One of the most common and arguably most distressing cognitive declines in aging, in large part because it is also an early sign of Alzheimer’s disease, is in episodic memory. As people age, they report more everyday difficulties in, for example, remembering someone’s name or the location of a placed item. Cognitive aging research over the past several decades has revealed many important insights into the factors contributing to these impairments and it is clear that there is no single cause of decline or path to memory improvement. We employ a multimodal approach to tackle this multifaceted problem in my laboratory, using objective and subjective measures of behavior, fMRI, EEG, neuropsychology, univariate and multivariate analyses to understand the neurocognitive functions that are responsible for the increasing prevalence of episodic memory failures across the adult lifespan. Our results have revealed a number of important insights that may help differentiate what is normal age-related memory decline from what is indicative of neurodegenerative disease. I will present data from my lab suggesting that age-related dysfunction in prefrontal-mediated cognitive control is a major contributor to older adults’ episodic memory impairments, when they are observed. We have also shown that young and older adults’ patterns of encoding and retrieval brain activity and memory performance are more alike than different and, in some conditions, older adults perform as well or better than young adults. I will present results showing inter-individual variability in both neural activity and memory performance across age and discuss the demographic, lifestyle, and mood factors that likely contribute to this variability across the lifespan. Our planned and future work will directly assess the impact of such factors on memory ability and the interventions that might facilitate memory ability and stave off cognitive decline.