

Neural substrates of social reward in rats

V. Trezza¹, A. Manduca¹, V. Cuomo²

¹Dept. of Sciences, University of Roma Tre, Rome, Italy

²Dept. of Physiology and Pharmacology, Sapienza University of Rome, Italy

Inbetween weaning and puberty, the young of all mammalian species, including humans, display a characteristic form of social interaction known as social play behavior or rough-and-tumble play. This form of social behavior is highly rewarding and essential for the development of social and cognitive skills. Our research focuses on elucidating the neural and behavioral underpinnings of social play behavior in adolescent rats, and its role in behavioral development. To that aim, we have developed methods to study the performance of social play behavior, and its rewarding and motivational properties. Our studies have revealed important roles for cannabinoid, opioid and dopaminergic neurotransmission in social play. This is in keeping with the rewarding properties of social play, as these neurotransmitter systems have been widely implicated in the positive subjective properties of food, sex and drugs. In-depth analysis of the underlying neural substrates has identified the nucleus accumbens and the amygdala as crucial brain areas involved in social play behavior. We will therefore present data showing that interacting opioid, cannabinoid and dopaminergic systems within the corticolimbic circuits underlying incentive motivation and reward modulate social play behavior.