

A close-up, artistic photograph of a microscope's objective lenses and eyepiece, set against a light blue background. The image is partially obscured by a white diagonal shape that serves as a background for the text.

THE 2021 IOA & CNDR
RESEARCH RETREAT

**BRINGING THE MICROSCOPE
TO CLINIC: "CROSSING THE
TRANSLATIONAL DIVIDE IN
NEURODEGENERATIVE
DISEASE RESEARCH"**

NOVEMBER 12, 2021

8:30 - 9:00 AM

CHECK IN/REGISTRATION

9:00 - 9:05 AM

INTRODUCTION | DAVID J. IRWIN, MD

9:05 - 9:15 AM

ROBERT TORRES, PA SECRETARY OF AGING

"Year One Updates on the Pennsylvania State Plan on Aging 2020-2024 - November 2021"

AM SESSION: MECHANISTIC STUDIES OF NEURODEGENERATION IN AGING

9:15 - 10:15 AM

KEYNOTE #1: LEONARD PETRUCELLI, PHD

"Mechanisms of Tau and TDP-43 mediated neurodegeneration and therapeutic target strategies"

10:15 - 10:30 AM

MORNING BREAK

BASIC SCIENCE SHORT TALKS: MECHANISMS OF PROTEIN AGGREGATION IN AGING

10:30 - 10:45 AM

"Disaggregases in ND" | James Shorter, PhD

10:45 - 11:00 AM

"Transmission of TDP-43" | Silvia Porta, PhD

11:00 - 11:15 AM

"Single cell transcriptome of AD/TDP" | Aivi Nguyen, MD

11:15 - 11:30 AM

"High resolution microscopy of normal and pathogenic tau species" | Melike Lakadamyali, PhD

11:30 - 11:35 AM

ALZHEIMER'S DISEASE RESEARCH CENTER TRAINING AND FUNDING OPPORTUNITIES | DAVID A. WOLK, MD

11:35 AM - 1:00 PM

LUNCH BREAK & VIRTUAL POSTER VIEWING

PM SESSION: TRANSLATIONAL HUMAN STUDIES OF NEURODEGENERATIVE DISEASE

1:00 - 1:15 PM

"Histopathological guided imaging of ND proteins" | Paul Yushkevich, PhD

1:15 - 1:30 PM

"Identification of small RNA signatures for ADRD via high-throughput sequencing" | Fanny Yuk Yee Leung, PhD

1:30 - 1:45 PM

"Biofluid Biomarkers in ADRD" | Katheryn Cousins, PhD

1:45 - 2:45 PM

KEYNOTE #2: DAVID A. BENNETT, MD

"Heterogeneity of age-related pathologies in community dementia"

2:45 - 3:00 PM

AFTERNOON BREAK

3:00 - 3:15 PM

AUTONOMY ON THE PRECIPICE OF COGNITIVE DECLINE | EMILY LARGENT, JD, PHD, RN

3:15 - 4:00 PM

MULTIDISCIPLINARY PANEL DISCUSSION: "Speaking the same language: how to translate basic science discoveries and apply them to human patients"

Participants: Leonard Petrucelli, David Bennett, Virginia Lee, Lauren Elman, Emily Largent, David Wolk

Moderator: David Irwin

4:00 PM

POSTER AWARDS AND ADJOURN



DAVID J. IRWIN, MD

2021 RETREAT COORDINATOR

David J. Irwin, MD is an Assistant Professor of Neurology at the University of Pennsylvania Perelman School of Medicine. His clinical focus is on cognitive neurology and neurodegenerative disease. He is particularly interested in young-onset dementia and the behavioral variant of frontotemporal dementia.

Dr. Irwin's research interests are neuropathology and biomarkers of neurodegenerative disease. The overall mission of his translational research program at Penn is to improve the diagnosis and treatment for young-onset and atypical neurodegenerative dementias. A major limitation for therapeutic trials in these disorders is that the gold-standard for diagnosis is neuropathological examination at autopsy. Dr. Irwin's lab, the Penn Digital Neuropathology Lab, develops novel open-source digital image analysis tools to study gold-standard histopathology in an objective and reproducible manner with rigorous validation. His lab utilizes both innovative "wet-lab" human brain histology techniques and novel "dry-lab" digital image analysis methods and bioinformatics to integrate fine-grained measures of postmortem neuropathology with antemortem clinical data.

Dr. Irwin's goal is to identify diagnostic and prognostic markers of disease progression that can serve as endpoints in treatment trials. The approach of his lab represents the blending of his training in two separate but complementary specialties of cognitive neurology and neuropathology.



ROBERT TORRES

PA SECRETARY OF AGING

Robert Torres was appointed, by Governor Tom Wolf, to serve as Secretary of Aging on January 5, 2019, after serving as Acting Secretary of the Commonwealth since October 11, 2017. He was confirmed by the Pennsylvania Senate on June 4, 2019.

As Secretary, Mr. Torres is responsible for the administration of aging programs and services in the Commonwealth and is committed to ensuring that the department is being responsive to older adults, a population that is growing significantly and becoming more diverse. He believes that strategic partnerships and collaborations will be essential to help meet the demand for services for older adults over 60 years of age; a demographic that currently makes up 25% of the Commonwealth's population and is projected to increase to 30% over the next 10 years.

Mr. Torres is also concerned with the level of fraud, abuse, exploitation and neglect impacting older adults and has made that a priority to address. He is emphasizing the effective use of data and data driven management to help guide priorities and the effective use of resources. Mr. Torres is focused and working to improve aging services to ensure Pennsylvania is a welcoming, safe and quality environment where older Pennsylvanians can age, in a setting they choose, with the dignity and respect that they deserve. Mr. Torres is an attorney who holds a Bachelor of Business Administration degree from Pace University and a law degree from Widener University School of Law.



LEONARD PETRUCELLI, PHD

KEYNOTE SPEAKER

Leonard Petrucelli, Ph.D., is a consultant and enterprise chair of the Department of Neurosciences at Mayo Clinic. He holds the academic rank of professor of neuroscience, Mayo Clinic College of Medicine and Science and is recognized with the highest distinction of the Ralph B. and Ruth K. Abrams Professorship at Mayo Clinic.

Dr. Petrucelli and his research team are focused on researching the cellular mechanisms that cause neurodegeneration in Alzheimer's disease, amyotrophic lateral sclerosis (ALS), or Lou Gehrig's disease, and frontotemporal dementia (FTD). By combining expertise in drug discovery, cell biology and induced pluripotent stem cell (iPSC) modeling, his lab aims to develop therapies for the treatment of diseases characterized by abnormal protein aggregation. Dr. Petrucelli's team recently discovered a new therapeutic target and biomarker with the aim of improving the diagnosis and prognosis for patients suffering from FTD and ALS linked to a mutation in the C9orf72 gene.

Dr. Petrucelli is principal investigator for several grants funded by the National Institutes of Health (NIH) including director of two large multi-institutional programs - FTD/ALS Program Project(P01) and Tau Center without Walls (U54).



DAVID A. BENNET, MD

KEYNOTE SPEAKER

Dr. Bennett directs the Rush Alzheimer's Disease Center (RADC) at Rush University Medical Center in Chicago. He is the Principal Investigator of the Rush Alzheimer's Disease Research Center, and the Religious Orders Study and Rush Memory and Aging Project, two prospective studies of risk factors for common diseases of aging in which all participants are organ donors.

Dr. Bennett is known for his work on preclinical AD, mixed pathologies as the primary cause of AD dementia, and resilience. Over the past decade, Dr. Bennett's team generated an unprecedented multi-level omic platform in blood, brain, spinal cord and muscle tissue being mined by investigators worldwide to identify novel therapeutic targets for AD. His group recently demonstrated that genomic, clinical, and neuropathologic phenotypes can be replicated in induced neurons generated from archived peripheral blood mononuclear cells engineered into iPSC. This has the potential to offer a new approach to personalized medicine for neurologic diseases. His cohorts support a wide range of studies including age-related loss of motor function, decision making, sleep and circadian rhythms, immune function and well-being.

Dr. Bennett recently completed a 4½ year term as member of the National Advisory Council on Aging for the National Institute on Aging. Dr. Bennett was the recipient of the 2018 Potampkin Prize for Research on Picks, Alzheimer's Disease, and Related Dementia.



PRESENTERS & PARTICIPANTS

JAMES SHORTER, PHD

SILVIA PORTA, PHD

AIVI NGUYEN, MD

MELIKE LAKADAMYALI, PHD

DAVID A. WOLK, MD

PAUL YUSHKEVICH, PHD

FANNY YUK YEE LEUNG, PHD

KATHERYN COUSINS, PHD

EMILY LARGENT, JD, PHD, RN

VIRGINIA M.Y. LEE, PHD

LAUREN ELMAN, MD



POSTER SESSION

This year's poster session is completely virtual.
To view this year's posters

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