Wayne State receives NIH funding to advance brain aging research

Wayne State University has received a $3.6 million grant from the National Institute on Aging of the National Institutes of Health for a project that will advance knowledge of brain aging, its relation to cognitive performance and the role of common vascular and metabolic risk factors in shaping the trajectories of aging. The funded project extends the longitudinal study of healthy volunteers from the metro Detroit area.

According to the principal investigator, Naftali Raz, Ph.D., professor of psychology and director of the lifespan cognitive neuroscience program in the Institute of Gerontology at Wayne State University, the focus of the study is on healthy aging.

"Although dementia is a major health concern and its prevention is the ultimate aim of many leading programs of basic and clinical research, advancement toward that goal necessitates understanding of normal aging," emphasized Raz.

"The main focus of this project—which has been funded by the National Institute on Aging for the past 23 years—is elucidating the relationships between changes in in-the-brain properties (regional volume, cortical thickness, iron content, energy metabolism, myelin content and connectivity among the brain regions), changes in cognitive performance across multiple domains (memory, speed of processing, complex reasoning skills), as well as modifying effects of risk factors for vascular and metabolic diseases on these relationships," explained Raz.

The research involves noninvasive evaluation of the brain through MRI scans, assessment of cognitive performance, and examination of blood biomarkers and genetic variants with known links to vascular and metabolic diseases.

Over the past two decades, Raz—along with his research team, colleagues and collaborators Jeffrey Stanley, Ph.D. and E. Mark Haecker, Ph.D. of Wayne State, Ulman Lindenberger, Ph.D. of Max Planck Institute for Human Development (Berlin, Germany) and Paolo Ghisletta, Ph.D. of the University of Geneva, Switzerland—has been charting the natural course of aging in healthy adults and determining the neural mechanism of change. Studies from the Raz lab have established increased vulnerability to aging in distinct brain regions—hippocampus, orbital-frontal cortex, entorhinal/parahippocampal cortex and cerebellum—and suggested a role of common vascular risk factors, such as hypertension, as well as genetic markers of increased pro-inflammatory response in exacerbating the negative changes. In the pioneering longitudinal study, Raz and his then-graduate student, Ana Daugherty, found that increase in iron content of the striatum exacerbates shrinkage of that region and affects cognitive performance in healthy adults.

"This study is a good example of how critical longitudinal studies are for understanding the mechanisms of adult development and aging," said Raz. "Identifying vascular and metabolic risk factors that exacerbate brain aging is particularly important because many of them can be mitigated by lifestyle changes and behavioral interventions."

"Dr. Raz's research has made important strides in furthering our understanding of dementia and Alzheimer's disease," said Gloria Hoppner, Ph.D., associate vice president for research at Wayne State University. "It is our great hope that Dr. Raz's work will one day offer new treatments to reverse or, at a minimum, stop the progression of these disorders."

Source:
Wayne State University Division of Research
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