In addition to reviewing the use PET imaging of translocator protein 18 kDa (TSPO) as a biomarker of neuroinflammation, Dr. Innis will provide novel results on TSPO imaging in Alzheimer’s disease. His laboratory found that this marker of neuroinflammation is increased in patients with AD compared to subjects with mild cognitive impairment (MCI, a precursor syndrome) and to control subjects (Kreisl et al., 2013). Furthermore—and unlike amyloid—the amount of inflammation, indirectly measured as TSPO binding, was correlated with the severity of cognitive impairment. The results of this between-group comparison have recently been confirmed in a larger group of subjects and, more importantly, have been extended with repeated PET scans in patients over a two- to three-year follow-up period (Kreisl et al., 2016). Dr. Innis’s laboratory found that TSPO binding increases with progression of AD but not in healthy aging. Furthermore, the increased TSPO binding was significantly correlated with the increase of cognitive impairment during the follow-up period. Overall, these results in AD suggest that neuroinflammation is a biomarker of disease severity (based on the cross-sectional study) as well as a biomarker of disease progression (based on the longitudinal study). Finally, Dr. Innis will review the development of radioligands for cyclooxygenase-1 (COX-1) and for COX-2, two well-known targets of anti-inflammatory medications. These radioligands have shown promising results in monkeys, including models of neuroinflammation, and are planned to be studied in humans in the coming year.