

What Makes a Parent; Hypothalamic Medial PreOptic Area: The Human ‘Care’ Circuitry

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Received: April 26, 2019; **Published:** May 28, 2019

Introduction

Parenting encompasses several, species-specific components such as grooming, crouching, carrying, feeding (including nursing in mothers), nest building, defence of young together, upsurge the probability of existence of the progenies and their premium physical growth and mental development [1].

Human parenting

The human parenthood necessitates protracted devotion and proper preplanning as the parent- child bond persists for decades. In human colonies, there exists a co-operative care system in which the off springs are often taken care by siblings, grandparents, relatives, friends, and nonrelated helpers called as allo-parental system. Unlike other mammals, who rear their off springs till weaning, human parents take care through puberty and even adulthood. Such extended caretaking by human parents leads to principally sturdy emotive ties and reciprocated dependencies [2].

Neural circuitry of parenting: Role of medial preoptic area (MPOA)

Recent advances in neuroscience, has led to the discovery of neuronal hubs that are responsible for the parental care. The visage of parental behaviour is principally controlled by the medial preoptic area (MPOA) in the hypothalamus. The Parenting behavior triggers MPOA neurons expressing the neuropeptide Galanin (MPOA^{Gal}). These neurons are essential and appropriate for the countenance of parental behavior in both sexes. When optogenetically activated, the MPOA^{Gal} neurons provoke parental behavior regardless of the reproductive state [3]. In human beings, the medial preoptic area (MPOA) is anatomically and sexually dimorphic. It expresses an increased number of receptors for gonadal steroid hormones that controls as sex differentiation, social behaviors and social reward functions [4].

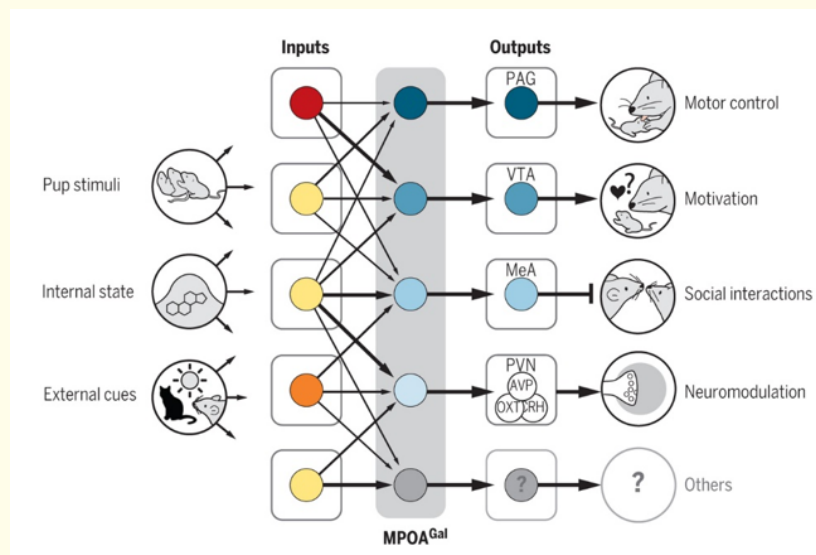


Figure 1: Parental circuitry: A proposed model for how galanin-expressing neurons in the medial preoptic area (MPOA^{Gal}) orchestrate components of parental behaviour. PAG: Periaqueductal Gray; VTA: Ventral Tegmental Area; MeA: Medial Amygdala; PVN: Paraventricular Nucleus of the Hypothalamus; AVP: Vasopressin; OXT: Oxytocin; CRH: Corticotropin-Releasing Hormone [5].

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Volume 3 Issue 3 June 2019

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