

Friday, 30 Jun 2017 | 4pm | DBS Conference Room 1

Hosted by A/P Li Daiqin

# Running Blind: How a fast visual predator copes with the effects of motion blur on physiological and evolutionary time scales.



**By Cole Gilbert**

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Have you ever tried to take a picture of something moving fast with a camera set at too slow a shutter speed? The image is completely washed out and lacks contrast. It may even be impossible to recognize what it is. The same problem accompanies biological viewers, such as fast moving predators chasing prey. In their case, the camera (their eyes) is also moving fast. If the photoreceptors of the predator's eye do not respond fast enough, the predator's image of the prey will also be completely washed out and perhaps unrecognizable. This is a general problem in biology that Dr. Gilbert studies in tiger beetles. They are diurnal visually-guided predators that run so fast chasing their prey that they go "blind". During pursuit of prey, they must stop, re-localize the prey, and resume pursuit after just a few tens of milliseconds - only to lose visual contact with the prey again due to motion blur. In the end, the beetles prevail and Dr. Gilbert will discuss several solutions to this problem that the beetles have evolved, using data from behavioral, morphological, computational modeling and electrophysiological approaches.

**About the Speaker:** Dr. Cole Gilbert is a Professor of Entomology and The Hays & James M. Clark Director of Undergraduate Biology at Cornell University. He is a neuroethologist interested in mechanisms of sensory guidance of arthropods and currently serves on the Executive Council of the International Society of Neuroethology and was formerly a Program Officer at the US National Science Foundation with responsibility for sensory systems, computational neuroscience and functional morphology. Problems of guided movement through the environment are common to all animals whether it is to exploit a resource, such as approaching a potential mate or food source, or finding their way back to a central place from which the animal foraged, or escaping from a predator. But approaching these problems at the interface of the nervous system and behavior is difficult with vertebrate animals due to the complexity of the CNS, so Dr. Gilbert's research focusses on arthropods. He is a university and national award winning instructor and teaches courses in Comparative Physiology, Insect Physiology, Evolution & Biological Diversity, and Insect Biology.