



Columbine Health Systems
Center for Healthy Aging
COLORADO STATE UNIVERSITY

ANNUAL REPORT

2021-2022



MISSION

We unite and facilitate research teams across CSU’s colleges and programs to bring convergence to the grand challenge of global aging.

VISION

We are a transdisciplinary catalyst and nationally recognized resource for the discovery and application of research on biological, cognitive, psychological, social, and behavioral factors that lead to healthy and successful aging.

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On the Cover: 2022 marked a re-emergence as humanity learned to better navigate the COVID-19 pandemic and its echoing effects. The Columbine Health Systems Center for Healthy Aging is also re-emerging this year after shifting focus to aid in the pandemic response. Now that we’ve taken a collective deep breath, the CHA team is realigning with our larger vision: to catalyze the discovery and application of research that leads to healthy and successful aging. This annual report reflects the breadth and scope of those efforts across the CSU System, and the cover image is representative of that re-emergence, both as a research center and as fellow travelers along the post-pandemic journey.



Nicole Ehrhart, V.M.D., M.S.

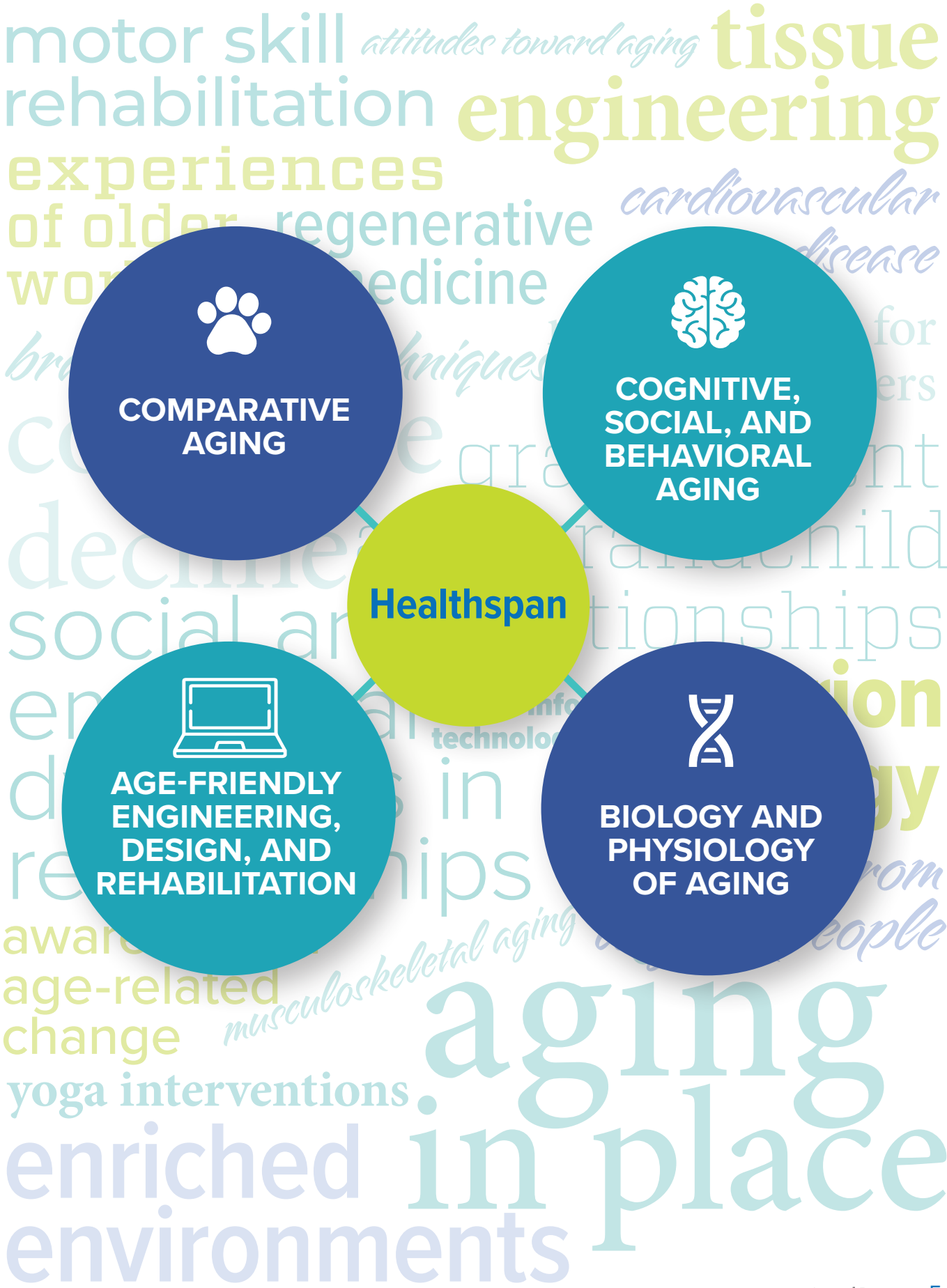
Dr. Nicole Ehrhart is the director of the Columbine Health Systems Center for Healthy Aging at Colorado State University, where she leads an interdisciplinary research effort to identify basic and translational mechanisms that promote healthy aging. Ehrhart holds the Ross M. Wilkins M.D. Limb Preservation Foundation University Chair in Musculoskeletal Oncology and Biology. She is a board-certified veterinary surgeon (Diplomate ACVS; ACVS Founding Fellow in Surgical Oncology), a professor of surgical oncology in the Department of Clinical Sciences in the College of Veterinary Medicine and Biomedical Sciences, and a research faculty member at CSU’s Robert H. and Mary G. Flint Animal Cancer Center. In her research lab, the Laboratory of Comparative Musculoskeletal Oncology and Traumatology, Ehrhart conducts translational aging, limb preservation, tissue engineering, and sarcoma research. Ehrhart holds joint faculty positions in the School of Biomedical Engineering, the Cell and Molecular Biology program, the Gates Regenerative Medicine Center at the University of Colorado, and the University of Colorado Cancer Center.

A Note from the Director

Over the last 18 months, as the pandemic started to loosen its grip and the world tentatively began returning to pre-pandemic activities, CSU’s Columbine Health Systems Center for Healthy Aging took inventory of our progress toward our overarching mission: to unite and facilitate research teams across CSU’s colleges and programs to bring convergence to the grand challenge of global aging. We understood that the new relationships, collaboration, success, and momentum created during the pandemic months were pivotal to furthering our vision. Therefore, our goal was to leverage this growth to serve our faculty, research enterprise, and community more broadly in a post-pandemic culture. In the time period reviewed in this annual report, we have continued to provide critical expertise and research to improve the health of people living and working in nursing homes and assisted living facilities. We have facilitated new transdisciplinary research teams. We led the effort to become Colorado’s first Age-Friendly University and have paved the way for other universities to follow suit. We supported multiple clinical studies, facilitated transdisciplinary grant activities, and became the inaugural engagement site for the Colorado Longitudinal Study, a longitudinal biospecimen collection with associated health data that will help researchers unravel the determinants of healthy aging. We have grown our faculty affiliate membership from 60 affiliates across four colleges in 2019 to more than 80 affiliates, now representing seven of CSU’s colleges. These esteemed faculty comprise a broad representation of aging expertise in biological, cognitive, psychological, social, and behavioral sciences, and hail from 23 academic departments.

Our continued growth and success would not be possible without the support of our contributors, funders, donors, supporters, and friends. I hope that you will enjoy learning more about our activities and celebrate the accomplishments that you continue to make possible.

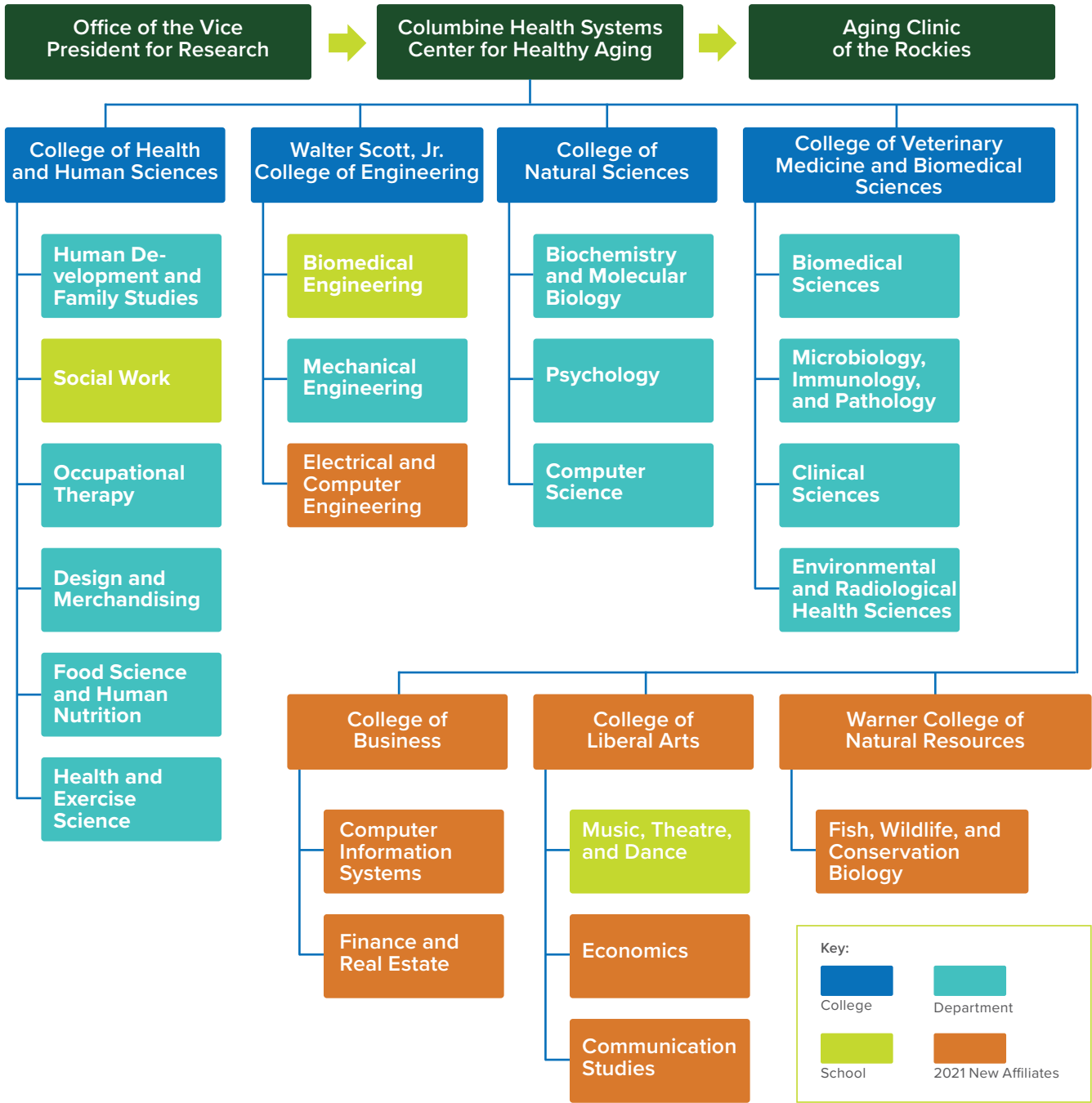
Warm regards,
Nicole Ehrhart



ABOUT THE CENTER

Center Structure

Currently, 83 faculty members across seven colleges and 22 departments are affiliated with the Center.



Leadership



Deana Davalos, Ph.D.

Associate Director

Deana Davalos, Ph.D., is a licensed psychologist, director of the Aging Clinic of the Rockies, associate director of the Columbine Health Systems Center for Healthy Aging, and

a professor in the Cognitive Neuroscience program in the Department of Psychology at CSU. She has published on issues surrounding cognitive aging and the neurophysiology of aging and is part of a multidisciplinary research team focused on developing community-based interventions for individuals with dementia-related diseases and their caregivers.



Tom LaRocca, Ph.D.

Center Faculty Member; Assistant Professor, Health and Exercise Science

Tom LaRocca, Ph.D., is an assistant professor and director of the Healthspan Biology Lab in CSU's Department of Health and Exercise Science. He is also

a faculty member at the Center for Healthy Aging. His laboratory studies the molecular biology and physiology of aging, and he is particularly interested in translational research (using laboratory science to develop practical applications or treatments that can help people). Current projects are focused on finding biology-based ways to increase healthspan, the period of life during which we are healthy and productive. LaRocca is also a former high school chemistry teacher and college instructor, so he enjoys bringing his interests into the classroom.



Karyn Hamilton, R.D., Ph.D.

Associate Director

Karyn L. Hamilton, R.D., Ph.D., is a professor and the director of the Translational Research on Aging and Chronic Disease laboratory in the Department

of Health and Exercise Science at Colorado State University. She also has the privilege of serving as an associate director of the Columbine Health Systems Center for Healthy Aging at CSU. The overall objective of the TRACD laboratory is to understand the role of adaptation to stresses and maintenance of a functional mitochondrial proteome in the context of extending healthspan and maintaining function with aging. To accomplish this objective, she uses models of long life and increased healthspan including exercise, nutritional, pharmacological, and genetic models. In the TRACD lab, they enjoy using a highly collaborative approach and employ in vitro systems, in vivo animal models, and human participants to help identify mechanisms of healthspan extension and to translate their findings.

ABOUT THE CENTER

Staff



Annette Foster, CPA

Operations and Grant Manager

Annette Foster joined the Columbine Health Systems Center for Healthy Aging in late January 2020 as the director of operations and grants management. She plays a vital role in helping to facilitate grant submissions, post-award support, and overall operations of the Center's facilities and is providing invaluable leadership and vision during our growth phase. Foster is a graduate of Colorado State University's College of Business, a CPA, a former financial auditor and sole proprietor, and, prior to joining the Columbine Health Systems Center for Healthy Aging team, she served as a research project manager for CSU's Department of Atmospheric Science. She brings her extensive experience from all these various roles to contribute to the success of the Center, and she hopes to gain some valuable tips for her own healthy aging as well! Foster was raised in Iowa and moved to Colorado with her husband in 1988. She has a daughter who graduated from CSU and a son who graduated from CU Boulder last spring (yes, there is a bit of rivalry during the Showdown), and her husband earned his master's degree at CSU. She loves to hike, ski, snowshoe, camp, backpack, and cycle, so Colorado is the perfect home and, clearly, CSU is a big part of her life.



Laura Thornes

Assistant Director of Development

Laura Thornes comes to the Center for Healthy Aging as part of the Vice President for Research advancement team. Her focus is on raising funds for the Center through philanthropic giving. She is passionate about furthering important research and learning, which benefit individuals and communities and have a global impact. She comes to this role after decades of work in international education and 10 years as CSU's director of Education Abroad. She received her bachelor's in secondary education with German and Spanish from the University of Arizona and master's in educational psychology from Northern Arizona University.



Hannah Halusker

Communications and Outreach Coordinator

As the communications and outreach coordinator, Hannah Halusker develops multimedia communications and plans outreach events to help amplify the research and programming offered by the Center for Healthy Aging. She comes to the Center from South Carolina, where she received her B.S. in genetics (2017) and M.A. in communication, technology, and society (2020) from Clemson University. At Clemson, Halusker served as a science writer in the College of Science and then as the director for a science and arts festival in nearby Greenville, South Carolina. She is thrilled to bring her passions for science communication and engagement to her role here at the Center. When she isn't working, you can find Halusker running, biking, reading, doing yoga, or hiking one of the many trails near her new home in Fort Collins.



Ali Murphy

Administrative Assistant

Allison Murphy, or Ali as she likes to be called, is the administrative assistant at the Center for Healthy Aging. She recently moved to Fort Collins from northern Virginia where she worked for a law firm specializing in special needs trusts, estates, and adult guardianship. Outside, she loves hiking, biking, trying her hand at artistic endeavors, cooking, and playing games with friends. Murphy is excited to facilitate faculty in all aspects of Center engagement and to be the friendly face you see at the reception desk when walking into the Center between 8 a.m. and 5 p.m. Please contact Murphy for help with directing clinical trials participants, room reservations, website update requests, office needs, mailing, Center AV issues, scheduling, and events planning.

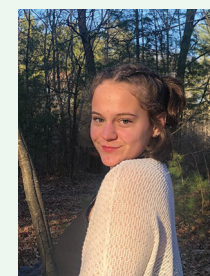
New Hires



Ashley Snell

Bioarchivist

Ashley Snell started as the bioarchivist for the Center in November 2021 after graduating from the University of Northern Colorado with a bachelor's degree in cellular/molecular biology. As a bioarchivist, Snell is responsible for creating a Universitywide biobank of SARS-CoV-2 specimens from the Center's Longitudinal COVID-19 Screening Study in Senior Care Facilities. Snell also aliquots positive samples within a BSL3 lab and collaborates with numerous research cohorts. Outside work, Snell loves watching movies, cooking, and spending time with Tigger, her cat. She is looking forward to continuing her education and research opportunities at CSU.



Grace Weintrob

Digital Media Intern

Grace Weintrob has been working as the Center for Healthy Aging's digital media intern since June 2021. She is currently a junior majoring in communication studies here at Colorado State University. As the digital media intern, Weintrob is responsible for the Center's social media posts, blogs for the website, editing YouTube videos, and reports like this one. She has a special interest in video production, which powers her dream of writing and directing her own TV show. Weintrob is looking forward to graduating in Fall 2022, starting her career, and investing in a school bus to convert into a home!



Community and Civic Engagement

As director, Dr. Nicole Ehrhart is the Center's key spokesperson, responsible for growing its local, regional, and national presence in healthy aging research, industry, and services. Below is a sampling of speaking opportunities she completed in FY22:

Larimer County Office on Aging

JULY 8, 2021: "Age-Friendly University Initiative."

Rocky Mountain Virology Association

OCT. 3, 2021: "COVID-19 Impact in Long-Term Care Facilities: Trying to Turn the Titanic."

UCCS Gerontology Center

OCT. 5, 2021: "Comparative Aging Research at CSU's Center for Healthy Aging."

Colorado Commission on Aging

OCT. 21, 2021: "Age-Friendly University Initiative."

CSU's Women and Philanthropy

MARCH 8, 2022: "Comparative Aging Research: Moving the Needle in Longevity Therapeutics."

Limb Preservation Foundation

APRIL 29, 2022: "Limb Preservation Research: Hope for the Toughest Cases."

Journal of the American Veterinary Association

JUNE 22, 2022: "Regenerative Medicine 2.0."

CoCARE

In FY22, Dr. Nicole Ehrhart served as president-elect of the Colorado Coalition for Aging Research and Education, a network of higher education programs across the state focused on aging research, clinical and applied services, outreach, and education. CoCARE plays a key role in forming collaborative groups, job searching, lobbying, proposing new legislation, and raising awareness of aging issues around the state of Colorado. The group meets quarterly and has representatives from seven universities and community colleges across the state.

Office of Gov. Jared Polis: Senior Care Strike Force of Subject Matter Experts

Weekly meetings between the Colorado Department of Public Health and Environment and other state agencies and stakeholders to guide public health policy and education surrounding protection and best practices for the senior care workforce and residents during the COVID-19 pandemic.

Events

COVID-19 Expert Panel Series

The Center for Healthy Aging, in partnership with CSU Extension and Senior Access Points of Larimer County, created the COVID-19 Expert Panel Series to provide clarity to the emerging COVID-19 pandemic by giving CSU faculty experts a platform to answer community questions about public health safety, vaccines, virus transmissibility, mental health strategies, travel, caregiving, and more. Panelists included faculty members in gerontology, infectious disease, biosafety, psychology, food safety, and geriatric medicine.

Mobility Yoga

This free, virtual yoga class, taught by Jennifer Atkins from Adaptive Yoga Specialist LLC, helped to improve flexibility and functional movement in everyday life. An average of five participants attended these classes from October 2021 to May 2022.

Healthy Aging Fitness

This virtual offering provided a free, gentle workout for older adults in Northern Colorado. Student trainers from the CSU Rec Center also received an educational opportunity by creating the workouts, leading the classes, and developing lessons about healthspan and healthy aging that were taught alongside the workouts. From January 2021 to May 2022, these classes attracted an average of eight participants each.

Aging Across the Life Span

Aging in Your 40s and 50s

This panel discussion provided middle-aged adults with advice about what can be done today to support healthy aging in the future. CSU faculty experts answered audience questions about diet, nutrition, fitness, mental health, and general well-being.

Aging 65+

This was the final webinar in the "Aging Across the Life Span" series. Panelists answered questions from adults aged 65 and older about healthy living practices that support longevity and long-term health.

Fast-Forward Movie Screening

In November 2021, the Center presented a showing of the PBS documentary, *Fast-Forward*, which follows four millennials and their parents as they explore the topic of aging with the help of MIT's aging technologies. The movie showing was followed by breakout room discussions on various healthy aging topics with the help of representatives from the Health District of Northern Larimer County, Alzheimer's Association: Colorado Chapter, Columbine Health Systems, and CSU's Department of Health and Exercise Science.



Interested in attending one of the Center's healthy aging events? To register, contact Hannah Halusker at hannah.halusker@colostate.edu.

Healthy Aging Speaker Series

This seminar series showcases the latest in aging research coming from CSU faculty, students, and beyond. These lunch-and-learn-style talks occur on a monthly basis and feature speakers who specialize in biological, cognitive, psychological, social, and behavioral factors of aging. **Below is a sampling of lectures that ran in FY2022, which averaged 20 attendees per lecture.**

FEB. 18, 2021

Neural Control of Movement and the Aging Brain. Brett Fling, Assistant Professor, Department of Health and Exercise Science.

APRIL 21, 2021

Interactions between Healthspan-Extending Interventions: Exercise and Pharmacotherapeutics. Karyn Hamilton, Associate Director, Columbine Health Systems Center for Healthy Aging.

MAY 13, 2021

Age Friendliness in Higher Education Today. Nina Silverstein, Professor, and Celeste Beaulieu, Ph.D. Candidate, University of Massachusetts Boston.

JUNE 10, 2021

Novel Insights into Aging, Anti-Aging Interventions, and Age-Related Disease. Devin Wahl, Postdoctoral Fellow, Department of Health and Exercise Science.

JULY 15, 2021

Senior Access Point 2.0: Expanding Resources for Older Adults Across Colorado. Allyson Brothers, Assistant Professor, Department of Human Development and Family Studies.

SEPT. 21, 2021

Targeting Cellular Stress Responses in Neurodegeneration. Julie Moreno, Assistant Professor, Department of Environmental and Radiological Health Sciences.

NOV. 10, 2021

SARS-CoV-2 Surveillance in Long-Term Care Facilities: Trying to Turn the Titanic. Nicole Ehrhart, Director, Columbine Health Systems Center for Healthy Aging.

FEB. 17, 2022

Cognition & Depression in Later Life: Leveraging Advanced Statistical Methods to Understand Temporal Dynamics and Risk/Protective factors. Stephen Aichele, Assistant Professor, Department of Human Development and Family Studies.

MARCH 17, 2022

Impact of Sleep and Circadian Disruption on Metabolic Health. Josiane Broussard, Assistant Professor, Department of Health and Exercise Science.

MARCH 18, 2022

For Better or for Worse? Social and Emotional Development Across Adulthood. Gloria Luong, Associate Professor, Department of Human Development and Family Studies.



The faces of our Healthy Aging Speaker Series. Staggered left to right: Brett Ellis, Gloria Luong, Josiane Broussard, Karyn Hamilton, Nicole Ehrhart, Stephen Aichele, Allyson Brothers, and Julie Moreno.

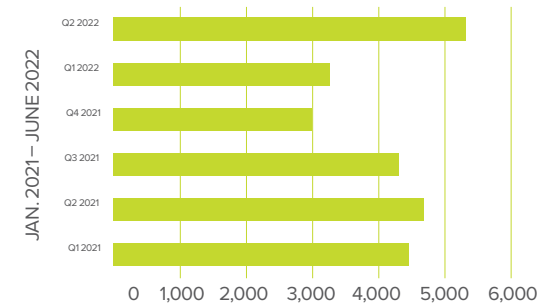
Social Media Growth from January 2021 to June 2022 | @CSUHealthy Aging



386 total followers

+67

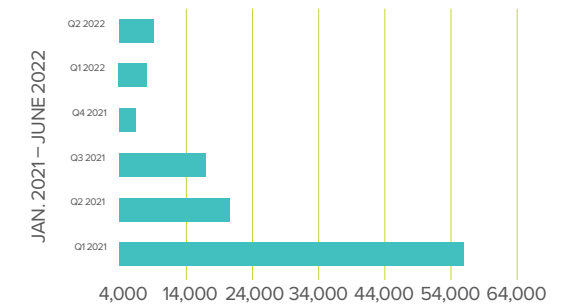
QUARTERLY FACEBOOK REACH



181 total followers

+86

QUARTERLY TWEET IMPRESSIONS



Top Posts from January 2021 to June 2022



“Promoting Dr. Gloria Luong’s seminar about social and emotional development.”

MOST REACH: 1,247 MOST REACTIONS: 10



“Recruiting participants for CSU’s Movement Neuroscience and Rehabilitation Lab.”

SECOND MOST REACH: 1,229



“living healthy longer: A Life Span Developmental Scientist on Healthy Aging with Dean Lise Youngblade.”

1,316 IMPRESSIONS | 41 ENGAGEMENTS



“living healthy longer: Biology of Healthspan with Dr. Tom LaRocca.”

1,527 IMPRESSIONS | 44 ENGAGEMENTS

Website Traffic from January 2021 to June 2022

Top Webpages



Aging Basics: “Body Temperature”

24,537 VIEWS



Aging Blogs: “The Simple Act of Stretching”

4,747 VIEWS



61,688 TOTAL PAGE VIEWS

includes all pages on CHA website
tripled from previous year: 20,189 views



9.96% OF VIEWS

within all OVPR websites
up 5.66% from previous year



VIEWERS FROM 20+ COUNTRIES

including U.S., India, Philippines, Australia, Canada, U.K., South Africa, France, Norway, and more.

CSU podcast *living healthy longer* unpacks the science of healthy aging

We live in an aging world. Humans are living longer and having fewer children and the percentage of adults over the age of 65 is continually growing. This unprecedented phenomenon creates changes at every level, from health care, social security, work, and retirement to family dynamics, life aspirations, and personal health and well-being.

When the Center for Healthy Aging set out to start a podcast in 2020, the goal was to highlight research from faculty members across CSU who are investigating these critical issues in aging and to bring aging studies out of the lab and into the earbuds of listeners across Northern Colorado.

Covering topics such as nutrition, psychology, health and exercise science, veterinary medicine, behavioral science, and more, the Center’s podcast provides a platform to translate aging research into actionable tips that listeners can incorporate into their daily lives to live healthier and more holistically. The show also delves into aging science to keep listeners up to date on how the field is progressing.

Listening and streaming

The *living healthy longer* podcast is released every other Monday. Listeners can subscribe across podcast platforms: Apple Podcasts, Spotify, Stitcher, Google Podcasts, or Amazon Music.

Read the full SOURCE article at col.st/7yk1k.

Podcast Analytics



TOP EPISODES*

GUEST	EPISODE TITLE	PUBLISHED DATE	# PLAYS
Devin Wahl	Anti-Aging Diets	9/20/21	368
Nicole Ehrhart	Hallmarks of Aging	1/11/21	231
Jen Currin-McCulloch	Communication at End of Life	1/24/22	188
Season 1 Guests	Best Advice for Healthy Aging: Season 1 Finale	11/1/21	182
Shelby Cox	Nutrition Tips for Healthy Aging	9/6/21	151

* as of 6/30/22

TOTAL DOWNLOADS: **3,685**

AVERAGE EPISODE DOWNLOADS: **74**

AVERAGE WEEKLY DOWNLOADS: **42**

Art and Aging Exhibition

In Fall 2021, the Center collaborated with students from Assistant Professor Aitor Lajarin-Encina’s ART 260 Beginning Painting class on a project to unpack ageism. Students were asked to create paintings that show what “healthy aging” means to them, and in their paintings, to avoid common ageist stereotypes of older adulthood.

Professor Christine Fruhauf from the Department of Human Development and Family Studies assisted with the project by giving an interactive lecture to the students that prompted them to reframe aging not as a period of decline, but as a time when life goals are realized and wisdom is abundant.

In February 2022, the Center hosted an art exhibition of the student’s paintings and a poll of the audience decided the top three paintings: first place: Ana Scott, *Radiant Wisdom* (top); second place: Logan Honea, *Glass Half Full* (middle); third place: Grace Thompson, *Classic Beauty* (bottom left).

These students received a certificate and a cash prize for their art, which will now hang on the walls of the Center for Healthy Aging permanently. The Center is planning more collaborations with the Department of Art and Art History in the future.



Assistant Professor Aitor Lajarin-Encina points to students’ paintings in ART 260 class.



BLOG: Aging Around the World

by Grace Weintrob

Did you know that nearly 47 million adults over the age of 65 live in the United States? Or that 80 percent of adults over the age of 50 have experienced age-based discrimination during their day-to-day?

With nearly 8 billion people living on the planet, there is plenty of room for interpretation regarding how people think about aging. Western cultures have traditionally been labeled as ageist societies that undervalue their older adult populations. Eastern cultures are recognized for their more accepting view of older adults, placing them on a pedestal of wisdom and respect.

The idea that Eastern cultures treat older adults with more respect comes from the Confucian values that promote a positive view of aging, which encourages younger generations to treat older adults with respect, obedience, and care. Western cultures tend to have more youth-centered societies that place value in young adults, rather than older adults, stemming from Protestant values that tie an individual's worth to their ability to work and be an active member of society.

A 2017 study in the *International Journal of Psychology* reported on the results of a survey that was conducted with more than 500 people from the United Kingdom and Taiwan to address this East-West aging debate. Data showed that members of Eastern cultures believed their society had a positive view of older adults' confidence and ability to handle emotions. While studies point to Eastern cultures as being less ageist, more data is needed to confirm perceptions of older adults in different cultures.

Another study aimed to understand younger people's views on aging throughout the world. By questioning more than 3,000 college students from 26 cultures on six different continents, the study aimed to develop understanding about the world's perception of aging through a cultural lens. The general perception of aging on an individual level varied, but most cultures viewed aging with a negative lens, except for those of mainland China, India, Malaysia, Russia, and New Zealand, where participants thought society was neutral or minimally positive about aging. Across all cultures, there was a consensus that aging comes with a decrease in physical attractiveness, everyday tasks, and learning new things. At the same time, cultures agreed that aging comes with an increase in general knowledge, wisdom, and respect.

Scientific literature suggests that we will see a massive growth in the older adult population. By 2060, demographers project that there will be 94.7 million older adults in the United States alone – almost three times the number of older adults in the year 2000. It's important to understand that age is not an indication of ability. As the population ages and grows, so should we. We should embrace an older generation, build on their strengths, and continue to develop our world to be more understanding and inclusive.



CSU Named an Age-Friendly University by AFU Global Network

In July 2021, Colorado State University was the first higher education institution in Colorado to be named an Age-Friendly University by the AFU Global Network, an international group of colleges and universities committed to understanding and fulfilling the needs of older adults in higher education. Earlier in the year, CSU underwent a gap analysis of its programs, policies, and practices involving older adults to identify strengths and weaknesses regarding age friendliness and inclusivity. Researchers from the University of Massachusetts and Lasell University provided the framework for the analysis and later reported that CSU had an **overall age friendliness score of 73% in 2021**. After receiving the AFU designation, CSU is now devising ways to expand educational opportunities for older adults, promote intergenerational learning, and develop a research agenda around issues in aging.

The 10 Age-Friendly University Principles, endorsed by the Academy for Gerontology in Higher Education:

1. To encourage the participation of older adults in all the core activities of the university, including educational and research programs.
2. To promote personal and career development in the second half of life and to support those who wish to pursue second careers.
3. To recognize the range of educational needs of older adults (from those who were early school-leavers through to those who wish to pursue master's or PhD qualifications).
4. To promote intergenerational learning to facilitate the reciprocal sharing of expertise between learners of all ages.
5. To widen access to online educational opportunities for older adults to ensure a diversity of routes to participation.
6. To ensure that the university's research agenda is informed by the needs of an aging society and to promote public discourse on how higher education can better respond to the varied interests and needs of older adults.
7. To increase the understanding of students of the longevity dividend and the increasing complexity and richness that aging brings to our society.
8. To enhance access for older adults to the university's range of health and wellness programs and its arts and cultural activities.
9. To engage actively with the university's own retired community.
10. To ensure regular dialogue with organizations representing the interests of the aging population.

Occupational Therapy Share Program



A Summer 2022 luncheon, featuring residents and staff at Silver Leaf and faculty and students from the OT Share Program.

In Fall 2021, the Center began collaborating with CSU's Department of Occupational Therapy to find community partners interested in the new OT Share Program, devised by Assistant Professor Julie Silver Seidle and a group of OT graduate students. The OT Share Program responds to the lack of OT in community settings by providing OT students-in-training to organizations that do not currently have an occupational therapist on staff but would like to provide OT for their clients. Aspire 3D, a partner of the Center's and the social engagement arm of the Loveland Housing Authority, helped to pilot the OT Share Program in their Silver Leaf community, where most residents are aged 62 or older and have physical and/or mental disabilities. Four OT students interned at Silver Leaf in the 2021-22 academic year, helping 12 residents with rehabilitative activities of daily living and services that were "life-changing," according to several residents. Silver Seidle plans to expand the OT Share Program in the 2022-23 academic year in several additional nonprofits in Larimer County.

Classes taught at the Center in FY22:

HDFS 534

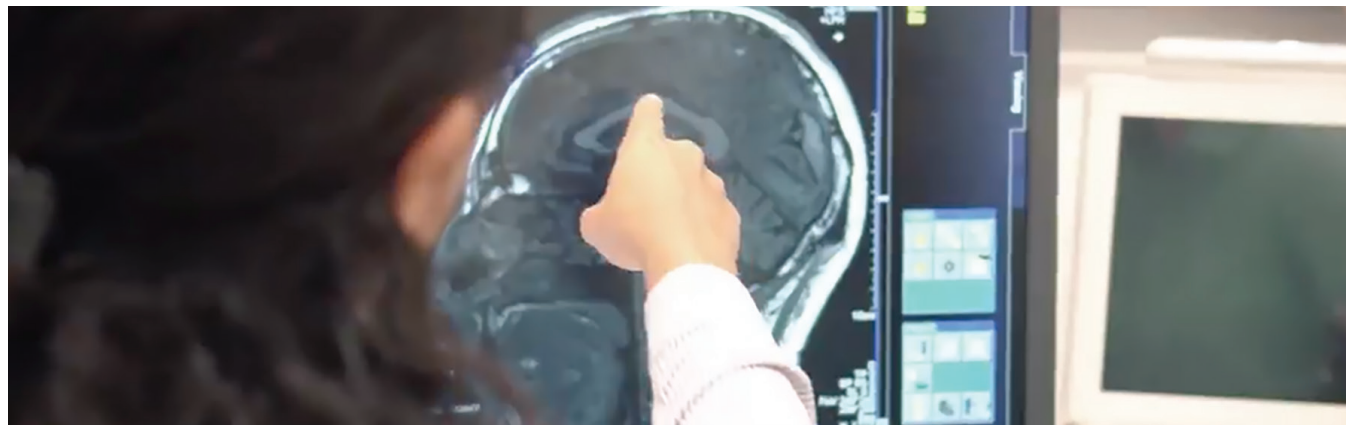
Marriage and Family Therapy

taught by Professor Toni Zimmerman from the Department of Human Development and Family Studies.

HES 620

The Science of Healthspan

taught by Assistant Professor Tom LaRocca from the Department of Health and Exercise Science.



Graduate student, Andrea Mendez Colmenares, points to the brain's corpus callosum in a T1-W image.

The Graduate Students of Healthy Aging

The Center has 83 faculty affiliates across 22 departments at CSU, which equates to lots of graduate students who are directly or indirectly associated with the Center. Below is a Q&A with a few of these students.



MICHAELA RICE

Ph.D. Candidate in Cognitive Neuroscience
Adviser: Deana Davalos

What does your research focus on?

My research examines how our emotions, pathologies, and mental states interact with our cognitive abilities. I am interested in how neuroimaging can be applied to help us better understand the underlying physiology of cognitive deficits associated with various pathologies. This is best exemplified by my thesis project, which is examining the relationship between anxiety and future-oriented memory using electroencephalogram.

What are your career goals?

I aim to work as a research scientist, leading projects that are focused on using technology and intervention strategies in a novel manner to support the physical, cognitive, and overall well-being of populations with a variety of pathologies and neurological disorders.

How has being affiliated with CSU's Center for Healthy Aging helped you?

My affiliation with CSU's Center for Healthy Aging has given me experience on an interdisciplinary intervention research project involving people with dementia and their caregivers. This project has allowed me to work with researchers across different fields and specializations, and I was able to learn how intervention research is conducted in aging populations. The knowledge and experience I gained from this project have motivated me to take an interdisciplinary and holistic approach in my own research on college students with anxiety, and it has inspired me to pursue future work in aging populations.



ANDREA MENDEZ COLMENARES

Ph.D. Candidate in Cognitive Neuroscience; Molecular, Cellular, and Integrative Neurosciences Program
Advisers: Aga Burzynska, Michael Thomas

What does your research focus on?

My research studies white matter MRI techniques to characterize aging white matter in the brain. I am also interested in identifying lifestyle factors that promote healthy aging and better white matter health. I hope that my research contributes to a better understanding of the role of white matter in health and disease.

What are your career goals?

I am a physician by training, and next year I will be applying for neurology residency training. In the future, I hope to be able to integrate research with clinical practice. I hope to become an academic neurologist and contribute to research and neuroscience education.

How has being affiliated with CSU's Center for Healthy Aging helped you?

Our team at the BRAiN Lab runs most of our research visits at CSU's Center for Healthy Aging. Our participants are very happy with the research environment. CHA has also provided a great opportunity to connect with other aging researchers.



MAUREEN WALSH

Ph.D. Candidate in Human Bioenergetics
Adviser: Karyn Hamilton

What does your research focus on?

My research focuses on extending the human healthspan, or the number of years we are free from age-related chronic diseases. I mainly focus on improving mitochondrial function (as you may remember, the "powerhouses of our cells") in the context of skeletal muscle aging and Alzheimer's disease.

What are your career goals?

After pursuing my Ph.D., I hope to obtain a position as a research scientist. Specifically, I want to work on a research team to better understand drug and exercise interactions at the level of the mitochondria to ultimately improve quality of life in older adults.

How has being affiliated with CSU's Center for Healthy Aging helped you?

Being affiliated with CSU's Center for Healthy Aging has been instrumental in fostering collaborations with additional CSU faculty. All five of my dissertation committee members are affiliated with the Center. Furthermore, I have interacted with numerous other CHA faculty where I have obtained both scientific and professional advice.

The Center responds to the coronavirus pandemic

RESTART Study

Funded by the Boettcher Foundation, this study guided return-to-work models during COVID-19 for two vital Colorado workforce populations: CSU employees deemed “essential” staff during stay-at-home and safer-at-home orders, and skilled nursing facility workers.

Two manuscripts using RESTART data were published in 2021. “Association Between COVID-19 Exposure and Self-reported Compliance With Public Health Guidelines Among Essential Employees at an Institution of Higher Education in the US,” published in *JAMA Network Open* in July, reviewed the purpose and outcomes of the RESTART Study. In it, the researchers found that compliance with protective behaviors, such as mask-wearing and hand-washing, both during and outside of work, may allow complex work environments to safely operate during a pandemic.

“Durable Antibody Responses in Staff at Two Long-Term Care Facilities, during and Post SARS-CoV-2 Outbreaks,” was published in *Microbiology Spectrum* in July and reported on the Center’s surveillance



testing protocol in long-term care facilities. Results from the publication suggest that when a high percentage of long-term care staff have antibodies to SARS-CoV-2, the immunity within a workplace is boosted and can protect against the spread of subsequent COVID-19 infections within a long-term care facility.

Two more publications using RESTART Study data are in progress and are expected to publish in 2022.



Staff helping with the RESTART Study. Credit: Sarah Ross, Health and Exercise Science

Longitudinal COVID-19 Screening Study in Senior Care Facilities

With a total of \$20.3 million from the state of Colorado, the Center developed a COVID-19 testing model in skilled nursing facilities that monitors the spread of the virus and traces where outbreaks are originating. After amassing one of the largest archives of longitudinally collected human samples of COVID-19, the Center is now working to build infrastructure to store the samples in a biobank and develop management techniques to aliquot samples for researchers across the globe to access. The biobank represents a vitally important collection of human specimens that will prove useful in understanding future pandemics and basic human health pathogenesis. As of June 2022, the Center was still collaborating with 22 skilled nursing facilities and processing about 4,000 SARS-CoV-2 specimens per week from staff and residents. This is down from numbers reported during the peak of the pandemic: approximately 5,000 samples per week from 30 facilities that were participating in the screening study.

At the close of FY22, the Center acquired space at the CSU Foothills Campus to house the Screening Study bioarchive, with help from Vice President for Research Alan Rudolph and CVMBS interim Dean Colin Clay. After months of resource-sharing between labs, including the Veterinary Diagnostic Lab and countless others, the Center is now transferring the bioarchive to a more centralized location on campus.





Cali McEntee, a Ph.D. student in Dr. Tom LaRocca's lab, works with dermal cells from an Alzheimer's patient.

Colorado Longitudinal Study

Starting in FY22, the Center became a “first engagement hub” for the collection of participant specimens in The Colorado Longitudinal Study, a biobank and health data collection effort designed to follow 1 million Coloradans over 10 years and led by researchers across the Front Range. With data on social determinants of health, lifestyle factors, and health history, researchers hope to investigate the link between genetics, metabolism, environment, and behavior to health outcomes and aging trajectories. As of Spring 2022, COLS had finalized contracts and standard operating procedures with the Center for Healthy Aging and CSU's Human Performance Clinical Research Laboratory, and had officially launched its first study site, operating out of the Center. The faculty expertise and state-of-the-art facilities at the Center were instrumental in COLS's decision to begin recruiting participants in Fort Collins, instead of elsewhere in the state.

Catalyst for Innovative Partnerships

In 2020, the Center was awarded a \$200,000 grant from the Office of the Vice President for Research's Catalyst for Innovative Partnerships program to investigate age-related cognitive decline in dogs as a model to inform cognitive decline in humans.

During year one of the CIP pilot, the team expanded to include 11 faculty members and an outstanding team of support and research personnel. As they work to establish a translational research pipeline to accelerate aging research at CSU, they met or exceeded most of their year one goals, making great progress toward identifying candidate biomarkers of age-related neurodegeneration using primary human cells and clinical companion dog populations. The team also established key methods to translate their approaches to clinical human populations in 2022.

Additional Studies Supported in 2022

The Center also supports studies conducted by its affiliate faculty members who use Center facilities or the administrative support of Center staff, including the coordination of transdisciplinary proposals, grant writing, communications promotion, assistance in study participant recruitment, pilot grant funding, and other pre- and post-award support. Below is a non-comprehensive list of a few of these studies:

AgingPLUS clinical trial

PI: Manfred Diehl, Department of Human Development and Family Studies

In 2021, the AgingPLUS clinical trial – designed to educate people about how to grow older in healthy ways – successfully completed seven waves of data collection, including a total of 47 new study participants. This was accomplished despite the continued impact of the COVID-19 pandemic, which slowed down participant recruitment. Preliminary results based on a subsample of the trial were presented in November 2021 at the Annual Scientific Meeting of the Gerontological Society of America. The symposium was organized and chaired by Dr. Diehl. The year ended with the Adult Development and Aging Project team preparing for the remaining four waves of the study that took place in Spring 2022. Official recruitment for the trial ended in May 2022.

MY-Skills Intervention for Chronic Pain

PIs: Christine Fruhauf, Department of Human Development and Family Studies, and Arlene Schmid, Department of Occupational Therapy

The MY-Skills Intervention for Chronic Pain was an eight-week study that examined how gentle movement and education impact pairs of people who both experience chronic pain. The study was completed in December 2021, with the last cohorts being conducted virtually due to COVID-19. Several papers based on MY-Skills data are in review, but not yet accepted for publication, and an R01 application was resubmitted in July 2022 based on these data.

Neural Markers of Static & Dynamic Balance Before & After Yoga in Adults with Acquired Brain Injury

PIs: Arlene Schmid and Jaclyn Stephens, Department of Occupational Therapy

A small feasibility trial of this study was completed in Fall 2021, where participants were asked to take part in research assessments before and after a free, eight-week yoga intervention. Assessments included safe, noninvasive brain imaging to investigate the potential physiological effects of yoga on brain injury. In June 2022, Stephens and Schmid received grant funding from the Boettcher Foundation's Webb-Waring Biomedical Research Awards Program to expand the study in a larger participant population.

Brain and Lifestyle Mechanisms of Healthy Cognitive Aging

PIs: Aga Burzynska, Department of Human Development and Family Studies, and Michael Thomas, Department of Psychology

Researchers on this study completed data collection of approximately 50 subjects in early Spring 2022. The team has presented findings at multiple conferences, including those held by the Society for Neuroscience, Society for the Advancement of Chicano/a and Native American Scientists, Front Range Neuroscience Group, and the International Neuropsychological Society. Manuscripts are being prepared and will be submitted for publication once data collection is completed and results of this research have been used to obtain new extramural grants focused on the physical and mental aspects of aging.



HELP US DEVELOP OUR
UNDERSTANDING OF AGING

JOIN OUR RESEARCH REGISTRY

The registry is composed of people who want to be contacted about studies on aging and age-related conditions. The information collected in the registry will be stored in a secure database, and access to your contact info will be limited to Center for Healthy Aging leaders. CSU researchers who are performing studies that align with your interests will be given your contact info and may contact you to gauge your interest in and eligibility for their study. You can then choose whether or not you would like to participate.

If you are a researcher with participants who agree to be contacted for future studies or a community member interested in participating in research:

 col.st/p9xxg

 (970) 495-2528

 CHAResearchRegistry@colostate.edu



RESEARCH

Diagnosing dementia, from dogs to people

by **Hannah Halusker**

The World Health Organization predicts that Alzheimer’s disease and other dementias will be the second-leading cause of death in the U.S. within the next decade, but efforts to treat these diseases have yet to be successful, due to funding limitations and the complexity of the human brain for targeting a one-size-fits-all cure.

By leveraging basic science and CSU’s renowned veterinary clinical trials program, researchers Julie Moreno (Environmental and Radiological Health Sciences) and Stephanie McGrath (Clinical Sciences) hope to make a difference in dementia diagnostics by looking to an underutilized model: man’s best friend.

“Dogs share the same environments, diets, and exercise habits as their humans, and they acquire the same naturally occurring diseases, meaning we can translate what we find in dogs to humans more seamlessly, unlike studies using mouse models,” McGrath said.

Currently, there is no definitive test that can catch dementia in dogs or humans before the onset of symptoms. The duo’s study aims to address this by identifying biomarkers that can predict a dog (or human’s) likelihood for developing dementia long before symptoms occur. This “basic science” will be done in Moreno’s laboratory, and in tandem, McGrath’s neurology clinical trials team will test dementia therapeutics in dogs that could also have a benefit in their human companions.

Do you want to volunteer your pup for this study? Email CSUNeuroTrials@colostate.edu for recruitment eligibility and details.



A well-designed workplace boosts the aging brain, says an international CSU study

by Grace Weintrob



Parker, S., & Fisher, G. (2022). How Well-Designed Work Makes Us Smarter. *MIT Sloan Management Review*, 63(3).

As technology shifts to automate more on-the-job processes, occupational health researchers, such as Gwen Fisher from the Department of Psychology, are studying ways to design workplaces to foster new learning, autonomy, and problem-solving in support of worker health and well-being.

A March 2022 publication from Fisher and colleague Sharon Parker of Australia's Curtin University explores this relationship between work design and cognitive skills. The study, published in *The MIT Sloan Management Review*, identifies five aspects of work design that support worker cognition.

"This research highlights ways that job design can be helpful and beneficial for workers' health and well-being. Jobs that provide workers with autonomy, feedback, learning, and less stress are desirable and beneficial," said Fisher, who brings expertise in cognitive functioning and occupational health to the study.

To identify these qualities, Fisher and Parker conducted a meta-analysis of 180 scholarly articles about work and cognition from disciplines such as neuroscience, public health, aging, experimental psychology, gerontology, and management.

Crystalized vs. fluid intelligence

Crystalized intelligence refers to knowledge that is stored and built upon over time. Fluid intelligence is more focused on the ability to pay attention, memorize, process, and reason with information. While crystalized intelligence seems to continually increase throughout life, fluid intelligence tends to decline with age. Fisher and Parker propose that a workplace can promote a longer period of healthy cognition if the workplace meets a few standards.

A recipe for success

Job autonomy refers to the amount of independence and opportunity an employee has when choosing how and when to work. When workers have greater job autonomy, they feel a greater sense of ownership over their work, which encourages them to perform at a higher level. **Feedback**

refers to the information that a worker receives about their work allowing them to reevaluate and understand which strategies are working and which are not. **Job complexity** describes how difficult or demanding a particular job is. The more complex, the more it allows an employee the opportunity to think critically and creatively. **Relational aspects** refer to social interactions that come with a specific job. When employees are supported by co-workers and bosses, it empowers them to continually learn and develop their understanding of their job. **Psychosocial job demands** deal with the emotional elements of a job. Reasonable hours, tasks, deadlines, and a clear definition of roles are

"Jobs that provide workers with autonomy, feedback, learning, and less stress are desirable and beneficial." – Gwen Fisher

just a few aspects of a workplace that contribute to workers' emotions. When these aspects are incorporated into the workplace, the study shows an increase in workers' abilities to develop their cognition and a reduction in age-related declines in cognitive health.

Prevention of cognitive decline

"An important variable in our review was to rule out the possibility that people with higher cognitive capabilities choose more demanding or autonomous jobs," Fisher said. "Rather, our evidence suggests that whether work design positively or negatively affects your cognition, it will not be noticeable until later in life."

However, some studies do show that the longer an individual has been in an active, demanding, and well-designed job, when an individual works a job for years on end, they become an expert at what they do and can provide wisdom to younger employees in the field: a positive argument for having social relationships at work.

The future of work

With pandemic effects, such as the "Great Resignation" and the national commentary on the future of work, finding a well-designed job might be easier now than it ever has been. As a follow-up, the researchers are considering developing a workplace intervention study that tests the findings gathered in this latest review. "We would enjoy being able to conduct a work design intervention in which jobs are modified to increase autonomy, feedback, and learning and then observe how workers' cognition changes in relation to those changes in job design," Fisher said. "The world's population is slowly aging, so understanding the multitude of ways that the aging process can be more graceful is of importance in research," she added.

Mind over age: How CSU studies of aging stereotypes are shifting the narrative

By Grace Weintrob

If a knee starts aching at age 20, something's wrong. Going to the doctor is not out of the question; it's the norm. If a knee starts aching at age 60, it's natural – just another symptom of aging. Going to the doctor seems trivial, because aches and pains are known to accumulate in older age. Christina Jacobson, a junior at Colorado State University, is terrified of the aging process.

"I feel like an old woman, except I'm not, but I feel like it. I'm not a child anymore; I have real stuff to do," Jacobson said.

Younger adults' narrow definition of aging limits understanding and acceptance of the aging process. By widening conception of what aging can and should be, more positive outlooks on the aging process can be implemented on a societal and personal level.

Self-perceptions of aging

Views on aging provide a critical look into how one's mindset can manifest in the physical world. Scientists studying self-perceptions of aging observe the way that an individual views age-related changes in the body to uncover the link between a cheerful outlook and a more graceful aging trajectory.

Allyson Brothers, an assistant professor in the Department of Human Development and Family Studies, is one of those scientists who has been studying aging for more than eight years now.

"If you start looking at media messages and advertising, you see words like 'anti-aging cream' or 'defy aging,'" Brothers said.

These messages embody the idea that aging is something to avoid or overcome.

Aging myths

Professor Manfred Diehl, also from the Department of Human Development and Family Studies, outlined and debunked common misconceptions that the public holds about aging in a 2020 publication in the *American Psychologist*.

While it is easy to think that growing old is full of loss and decline, that's not all there is. Diehl notes that intellectual and emotional regulation continually develop from age 20 to age 70, meaning that growth does not suddenly stop at a certain age.

Another misconception is that adults have zero control over the aging process; though, it turns out that 30 minutes of exercise, five days a week can do wonders for health and longevity.

The last misconception described in Diehl's study is that age-related losses are irreversible. While portions of that are true, recent studies have shown that having a positive self-perception of aging allows individuals to recover more easily from injuries than those with negative SPAs.

Link to health conditions

"What it seems like is that if we think more negatively about aging in general, we probably will think more negatively about our own aging," Brothers said. "Age stereotypes are present as early as age 3, so it's throughout our whole life, and at some point, they start to become self-relevant."

When these stereotypes become self-relevant is when SPAs start to emerge. A generally negative view of older adults increases the likelihood of a negative SPA, which can be "correlated with and predictive of so many other health outcomes," Brothers added.

Brothers's and Diehl's research suggests that negative SPAs lead to poor health conditions in individuals with cancer, an increased risk of diabetes, and generally higher mortality rates.

Another one of Diehl's studies followed adults aged 40-85 in Germany for a period of 21 years. The study aimed to examine views on aging, SPAs, and aging stereotypes to understand the role that mindset plays in the physical and mental processes of aging.

Diehl found that around age 65, individuals started to display negative SPAs, likely because age 65 is when accumulating age-related changes become more noticeable. Changing the narrative around aging is the first step in creating positive SPAs. The lack of positive stories, celebrities, shows, and even birthday cards underrepresent older adults, leaving strong, positive perception of older adults out of the public's mind.

Understanding public and personal views on aging is increasingly important as older adults are growing to be the largest segment of the population.

Changing the narrative

The world population is steadily increasing, and older adults are the largest growing sector of that population. A 2015 U.S. Census report predicts that

adults aged 65 and older will make up 17% of the global population by 2050, making aging research of increased importance.

Changing the narrative around aging and the stereotypes it includes will help individuals create more positive SPAs, thus increasing their longevity. Putting mind over matter, in terms of aging, might seem exaggerated, but CSU studies suggest it's a life extension.

"This isn't just one finding that has been found one time. This is replicated psychological research that's happened across different labs, different universities, different countries, and different methodologies and statistical approaches – and the same story seems to be emerging after 20, 30 years of research," Brothers said.

"... if we think more negatively about aging in general, we probably will think more negatively about our own aging." – Allyson Brothers

FINANCIAL REPORT

FY21-FY22 Summary of Proposed and Awarded Funding for Aging-Related Research

PROPOSALS
SUBMITTED

60

PROPOSAL FUNDING
REQUESTED

\$50.2M

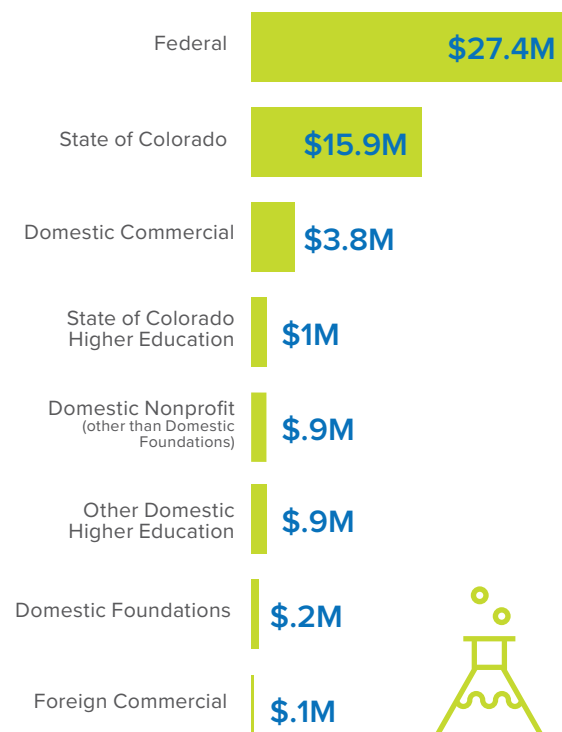
\$24

MILLION

TOTAL ACTIVE
AWARDS

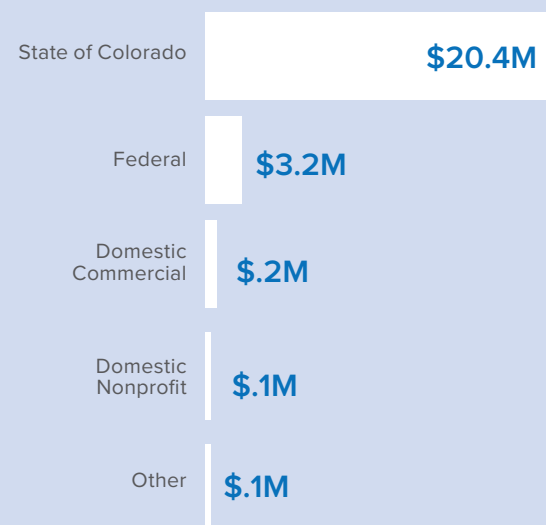
Aging-Related Research Proposals Totals By Sponsor Type

\$50.2M



Total Active Awarded in FY21-FY22 by Sponsor

\$24M



Total Operating
Expenses FY22

\$290,200

Total Projected
Expenses FY23

\$854,435

Total Projected
Expenses FY24

\$745,325

External Funding

\$165,000

10/1/21 TO 8/31/22

Creative Bio-peptides (PI Bamburg, Co-PI Tahtamouni and Kuhn)

Optimization of a Chemokine Receptor Antagonist Peptide as a Synapse Protecting Treatment for Neurodegeneration in Alzheimer's Disease.

\$403,440

9/30/21 TO 5/31/22

HHS-NIH-National Institutes of Health

(PI Burzynska)

New approach to studying white matter aging: symmetric multimodal fusion of MRI techniques targeting different biophysical properties of white matter.

\$20,381,370

5/11/20 TO 5/31/22

Colorado Department of Public Health and Environment

(PI Ehrhart: Co-PI Daniels, Ebel, and Pablonia)

COVID-19: CHSCHA: COVID-19 surveillance testing in Colorado skilled nursing and senior group living facilities.

\$15,200

8/1/21 TO 7/31/22

University of California, San Diego

(PI Thomas)

UCSD Successful Aging Evaluation Study.

\$40,000

1/1/22 TO 12/31/22

Consolidated Anti-Aging Foundation

(PI Tialkens)

Nuclear Receptor NR4A2 as a Therapeutic Target for Parkinson's Disease.

\$28,437

2/15/21 TO 1/31/26

University of Colorado

(PI Tracy)

Cannabis Use Among Older Adults: Potential Risks and Benefits to an Aging Population.

\$61,719

8/1/20 TO 7/31/21

Community Care Corps

(PI Davalos; Co-PI Lotstein)

Carrying the Caregiver Knowledge On! A Novel Caregiver Mentor/ Mentee Program.

\$7,944

1/21/21 TO 4/30/22

Larimer County

(PI Ehrhart)

CHSCHA: Senior Access Points of Larimer County: Program Planning, Capacity-Building Support, and Outreach.

\$251,694

1/1/21 TO 12/31/25

HHS-NIH-National Institutes of Health

(PI Lodha)

Investigating cognitive-motor variability to predict driving performance in stroke survivors with MCI.

\$1,520,000

8/10/17 TO 7/31/23

HHS-NIH-NIAID-Allergy and Infectious Disease

(PI Henao Tamayo)

Vaccine Induced Memory Immunity in Tuberculosis.

\$765,123

7/15/19 TO 4/30/22

HHS-NIH-National Institutes of Health

(PI LaRocca)

Inclusive Transcriptomics to Uncover Molecular Mechanisms Underlying Healthspan.

\$138,214

6/1/21 TO 5/31/23

HHS-NIH-National Institutes of Health

(PI Tsunoda)

Kv4 Channels as a Target of Aging and Beta-Amyloid.

\$152,000

8/15/21 TO 6/30/23

HHS-NIH-National Institutes of Health

(PI Kim)

Recovery of Synaptic Dysfunction and Memory Loss in Alzheimer's Disease by Selective Co-Activation of Nicotinic Acetylcholine Receptors.

\$42,694

9/22/20 TO 9/30/21

Larimer County Department of Human Services

(PI Davalos; Co-PI Ehrhart)

COVID-19: CHSCHA Interdisciplinary Outreach for Older Adults Affected by COVID-19.

\$23,972,835

TOTAL EXTERNAL AWARDS

Internal Funding

\$200,000

12/1/20 TO 5/31/23

CSU VPR Catalyst for Innovative Partnerships Program

(PI Hamilton; Co-PI Ehrhart, Davalos, McGrath, Moreno, LaRocca, Mathiason, Popichak, and Lark)

CIP: Translational Aging Research.

Donations

\$10,000

Anonymous Donor Gift 10/2021

Faculty Recruitment Effort

In Fall 2021, the Center hosted its first faculty recruitment effort, welcoming 28 new affiliate faculty with representatives from three new colleges and six different departments. The Center now has a total of 83 affiliate faculty across seven of CSU's eight colleges and in 22 different departments. New faculty's research interests fall into one of four categories: comparative aging; cognitive, social, and behavioral aging; age-friendly engineering, design, and rehabilitation; or biology and physiology of aging.

NEW FACULTY RECRUITS

College of Business

Adela Chen | **Computer Information Systems**

Understanding the use of information communication technologies among individuals, including older adults, with emphasis on the impact of technology use in work and non-work domains.

Harry Turtle | **Finance and Real Estate**

Financial decisions of households represented in the Health and Retirement Study and the RAND American Life Panel.

Tianyang Wang | **Finance and Real Estate**

Household financial planning strategies for managing longevity risk; behavior finance.

Walter Scott, Jr. College of Engineering

Tony Maciejewski | **Electrical and Computer Engineering**

Rehabilitation robotics to aid recovery from injuries; social robotics for cognitive or emotional support.

Kirk McGilvray | **Mechanical Engineering**

Deterioration and/or trauma to the skeletal system and soft tissues; development of advanced materials, techniques, and devices to monitor and aid in the treatment of these conditions.



College of Health and Human Sciences

Maria Delgado | **Design and Merchandising**

Aging in place; housing design.

Stephen Aichele | **Human Development and Family Studies**

Cognitive epidemiology; advanced longitudinal modeling and machine learning approaches to risk analysis (for cognitive decline, depression, mortality) in middle-aged and older adults; cognitive testing for early diagnosis.

James Graham | **Occupational Therapy**

Rehabilitation health services.

Jen Currin-McCulloch | **Social Work**

Psychosocial adaptations to serious illness and how people cope at end-of-life; caregiver experiences.

College of Natural Sciences

Lubna Tahtamouni | **Biochemistry and Molecular Biology**

Pathogenesis of cofilin-actin rods in neurodegenerative diseases; actin dynamics during migration of breast cancer cells.

College of Liberal Arts

Meara Faw | **Communication Studies**

Positive communication and intervention strategies for caregivers; community-based experiences to promote healthy aging in people with cognitive impairments and their caregivers.

Lisa Morgan | **Dance**

Movement/dance and Parkinson's disease.

Ray Miller | **Economics**

Economics of caregiving, population aging, the inequality of health and economic well-being among older populations; health policy.

Lindsey Wilhelm | **Music Therapy**

Music therapy for care partners and aging adults with neurologic conditions.

Warner College of Natural Resources

Lise Aubry | **Fish, Wildlife, and Conservation Biology**

Life history trade-offs and senescence in vertebrates.

College of Veterinary Medicine and Biomedical Sciences

Brian Scansen | **Clinical Sciences**

Partner site for the Dog Aging Project; cardiovascular health in animals.

Kelly Hall | **Clinical Sciences**

Naturally occurring trauma in dogs as a model to identify markers of injury; therapeutic interventions to improve outcomes in geriatric trauma patients.

Laurie Goodrich | **Clinical Sciences**

Regenerative medicine; effects of age on various biologic therapies.

David Rojas-Rueda | **Environmental and Radiological Health Sciences**

Environmental health; climate change; urban and transport planning; epidemiology; public health; community-based participatory research; environmental justice; health equity.

Elizabeth Ryan | **Environmental and Radiological Health Sciences**

Food access, affordability, and availability; brain fog, forgetfulness, and cognitive function concerns in long-COVID-19 and cancer patients.

Alan Schenkel | **Microbiology, Immunology, and Pathology**

Pulmonary fibrosis and non-tuberculosis mycobacterial infections.

Diane Ordway | **Microbiology, Immunology, and Pathology**

Regenerative medicine; effects of age on various biologic therapies.

Gregory Ebel | **Microbiology, Immunology, and Pathology**

Virus infection; nursing home surveillance; arboviruses; differential pathology/mortality in older adults.

Jeffery Wilusz | **Microbiology, Immunology, and Pathology**

RNA biology; influence of aging on the cell.

Katriana Popichak | **Microbiology, Immunology, and Pathology**

Neurodegenerative disease and neuroimmunology.

Marcela Henao-Tamayo | **Microbiology, Immunology, and Pathology**

Immune responses to vaccines and infectious diseases; how these responses vary with age and in relation to degenerative disorders and co-morbidities; maternal-fetal immune transfer.

Tawfik Aboellail | **Microbiology, Immunology, and Pathology**

Neurodegenerative diseases: dementia, Alzheimer's, and Parkinson's.

Thomas Kuhn | **Microbiology, Immunology, and Pathology**

Cellular and molecular mechanisms underlying the decline of neuronal integrity and connectivity in aging individuals; natural-product drug development.

FACULTY: 2017 Recruitment

Walter Scott, Jr. College of Engineering

Jianguo Zhao | **Mechanical Engineering**
Design and control of robotics devices.

Stu Tobet | **School of Biomedical Engineering**
Structures in the brain that control neuroendocrine functions; microbiome and aging.

Zhijie Wang | **Mechanical Engineering**
Cardiovascular biomechanics at different scales (single segment of artery to whole organs, including the heart and lungs).

College of Health and Human Sciences

Allyson Brothers | **Human Development and Family Studies**
Promotion of healthy aging throughout the life span; attitudes toward aging and awareness of age-related change; the influence of attitudes toward aging on health, well-being, and health behaviors; rural aging experiences.

Laura Malinin | **Design and Merchandising**
Age-related cognitive decline and enriched environments.

Chris Gentile | **Food Science and Human Nutrition**
Novel treatments to preserve endothelial function in aging.

Sarah Johnson | **Food Science and Human Nutrition**
Functional foods, cardiovascular disease, and postmenopausal women.

Tom LaRocca | **Health and Exercise Science**
Biological mechanisms of aging; interventions for increasing healthspan.

Chris Bell | **Health and Exercise Science**
Diabetes; control of blood glucose in aging.

Barry Braun | **Health and Exercise Science**
Effects of physical activity and pharmacology on prevention and management of Type 2 diabetes.

Frank Dinunno | **Health and Exercise Science**
Regulation of blood flow and how the basic control mechanisms become impaired with aging and disease.

Brett Fling | **Health and Exercise Science**
Neuromechanics, brain imaging, gait, and balance in multiple sclerosis, Parkinson's, aging.

Karyn Hamilton | **Health and Exercise Science**
Integrative, comparative, and translational approaches to increasing human healthspan.

Dan Lark | **Health and Exercise Science**
The contribution of secreted extracellular vesicles (i.e., exosomes) to age-related metabolic disease.

Heather Leach | **Health and Exercise Science**
Physical activity interventions to minimize recurrence and optimize physical health and well-being in cancer survivors.

Neha Lodha | **Health and Exercise Science**
Neurophysiology and motor skill rehabilitation in stroke and TIA.

Brian Tracy | **Health and Exercise Science**
Examining the mechanisms that explain neuromuscular decline with aging and the physical functional consequences of the changes.

Allison Bielak | **Human Development and Family Studies**
Normal and pathological cognitive changes in adulthood; influence of lifestyle factors on cognitive aging; intraindividual variability in cognitive speed and how it relates to cognitive ability, health, and possible dementia prediction.

Aga Burzynska | **Human Development and Family Studies**
Interconnections between brain structure and function, cognitive functioning, and physical health in older age.

Manfred Diehl | **Human Development and Family Studies**
Awareness of age-related change and its role in successful aging; personality development in adulthood and its contribution to successful aging; experience and regulation of emotion in adulthood.

Christine Fruhauf | **Human Development and Family Studies**
Grandparent and grandchild relationships; grandparents raising grandchildren; GLBT grandparenting.

Gloria Luong | **Human Development and Family Studies**
Socioemotional dynamics and emotion regulation across the life span; emotional and physiological stress reactivity and recovery; developmental links between social relationships, emotions, health, and well-being.

Karen Atler | **Occupational Therapy**
Satisfaction and meaningfulness of time use and everyday activity.

Anita Bundy | **Occupational Therapy**
Fitness to drive; everyday time use.

Aaron Eakman | **Occupational Therapy**
Meaningfulness of everyday activity; behavioral (i.e., non-pharmacological) interventions to promote sleep.

Matt Malcolm | **Occupational Therapy**
Self-management of chronic conditions, especially diabetes, in primary care settings. Management of big data sets, especially related to responsiveness to therapeutic interventions.

Mackenzi Pergolotti | **Occupational Therapy**
Occupational therapy interventions for older adults with cancer; policy and management of large data sets, especially related to uptake of therapeutic interventions; disparities in access to health care.

Arlene Schmid | **Occupational Therapy**
Complementary and integrative therapies such as yoga for fall prevention in older adults and people with stroke or other neuro conditions; self-management of chronic conditions.

Wendy Wood | **Occupational Therapy**
Long-term residential care for dementia; animal-assisted interventions for older adults.

Eunhee Choi | **Social Work**
Aging, health, and policy, particularly for older workers and volunteers; research methodology and program evaluation.

College of Natural Sciences

Eric Ross | **Biochemistry and Molecular Biology**
Yeast prions as a model for amyloid diseases, including Alzheimer's disease, Parkinson's disease, and transmissible spongiform encephalopathies.

Michael Thomas | **Psychology**
Schizophrenia, aging, and dementia; development of tests to improve the collection and interpretation of cognitive and brain imaging data.

Tingting Yao | **Biochemistry and Molecular Biology**
Regulatory mechanisms in DNA repair and gene expression; ubiquitin signaling in macroautophagy.

Shrideep Pallickara | **Computer Science**
Cloud computing, distributed systems, content distribution networks, streaming systems.

Deana Davalos | **Psychology**
Understanding the development of time-processing abilities over the life span, including older adults, with emphasis on processing time accurately.

Ed DeLosh | **Psychology**
Aging and memory, including effects of physical fitness on age-related declines in memory.

Gwen Fisher | **Psychology**
Health and well-being among older workers; retirement, work ability, and prolonged working life; work/non-work interface, including work/non-work conflict, enhancement, and work/life balance.

Matt Rhodes | **Psychology**
Understanding individual differences in memory, including the impact of healthy aging on memory function.

Silvia Sara Canetto | **Psychology**
Cultural scripts of suicide and hastened death; the paradox of U.S. older-adult white men's suicide vulnerability; stereotypes of gender, sexual orientation, and aging.

College of Veterinary Medicine and Biomedical Sciences

Susan Bailey | **Biomedical Sciences**

Role of chromosomes and telomeres in cancer and other human disease states, tumorigenesis, and aging.

Adam Chicco | **Biomedical Sciences**

Various aspects of heart health and disease from the molecular to systemic levels and relation to aging.

Frederic Hoerndli | **Biomedical Sciences**

C. elegans genetics and in vivo microscopy to study synaptic aging and neurodegeneration.

Seonil Kim | **Biomedical Sciences**

Neurobiological mechanisms in aging and Alzheimer's disease.

Mike Tamkun | **Biomedical Sciences**

Neuronal response to stroke/ischemia; cell biology of traumatic brain injury.

Susan Tsunoda | **Biomedical Sciences**

Drosophila genetics to study neurodegenerative disease; aging and Alzheimer's disease.

Ron Tjalkens | **Environmental and Radiological Health Sciences**

Neuroinflammatory mechanisms in neurodegenerative disorders, particularly disorders of the basal ganglia such as manganism and Parkinson's disease.

Edward Hoover | **Microbiology, Immunology, and Pathology**

Prion biology.

Candace Mathiason | **Microbiology, Immunology, and Pathology**

Prion pathobiology, pathogenesis, trafficking, and transmission dynamics with emphasis on blood-borne prions and asymptomatic disease stage.

Julie Moreno | **Microbiology, Immunology, and Pathology**

Cellular stress mechanisms in protein misfolding neurodegenerative diseases, and aging.

Kelly Santangelo | **Microbiology, Immunology, and Pathology**

Osteoarthritis, aging, and obesity; translational analyses that combine therapeutic interventions with molecular mechanisms, advanced imaging, and assessments of mobility.

Glenn Telling | **Microbiology, Immunology, and Pathology**

Mechanisms of prion replication, prion species barriers and strain diversity, and the molecular basis of inherited human prion diseases.

Mark Zabel | **Microbiology, Immunology, and Pathology**

Early lymphoid system distribution of prions; employs vector systems expressing prion-targeted interfering RNA molecules as therapeutic strategies for prion infections.

Felix Duerr | **Clinical Sciences**

Small-animal musculoskeletal problems, including arthritis, sports injury treatment, and prevention; canine-to-human translational applications.

Stephanie McGrath | **Clinical Sciences**

Seizure and spinal cord disorders, inflammatory brain diseases; canine-to-human translational applications.

Nicole Ehrhart | **Clinical Sciences**

Translational aging, limb preservation, tissue engineering, and sarcoma research; bone and muscle regenerative medicine; canine-to-human translational applications.

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M.J., Spickler, C., Xie, X., Zou, J., Shi, P., Dutt, T., Henao-Tamayo, M., Ragan, I., Bowen, R.A., Johnson, R., Nuti, S., Luisi, K., Ulmer, J.B., Steff, A., Jalah, R., Bertholet, S., Stokes, A.H., Yu, D. (2022). Molecular Therapy. <https://doi.org/10.1016/j.ymthe.2022.01.001>

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