Abstract Title

Circuit mechanisms of fatherhood and motherhood in the medial preoptic area

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Abstract

Mammalian neonates are born immature and require intense care for nutrition, protection, and locomotion. Mammalian mothers are equipped with motivation to nurture them. And in the species that live in a family group, fathers and older siblings may also provide extensive care to the young, in a manner similar to maternal care except for nursing. By studying those highly social species, such as laboratory mice, marmosets, and humans, we are trying to elucidate the neural mechanisms of parental care in general.

Neuronal activity mapping and site-specific functional suppression in mice identified the central part of the medial preoptic area (cMPOA) as the hub of nurturing care network for both mothers and fathers. In addition, the rhomboid nucleus of bed nuclei of stria terminalis (BSTrh), a part of the extended amygdala, was shown to facilitate male infanticide of non-offspring pups. The circuit between the cMPOA and BSTrh suppressed infanticide and enabled paternal behavior even toward non-offspring after mating in male mice. Relevant anatomical and neuroendocrinological issues will be discussed based on the recent results.

References

1. Tsuneoka, Y., Tokita, K., Yoshihara, C., Amano, T., Esposito, G., Huang, A.J., Yu, L.M., Odaka, Y., Shinozuka, K., McHugh, T.J., et al. (2015). *Distinct preoptic-BST nuclei dissociate paternal and infanticidal behavior in mice*. EMBO J *34*, 2652-2670.
2. Yoshihara, C., Numan, M., and Kuroda, K.O. (2017). *Oxytocin and Parental Behaviors*. Curr Top Behav Neurosci. https://doi.org/10.1007/7854_2017_11