Deciphering Neural Mechanisms Underlying Natural Behavior

December 3

Tuesday, 12:30 pm

Billings Building—Rosedale Room

SPEAKER:

Sandeep Robert Datta, MD, PhD

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Host: Teruko Danjo, Ph.D.

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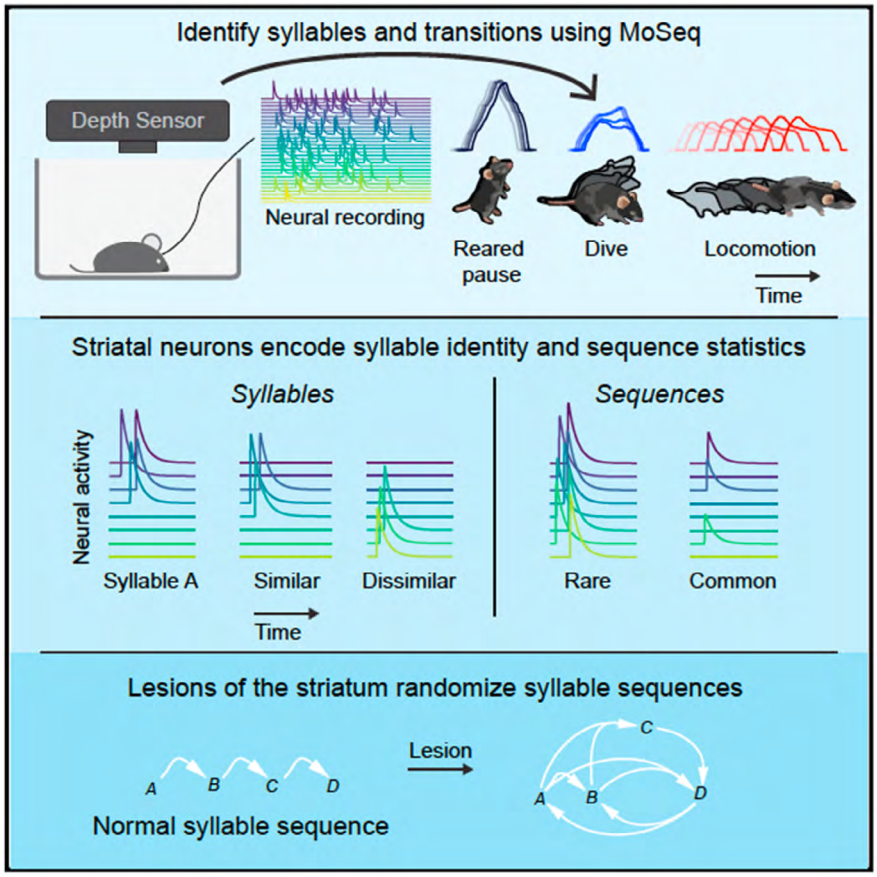
Abstract

The brain allows animals to successfully interact with the world through behavior. But how does the brain compose natural behaviors—the kinds of behaviors that are expressed by animals when they are unrestrained and free to act based upon their own motivations? And how do sex, age, internal state, individual identity coalesce into a context-appropriate pattern of behavior at any given moment? Here I describe recent developments in computational ethology, and highlight how these emerging approaches can shed new light on how the brain endows natural behavior with meaning.



Publications

1. *Keypoint-MoSeq: parsing behavior by linking point tracking to pose dynamics.* Caleb Weinreb, Jonah E Pearl , Sherry Lin, Mohammed Abdal Monium Osman, Libby Zhang, Sidharth Annapragada, Eli Conlin, Red Hoffmann, Sofia Makowska, Winthrop F Gillis, Maya Jay, Shaokai Ye, Alexander Mathis, Mackenzie W Mathis, Talmo Pereira, Scott W Linderman, Sandeep Robert Datta. 2024 Jul;21(7):1329-1339. doi: 10.1038/s41592-024-02318-2.

2. *Mouse spontaneous behavior reflects individual variation rather than estrous state.* Dana Rubi Levy, Nigel Hunter, Sherry Lin, Emma Marie Robinson, Winthrop Gillis, Eli Benjamin Conlin, Rockwell Anyoha, Rebecca M Shansky, Sandeep Robert Datta. PMID: 36889318 PMCID: PMC10090034 DOI: 10.1016/j.cub.2023.02.035

3. *Spontaneous behaviour is structured by reinforcement without explicit reward.* Jeffrey E Markowitz, Winthrop F Gillis, Maya Jay, Jeffrey Wood, Ryley W Harris, Robert Cieszkowski, Rebecca Scott, David Brann, Dorothy Koveal, Tomasz Kula, Caleb Weinreb, Mohammed Abdal Monium Osman, Sandra Romero Pinto, Naoshige Uchida, Scott W Linderman, Bernardo L Sabatini, Sandeep Robert Datta. PMID: 36653449 PMCID: PMC9892006 DOI: 10.1038/s41586-022-05611-2.

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