr. Karen Gomez

**Divon Beards** (Aurora, CO)

*Adolph Coors Foundation Scholar*

Cannabigerol as an Aid for Inflammation Caused By Fatty Liver Disease in Mice, Mentor: Fariha Tasni, PI: Dr. Yuyan Han





# STUDENT RESEARCH PROJECTS

**Elianna Haffner** (Colorado Springs, CO)

*Adolph Coors Foundation Scholar*

Effect of Geometry on Acoustic Properties in LRAD Horns, Mentor: Indigo Peppard, PI: Dr. Matthew Semak

**Ian Montgomery** (Aurora, CO)

*Adolph Coors Foundation Scholar*

How Tariffs affect small businesses, Mentor: Saeed Fayyaz, PI: Dr. Randy Larkins

**Jamin Coats** (Greeley, CO)

*Adolph Coors Foundation Scholar; Chevron Scholar*

Effects of the Temperature of Sucrose and Fructose on Optical Rotation, Mentor: Saeed Fayyaz, PI: Dr. Randy Larkins

**Joyce Kim** (Aurora, CO)

*State Farm Scholar*

What the fuzz is going on with IoT Devices?, Mentor: Dr. Hammad Mazhar

**Kate Joffrion** (Colorado Springs, CO)

*Union Pacific Foundation Scholar; State Farm Scholar*

The Effect of CBG on Fatty Liver Disease Associated Steatosis, Mentor: Fariha Tasnim, PI: Dr. Yuyan Han

**Leah Wakelyn** (Deltona, FL)

*State Farm Scholar*

The organic synthesis and re-crystallization of a photoredox catalyst, Mentor: Dr. Bonnie Buss



# STUDENT RESEARCH PROJECTS

**Madeline Cooreman** (Colorado Springs, CO)

*Adolph Coors Foundation Scholar*

Title: Finding Vulnerabilities in TP-Link Smart-home Devices,

Mentor: Dr. Hammad Mazhar

**Matthew Paul** (Fresno, CA)

*Xcel Energy Foundation Scholar*

The Impact of High and Low Intensity Treadmill Exercise on Blood Glucose Levels, Mentor: Kara Phillips, PI: Dr. David Hydock

**Matthew Young** (Cave Creek, AZ)

*Union Pacific Foundation Scholar*

How Material Choice and Material Thickness Affect The Acoustic Performance of LRADs, Mentor: Indigo Peppard, PI: Dr. Matthew Semak

**Nikhil Gangwal** (Erie, CO)

*Union Pacific Foundation Scholar*

How meal timing affects aerobic fitness, Mentor: Kara Phillips, PI: Dr. David Hydock

**Ruth Masten** (Greeley, CO)

*Adolph Coors Foundation Scholar; Rollie R. Kelley Family Foundation Scholar*

How Desk Layout Affects Student's Focus, Mentor: Saeed Fayyaz, PI: Dr. Randy Larkins

**Saketh Parimi** (Dublin, CA)

*Union Pacific Foundation Scholar*

How good can AI be at fuzzing IoT devices?, Mentor: Dr. Hammad Mazhar



# STUDENT RESEARCH PROJECTS

**Shreya Manthana** (San Ramon, CA)

*Union Pacific Foundation Scholar*

A Study on Cannabinoid-Associated Modulation of Liver Fibrosis and Inflammation, Mentor: Fariha Tasnim, PI: Dr. Yuyan Han

**Spencer Frandsen** (Helena, MT)

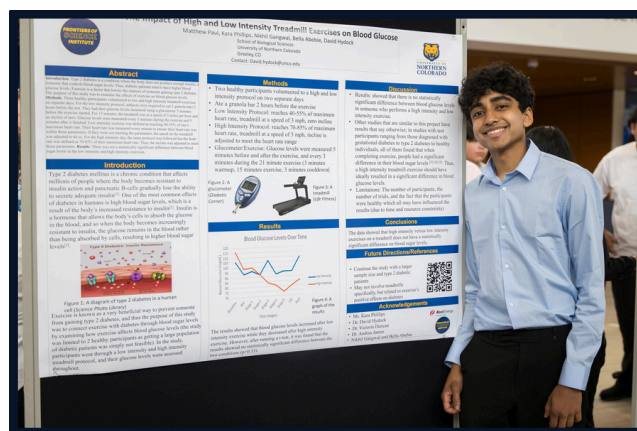
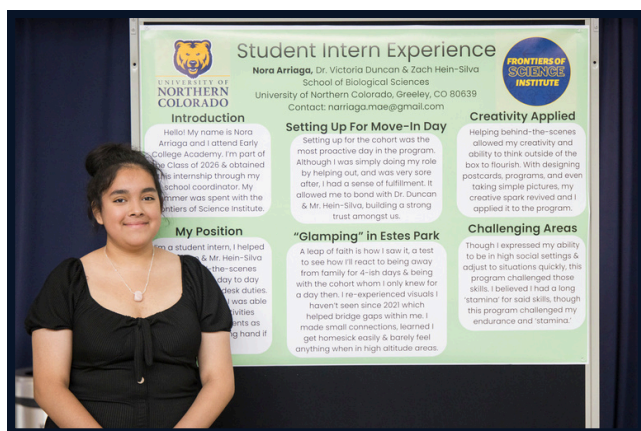
*Xcel Energy Foundation Scholar*

The Synthesis of Organic Photocatalysts with Emphasis on Liquid Liquid Extraction, Mentor: Dr. Bonnie Buss

**Zach Fisher** (Aurora, CO)

*Xcel Energy Foundation Scholar*

The Impact of Acoustic Interference on Safety in Multiple Acoustic Devices, Mentor: Indigo Peppard, PI: Dr. Matthew Semak



# STUDENT TESTIMONIALS

*"I wanted to gain the college experience as well as see a sneak peek on what might be in my future. FSI allowed me to explore what I am interested in and have the opportunity to research and conduct an experiment of my choice."*

- Bella



*"The FSI experience has made me feel more comfortable with meeting new people. It has also helped me feel more confident about entering college in a year because it has shown me that I can adapt well to similar situations."*



*The opportunity to conduct research was incredibly valuable to me. It taught me so many important things about working with people, methods involved in research, as well as how to create the components of a research project, such as the poster and presentation."* - Elianna

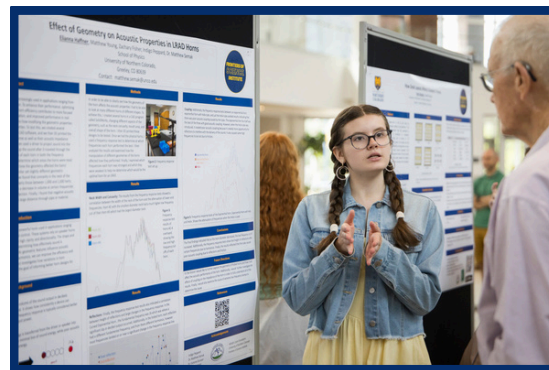
*"Something the FSI experience has taught me about science/STEM or careers in STEM is the importance of the people around me. I learned that collaboration, mentorship, and having a supportive community are essential for growth and success in STEM fields. Science is not just about individual effort, but about working together, sharing ideas, and learning from others."*

*For me, the most valuable feature of FSI was the opportunity to work closely with mentors who truly cared about my learning and growth. Their guidance made a huge difference in my understanding and motivation throughout the program."* - Bianca



# FSI SCHOLARS CELEBRATION

Students showcased their research with professional scientific talks and poster presentations. Their hard work and discoveries were celebrated during a weekend at the end of the program, packed with events, including a banquet and award ceremony. We hope to see you at next year's FSI year-end celebration!



## STUDENT AND STAFF AWARDS

EXCEPTIONAL SCIENTIFIC TALK - ELIANNA HAFFNER

EXCEPTIONAL POSTER PRESENTATION - JAMIN COATS

JOHN K. GAPTER TEACHING EXCELLENCE AND SERVICE -  
SAMUEL KERWIN

PAUL W. RICHARD OUTSTANDING SCHOLAR -  
MADELINE COOREMAN

LORI K. BALL EXCELLENCE IN LEADERSHIP AWARD -  
NIKHIL GANGWAL

# THANK YOU FOR THE SUPPORT!

We wish to thank all of the FSI **corporate and foundation sponsors:**



**UNION PACIFIC  
FOUNDATION**



***State Farm***



And all of the **individual alumni and friends of FSI**  
that support our institute!

This couldn't happen without you!

## UPDATE YOUR INFO!

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