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Systemic Factors That Contribute to Neuroinflammation

Dr. Louise McCullough is the Roy M. and Phyllis Gough Huffington Distinguished Chair and Professor of Neurology at McGovern Medical School at UTHealth and Chief of Neurology at Memorial Hermann Hospital – _Texas Medical Center. She is a physician-scientist and a practicing vascular neurologist with clinical expertise in sex/gender disparities, the microbiome, stroke and aging, and acute stroke treatments. A renowned investigator, she is well recognized for her work in cerebral vascular disease and is known for her research identifying sex differences in cell death pathways during stroke, which have now been shown to be a major factor in the response to an ischemic insult. Working closely with the Society for Women's Health Research (SWHR) and the Office of Research on Women's Health (ORWH), she was instrumental in the National Institute of Health's__ requirement to include female animals in basic and translational studies.

Among Dr. McCullough's__ many honors and awards are the prestigious National Institute of Neurological Disorders and Stroke (NINDS) Javits Neuroscience Investigator Award, the NINDS Landis Award for Outstanding Mentorship, the Inaugural American Heart Association (AHA) Outstanding Stroke Research Mentor Award and the AHA Merit Award. She completed her PhD in Neuroscience and her MD from the University of Connecticut. She continued her training at Johns Hopkins completing a neurology residency in 2000. Her residency was followed by a fellowship in cerebrovascular disease and stroke (2000-2002). After completing her training, she joined the faculty at Johns Hopkins Hospital and began her translational research career.

Dr. McCullough returned to Connecticut in 2004 and rose to the rank of Professor in the Departments of Neurology and Neuroscience at The University of Connecticut Health Center and at the John Dempsey Hospital in Farmington, Connecticut. She became the Director of Stroke Research and Education at Hartford Hospital, and helped develop one of the largest stroke centers in New England. In 2015, she relocated to the University of Texas Health Science Center in Houston 2015 as the Chair of Neurology. The Neurology Department at UT Health has very active educational, clinical, and research programs, and is ranked highly in NIH funding.

Abstract: Over the past decade, there has been a growing recognition that stroke and other sterile brain injuries cause dramatic changes in peripheral tissues. In addition to focal brain damage, acute ischemic stroke (AIS) provokes systemic abnormalities across peripheral organs. AIS profoundly alters the autonomic nervous system, hypothalamic-pituitary-adrenal axis, and immune system, which further yield deleterious organ-specific consequences. Poststroke systemic pathological alterations in turn considerably contribute to the progression of ischemic brain injury, which accounts for the substantial impact of systemic complications on stroke outcomes. One increasingly important signaling pathway is the microbiota-gut-brain-axis (MGBA). The MGBA is a bidirectional communication network between gut microbes and their host. Many environmental and host-related factors affect the gut microbiota. Dysbiosis is defined as compositional and functional alterations of the gut microbiota that contribute to the pathogenesis, progression and treatment responses to disease. Dysbiosis occurs when perturbations of microbiota composition and function exceed the ability of microbiota and its host to restore a symbiotic state. Dysbiosis is seen with both aging and stroke, and is linked to the development of common stroke risk factors such as obesity, diabetes, and atherosclerosis. This talk will focus on the relationship between the MGBA in both aging and after stroke.