



Integrative Physiology

University of Colorado
Boulder

Department
Newsletter

IPHY

Issue #19

May 2022

Special points of interest:

- Major international scientific societies are unanimous in that we should adopt permanent standard time
- \$2.3M grant by the National Science Foundation to implement the Active Learning Academy
- CU Boulder and CU Anschutz collaborating on innovative research projects that aim to improve human wellbeing

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A Few Words from Chair Marissa Ehringer

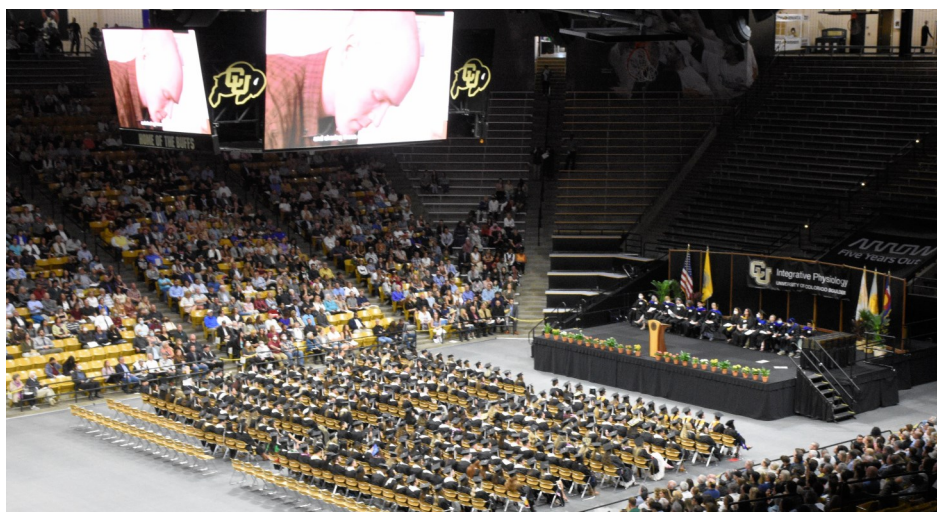
The spring and summer of 2022 returned the world and our department to a closer state of “normal” following the COVID pandemic. We were thrilled to host an in-person graduation ceremony to celebrate the accomplishments of our students. Please see some of the photos at the end of this newsletter of graduates in front of multiple backdrops, including one with custom artwork from Dr. Leif Saul, who also creates the cartoons for these newsletters.

We are excited to share departmental updates, which include the addition of two new staff members, Angela Bergamo and Lucas Eads. Our staff comprise a total of eight individuals who hold us together by providing exceptional support for faculty and students. We are grateful for their commitment and dedication as various college administrative procedures continue to evolve!

Drs. Steve Hobbs, Nicole Stob, and Andrew Tan re-invigorated our annual Undergraduate Research Symposium, where students participating in laboratory research presented posters highlighting their work. Staff member Eric Heltne contributed a herculean effort to assist with printing 25 posters within a couple of days! This well-attended event was stimulating and fun for all.

Many of our faculty and students have been featured for their research and teaching accomplishments, earning recognition through grants funded, participation in teaching workshops, and various awards. Our department continues to excel across multiple domains, providing exceptional opportunities for trainees.

We hope you enjoy these biannual newsletter updates – please stay in touch and follow us also on FaceBook, Instagram, and Twitter (@CUBoulderIPHY) for the latest news!





Why Permanent Saving Time is a Bad Idea?

CU Boulder Today spoke with Integrative Physiology Professor Ken Wright about the history of daylight saving time, the proposed Sunshine Protection Act that now awaits further hearings, and what the science says.

When and why was daylight saving time created?

It was first introduced on a large scale by the Germans during World War I to save energy. The idea was that extending evening sunlight would mean people wouldn't use as much energy. The U.S. followed suit and has since gone back and forth between having it and not having it, including during the energy crisis of 1974, when the U.S. decided to try permanent DST for two years to save energy.

How did that go?

At first, 79% of the public was in favor of the change. However, by February, after the first winter of exposure to dark mornings, support dropped to 42% and the law was repealed after only 10 months. It didn't save much energy, and research showed fuel usage actually increased slightly.

What would winter mornings be like if this bill passes?

As a population, we'll be waking up more often in the darkness. For instance, this clock change would cause Colorado to lose more than two months of having sunlight in the morning before 8 a.m. and 98 days of having sunlight in the morning before 7 a.m., compared to if we were to adopt permanent standard time (ST).

What's wrong with dark mornings?

The winter sun that is often there to help melt the ice on our roads for the morning commute won't be there, and more people will be driving to work or to the ski resorts in the dark, increasing risk of accidents. More Colorado children will be waiting for the morning bus in the dark. And any benefits to our children that have been gained by some schools adopting later start times (to better match adolescents' physiological tendency to go to bed later and sleep later) will be erased.

But we'll have more light at night? Isn't that a good thing?

Actually no. When we get exposed to light at night, whether it be more sunlight or lights inside our house or on our devices, that sends a signal to our circadian clock that we should go to bed later and wake up later. Later sleep timing is associated with more substance use and physical and mental health problems, including obesity, depression and heart disease. It's also associated with morning sleepiness, which contributes to accidents, poor work productivity and poor school performance. And we're not just getting more light at night with this change, we're getting less morning light. Morning light is good for your health because it promotes earlier sleep timing that is more conducive to school and work start times.

What do you make of the argument that getting an 'extra hour of sunshine' will make kids more active?

Regardless of what happens, we are still going to have the same amount of sunlight across 24 hours. What will change is how we schedule ourselves relative to the sun. Permanent DST and permanent ST have the same number of days with sunset after 7 p.m. during the summer holidays (mid-May to mid-August), so permanent ST will have little impact on many outdoor sports in the summer. Yes, there would be fewer sunsets after 8 p.m. under permanent ST, but any sports can continue at night after sunset as is currently done with electric lights. This is likely why the yearly shift to DST does not make kids more active.

You say we should do away with the time change. Why?

There is no question the change itself is associated with problems. In the days after the "spring ahead", we get less sleep and wake up at a time when our brains are telling us we should still be sleeping. There are lots of associated risks, including an increase in fatal motor vehicle accidents and in heart attacks and strokes.

What does the research say? Is permanent DST or ST healthier?

We don't have any studies that have, say, compared 10 years of one to 10 years of the other. But we do have studies where they compare people who live on the western edge of a time zone to people living on the eastern edge of the adjacent time zone. They are essentially in the same region, with the sun coming up and going down for them about the same time, but the one on the western edge has the sun setting an hour later according to the clock on the wall, much like what would happen with DST. These studies have found that people on the western edge of the time zone slept less, were more likely to be overweight and obese, and had higher risks of diabetes, heart attacks and cancer.

What's your takeaway for lawmakers mulling this decision?

Major international scientific societies have put out expert opinion papers that are unanimous in that we should adopt permanent standard time, and Arizona and Hawaii have used permanent standard time since the 1960s. We should follow suit.

<https://www.colorado.edu/today/2022/03/28/why-permanent-daylight-saving-time-bad-idea>





Andrew Tan Selected as Learning By Design Cohort

Over the last eighteen months, we have all experienced unprecedented shifts in our daily lives, including how, when, and where teaching and learning happens. One bright side is that these shifts have given us the opportunity to examine precisely those aspects of teaching and learning. To that end, CU Boulder has incredibly dedicated faculty who are engaging in professional development to become even better at their teaching craft.

Eight dedicated faculty, including Integrative Physiology Assistant Professor Andrew Tan, were recently accepted into the Fall 2021 Learning by Design cohort and will be spending this semester examining the design of their courses and ways to infuse active learning strategies into their teaching. Dr. Tan teaches IPHY 4540, Biomechanics, and this eight-session program will allow him to: (a) facilitate research-based instructional strategies and course design principles that facilitate active learning in an undergraduate STEM course; and (b) cultivate a faculty learning community that together explores ways to apply active learning to their chosen courses.



This offering is available thanks to a \$2.3 million grant by the National Science Foundation to implement the Active Learning Academy (ALA), a series of three professional development programs. This series of programs is aimed at building capacity at CU Boulder for student-centered teaching in undergraduate science, technology, engineering, and math (STEM) courses.

<https://www.colorado.edu/asset/2021/10/12/congratulations-fall-2021-learning-design-cohort>

Charles Hoeffler Was Awarded AB Nexus Research

The AB Nexus program announced its third round of grant awards to faculty at the University of Colorado Anschutz Medical Campus and the University of Colorado Boulder, collaborating on innovative research projects that aim to improve human wellbeing through basic science and translational research approaches.

Since launching almost two years ago, AB Nexus has helped increase partnerships and strengthen existing areas of connectivity between CU Anschutz and CU Boulder. The initiative has provided seed grants to spur early collaborations, helped faculty rapidly respond to federal research opportunities, and elevated the connectivity between the two campuses to increase joint public and private proposal submissions.

“As this collaboration between our campuses and faculty matures, we’re seeing an encouraging diversity in the disciplines and research teams that are working together,” said Terri Fiez, vice chancellor for research and innovation at CU Boulder. “Even more exciting is that those teams are delving into some of the most important challenges currently facing scientists, which means the opportunities for impact are tremendous.”



Dr. Hoeffler’s primary research interests are related to the understanding of molecular signaling pathway dysfunction in the manifestation of neurological disorders and neurodegenerative diseases. His research-specific interests are in neuronal mechanisms of translational control in synaptic plasticity and memory, phosphatase regulation in Down syndrome, and in synaptic function in Tauopathies.

IPHY/IBG Associate Professor Charles Hoeffler will work with Molly Hunsman of Pharmaceutical Sciences (CU Anschutz) on **“Understanding AKT1 Function Regulating Interneuronal Activity Involved in E/I Balance”**



Cartoon Representation of Dr. Tanya Alderete's Research by Leif Saul

POLLUTANTS, OBESITY, AND THE MICROBIOME

OBESITY IS REACHING EPIDEMIC PROPORTIONS IN THE UNITED STATES TODAY

YOU MIGHT SAY IT'S AN "EXPANDING" PROBLEM

-- WITH MANY SERIOUS HEALTH CONSEQUENCES, SUCH AS TYPE 2 DIABETES MELLITUS.

WE KNOW THAT CHANGES IN DIET AND EXERCISE CAN REDUCE THE RISK

BUT THAT GENES ALSO PLAY A ROLE.

THANKS MOM & DAD -- I CAN'T EVEN FIT INTO MY JEANS!

AND RECENT WORK BY TANYA ALDERETE AND COLLEAGUES* IS REVEALING SURPRISING WAYS OUR **EARLY ENVIRONMENT** CAN AFFECT ADULT HEALTH.

IT STARTS EVEN BEFORE YOU'RE BORN...

*ALDERETE DIABETES AND OBESITY RESEARCH (ADOR) LABORATORY, DEPT. OF INTEGRATIVE PHYSIOLOGY, UNIVERSITY OF COLORADO BOULDER

WE'RE SURROUNDED BY ENVIRONMENTAL POLLUTANTS FROM VARIOUS SOURCES THAT CAN DISRUPT PHYSIOLOGY.

OUR RESEARCH FOCUSES ON THOSE FOUND IN THE AIR --

WHICH CAN MAKE THEIR WAY INTO A MOTHER WHO IS PREGNANT OR BREAST-FEEDING...

AND INTO THE INFANT'S GUT (DIGESTIVE TRACT)...

WHERE THEY CAN CAUSE CHANGES IN THE **MICROBIOME** -- THE BACTERIA THAT CARRY OUT THEIR LIVES WITHIN US.

CONSUMER PRODUCTS

INDUSTRIAL WASTE

CAR EXHAUST

NO_x

PARTICULATE MATTER

PLACENTA

MOTHER'S MILK

HOME SWEET HOME

WE'RE FINDING THAT AIR POLLUTION MAY ALTER THE RELATIVE ABUNDANCE OF DIFFERENT TYPES OF BACTERIA

-- REFLECTING DIFFERENT PREFERENCES IN THE GUT ENVIRONMENT.

WELCOME TO **SOOT CITY** "IN THE BOWELS OF INDUSTRY"

HOW DID THEY SAMPLE THE MICROBES?

SHH! THIS IS A FAMILY STRIP

OH HONEY -- IT'S JUST PERFECT!

THESE CHANGES IN THE GUT COMMUNITY WERE ASSOCIATED WITH CHANGES THAT PREDISPOSE THE INFANT TO DIABETES

-- SUCH AS FASTER GROWTH AND GREATER FAT DEPOSITION.

LOOK AT HIM GROW!

AND GROW AND GROW!

THESE EFFECTS MAY INVOLVE A VARIETY OF MECHANISMS THAT ALTER THE REGULATION OF OUR METABOLISM.

ENTERIC (GUT) NERVOUS SYSTEM

BACTERIAL METABOLITES (SMALL MOLECULES)

GUT WALL PERMEABILITY

INFLAMMATION & IMMUNE SYSTEM

SO, WHILE IT MAY BE OBVIOUS THAT THESE CHEMICALS ARE **BAD** FOR US, WE'RE ONLY JUST BEGINNING TO UNDERSTAND **HOW** THEY WORK

OW!

THUD

-- AN IMPORTANT STEP IN FORMING MEDICAL AND POLICY INTERVENTIONS.

THIS RESEARCH DESERVES A KICK START!

BY DOING COMPREHENSIVE SURVEYS OF DIFFERENT ASPECTS OF THE GUT COMMUNITY, WE AIM TO MORE QUICKLY IDENTIFY THE COMPLEX WAYS IT INTERACTS WITH OUR ENVIRONMENT AND OUR HEALTH.

MICROBES

GENES

METABOLITES

WE NEED A **"BIG DATA"** APPROACH -- TO TACKLE THIS **BIG CHALLENGE**.

IT'S A "JUNGLE" IN THERE, AND WE'VE GOT A LOT OF EXPLORING LEFT TO DO!

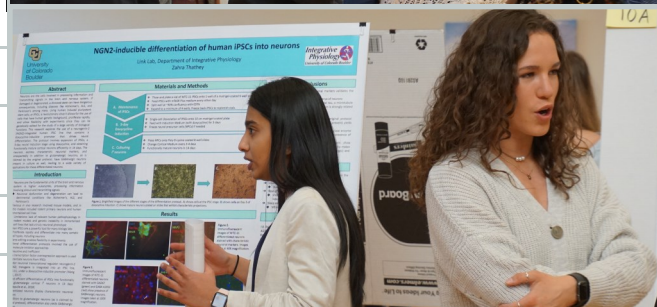


Research Symposium

The IPHY 2022 Undergraduate Research Symposium took place on April 6 with a goal in mind to provide an opportunity for our undergraduate students to present their research activities and to promote interaction with other undergraduate/graduate students and faculty. It was a huge success with 27 IPHY undergraduate poster presentations by 37 students. Their research occurred in 10 different research labs, 3 classes, and also at Children's Hospital Colorado.

Presenter(s)/Award	Lab/Course	Award Winning Poster Title
Leen Abbas Best Overall	IPHY 2010/Sleep Seminar	Genetics of Napping in Children
Mary Darrah Best Presentation	Integrative Physiology of Aging Lab	Oral Fisetin Supplementation Suppresses Vascular Cell Senescence and Reduces Arterial Stiffness in Old Mice
Sophia Choubai Best Science	Sleep and Development Lab	Light at Night & Pupil Size in Children and Adolescents
Natalia Klamut Student's Choice	Children's Hospital Colorado	Diagnostic and Perinatal Features of Turner Syndrome with Trisomy X Syndrome

Noemi Ira Jennifer Lawrence	IPHY 1181/Probiotic/Drug Discovery
Ian Rutherford Devin Schmuckal	IPHY 1181/Probiotic/Drug Discovery
Charlotte Laurel Kevin Wooser	Molecular Biology of Neurodegeneration Lab
Zee Stark; Nina Ning	IPHY 1181/Probiotic/Drug Discovery
Anna Morelock	Honor's Thesis with Dr. Teresa Foley
Emma Yang	Genetics of Substance Abuse Lab
Nicholas Barry	Sleep and Development Lab
Sarila Ekin	Sleep and Chronobiology Lab
Sydney Holtman	Children's Hospital Colorado
Zofia Lisowska	Sleep and Chronobiology Lab
Natalie Shelden	Reproductive Endocrinology Lab
Zahra Thathey	Molecular Biology of Neurodegeneration Lab
Morgan Brown	Molecular Neurogenetics Lab
Trinity Buckley	Molecular Biology of Neurodegeneration Lab
Alexandra Lindquist	Integrative Physiology of Aging Lab
Lauren McCabe	Molecular Signaling of Neurological Disorders
Eliam Sanchez	IPHY 3430: Human Physiology
Monvi Kudumula	Integrative Physiology of Aging Lab
Branden Long Trinity Mason	IPHY 1181/Probiotic/Drug Discovery
Addie Horton Morgan Matous	IPHY 1181/Probiotic/Drug Discovery
Avy Chiluka Basiesi Nkelani Dominick Shoha	IPHY 1181/Probiotic/Drug Discovery
Nathan Adler Kyla Wrenn	IPHY 1181/Probiotic/Drug Discovery
Kate Timothy Sophia Kvaratskhelia	IPHY 1181/Probiotic/Drug Discovery





Alumni News

Teresa Foley (BA/MS 2004, PhD 2009)

Dr. Foley is currently a Teaching Professor of Distinction in the Department of Integrative Physiology (IPHY). After completing her graduate training in the Stress Physiology Laboratory under Dr. Monika Fleshner, Teresa began her postdoctoral work for CU's Science Education Initiative, a 5-year, \$5M investment directed by Nobel Laureate Carl Wieman to catalyze and support sustainable improvements in undergraduate science education. As a postdoctoral fellow, Teresa helped IPHY faculty develop teaching methods that promote deeper understanding of scientific concepts, long-term retention of material, and advanced critical thinking skills. In 2011, she was hired as an instructor in IPHY where she has taught a broad range of upper-division lecture and lab courses, and played an integral role in the development of the public health certificate. In January 2022, Teresa became the Associate Chair of Undergraduate Affairs in IPHY where she works with faculty and staff to retain the high caliber of our undergraduate program. When she's not teaching, Teresa continues to cross off items on her travel bucket list including recent trips to Machu Picchu in Peru, Oktoberfest in Germany, and Santiago de Compostela in Spain.



Kirstin Freemantle (BA 2014)

Kirstin's love of medicine began early with animals, and she has loved working as a veterinary nurse in Boulder for almost 17 years! She knew she wanted more education and autonomy in the medical field and decided the physician assistant path was where she wanted to go. After consideration, she enrolled in the IPHY program at CU Boulder. This was an amazing program that set her up well for a graduate degree. She was attracted by the great professors in the program and also the choice of upper level courses afforded by the program. If only being an eternal student were an option. The education received from the IPHY program made her transition to PA school much easier. She went to Idaho State University for graduate school and in 2017 obtained a Physician Assistant Studies Master of Science degree. She currently works in primary care for a federally funded community health care physician in Tulare, California. Based in the Central Valley, the Family HealthCare Network cares mostly for low income, indigent, and seasonal migrant workers. In a typical day she takes care of patients with uncontrolled diabetes, hypertension, varied internal medicine cases, a lot of mental health and addiction, urgent care walk-ins and ED follow ups. Every day is different, and it is both rewarding and exhausting. But, she loves it and received a crash course in Spanish as a bonus. Having worked through the pandemic, she is still happy she made the choice to go into medicine.





Kudos/News

Maximilian Bailey, a MS student in the **Alderete lab**, has been accepted into 14 medical schools and will begin a MD program next year.

Teaching Associate Professor Janet Casagrand and **Teaching Assistant Professor Nicole Stob** were selected to participate in the Online Teaching Academy for the Summer 2022.

Teaching Associate Professor Janet Casagrand received the 2022 Boulder Faculty Excellence Award, which includes a \$3000 monetary prize.

Kevin Clark, a graduate student in **Alderete's lab**, won a Beverly Sears award of \$1000.

Professor Monika Fleshner's student comment: I just want to thank you for an amazing semester! I have never been so invested in a class at CU and it furthered my passion for science and the human body.

Postdoctoral Fellow Lauren Hartstein was [interviewed on CPR](#) about healthy ways to help preschoolers sleep.

Associate Professor Charles Hoeffler, Professor Mark Opp, & Associate Professor Chris Link were awarded an \$250,000 INCLUDE (Down Syndrome research initiative) supplement to their RF1 grant "Sleep Disruption and Alzheimer's Disease Pathology related to Down Syndrome".

Lyanna Kessler and **Saydie Sago**, PhD candidates in **Lowry's lab**, were accepted into the [Neuroscience School of Advanced Studies course on Neuroinflammation](#) in Venice, Italy.

Associate Professor Monique LeBourgeois and **Postdoctoral Fellow Lauren Hartstein** received a \$100,000 grant entitled "Physiological Mechanisms underlying the Relationship between Nighttime Media Use and Sleep in Adolescents" from the NYC-based foundation, Children and Screen.

Associate Professor Monique LeBourgeois was selected to receive the College Scholar Award which will allow her to request a semester free from classroom teaching within the next four semesters to pursue research questions.

Associate Professor Christopher Lowry was awarded a \$50,000 RIO Seed Grant "Broad-spectrum Cannabidiol (CBD) as a prevention/treatment of neuroinflammation in a rat model of comorbid autism and epilepsy" in collaboration with Drs. Jon Reuter and Dan Barth.

Associate Professor Christopher Lowry, received a LEAP Individual Growth Grant which provides funding for projects that will assist in advancing the careers of associate professors on the CU Boulder campus.

Brandon Middlemist, from the **Lowry lab**, is a recipient of a \$60,000, 4-year [National Western Stock Show Scholarship](#).

Anna Morelock and **Nora Want** each received an Everson Trust scholarship of \$1250; this is an IPHY scholarship for women undergraduate students with outstanding academic and research accomplishments.

Amy Luthens, from the **Lowry lab**, successfully defended her UG Honors thesis in Psychology and Neuroscience: The effects of Mycobacterium vaccae NCTC 11659 treatment on fear extinction in female rats in the fear-potentiated startle paradigm.

Teaching Assistant Professor Amanda Schaetzel and **Teaching Associate Professor Ruth Heisler** will be traveling abroad this summer to prepare for "The History of Medicine" - a new course that will be offered Maymester 2023.

John Sterrett and **Nathan Andersen**, graduate students from the **Lowry Lab**, will have a [book chapter](#) in a book edited by Graham Rook and Christopher Lowry: Evolution, Biodiversity and an Assessment of the Hygiene Hypothesis.



Alexander Strauss, from the **Tsai Lab**, was accepted into the University of Cambridge.

Rose Summers, undergraduate research assistant in the **Lowry lab**, was selected as a 2022 Barry Goldwater Scholar and accepted into the Harvard-Amgen Scholars Program, Summer 2022.

Assistant Professor Andrew Tan's lab was selected for a pilot grant from the National Center of Neuromodulation for Rehabilitation (NM4R) via the NIH NICHD P2CHD086844 mechanism.

Emily Westwood, a Life Course Centre PhD student in Australia, will join the LeBourgeois lab as a Fulbright Scholar.

Professor Ken Wright was recognized with the prestigious Mary A. Carskadon Educator Award from the Sleep Research Society.

We Welcome Our New Staff

Angela Bergamo

Originally from Longmont, Colorado, Angela moved to Los Angeles to pursue a career in professional dance. After graduating Summa Cum Laude from Loyola Marymount University as double major in Dance and Communications, she joined several dance companies and began performing locally and across the country. Engaging in live performances and on camera, Angela has appeared in numerous stage productions, films, commercials, and TV shows. She has been a performer, actress, and aerialist for Disney, Disney's California Adventures, and Tokyo Disney Sea in Japan, and has appeared onscreen for ABC Family, Nickelodeon, Disney, FOX, and TBS. Angela is glad to be back in Colorado and currently dances, performs, and teaches locally. Before coming to CU Boulder, Angela served as a patient care and outreach coordinator for a local hearing care center. Now, she is thrilled to be a part of the IPHY staff as our undergraduate coordinator and grateful for such a positive team and working environment. In her free time she enjoys writing and spending time with family in the great outdoors.



Lucas Eads

As the finance and business operations manager for IPHY, Lucas joined the department November 2021 after working a similar role in Chemical and Biological Engineering. His key IPHY duties include advising the chair of the department with financial and budgetary reports, managing the operating team staff, and overseeing the department's financial and HR practices. On the personal side of life, he is married to Kelly, who also works at CU Boulder, and they are expecting their first child in November of 2022—it's a girl! He and Kelly met as undergrad students while attending CU Boulder, so they have many ties to CU and the Boulder community. As an animal lover, Lucas has two Australian Shepherds (Kona and Otis), a cat named Londa, as well as several tropical fish tanks with turtles and fish from around the world. Having worked as a specialist at both the Denver Aquarium and Denver Zoo, there are not many animals he has not worked with in some capacity. Though he is an active traveler and explorer, he considers himself to be more of a homebody. His hobbies include fishing, snowboarding, snorkeling, golfing, and photography—often giving him an excuse to visit a beautiful beach somewhere. Some favorite travel destinations from the recent years include Bora Bora, the Hawaiian Islands, and Captiva Island.





Spring & Summer 2022 PhD, MS, and BA/MS Graduates

Doctor of Philosophy

Sachi Wong

B.A., University of Colorado Boulder

M.S., University of Colorado Boulder

Dissertation: *Development of sleep & circadian rhythms in early childhood: a goodness of fit perspective*

Advisor: Dr. Monique LeBourgeois

Sophia Mahoney

B.S. University of California Santa Cruz

Research Project: *Fisetin suppresses vascular cell senescence and improves arterial function with aging*

Advisor: Dr. Douglas Seals

Erika Mehrhoff

B.S., Colorado State University

Thesis: *Diazepam Effects on Anxiety-related Defensive Behavior of High and Low Open-Field Activity Inbred Mouse Strains*

Advisor: Dr. Marissa Ehringer

Master of Science

Maximilian Bailey

B.A., University of Colorado Boulder

Research Project: *Ambient Air Pollutant Exposure, The Gut Microbiome and Brain Morphology: Potential Environmental Exposure Induced Alterations to The Gut-Brain Axis*

Advisor: Dr. Tanya Alderete

Georgia Reis

B.A., University of Colorado Boulder

Research Project: *Is there an Association Between Genetics and Chronotype in Early Childhood?*

Advisor: Dr. Monique LeBourgeois

Logan Bunch

B.A. University of Colorado, Colorado Springs

M.A. University of Colorado Denver

Research Project: *Characterization of GCKR Human SNP RS1260326 (P446L) in a Mouse Model of Alcohol Behaviors and Metabolism*

Advisor: Dr. Marissa Ehringer

Katrina Rodheim

B.A., University of California Merced

Research Project: *Associations between Circadian Melatonin and Temperature Amplitudes during Constant Routine*

Advisor: Dr. Kenneth Wright, Jr.

William (Liam) Canty

B.A., University of Colorado Boulder

Research Project: *Association between circadian clock and clock-controlled gene single nucleotide poly-morphisms and eating behaviors in children aged 2-6 years*

Advisor: Dr. Monique LeBourgeois

Bachelor of Arts/Master of Science

Elisabeth (Libby) Geraghty

B.A., University of Colorado Boulder

Research Project: *Comparison of concussion recovery between sport and non-sport related concussions in NCAA D1 athletes*

Advisor: Dr. Kenneth Wright, Jr.

Siena Krueger

B.A. Austin College

Coursework Only

Advisor: Dr. Kenneth Wright, Jr.

Zachariah (Zach) Morgan

B.A., University of Colorado Boulder

Research Project: *The Effects of Prenatal exposure to ambient air pollution is associated with cognitive outcomes in infants at 2 years of age*

Advisor: Dr. Tanya Alderete

Sabrina Linton

B.A. University of Colorado Boulder

Research Project: *Individual Trait-Like Cardiovascular Responses to an Acute Stressor Following Days of Combined Sleep Restriction and Circadian Misalignment*

Advisor: Dr. Kenneth Wright, Jr.





Spring & Summer 2022 BA Graduates

Lupton Abshire Jr.
Mehdi Ahmadi
Shawg Ahmed
Hayley Alexander
Kelly Anderson
Christian Apps
Shannon Austin
Madison Baca
Katharine Bacon
Coreena Ball
Noemi Banda
Madeline Bares
Maria Barrett
Arin Barth
Logan Baumberger
Cameron Bean
Ryan Beck
Avery Bell
Hannah Bennett
Logan Berger
Anthony Berley
Madelyn Betz
Abigail Blackwood
Kendyll Boback
Arpi Bocchierian
Alice Bosley
Arianna Boushell
Makenna Bridgeman
Jackson Brill
Aaron Bronte
Amanda Brown
Jeremy Brown
Stacy Buch
Lia Buisson
Natalie Butterfield
Kevin Butterman
Priya Byati
Lauren Byford
Rosemary Callahan
Amy Campbell
William Canty
Aaron Carmichael
Kyrach Changoo
Rachelle Charlie
Kristin Cler
Shane Cohan
Alexandra Coy
Hunter Dagnon
Samantha Daigle
Derick D'Amico
Jane Dang
Evan Davros
Desiree Deangelo
Michaela Deck
Henry Denny
Kaycee Di Lorenzo
Trace Dimos
Skylee Donaldson
Tenzin Dorje
Justen Downing

Molly Dragan
Natalie Duncan
Haylee Duncan
Edita Michelle Dyer
Stefanie Eikermann
Madeleine El-Jammal
Nicholas Elrod
Kaylie Evans
Courtney Fanch
David Fang
Aidan Farlo
Mary Farris
Marcus Ferrara
Lauren Fiorini
Payton Fisher
Ruth Fisseha
Hayden Fite
Julia Fontana
Sarah Fowle
Dylan Freytag
Julia Frondoni
Tylar Fugate
Lauren Garlock
Falyn Garner
Molly Gaugler
Aariz Gawandi
Samuel Gendelman
Melia Golin
Anne-Liese Golletz
Emilee Gower
Julia Graham
Cameron Gralka
Andrew Gross
Francesca Guerrero
Lucy Hall
Adina Halzel
Makinzie Hamilton
Hannah Hansen
Andrew Harding
Madeline Harrison
Layla Hasan
Tyler Hazell
Sinead Heaney
Emelia Hedberg
Patricia Helbin
Taylor Hendrickson
Megan Hendy
Sophia Herrera
Emma Hesse
Emily Hipp
Julia Ho
Jasper Hoag
Benjamin Holubiak
Brianna Hormberg
Cassandra Horton
Saxton Huggins
Vakhtang Huhua
Lindsey Humphrey
Áine Huntington
Asmita Idate

Natalie Imamura
Sara Ingram
Benjamin Jablon
Hannah Jackson
Lauren Jaffe
Kaitlin James
Katelyn Jewell
Andrea Jewell
Marc Kaplan
Jeremie Kautzmann
Sara Kester
Molly Kett
Morgan Kihn
Alexandra Kinder
Nicholas Kolesky
Shrihari Kote
Mikayla Lacovara
Honora Laduzinsky
Michaela Lange
Aaron Lange
Shannon Lanza
Anna Larson
Hanna Lavassani
Sydney Lehman
Haylie Lengel
Chelsea Leung
Mandy Li
Mengyi Liang
Megan Liaw
Rebecca Lockyear
Lakiah Louangrath
Kathryn Lucernoni
Cierra Ludvik
WenHao Ma
Michael MacGuire III
Heather Mahon
Lauren Mainello
Brandon Marquart
Cassandra Marquez
Sydney Mattox
Mayah McCumsey
Sydney McDaniel
Megan McGrew
Connor McIntyre
Bailey McLagan
Jack McLeod
Maureen McNamara
Jessica McNulty
Jonah Mediavilla
Savannah Mierau
Heather Miyazawa
Shauna Montoya
John Moore
Madeline Moore
Samantha Morris
Natalie Morrissey
Noah Mostoller
Matison Music
Andre Naranjo
Michaela-Jana Nasr

Michaela Nelsen
Alisa Nelson
Andrew Neuhalen
Collin Newlon
Judy Nguyen
Tyler Nguyen
Katlyn Nowak
Ali O'Donnell
Jasmyn Olivas
Kate O'Neill
Cole Ossian
Cody Osteen
Aram Ovsepien
Virginia Owen
Andrew Pallis
Anthony Partrick
Cayla Pawlowski
Monet Percun
Anne Perrizo
Eric Potter
Rylee Price
Emily Pung
Aishwarya Rajagopal
Daisy Ramirez-Valdez
Monique Ransford
Karen Rawlinson
Maxwell Reinke
Georgia Reis
Philip Ripp
Lake Roberson
Vaneza Robles
Nick Rodrigues
Karla Rodriguez-Ramirez
Sam Roth
Paige Ruscher
Elizabeth Santos
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