

Maternal androgen excess and obesity induce sexually dimorphic anxiety-like behavior in the offspring

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© 2018 FASEB. All rights reserved. Maternal polycystic ovary syndrome (PCOS), a condition associated with hyperandrogenism, is suggested to increase anxiety-like behavior in the offspring. Because PCOS is closely linked to obesity, we investigated the impact of an adverse hormonal or metabolic maternal environment and offspring obesity on anxiety in the offspring. The obese PCOS phenotype was induced by chronic high-fat-high-sucrose (HFHS) consumption together with prenatal dihydrotestosterone exposure in mouse dams. Anxiety-like behavior was assessed in adult offspring with the elevated-plus maze and open-field tests. The influence of maternal androgens and maternal and offspring diet on genes implicated in anxiety were analyzed in the amygdala and hypothalamus with real-time PCR (n = 47). Independent of diet, female offspring exposed to maternal androgens were more anxious and displayed up-regulation of adrenoceptor α 1B in the amygdala and up-regulation of hypothalamic corticotropin