P154.-Sex differences in X-linked gene expression in embryonic hypothalamic neurons

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Although sex hormones are usually considered the main architects of sexual dimorphisms, recent studies have demonstrated that sex chromosomes can also induce sex differences in somatic gene expression in the absence of hormonal differences. Ngn3 is a Notch regulated gene that, in developing neurons, is involved in neurite extension and remodeling. Previous results showed that hypothalamic neurons carrying the XX sex chromosomes present a higher expression of Ngn3 and a faster rate of development than XY neurons, irrespectively of gonadal hormones. Using the Four Core Genotypes (FCG) mouse model, here we analyzed the expression of X-linked genes involved in neuronal growth and differentiation which are probable candidates to regulate Ngn3 expression. By qPCR, we have evaluated the expression of Ddx3x, Eif2s3x, Kdm6a, Syp, Mecp2 and Usp9x in primary hypothalamic cultures from E15 FCG mice. Ddx3x, Eif2s3x and Kdm6a showed higher expression levels in XX neurons than in XY neurons, regardless of the embryo sex. Importantly, Kdm6a is an epigenetic regulator codifying for a histone demethylase, whereas Ddx3x and Eif2s3x codify translation regulators. Thereby, it is possible to hypothesize that some of these genes might be regulating Ngn3 expression and neuronal development. Further experiments blocking these X-linked genes are required to determine the effect of this specific down regulation over Ngn3 and neuronal development. Financial support: CONICET, ANPCyT and SECyT-UNC.