Lifetime Exposure To Estrogen in Postmenopausal Women
This study examined the interaction between the lifetime estrogen exposure and dopamine in postmenopausal women. An important gene that plays a role in cognition and aging is called catechol-o-methyltransferase (COMT) and its transcription is controlled by estrogen. This gene is involved in cognition its purpose is to encode for an enzyme that degrades dopamine. The different genotypes of this gene cause expression of varying amounts of the enzyme intended to degrade dopamine. When estrogen is present in the system, it prevents expression of the enzyme that should reduce its ability to metabolize dopamine. I hypothesized that a longer period of exposure to estrogen has a greater effect on cognition in women with lower dopaminergic functioning, the Val/Val genotype of COMT, more than women with higher dopamine functioning, with Val/Met and Met/Met genotypes. The participants were 67 healthy, cognitively normal postmenopausal women aged 60-70 years. Each woman provided a buccal DNA sample, performed cognitive tests to examine working memory and episodic memory, and answered questions about lifetime hormone exposure. Out of the 67 total recruited women, 19 were Val/Val, 36 were Val/Met, and 12 were Met/Met. Initial analyses suggest the COMT genotype had no influence on cognition in these postmenopausal women. Some of the estrogen exposure measures were related to cognitive performance. Specifically, the duration of hormonal contraception, parity, reproductive years (age from menarche to menopause), and duration breast-feeding were all directly related to cognitive performance. Thus, it appears that COMT genotype did not influence cognition in these postmenopausal women but more hormone exposure before menopause was related to better cognitive performance after menopause.