



INNOVATIONS IN AGING

Aging Institute
2018 Annual Report

UPMC | **SENIOR
SERVICES**



University of Pittsburgh

Aging Institute 2018 Annual Report
UPMC Senior Services & The University of Pittsburgh



“Of molecules, mice, and men.”

This trinity aptly summarizes the spectrum of discovery, testing, and life-changing applications that are the promised hallmark of the new Aging Institute of UPMC Senior Services and the University of Pittsburgh.

Long recognized nationally as a pioneering force of excellence in geriatric care, the Aging Institute is now investigating the very fundamentals of aging under the leadership of its new director, **Toren Finkel, MD, PhD**, supported by a multi-million-dollar investment by UPMC and the University of Pittsburgh in new faculty and state-of-the-art research laboratories.

In its new role, the Aging Institute will add a focus on the basic science of aging to its work, enabling it to address the entirety of the aging research spectrum. And by illuminating the root cause of the many diseases associated with aging — from cardiovascular disease, cancer, and neurodegenerative disorders — the Institute will begin addressing these diseases in their biological context.



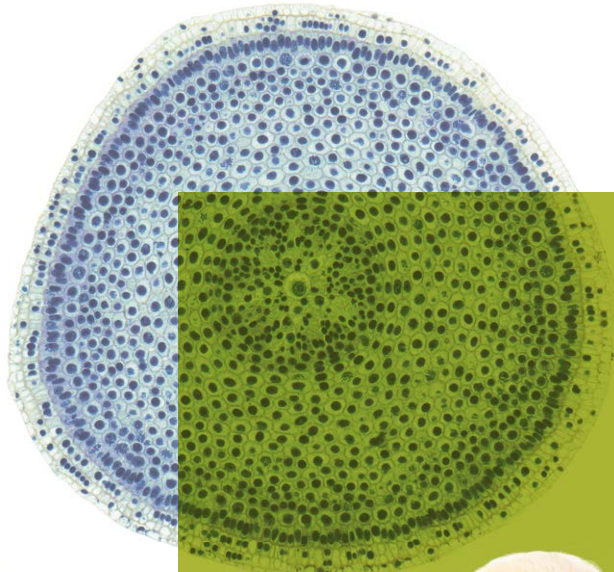


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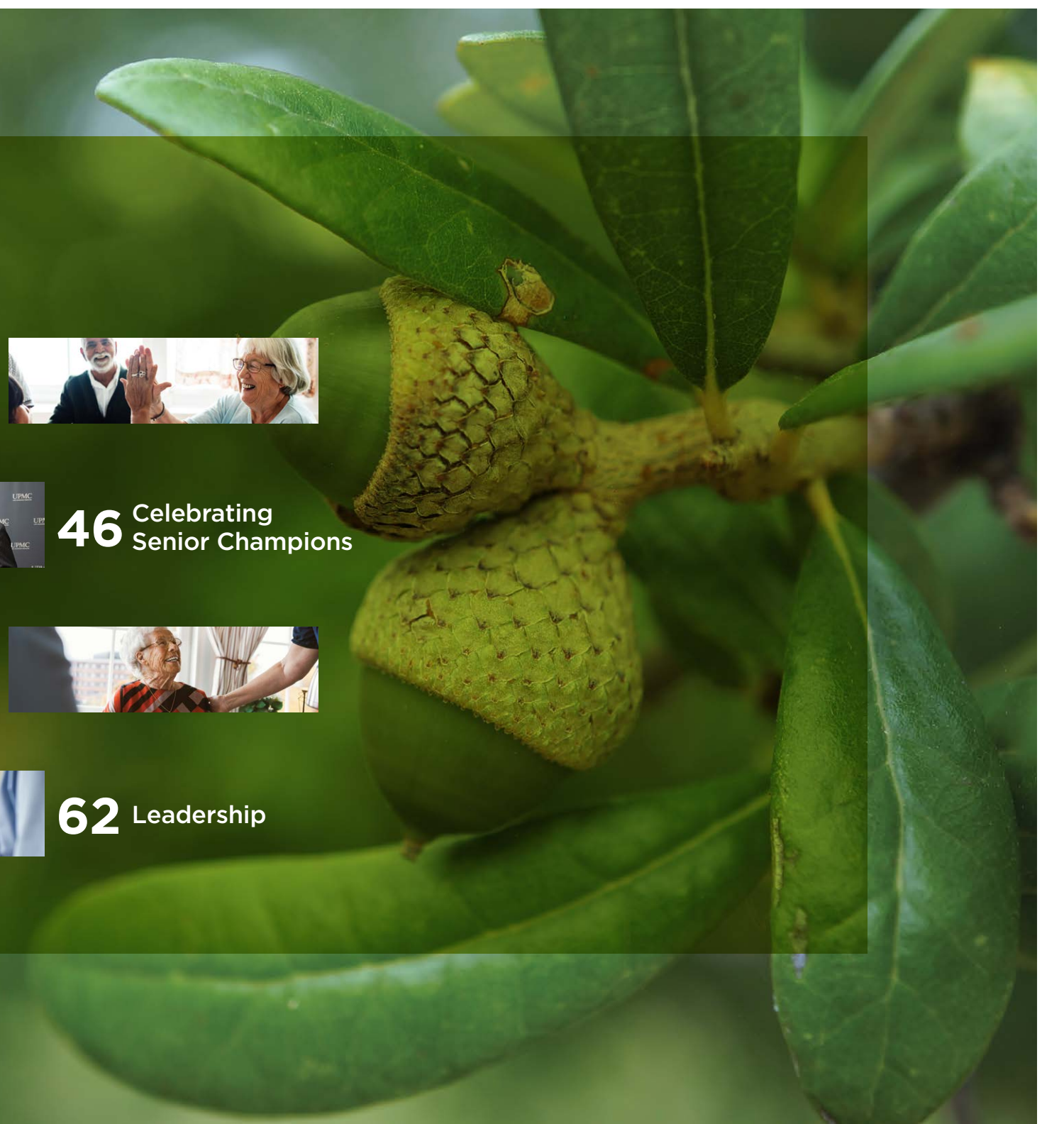


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Dear Colleagues and Friends,

It's a rare day that I'm not reminded of what a privilege it is to work as a researcher in the field of aging. If you love science as I do, you know it is a process both creative and profound. Even when we find ourselves most challenged, there is still something intrinsically noble in the scientific search for understanding and discovery.

I've come to feel that way even more as recent advancements in the biology of aging allow me and others in the field to dare to rationally think about ways we can transform the aging process in humans. **We are on the cusp of a tremendous paradigm shift:** By understanding how we age and translating it to new therapies, we have the potential to slow down the aging process and thereby prevent, or even stop, a host of age-related complications and diseases.

In September of 2017, these advancements led me to become part of the remarkable work of the Aging Institute of UPMC Senior Services and the University of Pittsburgh. For many years, I served as a researcher at the National Institutes of Health (NIH) in Bethesda, Maryland. It was a wonderful, fascinating, and challenging place to work, and I'm grateful for the many rewarding experiences I had there.

But given the explosive new growth occurring in the study of aging, the chance to build a research laboratory from the ground up in Pittsburgh — one dedicated to solving the chronic diseases of aging as part of the visionary new **UPMC Immune Transplant and Therapy Center** — proved irresistible. It signals that aging as a field has sufficiently matured to the point that **we can now seize the opportunity to address human aging in a new way.**

Much has happened during my first year here as **we seek to continue and build upon the many strengths of the Aging Institute** — from its rich and varied education, community outreach, and practice initiatives focused on creating new models of care for older adults, to its vital role as a convening mechanism for collaboration among the schools of health sciences at the University of Pittsburgh — **while adding a new biology of aging research dimension to its mission.**

This charge for the Aging Institute will focus on the identification of biochemical pathways and therapies that **target the process of aging**, with the ultimate goal of extending health span and eliminating disease. A major focus of the new Aging Institute will be the development of new drugs that will enhance our fundamental resilience to age and preventing age-related complications such as atherosclerosis, lung fibrosis, and neurodegenerative diseases.

Highlights of the Aging Institute Laboratory's new research agenda in 2018 include:

- Construction and opening of the **new Aging Institute Laboratory** at Bridgeside Point, featuring state-of-the-art laboratories dedicated to biological discovery in aging
- Recruitment of **10 gifted faculty investigators** from within the University of Pittsburgh and leading institutions across the nation
- Securing more than **\$4 million in initial research funding** from NIH and private support, catalyzed by leadership funding from The Beckwith Institute
- Initiation of a new **drug discovery** program

And I am deeply honored that **Anne Newman, MD, MPH**, has agreed to serve as the Institute's new clinical director to assure the continued growth of its many legacy programs that promote cross-disciplinary collaboration at the University of Pittsburgh and UPMC. She also will be involved in the development and testing of new therapies, joined by **Daniel Forman, MD**, the new director of emerging therapeutics for the Institute. With their combined leadership and experience, we are well positioned to soon design and launch our own novel mechanistic trials.

We are grateful every day for these new opportunities, made possible through the counsel, support, and investment of many individuals and offices throughout the University of Pittsburgh and UPMC. I would particularly like to extend our appreciation to the following:



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**, Jack D. Myers Professor and Chair, Department of Medicine, University of Pittsburgh and Director, Pittsburgh Heart, Lung and Blood Vascular Medicine Institute. **Christopher P. O'Donnell, PhD**, executive vice chair of academic affairs, Department of Medicine, University of Pittsburgh; **Deborah Brodine**, president, UPMC Community Provider 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**, chairman of the Environmental and Occupational Health Department, University of Pittsburgh; **Diane 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**, School of Nursing; **Patricia Kroboth, PhD**, School of Pharmacy; **Ann E. Cudd, PhD**, provost and senior vice chancellor, University of Pittsburgh; and **Elizabeth M. Z. Farmer, PhD**, dean of the School of Social Work.

In summary, may I say that those of us at the Aging Institute, in all our many capacities, recognize that working together we have the power to transform the lives of older adults and our greater society at large. The year of 2018 has been ambitious, successful, and satisfying — an exciting portent of the life-changing discoveries we hope to realize through our efforts.

Sincerely,

Torén 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*



Anne B. Newman, MD, MPH

Clinical Director, Aging Institute of UPMC Senior Services and the University of Pittsburgh

Department Chair, Epidemiology, School of Public Health, University of Pittsburgh

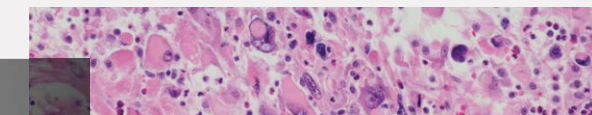
Katherine M. Detre Endowed Chair, Population Health Sciences

Director, Center for Aging and Population Health

Professor, Epidemiology, Medicine, and Clinical and Translational Science Institute

Dr. Newman, a leading voice with the Aging Institute since its inception more than a decade ago, now serves as its first clinical director. “With her exceptional knowledge and expertise in understanding what happens biologically as we age and how to maintain function and good health into old age, she is unquestionably the perfect person to lead the Aging Institute’s clinical efforts and interventions,” says Dr. Finkel in announcing her appointment.

A renowned researcher in the field of epidemiology and public health, Dr. Newman served for many years as a distinguished gerontologist and was the first geriatrics fellow at the University of Pittsburgh School of Medicine. During her clinical career, she was staff physician at the highly regarded UPMC Senior Care-Benedum Geriatrics Center, which offers primary ambulatory care services for older persons with complex problems. She also established the region’s first teaching nursing home, Canterbury Place (now part of UPMC Senior Communities), as well as Longwood at Oakmont, a model continuing care community.



“My own journey as a researcher has focused on understanding the reasons that cause loss of mobility in order to prevent disability and optimize health in old age,” notes Dr. Newman, who has led several seminal research studies, including two long-term projects on cardiovascular health and healthy aging body composition. She has followed thousands of participants from the Pittsburgh area for two to three decades to understand the health outcomes of older adults. She also has conducted clinical trials testing lifestyle and medications to improve health span. Most recently, she identified that the predictors on healthy aging include genetic and metabolomic signatures.

“I’m very excited to be part of the next phase of the Aging Institute’s evolution,” she says. “We are looking forward to continuing its initiatives in education and training to foster best practice care, as well as its efforts promoting collegial, multidisciplinary collaboration throughout UPMC and the University of Pittsburgh, such as Research Day. The Institute promises to be a continuing catalyst and community for academicians and researchers who truly care about older adults.”

With the Institute’s new focus on the biology of aging, she also sees new opportunities to optimize health span. “We expect to increasingly look at approaches from a prevention orientation and consider the underlying drivers of conditions that require significant integrated health services,” she notes. “For example, cardiovascular prevention is critical to optimizing health span. There is a tremendous capacity in older people to recover, respond, and improve their health, even after serious illness.”

She also feels it is important for the Institute to support efforts to ensure that the University’s centers of excellence that support aging remain vibrant and well-funded. “They strengthen our work as a whole,” she notes. “My hope is that working together, we’ll make Pittsburgh the best place to grow old.”

Aging Institute Initiatives



Since its inception, the Aging Institute has led collaborative initiatives through a variety of multidisciplinary teams targeting key health problems and wellness initiatives important to older adults. Drawing on the talents and insights of dedicated researchers, scientists, and administrators from the University of Pittsburgh and UPMC, these innovative collaborations have generated new knowledge and actionable solutions — and served as incubators for large-scale, externally funded research such as RAVEN. This year, the Healthy Brain Aging Initiative continued to explore new ways of delaying the effects of brain aging.

Healthy Brain Aging Initiative

Is brain aging an inevitable reality that we all must one day face? Are there active steps we can take to protect our brains from — or at least delay — the intrusive effects of aging?

Those questions have shaped the agenda of the Aging Institute's multidisciplinary **Healthy Brain Aging Initiative**. Since 2013, its members have focused their efforts on assessing the impact of physical activity on the brain in hopes of developing preventative strategies linked to changes in lifestyle.

Over the past five years, they have conducted both animal and human studies, including:

- Measurements of physical and cardiac fitness
- Functional imaging to look at blood flow in the brain
- Proteomic analysis of the blood proteins and gene expression profiling of blood cells
- Neuropsychological and cognitive testing

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*. Its findings were based on the group's research that used functional MRI imaging. **Stephen Smagula, PhD**, assistant professor of psychiatry at the University of Pittsburgh, served as the lead author.

A Study in Contrasts: The Test Group vs. the Control Group

"When we began the Initiative, we knew from earlier studies with primates that just being active improves brain health, so our clinical study with humans was based on that basic science work," says chair **Judy L. Cameron, PhD**, professor of psychiatry and director of the Pitt Science Outreach program at the University of Pittsburgh.



In all, 25 older adults aged 65-85 were recruited for a human study conducted in 2015-16.

- **Test group participants** were asked to build up to 10-minute periods of moderate exercise, three times a day, five days a week.
- **Control group members** were asked to simply stretch three times a day.
- Both groups were given electronic tablets to watch videos demonstrating their assigned workouts, and **all engaged in socialization activities** through regular group sessions.

Unexpected Findings in Cognitive Function

While previous research studies led the Initiative to expect likely improvements in the exercise test group, cognitive function analysis results also revealed unexpected changes in the stretching control group.

"We were surprised to see improvements among the members of the stretching control group, who

appeared to get better at learning and memory," says **Meryl A. Butters, PhD**, associate professor of psychiatry and clinical and translational science at the University of Pittsburgh, who has led the cognitive assessment of all participants at the start of the study and its conclusion. Tests focused on these five domains:

- Language abilities
- Visual/spatial abilities
- Attention/processing speed
- Memory/learning
- Executive function

The stretching control group improved in all three areas — immediate learning, short-term recall, and long-term recall. Those results were confirmed by additional tests, demonstrating improvements in learning in the entire control group.

"The exercise group also demonstrated improvements on multiple cognitive processes, particularly in the area of executive function (EF)," notes Dr. Butters. EF is key for complex reasoning, such as problem solving and planning.

"These early results are exciting because both learning memory and EF deteriorate with age. But in this limited study, we instead saw *improvement*, not deterioration, over a period of six months, in both the control group and exercise group," says Dr. Butters. "There's the potential for true major

public health significance if we can replicate these findings on a larger scale."

Big Data: Bringing New Eyes to the Research Analysis

In 2018, the group turned to **Panagiotis (Takis) Benos, PhD**, professor of computational and systems biology at the University



of Pittsburgh and his doctoral student **Vineet Raghu**, to apply a big data machine learning approach to this data. His lab specializes in causal inference algorithms that learn cause and effect associations across mixed data types and build predictors.

"The world's top scientists have not yet been able to successfully find a biomarker for brain health. With this approach, we're looking at the search

The Quest for Biomarkers: Proteins and Genes

In addition to the cognitive results, the Initiative has intensified its effort to identify biomarkers of the improvements they have seen in learning (in the control group) and executive function (in the exercise group).

"We're trying to determine if increased exercise results in changes to the structure and functional activity of the brain, and if we can detect blood biomarkers that reflect these brain changes" explains **Abbe N. de Vallejo, PhD**, an immunologist at UPMC Children's Hospital of Pittsburgh, who is leading this aspect of the research. "We can't biopsy a living brain and brain imaging is very expensive, so identifying one or more biomarkers - chemicals measured in the blood that reflect changes going on in the brain - corresponding to the cognitive changes would provide invaluable insight."

Of the hundreds of thousands of proteins in the blood, Dr. de Vallejo has identified 87 for analysis that could be expected to show deterioration or improvements that reflect changes in the brain function in older individuals. They include proteins that have been reported to affect or be linked to immune function, inflammation, Alzheimer's disease, and other age-related diseases.

The Initiative first used proteomic analysis (looking at proteins in the blood) to see what changes in the proteins correlate to changes in brain structure and function. "The initial results identified certain proteins known to affect muscle function. This first dataset has given us confidence that we're going in the right direction with the biomarker approach," notes Dr. de Vallejo. In the coming year, the Initiative will complete the proteomic analysis and plans to analyze its RNA Sequencing (RNA-Seq) results, with the goal of detecting changes in gene expression in the blood.

in a different way," says Dr. Cameron. "In addition to a traditional scientist-driven analysis, we're adding a data-driven analysis that will yield statistical connections without imposing any presumptive hypotheses."

"We will try to show unique associations in the data by representing every variable as a node in a graph, creating visual connections," says Dr. Benos. "By showing what variables directly affect others, it's possible to build predictive models. This approach will enable us to look at multiple data scales concurrently and identify the parameters that are most related to the cognitive findings by group and age."

Strength in Numbers

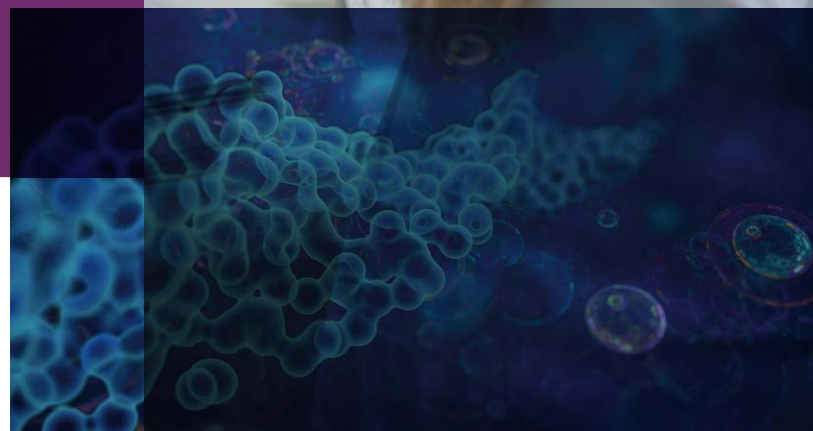
Dr. Cameron praised the commitment and diversity of the members of the Initiative, which has grown in scale and scope over the last five years. "They represent a remarkable, interdisciplinary range of skills and perspectives — from immunology, sports medicine, psychiatry, cognitive neuroscience, biostatistics, and more," says Dr. Cameron. "Their immense expertise has brought incredible cross-fertilization to this project and allowed us to achieve what none of us could ever have done on our own."

The Bridgeside Point research building is just a stone's throw from where steel mills once lit the night sky and fueled the lifeblood of Pittsburgh's manufacturing economy. Today, this area is part of the region's booming "eds and meds" economy and the home of the new Aging Institute Laboratory. Here, talented investigators are using sophisticated molecular techniques to answer the fundamental biological question of what controls how, and why, we age.

The answers they yield through their research, says **Toren Finkel, MD, PhD**, the Aging Institute's new director, have the potential to unlock powerful new approaches to extend our health span — the period of life during which a person remains free from serious illness — by increasing the number of years we remain free of chronic, age-related diseases and conditions.



Biology of Aging Research



A Revolutionary New Look at Aging

To many, it seemed an impossible undertaking, but under the leadership of Dr. Toren Finkel, the gleaming new state-of-the-art Aging Institute Laboratory was successfully designed, constructed, equipped, and staffed in just over a year's time. It comprises nearly 30,000 square feet of lab and office space on two floors of Bridgeside Point 1, an impressive and modern glass-encased building that is part of several University of Pittsburgh research operations.

Prior to coming to the Aging Institute, Dr. Finkel spent a quarter century working with the National Institutes of Health (NIH) in Maryland.

"Over the last years, researchers have made a great deal of progress trying to understand the basic mechanisms of why we age, and uncovered some of the core regulators of the aging process," says Dr. Finkel. "We've come to understand that aging is like every other biological process: it's regulated by biochemical and genetic controls. While there's a stochastic nature to it, there's also a lot of regulation in many places, where we can intervene rationally to change the trajectory. That's very exciting because the aging process is fundamental to so many diseases."

"The bold idea that the Aging Institute will test is whether or not those pathways can be treated with drugs: Can we find medicines that target those pathways, just like we have medicines that target other pathways in our body? By essentially slowing or reversing the rate at which we age, we could potentially prevent a variety of age-related diseases. The idea isn't really to make people live incredibly longer lives, but much healthier lives. Ultimately, the potential impact on human health and quality of life could be staggering."

The Aging Institute plans a three-pronged approach to its research:

- It will continue to **explore the basic biology of aging**, using sophisticated molecular techniques.
- It will work to **identify novel small molecules** — drugs — to combat the aging process.
- It will conduct clinical trials to leverage its discoveries in the biology of aging to **test new therapies in actual human patients**.

Accelerating New Treatments

Dr. Finkel's own research has significantly contributed to the understanding of the aging process. He has studied a specific class of enzymes (sirtuins) that are key regulators in aging and discovered that cellular

energy pathways are involved in the maintenance of the body's stem cells.

Over the years, his research has involved both animal models and humans, bridging basic science and clinical medicine. His current work at the Aging Institute now explores the relationship between mitochondria, metabolism, and human aging.

"We are heavily invested in the joy of discovery here and have made considerable progress in the course of our first year," says Dr. Finkel. "While we continue our work in basic biology, we are increasingly thinking of more practical applications. There are already a number of novel drugs that are in different parts of our pipeline, and we're very optimistic that we can move some of these forward into clinical trials within the next several years."

"In 2019, we're planning to test whether repurposing biological therapies already-approved by the Food and Drug Administration (FDA) that target the inflammatory cytokine IL-6 can reduce the symptoms of frailty," says Dr. Finkel. "If we're successful, this will be the first trial to rigorously test the 'inflamm-aging' hypothesis of human aging, which theorizes that aging is driven by chronic, low-grade inflammation."

Immune Transplant and Therapy Center

The Aging Institute's cutting-edge aging research to help patients have longer, healthier lives is a central part of the **Immune Transplant and Therapy Center (ITTC)**, a major \$200-million initiative of UPMC and the University of Pittsburgh. Its focus is to promote scientific discoveries that will harness the power of the human immune system to treat and cure a wide range of diseases. Focused on the areas of cancer, transplantation, and aging, its ultimate goal is to accelerate the development and distribution of life-saving and cost-effective clinical solutions to patients.

Pittsburgh's Bridgeside Point 1 research building



Aging Institute Laboratory Inaugural Faculty

During 2018, ten principal investigators were recruited to conduct research at the Aging Institute Laboratory. They came from leading institutions from throughout the United States, as well as from the University of Pittsburgh, and included both established researchers and gifted early-career faculty.

Beibei "Bill" Chen, PhD (University of Pittsburgh)

Associate Professor of Medicine, Division of Pulmonary, Allergy, and Critical Care Medicine
Director, Small Molecule Therapeutic Center
Co-Director, Acute Lung Injury Center of Excellence

Research Interests: Studying the molecular mechanisms that control inflammation and cell proliferation via protein ubiquitination (ubiquitin biology)

Yvonne Eisele, PhD (Scripps)

Assistant Professor of Medicine, Division of Cardiology
Research Interests: Delineating the molecular and cellular changes of age-related pathogenic proteins seen in Alzheimer's and Parkinson's diseases, and cardiac transthyretin amyloidosis

Aditi Gurkar, PhD (Scripps)

Assistant Professor of Medicine, Division of Geriatric Medicine
Research Interests: The role of DNA damage in aging and age-related pathologies

Gang Li, PhD (Harvard)

Assistant Professor of Medicine, Division of Cardiology
Research Interests: Functional genomics of age-related diseases and the use of human genetics as a guide for new drug targets



Shihui Liu, MD, PhD (National Institutes of Health)

Associate Professor of Medicine, Division of Infectious Diseases

Research Interests: The basic mechanisms underlying the pathogenesis of infectious diseases

Yuan Liu, PhD (University of Pittsburgh)

Assistant Professor of Medicine, Division of Pulmonary, Allergy and Critical Care Diseases

Research Interests: The role of lysosomal biogenesis in degenerative diseases

Ana Mora, MD (University of Pittsburgh)

Associate Professor of Medicine, Division of Pulmonary, Allergy and Critical Care Diseases

Research Interests: The pathogenesis of idiopathic pulmonary fibrosis (a fatal and progressive lung disease)

Shiori Sekine, PhD (National Institutes of Health)

Assistant Professor of Medicine

Research Interests: Stress-sensing mechanisms of mitochondria proteins, particularly the stress-dependent regulation of mitochondrial proteases and mitochondrial import machineries

Yusuke Sekine, PhD (National Institutes of Health)

Assistant Professor of Medicine

Research Interests: Mechanisms underlying cellular responses to oxidative, endoplasmic, and metabolic stress

Bokai Zhu, PhD (Baylor)

Assistant Professor of Medicine, Division of Endocrinology and Metabolism

Research Interests: The role of non-circadian rhythms in preventing aging-associated diseases

As part of its research mission, the Aging Institute also is helping to train a new generation of investigators in aging through mentoring opportunities in basic and translational research. Each month, it also hosts a research conference series, network gatherings, progress reports, and a journal club, as well as an annual grant writing workshop.

New Supporting Leadership at the Institute

Daniel Forman, MD

Director of Emerging Therapeutics, Aging Institute of UPMC Senior Services and the University of Pittsburgh

Professor of Medicine, Division of Cardiology, University of Pittsburgh

Chair, Section of Geriatric Cardiology, UPMC



A cardiologist and geriatrician, Dr. Forman was recruited to the University of Pittsburgh four years ago from Brigham and Women's Hospital in Boston to launch a new geriatric cardiology program that extends from his areas of expertise. That program has flourished and Dr. Forman has advanced as a national leader in efforts to broadly integrate geriatric precepts into specialty medicine in order to better achieve care that responds to the distinctive needs of older adults. Management of a specific disease process is coupled to expanding insights regarding associated frailty, comorbidity, cognitive decline, falls, and other healthcare challenges that become pervasive with age and which commonly confound standard medications,

procedures, and assessments. His leadership in the American College of Cardiology, the American Heart Association, the American Geriatrics Society, and the National Institutes of Health have catalyzed relatively more novel holistic approaches to patient care, and have even sparked funding initiatives to further grow the field.

Dr. Forman's research on older adults at the University of Pittsburgh is multifaceted, extending from novel approaches of clinical care in older adults to cellular and subcellular mechanisms, all with prevailing goals of enhancing function and quality of life in older adults. His expertise in cardiovascular disease and clinical care is complemented by broad expertise in pertinent cellular science.

Soon after arriving to Pittsburgh, Dr. Forman received funding from the Aging Institute to pursue a novel pilot study of nitrite supplementation in older heart failure patients. The study showed that nitrites improved bioenergetics in skeletal muscle mitochondria and boosted exercise performance. These data have subsequently led to multiple NIH studies and an expanding body of work.

While much of Dr. Forman's initial research focused on older adults with cardiovascular disease, his studies have expanded to include those with and without cardiovascular disorders. He is the principal investigator of a cardiac rehabilitation trial that will advance strategies to better enable older patients who are weakened and debilitated after

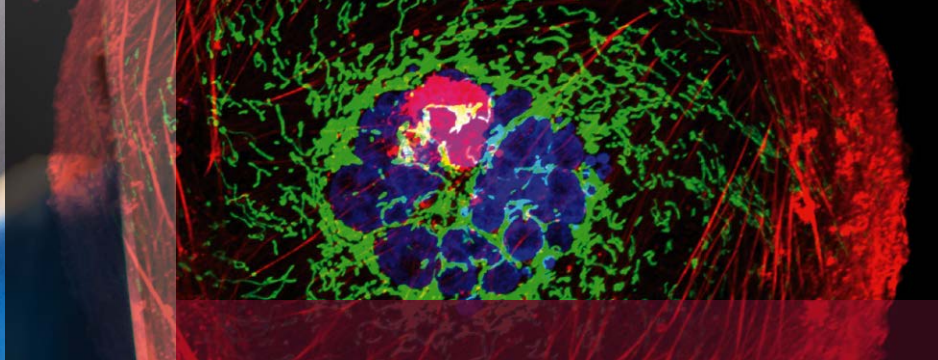
hospitalization to regain function, confidence, and independence. Simultaneously, he is leading multiple studies that target biological mechanisms underlying physical decline and novel strategies to remedy them. Body composition, nutrition, and inflammation are among the factors considered in this work.

"I am thrilled to be part of the Aging Institute and its work," says Dr. Forman. "I see it as an exceptional crucible for ideas, insight, and energy among idealistic and dazzling colleagues, which seems certain to propel innovation in the care of older adults." As the Aging Institute's first director of emerging therapeutics, he will help organize and lead its translational program.





Innovations in Research



A primary goal of the Aging Institute is to foster innovative, pioneering, and multidisciplinary age-related research. Through the Seed Grant program and other initiatives, the Aging Institute is encouraging new and novel research aimed at improving the quality of life and care for older adults. Many of these “seed” projects have gone on to receive additional outside funding, expanding their reach and advancing the development of pioneering insights.

RAVEN: At the Frontline of Care for Older Adults

With two years remaining in Phase II of the initiative, RAVEN continues to make a difference.

For the last six years, UPMC Senior Services and the Aging Institute have spearheaded a groundbreaking, multiphase innovation project known as RAVEN (Reducing Avoidable Hospitalizations Using Evidence-based Interventions for Nursing Facility Residents). The initiative is designed to improve the quality and reduce the cost of care for skilled nursing home residents enrolled in Medicare and Medicaid.

In 2012, UPMC was one of only seven organizations nationwide to receive a healthcare innovation award from the Centers for Medicare and Medicaid Services (CMS). Phase I of RAVEN focused on 18 long-term care facilities, bringing nurse practitioners onsite to support nursing staff, enhanced staff training, and develop customized communication tools to empower staff. The \$19 million award featured the introduction of telemedicine, enhanced medication review, and pharmacy engagement — all with the collective goal of reducing avoidable hospitalizations among nursing home residents.

Based on the successes of its evidence-based innovations, UPMC's RAVEN initiative received an additional four-year, \$20 million award from CMS in 2016. Phase II continues to build on the program's past successes while introducing a new payment model based on a facility's ability

to proactively manage six health conditions that historically result in hospitalization for older adults, such as urinary tract infections, pneumonia, and congestive heart failure.

"In addition to integrating the new payment, we've also expanded our reach and impact to include 35 nursing homes statewide — nearly double the number of facilities we worked with during Phase I," says RAVEN co-director **April Kane, MSW, LSW**, of UPMC Community Provider Services.

"We're honored to continue our work in this pioneering program," says **Mary Ann Sander, MHA, MBA, NHA**, vice president of Aging and Disability Services, UPMC Community Provider Services and RAVEN co-director. "RAVEN is helping to develop new models of care that can deliver better health, improved care, and lower costs for older adults who often have the greatest healthcare needs."

RAVEN in Action on the Job

Nurse practitioner **Sharon Heidecker, MSN, FNP-BC, ACPNP**, was the first staff person hired for RAVEN in 2012. "It was a very exciting day for me," she remembers. "I understood this program could be a game changer." In addition to serving as the nurse leader for four other RAVEN facilities, Sharon works onsite three days a week at Ball Pavilion — the skilled nursing unit of Brevillier Village in Erie, Pennsylvania.

Sharon's nursing background includes experience in cardiac, long-term, and hospital-based palliative care, where she often saw nursing home residents "being hospitalized with conditions that probably could have been better managed in place."



When **Vicky Wittuck**, senior vice president of Brevillier Village and Ball Pavilion's administrator, first learned about RAVEN, she immediately knew its residents would benefit from the creative, best practice offerings. "We serve a very middle income population and our facility never could have afforded the expertise of such an experienced nurse practitioner like Sharon," says Vicky.

Sharon says RAVEN's telemedicine initiative is key to providing effective and immediate care.

"When a resident is having a medical problem, I'm able to evaluate the condition with the RN that very day using telemedicine, rather than delaying until the attending physician or I can be there in person."

"I can't sing the praises of the RAVEN initiative strongly enough," adds Vicky. "Our hope is that CMS sees the full benefits it can offer facilities like ours. It's inspiring us to look for new ways to continue its impact."

2017 Seed Grant Update: Early Hearing Loss

Identification and Intervention in Older Adults

Hearing loss can have a significant impact on quality of life, but many older adults are unaware their hearing has been compromised. It can lead to isolation and depression and even be misinterpreted as a loss in cognitive function.

Catherine Palmer, PhD, director of Audiology and Hearing Aids, UPMC, and associate professor in the departments of Communication Science and Disorders in the School of Health and Rehabilitation Sciences and Otolaryngology in the School of Medicine,



University of Pittsburgh, received a two-year seed grant from the Aging Institute in 2017 to research GATE: Geriatric Auditory Testing for Everyone. Her study aims to find the most cost-effective way to identify hearing loss in seniors early on — before it has a negative impact on their social, mental, and physical well-being.



“It’s mind blowing,” says Dr. Palmer. “Although it seems unlikely, no one has systematically collected data on the prevalence of hearing loss in typical settings where we find seniors.”

She and her team conducted hearing screening tests of nearly 1,000 seniors, seen at an outpatient geriatric clinic and residents of assisted living, skilled nursing, and independent living facilities. Data also was collected on the willingness of patients to accept and use simple amplifiers.

According to Dr. Palmer, it has been commonly viewed that patients frequently choose not to correct, or amplify, their hearing because of cost and accessibility issues. Her study points to a bigger problem. “Our data indicates patients simply don’t recognize that they have impactful hearing loss,” she says. “Untreated hearing has even been associated with hospital readmissions. Early identification can lead to better care on all levels.”

She pointed to studies showing that 60 percent of adults 65 and older and 80 percent of those over 80 have impactful hearing loss — but only 18 percent use hearing aids.

Audiologists typically operate well-established clinics where they wait for patients to come to them. “But these are patients who have self-identified that they have impactful hearing loss,” says Dr. Palmer.

“What we are proposing is interventional audiology — bringing the audiologist to the patient in order to identify hearing loss and provide an immediate solution before it has a negative impact on their lives.”

A Day in the Lifespan Conference

A novel look at the impact of biomedical science on every stage of life

In May 2018, the Aging Institute was among the lead sponsors of the “A Day in the Lifespan” conference at the University of Pittsburgh, which examined the development, influence, and trajectory of biological processes across the lifespan. Co-sponsoring the event were the Clinical and Translational Science Institute (CTSI) of the University of Pittsburgh and Magee-Womens Research Institute.

The daylong conference, which brought together academicians and clinicians to create connections throughout the world of research, featured an emphasis on aging and the developmental origin of health and disease. Presenters included researchers from the National Institutes of Health (NIH), National Institute on Aging, the Ohio State University, the University of Wisconsin, and the University of Pittsburgh. Their topics ranged from the developmental origin of health and diseases to



in vitro and in vivo models of caloric restriction, and from aging biology to mutations that affect sleep, cognitive function, and lifespan in animal models.

“Our goal was to stimulate a deeper conversation on well-being throughout the spectrum of life,” says **Yoel Sadovsky, MD**, executive director of Magee-Womens Research Institute and associate dean, women’s health research and reproductive sciences, University of Pittsburgh. “For example, people tend to think about pregnancy as largely a woman’s issue, but we now know that what happens at the start of life has huge implications on wellness, disease prevention, and overall quality of life.”



“By applying a wide-angle lens to look at the research continuum across all phases of life, we were able to gain a different perspective on the work each of us is doing,” adds conference co-developer **Daniel J. Buisse, MD**, core director of participant and clinical interactions at CTSI, and professor of psychiatry and clinical and translational science, University of Pittsburgh School of Medicine. “Our

hope is that this big-picture view will inspire new research questions and directions.”

“The conference really epitomized the spirit of collaboration and sharing that is a signature trait of the University of Pittsburgh and UPMC,” notes **Toren Finkel, MD, PhD**, director of the Aging Institute. “By engaging people from diverse disciplines, and whose research and practice areas focus on very different areas within the lifespan, we’re able to broaden our insights and understandings exponentially.”

Plans are now underway for a 2019 conference on epigenetics.

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 2018: Collaboration in Aging Research

Core to the success of the Aging Institute has been its constant emphasis on bringing together the best and brightest minds to analyze, research, and develop solutions in the field of aging. Its annual seed grant program is a celebration of such collegial efforts. In 2018, the program’s theme — Collaboration in Aging Research — exemplified and encouraged that spirit.

Jointly funded by the Aging Institute of UPMC Senior Services and the University of Pittsburgh and the office of **Steven B. Shapiro, MD**, UPMC senior vice president and chief medical and scientific officer of UPMC.

The program sought innovative proposals demonstrating research collaborations in aging, drawing from the full spectrum of disciplines across the University of Pittsburgh and UPMC — from basic biology, clinical and translational approaches, and epidemiological to psychosocial, health sciences, health policy and health services research. Proposals pairing basic science research with clinical/translational teams were especially encouraged this year, as were proposals involving interprofessional collaborations between at least two different schools within the University of Pittsburgh or UPMC.

2018 Pilot Seed Grant Recipients

The Aging Institute awarded the following seed grants in 2018 in support of these projects:

Examining the spatio-temporal role of oxidative telomere damage on healthspan and lifespan by optogenetics

Aditi U. Gurkar, PhD, assistant professor, Division of Geriatric Medicine, School of Medicine, University of Pittsburgh; Aging Institute; Geriatric Research, Education, and Clinical Center, VA Pittsburgh Healthcare System

A function for B-type lamins in nuclear pore insertion impacts heart repair and regeneration

Bernhard Kühn, MD, scholar, Richard King Mellon Foundation Institute for Pediatric Research, UPMC Children’s Hospital of Pittsburgh; associate professor and director of research in cardiology, Department of Pediatrics, School of Medicine, University of Pittsburgh

Circulating Autophagy Related 7 (ATG7) Protein as a Biomarker of Aging

Allison L. Kuipers, PhD, assistant professor of epidemiology, Graduate School of Public Health, University of Pittsburgh

Adoption and effectiveness of a health intervention for hypertension in older adults: a pilot clinical trial

Matthew F. Muldoon, MD, MPH, professor of medicine, psychology, and epidemiology, School of Medicine, University of Pittsburgh

Novel tools to study mitochondria and postsynaptic densities in aging human brains

Yi Shi, PhD, assistant professor, Department of Cell Biology, University of Pittsburgh

Prefrontal cortex stimulation: effects on memory and executive function through slow-wave sleep

Kristine A. Wilckens, PhD, assistant professor, Sleep and Chronobiology Center, Department of Psychiatry, University of Pittsburgh

12th Annual Research Day on Aging

Celebrating Research on Aging: Building Collaborations for the Future

The Aging Institute's 12th Annual Research Day on Aging was held on December 6, 2018 on the campus of the University of Pittsburgh.

A signature event of the Aging Institute, Research Day provides an essential forum for clinicians and researchers from UPMC, the University of Pittsburgh, Carnegie Mellon University, Duquesne University, Robert Morris University, and other academic institutions to meet, interact, and view posters highlighting the latest in aging research.

This year's session opened with welcoming remarks by **Toren Finkel, MD, PhD**, director of the Aging Institute of UPMC Senior Services and the University of Pittsburgh. Dr. Finkel also joined in a collaborative presentation on the topic of Innovative and Emerging Research in Aging with

Anne B. Newman, MD, MPH, clinical director of the Aging Institute, **Anthony Delitto, PhD, PT, FAPTA**, dean of the School of Health and Rehabilitation Sciences at the University of Pittsburgh, and **Matthew D. Neal, MD, FACS**, Roberta G. Simmons assistant professor of surgery at the University of Pittsburgh.

The poster session at this year's event featured more than 50 presenters on a range of topics. Winners in the different categories of submissions included the following students, researchers, and clinicians:

Basic Student -First Place (tie)

Abish Pius

AAV Delivery of α -Klotho: Gene Therapy as a Strategy to Counteract Sarcopenia

Amrita Sahu, MS

Role of α -Klotho in Muscle Progenitor Function and Skeletal Muscle Regeneration



Basic Student- Honorable Mention

Amanda Kowalczyk

Identifying the Genetic Basis of Longevity in Mammals Using Patterns of Convergent Evolution

Basic Post-Doctoral - First Place

Diana Alvarez, MD

Defective Fatty Acid Metabolism Promotes Fibrosis in the Lung

Basic Post-Doctoral - Honorable Mention

Hye Jin Hwang, PhD

Spatiotemporal Regulation of Fatty Acid Desaturation in Long-lived Germline-less Animals

Basic Faculty -First Place (tie)

Aditi Gurkar, PhD

Endogenous DNA Damage Plays a Causal Role in Cardiomyopathy

Yusuke Sekine, PhD

The Nucleolus Links Acetyl-CoA fluctuation to p53-mediated Stress Responses

Clinical Student - First Place

Jessica Graves

Rest-activity Rhythm Timing and Depression Symptom Severity in Dementia Caregivers

Clinical Student - Honorable Mention (tie)

Loren Schleiden, MS

Geographic Variation in Antidementia Medication Use Among Medicare Part D Beneficiaries with Alzheimer's Disease

Mary Winger, MPH

Longitudinal Quadriceps Strength and Fall Injuries in Medicare Claims: The Health ABC Study

Clinical Post-Doctoral - First Place

Joshua Niznik, PharmD

Factors Associated with De-prescribing Antidementia Medications in Older NH Residents with Severe Dementia

Clinical Post-Doctoral - Honorable Mention

Samaneh Farsijani, MSc, PhD

High Inter-muscular Fat is Associated with Poor Mobility Function in Older Adults, Only When Accompanied by Low Muscle Area

Clinical Faculty - First Place

Gustavo Almeida, PT, PhD

Effect of Changes in Physical Activity on Cartilage Degradation and Inflammation in Knee Osteoarthritis

Clinical Practitioner - First Place

Aziza Battle, MA

Kane County Living Centers Unit 4a



Educational Initiatives in Aging Services



In hospitals and homes, from clinicians to caregivers, the Aging Institute is educating — and inspiring — audiences on the tremendous physical, mental, and social challenges facing our aging population. It continues to share aging-related insights, knowledge, and findings through its educational training programs, community outreach, literature, and videos aimed at enriching the direct care and treatment of aging adults today and tomorrow — and at helping older adults to not just live longer, but *healthier*, lives.



A Regional Partner on the National Geriatrics Workforce Enhancement Program

Recognizing the dire shortage of skilled geriatric specialists and providers in our country, in 2015 the U.S. Department of Health and Human Services launched the **Geriatric Workforce Enhancement Program (GWEP)**. The three-year, \$38.7 million program focused on the development of the health care workforce and quality care for older adults through community-based programs, preparation of health providers and training opportunities for healthcare workers. In July 2017, the program was extended through July 2019.

The University of Pittsburgh is one of 44 sites nationwide receiving GWEP funding — and one of only four programs focused directly on older adults. It is led by **Richard Schulz, PhD**, associate director of the Aging Institute and the director of the University of Pittsburgh's University Center for Social and Urban Research (UCSUR).

Given its long-term expertise in supporting the needs of older adults, the Aging Institute has collaborated with the University of Pittsburgh over the last four years as a GWEP community partner. In 2018, the Institute continued to connect older adults and their caregivers to community resources — with an additional focus on better educating primary care providers about the unique needs of older adults — through these distinct initiatives:

- Creation of an online video series for caregivers
- Expansion of the Institute's Help and Referral Line services
- Support outreach efforts to older adults and caregivers in underserved communities

Filling the Information Void: A Video Series for Caregivers Created in Partnership with the National Geriatrics Workforce Enhancement Program.

"My mother resists whenever we try to bathe her — it's a battle every time."

"Our brother has fallen repeatedly in his home — and the injuries keep getting worse."

"My wife won't stop asking me the same question, over and over. I'm like a raw nerve."

It's often the day-to-day details of caring for an older adult that can be the most overwhelming. To support caregivers in their daily efforts — and reinforce that they are not alone — the Aging Institute has developed a series of six free videos as part of the GWEP Initiative.

"We completed several new videos this year that are designed to build upon the messages of our 2017 videos exploring caregiving, home safety, and stress management," explains **Betty Robison, MSN, RN**, gerontology educator for the Institute. "The first videos were very well received, so our goal is to continue to provide practical, supportive, and realistic information that caregivers can use and refer to as needed."

Building on the Institute's focus on dementia, the new videos spotlight typical issues that dementia caregivers face:

- **Dementia basics** — For many caregivers, not knowing what to expect when caring for someone with dementia can lead to unnecessary tension, misunderstandings, and frustration. UPMC Western Psychiatric Hospital's clinical nurse specialist **Marcia Kollar, RN**, identifies common dementia-related behaviors and their causes, while geriatric psychiatrist **Tejal Bhojak, MD**, speaks to the progression of the disease.
- **Dealing with dementia** — There are proactive steps caregivers can take to help redirect difficult behaviors in individuals with dementia. Cumberland Woods' **Christine Cassesse**, life enrichment coordinator, aided by a volunteer resident, demonstrates how to handle problems such as restlessness, repetitive behavior, resistance to care, and wandering.
- **Eating challenges** — Patients with dementia often experience greater difficulty when eating and drinking, from forgetting to eat to problems recognizing how and what to eat. Speech therapist **Audrey Rozell**, supervisor of rehab services at UPMC McKeesport, explains proper seating positions, feeding assistance techniques, and helpful tips for drinking fluids for all older adults.

The videos are available to interested caregivers and professionals and can be accessed on the Institute's website.

Creating a National Model for Caregiving

Pioneering research on the needs of area caregivers has led to the creation of a groundbreaking new center focused on caregiver research, education, and policy

The Aging Institute has long supported local, statewide, and national efforts targeting issues related to caregiving. At the forefront of these initiatives has been the Institute's associate director for education and executive board member, **Richard Schulz, PhD**, distinguished service professor of psychiatry at the University of Pittsburgh and a nationally recognized researcher on caregiving and caregivers.



Most recently, Dr. Schulz spearheaded The Caregiver Project, a two-year, \$1 million initiative focused on making western Pennsylvania — which has one of the nation's oldest populations — a national model of a "culture of caregiving" by partnering with caregivers, patients, providers, and community stakeholders to conduct applied research that would inform policy and practice regionally.

Central to its research agenda was the Pittsburgh Regional Caregivers Survey, led by Dr. Schulz and **Scott R. Beach, PhD**, interim director of the University of Pittsburgh's University Center for Social and Urban Research. More than 1,000 caregivers participated in the survey, which revealed that southwestern Pennsylvania significantly exceeds the national averages reported by family caregivers on the stresses and challenges they face.



Results of the Pittsburgh Regional Caregivers Survey are at: https://ucsur.pitt.edu/caregiving_project_2017.php

New center on caregiving research announced
In July 2018, Dr. Schulz was named the director of the newly-created Center for Caregiving Research, Education, and Policy, launched by the University of Pittsburgh Health Policy Institute. It aims to increase

awareness about the important role of family caregivers in the healthcare system, conduct priority research in family caregiving, and educate providers and family members so caregivers can more effectively care for their loved ones as well as themselves.

"Research and implementation studies from the center will provide evidence to guide both practice and policy development on how best to support caregivers and fully integrate them into the health system," says **Everette James, JD, MBA**, director of the Health Policy Institute.

"In many ways, the need for a center evolved out of the Aging Institute's Caregiver Workgroup, which gave us the opportunity to identify and partner with researchers and experts across UPMC and the University of Pittsburgh," says Dr. Schulz. "We have a remarkable depth of expertise that ideally positions us to become a national leader in caregiving research and public policy."

Help and Referral Line Initiatives

As a GWEP partner, the Aging Institute has expanded the capabilities and resources of its Help and Referral Line to connect greater numbers of caregivers and older adults to important community information, services, and resources. Additionally, the Institute is also working to increase awareness and use of these resources among healthcare providers.

“The call line is critically important to GWEP’s success. It’s serving as a primary point of entry for providers as well as their patients and family members,” says Dr. Schulz.

In 2018, the Institute began the process of exploring the integration of the Help and Referral line into **EPIC** — an electronic health record system used by UPMC and many other healthcare systems — as a

referral resource for doctors and other healthcare providers. “It’s our goal to use this platform to receive referrals through EPIC, but also to be able to provide feedback and follow up to the practitioner on the recommended resources,” explains **Melissa Jones, MSN, RN**, who joined the Institute in 2018 as a geriatric nurse educator. “Our first accomplishment was getting established as a “SmartText” in EPIC. This phrase provides written information on our website and the Help and Referral Line for ease of reference among providers and their patients.”

The full incorporation of the Help and Referral Line into EPIC will broaden access to resources and services related to health maintenance and healthcare, which are key focus areas of the GWEP, adds Dr. Schulz.

Reaching Underserved Areas

Locally, the GWEP has turned its attention to serving underserved areas that have large numbers of lower income, older, frail adults. The goal is to ensure that seniors in these communities get recommended health screenings, or assessments, during primary care visits. However, most primary care doctors — who are on the front lines of treating older adults — have little to no training in geriatrics.

Throughout 2018, the Aging Institute worked with GWEP to help support primary care offices in the greater **McKeesport** area through its UPMC McKeesport Resource Center, as well as through mailings, personal visits, and social media.

The Institute is working to assist GWEP to help doctors and other healthcare providers to better understand aging issues, and provide geriatric training to properly assess and treat older patients.

New and Ongoing Educational Programming

Throughout 2018, the educational arm of the Aging Institute made dozens of presentations and launched new initiatives on age-related topics to healthcare professionals, community groups, colleges and universities, caregivers, and older adults in western Pennsylvania and statewide. Direct mail, advertising, and social media initiatives helped to build awareness of the Institute’s robust portfolio of educational services. “In addition to our new programs, we’re seeing renewed interest in our traditional training and certificate programs, such as Ageless Wisdom™ —

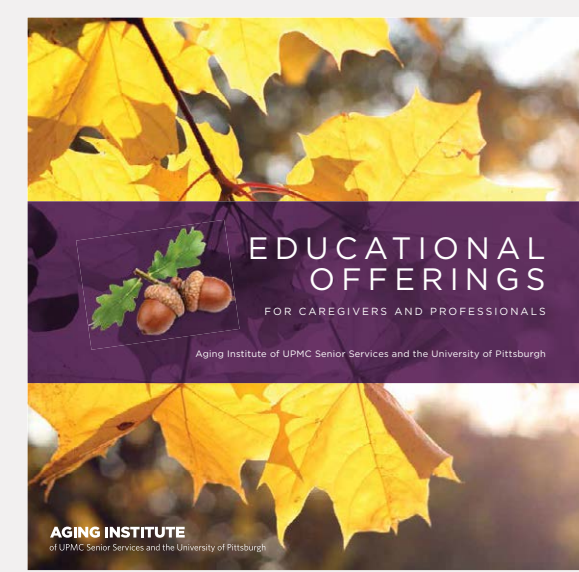
not only within the UPMC system but at healthcare organizations and community groups statewide,” notes **Betty Robison, MSN, RN**, gerontology educator for the Aging Institute.

2018 Highlights

Promoting Proactive, Healthy Aging

As conventional medicine increasingly incorporates wellness and healing into its scope of care — and as people look for new ways to stay healthier and live a quality life — the Aging Institute offered its first major conference on integrative medicine for older adults in 2018. More than 100 participants attended

How to Live Longer and Live Better in October, featuring keynote remarks by **Michael D. Parkinson, MD, MPH, FACPM**, senior medical director of health and productivity, UPMC Health Plan.



The immediate past president of the American College of Preventive Medicine, Dr. Parkinson is a leading national advocate for public health, preventive medicine, and consumer-driven health plans. His comments focused on the role of plant-based diets as key to longer and healthier living, noting that research indicates they can reduce diabetes by 91 percent, heart disease by 80 percent, and cancers by 60 percent. He also stressed the importance of 30 minutes of moderate physical activity every day to reduce injuries and other health risks.

The program also featured these staff members from the UPMC Center for Integrative Medicine and their topics:

- Medical Director **Ronald Glick, MD** — Integrative approaches to managing osteoarthritis
- Naturopathic Doctor **Khara Lucius, ND, FABNO** — Supplements and aging
- Psychotherapist **Barbara Ivanko, LCSW** — Mindfulness techniques for stress reduction

Held at Cumberland Woods Village in Allison Park, Pennsylvania, the program also featured two therapists from the Center for Integrative Medicine, who provided shiatsu massage therapy, a form of Japanese therapy that stimulates acupressure points to promote energy and balance.



Integrating Geriatric Training in the Career Ladder at UPMC

For many years, the Aging Institute has been collaborating with UPMC Senior Communities to promote the professional development of its nurses and nurses' aides through geriatric training. Offered quarterly, Senior Communities staff members who successfully complete the Institute's Geriatric Nurse Aide Training or Geriatric Resource Nurse Training program now receive an increase in compensation, and are eligible for an additional increase after completing an approved project. Lighthouse Pointe Village and Cumberland Woods Village hosted 2018 geriatric training classes for participating staff from all UPMC Senior Communities' facilities.

Monitoring and Building Brain Health

A new overview program for the general public on brain health in older adults was introduced in 2018 at UPMC McKeesport and the Cranberry (Pennsylvania) Municipal Building, covering such topics as:

- The connection between medications and confusion
- The impact of too little sleep on brain health

- Warning signs that something serious may be happening
- The role of diet and increased activity in improving brain health

Making a Transition

Making the move into a nursing or personal care facility can pose painful and unexpected challenges for older adults. To address these concerns, the Aging Institute developed a new program in 2018 for new residents, which covers topics such as fitting in, meeting people, making new friends, and adapting to a new lifestyle. The program was introduced at Seneca Hills Village, a UPMC Senior Community.

Strategies and Training for Wandering Adults with Dementia

In 2018, the Aging Institute continued to play a leadership role in educating law enforcement and first responders to the specialized needs of adults with dementia who wander from their home or care facility.

A presentation was developed for emergency medicine services (EMS) workers, police and fire professionals, social workers, and others involved

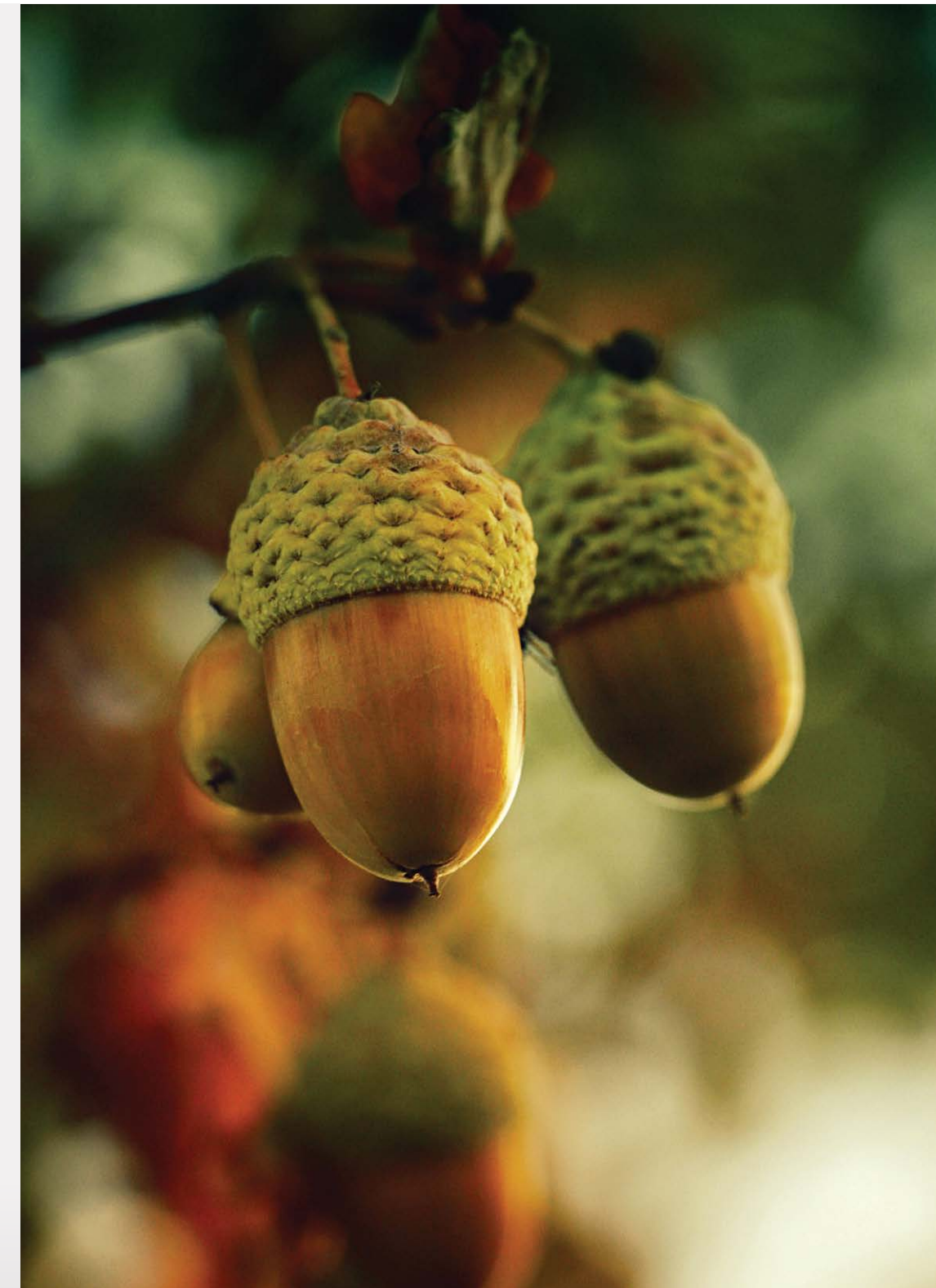


in such searches. Based on the groundbreaking work of **Robert J. Koester, PhD** (the featured guest of the Institute in 2017 at a training program on the subject), the presentation was delivered at UPMC Magee-Womens Hospital and VOICE PA (formerly the PA Culture Change Coalition), which was telecast to 25 organizations statewide. To help build general public awareness of the subject, Ms. Robison participated in UPMC Health Plan's Caregiver Teletown Hall, hosted by former Pittsburgh Steeler Charlie Batch.

The Institute also developed additional training focused on the specialized challenges faced by rural volunteer search and rescue teams — and its

canine members — which emphasized the need to educate community members on the need to secure homes and facilities. The presentation was delivered in November 2018 at a two-day training program sponsored by the Fayette County Search and Rescue Team in Hopwood, Pennsylvania. Hailing from five states, the participating volunteers contribute their own time and resources to become certified in search and rescue, as well as bearing the cost and time of training their dogs.

NOTE: The Aging Institute website features a downloadable worksheet and tips for caregivers of adults with dementia with a tendency to wander on its Resources for Caregivers page.



Gerontology Scholarship Winners

There's an ever-growing need for informed and compassionate professionals in virtually every field to meet the complex challenges facing older adults — from medicine to law, mental health to finance, pharmacy to social work. These professionals are essential advocates and care providers, who are key to assuring older adults have access to quality care, resources, and support.

The Aging Institute actively encourages full-time UPMC employees in any area to expand their knowledge and understanding of geriatrics by awarding \$2,500 each year for studies in the University of Pittsburgh's interdisciplinary Graduate Certificate in Gerontology Program. Offered by the University of Pittsburgh Center for Social and Urban Research and the College of General Studies, the program introduces students to relevant and meaningful coursework featuring the latest theories and best practices in the study of aging.



2017 Scholarship Recipients

Deborah Keyes
Dialysis Nurse
UPMC Hamot

"I think of myself more as an advocate than a student. I'm learning how I can better represent a vulnerable population."

Deborah Keyes has seen a lot of changes during her 18 years as a dialysis nurse at UPMC Hamot. "When I first started out, I didn't see many older patients," she says. "Now many of them are seniors."

A desire to better serve her older patients prompted her to apply for the Aging Institute's graduate certificate in gerontology scholarship. She has completed two classes so far — Nutrition and Exercise for Performance and Perspective in Aging.

"It's nice. The classes I take have professionals of all ages and from a variety of career areas — occupational therapy, physical therapy, nursing, even finance," she says. "It results in great discussions and sharing of diverse perspectives and experiences."



Allegra Wakefield-Flournoy
Community Health Worker
UPMC Health Plan

"I've learned that you need a lot of patience working with older adults, plus good listening skills. It's important to really hear their concerns, not just lecture them or tell them what you want."

As a community health worker with the UPMC Health Plan, Allegra Wakefield-Flournoy works hard to keep members connected to their primary care doctors and help them avoid the emergency department.

"A large percentage of the people I work with are older adults, and I've always been interested in better understanding their needs and issues," says Ms. Wakefield-Flournoy, who is pursuing a graduate certificate in gerontology as an Aging Institute scholarship recipient.

Ms. Wakefield-Flournoy, who helped care for her grandmother, father, and increasingly now her mother, says her family inspired her to learn more so she can better help older adults.

She hopes to apply the credits she earns for the graduate certificate in gerontology toward a master's of social work degree.

2018 Scholarship Winners

Renee Bristow
Physical Therapy Assistant
UPMC Sugar Creek Station

"Working with geriatric patients has been rewarding. I want to expand my knowledge and ability to provide the best possible treatment tailored to their specific needs."

Renee Bristow already had a bachelor's degree in human relations when she returned to the

University of Pittsburgh in 2011 to pursue a degree as a physical therapy assistant. With that new degree in hand, she went to work at UPMC Sugar Creek Station, a skilled nursing facility operated by UPMC Senior Communities. Now, after five years spent working mainly with geriatric patients, she is pursuing a graduate certificate in gerontology. "My appreciation and respect for this population has grown over time," says Ms. Bristow. "Earning my certificate will improve my ability to provide quality, appropriate therapy."



Christina Chodor-Papst
Product Development Specialist
UPMC Health Plan-Product Development

"I want to be an advocate for programs that foster healthy habits and preventive care with the goal of preventing or postponing physical decline."

After her mother's devastating stroke at age 63, Christina Chodor-Papst took on the role of caregiver for both of her parents. She also juggled responsibilities as a product development

specialist with the UPMC Health Plan, where her team has focused on the benefits of hearing tests and hearing aids in preventing Alzheimer's disease. Her experiences gave her a new appreciation for the culture of innovation nurtured at UPMC. "With the graduate certificate in gerontology, I will be able to develop programs that will allow our members to live longer and more rewarding lives," says Ms. Chodor-Papst.



Victoria Glass
Service Coordinator
UPMC Western Psychiatric Hospital

"Helping others has been a dream of mine since I can remember. This program is allowing me to get the education I need to continue to help others."

As a service coordinator at UPMC Western Psychiatric Hospital, Victoria Glass has spent the past two years working closely with patients of all ages, including older adults. "I enjoy every second of it," says Ms. Glass, a graduate of the University of Pittsburgh with a bachelor's degree in social

work. Her goal is to continue building on her education and knowledge by pursuing a master's degree in social work after earning her graduate certificate in gerontology. I want to continue my education so I can better serve patients," she adds.



Erika Williams, RN
Staff Nurse
East Rehabilitation Unit

"I learned if I truly want to improve the quality of care for my patients and conditions for nurses, I needed to continue to seek more education and knowledge."

Having worked as a nurse in long-term care facilities for nearly a decade, Erika Williams knows the ups and downs of her job. "Being able to be part of the resident's life and eventually feel like family makes everything worth it," she says. Her belief that education is key to providing the best

quality care for her patients inspired Erika as she worked her way up from a certified nurse's aide to licensed practical nurse to registered nurse. Now, as she pursues a graduate certificate in gerontology, Ms. Williams hopes to set an example for her twin sons. "Sometimes it is not about what is easiest, it is about working hard for something that matters," she says.

Inspiring Tomorrow's Geriatric Professionals

Each year, the Aging Institute participates in the **Health Career Scholars Academy** — a unique summer program offered to gifted high school students statewide by the University of Pittsburgh. These talented teenagers travel to Pittsburgh to examine critical issues and emerging career opportunities in healthcare. During the 2018 program, students choosing the geriatric concentration received an in-depth look at geriatrics and aging from Aging Institute staff and board members — including many of the field's leading researchers and clinicians. Students explored important issues such as healthy aging, memory changes, senior living options, and emerging technology, and participated in eye-opening hands-on exercises that dramatically demonstrate the impact of vision and hearing loss, arthritis, and other forms of disability.

i-PEEP: Hands-on, Community-based Geriatric Training for Tomorrow's Healthcare Professionals

The Aging Institute has long advocated the importance of interprofessional care to effectively address the complex health needs of older adults. The **InterProfessional Education Exchange Program (i-PEEP)**, spearheaded by the University of Pittsburgh School of Nursing, is helping to prepare the next generation of healthcare professionals to be "interprofessional collaborative care ready," with a special focus on geriatrics.

Funded through the National Center for Interprofessional Practice and Education, the University of Pittsburgh School of Nursing is one of 16 nursing programs nationwide — and one of only four focused on geriatrics — selected for the National Center's Accelerating Interprofessional Community-Based Education and Practice Initiative award.

The Pitt program pairs professionals and graduate students from the University's schools of Nursing, Pharmacy, Health and Rehabilitation Sciences, and Social Work for hands-on learning. Students from different disciplines shadow each other on site visits to a rural primary care practice and to the residences of older adults participating in the UPMC Living-at-Home program.

"We're thrilled to be a community partner for this project," says **Melissa (Missy) Sovak, MSW, LCSW**, director of the Living-at-Home program. "There's never been a greater need for collaborative healthcare for aging adults in their home settings.



"We are broadening access to health assessments among vulnerable older adults while building a workforce of health professionals who are better able to identify and collaboratively manage their health needs," says **Lorraine M. Novosel, PhD, CRNP**, assistant professor in the School of Nursing, coordinator of the Adult-Gerontology Primary Care Nurse Practitioner program, and principal investigator for i-PEEP. "



"We know from experience that you can't 'go it alone' as a health care practitioner when working with older adults," says co-investigator **Jennifer Hagerty Lingler, PhD, CRNP**, professor in the Department of Health and Community Systems in the School of Nursing.



"This initiative is about learning and working together to accelerate the use of best team practices in the home, where we are focusing efforts to help older adults remain independent."

"Next year, i-PEEP will take a closer look at how factors such as poverty, food insecurity, abuse, and crime impact community health," adds co-investigator **Pamela E. Toto, PhD, OTR/L**, associate professor of occupational therapy in the School of Health and Rehabilitation Sciences. "It is allowing us to collaborate across professions and expose our students to real-life community-based care."



Additional support is provided through a collaboration with the Robert Wood Johnson Foundation, the John A. Hartford Foundation, the Josiah Macy Jr. Foundation, and the Gordon and Betty Moore Foundation. Funding was also provided by **Jacqueline Dunbar-Jacob, PhD**, dean of Pitt's School of Nursing and a member of the Aging Institute general board of directors.

What Students Say About i-PEEP

For **Julie Xu, MSW**, a Hartford Fellow and recent graduate from the University of Pittsburgh, the i-PEEP program was an eye-opening experience.

"i-PEEP helped us become more aware of each other as professionals and taught us to be more sensitive to the needs of older adults," she says.

"You can learn a lot in a classroom but assessing older adults in their homes — with healthcare professionals from other fields — takes learning to a whole new level," says **Kady Yoder, MSW**, a University of Pittsburgh graduate with a master's degree in social work and certification in gerontology.

"Everyone should do this," she says. "It was a great learning experience. I got to see things from a different perspective and hear new ideas."

Post-Acute Care Forums

Understanding How Policies and Politics Impact Care

Over the past several years, the Aging Institute has partnered with UPMC Community Provider Services and UPMC Senior Communities to host a series of interactive forums designed to build awareness, understanding, and conversations within UPMC on major changes impacting the state's and nation's healthcare system, particularly in post-acute care.

Each year, UPMC professionals — from frontline staff to senior leadership — attend the annual Post-Acute Care (PAC) forums to engage in discussions on key medical, ethical, and legal



issues that are shaping political agendas in Harrisburg and Washington, D.C.

“The goal was to encourage open dialogue and collaboration around policies that are responsive to the needs of the aging population and caregivers.” says **Nicole Fideli**, who helped coordinate the forums and now serves as director of Public Policy and Engagement at UPMC.



The initial PAC forum held in 2015 was inspired by the passage of the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014 and its

effect on skilled nursing facilities and home health agencies. Key speakers included **Barbara Gage, PhD**, of the Post-Acute Care Center, a national expert on Medicare post-acute care policy issues and an architect of the IMPACT Act, and policy experts from LeadingAge, the national association for nonprofit providers of aging services.

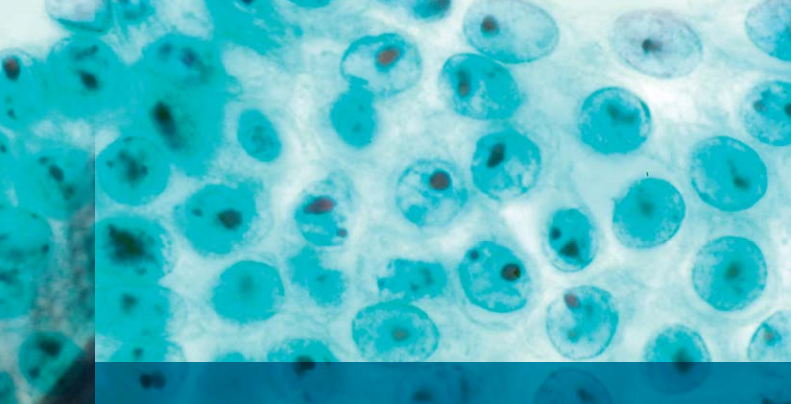
The 2017 PAC forum featured leaders from the National Hospice and Palliative Care Organization (NHPCO), including President/CEO **Edo Banach, JD**, with discussions focused on end-of-life care, the importance of advanced directives, and the work of UPMC’s own palliative care program.

The program’s format has proven so popular that in November 2018 the initiative developed a related forum titled “Election Reflection” and brought in state and national policy influencers to discuss implications of the November election, including its impact on important aging-related issues.





Connecting to the Community



Sharing knowledge and resources with the community is central to the mission of the Aging Institute. Through this dissemination and outreach, we are building awareness and empowering older adults, their families, and caregivers, providing them with the tools for informed decision-making and access to critical support. Through these and other efforts, we are also forging powerful relationships with a host of medical, community, public health, legal, advocacy, and faith-based organizations to enlarge the network of expertise available for older adults' lives.

The Aging Institute Help and Referral Line

In 2018, calls to the Aging Institute Help and Referral Line continued to increase — as did the complexity and diversity of caller questions received.

“A big part of the call line’s growth is due to the Institute’s increased promotional efforts with doctors, practice managers, and other healthcare providers through our partnership over the last four years with the national Geriatric Workforce Enhancement Program (GWEP),” explains **Ronnie Edwards, MSW, LSW**, the Institute’s Aging and Disability Coordinator (see page 28). “Working together, we’re creating a centralized regional call line that older adults, caregivers, and healthcare providers can rely upon for expert help and links to community resources.”

According to Ms. Edwards, healthcare professionals now comprise 25 percent of all calls. “We’re hearing directly from concerned social workers, nurses, doctors, and case managers who want to discuss about a particular patient’s situation to determine what kinds of community resources are available to help that individual,” she says.

Older adults and their spouses — as well as their adult children, concerned friends, and neighbors — make up the balance of callers. “The questions

we get most frequently center around in-home services so older adults can remain at home and their caregivers can get some relief,” says Ms. Edwards. “There’s also a great deal of interest in transportation assistance.”

Both Ms. Edwards, a licensed social worker, and her colleague **Melissa Jones, MSN, RN**, a geriatric nurse educator, are the voice of the Help and Referral Line. “Our professional backgrounds enable us to look at a caller’s problem with very different perspectives,” says Ms. Edwards. “That’s a real distinction and value that we offer callers.”

The service is free and open to anyone, regardless of location, level of need, or insurance affiliation.

And in 2018, for the first time, the Institute offered opportunities for callers to participate in live chats and webinars. “Doing so allows us to engage in more extended discussions on a particular topic,” says Ms. Edwards. “We’re looking forward to doing more of them next year.”

Sharing Resources for Older Adults

As part of its efforts to promote awareness of the needs of caregivers, in May 2018, the Aging Institute presented a half-day program focused on sharing ideas and resources with caregivers and professionals who support older adults in our region.

Held at Cumberland Woods Village, the event - **Resource Networking in the Care of Older Adults** - featured speakers from AARP Pennsylvania and the Allegheny County Health Department.

Jennifer Blatz, AARP

Pennsylvania’s associate state director for community outreach, discussed AARP’s **Livable Communities** initiative to make neighborhoods, towns, cities, and rural areas more age-friendly so older adults can stay in their communities as they age. The program focuses on helping communities create environments that can enable older adults to thrive - from transportation and social inclusion to housing, communication,



and employment. She also explained how to access the valuable resources available through the program, including AARP’s **Network of Age-Friendly Communities** — an initiative affiliated with the World Health Organization’s Age-Friendly Cities and Communities Program.

Hannah Hardy, program manager of the chronic disease prevention program with the Allegheny County Health Department, talked about the county’s ambitious and comprehensive **Live Well Allegheny**



campaign aimed at improving the health and wellness of county residents of all ages. She encouraged participants to become active partners with the Live Well Allegheny program to sustain and grow its successes. Ms. Hardy also provided information on county resources of special interest to older adults and their caregivers, ranging from food access (Just Harvest), to fall prevention (Matter of Balance and STEADI) and driver safety (CarFit).

NOTE: Over the summer of 2018, Aging Institute staff received training in Matter of Balance and CarFit and began offering classes for interested older adults and caregivers.

The Aging Institute at UPMC McKeesport

In 2018, the Aging Institute’s commitment to supporting underserved older adults and their caregivers in the nearby Pittsburgh community of McKeesport continued to grow through a concentrated effort to broaden community outreach and increase educational programming.

In 2014, the **Aging Institute at UPMC McKeesport Resource Center** opened in collaboration with the McKeesport Hospital Foundation. According to the United States Census Bureau, nearly one in five adults living in the city of McKeesport, a suburb of Pittsburgh, is over the age of 65 - and nearly 40 percent of these adults live on an annual income of \$20,000 or less.

“We’ve increased our outreach efforts to other community partners, working with the Salvation Army, area church leaders, and local senior centers,” says geriatric nurse educator Ms. Jones, the Aging Institute’s newest staff member. “We’ve also aligned efforts with the 9th Street Clinic in McKeesport, a non-profit that provides non-emergency basic services to individuals who cannot afford primary care health insurance.”

“We encourage older adults and caregivers to drop in to meet with us to discuss any problems they’re having and to connect to community resources,” says Ms. Jones. “Twice a month, we also offer free educational programs offered by the Aging Institute, UPMC, and external organizations.”



In 2018, these programs covered a wide range of topics, including:

- Fraud
- Rehabilitation
- Financial planning for care
- Eye health
- Hospice care
- Mindfulness
- Wandering/lost behavior
- Seniors and research trials
- Nutrition
- Medications
- Caregiving
- Fall prevention
- Elder law
- Depression and holiday blues
- Navigating community resources
- Winter safety

Additionally, through its relationships with the Allegheny County Health Department and the University of Pittsburgh Department of Occupational Therapy, Aging Institute staff pursued training and began conducting programming at UPMC McKeesport and other locations:

Matter of Balance: Overcoming Fears and Avoiding Falls

Particularly if they've already experienced a bad fall, older adults have a fear of falling, which can limit their activities and lead to weakness and an increased risk of falling. Matter of Balance, an

award-winning program created by the Maine Health Partnership for Healthy Aging, is designed to help seniors overcome their fears and become more active.

This year, Ms. Jones completed coach/facilitator training in Matter of Balance taught by master trainers through the Allegheny County Health Department. The eight-week, two-hour-long classes focus on developing coping strategies to address the fear of falling, including making changes to reduce fall risks and exercising to increase strength and balance.

In Fall 2018, Ms. Jones introduced Matter of Balance classes at the Aging Institute Resource Center at UPMC McKeesport, Turtle Creek Senior Center, and at William S. Moorhead Towers in Oakland, an independent living community serving individuals with visual or physical challenges. The program was met with enthusiastic response by both older adults and caregivers, with requests to increase the number of available classes in the future. A major feature article on the program appeared in the *Pittsburgh Post-Gazette*, which has also generated increased interest in the program.

"We begin the program by encouraging participants to talk about their fears of and experiences with falling," says Ms. Jones. "From there we explore ways to integrate balance exercises into their lives, which can be done while sitting or watching television."

Professor and occupational therapist **Pamela E. Toto, PhD, OTR/L**, School of Health and Rehabilitation Sciences at the University of Pittsburgh, is a master trainer for the Matter of Balance program. She also was awarded the 2017 Geriatrics Teacher of the Year Award by the Pennsylvania Geriatric Society for her contributions to improved care for older adults. "Dr. Toto made a huge impact when she talked to participants at our McKeesport and Turtle Creek programs," says Ms. Jones. "She demonstrated the correct way to fall and offered safe strategies on how to stand up again - something that can be very challenging to older adults." **Dennis A. Martin, OTR/L, CHT**, occupational therapy program director for UPMC Centers for Rehab Services, also spoke to one of the McKeesport classes on how to get up from a fall and shared assistive devices that can help make getting dressed and managing household tasks easier.

The Aging Institute had the opportunity to facilitate the engagement of three students from the University of Pittsburgh's School of Engineering through Matter of Balance. The students used feedback from the participants to modify prototypes for a fall detection device they were developing for a class project and poster presentation. The engineering students gained knowledge about the challenges older adults face especially related to vision and hearing impairments and the class participants were thrilled to engage with students

and help them complete their project. Plans are in place for 2019 to offer Matter of Balance again for McKeesport and Turtle Creek residents as well as other lower income communities with high senior populations. "The Aging Institute and its programs are a tremendous resource for our students," notes Dr. Toto, who also is involved with the Institute's work with the Geriatric Workforce Enhancement Program (see page 28).

CarFit: Helping Older Drivers Find a Perfect Fit
Older drivers often sit too close to the steering wheel, which increases their injury risk if the air



bag deploys in a crash. Many also lack a clear line of sight, which can lead to an accident.

To ensure area seniors "fit" safely in their cars, Ms. Jones completed training as a CarFit technician alongside nearly 50 University of Pittsburgh occupational therapy students in 2018. Training was completed at Senior Communities' Asbury Heights, located in Pittsburgh's Mount Lebanon neighborhood. As a certified CarFit event coordinator and instructor since 2007, Dr. Toto has championed the program locally for more than a decade. "We're planning to host CarFit community events in McKeesport and other communities starting in 2019 in collaboration with Dr. Toto and her occupational therapy students," notes Ms. Jones.

CarFit, a program created by the American Society of Aging in partnership with the Automobile Association of America (AAA), the American Occupational Therapy Association, and AARP, uses a 12-point checklist to ensure that older drivers fit in order to ensure safe driving. Drivers are checked in their vehicles for a clear line of sight, good foot position, safe distance between chest and steering wheel, properly adjusted mirrors and steering wheels, and other safety concerns.

MOVE UP at UPMC McKeesport

The growing presence of the Aging Institute at UPMC McKeesport and its commitment to supporting the health and wellness needs of vulnerable older adults in the community made it the ideal resource to host the first hospital-based site of MOVE UP, The Mobility and Vitality Lifestyle Program.

The national community-based lifestyle research study is a project of the University of Pittsburgh Center for Aging and Population Health's Prevention Research Center, funded by the Centers for Disease Control and Prevention (CDC). It is led by epidemiologist **Anne B. Newman, MD, MPH**, clinical director of the Aging Institute.

McKeesport area residents participated in the program, which targets weight loss and maintenance through the development of healthy eating habits, behavior modification, and self-directed exercise (usually walking), with the goal of reaching 175 minutes of activity a week. Participants in the 13-month, 32-session program ranged in age from 60 to 75 with a body mass index between 27 and 45. Early indicators of both weight loss and participation in the program is promising. And while long-term participation isn't part of the study, many members of the McKeesport MOVE UP program are remaining active and involved through the Aging Institute at UPMC McKeesport.

Celebrating Senior Champions

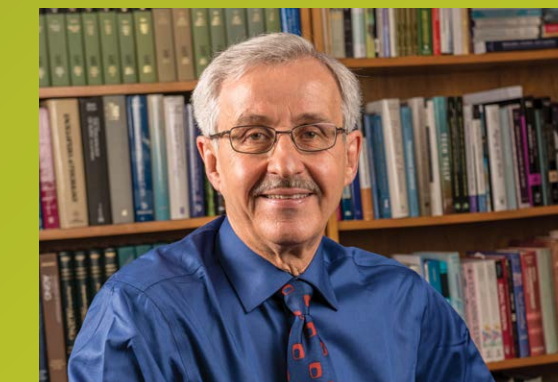
What began as a dinner in 2009 to recognize the 20th anniversary of Seneca Place and the genesis of UPMC Senior Communities has marked its tenth year of recognizing remarkable individuals and organizations who have created a better life for seniors and caregivers living in western Pennsylvania. Since its inception, “Celebrating Senior Champions” has presented more than \$1.1 million in net proceeds to further charitable care for frail seniors who have outlived their financial resources. UPMC Senior Services hosted this signature event on October 18, 2018.

“These honorees play a critical role in developing the clinical and human service platforms needed to improve the lives of seniors in western Pennsylvania and nationally,” said **Deborah Brodine, president** of UPMC Community Provider Services. “UPMC Senior Services is proud to recognize their exemplary work.”



The 2018 Grand Champion is **Anne B. Newman, MD, MPH**, Distinguished Professor and Chair of the Department of Epidemiology and Director of the Center for Aging and Population Health (CAPH) in the Graduate School of Public Health, with a joint appointment in the Division of Geriatric Medicine in the School of Medicine at the University of Pittsburgh. She has also been newly appointed as the Clinical Director of the Aging Institute of UPMC Senior Services and the University of Pittsburgh. Dr. Newman plays a critical role in developing the clinical platforms needed to translate basic science discoveries into population health and patient care. Internationally renowned for her work in the epidemiology of aging, longevity, and disability, Dr. Newman’s research has defined the impact of apparently subclinical disease on physical, cognitive function, and on the metrics of healthy aging. She conducts clinical trials to prevent disability using physical activity, weight management, and medical therapies.

The 2018 Community Champion is the **United Way of Southwestern Pennsylvania** under the leadership of **President and Chief Executive Officer, Robert Nelkin**. Helping our region’s seniors live healthy lives is one of four core pillars of United Way’s work. To help address the unmet needs of seniors, United Way launched “Open Your Heart to a Senior” in 2012, connecting caring adults with seniors who need extra assistance to remain safe at home and who would benefit from companionship to combat isolation and loneliness. Since then, thousands of seniors and volunteers have developed enriching relationships each year, helping seniors prolong their health, happiness, and independence. Through innovative leadership, financial investment, volunteerism, public education, and strategic local partnerships, United Way is keeping the time, talent, and experience of seniors tightly woven into the fabric of our community, making the region stronger, more vibrant, and more economically secure.



Richard Schulz, PhD is the 2018 Caregiver Champion. Dr. Schulz is a Distinguished Service Professor of Psychiatry and Director of Gerontology at the University of Pittsburgh. He is also the Associate Director of the Aging Institute of UPMC Senior Services and the University of Pittsburgh. His work focuses on social-psychological aspects of aging, including the impact of disabling late-life disease on patients and their families. Funded by the National Institutes of Health for more than three decades, Dr. Schulz conducts descriptive longitudinal and intervention research on diverse older populations representing illnesses such as cancer, spinal cord injury, stroke, Alzheimer’s disease, heart disease, and arthritis. He is a leading contributor to literature on the health effects of caregiving. Additionally, Dr. Schulz is exploring supportive interventions, including technology-based approaches designed to enhance patient functioning and quality of life of both patients and their relatives.



Research of the Aging Institute's Partners



A recognized pioneer in the field of geriatrics, the University of Pittsburgh remains among the foremost institutions of higher learning to lead research focused on improving the care and quality of life of older adults. Through decades of collaborative and multidisciplinary research — conducted by experts in medicine, public health, nursing, social science, psychiatry, epidemiology, and ethics — our University partners have positioned our region at the forefront of aging-related research and innovation.

Centers of Excellence Research Publications Highlights

Following is a representative sampling that highlights the remarkable range and diversity of aging-related research initiatives undertaken by researchers, scientists, and clinicians at the University of Pittsburgh and UPMC that were published in peer-reviewed journals in 2018.

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.

Dias A, Azariah F, Anderson SJ, Sequeira M, Cohen A, Morse JG, Cuijpers P, Patel V, Reynolds CF. Effect of

a Lay Counselor Intervention on Prevention of Major Depression in Older Adults Living in Low- and Middle-Income Countries: A Randomized Trial. **JAMA Psychiatry.** E-pub, ahead of print.

Finding: The depression in later life (DIL) intervention is effective for preventing episodes of major depression in older persons with subsyndromal symptoms. If replicated, the DIL intervention may be effective in older adults living in low- and middle-income countries.

Karim HT, Wang M, Andreescu C, Tudorascu D, Butters MA, Karp JF, Reynolds CF, Aizenstein HJ. Acute trajectories of neural activation predict remission to pharmacotherapy in

late-life depression. **Neuroimage Clinical.** 2018 Jun 8;19:831-839.

Finding: Acute, dynamic trajectories of functional imaging metrics in response to a pharmacological intervention are a valuable tool for predicting treatment response in late-life depression and elucidating the mechanism of pharmacological therapies in the context of the brain's functional architecture.

Karp JF, Gao X, Wahed AS, Morse JQ, Rollman BL, Weiner DK, Reynolds CF. Effect of Problem-Solving Therapy Versus Supportive Management in Older Adults with Low Back Pain and Depression While on Antidepressant Pharmacotherapy.

American Journal of Geriatric Psychiatry. 2018;26:7.765-777.

Finding: The combination of antidepressant pharmacotherapy and problem-solving therapy was not superior to antidepressant pharmacotherapy and supportive management. Clinically, the rates of response and stability of response over one year observed in both groups suggest that these approaches may have clinical utility in these chronically suffering patients.

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.

Lopez OL, Becker JT, Klunk WE, Mathis C, Price J, Aizenstein HJ, Snitz B, Cohen A, Ikonovic M, Chang YF, Kamboh MI, Kuller LH. Amyloid

deposition and brain structure as predictors of MCI, dementia and mortality in the oldest-old. **Neurology** 2018 May 22;90(21): e1920-e1228 [PMCID: PMC5962915].

Finding: This study tested the hypothesis that brain structural integrity (i.e., hippocampal (HIP) volume), white matter lesions (WMLs), and amyloid- β (A β) deposition, were associated with long-term (8 years) increased risk of incident dementia and mortality in 183 cognitively normal and MCI individuals age 80+. HIP, WMLs and amyloid- β (A β) deposition were predictors of incident dementia, especially in the individuals that had the three biomarkers present. After adjusting for the risk of dying, A β deposition,

WMLs remained strong predictors. Amyloid- β (A β) deposition and HIP volume were predictors of death in MCI participants. This study showed the presence of more than one biomarker was a stronger long-term predictor of incident dementia than any biomarker alone. After adjusting for the risk of dying, amyloid deposition and WMLs were stronger predictors of dementia than HIP volume. The risk of dying during follow-up was associated with both, neurodegeneration, and amyloid deposition, especially in MCI individuals.

Wilckens KA, Tudorascu D, Snitz B, Price J, Aizenstein H, Lopez OL, Erickson K, Lopresti B, Laymon C, Minhas D, Mathis C, Buysse D, Klunk WE, Cohen AD. Sleep moderates the relationship between amyloid beta and memory recall.

Neurobiology of Aging,

2018 Nov;71:142-148 [PMCID in process; PMID 30138767].

Finding: This study examined the potential modifiable factors that might influence the functional impact of Alzheimer's disease pathology, by investigating whether sleep measures moderate the relationship between A β burden and cognitive function. Forty-four in nondemented subjects (age range 64-96) underwent PiB-PET imaging and cognitive testing. High A β burden was associated with poor memory function in those with poorer sleep. This suggests that better sleep may be protective against the effects of A β in preclinical Alzheimer's disease.

Zhao J, Tudorascu DL, Lopez OL, Cohen AD, Price JC, Mathis CA, Aizenstein HJ, Kuller LH, DeKosky ST, Klunk WE,

Snitz BE. Amyloid-beta deposition and suspected non-Alzheimer pathophysiology exhibit different cognitive decline patterns over 12 years in the oldest-old without dementia. **JAMA-Neurology.** 2018 Jan 1;75(1):88-96 [PMCID: PMC5833487].

Finding: This study evaluated preclinical biomarkers and cognitive decline in a longitudinal study of the oldest old (> 80 years) without dementia. The study assessed whether those individuals with A β accumulation but without evidence of neurodegeneration (ND), as assessed by hippocampal volume, or with evidence of ND but without A β accumulation (A β), show specific cognitive decline signatures. The study found that the A β + /ND+ group showed the steepest decline on cognitive measures. The amyloid

deposition alone (A β + /ND-) group showed faster decline on tests of verbal and visual memory, executive function, and language. The group with isolated hippocampal atrophy (A β - /ND+ group) showed greater decline only in tests of visual memory. The study concluded that isolated hippocampal atrophy is dissimilar to preclinical AD in that only isolated memory decline was observed over time, as compared to memory and non-memory decline with A β accumulation. This study confirms previous findings that A β deposition is associated with long-term cognitive decline.

Krivinko JM, Erickson SL, Ding Y, Sun Z, Penzes P, MacDonald ML, Yates, NA, Ikonovic MD, Lopez OL, Sweet RA, Kofler J. Synaptic proteome compensation and resilience to psychosis in Alzheimer Disease.

American Journal of Psychiatry. 2018 ;in press [PMC6167138].

Finding: This study examined whether the psychotic phenotype in Alzheimer's disease had a more rapid cognitive deterioration than in Alzheimer's disease without psychosis by examining alterations in the synaptic proteome in autopsied Alzheimer's disease cases. The study found that subjects resilient to psychotic symptoms in Alzheimer's disease had higher levels of synaptic proteins compared to those with psychosis and to unaffected control subjects. Neuropathologic burden predicted less than 20% of the variance in psychosis status and did not account for the synaptic protein level differences between groups. The authors concluded that the accumulation of synaptic proteins, particularly those that are enriched in the

postsynaptic density, is associated with resilience to psychosis in Alzheimer's disease.

Yan Q, Nho K, Del-Aguila JL, Wang X, Risacher SL, Fan KH, Snitz BE, Aizenstein HJ, Mathis CA, Lopez OL, Demirci FY, Feingold E, Klunk WE, Saykin AJ, Cruchaga C, Kamboh MI. Genome-wide association study of brain amyloid deposition as measured by Pittsburgh Compound-B (PiB)-PET imaging. **Molecular Psychiatry.** 2018 Oct 25;doi: 10.1038/s41380-018-0246-7).

Finding: This was the first GWAS on brain amyloid deposition as measured by Pittsburgh Compound-B (PiB)-PET imaging conducted in several cohorts in the country. We identified multiple independent signals in the APOE and non-APOE regions (We have also identified a novel locus for



the attention/processing speed cognitive domain.

Snitz, B.E., Wang, T., Cloonan, Y.K., Jacobsen, E., Chang, C.C.H., Hughes, T.F., Kamboh, M.I. and Ganguli, M. Risk of progression from subjective cognitive decline to mild cognitive impairment: The role of study setting. **Alzheimer's & Dementia**. 2018;14 (6): 734-742.

Finding: This study compared risk for clinical progression associated with subjective cognitive decline (SCD) (vs. control) from two study settings: the ADRC vs. a population-based cohort in small town communities around Pittsburgh, the Monongahela-Youghiogheny Health Aging Team (MYHAT). The hazard ratio for incident mild cognitive impairment in individuals with SCD was higher in the memory clinic than in a general non-specific population.

This study demonstrated the critical role of study setting on SCD-associated risk for progression and underscores the importance of consideration of study setting when evaluating the utility of SCD as a risk marker for AD / cognitive decline. This is one of the first direct comparisons of clinical outcomes between two divergent study settings addressing this hypothesis.

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.

Sanders JL, Arnold AM, Boudreau RM, Hirsch CH, Kizer JR, Kaplan RC, Cappola AR, Cushman M, Jacob ME, Kritchevsky SB, Newman AB. Association of biomarker and physiologic indices with mortality in older adults: Cardiovascular Health Study. **Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences**. 2018 Apr 12. doi: 10.1093/gerona/gly075. [Epub ahead of print] PubMed PMID: 29659743. PubMed Central PMCID: In Process by Journal.

Finding: This report from the CHS All Stars Study (R01 AG023629, Newman PI) shows how an index of blood biomarkers of aging

predicts mortality alone and in combination with a previously published index of comorbidity.

Jacob ME, Marron MM, Boudreau RM, Odden MC, Arnold AM, Newman AB. Age, Race, and Gender Factors in Incident Disability. **Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences**. 2018 Jan 16;73(2):194-197. doi: 10.1093/gerona/glx194. PubMed PMID: 29045556; PubMed Central PMCID: PMC5861898.

Finding: Rates of disability by various definitions are useful for planning future studies. This report from the Cardiovascular Health Study (CHS) provides such rates by age, race, and sex.

Marron MM, Singh J, Boudreau RM, Christensen K, Cosentino S, Feitosa MF, Minster RL, Perls T, Schupf N, Sebastiani P, Ukraintseva S, Wojczynski MK, Newman AB. A novel healthy blood

pressure phenotype in the Long Life Family Study. **Journal of Hypertension**. 2018 Jan;36(1):43-53. doi: 10.1097/H.0000000000001514. PubMed PMID: 28837423; PubMed Central PMCID: PMC5893936.

Finding: The Long Life Family Study is a major ongoing study of families with longevity. This report suggests that blood pressure may be one specific pathway to longevity in certain families.

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.

Gurkar AU, Robinson A, Yuxiang, et al. Dysregulation of DAF-16/FOXO3-mediated stress responses accelerate oxidative DNA damage induced aging. **Redox Biology**. In press.

Finding: Physiologic DNA damage is thought to drive cell fate-decisions such as senescence or apoptosis, which in turn, are believed to drive aging and age-related pathologies. However, Dr. Gurkar and colleagues found that, in mice, endogenous DNA damage induces activation of the DAF-16/FOXO3A stress response pathway. In the short term, this response

is protective. Since such activation cannot be sustained, however, it results in functional decline and death. Thus, response to DNA damage, rather than the damage itself, seems to drive organismal aging.

Forman DE, Santanasto AJ, Boudreau RM, et. al. Impact of incident heart failure on body composition over time in the Health, Aging, and Body Composition Study population.

Circulation Heart Failure. 2017; 10 (9):e003915.

Finding: Obesity is linked to heart failure (HF) but the association has not accounted for age-related changes in lean body mass. This analysis of healthy older adults over 6 years revealed that, despite an increase in obesity, those who develop HF suffer loss of lean mass that exceeds the amount due to aging. The loss likely increases the risks of functional decline,

falls, and frailty. It also supports broadening the scope of HF management to include greater emphasis on nutrition and other approaches to preserve lean mass as an additional target.

Clarkson B, Griffiths D, Resnick NM. Do brain structural abnormalities differentiate separate forms of urgency urinary incontinence? **Neurourology and Urodynamics.** 2018 [epub ahead of print].

Finding: Urge incontinence is the most common and refractory type of geriatric incontinence, and it is associated with non-suppressible bladder contractions. Using neuroimaging to assess brain structure, function, and connectivity, however, Drs. Clarkson, Griffiths, and Resnick have found that UI may comprise at least two separate phenotypes, even in neurologically normal elders: one in which the

brain plays the dominant role and one in which it does not. These findings should facilitate development of enhanced behavioral therapy for the first phenotype and more targeted pharmacologic treatment for the second.

Gray SL, Hart LA, Perera S, Hanlon JT. Meta-analysis of interventions to reduce adverse drug reactions in older adults. **Journal of the American Geriatrics Society.** 2018; 66:282-288.

Finding: Older adults take more drugs than younger individuals, and are more apt to suffer adverse drug reactions (ADR). Pharmacists can reduce the use of potentially problematic medications but it is less clear whether this input can reduce ADRs. This meta-analysis by Drs. Gray, Perera, and Hanlon found that, regardless of the setting or type of intervention, optimizing

pharmacotherapy for older adults reduces ADRs by 21% and serious ADRs by 35%. Healthcare systems should consider deploying more pharmacists to reduce ADRs and associated costs.

Rubin FH, Bellon J, Bilderback A, Urda K, Inouye SK. Effect of the Hospital Elder Life Program (HELP) on risk of 30-day readmission. **Journal of the American Geriatrics Society.** 2018; 66: 145-149.

Finding: In 2002, Dr. Rubin implemented Dr. Inouye's HELP program at UPMC Shadyside, a community teaching hospital. Although HELP is effective in reducing the incidence of delirium, its efficacy in reducing readmissions is unclear. Thus, Dr. Rubin and colleagues identified readmissions of all older patients discharged from Shadyside. Using administrative data to adjust for group

differences, they concluded that those in the HELP program had 17% fewer readmissions than those who were not.

Sanders JL, Arnold AM, Newman AB. Association of biomarker and physiologic indices with mortality in older adults. **Cardiovascular Health Study. J Gerontology: Series A.** 2018: gly075.

Finding: A new biomarker index-which included Cystatin C, IGF-1, IGFBP-3, IL-6, NT-Pro BNP, and DHEAS-was independently associated with mortality, even after adjusting for an organ system-based physiologic index of comorbidity. Because both indices substantially attenuate the age effect on mortality, these indices may prove useful in targeting and assessing the impact of interventions to alter the trajectory of aging.

Kotlarczyk MP, Perera S, Nace DA, Resnick NM,

Greenspan SL. Identifying sarcopenia in female long-term care residents: A comparison of current guidelines. **Journal of the American Geriatrics Society.** 2018; 66:316-20.

Finding: Although sarcopenia-the loss of muscle mass and capacity--impairs function and independence of older adults, there is a lack of consensus on how to define it. The 3 most accepted definitions-from NIH, the European Working Group, and SARC-F- are based on data from community-dwelling elders; none used data from long-term care residents. This study compared the 3 criteria in 141 such residents. Fifty-one met at least one definition but concordance between definitions was low and only 2 residents met all 3 definitions. Clearly, development of better diagnostic criteria is needed.

Greenspan SL, Singer A, Vujevich K, et al. Implementing a fracture liaison service open model of care utilizing a cloud-based tool. **Osteoporosis International.** 2018; 29:953-960.

Finding: Half of women and 25% of men ≥ 50 will fracture, but <25% receive appropriate secondary prevention. In this innovative quality improvement project, a nurse practitioner-led Fracture Liaison Service (FLS) was implemented in 3 healthcare systems. It increased bone density testing from 21% to 93% ($p < 0.001$), vitamin D assessments from 25 to 84% ($p < 0.001$), prescription of calcium/vitamin D from 36% to 93% ($p < 0.001$), and prescription of specific osteoporosis treatment from 20 to 54% ($p < 0.001$). An FLS model can effectively address

osteoporosis following a first fracture.

Jump RLP, Gaur W, Katz MJ, Crnich CJ, Sloane P, Nace D on behalf of the Infection Advisory Committee for AMDA-The Society of Post-Acute and Long-Term Care Medicine. Template for an antibiotic stewardship policy for post-acute and long-term care settings. **Journal of the American Medical Directors Association.** 2017; 18: 913-20.

Finding: Owing to the increase in multidrug resistance and Clostridium difficile infections, in 2017 CMS required all long-term care (LTC) facilities to establish an antibiotic stewardship program. Yet experience with such programs is largely limited to academic or hospital settings. To address this gap, leaders in geriatrics and infectious disease reviewed the formal literature and expertise of

its authors to summarize the key components of such a program and the steps needed to adapt them to the LTC setting; they also provided a sample policy template and a list of free resources to support such efforts. The article is among the top 5 downloaded from the JAMDA website.

Forman DE, Maurer MS, Boyd C, et. al. Multimorbidity in older adults with cardiovascular disease. **Journal of the American College of Cardiology.** 2018; 71: 2149-61.

Finding: Although comorbidity is common with aging, current CVD diagnosis and management focus primarily on the heart. This review recommends incorporating multimorbidity into clinical decision making, highlights critical knowledge gaps, and clarifies research priorities to optimize care

of complex older CVD patients. Its publication in one of the field's premier journals adds further credence to its message: a geriatric domain (i.e., multimorbidity) must transform CVD practice.

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.

Xia Y, Pu H, Leak RK, Shi Y, Mu H, Hu X, Lu Z, Foley LM, Hitchens TK, Dixon CE, Bennett MVL, Chen J. Tissue plasminogen activator promotes white matter integrity and functional recovery in a murine model of traumatic brain injury. **Proceedings of the National Academy of Sciences of the United States of America.** 2018 Sep 25;115(39):E9230-E9238. doi: 10.1073/pnas.1810693115.

Finding: Tissue plasminogen activator (tPA) is used in stroke patients to break up blood clots, but there are conflicting reports about its potential therapeutic benefit and safety for victims of traumatic brain injury (TBI). In this study, electrophysiological, anatomical, and behavioral measures of recovery were performed on mice after TBI. The findings suggested that natural or

synthetic tPA can safely protect or repair white matter by promoting communication across nerve fiber tracts, leading to improved long-term adaptive behavior. These results suggest that tPA could be useful in promoting recovery after TBI in patients.

Cai M, Zhang W, Weng Z, Stetler RA, Jiang X, Shi Y, Gao Y, Chen J. Promoting Neurovascular Recovery in Aged Mice after Ischemic Stroke - Prophylactic Effect of Omega-3 Polyunsaturated Fatty Acids. **Aging and Disease.** 2017 Oct 1;8(5):531-545. doi: 10.14336/AD.2017.0520. eCollection 2017 Oct. PMID:28966799.

Finding: Omega-3 polyunsaturated fatty acids (o-3PUFAs) are the active ingredients of fish oils and have been shown to improve recovery from stroke in young adult

rodents. This study investigated whether o-3PUFA-enriched fish oil is effective in aged mice. Mice treated with o-3PUFA-enriched fish oil improved long-term stroke histological and behavioral outcomes and evidence of enhanced post-stroke brain repair processes. Since stroke is a disease of the elderly, these results suggest that o-3PUFA-enriched fish oil treatment may improve recovery in patients with stroke.

Weiner DK, Gentili A, Coffey-Vega K, Morone N, Rossi M, Perera S. Biopsychosocial Profiles and Functional Correlates in Older Adults with Chronic Low Back Pain: A Preliminary Study. **Pain Medicine**. 2018 Apr 16. doi: 10.1093/pm/pny065. [Epub ahead of print] PMID:29672748.

Finding: Current treatments for chronic low

back pain (CLBP) tend to be nonspecific and costly, and lead to unsatisfactory outcomes. This study demonstrated the association of individual pain-causing conditions in the periphery (e.g., osteoarthritis) and in the central nervous system (e.g., insomnia, fibromyalgia) to key treatment outcomes – pain severity and self-reported and performance-based physical function. Treating these specific conditions may impact outcomes and health care utilization.

Gravier ML, Dickey MW, Hula WD, Evans WS, Owens RL, Winans-Mitrik RL, Doyle PJ. What Matters in Semantic Feature Analysis: Practice-Related Predictors of Treatment Response in Aphasia. **American Journal of Speech-Language Pathology**. 2018 Mar 1;27(1S):438-453. doi:

10.1044/2017_AJSLP-16-0196. PMID:29497754.

Finding: Semantic feature analysis (SFA) is a common treatment for aphasia, a language impairment, following stroke. This study investigated how practice-related variables affected word-finding outcomes in 17 patients undergoing intensive SFA treatment. Findings indicated that the number of semantic features generated during naming trials was more strongly related to treatment response than other factors such as number of trials, total treatment time, and number of trials per hour. These results suggest how refinements in rehabilitation protocols may reduce word finding problems in patients after stroke.

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 (MH CoE) are an essential component of the VA's response to meeting the mental health needs of veterans.

Tighe, C, & Bramoweth, AD. Recent Developments in the Management of Insomnia in Later Life. **Current Treatment Options in Psychiatry**. 2018; 5 (2), 195-210.

doi:10.1007/s40501-018-0145-1.

Finding: This narrative review provides an overview of recent recommendations and empirical findings regarding the management of insomnia in older adulthood. Cognitive Behavioral Therapy for Insomnia (CBT-I) continues to be empirically supported and is the recommended first-line intervention for insomnia in older adults. Other nonpharmacological interventions such as mindfulness-based therapies, light therapy, and physical activity interventions also show promise in the treatment of insomnia in older adulthood.

DeMichele-Sweet MAA, Weamer EA, Klei L, Vrana DR, Hollingshead DJ, Seltman HJ, Sims R, Foroud T, Hernandez I, Moreno-Grau S, Tárraga L, Boada

M, Ruiz A, Williams J, Mayeux R, Lopez OL, Sibille EL, Kamboh MI, Devlin B, Sweet RAC. Genetic Risk for Schizophrenia and Psychosis in Alzheimer Disease. **Molecular Psychiatry**. 2018; 23(4), 963-972. doi: 10.1038/mp.2017.81.

Finding: Dr. DeMichele-Sweet and colleagues demonstrate that the risk for psychotic symptoms (delusions and/or hallucinations) in elderly individuals with Alzheimer's disease is reduced in those individuals carrying common genetic variations that otherwise increase the risk for schizophrenia. This provides an opportunity to identify possible biologic pathways (i.e. pathways affected by these genetic variations) that may be targeted in efforts to develop medications to treat or prevent these



disturbing symptoms in elderly Alzheimer's disease patients.

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.

Kotlarczyk MP, Perera S, Nace DA, Resnick NM, Greenspan SL. Identifying Sarcopenia in Female Long-Term Care Residents: A Comparison of Current Guidelines. **Journal of American Geriatrics Society**. 2018; 66(2): 316-320. DOI: 10.1111/jgs.15213.

Finding: This study conducted cross-sectional secondary analyses of long-term care communities in Pittsburgh, Pennsylvania with the aims of establishing the prevalence of sarcopenia in long-term care populations and examining different guideline and self-report systems. One-hundred and forty-one women sixty-five years and older were assessed based on appendicular lean muscle mass, hand grip strength, and gait speed. Sarcopenia status was determined based on consensus guidelines from the

European Working Group on Sarcopenia in Older People (EWGSOP) and two sets of evidence-based guidelines from the Foundation for the National Institutes of Health (FNIH) Sarcopenia Project, as well as by the SARC-F questionnaire. The study found that the prevalence of sarcopenia ranges from 4.3-32.6%. Only two out of the one-hundred and forty-one participants would be considered sarcopenic under all three diagnostic guidelines. The criteria set by the EWGSOP and FNIH have little overlap among older women living in long-term care communities. The SARC-F questionnaire, while a useful and simple tool, has comparatively low sensitivity for identifying those with sarcopenia.

Perera S, Nace DA, Resnick NM, Greenspan SL. The Nursing Home Physical Performance Test: A

Secondary Data Analysis of Women in Long-Term Care Using Item Response Theory. **The Gerontologist**. 2018; 58(4): e197-e204. DOI: 10.1093/geront/gnx033.

Finding: Using item response theory, this study explored the psychometric characteristics and potential improvements of the Nursing Home Physical Performance Test (NHPPT), an instrument developed using classical methods to measure function among nursing home residents. Researchers already knew that NHPPT had good psychometric properties from an item response theory perspective but acknowledged the possibility of further improvement. For example, making sit-to-stand and dialing a phone easier improves concurrent validity of the NHPPT from

0.60 to 0.68 in terms of correlation with ADL and from 22% to 36% in terms of proportion of explained variability by frailty. As only older women were included, further study with a larger and more generalizable sample is needed before definitive recommendations can be made for NHPPT.

Rosso AL, Bohnen NI, Launer LI, Aizenstein HJ, Yaffe K, Rosano C. Vascular and Dopaminergic Contributors to Mild Parkinsonian Signs in Older Adults. **Neurology**. 2017; 90(3): e223-e229. DOI: 10.1212/L.0000000000004842.

Finding: In this study, researchers examined associations between mild Parkinsonian signs (MPS) and the dopaminergic indicator catechol-O-methyltransferase (COMT) and white matter hyperintensities (WMH).

Using regression modeling, the study examined cross-sectional associations between WMH volume and COMT Val158Met genotype in a cohort of older adults. MPS was found to be present in 42.3% of the sample. Ultimately, WMH had a direct relation with MPS, and while COMT was not associated with MPS, it did modify the effect of WMH on MPS. These findings suggest that MPS has a primarily vascular origin in older adults and that dopaminergic networks may have a role in resilience to vascular pathology.

Rosso AL, Verghese J, Metti AL, Boudreau RM, Aizenstein HJ, Kritchevsky S, Harris T, Yaffe K, Satterfield S, Studenski S, Rosano C. Slowing Gait and Risk for Cognitive Impairment: The Hippocampus as a Shared Neural Substrate. **Neurology**. 2017; 89(4):

336-342. DOI: 10.1212/L.0000000000004153.

Finding: This study examined the association between slowing gait and cognitive impairment in a cohort of older adults (n=175). Participants were assessed for gait speed over fourteen years and gray matter volume (via MRI) at years ten or eleven. Cognitive status was then adjudicated at year fourteen. Gait was calculated by using Bayesian slopes, with higher values indicating greater decline, while gray matter volume was normalized to intracranial volume, with lower volumes indicating greater atrophy. Ultimately, the study found that an association between slowing gait and cognitive decline is supported by a shared neural substrate that includes a low volume right hippocampus. These results support the

conclusion that slowing gait can serve as an indicator of dementia risk.

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

Gurkar AU, Robinson AR, Cui Y, Li X, Allani SK, Webster A, Muravia M, Fallahi M, Weissbach H, Robbins PD, Wang Y, Kelley EE, Croix CMS, Niedernhofer LJ, Gill MS. Dysregulation of DAF-16/FOXO3A-mediated stress responses accelerates oxidative DNA damage induced aging. **Redox Biology**. 2018 Sep; 18:191-199. doi: 10.1016/j.redox.2018.06.005. Epub

2018 Jun 19. PubMed PMID: 30031267; PubMed Central PMCID: PMC6076207.

Finding: How DNA damage and repair modulate the aging process is an active area of research. This study shows how the loss of a critical DNA repair protein, ERCC1, in the nematode, early in life turns on an oxidative stress response network, under the control of DAF-16. However, this activation is lost with age and these nematodes displayed overall shorter life span, and premature functional decline. Analysis of mice with the same DNA repair deficiency showed activation of the homologous transcription factor, FOXO3A early in life, which declined with age. This decrease in activity caused an increase in oxidant stress and premature aging in the mice. These data indicate

that the blunted transcription responses to oxidant stress in these repair deficient animals rather than direct DNA damage seems to be the cause of premature aging.

Vendetti FP, Karukonda P, Clump DA, Teo T, Lalonde R, Nugent K, Ballew M, Kiesel BF, Beumer JH, Sarkar SN, Conrads TP, O'Connor MJ, Ferris RL, Tran PT, Delgoffe GM, Bakkenist CJ. ATR kinase inhibitor AZD6738 potentiates CD8+ Tcell-dependent antitumor activity following radiation. **Journal of Clinical Investigation**. 2018 Aug 31;128(9):3926-3940. doi: 10.1172/JCI96519. Epub 2018 Aug 13. PubMed PMID: 29952768; PubMed Central PMCID: PMC6118586.

Finding: Cancer Immunotherapy, the subject of the 2018 Nobel Prize in medicine is an

active area of research at the Hillman Cancer Center. This preclinical study examined how combining a ATR kinase inhibitor with ionizing radiation (IR) caused complete immunity to colon cancer cells in a mouse model. They show that while IR increases the expression of a tumor cell marker that allows immune evasion, the ATR inhibitor helped to ameliorate this effect. Mice were found not only to clear the tumor cells, but were found to be immunized to further tumor challenges. Orally active ATR inhibitors are currently being translated into the clinic here in Pittsburgh.

Yuan JM, Beckman KB, Wang R, Bull C, Adams-Haduch J, Huang JY, Jin A, Opresko P, Newman AB, Zheng YL, Fenech M, Koh WP. Leukocyte telomere length in relation to risk of lung adenocarcinoma incidence: Findings from

the Singapore Chinese Health Study. **International Journal of Cancer**. 2018 Jun 1;142(11):2234-2243. doi: 10.1002/ijc.31251. Epub 2018 Jan 25. PubMed PMID: 29318605; PubMed Central PMCID: PMC5893405.

Finding: Is telomere length a predictor of cancer? This study examined telomere lengths in peripheral blood cells from 26,540 individuals prior to the onset of any overt disease, of which 654 developed lung cancer. The patients' average age was 73 years. The results showed that longer telomere length was associated with a greater risk for developing lung adenocarcinoma, but not squamous cell carcinoma. These data are important because they suggest telomere length may help inform about risk of specific cancer types, and they offer clues into the role that telomeres



play in developing lung adenocarcinoma. Cells with longer telomeres can undergo more cell divisions prior to arrest, increasing the likelihood of acquiring genetic mutations or chromosomal changes than allow bypass of growth arrest, and switching on telomere maintenance pathways that enable unlimited cell divisions.

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.

White DB, Angus DC, Shields AM, Buddadhumaruk P, Pidro C, Paner C, Chaitin E, Chang CH, Pike F, Weissfeld L, Kahn JM, Darby JM, Kowinsky A, Martin S, Arnold RM: PARTNER Investigators

A randomized trial of a family-support intervention in intensive care units.

New England Journal of Medicine. 2018 Jun 21;378(25):2365-2375.

Findings: This stepped wedge, cluster-randomized trial involved 1420 patients at high risk of death and their surrogates in five intensive care units. The study found that a multicomponent family-support intervention delivered by the interprofessional ICU team did not affect surrogates' psychological symptoms when compared to usual care, but ratings of the quality of communication and the patient- and family-centeredness of

care were higher in the intervention group, and the length of ICU stay was shorter in the intervention group, when compared to usual care.

Schenker Y, Merlin JS, Quill TE. Use of palliative care earlier in the disease course in the context of the opioid epidemic: educational, research, and policy issues. **Journal of the American Medical Association.** 2018 Sep 4;320(9):871-872.

Findings: This article highlighted important educational, research, and policy challenges related to use of palliative care earlier in the disease course in the context of the opioid

epidemic. The authors noted that balanced attention to the morbidity and mortality related to opioid addiction and the morbidity and adverse effects on function and quality of life related to undertreatment of pain in serious illness are needed.

Kavalieratos D, Gelfman LP, Tycon LE, Riegel B, Bekelman DB, Ikejani DZ, Goldstein N, Kimmel SE, Bakitas MA, Arnold RM. Palliative care in heart failure: rationale, evidence, and future priorities. **Journal of the American College of Cardiology.** 2017 Oct 10;70(15):1919-1930. doi: 10.1016/j.jacc.2017.08.036.

Finding: This review synthesized evidence from randomized clinical trials of palliative care interventions in heart failure. The authors found that the evidence base, while promising, was still in its infancy. Additional high-quality studies are needed, in particular with regards to primary palliative care interventions to address unmet needs earlier and throughout the illness course.



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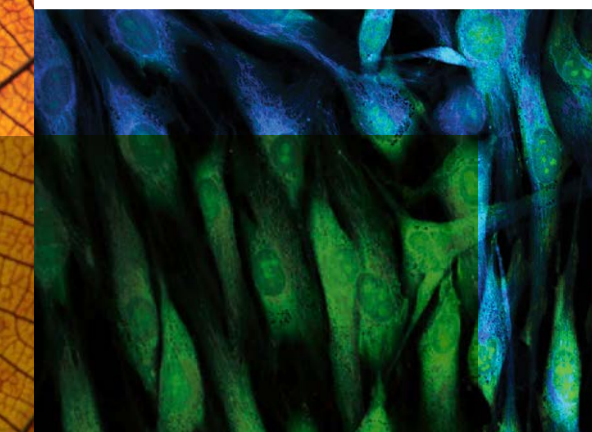
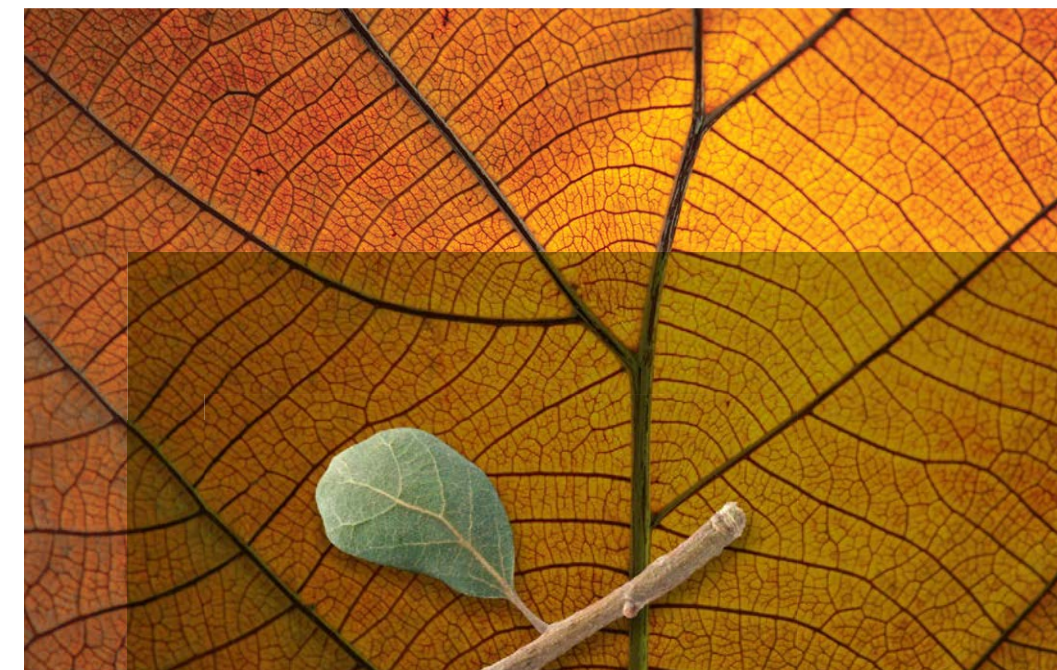
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