Episode 3: Pomergranate Juice
Researcher Bio

Rich Hartman, PhD is professor of experimental psychology and director the Behavioral Neuroscience Lab at Loma Linda University. He graduated from Missouri State University in 1993 with a Bachelor of Science in experimental psychology. Hartman enrolled in the Behavior, Brain and Cognition program at Washington University in St. Louis, where he studied rodent behavior and neurodegeneration under behavioral expert Dave Wozniak in the lab of the renowned John Olney, medical doctor and a professor of psychiatry, pathology, and immunology at the Washington University School of Medicine.

Hartman defended his PhD dissertation on September 11, 2001, and then trained for another four years as a post-doctorate in the lab of Alzheimer's disease guru Dave Holtzman. While with Holtzman, he worked with a number of transgenic and knockout mouse models of Alzheimer's disease and learned biochemical and histological techniques for assessing biomarkers of neuropathology.

Hartman has published papers characterizing brain injury resulting from early drug exposure, global ischemia, intracerebral hemorrhage, impact trauma, as well as characterizing a number of transgenic mouse lines and neuroprotective strategies.

Hartman's lab is exploring the interface between acute brain injury (e.g., TBI, stroke, radiation,) subsequent neurodegeneration (e.g., Alzheimer's neuropathology) and in dissecting the mechanisms by which plant-based compounds (phytochemicals) can influence the brain's functions under these conditions. His laboratory team has shown that traumatic brain injury can accelerate the development of Alzheimer's-like neuropathology in transgenic mice and rats, and that preventing accumulation of amyloid plaques in their brains with a monoclonal antibody or pomegranate phytochemicals can prevent the age-related decline in cognition seen in these animals. Interestingly, pomegranate supplementation reduced soluble amyloid-β and plaques by ~50% in the brains of transgenic mice. More importantly, they showed that dietary supplementation with pomegranates improved learning and memory performance in the mice and in humans after heart surgery.

Other experimental data from the lab demonstrates that pomegranate supplementation protected against depression-like behaviors (learned helplessness) induced by radiation exposure and improved swim speed in transgenic mice. Presumably, these effects are mediated by phytochemicals like polyphenols (including the phenolic acids and flavonoids), which have been shown to have antioxidant properties and to suppress inflammatory and other pathways. Hartman's lab also functions as the Neurobehavioral Core Facility for Loma Linda University's Hemorrhagic Stroke Center.