SCHEDULE OF EVENTS

8:00a.m.  Registration & Continental Breakfast
Alumni Gallery, Room 1-65, W.T. Young Library

8:30a.m.  Welcome
Dr. Eli Capilouto, President
Dr. Robert DiPaola, Provost
Dr. Lisa Cassis, Vice President for Research
Dr. Ana Franco-Watkins, Dean, College of A&S
Prof. Mark Lovell, Chair, Department of Chemistry
Prof. D. Allan Butterfield, Organizer
AA Auditorium, Room 1-62, W.T. Young Library

9:00a.m.  "Is Ergothioneine a Protective Factor Against Neurodegeneration and a Promoter of Healthy Aging?"
Dr. Ana Franco-Watkins, Dean, College of A&S
AA Auditorium, Room 1-62, W.T. Young Library

9:15a.m.  "Sculptor and Destroyer" - Focus on Alzheimer Disease
Prof. Mark Mattson
Johns Hopkins University
AA Auditorium, Room 1-62, W.T. Young Library

10:15a.m.  "Redox Imbalance and Metabolic Defects in the Brain of Down Syndrome Individuals: a Synergistic Path to Alzheimer's Neurodegeneration"
Prof. Manzia Periugi
Sapienza University of Rome
AA Auditorium, Room 1-62, W.T. Young Library

11:30a.m.  Lunch & Break

1:30p.m.  "The Role of Mitochondria in Neurodegeneration"
Prof. Mark Mattson
Johns Hopkins University
AA Auditorium, Room 1-62, W.T. Young Library

3:00p.m.  Poster Session
Jacobs Science Building, Atrium

4:15p.m.  Presentation of Poster Awards
Jacobs Science Building, Atrium

4:30p.m.  Close of the 48th Naff Symposium
Jacobs Science Building, Atrium

48th Annual Naff Symposium
Oxidative Stress in Neurodegeneration: Focus on Alzheimer Disease
April 21, 2023
W.T. Young Library

College of Arts and Sciences
Department of Chemistry

endothelial dysfunction, protect against ischemia-reperfusion injury, counteract iron dysregulation, hinder lung and liver fibrosis, and mitigate damage to the gastrointestinal tract, and tests. ET may also influence the gut microbiome. There is evidence that ET is specifically accumulated at sites of tissue injury, so we have called it an "adaptive antioxidant" that may not interfere with the normal physiological roles of ROS. But does low ET predispose to age-related diseases or is it a spurious correlation? We will present animal studies that suggest the former, but only double-blind placebo-controlled human clinical trials will provide the final answer.

Caveats in the use of ergothioneine include its potential to generate trimethylamine-N-oxide by the action of ergothioneinase enzymes in gut bacteria and its ability to be taken up by many bacteria, a few of which might be pathogenic (e.g., H. pylori, M. tuberculosis). These caveats will be discussed in detail.

Increased damage by oxygen radicals and other "reactive oxygen species" appears to play a key role in the development of neurodegenerative diseases, especially dementias, and diets rich in antioxidants (high intake of fruits and vegetables) seem neuroprotective (as well as being protective against many other diseases). However, attempts to treat / prevent such diseases by giving high doses of antioxidants such as vitamins E and C have, overall, been unsuccessful. Reasons for this will be discussed.

A major focus of our work at the moment is a unique diet-derived thiol/thione with antioxidant properties, namely ergothioneine (ET). Low blood levels of ET appear to be a risk factor for the development of neurodegenerative and cardiovascular diseases, frailty, eye disease, pre-eclampsia, and age-related diseases generally. We have identified "risk levels" of plasma ET concentrations in human subjects, levels below which are associated with increased disease risk. In animal studies, ET has exhibited the ability to modulate inflammation, scavenge certain ROS, protect against acute respiratory distress syndrome, decrease brain damage in models of Parkinson and Alzheimer diseases, prevent...
Oxidative Stress in Neurodegeneration: Focus on Alzheimer Disease

April 21, 2023

GUEST SPEAKERS

Prof. BARRY HALLIWELL
National University of Singapore

Biography

Professor Halliwell graduated from Oxford University with BA (first class honors) and D.Phil degrees. He holds a Doctor of Science degree from the University of London. He was a faculty member with King’s College London (1974-2000) and held a prestigious Lister Institute Research fellowship. He was a Visiting Research Professor of Internal Medicine and Biochemistry at the University of California Davis (1995-1999). He now holds several key positions in Singapore, as indicated above.

Professor Halliwell is recognized for his seminal work on the role of free radicals and antioxidants in biological systems, being one of the world’s most highly cited researchers with a Hirsch-Index of 168 (Based on Scopus, Jan 2023). His Oxford University Press book with John Gutteridge, Free Radicals in Biology and Medicine, now in its fifth edition (2015), is regarded worldwide as an authoritative text. He was honored as a Citation Laureate (2021) for pioneering research in free-radical chemistry including the role of free radicals and antioxidants in human disease. The distinction is awarded by Clarivate to researchers whose work is deemed to be of “Nobel Class” as they are among the most influential, even transformative, in their fields. He was one of 16 scientists (only three in Chemistry) listed in the 2021 Hall of Citation Laureates.

Prof. MARZIA PERLUIGI
Sapienza University of Rome

Biography
Marzia Perluigi, PharmD, Ph.D., Head of Laboratory of Redox Biochemistry in Neuroscience (LRBN). Professional appointments: Professor of Biochemistry, Department of Biochemical Sciences “A. Rossi Fanelli” – Medical School Sapienza University of Rome. Fields of Expertise: Biochemistry and cell biology.

The major research interest is the study of the role of oxidative stress in Down Syndrome (DS) and Alzheimer Disease (AD). Projects involve both the analysis of post-mortem brains, biological fluids, and cellular and animal models of the diseases. In particular, current projects focus on defects of energy metabolism, failure of protein quality control (UPS and autophagy), impairment of mitochondrial activity, both in DS and AD. Further, preclinical studies are ongoing to test the neuroprotective effects of selected compounds able to prevent/slow the onset of dementia.

Prof. MARK MATTSON
Johns Hopkins University

Biography
Mark Mattson is the former Chief of the Laboratory of Neurosciences at the National Institute on Aging and is now on the faculty of Neuroscience at Johns Hopkins University School of Medicine. His research has advanced an understanding of the cellular signaling mechanisms that control the formation and plasticity of neuronal networks in the brain, and cellular and molecular mechanisms of brain aging and neurodegenerative disorders. His research has also elucidated how the brain responds adaptively to challenges such as fasting and exercise, and he has used that information to develop novel interventions to promote optimal brain function throughout life. Dr. Mattson is among the most highly cited neuroscientists in the world with more than 900 publications and 200,000 citations. He was elected a Fellow of the American Association for the Advancement of Science and has received many awards including the Metropolitan Life Foundation Medical Research Award and the Alzheimer’s Association Zenith Award.