

### **P3.06.**

#### **Ligand-dependent changes in estrogen receptor- and thyroid hormone receptor expression in the developing rat cerebellum: A comparative Western blot and Q-PCR study.**

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Estrogen (E2) and thyroid hormones (THs) are important regulators of CNS development and function. These hormone-regulated events involve the binding of hormone ligands to their receptors that function as transcription in the orchestration of developmental processes. Recent reports implicate a complex mechanism through which E2 and THs interact to regulate the expression levels of E2 receptors (ERs) and TH receptors (TRs) to precisely mediate developmental signals. We examined the effects of the presence or absence of E2 and THs on the expression of their receptor mRNAs and proteins. Cerebellar granule cell cultures were treated with either E2, T3, T4 or a combination of these hormones, and resulting receptor mRNA and protein expression levels were determined. We also determined the effects that glial cells might have on the regulation of ER-TR expression levels. Results: 1. ER and TR expression levels depend on the individual or combined presence of E2 and THs; 2. Glial cells mediate the hormonal regulation of neuronal ER-TR expression; 3. Loss of tissue integrity results in characteristic changes in ER-TR expression levels. Observations suggest that a fine equilibrium of E2 and THs is required for the precise orchestration of cerebellar development. Comparison of results from in vitro and in situ samples revealed a shift in receptor expression levels after loss of tissue integrity, likely indicating possible adjusting/regenerative mechanisms after cerebellar tissue injury.