

Diffusion Tensor Imaging of the Carnivora Brain: A Pilot Study

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Fiber tractography is a relatively novel method for reconstructing the course and location of white matter tracts in the mammalian brain. While this approach has been applied extensively in human studies, very few studies have looked at the application of this approach to the study of non-traditional animal models. Here we look to explore the use of fiber tractography to reconstruct the major commissural, association and projection fiber pathways in a range of closely related Carnivora. The null hypothesis is that fiber pathways in closely related species of carnivora have remained largely unchanged and are indicative of the constraints (architectural, developmental, or phylogenetic) that unite species within a given Order. Alternatively, deviations from this known bauplan are interpreted as species specific variation, which is directly related to the unique ecological context of each species (i.e., hunting strategies, social organization and or cognition).