

THE SCIENCE OF AGING

summer 2019

an Institute on Aging publication

ENERGETICS AND AGING: MITOCHONDRIA DO IT THE 2019 SYLVAN M. COHEN ANNUAL RETREAT AND POSTER SESSION

On Wednesday, May 1, 2019, the Institute on Aging (IOA) hosted their annual Sylvan M. Cohen Retreat and Poster Session with co-sponsor, the Center for Mitochondrial and Epigenomic Medicine (CMEM), Children's Hospital of Philadelphia (CHOP).

This theme of this year's retreat was "Energetics and Aging: Mitochondria Do It" which included talks from two keynote speakers, Richard J. Youle, PhD, Senior Investigator at the National Institute of Neurological Disorders and Stroke (NINDS), NIH, and Robert Balaban, PhD, Senior Investigator at the National Heart, Lung, and Blood Institute (NHLBI), NIH, as well as the Penn Presenter, Liming Pei, PhD, Associate Professor in the Department of Pathology and Laboratory Medicine at the University of Pennsylvania.

With 166 attendees and nearly 50 posters, the event proved to be another great success.

- Find more, including poster presenter interviews at www.penninstituteonaging.wordpress.com



FIVE UNIVERSITY OF PENNSYLVANIA RESEARCHERS RECEIVE NEARLY \$790K IN GRANTS FROM THE ALZHEIMER'S ASSOCIATION

The Alzheimer's Association Delaware Valley Chapter recently awarded five University of Pennsylvania researchers with grants from their International Research Grant Program and the Biomarkers Across Neurodegenerative Diseases (BAND) grant program, totaling nearly \$790,000.

The grants were presented to **Alice Chen-Plotkin, MD**, Associate Professor of Neurology (not pictured), **Dawn Mechanic-Hamilton, PhD**, Assistant Professor of Neurology, **Gabor Egervari, MD, PhD**, Postdoctoral Researcher in the Berger Lab of the Penn Epigenetics Institute (not pictured), **Laura Wisse, PhD**, Postdoctoral Fellow in the Penn Memory Center, and **Yuk Yee Leung, PhD**, Research Assistant Professor of Pathology and Laboratory Medicine at a small ceremony on Penn's campus.

According to the announcement in the Philadelphia Inquirer (www.inquirer.com), the funds will support:

- Dr. Plotkin to study biological networks and the pathophysiology of Alzheimer's disease and Parkinson's disease.
- Dr. Mechanic-Hamilton to develop and validate a mobile cognitive assessment tool using digital games to measure cognitive skills, brain processing speed, and memory.
- Dr. Egervari to study how problems with the protein ACSS2 may affect learning and memory in people with Alzheimer's disease.
- Dr. Wisse to study the causes and progression of "suspected non-Alzheimer's pathophysiology," or SNAP, a condition presenting damaged nerve cells, loss of brain volume and often diminished cognitive functioning.
- Dr. Leung to study genetic aspects of Alzheimer's disease and other forms of dementia.



Left to right: Rebecca Edelmayer, Ph.D., Director, Scientific Engagement of the Alzheimer's Association, Dawn Mechanic-Hamilton, PhD, John Q. Trojanowski, MD, PhD, Director, Penn ADCC, Laura Wisse, PhD, Leung Yuk Yee, PhD, Virginia M.Y. Lee, PhD, Director, Penn's Center for Neurodegenerative Disease Research, Kristina Fransel, Executive Director of the Alzheimer's Association Delaware Valley Chapter.

IOA External Advisory Board
David C. Hoefner
IOA EAB Member

"My goal as a member of the EAB is to gather and disseminate information about the important work of the IOA and CNDR in order to increase the financial support for Drs. Trojanowski and Lee's award-winning research."

Learn more about David and meet the rest of our IOA External Advisory Board (EAB) Members at: www.med.upenn.edu/aging

a fresh look at PARKINSON'S PROTEINS

New research led by University of Pennsylvania's Elizabeth Rhoades, PhD, Associate Professor of Chemistry, and postdoc Melissa Birol discovered a link between glycoproteins -- proteins with added sugar molecules -- and Parkinson's disease.

The study revealed that when alpha-synuclein, the protein responsible for PD, binds to glycoproteins it can be taken up by neurons more easily, therefore influencing the spread of the disease.

However, the paper also detected a second, and unexpected, protein that is related to this process. Based on their findings, a specific presynaptic protein, neurexin 1 β , can act as a key regulator making it a potential therapeutic target. The hope is that this protein will provide insight into new treatment strategies not only for PD, but for other neurodegenerative diseases as well.

DEADLY FALLS IN OLDER ADULTS ARE ON THE RISE

According to a study led in part by the US Centers for Disease Control and Prevention and featured on nytimes.com, the rate of mortality from falls in people over the age of 75 more than double from 2000 to 2016. The exact reason for the increase seems to be unclear; and while falls tends to be unavoidable for many seniors because of their various risk factors, there are some precautions that you can take to help prevent them.

- **Exercise: Staying active improves balance**
- **Be Mindful of Your Meds: Some medications can affect stability and cause dizziness**
- **De-clutter: Remove or rearrange items around your home that pose a tripping hazard**



TARGETED THERAPIES BENEFIT MANY ELDERLY KIDNEY CANCER PATIENTS

Many patients with metastatic renal cell carcinoma (RCC), or kidney cancer, are seeing overall survival benefits from treatment with targeted therapies, according to a new study from Penn Medicine researchers. As stated in the Penn Medicine News Release, "analyzing 13 years of data on Medicare patients, the study found that the patients who received targeted therapies were more medically complex than those who received the older, more toxic treatments that were available earlier in the study period, indicating that newer treatments are offering hope to more people."

In the past, clinical trials looking at these therapies often excluded sicker patients and those over the age of 65, leaving a gap in knowledge about the effectiveness of newer versus older treatments in the sick and elderly population.

The study also found that targeted therapies offered moderate survival benefits as compared to older treatments, even though as a whole, the targeted therapy treatment group was vulnerable to worse outcomes.

"Treatment decisions involve weighing potential risks, benefits, and costs of treatment as well as quality-of-life considerations, which may vary from person to person depending on their medical situation and preferences," said Penn Medicine's Amy R. Pettit, PhD, adjunct fellow at the Penn Center for Public Health Initiatives. "Good communication between

patients and their treatment teams is essential, and knowing more about real-world outcomes can help with those discussions."

Average age of those diagnosed with RCC...
64 YEARS OLD

MAJORITY OF SENIORS FEEL GOOD ABOUT THEIR HEALTH

Based on the most recent National Health Interview Survey (2017) by the US Center for Disease Control, the majority of seniors report positive feelings about their health, despite the fact that most — about 60% — have two or more chronic illnesses.

82% of adults ages 65 - 74 rate their health as:



73% of adults age 75+ rate their health as:



Why? There are a few reasons. According to recent coverage on www.post-gazette.com, there is more to good health than lack of illness and disability. For many, vitality, emotional well-being, positive social relationships and remaining active hold more value than poor physical function. It is also important to recognize that expectations for what constitutes good health changes as people get older.

"Older people expect some deterioration in health and aren't thrown off course in the same way [as younger adults] when it occurs," said University of Pennsylvania's Jason Schnittker, PhD, professor of sociology, who was featured in the article.

There are some exceptions to this positive outlook. The article states, "African Americans, Hispanics, people with lower levels of income and education, and individuals with poor social connections are more likely to rate their health negatively as they age."

MITOCHONDRIAL DAMAGE AND BONE LOSS

A recent Penn Medicine News Release highlights research from Penn's School of Veterinary Medicine which links mitochondrial damage and osteoporosis. This damage -- often caused by environmental factors, smoking cigarettes, consuming alcohol, and taking certain medications -- leads to overproduction of cells called "osteoclasts" which are responsible for breaking down bone.

Their findings suggest that when the mitochondria in macrophages, or immune cells, are under stress they turn into osteoclasts.

"In a normal individual, the process of bone degradation and rebuilding proceeds in a very balanced way, but in some people they somehow produce a lot more osteoclasts, and this leads to bone loss and osteoporosis," said senior author, Narayan Avadhani, B.Sc, PhD.

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Penn Medicine



PENN'S
5K FOR THE IOA
& THE MEMORY MILE WALK

Sunday, September 22, 2019
8:00 am @ Penn Park
Shoemaker Green Entrance | On 33rd Street between Walnut & South Streets | Philadelphia, PA

- \$30 Before September 6th
- \$35 After September 6th
- \$40 Day of Race Sept 22th
- \$20 with Penn Student ID



Register online at
PennMedicine.org/5kIOA

*Online registration closes on September 16th at midnight
*Dogs on leashes are welcome for Memory Walk only

FREE PARKING • AWARDS • FREE FOOD • CHIP TIMING • FREE T-SHIRTS • #5KFORTHEIOA

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The mission of the Institute on Aging (IOA) at the University of Pennsylvania is to improve the health of older adults by increasing the quality and quantity of clinical and basic research as well as educational programs focusing on normal aging and aging-related diseases across the entire Penn campus.

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