

Brain IGF-I regulates hippocampal neurogenesis, synaptic plasticity, and sexual dimorphic behavior

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Insulin-like growth factor-I (IGF-I) exerts multiple actions, regulating body growth, cell proliferation, adult neurogenesis, neuronal and glial differentiation, synaptic plasticity and behaviour, among other processes. Both circulating and locally synthesized IGF-I are active, although the role of IGF-I from different sources is poorly understood. We previously found that brain IGF-I plays a major role in promoting the correct generation, migration and maturation of neurons from neural stem cells during postnatal adult hippocampal neurogenesis (Nieto-Estévez et al., 2016), although electrophysiological or behavioural phenotypes were not investigated in that study. Here we show that the lack of brain IGF-I almost completely abrogates hippocampal LTP, as well as altering sex-dependent behaviour and causing major changes in the hippocampal proteome. We suggest that the disruptions to the hippocampal proteome of conditional knockout *Igf-I* mice may partially underlie the changes observed in synaptic plasticity and behaviour.