What the brain tells us about food neophobia in the young chicken Gallus gallus domesticus

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Food neophobia is a complex behaviour that involves the complete or partial rejection to eat a new source of food. While described in a large variety of mammalian and bird species in terms of behavioural changes, there are still very few studies to date interested in its neurobiological bases. However, understanding the neuronal bases of food neophobia will bring new insights to reduce this behaviour in farm birds, thus increasing their welfare. We propose here for the first time a comprehensive study in the domestic chicken, from a detailed description of the behaviour to the neural activity associated with food neophobia. Using both behavioural and immunohistochemistry procedures on one-week chicks, our study focuses on several brain structures suspected to play an important role in food neophobia, including: five amygdala structures implicated in emotions, the nucleus accumbens that plays a central role in the reward circuit, and the olfactory bulb so as to understand the possible olfactory dimension of the behaviour.