



TRANSFORMING AGING

UPMC | SENIOR SERVICES

 University of
Pittsburgh

Aging Institute 2019
Annual Report

A close-up photograph of a person with a beard wearing a white lab coat and blue gloves, with their hand near their face. The image is softly focused, emphasizing the texture of the lab coat and the color of the gloves. The person's face is partially visible on the right side of the frame.

Aging Institute 2019 Annual Report
UPMC Senior Services & the University of Pittsburgh



“Of molecules, mice, and men.”

This report chronicles the continued progress of the Aging Institute of UPMC Senior Services and the University of Pittsburgh as it adds a new dimension to its well-established excellence in geriatric care: a revolutionary scientific investigation of the very fundamentals of aging. Its quest is to literally transform the aging process.

This interdependent circle of molecules, mice, and men holds the promise of discovery, testing, and life-changing applications that may help to conquer age-related diseases and enhance the very quality of life itself.

TABLE OF CONTENTS

6



Aging Institute Initiatives

10



The Biology of Aging Research

16



Innovations in Research

22



Educational Initiatives in Aging Services

30



Connecting to
the Community

38



Celebrating
Senior
Champions

40



Centers of
Excellence

50



Administrative
Staff &
Leadership



Dear Colleagues and Friends

As a society, we often speak of the promise and potential of youth — but the same holds true at the opposite end of the spectrum, as I can attest in our daily work at the Aging Institute of UPMC Senior Services and the University of Pittsburgh.

Whatever your life's pursuit, aging is the essential, ultimate destination of the human lifespan. It remains a process we are far from understanding, and one from which scientists, educators, and clinicians have so much to learn. The more I study aging, the more I appreciate its implications and meaning for us as individuals, as a society — and as a species.

Through my research work in the biology of aging, I am constantly energized by the rapid changes that are happening worldwide on the aging landscape. We are on the verge of seismic shifts in how we view aging and, in particular, **our ability to intervene in the process** to promote and extend healthier lives. Here in Pittsburgh at the Aging Institute, we hope to be a leader among our many colleagues who share our early interest in this revolutionary work.

Simultaneously, we remain deeply committed to continuing the vital initiatives in education, training, and service that are hallmarks of the Aging Institute. Its many programs and collaborations are valued for fostering best practices, developing innovative care models, and responding to our region's great need for leadership in geriatric care.

Many years ago, I recall hearing stories about President Dwight Eisenhower's first heart attack in 1955. The heavy smoker was advised to spend six weeks in bed: that was "best practice" therapy at the time. By the time I was a

medical student, that passive plan of care had already started changing. Thrombolytics came into use when I was a cardiology intern, followed by increasingly greater interventions. The field of cardiology moved from an observational field to an interventional one.

Today, **geriatrics is at a similar point of inflection**. It is no longer necessary for us to merely watch people as they age — we can make rational and meaningful interventions in the aging process. That is precisely what we are doing in our research at the Aging Institute Laboratory as we try to influence the rate and process of aging in the hope of extending health span, eliminating age-related disease, and improving the quality of life. Our emphasis is on leveraging basic science for direct translation and clinical application as soon as possible. In short, we want to move beyond the theoretical to develop effective new medicines for human use.

As you'll read in later pages of this report, over the last year, we've made great progress on our ambitious and accelerated plans to identify biochemical pathways that directly target the aging process, develop new drugs that will enhance our resilience to aging, and apply that knowledge through clinical interventions. In particular:

- We have filed five patents on different compounds and formed a company to commercialize two of them.
- We have two promising drugs now in development, designed to stimulate a process known as autophagy — the system by which your body clears away damaged proteins. Our goal is to begin human testing by the end of 2020.

These are remarkable milestones to achieve in just two years. Credit for many of our early successes is due in large measure to funding from both **UPMC Enterprises** and **The Beckwith Institute**, which is funding the RIGHT (**R**educing **I**nflammations for **G**reater **H**ealth **T**rial) study, our cornerstone clinical trial. We are greatly indebted to both for their confidence and generous support. Additionally, our researchers continue to attract funding from the National Institutes of Health (NIH), providing valuable and credible external validation of our work.

I am especially fortunate to be surrounded by colleagues who bring vision, energy, and passion to this work: **Anne Newman, MD, MPH**, the Institute's clinical director; **Daniel Forman, MD**, director of emerging therapeutics; and our lead team of investigators who made the leap of faith with me to begin this project, and assured its early momentum.

Our work also reflects the confidence of many other individuals, offices, and organizations that have embraced our mission of discovery. I offer particular thanks to the following people for their guidance, input, and investment this past year:

Steven D. Shapiro, MD, executive vice president, UPMC; **Timothy Billiar, MD**, associate medical director, UPMC International and Commercial Services Division; **Jeanne Cunicelli**, executive vice president, UPMC Enterprises; **Matthias Kleinz, DVM, PhD**, senior director, UPMC Immune Transplant and Therapy Center; **Mark T. Gladwin, MD**, director of the Pittsburgh Heart, Lung, and Blood Vascular Medicine Institute, University of Pittsburgh; **Christopher P. O'Donnell, PhD**, executive vice chair of academic affairs, Department of Medicine, University of Pittsburgh; **Deborah Brodine**, president, UPMC Western Psychiatric Hospital & president, UPMC Senior Services; **Jeffrey A. Romoff**, president and chief executive officer of UPMC; **Arthur S. Levine, MD**, senior vice chancellor for the health sciences and dean of the School of Medicine, University of Pittsburgh; **Bruce R. Pitt, PhD**, chair of the Department of Environmental and Occupational Health, University of Pittsburgh; **Diane P. Holder**, executive vice president, UPMC, president, UPMC Insurance Services Division, and president and chief executive officer, UPMC Health Plan; the

deans of the University's Schools of the Health Sciences: **Bernard J. Costello, MD, DMD**, School of Dental Medicine; **Anthony Delitto, PhD, PT, FAPTA**, School of Health and Rehabilitation Sciences; **Donald Burke, MD**, Graduate School of Public Health; **Jacqueline Dunbar-Jacob, PhD, RN, FAAN**; School of Nursing; and **Patricia Kroboth, PhD**, School of Pharmacy. My thanks as well to **Elizabeth M.Z. Farmer, PhD**, dean of the School of Social Work, and **Ann E. Cudd, PhD**, provost and senior vice chancellor, University of Pittsburgh.

With the support of many, we look forward to even greater accomplishments in the coming year, with plans to expand our research portfolio with additional faculty recruits and the continued growth of external funding. In tandem with this growth, the clinical care, educational and outreach programs of the Institute will move under the heading of UPMC Senior Services where they will continue to expand their reach and provide key aging-related supports and services to a wide lay and professional audience.

There's never been a more exciting time to be part of the Aging Institute.

Sincerely,



Toren Finkel, MD, PhD
Director, Aging Institute of UPMC Senior Services and the University of Pittsburgh
Professor of Medicine, Division of Cardiology, School of Medicine, University of Pittsburgh
G. Nicholas Beckwith III and Dorothy B. Beckwith Inaugural Chair in Translational Medicine, University of Pittsburgh



Collaboration is the bedrock of all Aging Institute initiatives. By bringing together gifted researchers, scientists, and administrators from the University of Pittsburgh and UPMC — and beyond — we have tapped into a wealth of knowledge and are generating exciting and innovative solutions. In 2019, our multi-year **Healthy Brain Aging Initiative** continued this collaborative and creative approach, yielding new scientific findings on brain health in older adults.



A group of people are bowling in a bowling alley. In the foreground, a woman with short grey hair, wearing a purple and white plaid shirt and white pants, is smiling and holding a large orange bowling ball. Behind her, several other people, including a woman in a light blue shirt and a man in a pink shirt, are watching. In the background, there is a bowling lane, a bar area with a television, and a rack of bowling balls. The scene is brightly lit and appears to be a social gathering.

Aging Institute Initiatives

Exercise is Good for the Brain

Using an approachable exercise regimen can improve brain health

A six-year pilot study with older adults by the **Healthy Brain Aging Initiative** has yielded intriguing findings that show that exercise — even less intense, but mindful, exercise — is good for aging brains. The results are so promising that the initiative feels it has the initial evidence it needs to continue its research and pursue external funding support in 2020.



“We think our colleagues in the scientific world will share our excitement about these findings,” says **Judy L. Cameron, PhD**, initiative chair, and

professor of psychiatry and director of the Pitt Science Outreach program at the University of Pittsburgh. “Our goal now is to do a much larger study to determine how useful an approachable — or less intense — exercise regimen can be in improving brain health in older adults.”

Initiative Milestones

- In 2013, the initiative led by **John M. Jakicic, PhD**, chair of the Department of Health and Physical Activity at the University of Pittsburgh, began looking into the health benefits of regular exercise on brain health. Their reasoning: if exercise can be better integrated into a person’s everyday life, they’d be more likely to add it to their daily routine. “We looked at animal models and saw that active monkeys don’t just exercise once a day — they exercise all day long. They’re not running a marathon, but they aren’t sedentary,” says Dr. Cameron.
- In 2015, 25 older adults aged 65–85 were recruited for a human study. The **test group** did 10 minutes of moderate exercise three times a day, five days a week. The **control group** only

did stretching exercises three times a day. Remarkably, both groups experienced improved — but different — cognitive performance during the six-month study. While the exercise group got better at executive function tasks, the stretching group got better at learning and memory. “The stretching outcomes were completely unexpected,” says Dr. Cameron. “We think it was due to mindful stretching; people were asked to actively think about stretching multiple times a day, and it may have helped memory.”

The persistent participation of the subjects in completing the exercise program was especially noteworthy for a pilot like this, notes Dr. Cameron. Only one person did not complete the full study. “The study created an unexpected, but noticeable, level of social engagement that led participants to feel they were contributing to something important through their involvement.”

- After seeing cognitive improvements in both groups, the initiative turned to team members

Abbe de Vallejo, PhD, an immunologist at UPMC Children’s Hospital, and **Panagiotis (Takis) Benos, PhD**, professor of computational and systems biology, in 2018 to look for possible biomarkers of the changes. Using blood samples taken from participants before and after the study, they identified 88 proteins in the blood that could be expected to show aging-related changes.

In 2019, **Vineet Raghv**, a doctoral student working with Dr. Benos, performed a **proteomic analysis**, looking at proteins in the blood to identify changes that correlated to the changes in cognitive function. His analysis identified proteins belonging to molecular pathways whose abundance was significantly different between the exercise and stretching groups. He then conducted a **graphical model analysis** to identify proteins directly linked to exercise or stretching and changes in cognitive function. He found a biomarker associated with changes in memory plus several biomarkers linked to changes in

executive function — including a surprising link between lower levels in vascularity and improved executive function.

“These are exciting findings to come out of the Healthy Brain Aging Initiative pilot study,” says Dr. Cameron.

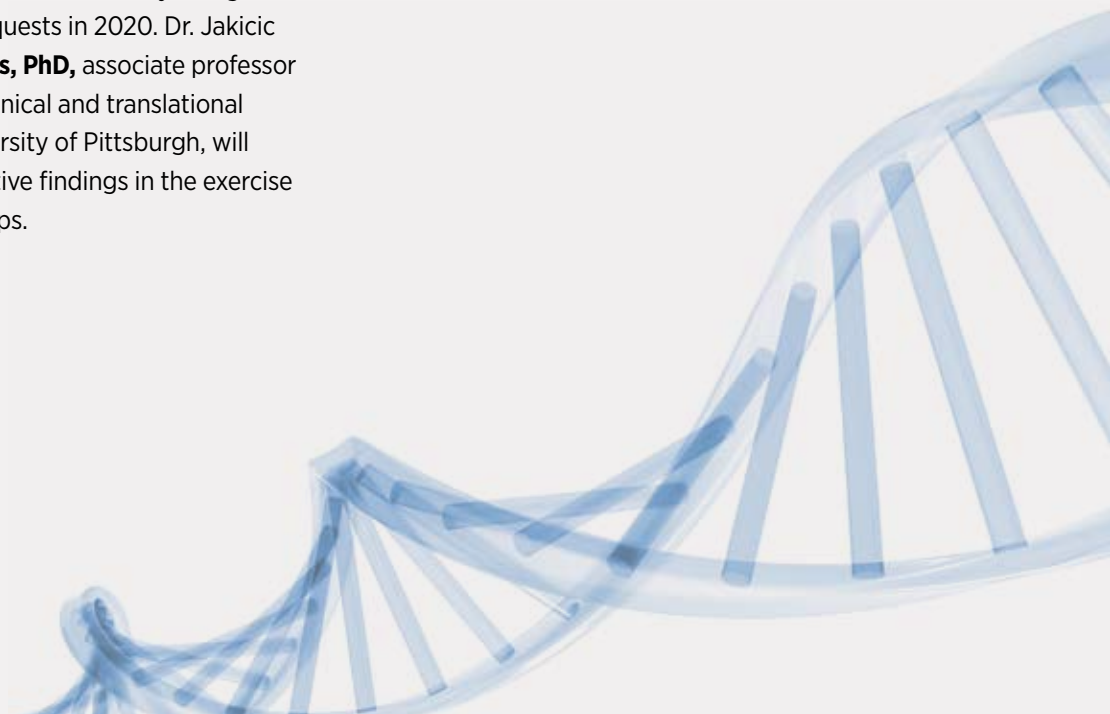
Next Steps

In June 2018, the first paper to come out of the group’s research — “Association of Hippocampal Substructure Resting-State Functional Connectivity With Memory Performance in Older Adults” — was published in the *American Journal of Geriatric Psychiatry*. **Stephen Smagula, PhD**, assistant professor of psychiatry at the University of Pittsburgh, served as lead author.

Two additional papers are currently being written to support grant requests in 2020. Dr. Jakicic and **Meryl A. Butters, PhD**, associate professor of psychiatry and clinical and translational science at the University of Pittsburgh, will report on the cognitive findings in the exercise and stretching groups.

The next paper, which will come directly out of their investigation, will report on the identification of biomarkers that appear to be linked to specific cognitive functions. “The real question is whether there is something that can be easily measured and tracked without being invasive that can tell people if they are exercising enough to help their brain function,” says Dr. Cameron.

Over the next year, the initiative plans to continue working to identify biomarker pathways. New grants will be used to conduct a larger study involving a control group that is sedentary in addition to the exercise and stretching groups.



A laboratory setting with a microscope, test tubes, and a person wearing blue gloves holding a clipboard. The background is bright and slightly blurred, showing various lab equipment and a window. The text "The Biology of Aging Research" is overlaid in the center in a large, bold, black font.

The Biology of Aging Research



There's a palpable, unmistakable energy when you walk the halls of Bridgeside Point 1, home to the Aging Institute Laboratory.

Just two years ago, the expansive two-story, 30,000-square-foot space was vacant. Now, it is filled with high-tech, state-of-the-art laboratories and offices, sunlit by floor-to-ceiling windows that offer spectacular glimpses of the Pittsburgh skyline.

But the view matters little. It's the underlying sense of shared purpose and discovery that drives the research and physician scientists who work there. They are united by their exploration of why and how we age — with the ultimate goal of transforming the lives of everyone as we age.



The Aging Institute Laboratory's Research Agenda

- Explore the metabolism and biology of aging, using sophisticated molecular techniques.
- Identify novel small molecules — drugs — to combat the aging process.
- Test new therapies in actual human patients that will leverage its discoveries in the biology of aging.

A Revolutionary New Look at Aging

The Aging Institute at Bridgeside Point brings together established world-class scientists and gifted early-career researchers who are working to uncover the basic mechanisms underlying human aging and develop novel therapeutic strategies to slow or reverse the aging process. As the research arm of the Aging Institute, the Laboratory is focused on:

- Basic science
- Drug development
- Clinical interventions

Bridgeside Point's labs include the recent addition of an impressive, multimillion-dollar, on-site **high-throughput drug discovery facility** that enables experimental samples to be simultaneously tested at unfathomable speeds. Institute researchers can daily screen and compare roughly 25,000–30,000 compounds a day.

“We have made remarkable progress in our second year of operation,” notes **Toren Finkel, MD, PhD**, director of the Aging Institute. “The productivity of our core faculty has resulted in funding for numerous basic research projects from sources like the National Institutes of Health. Their research also has provided the critical momentum needed to launch our major clinical research projects.”

Faculty Additions

Ten inaugural faculty were recruited in 2018, with another three faculty joining their ranks in 2019:

Stacey J. Sukoff Rizzo, PhD

The Jackson Laboratory in Maine

An expert in behavioral phenotyping of mouse models of disease, Dr. Rizzo's research interests include neurodegenerative conditions of aging, including Alzheimer's, Parkinson's, and Huntington's diseases.

Matt Steinhauser, MD

Harvard's Brigham and Women's Hospital

Dr. Steinhauser's research interests include the study of metabolism and adipocyte biology, including the characterization of what happens when people go long periods without eating and the resulting metabolic changes that occur in the body.

Andrey A. Parkhitko, PhD

Fellow in Genetics, Harvard Medical School

Dr. Parkhitko's research focuses on the fruit fly (*Drosophila*) as a model to study aging and age-related disease, including metabolic alterations and their potential retargeting during aging.

Faculty Publications

Over the last two years, the work and collaborations of the faculty of the Aging Institute have been published in 24 peer-reviewed journals, professional publications, and mainstream press, including:

- Aging Cell
- American Journal of Respiratory & Critical Care Medicine
- Cardiovascular Research
- Cell Death Discovery
- Diabetes
- European Respiratory Journal
- Expert Review of Cardiovascular Therapy
- FASEB Journal (Federation of American Societies for Experimental Biology)
- Free Radical Biology and Medicine
- JAMA Internal Medicine
- JCI Insight
- Journal of the American College of Cardiology
- Journal of Clinical Investigation
- Journal of Molecular & Cellular Cardiology
- Journals of Gerontology Series A
- Molecular Cell

- Molecular Carcinogenesis
- Molecular Metabolism
- Nature Cell Biology
- Nature Genetics
- Nature Magazine
- PLOS One
- Redox Biology
- Stem Cell Research & Therapy
- Science Magazine

An Expanded Teaching Role

In addition to its research focus, teaching is a fundamental part of the Aging Institute Laboratory's mission. "We're very committed to providing innovative research opportunities and a rich environment for training a new generation of investigators in the field of aging," says Dr. Finkel. He notes that beyond individual mentorship, the Institute will be providing support in career development, presentation skills, and grant writing, as well as networking opportunities within and outside of the University of Pittsburgh.

Other Institute activities now include:

- A research conference series offered monthly
- Monthly "Research in Progress" presentations during the academic year

- An Aging Institute research retreat
- Translational aging forums with the Pittsburgh Claude D. Pepper Older American's Independence Center and the University of Pittsburgh Schools of Medicine and Public Health

2019 Clinical Studies

The Aging Institute's two major clinical initiatives in 2019 both focused on the cause and impact of chronic inflammation in older adults. "The bold idea we are testing in our clinical studies is whether we can find medicines that target the pathways of inflammation — and in doing so, slow or reverse the rate at which we age to prevent or even eliminate age-related diseases," says Dr. Finkel.

Spearheading the clinical efforts is **Anne B. Newman, MD, MPH**, now in her second year as clinical director of the Aging Institute of UPMC Senior Services and the University of Pittsburgh.

"Dr. Newman — internationally known for her leadership role in the study of human aging — is now overseeing the Aging Institute's efforts to test its geroscience hypothesis, which posits that therapies targeting the basic biology of aging can slow — or possibly reverse — human aging," says Dr. Finkel.

Joining her is **Daniel E. Forman, MD**, associate director for clinical translation and director of emerging therapeutics. “Dually trained and board certified in both geriatrics and cardiology, Dr. Forman brings impressive research credentials that have attracted national attention,” says Dr. Finkel. “He’ll be helping to direct a series of innovative clinical trials that launched in late 2019. The first of these — dubbed the RIGHT study — will test whether immunomodulation can alter the course of human frailty.”

ENRGISE

Markers of inflammation like Interleukin-6 (IL-6) play an important role in predicting decline as we age. ENRGISE — **Enabling Reduction of Low-Grade Inflammation in Seniors** — was a randomized clinical trial led by Dr. Newman that focused on adults age 70 and older with elevated IL-6 levels.

“We know that IL-6 levels correlate with frailty in older adults,” says Dr. Newman. “Chronic inflammation is associated with most age-related diseases — from cardiovascular and neuro-degenerative diseases to metabolic disorders, cancer, and musculoskeletal disorders.”

The trial tested the potential of anti-inflammatory interventions for preventing major mobility disability by improving or preserving walking

ability. Participants took Losartan (a high blood pressure medication) and/or omega-3 fatty acids (fish oil). The now-published study found that while there was an initial lowering of IL-6 levels, those results were not sustained over a period of months.

“While the study may not have supported the hypothesis, it did allow us to build a platform for future studies,” says Dr. Newman. “It affirmed that we have the ability to recruit the right study participants as well as line up the statistical team and physicians who know how to conduct and analyze the research.”

RIGHT

RIGHT (**R**educing Inflammations for **G**reater **H**ealth **T**rial) is the Institute’s major research initiative to jump-start its program of innovative therapies. Funding the initiative is The Beckwith Institute, an endowed fund of UPMC.

RIGHT is a small pilot trial launched in fall 2019, targeting 50 participants. This randomized, double-blind clinical trial involves the participation of a pharmaceutical partner that is supplying participants with a drug intervention identified to lower IL-6 levels.

“We know that chronic inflammation increases as we age,” says Dr. Forman. “While researchers

have looked at drugs that successfully modify inflammation for disease, we believe we are the first to look at modifying inflammation as a way of improving frailty.”

During the course of taking the drug over a year’s time, participants will be measured for elements of fatigue, strength, and body composition.

“Our innovation is that this is one of the few times people will be given a drug for aging. We believe the Aging Institute is uniquely positioned to look at the changes that occur on a systemic level with this drug,” says Dr. Newman. “If that happens — and we’re able to prove the concept that the drug works and how it works — that will lead to a much larger clinical trial.”



A Sampling of Faculty Research at the Aging Institute Laboratories

- Unraveling the age-related mechanisms involved in the susceptibility to lung disease
- The study of molecular mechanisms that control cell proliferation and inflammation
- Small molecule drug discovery
- Age-related amyloid diseases, such as Alzheimer's
- Mitochondrial function, cellular metabolism, oxidative stress, and aging
- Impact of exercise on skeletal muscle gene transcription
- DNA damage in aging and age-related diseases
- Construction of a disease-associated risk gene transcriptional regulation network
- Bacterial protein toxins to develop therapeutics
- Mitochondrial dysfunction and metabolic adaptations to stress
- Therapeutic targets to mitochondria dysfunction-related diseases by manipulating stress signaling
- Molecular mechanisms behind the sensing, repairing, and clearance of damaged organelles in mammalian cells
- Regulation and function of the mammalian 12-hour clock as related to metabolic disease and aging



A core mission of the Aging Institute is to “sow seeds” of innovative and cross-disciplinary age-related research. Through the Seed Grant program and other initiatives, the Aging Institute is fostering original research aimed at improving the health, care, and independence of older adults. As intended, many of our seed projects provide the critical “proof of concept” investigators need to go on and secure additional outside funding for expanded research.





Innovations in Research

UPMC's RAVEN Grant

Marking seven years of innovation and progress for skilled nursing facility residents

In 2012, the Centers for Medicare and Medicaid Services (CMS) awarded UPMC Senior Services and the Aging Institute the first of two four-year Innovation Awards known as RAVEN (**R**educe **A**voidable Hospitalizations Using **E**vidence-based Interventions for **N**ursing Facilities in Pennsylvania). In making the awards, CMS was seeking to pilot, test, and evaluate new approaches with the potential of improving and reducing the cost of care for skilled nursing facility residents enrolled in Medicare and Medicaid.

To achieve that goal, the \$19 million Phase I RAVEN demonstration project focused on implementing a comprehensive, multi-pronged approach targeted at reducing avoidable hospitalizations at 19 skilled nursing facilities in western Pennsylvania. Its initiatives included **facility-based nurse practitioners** and enhanced nursing staff; the implementation of **staff education** tools and **training**; evidence-based communication **tools to improve clinical assessment** for earlier identification of changes in a resident's condition; enhanced **medical review and pharmacy engagement** to reduce potential medication-related problems; and the **use of telemedicine** and information technology to expand access to care.

RAVEN's first four years showed promising results, prompting CMS to award a second \$20 million award in 2016 that expanded RAVEN's outreach to 35 skilled nursing facilities statewide. The Phase II grant, scheduled to conclude in October 2020, also introduced a new payment incentive model based on a facility's ability to proactively manage six health conditions that historically result in hospitalization for older adults.

"As we commence our final year in the project, we're evaluating the cumulative impact of the RAVEN project in collaboration with CMS and other Innovation Award recipients nationwide," says RAVEN co-director **April Kane, MSW, LSW**. "This experience has offered us deep insights into the culture, needs, and challenges of care providers in a nursing home setting, and allowed us a unique opportunity to create new ways to better support them and the residents they serve."

Telepresenters: A Promising New Model for Sustainability

Approaching its final year, RAVEN is piloting a new direction to expand use of telemedicine

Among RAVEN's many groundbreaking initiatives in its early years was its pioneering use of telemedicine for skilled nursing facilities. Telemedicine holds the promise of enhancing resident access to expert care — regardless of time of day — while reducing unnecessary emergency admissions.

The telemedicine initiative was spearheaded by geriatrician **Steven Handler, MD, PhD, CMD**, an associate professor of geriatric medicine at the University of Pittsburgh, and now director of Geriatric Telemedicine Programs. Its early impact and growing technical needs led UPMC Enterprises to establish Curavi Health in 2016, appointing Dr. Handler as its chief medical and innovation officer. It also led to the CuraviCart, a state-of-the-art telemedicine cart used to examine skilled nursing facility residents, and CuraviCare, a HIPAA-compliant video platform that links the facility with expert medical help specific to the condition.

"After hours, facilities traditionally rely on telephone consults when a resident experiences a change in condition," says Dr. Handler. "These phone consults are generally done by a doctor unfamiliar with the resident and without benefit of a physical exam. The result is residents are usually transferred to the hospital.

"Not only are these transfers time intensive for staff, they're also highly disruptive for these older adults and sometimes harmful to their health," adds Dr. Handler. "What's more, these avoidable hospitalizations are costing Medicare, private insurers, and taxpayers billions a year and resulting in financial loss for skilled nursing facilities and potential penalties for the hospital."

In the summer of 2019, RAVEN and Curavi began exploring a new telemedicine model designed to

address some of the obstacles identified over the span of the project.

In the original telemedicine model, nursing staff were trained to use the special carts at the patient's bedside to communicate remotely with a doctor. "Despite the support and enthusiasm for telemedicine at facilities, there were barriers to its use due to limited resources and staffing," says Dr. Handler. "That led us to consider piloting an alternative approach in RAVEN's final year."

Telemedicine's goal remained the same: to break the cycle of unnecessary, high-cost readmissions and improve access to quality care. But the telemedicine delivery model has been "flipped" from an internal to external one — bringing in specially trained staff to carry out the service, explains Dr. Handler.

Under the new model, a medical consultant, or registered nurse, acts as a "telepresenter" — bringing the telemedicine cart to the nursing home, setting it up at the resident's bedside, and performing an examination under the guidance of a nurse practitioner, doctor, or specialist at a remote location.

In this pilot program funded by an additional supplement from CMS, the telepresenters/nurse practitioners are on call after-hours and respond within an hour. There are added bonuses: Because they are registered nurses and are licensed at

the facility, they also are able to take orders and complete the necessary clinical charting and documentation. In addition, they are able to examine other residents while on-site and instruct staff about a resident's changing medical condition.

"We believe this new model will translate to better care and higher satisfaction for patients and staff — and hopefully provide a sustainable model to continue," says Dr. Handler.

2018 Seed Grant Update: Circulating Autophagy as a Biomarker of Aging

Autophagy is an important natural process that "cleans and recycles" the body's cells to maintain the right balance at critical times in development or in response to nutrient stress. When autophagy doesn't function properly, it has been linked to diseases of aging such as heart disease.

Epidemiologist **Allison Kuipers, PhD**, had an idea: What if there was a biomarker, or indicator, that



could be measured to directly determine how a body is functioning and aging? She zeroed in on ATG7, or autophagy related 7, a protein found circulating in human blood that plays an essential role in cell recycling. Without it, autophagy doesn't occur.

Dr. Kuipers, assistant professor of epidemiology in the Graduate School of Public Health at the University of Pittsburgh, received a seed grant from the Aging Institute in 2018 to research Circulating Autophagy Related 7 (ATG7) Protein as a Biomarker of Aging. Her one-year study aimed to establish a protocol for measuring circulating ATG7 and determine the correlation of the protein with aging. An easily measurable marker of human aging could lead to improved risk estimation and new autophagy-based therapies.

"In epidemiology, that's the holy grail of aging research," says Dr. Kuipers. "We're trying to find a biomarker that more clearly distinguishes a person's age than merely chronologic age."

In keeping with the 2018 Seed Grant Program theme "Collaboration in Aging," she assembled a team from across the University of Pittsburgh and the Aging Institute — experts in aging, population health, medicine, and lab sciences. They examined 81 adults between the ages of 70 and 91. In addition to taking blood samples for ATG7 measurements, they conducted an assessment of their vascular stiffness and cognitive and physical function.

Study results were mixed. According to Dr. Kuipers, her team succeeded in finding a way to measure ATG7 and determined that levels do vary. But they were unable to find a strong indicator of aging or cardiovascular disease. Surprisingly, they did see a correlation with body mass index (BMI).

“ATG7 may not be the best biomarker of aging, but it still appears to be associated with health status in people over age 70,” she says.

Perhaps the most important outcome was the collaborative nature of the study, she adds.

“Collaboration is critical. That’s how we take findings from animal-based lab studies and explore how an experimental model or design applies to humans,” says Dr. Kuipers. “We need collaborative research to actually move the science forward from lab studies to human studies and improved patient care.”

The Epigenome Across the Lifespan Conference

Looking at the pathways that lead to aging

In May 2019, the University of Pittsburgh’s Clinical and Translational Science Institute (CTSI) held its “The Epigenome Across the Lifespan” conference, bringing together basic and clinical researchers, health professionals, educators, and students from throughout the tristate region to examine the trajectories shaping development and transitions across life’s course.



The Aging Institute reprised its role in support of the 2019 conference, along with the Magee-Womens Research Institute and UPMC Centers for Rehab Services.

The daylong conference looked at the pathways that lead to aging, focusing on epigenetics and the impact of environmental and physical factors on the genome while also encouraging new collaborations in science. Presenters included regional and national experts in public health, women’s health, genetics, cell biology, and pediatrics.

“We want the conference to serve as an exciting opportunity for researchers from across multiple disciplines and areas of study to focus on the human lifespan,” says **Yoel Sadovsky, MD**, executive director of Magee-Womens Research Institute and associate dean, women’s health research and reproductive sciences at the University of Pittsburgh. “Our point of focus was not only aging, but the epigenomic pathways across life’s course, which were explored through



presentations on biology and diseases, from embryonic development to aging.”

“We already know that environment affects health across the lifespan. Epigenetics sheds far greater light on that process,” says **Daniel J. Buysse, MD**, professor of psychiatry and clinical and translational science at the University of Pittsburgh School of Medicine. “What is clear in lifespan research is that it requires the contributions of diverse perspectives and disciplines. Many of the presenters are sharing exciting and emerging research on a variety of topics, giving our participants an early look at the newest thinking on topics. It’s truly a celebration of collaboration and diverse perspectives.”

Plans are currently underway for a 2020 Lifespan Conference.

Editor's Note: CTSI is part of an NIH-funded nationwide network which provides the support necessary to bridge the gap between innovative approaches to research and effective clinical and public health practice, health policy, and community engagement in research. Magee-Womens Research Institute is the largest research institute in the United States dedicated exclusively to women's health research.

Seed Grant Program 2019: Focusing on Cancer and Aging

Cancer is among the leading age-related diseases, prompting a focus by the 2019 Pilot Seed Grant program on **Aging and Cancer**. Now in its 12th year, the Institute's seed grant program encourages junior faculty to collaborate in exploring new areas of research in aging that have the potential for further funding from outside sources.

Supported by the Aging Institute of UPMC Senior Services and the University of Pittsburgh, this year's program received additional funding from the **UPMC Hillman Cancer Center**. Five grantees were selected as this year's winners.

Open to junior faculty researchers across the spectrum of disciplines at the University of Pittsburgh and UPMC — from basic biology, clinical and translational approaches, and epidemiological, to psychosocial, health sciences, health policy, and health services — the program sought innovative proposals demonstrating research collaborations focusing on the intersection between cancer and aging.

Proposals pairing basic science research with clinical/translational teams were strongly encouraged, as were proposals involving interprofessional collaborations between at least two different schools within the University of Pittsburgh or UPMC.

2019 Pilot Seed Grant Recipients

The Aging Institute awarded the following seed grants in 2019 in support of these projects:

Angiotensin II: novel pleiotropic regulator of senescence and transformation in the lung **Ferruccio Galbiati, PhD**

*Professor and Vice Chair of Research
Department of Pharmacology & Chemical Biology
University of Pittsburgh School of Medicine*

Characterizing age-related variations in persistent neuropathy-related balance/gait changes, functional impairments, and social role disability after chemotherapy for gynecologic cancer

Grace B. Campbell, PhD, MSW, RN, CNL, CRRN
*Assistant Professor
School of Nursing, Department of Acute & Tertiary Care
School of Health & Rehabilitation Sciences,
Department of Occupational Therapy
University of Pittsburgh*

Epigenetic Regulation of Human Memory CD8 T cell Effector Function During Immune Senescence

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Geographic Access to Oncology and Its Impact on Cancer-Related Health Outcomes **Coleman Drake, PhD**

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Immune inhibitor receptor LILRB2 in mediating aging-induced inflammatory state and promoting immune suppressive microenvironment of acute myeloid leukemia

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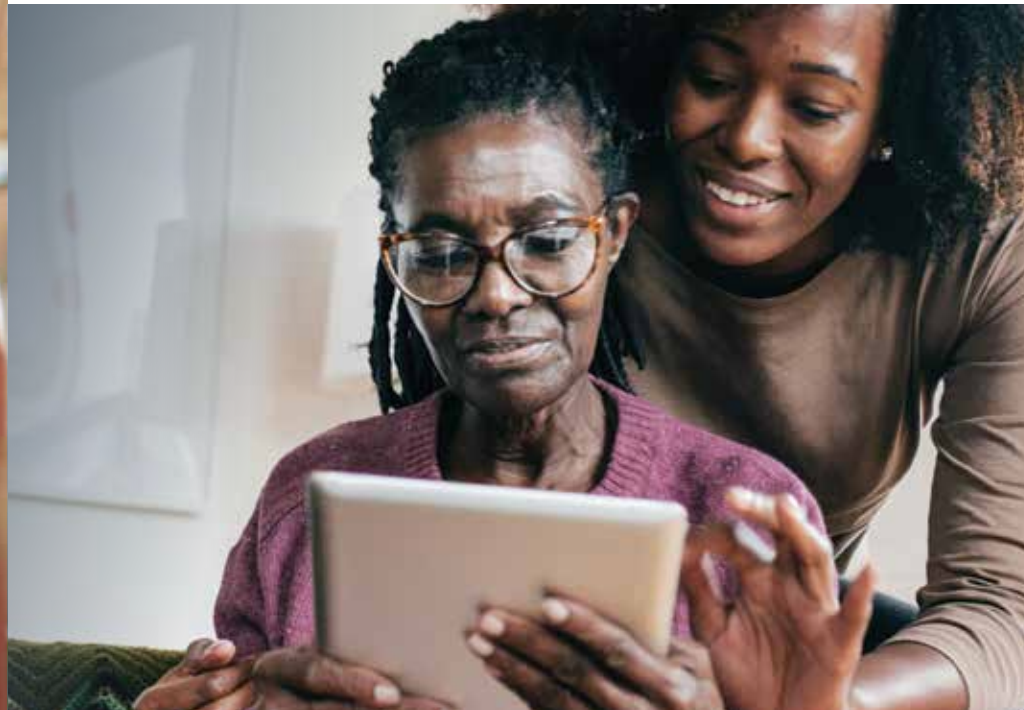
A photograph showing a group of men sitting at a long white table in what appears to be a classroom or meeting room. On the left, a person in a brown shirt is partially visible, gesturing with their hand as if speaking. Three men are seated at the table, looking towards the speaker. The man in the foreground is wearing a blue button-down shirt and a black watch. The background is slightly blurred, showing other people and a bright, airy environment.

Educational Initiatives in Aging Services



From in-home caregivers to hospital clinicians and front-line staff, the Aging Institute continues to educate audiences on the immense physical, mental, and social challenges faced by older adults. As one of the region's leading resources for geriatric education, the Aging Institute offers extensive educational training programs, community outreach, literature, videos, and simulations aimed at increasing awareness and improving the direct care and treatment of aging adults — today and tomorrow.

The following educational programs and initiatives will continue to engage both professional and lay audiences and will move under the heading of UPMC Senior Services.



The Aging Institute at UPMC McKeesport: Expanding Outreach

Providing information, education, and support for healthier, more informed lives

Providing underserved older adults — as well as their families and community members — with information, education, and support to help them live healthier and more informed lives has been the mission of the **Aging Institute at UPMC McKeesport Resource Center** since it first opened in 2014 with the support of the McKeesport Hospital Foundation.

The Resource Center features a robust program staffed by trained health care professionals and includes community outreach, a community-based help and referral line, educational programs, and lifestyle programs to encourage healthy living.

“In 2019, we continued to focus our energy on increasing our connections and partnerships with both primary care providers (PCPs) and members of the faith-based community in McKeesport,” says **Melissa Jones, MSN, RN**, geriatric nurse



educator for the Aging Institute. “Both groups work on a daily basis with seniors who need assistance. Our goal through this outreach is to build awareness of how the services and staff at the Resource Center can connect them to the help they need.”

The Aging Institute played a key role in helping UPMC McKeesport become the first hospital in western Pennsylvania to receive prestigious NICHE (Nurses Improving Care for Healthsystem Elders) designation in 2012. “Today, we remain committed to supporting the educational needs of the staff,” says Ms. Jones. Its regular program offerings include:

- Quarterly geriatric training opportunities for nurses, patient care technicians, and nursing assistants through the Institute’s **Geriatric Resource Nurse** and **Geriatric Nursing Assistant/Patient Care Technician** programs. Programs in 2019 were attended by nearly 70 staff members.
- **Ageless Wisdom**, the Institute’s geriatric sensitivity program, has been integrated in the orientation curriculum for all new employees, from housekeeping to senior administrators.

Tracy Petras, manager of community outreach at UPMC McKeesport, praises the Aging Institute for its vital role with older residents in the community.

“The association between UPMC McKeesport and the Aging Institute is very important to us,” says Ms. Petras. This is a community whose older



residents have great needs and there are many opportunities to provide both clinical and social service supports.. Having the on-site Aging Institute Resource Center provides an invaluable central hub for us to help these individuals right here at the hospital. And we also have access to the Aging Institute’s broader expertise and educational and training resources.”

For example, in 2019, the Resource Center began offering a monthly **Caregiver Support Group** meeting to help caregivers cope with challenges they face. “It’s an opportunity for these individuals to share their insights, struggles, and ideas in a safe and understanding space,” says **Ronnie Edwards, MSW, LSW**, aging and disability coordinator for the Aging Institute, who serves as one of the facilitators for the on-site support group. “Many of our current members are caring for spouses with dementia or Alzheimer’s disease, so part of what we do is educate participants on the disease process — why



we let people know they're not alone – and that others care and want to help them.”

Helping seniors lead healthier lives through diet and exercise is the goal of UPMC McKeesport’s **MOVE UP, The Mobility and Vitality Lifestyle Program**. “Weight reduction can have many positive effects on health, particularly on both mobility and chronic conditions such as high blood pressure and diabetes.” says **Holly Sloan, MS**, lead volunteer coordinator for the Aging Institute Resource Center at UPMC McKeesport and instructor for the hospital’s **MOVE UP** program.

Last year, UPMC McKeesport became the first hospital-based site of MOVE UP — an ongoing national community-based lifestyle research study led locally by the University of Pittsburgh’s Prevention Research Center at the Center for Aging and Population Health under the direction of **Anne B. Newman, MD, MPH**, clinical director of the Aging Institute. Not a weight loss program, MOVE UP targets both mobility and weight loss through



their family members act like they do, how to help — and what to possibly expect in the future.”

In 2019, the Institute moved from monthly to twice-a-month workshops and community events at the Aging Institute Resource Center, covering a wide range of topics presented by established guest experts — from advance directives and elder law to financial planning and senior nutrition. “We often look at the questions we get on the Aging Institute’s Call and Referral Line for topic suggestions,” says Ms. Edwards. “Elder law is a great example. Attendance at that Resource Center event was one of our most well attended programs in 2019.”

In her role as community social service coordinator of the UPMC McKeesport Aging Institute, **Ashlee Stone** fields a wide range of calls for the Resource Center’s help and referral line. “We’ve helped people connect to a variety of services — from health care to home repair and home modifications like ramps and handrails,” she says. “Most of all,



healthy eating habits, behavior modification, and self-directed, moderate-intensity physical activity such as walking. “Our MOVE UP studies have been very well received,” says Ms. Sloan. “So many study participants want to continue to meet after the study portion of the program ends that we offered them the opportunity to do so at the Resource Center.”

The Resource Center has also served as a site for the **Matter of Balance** program, a national evidence-based falls management program for older adults. The free program meets for eight weeks; its two-hour-long classes focus on reducing the fear of falling and increasing activity levels among community-dwelling older adults, with the goal of breaking the cycle of repeated falls frequently seen after a first accident.

“It’s our hope that the model we’re building to serve older adults with the Aging Institute Resource Center at UPMC McKeesport is one that we can share with other UPMC facilities,” adds

Ms. Jones. “Working together, we have the potential to make a real difference for older adults in the community.”

Pursuing Excellence in Geriatrics

UPMC Mercy is partnering with the Aging Institute on its path to becoming a hospital-level geriatric center

The Aging Institute has long been committed to ensuring that older adults receive quality, age-appropriate care. This past year, the Institute had the opportunity to join with UPMC Mercy to raise that commitment to a new level as the hospital works to achieve designation as a Geriatric Center of Excellence. Once achieved, UPMC Mercy will be the first hospital-level geriatric center in the UPMC system.



“The executive leadership and staff of the Aging Institute have been invaluable partners with us on this journey,” says **Leeanna McKibben, MSN, RN, CENP**, chief nursing officer and vice president of patient care services.

“We’ve relied heavily on their insights and experience, helping us identify areas of opportunity, establish milestones, build awareness, and provide specific staff training on how we can better serve our older adult patients.”

For example, in May 2019 the Aging Institute hosted a program for more than 30 nurses, patient care technicians, and nursing assistants on topics such as dementia, recognizing and managing delirium, and medication management for older adults.

It could be said that UPMC Mercy has been preparing for years for this new role, traditionally serving a significantly older population. It holds prestigious designation as a Comprehensive Stroke Center and is the hub of the renowned UPMC Rehabilitation Institute. UPMC Mercy’s ability to offer a “one-stop” continuum of care is especially important in treating more complex conditions in older adults — and the new UPMC Vision and Rehabilitation Tower currently under construction only adds to that potential.

“Identifying ways to improve the quality of care for older adults is a perfect example of UPMC Mercy’s mission as the only Catholic hospital in the area — to serve the frailest and neediest in our community,” says Ms. McKibben. “Throughout the hospital, there is incredible energy and enthusiasm about this initiative, at every level of care.”

Geriatric care requires a multidisciplinary approach. “Every clinician, nurse, technician, and support

staff member will play a role in providing excellence in geriatric care to our patients,” says Ms. McKibben. Toward that end, in 2019 the following relationships and recognitions were secured with key organizations that promote innovative geriatric care, including:

- Designation as a “National Center of Excellence in Geriatric Medicine” by the John A. Hartford Foundation, a driving force nationwide in supporting hospitals and health systems in improving their care for older adults.
- Recognition as a NICHE (Nurses Improving Care for Healthsystem Elders) membership program partner, a nurse-driven program to help hospitals improve the care of older adults.
- Achievement of Bronze Level 3 Geriatric Emergency Department Accreditation by the American College of Emergency Physicians, which focuses on integrating best practices for older adults into the emergency department.

Additionally, members of the UPMC Mercy Pharmacy are currently pursuing Board Certified Geriatric Pharmacist (BCGP) designation, the credential for individual pharmacists who meet the criteria for providing pharmaceutical care to the elderly.

“With the Aging Institute’s help, we’re working to create a new model of geriatric care for the entire UPMC system,” says Ms. McKibben.

2019 Aging Institute Scholarship Winners

Each year, the Aging Institute awards \$2,500 scholarships to UPMC employees seeking to advance their professional credentials in geriatrics. The scholarship helps to support their pursuit of the Graduate Gerontology Certificate at the University of Pittsburgh, led by the University of Pittsburgh Center for Social and Urban Research and the College of General Studies. Students can choose from online or on-campus course delivery options.

As evidenced by this year's scholarship recipients, participants in the program represent a wide range of career paths — but they are united by a common commitment to providing better care and support for older adults.

Abigail Steele, PharmD
Clinical Pharmacist
UPMC Mercy



“I hope to take an active role in optimizing patient care and medication safety as UPMC Mercy works to become a UPMC Center of Excellence in Geriatrics.”

As a clinical pharmacist at UPMC Mercy for the past four years, Abigail Steele has worked with medical teams caring for patients recovering from brain and spinal cord injuries, stroke, and other serious injuries requiring inpatient rehabilitation. Many of those patients have been older adults. “I have experienced first-hand how much age can affect patients in this setting,” she says.

That daily interaction with geriatric patients inspired her to apply for the Aging Institute's scholarship — especially now that UPMC Mercy is becoming a UPMC Center of Excellence in Geriatrics, caring for more geriatric orthopaedic trauma and geriatric stroke patients. “Geriatric patients need specialized pharmaceutical care,” says Dr. Steele. “I want to increase my knowledge so I can better serve older patients.”

Heather Miller
Community Relations Coordinator
UPMC for Life-Northwest Pennsylvania



“I'm passionate about my work with older adults. I plan to use this knowledge to expand health and wellness services for seniors in northwestern Pennsylvania.”

Heather Miller wears many hats. As a community relations coordinator with UPMC for Life, she

helps to educate insurance plan members on their benefits and promotes health screenings, disease prevention, and healthy living. She has also been trained in the Powerful Tools for Caregivers programming and serves as a class leader and certified master instructor.

In addition, she serves as coordinator of National Senior Health and Fitness Day, working with older adults to promote lifelong exercise and wellness. And, she works with local community organizations to tackle Alzheimer's and mental health issues facing the region's aging seniors.

Her colleagues describe her as a "natural" in her work with older adults. "I'm excited," says Ms. Miller. "With this graduate certificate, I'll be able to do more to help with the mental health, physical health, and overall well-being of our seniors."

Bethany Rajaratnam
Speech-Language Pathologist
UPMC McKeesport



"Gerontology is a field that has always interested me. This program is helping me to improve my skills so I can address the unique needs of our growing population of older adults."

At UPMC McKeesport, Bethany Rajaratnam is viewed as a champion for older adults. She is the primary speech pathologist on the Transition Care Unit and Rehabilitation floors where she plays an integral role in educating staff on geriatric-focused care — a key element of the hospital's NICHE (Nurses Improving Care for Healthsystem Elders) initiative. She created a handout on oral care for seniors and a Power Point presentation on dysphagia and safe swallowing.

Mrs. Rajaratnam also serves on a committee tasked with training staff across the UPMC Health System on "Swallowing Safety and Feeding Patients with Visual, Cognitive, and Physical Challenges." As a speech language pathologist, she works closely with older adult patients to help them return home and live independently. "Earning a graduate certificate in gerontology will help me identify and address disparities and risks in aging adults," says Mrs. Rajaratnam.

Vanessa Talley
Oncology Social Worker
UPMC Magee-Womens Hospital



"My goal has always been to work with older adults. This program is giving me a second chance to learn more about gerontology so I can realize my dream of working with geriatric patients."

When Vanessa Talley began pursuing a degree in social work, she had two special interests: gerontology and child welfare. At the University of Pittsburgh, where she was accepted into the child welfare program, she went on to earn both her bachelor's and master's degrees in social work. She then began her career as a social worker, working with clients at the Allegheny County Jail and UPMC Western Psychiatric Hospital.

She is now an oncology social worker at UPMC Magee-Womens Hospital, where she works with women ages 60 and older who have been diagnosed with cancer. “By pursuing a graduate certificate in gerontology, I’m expanding my knowledge so I can help older patients who are facing cancer live a full life,” says Ms. Talley.

Wanted: Geriatric Specialists for an Aging Tomorrow

Introducing high school students to careers in gerontology

Every day, 10,000 Americans turn age 65. Not only is our population growing older — by 2020, 55 million of us will be age 65 and older — we’re also living longer. That increase translates into an growing need for more health care professionals in fields like medicine, nursing, rehabilitation therapy, and mental health who are highly tuned to the needs of older adults.

That’s why the Aging Institute is committed to spearheading the geriatric concentration course of the University of Pittsburgh’s **Health Career Scholars Academy**, an ambitious four-

week summer program that draws 100 gifted high school students from across the nation to the Pitt campus.

“Students selected to participate in the geriatric concentration work with some of the leading innovators in the field. They also learn about the latest research and advancements in aging,” notes **Karen D. Narkevic**, program director for the academy. Volunteer faculty for this year’s program included administrators and board members of the Aging Institute, practicing health care professionals from the University of Pittsburgh’s Division of Geriatric Medicine, and guest speakers from community organizations focused on aging. “The Institute sees this



partnership as an important investment — a way to introduce students to the wide range of career options available in geriatrics,” she adds.

Rising high school juniors and seniors in the academy participate in a rigorous schedule of classes, group discussions, and team projects. This year’s geriatric course included topics such as *Healthy Brain Aging and Exercise*, *Remote Monitoring by Telemedicine*, *the Biology of Aging*, and *Careers in Pharmacy*. “The presenters are all practicing professionals, bringing real world experience to the classroom,” adds Ms. Narkevic.

Site visits to local senior communities and organizations also allowed students to connect one-on-one with older adults, giving these young people time to talk and listen to their stories and understand their circumstances, and crystallized how theory applies to actual patients, families, and caregivers.



Too often, seniors and their caregivers struggle alone, isolated by the stress of the challenges they face and unaware of the resources available to them. Engaging with the community and sharing knowledge and resources — showing them they are not alone — is a key objective of the Aging Institute. Through our outreach, we are building awareness and empowering older adults, families, and caregivers through informed decision making and access to needed support.

The following programs are moving under the heading of UPMC Senior Services and will continue creating essential connections for members of the community.





Connecting to the Community

The Aging Institute Help and Referral Line

Delivering answers, advice, and a listening ear to older adults and their families

For older adults and their caregivers, the **Aging Institute's Help and Referral Line** can be a lifeline of support and a vital link to community resources.

"Many people call us when they don't know where to go for help — and increasingly, people are calling us back because they know we can get them the answers they need," says **Ronnie Edwards, MSW, LSW**, the Institute's aging and disability coordinator. "The call line has become a valuable resource on aging issues for the entire community. We work hard to be a one-stop source for information ranging from finding a doctor to moving to a senior care facility. We don't always have the answers — but we can help get them."

The service is free and available to anyone, regardless of location, level of need, or insurance affiliation. While the majority of calls come from older adults and their families, health care providers, social workers, and case managers also call in for information and assistance. "As more adults choose to age in place, there is a growing need for in-home services, transportation, and caregiver support," says Ms. Edwards. "We

connect them to the right resources available in the community to help."

Ms. Edwards, a licensed social worker, staffs the call line with her colleague, **Melissa Jones, MSN, RN**, a geriatric nurse educator. "We're a great team," says Ms. Edwards. "We bring different skills and perspectives that help us to fully assess and address a caller's situation."

The Help and Referral Line has evolved over the years, says Ms. Edwards. More than one in 10 callers is a return caller — someone who called previously. "This tells us that they got the information they needed and feel comfortable calling again for help," she says.

In 2019, pathways and protocols were established to provide better follow-up for callers in need. Designed to trigger a more proactive response, the new system creates a process for handling cases flagged as "difficult."

Those identified as difficult cases fall into six categories of callers:

- Has a poor understanding of initial resource call
- Lacks a social network
- Is a long-distance family member or caregiver
- Has multiple resource needs

- Has a barrier(s) to self-management of care or needs
- Has a hidden need identified during the initial call

"It's a streamlined system that helps us to better recognize complex cases and defines how we should follow up with those callers," says Ms. Edwards.

Good Things Start With a Phone Call

Connecting to the Resources of the Aging Institute

Joni Oliver is a natural-born caregiver. She remembers running errands and helping to clean the home of elderly neighbors as a child. "I've always loved feeling useful," she says.

An education major in college, Ms. Oliver embarked on a teaching career at several area schools until cutbacks prompted her to earn a



gerontology certificate at a community college. “I started working in senior care and that opened a new world for me,” Ms. Oliver says. “As an activities director, I put many of my teaching skills to good work.”

Today, the 62-year-old Pittsburgh resident focuses her skills as a full-time caregiver for her brother-in-law, who has cerebral palsy. Through Pennsylvania’s Aging Waiver program, he’s able to stay at home with Ms. Oliver and her husband instead of living in a skilled nursing facility. Ms. Oliver’s gerontology credentials — coupled with training through Pennsylvania’s Department of Aging — qualified her as a home caregiver, but she is also required to pursue continuing education in that role. It’s something she welcomes doing.

In summer 2017, Ms. Oliver reached out to the Aging Institute’s Help and Referral Line looking for caregiver resources and educational opportunities. At the suggestion of **Ronnie Edwards, MSW, LSW**, the Institute’s aging and disability coordinator, she began attending monthly educational programs offered by the Aging Institute at UPMC McKeesport. “The classes I’ve taken over the past 18 months have been extremely useful,” she says. “They’ve

covered topics from rehabilitation to wellness, and even stress reduction for caregivers.”

Ms. Oliver also values the community connections that she’s made through the Aging Institute. “Ronnie has been very helpful in linking me to other support resources. She has fingertip access to what’s available in the region — and beyond,” she says. “She was even able to help me assist my mother in Florida, who has a hearing loss.”

Her advice to other caregivers? “Do the best you can with an open heart,” she says. “I found I have to create a schedule and stick with it. And recognize that you can’t do it alone. Be open to getting help — not just from neighbors and friends, but also from community resources like the Aging Institute.”

There’s No Place Like Home:

[Helping seniors stay home longer](#)

For reasons both economic and emotional, older adults are increasingly opting to stay in their own homes for as long as possible as they age. That choice can come with challenges.

The UPMC Living-at-Home (LAH) program — has an admirable track record in helping seniors who want to age in place. LAH was founded nearly

30 years ago with grants provided by The Pew Charitable Trust and the Commonwealth of Pennsylvania.

“We were definitely ahead of the times back then, and we try to continue that tradition of innovation,” says **Missy Sovak, MSW, LCSW**, director of LAH. “Our new role with the Aging Institute has been a great fit because we share a common goal and a common commitment to supporting older adults. It’s allowing for greater sharing of resources and creating new opportunities to better serve our clients through those resources.”

The program serves nearly 450 clients ranging from their 70s to more than 100 years of age. The average age is 84, and most are women living alone. “I love our mission of keeping older adults in their homes for as long as they are able,” says Ms. Sovak. “Our focus is to connect them with the care and services they need to thrive.”

Clients must be at least 70 years old, meet income guidelines, and live in one of nearly two dozen Pittsburgh neighborhoods. After assessing an approved client’s needs and talking with their friends, family, and health care providers, a registered nurse and social worker develop a care

Resource Networking

A way to exchange ideas and resources to support seniors in our community

On May 14, staff from the Living-at-Home program and the University of Pittsburgh co-hosted an educational event for health care professionals focused on aging and technology. Presentations included the latest advancement in low vision technology, complex prescription management, and sending reminders through a person's home television.

More than 60 professionals from hospice, life and health insurance, and home health services — including caregiver representatives — attended the event.

plan. The program also links older adults with volunteers who can perform a range of services, such as grocery shopping, housekeeping, yard work, running errands, and reading mail. “If someone can’t manage their own medicines, our nurses can prefill pill boxes and insulin syringes as ordered by the client’s doctor,” explains Ms. Sovak. They also can take care of doctors’ requests for actions like a monthly blood pressure check or B12 injections.

For an older person living alone, it can be intimidating to invite strangers into their homes, notes Ms. Sovak. She’s proud to say that the LAH care team is remarkably stable, with most members tallying between seven to 28 years of experience with the program. “We work to build a good relationship with each client,” she adds. “They trust us to make appropriate referrals for their care — and we take that responsibility very seriously.”

From First Class to Retirement: Sandy Gilmore Says Goodbye

In June, lead geriatric nurse Sandy Gilmore, RN, retired after nearly 20 years spent working with older adults. She was in the Aging Institute’s first class of Gerontology Certificate Scholarship recipients.

Ms. Gilmore was already working as a community geriatric outreach nurse for UPMC’s Living-at-

Home (LAH) program when she decided to apply for a graduate **Gerontology Certificate Scholarship** from the Aging Institute. She was one of two recipients of the inaugural scholarship awarded in 2011.

“It opened up my world,” says Sandy. “The program gave me new insights into the challenges older adults face. I understood things in a new way.”

Her position took her to dozens of different venues each week — individual patient homes, senior centers, and retirement communities — where she conducted geriatric assessments and screenings, and helped to connect her LAH clients with other community and home services they might need.

She particularly enjoyed her outreach work at independent living facilities at UPMC Senior Communities. There she conducted a recurring “Ask the Nurse” event where residents could ask



her about any health-related matter. “My main role was to educate and give residents person-to-person time to talk about their health concerns. I was especially vigilant about them getting flu shots — that was a priority for me,” says Ms. Gilmore.

In June 2019, she retired after 37 years as a nurse, including 19 years with the LAH program.

“It’s been 19 wonderful and rewarding years. I will deeply miss my daily interactions with clients. I’ve learned so much from them about life, love, and living. They are such an inspiring and loving group,” she says.

“As our population ages, gerontology is a wonderful career that’s increasingly in demand. Seniors want to stay at home and age in place — don’t we all share that dream?”

Ms. Gilmore offers these lessons she learned during her nearly two decades of working with seniors:

- 1) Take care of yourself — physically and mentally. I see seniors who have done a great job in one area but not the other. Both are key to living well as you age — but you need to start young.
- 2) Stay connected to your family and friends. Old age is not a time to be alone; it’s a time to share and be with others.

- 3) Volunteer — It’s a great way to connect to what’s happening in the world around you. People benefit from and need the experiences and ideas seniors have. It helps ward off depression and isolation, which are both connected to declining mental and physical health.

“As a Living-at-Home nurse, I tried to intervene when I saw people pulling back or not engaging. I encouraged them to seek help — or at least to see me,” says Ms. Gilmore.

Geriatric Training Support for the Frontline of Care

Primary care practices and their staff are the focus of a novel Geriatric Workforce Enhancement Program and Aging Institute initiative.

Older adults typically see their primary care provider (PCP) multiple times a year for medical care — but few of these frontline doctors and staff have the geriatric training to recognize and manage mental health issues and cognitive decline.

That lack of training has long concerned **Ellen M. Whyte, MD**, a board-certified geriatric psychiatrist and assistant professor of psychiatry at the University of Pittsburgh School of Medicine. Through the **Geriatric Workforce Enhancement Program (GWEP)**, Dr. Whyte and her team are



collaborating with the Aging Institute to deliver practical, concrete training to these frontline clinicians and their staff — and connecting them to valuable community resources.

Launched in 2015 by the U.S. Department of Health and Human Services, GWEP is a \$38.7 million program focused on the development of a health care workforce that is prepared to deliver high-quality, age-appropriate care for older adults. The University of Pittsburgh is one of 44 sites nationwide that received GWEP funding through the first funding cycle.

According to Dr. Whyte, PCPs provide the majority of care for patients’ mental health issues like late-life depression, anxiety, and cognitive decline. They also face the need to connect these patients and their families to essential social services.

“The reality is that busy medical practices don’t have the depth of resources to meet these needs as well as they’d like. Partnering with the Aging Institute on this project made great sense: its Help and Referral Line is a terrific resource for PCPs to help their patients and families,” says Dr. Whyte. “We also have involved the Aging Institute to help in our training sessions and educational materials.”

The need is great. There are less than 2,000 board-certified geriatric psychiatrists in the United States, far too few to deal with our nation’s growing population of older adults.

“We know that patients want to get all of their health care, addressing medical as well as mental health concerns, from their PCP — that’s where they are most comfortable,” she says. “Many of the practices we contacted are eager for this kind of education. They want to help in caring for the mental and cognitive health needs of their older patients because they see the need.”

Through the Geriatric Workforce Enhancement Program (GWEP), monthly presentations and training sessions are offered to individual

practices — involving both clinicians and staff. “We feel strongly that every member of office needs to know what to look for,” says Dr. Whyte. “The medical assistant taking vitals or the front office person working on scheduling might be the one person that a patient really connects with and who can get them talking about their depression.”

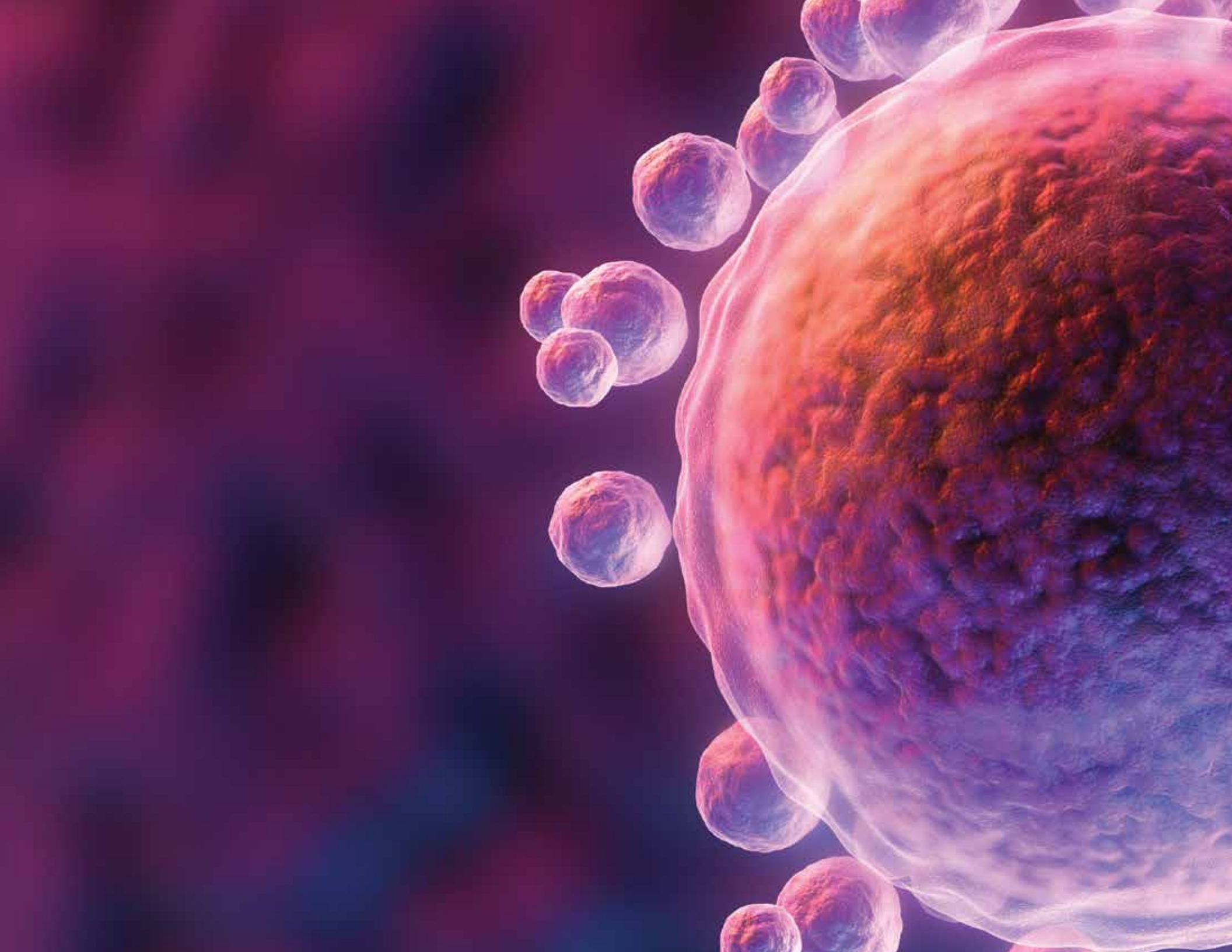
Caring for older adults can be time consuming, often with limited financial reimbursement. As part of her GWEP programming, Dr. Whyte also educates interested practices about CMS incentives for PCPs that provide high-quality behavioral health care to older patients and patients with cognitive impairment. Her team is now working to train staff in the necessary requirements and documentation needed for reimbursements for CMS cognitive assessment and care planning codes.

“We’ve built templates, created notes, and organized assessments so that these practices can take on this added role with greater confidence,” says Dr. Whyte. “It’s the kind of care that’s greatly needed by older adults —

and these billing codes allow for appropriate compensation for PCPs for that investment of time and resources.”

The Aging Institute has helped with one of the requirements for the higher CMS reimbursement — namely the education of older patients and their caregivers. “Most of these practices do not have social work support on-site; the Aging Institute’s Help and Referral Line is the ideal resource to connect patients to those services,” she adds.

Primary care practices have been eager to learn, she says. “They want to know more about identifying and managing cognitive impairment, and treatment options for late life depression and anxiety because they face these issues with their patients day in and day out,” says Dr. Whyte.





11th Annual
SENIOR
Celebrating
CHAMPIONS

The **Celebrating Senior Champions Dinner and Auction**, held on October 16, 2019, marked its 11th year of recognizing distinguished individuals for their outstanding accomplishments and focus in creating a better life for seniors. Through research, education, community outreach, and business leadership the 2019 Champions have improved the quality of life for older adults. Since its inception in 2009, this event has presented more than \$1.5 million in net proceeds to further charitable care throughout UPMC Senior Communities.



This year, two Grand Champions were recognized for their scientific work and accomplishments: **William E. Klunk, MD, PhD** and **Chester A. Mathis, PhD, Distinguished Professors**. Dr. Klunk is a Distinguished Professor of Psychiatry and Neurology and Co-Director of the Alzheimer Disease Research Center at the University of Pittsburgh and past Chair of the Medical and Scientific Advisory Council of the National Alzheimer's Association. Dr. Mathis is a Distinguished Professor of Radiology at the University of Pittsburgh, Director of the University of Pittsburgh Positron Emission Tomography (PET) Facility, and UPMC Endowed Chair of PET Research.

For their joint efforts, the two colleagues share the 2004 MetLife Foundation Award, the 2008 Potamkin Prize and the 2009 Ronald and Nancy Reagan Research Institute Awards for research in Alzheimer's disease.



The Community Champion recipient for 2019 was the **Greater Pittsburgh Community Food Bank** under the leadership of **Lisa Scales, President and CEO**. Through advocacy efforts, Greater Pittsburgh Community Food Bank has become a primary driver in comprehensive anti-hunger endeavors regionally, statewide, and at the national level.

Seniors who are food insecure are more likely to have health concerns and with anticipated growth in the senior population, the organization is dedicated to ensuring that no senior need choose between buying food or medicine. Annually 1.6 million meals are provided to seniors.

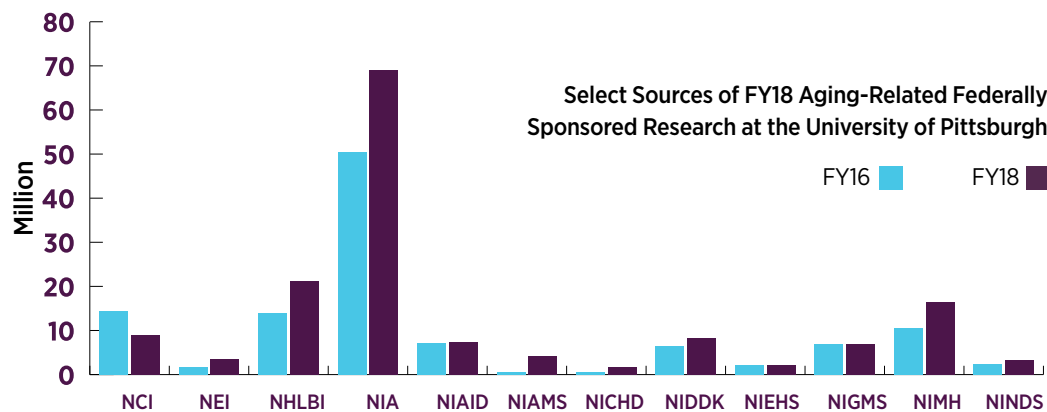
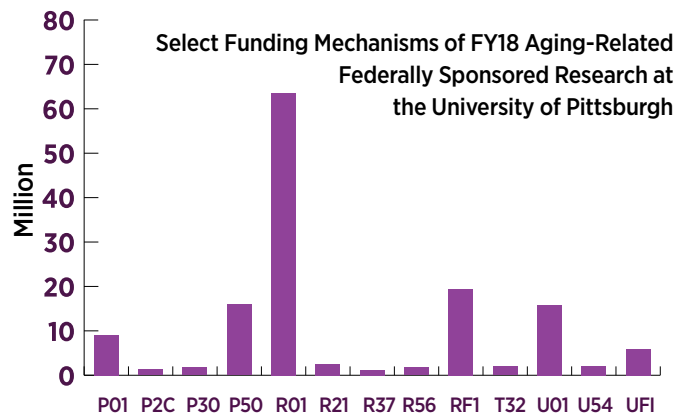


This year's Caregiver recipient is **Ralph T. DeStefano**. Mr. DeStefano retired in 1999 following a very successful career in labor law practice and health care, much of which was spent expanding the UPMC Passavant campus. He has been a very influential force, particularly in the Northern region of Pittsburgh, for many decades and is truly an ambassador to the UPMC Passavant campus.

Ralph was instrumental in supporting the evolution of Cumberland Woods Village independent living campus, with primary focus on the adjoining conference center and performance theatre, that now serves as an important social outlet for thousands of seniors coming from many areas of Pittsburgh. He has taken a personal interest in the lives of the many seniors whom he has helped guide and has contributed greatly to the reputation, growth, and community awareness of the entire UPMC Passavant campus.

Research Publication Highlights

A recognized pioneer in the field of geriatrics, the University of Pittsburgh continues its leadership role as one of the nation's foremost institutions of higher education conducting research focused on improving the care and quality of life of older adults. The scope, depth, and continuity of work conducted collaboratively by our University partners — experts in disciplines as diverse as medicine, public health, nursing, social science, psychiatry, epidemiology, and ethics — positions our region as an epicenter of aging-related research and innovation.



A photograph of a laboratory setting. In the foreground, a Black man with short, curly hair, wearing a white lab coat over a purple striped shirt and blue nitrile gloves, is looking intently at a laptop screen. In the background, a woman with reddish hair, also in a white lab coat and blue gloves, is working with a microscope. The background is slightly blurred, showing laboratory equipment and shelves. The text "Centers of Excellence" is overlaid in a large, purple, sans-serif font on the right side of the image.

Centers of Excellence

Center for Late-Life Depression Prevention and Treatment (CLLDPT)

Director:

Jordan F. Karp, MD

The CLLDPT provides a research infrastructure to promote and support investigations that will improve real world practice in the care of older adults living with depression and other severe mood and anxiety disorders. It focuses on developing and testing novel medication, psychosocial, and behavioral interventions to improve mood and cognitive outcomes and reduce the disability associated with late-life depression.

Karp JF, Zhang J, Wahed AS, Anderson S, Dew MA, Fitzgerald K, Weiner DK, Albert S, Gildengers A, Butters M, Reynolds CF. Improving Patient Reported Outcomes and Preventing Depression

and Anxiety in Older Adults with Knee Osteoarthritis: Results of a Sequenced Multiple Assignment Randomized Trial (SMART) Study. *American Journal of Geriatric Psychiatry*. In Press. 2019 Oct; 27(10): 1035-1045. PMID PMC6739151.

Finding: Older adults with knee osteoarthritis and comorbid subsyndromal depressive symptoms are at elevated risk for incidental major depression or anxiety disorders. The aims of this intervention-development SMART trial were to evaluate the clinical effect of cognitive behavioral therapy (CBT) and physical therapy (PT), as well as the order of effects of the interventions, on patient-reported outcomes. Stage 1 response was higher

for PT (47.5%) compared to CBT (20.5%). Non-responders re-randomized to an increased dose of the same intervention experienced a response rate of 73%, higher than for switching. These results suggest it may be dose and not type of these interventions that is necessary for clinical benefit. This finding may guide providers to stay the clinical course for up to 12 weeks before switching.

Stahl S, Jung C, Weiner DK, Peciña M, Karp JF. Opioid Exposure Negatively Affects Antidepressant Response to Venlafaxine in Older Adults with Chronic Low Back Pain and Depression. *Pain Medicine*. E-pub, ahead of print.

Finding: Serotonin norepinephrine reuptake inhibitors (SNRIs) are commonly co-prescribed with opioids for chronic

pain. The purpose of this study was to describe pain and mood response to venlafaxine among older adults with chronic low back pain (CLBP) and depression relative to opioid exposure. Opioid exposure was analyzed as prescribed (yes or no) and by morphine equivalent dosing (MED). Patients co-prescribed an opioid were less likely to report a pain response to venlafaxine. MED was negatively correlated with pain response. Depression response was not impacted. These findings suggest that clinicians may wish to consider either nonopioid or alternative antidepressant approaches to pain management in these complex patients. It is reassuring that opioids do not prevent depression response.

Wu M, Thurston RC, Tudorascu DL, Karim HT,

Mathis CA, Lopresti BJ, Kamboh MI, Cohen AD, Snitz BE, Klunk WE, Aizenstein HJ. Amyloid Deposition Is Associated with Different Patterns of Hippocampal Connectivity in Men versus Women. *Neurobiology of Aging*. 2019; 76: 141-150. [PMID: 30711677; NIHMS 1515576].

Finding: The effects of brain amyloid on functional connectivity in preclinical AD differ by sex. In men but not women, greater amyloid burden was associated with greater hippocampal-prefrontal connectivity. Characterizing sex differences in responses for AD-related pathologies, as in the present study, can help guide the development of sex-specific prevention and treatment strategies.

Alzheimer's Disease Research Center (ADRC)

Director: Oscar Lopez, MD; Co-Director: William E. Klunk, MD, PhD

The ADRC performs and promotes research designed to gain an understanding of the etiology and pathogenesis of Alzheimer's disease (AD) and the mechanisms underlying the cognitive and neurobiological changes. It also develops strategies targeted at effective early diagnoses and treatments for AD and other dementias. The publications of the ADRC highlight a focus on imaging biomarkers, neuropsychiatric characterization including the provision of high quality, behaviorally characterized samples for genetic and postmortem studies, and early stage disease.

Wang L, Ying J, Fan P, DeMichele-Sweet MA,

Weamer EA, Lopez OL, Kofler JK, Sweet RA. The Effects of Vitamin D use on outcomes of psychotic symptoms in Alzheimer's disease patients. *The American Journal of Geriatric Psychiatry*. 2019 Sept; 27(9): 908-917. [PMCID: PMC6693492].

Finding: Vitamin D was associated with delayed onset of psychotic symptoms in patients with AD. Its mechanisms of action provide a novel direction for development of drugs to prevent or treat psychosis in AD. In addition, AD and/or psychosis-related genes were enriched in the list of genes most perturbed by vitamin D, specifically genes involved in the regulation of calcium signaling downstream of the vitamin D receptor suggesting that genetic variations in vitamin D-regulated genes may

provide a biomarker signature to identify a subpopulation of patients who can benefit from vitamin D treatment.

Lopez OL, Chang YF, Ives DG, Snitz BE, Fitzpatrick AL, Carlson MC, Rapp S, Williamson JD, Tracy RP, DeKosky ST, Kuller LH. Blood Amyloid Levels and Risk of Dementia in the Ginkgo Evaluation of Memory Study (GEMS): A Longitudinal Analysis. *Alzheimers & Dementia*. 2019 Aug; 15(8): 1029-1038. doi: 10.1016/j.jalz.2019.04.008.

Finding: Increased plasma A β 1-40 and A β 1-42 levels were associated with gender (women), age, low education, creatinine levels, history of stroke, and hypertension. Cognitively normal (CN) participants who developed dementia had lower levels of A β 1-42

and A β 1-42/A β 1-40 ratio compared with those who did not. A β 1 levels did not predict dementia in mild cognitive impairment participants.

We concluded that there was an inverse association between A β 1-42 and A β 1-42/A β 1-40 ratio to risk of dementia in CN participants. Cerebral and cardiovascular disease and renal function are important determinants of increased A β levels and must be considered in evaluations of relationship of plasma A β and subsequent risk of dementia.

Lyons CE, Tudorascu D, Snitz BE, Price J, Aizenstein H, Lopez OL, Lopresti B, Laymon C, Minhas D, Mathis C, Klunk W, Cohen AD. The relationship of current cognitive activity to brain amyloid burden and glucose metabolism.

American Journal of Geriatric Psychiatry. 2018 Sep; 26(9): 977-984. [PMCID: PMC6482956].

Finding: This study investigated the relationship between cognitive activity (CA), and A β deposition and glucose metabolism in 199 cognitively normal participants. All participants underwent Pittsburgh Compound-B (PiB) and [18 F] fluorodeoxyglucose-positron emission tomography and completed a questionnaire designed to measure current CA. Linear regression models revealed a significant negative relationship between PiB retention and CA and a significant positive relationship between glucose metabolism and CA. These data suggest that CA may have a direct beneficial effect on the pathophysiology of AD

or reflect another underlying process that results in both higher CA and lower AD pathophysiology.

Center for Aging and Population Health

Director: Anne B. Newman, MD, MPH

The Center for Aging and Population Health (formerly the Center for Healthy Aging) generates new solutions to the challenges of an aging society through population-based research that promotes healthy aging, longevity, and prevention of disability. Supported in part by the Centers for Disease Control and Prevention's (CDC) Prevention Research Centers Program, the Center orchestrates epidemiologic and public health research on aging, trains professionals in population research methodology, and conducts community outreach with a goal of

keeping older adults healthy.

Marron MM, Harris TB, Boudreau RM, Clish CB, Moore SC, Murphy RA, Murthy VL, Sanders JL, Shah RV, Tseng GC, Wendell SG, Zmuda JM, Newman AB. Metabolites Associated with Vigor to Frailty Among Community-Dwelling Older Black Men. *Metabolites*. 2019 Apr 30; 9(5). pii: E83. doi: 10.3390/metabo9050083. [PMID: 31052232].

Finding: This project found that certain small molecules including some lipids and amino acids were characteristic of older men who were vigorous vs. frail and could help in uncovering the biologic state of healthy aging vs. frailty.

Cawthon PM, Trivison TG, Manini TM, Patel S, Pencina KM, Fielding RA,



Magaziner JM, Newman AB, Brown T, Kiel DP, Cummings SR, Shardel M, Guralnik J, Woodhouse LJ, Pahor M, Binder E, D'Agostino RB, Xue QL, Orwoll E, Landi F, Orwig D, Schaap L, Latham NK, Hirani V, Kwok T, Pereira S, Rooks D, Kashiwa M, Torres-Gonzalez M, Menetski JP, Correa-De-Araujo R, Bhasin S, and Sarcopenia Definition and Outcomes Consortium Conference participants. Establishing the Link Between Lean Mass and Grip Strength Cut-points With Mobility Disability and Other Health Outcomes: Proceedings of the Sarcopenia Definition and Outcomes Consortium Conference. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences*. 2019 Mar 14; pii: glz081. doi: 10.1093/gerona/glz081. Epub ahead of print. [PMID: 30869772].

Finding: This project is reevaluating cut-points for sarcopenia, using data from the Health Aging and Body Composition Study conducted here at Pitt.

Pahor M, Anton SD, Beavers DP, Cauley JA, Fielding RA, Kritchevsky SB, Leeuwenburgh C, Lewis KH, Liu CK, Lovato LC, Lu J, Manini TM, McDermott MM, Miller ME, Newman AB, Radziszewska B, Stowe CL, Tracy RP, Walkup MP, Wu SS, Ambrosius WT; ENRGISE study investigators. Effect of losartan and fish oil on plasma IL-6 and mobility in older persons. The ENRGISE Pilot randomized clinical trial. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences*. 2018 Dec 12; doi: 10.1093/gerona/gly277. Epub ahead of print. [PMID: 30541065].

Finding: This important clinical trial was the first

to test whether we can lower chronic inflammation in older adults and will set the stage for future interventions.

Division of Geriatric Medicine

Director: Neil M. Resnick, MD

Designated a National Center of Excellence by the John A. Hartford Foundation, the University of Pittsburgh's Division of Geriatric Medicine is committed to excellence in geriatric research, clinical care, and training. Its research includes the biology of aging, cancer, dementia, depression, falls, frailty, heart disease, incontinence, infections, mobility, osteoporosis, pain, pharmacotherapy, resilience, and sarcopenia. The division also has NIH support for a Cancer and Aging Center, an Older Americans Independence Center (Pepper), and several NIH-funded research training grants.

Damluji A, Forman DE et al. Older adults in the cardiac ICU: Factoring geriatric syndromes in the management, prognosis, and process of care. A Scientific Statement from the American Heart Association. *Circulation*. 2019; 140.

Finding: With age, cardiovascular disease is much more likely to be superimposed on other comorbidity, polypharmacy, and age-related decline in physiologic capacity of nearly all organ systems. This overlap has important implications for the approach to and management of patients admitted to the cardiac ICU, and these are extensively reviewed in this scientific statement of the AHA.

Scheunemann LP, et al. Clinician-family communication about patients' values and preferences in intensive

care units. *JAMA Internal Medicine*. 2019; 179: 676-684.

Finding: In a quarter of cases, both clinicians and families ignored the values and preferences of incapacitated ICU patients during family conferences about goals of care. Moreover, when they did try to attend to such issues, the conversations typically lacked robust deliberation about key end-of-life values like physical, cognitive, and psychosocial function, as well as spirituality. Interventions are needed to improve patient-centered, shared decision-making for critically ill patients near the end of life.

Kapoor A, Field T, Handler SM, et. al. Adverse events in long-term care residents transitioning from hospital back to the nursing home. *JAMA Internal Medicine*. 2019;

doi: 10.1001/jamainternmed.2019.2005.

Finding: The risk of adverse events has been well-described in both the hospital and nursing home, but there are few data regarding adverse events during the transition of hospitalized patients back to the nursing home. This study revealed an incidence of nearly 40%, and the majority were preventable.

Tyagi SH, Perera S, Clarkson BD, Tadic SD, Resnick NM. Nocturnal excretion in healthy older women and rationale for a safer approach to sleep disruption. *Journal of the American Geriatrics Society*. 2019; Aug 22. doi: 10.1111/jgs.16144

Finding: Insomnia occurs most commonly in older adults, but its treatment in these individuals remains least effective and most

likely to cause falls and fractures. Although there is a bidirectional relationship between insomnia and nocturia, the latter is rarely addressed in treatment guidelines. This study of robustly healthy seniors, all of whom had normal bladder function, revealed that nocturia was present in over half and that, in 90%, the cause was nocturnal polyuria. More notably, most with nocturnal polyuria also had reduced bladder capacity, suggesting that addressing both the excess nightly excretion and small bladder capacity may be safer than the current approach to geriatric insomnia and also more effective.

2019 American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2019 Updated AGS Beers Criteria for potentially inappropriate

medication use in older adults. *Journal of the American Geriatrics Society*. 2019; 67: 674-94.

Finding: Update of the landmark and extensively-used “Beers list” of drugs to avoid in treating older adults.

Nayak S, Greenspan SL. A systematic review and meta-analysis of the effect of bisphosphonate drug holidays on bone mineral density and osteoporotic fracture risk. *Osteoporosis International*. 2019; 30: 705-720.

Finding: Bisphosphonates can be a double-edged sword. Although they are the cornerstone of osteoporosis treatment, they also can cause atypical fractures and osteonecrosis of the jaw. Yet consensus is lacking as to when they can be discontinued. This critical analysis revealed

that bisphosphonate therapy may be discontinued for women who no longer have low hip bone density after 3-5 years of treatment, but it should be continued for those whose bone density remains abnormal.

Madill E, Samuels R, Newman DP, Boudreaux-Kelley M, Weiner DK. Development of an evaluative, educational, and communication-facilitating app for older adults with chronic low back pain: Patient perceptions of usability and utility. *Pain Medicine*. 2019; May 7. pii: pnz088. doi: 10.1093/pm/pnz088.

Finding: The authors created an office-based app that screens for key conditions that drive pain and disability in chronic low back pain, provides evidence-based education about these conditions, and

facilitates targeted patient-provider communication. It has the potential to save significant health care resources and improve quality of life for millions of older Americans, and it is part of an ongoing multisite VA trial.

Geriatric Research Education and Clinical Center (GRECC)

Director: Steven Graham, MD, PhD

The GRECC is funded by the Department of Veterans Affairs and provides an integrated program of basic biomedical, clinical, and health services research; education of trainees and practitioners; and clinical demonstration projects designed to advance knowledge regarding the care of the elderly, with an emphasis on stroke. Its research focus includes neuronal-cell death in stroke, gene therapy in

cerebrovascular disease, depression in the elderly, polypharmacy in long-term care, and end-of-life care.

Weiner DK, Gentili A, Rossi M, Coffey-Vega K, Rodriguez KL, Hruska KL, Hausmann L, Perera S. Aging Back Clinics - a Geriatric Syndrome Approach to Treating Chronic Low Back Pain in Older Adults: Results of a Preliminary Randomized Controlled Trial. *Pain Medicine*. 2019 Sep 10. doi: 10.1093/pm/pnz179. [Epub ahead of print]. PMID: 31503275.

Aspinall SL, Springer SP, Zhao X, Cunningham FE, Thorpe CT, Semla TP, Shorr RI, Hanlon JT. Central Nervous System Medication Burden and Risk of Recurrent Serious Falls and Hip Fractures in Veterans Affairs Nursing Home Residents. *Journal of the American Geriatrics Society*. 2019 Jan; 67(1):

74-80. doi: 10.1111/jgs.15603. [Epub 2018 Oct 11].

Liu H, Povysheva N, Rose ME, Mi Z, Banton JS, Li W, Chen F, Reay DP, Barrionuevo G, Zhang F, Graham SH. Role of UCHL1 in axonal injury and functional recovery after cerebral ischemia. *Proceedings of the National Academy of Sciences of the United States of America*. 2019; 110: 4643-4650..

Mental Illness Research, Education, and Clinical Centers (MIRECC)

Site Director: Gretchen L. Haas, PhD
The Mental Illness Research, Education and Clinical Centers (MIRECC) were established by Congress with the goal of researching the causes and treatments of mental disorders and using education to put new knowledge into routine

clinical practice in the Veterans Administration. Specialized mental health centers of excellence (MHCoE) are an essential component of the VA's response to meeting the mental health needs of veterans.

Tighe C, Youk A, Ibrahim S, Weiner D, Vina E, Kwoh C, Gallagher R, Bramoweth AD, Hausmann L. Pain Catastrophizing and Arthritis Self-Efficacy as Mediators of Sleep Disturbance and Osteoarthritis Symptom Severity. *Pain Medicine*. 2019; Advance online publication. doi:10.1093/pm/pnz187.

Finding: A secondary analysis of baseline data from a clinical trial examining a positive psychological intervention for Veterans with pain from knee osteoarthritis (PI: Hausmann; IIR13-080) was conducted. In this

study, Veterans reported moderate pain severity and endorsed experiencing sleep disturbance at least several days in the past 2 weeks. Veterans who more frequently experienced sleep disturbance reported higher levels of pain catastrophizing and lower levels of pain self-efficacy; higher catastrophizing and lower self-efficacy, in turn, were associated with higher levels of osteoarthritis symptom severity.

Gebara MA, DiNapoli EA, Lederer L, Bramoweth AD, Germain A, Kasckow JW, & Karp J. Brief behavioral treatment for insomnia in older adults with late-life depression and insomnia: a pilot study. *Sleep and Biological Rhythms*. 2019; Advance online publication. doi:10.1007/s41105-019-00211-6.

Finding: This is the first study to examine the feasibility and effect of Brief Behavioral Treatment for Insomnia (BBTI) in older adults with comorbid late-life treatment resistant depression. The findings suggest that BBTI is a feasible treatment for insomnia in older adults and that it may also be an effective adjunctive treatment for depression in this difficult to treat population.

Gujral S, Aizenstein H, Butters MA, Reynolds CF, Grove G, Karp JF, & Erickson KI. Exercise for Depression: a Feasibility Trial Exploring Neural Mechanisms. *American Journal of Geriatric Psychiatry*. 2019; 27(6): 611-616. doi: <https://doi.org/10.1016/j.jagp.2019.01.012>.

Finding: In a systematic review, this study examined the overlap

between structural brain abnormalities in depression and the effects of exercise on brain structure in adults, to highlight possible neural mechanisms that may mediate the positive effects of exercise on depressive symptoms. The prefrontal cortex, anterior cingulate cortex, hippocampus, and corpus callosum emerged as structural neural markers that may serve as targets for exercise-based treatments for depression.

**Pittsburgh
Claude D. Pepper
Older Americans
Independence Center**

Director: Susan L. Greenspan, MD

Balance Disorders in older people are common, disabling, and often complex. A concentrated, multidisciplinary effort is needed to understand its causes and consequences – and to develop

innovative treatments. The team of investigators at the Claude D. Pepper Older Americans Independence Center offers complementary expertise, outstanding research productivity, and ongoing studies to address this problem. The center brings together faculty from five schools within the University of Pittsburgh: medicine, nursing, public health, allied health, and engineering.

Sahu A, Mamiya H, Shinde SN, Cheikhi A, Winter LL, Vo NV, Stolz D, Roginskaya V, Tang WY, St Croix C, Sanders LH, Franti M, Van Houten B, Rando TA, Barchowsky A, Ambrosio F. Age-related declines in alpha-Klotho drive progenitor cell mitochondrial dysfunction and impaired muscle regeneration. *Nature Communications*. 2018; 9(1): 4859.

Finding: While young muscle is capable of restoring the original architecture of damaged myofibers, aged muscle displays a markedly reduced regeneration. We show that expression of the “anti-aging” protein, α -Klotho, is up-regulated within young injured muscle as a result of transient Klotho promoter demethylation. The studies demonstrate a role for α -Klotho in the regulation of mitochondrial function.

Scheunemann LP, Ernecoff NC, Buddadhumaruk P, Carson SS, Hough CL, Curtis JR, Anderson WG, Steingrub J, Lo B, Matthay M, Arnold RM, White DB. Clinician-Family Communication About Patients' Values and Preferences in Intensive Care Units. *JAMA Internal Medicine*. 2019; 179(5): 676-684.

Finding: Little is known about whether clinicians and surrogate decision makers follow recommended strategies for shared decision making by incorporating intensive care unit (ICU) patients' values and preferences into treatment decisions. The study found that most clinician-family conferences about prognosis and goals of care for critically ill patients appear to lack important elements of communication about values and preferences, with robust deliberation being particularly deficient. Interventions may be needed to better prepare surrogates for these conversations and improve clinicians' communication skills for eliciting and incorporating patients' values and preferences into treatment decisions.

Hergenroeder AL, Barone Gibbs B, Kotlarczyk MP, Perera S, Kowalsky RJ, Brach JS. Accuracy and Acceptability of Commercial-Grade Physical Activity Monitors in Older Adults. *Journal of Aging and Physical Activity*. 2019; 27(2): 222-229. 35.

Finding: The aim of this study was to evaluate the accuracy of seven commercial activity monitors in measuring steps in older adults with varying walking abilities and to assess monitor acceptability and usability. The Accusplit AX2710 Accelerometer Pedometer had the highest accuracy (93.68% ± 13.95%), whereas the Fitbit Charge had the lowest (39.12% ± 40.3%). Device accuracy varied based on assistive device use, and none of the monitors were accurate at gait

speeds <0.08 m/s. Barriers to monitor usability included inability to apply monitor and access the step display. Monitor accuracy was rated as the most important feature, and ability to interface with a smart device was the least important feature. This study identified the limitations of the current commercial activity monitors in both step counting accuracy and usability features for older adults.

University of Pittsburgh Cancer Center Genome Stability Program

Patricia Opresko, PhD and Ben Van Houten, PhD, co-leaders.

Advancing the understanding, diagnosis, and treatment of cancer through basic, translational, clinical, and population-based research programs.

Fouquerel E, Barnes RP, Uttam S, Watkins SC, Bruchez MP, Opresko PL. Targeted and Persistent 8-Oxoguanine Base Damage at Telomeres Promotes Telomere Loss and Crisis. *Molecular Cell*. 2019 July 11; 75(1): 117-130.e6. doi: 10.1016/j.molcel.2019.04.024. Epub 2019 May 14. [PMID:31101499].

Finding: Telomeres are the caps at chromosome ends that shorten as we age, and critically short telomeres cause cellular aging. Oxidative stress caused by an excess of unstable reactive oxygen molecules accelerates telomere shortening. By developing a tool to selectively induce oxidative damage only at the telomeres, Dr. Patty Opresko and her team showed that telomere damage directly drives telomere loss and causes telomeres to shorten faster.

Barroso-González J, García-Expósito L, Hoang SM, Lynskey ML, Roncaioli JL, Ghosh A, Wallace CT, Modesti M, Bernstein KA, Sarkar SN, Watkins SC, O'Sullivan RJ. RAD51AP1 Is an Essential Mediator of Alternative Lengthening of Telomeres. *Molecular Cell*. 2019 Oct 3; 76(1): 11-26.e7. doi: 10.1016/j.molcel.2019.06.043. Epub 2019 Aug 7. [PMID: 31400850].

Finding: Cancer cells must maintain telomere lengths for immortalization and unlimited growth, and nearly 15% of cancers maintain telomeres by the ALT mechanism. This study from the O'Sullivan laboratory showed that RAD51AP1 protein is required for ALT, and that disruption of this protein led to telomere shortening in ALT positive cancer cells and activation of

autophagy as a compensatory survival mechanism. This team discovered that the combined inhibition of RAD51AP1 protein and autophagy may be a promising new strategy for treating aggressive cancers that use ALT to maintain telomeres.

Qian W, Kumar N, Roginskaya V, Fouquerel E, Opresko PL, Shiva S, Watkins SC, Kolodieznyi D, Bruchez MP, Van Houten B. Chemoptogenetic damage to mitochondria causes rapid telomere dysfunction. *Proceedings of the National Academy of Sciences of the United States of America*. 2019 Sep 10; 116(37): 18435-18444. doi: 10.1073/pnas.1910574116. Epub 2019 Aug 26. [PMID: 31451640].

Finding: Using a new chemoptogenetic approach, this team led by Dr. Ben Van Houten

showed that hydrogen peroxide released from damaged mitochondria caused oxidation of nuclear proteins, alterations in nuclear morphology, but not gross genomic damage. Analysis of telomeres indicated that this targeted mitochondrial damage led to telomere double-strand breaks, fragility and loss within 48 hrs. of the initial insult. This work has important implications in cancer and aging. For an interview with Ben Van Houten, describing this work see: <https://www.upmc.com/media/news/082619-pnas-van-houten>.

UPMC Palliative and Supportive Institute (PSI)

Director: Robert Arnold, MD

The PSI was established to improve the quality of life of patients whose diseases are no longer responsive to curative treatments. Its

team of health care professionals offers care for patients with life-limiting illnesses, and provides comfort and support to those patients and their families. The following publications are relevant to today's trend of focusing on patients' desires for care at the end of life and the importance of communicating clearly with the patient and physician or clinician.

Schenker Y, Park SY, Jeong K, Pruskowski J, Kavalieratos D, Resick J, Abernethy A, Kutner JS. Associations Between Polypharmacy, Symptom Burden, and Quality of Life in Patients with Advanced, Life-Limiting Illness. *Journal of General Internal Medicine*. 2019; 34(4): 559-566. 10.1007/s11606-019-04837-7.

Finding: This secondary analysis of baseline data from a trial of statin

discontinuation evaluated the associations between polypharmacy, symptom burden, and quality of life (QOL) in 372 patients with advanced, life-limiting illness. The study found that among adults with advanced illness, taking more medications is associated with higher symptom burden and lower quality of life. The authors note that future priorities for treating patients in this setting should include attention to medication-related symptoms and shared decision-making regarding deprescribing.

Merlin JS, Long D, Becker WC, Cachay ER, Christopolous KA, Claborn KR, Crane HM, Edelman EJ, Lovejoy TI, Mathews WC, Morasco BJ, Napravnik S, O'Leirigh C, Saag MS, Starrels JL, Gross R, Liebschutz JM. Marijuana Use Is Not Associated

With Changes in Opioid Prescriptions or Pain Severity Among People Living With HIV and Chronic Pain. *Journal of Acquired Immune Deficiency Syndromes*. 2019; 81(2): 231-237. 10.1097/qai.0000000000001998.

Finding: Marijuana use for chronic pain is commonly reported among people living with HIV, although there is limited empirical evidence to support its use. In this study, 433 people living with HIV completed self-report measures of chronic pain and marijuana use. Among the participants, 28% reported marijuana use in the past 3 months. However, there was no evidence that marijuana use in people living with HIV is associated with improved pain outcomes or reduced opioid prescribing.

Scheunemann LP, Ernecoff NC, Buddadhumaruk P, Carson SS, Hough CL, Anderson WG, Steingrub J, Lo B, Matthay M, Arnold RM, White DB. Clinician-Family Communication About Patients' Values and Preferences in Intensive Care Units. *JAMA Internal Medicine*. 2019; 179(5): 676-684. 10.1001/jamainternmed.2019.0027.

Finding: This study involved a secondary analysis of audio-recorded clinician-family conferences between surrogates and clinicians of 249 incapacitated, critically ill adults. Findings indicated that most clinician-family conferences about prognosis and goals of care for critically ill patients lack communication about values and preferences. Future interventions may

be needed to enhance clinicians' communication skills to include patients' values and preferences in treatment decisions.



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