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The 39th Annual Meeting of the J.B. Johnston Club for Evolutionary Neuroscience and the 31th Annual Karger Workshop in Evolutionary Neuroscience

The 2019 meetings of the J.B. Johnston Club for Evolutionary Neuroscience and Karger Workshop in Evolutionary Neuroscience will be held immediately before the annual meeting of the Society for Neuroscience on Thursday, October 17 (the Karger Workshop), and Friday, October 18 (the regular JBJC meeting). Both meetings will take place at the University Center, Chicago, IL, USA.

This year's Karger Workshop in Evolutionary Neuroscience, made possible by the continuing support of Karger Publishers, is organized by Robert Huber. It is titled "Evolution of Natural and Drug-Sensitive Reward in Addiction." The Workshop will examine to what extent and by which kind of mechanisms, a very wide range of animals, from insects and mollusks to primates, develop addiction to various compounds, as a consequence of reward-driven behaviours.

On the following day, the program for the annual JBJC meeting will consist of 16 talks submitted by JBJC members selected by the JBJC Program Committee (Kara Yopak, Muhammad Spocter, Werner Graf) plus a presentation by this year's invited Karger Speaker, Dr. Marc Lewis. The meeting also includes a "data blitz" of very brief presentations from graduate students and postdoctoral researchers. Additional information and the final schedule of talks will be mailed to JBJC members before the meeting and posted on the JBJC web site (www.jbjclub.org).

2019 J.B. Johnston Club for Evolutionary Neuroscience Meeting Abstracts

Abstracts for talks scheduled for the 2019 annual meeting of the J.B. Johnston Club for Evolutionary Neuroscience are listed in alphabetical order by presenting author. The final schedule of talks will be sent to the membership prior to the meeting and will be available at the registration desk during the meeting. This year's Karger Invited Guest will be Dr. Marc Lewis. The title of his talk will be: "Mapping the Chemistry of Attraction from Animal Models to Human Addiction."

Reevaluating the evolution of cortical folding in mammals

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Higher-order cognition provides a selective advantage for animals because it improves information processing, decision making, and problem-solving. In mammals, higher-order cognition can be attributed to the enlargement and increased complexity of the cerebral cortex. A widely employed surface-based measurement of cortical complexity is cortical folding. Although several models of the evolution of gyrification have been proposed, certain aspects are still not well understood. A first aspect relates to the existence of diverse grade shifts towards the expansion of cortical association areas across mammals. A second aspect is the influence of developmental time on gyrification since cortical folding largely occurs during intrauterine neurodevelopment. More specifically, we (1) reevaluated the evolutionary allometric relationship between gyrification and brain mass; (2) determined the evolutionary interplay between gyrification, brain mass, and gestation length (as a proxy for developmental time); and (3) reconstructed the ancestral state for mammals. A sample of 103 mammals was analyzed using phylogenetic comparative methods. We find multiple grade shifts in the allometric relationship of gyrification and brain mass across mammals (in Carnivora and Cebidae, Catarrhini and Atelinae, Artiodactyla and Pinnipeds, and Cetacea). In primates, after controlling for brain mass, there was no effect of gestation length on gyrification. We further find, based on OU modeling, that the ancestral mammalian condition most likely had a lissencephalic brain. These findings suggest that the evolution of gyrification is not explained by either a simple power law of brain mass, nor by a threshold model comprising of a grade shift at a gyrification index higher than 1.5. Rather, gyrification is characterized by multiple grade shifts, possibly related to the evolution of expanded cortical association areas.

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