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Session P078 - Comparative Anatomy: Evolution

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P078.09 - Japanese and rhesus macaques differ in amygdala cannabinoid 1 receptor-immunoreactive axon density

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Abstract

Japanese and rhesus macaques differ in amygdala cannabinoid 1 receptor-immunoreactive axon density

Endogenous and exogenous cannabinoids signal through the cannabinoid 1 receptor (CB1R) to modulate various aspects of social behavior, including aggression and anxiety. In rodents and primates, CB1R expression in the basolateral amygdala is dense and cannabinoid signaling in this region has been reported to influence social behavior. Little is known about how endocannabinoid signaling in the amygdala contributes to primate social diversity. The behaviorally diverse and species-rich cercopithecoid monkey genus *Macaca* is an ideal model for addressing this topic. Japanese (*Macaca fuscata*) and rhesus macaques (*M. mulatta*) display similar social styles in some respects; however, there is evidence to suggest they differ in their stress response, amygdala structure, and monoaminergic signaling. To further assess the molecular basis of social style in Japanese and rhesus macaques, we used immunohistochemistry and stereological methods to compare CB1R-immunoreactive (CB1R-ir) axon density in the basolateral amygdala, which is comprised of the lateral, basal, and accessory basal nuclei. Our study sample included 6 Japanese and 5 rhesus macaques. Repeated-measures ANOVAs were used to evaluate species differences, with amygdala region as the within-subjects measure and species as the between-subjects factor. This revealed significant main effects for species and area (p values < 0.05) with no interaction. Post hoc tests revealed higher CB1R-ir axon density in the basal and accessory basal nuclei of rhesus macaques compared to Japanese macaques. Our results suggest that CB1R-mediated signaling in the lateral nucleus of the amygdala is comparable between the two species, while the differences we observed in the basal and accessory basal nuclei may contribute to the nuanced behavioral differences observed between them.