



Bridging Nature and Nurture: Insights from Adolescence and Parenting

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We study the neural mechanisms underlying the interplay between innate predispositions and learned experiences, which remains poorly understood. To investigate it, we focus on two distinct but complementary phases of life—adolescence and parenthood—each marked by striking shifts in behavior and neural function. I will first present work showing that juvenile mice exhibit associative odor learning even before their innate olfactory responses are fully developed. This behavioral dissociation is reflected in early the structure and function of olfactory circuits, showing that innate circuits undergo prolonged development, highlighting adolescence as a critical window for the emergence of “late innate” behaviors. Then, I will discuss our work on fathers through the prism of cortical auditory circuits. We use behavioral analysis, neural tracing and physiology to find that different brain areas as well as different sexes, undergo unique plastic changes to support the seemingly shared behavioral goal. Together, these findings illustrate how the nervous system flexibly bridges innate programming with learned experience across life stages—revealing how evolution and plasticity work in tandem to shape behavior.

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