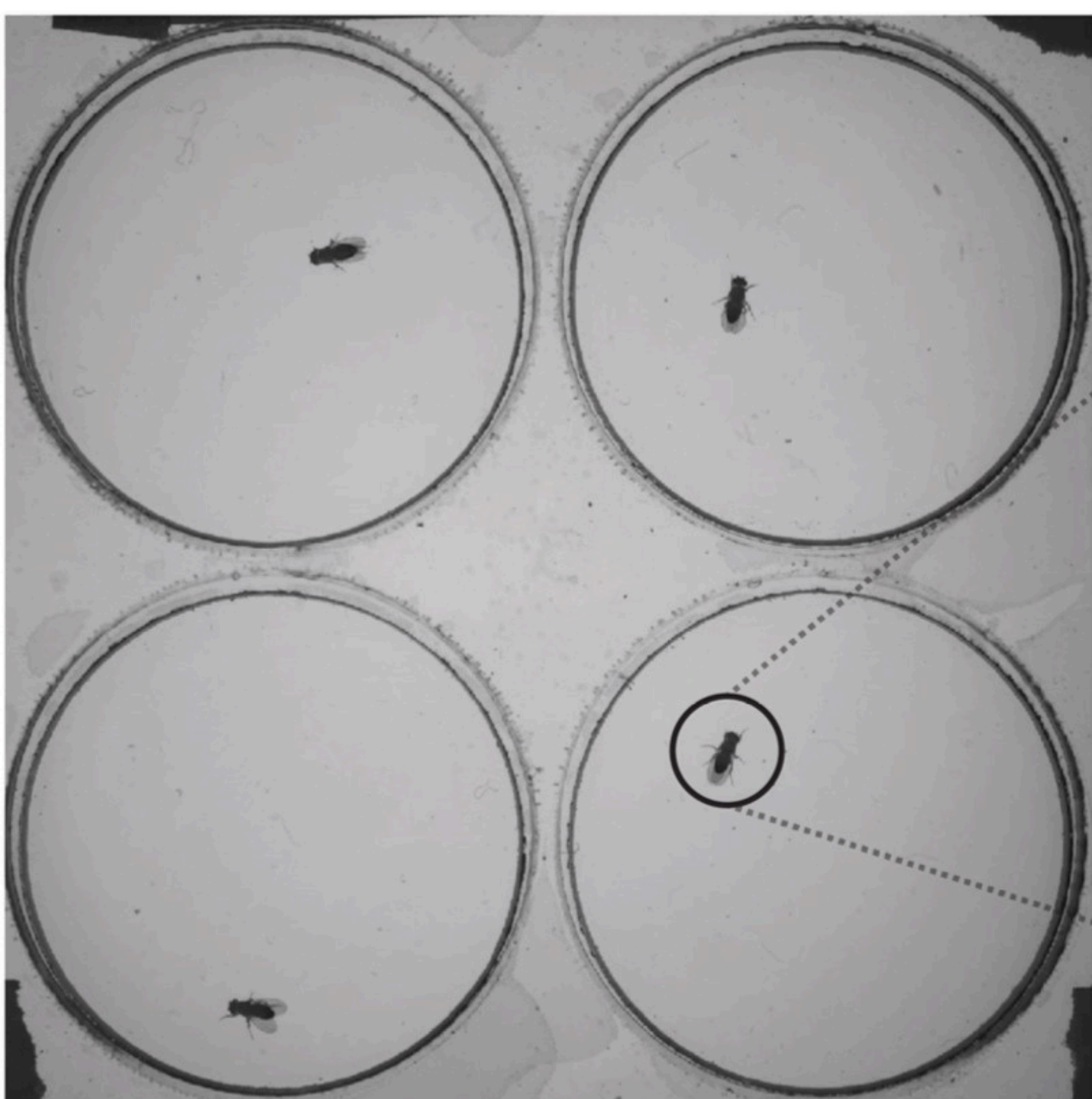
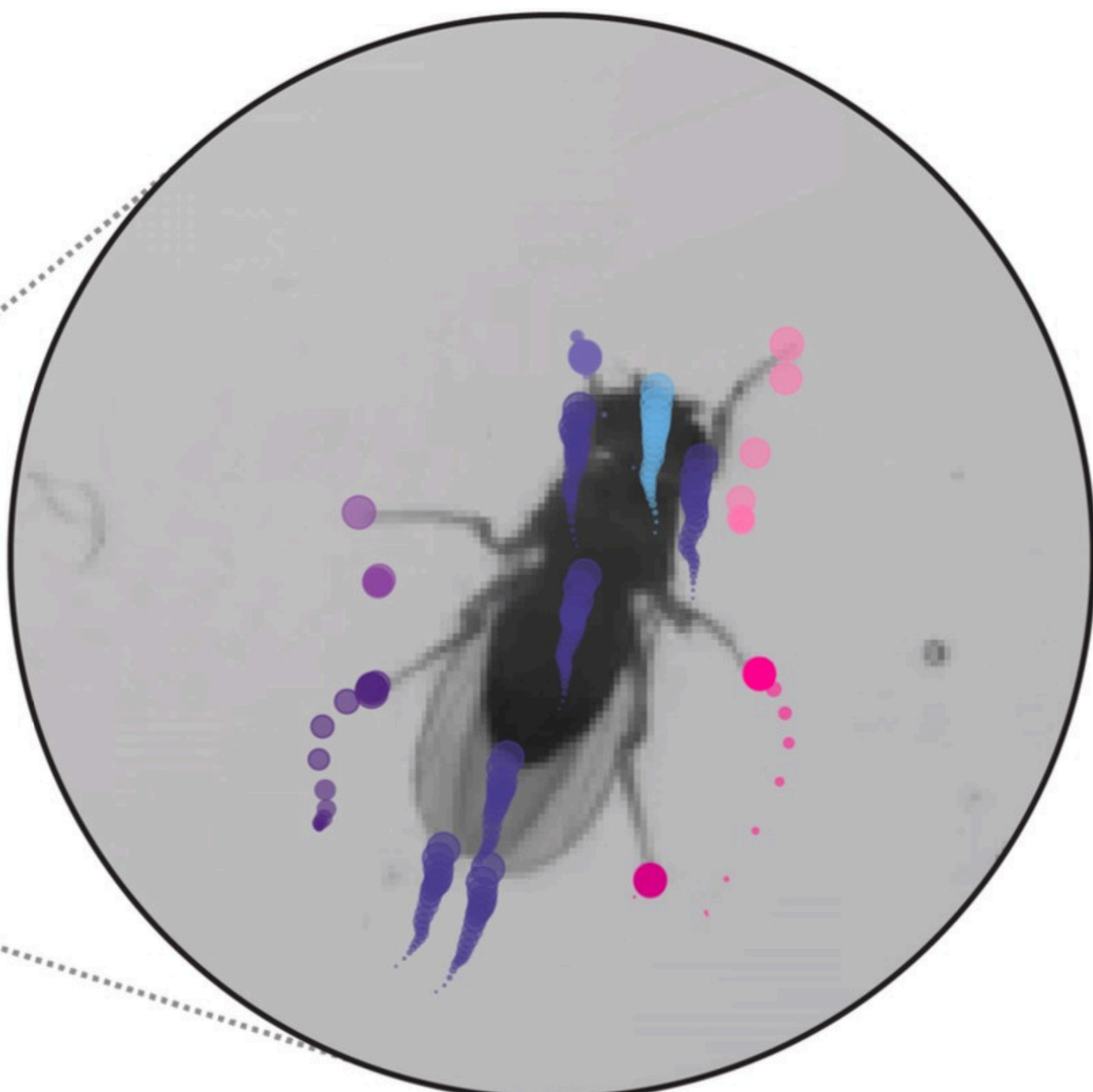


McKenzie-Smith Lab

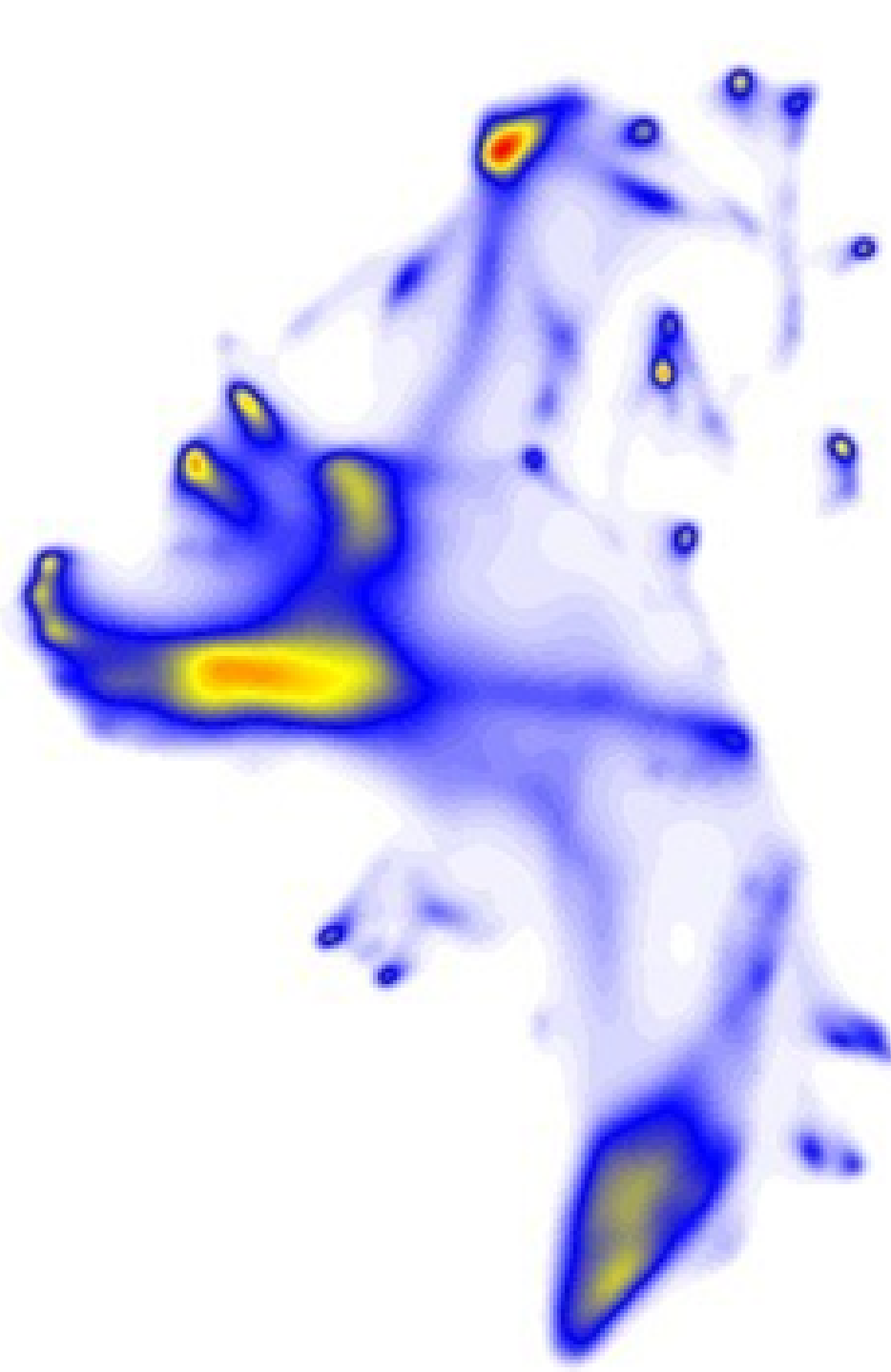
Dr. Grace McKenzie-Smith’s research group explores quantitative ways to describe animal behavior and studies the behavioral physics of fruit flies, *Drosophila melanogaster*, and the ant genera *Temnothorax* and *Leptothorax*. In their developing research, they endeavor to perform system modeling of the transfer of information on both an individual and collective level, working from recorded data of social interactions. These social interactions are engineered via the creation of appropriate arenas for these insects—they aspire to create new experimental methods in order to record and analyze these social interactions.



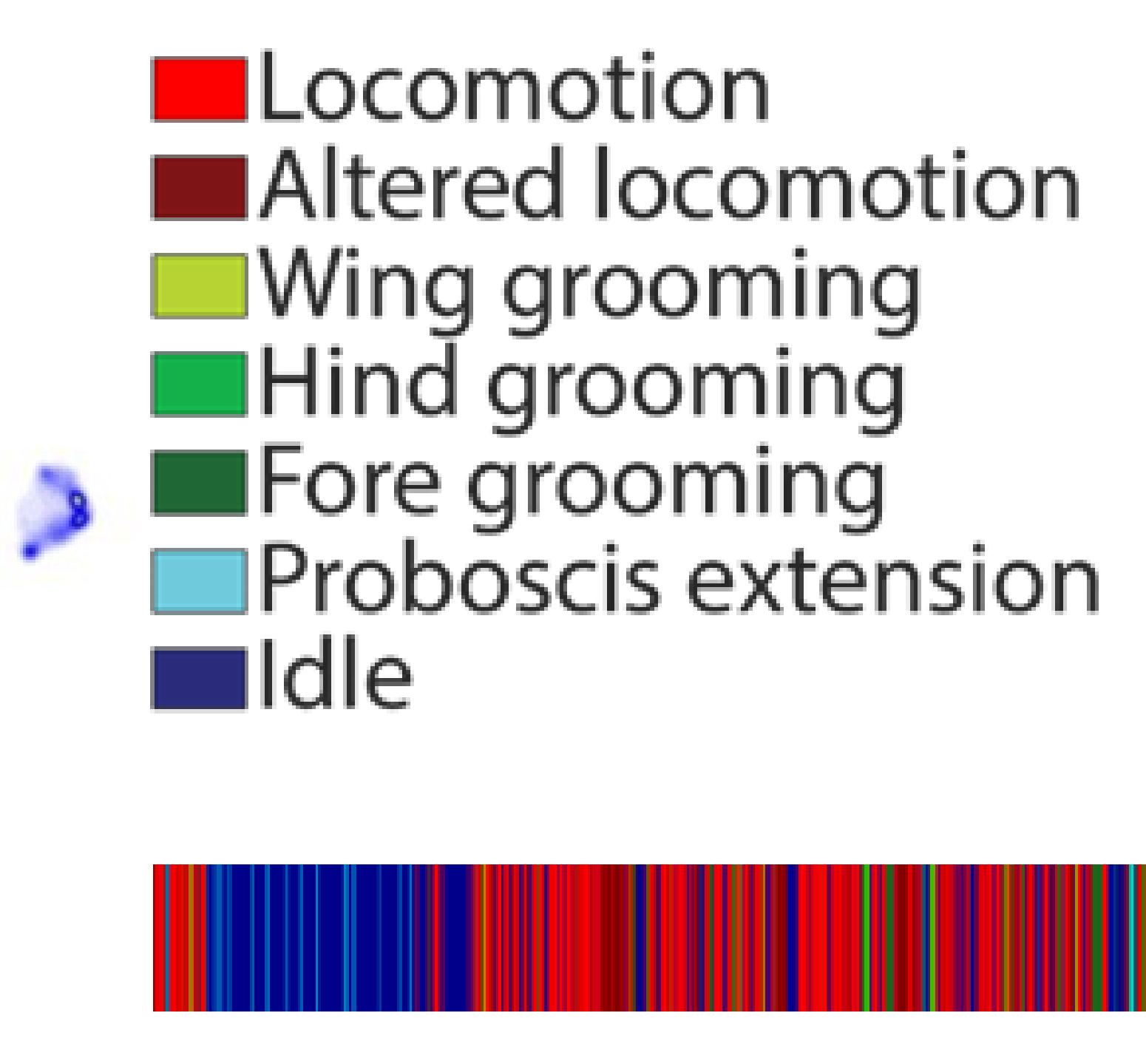
High resolution, high framerate videos



Deep-learning based limb tracking



Data-driven definitions of behavior



Behavior sequences quantified over lifetimes

This work emerges out of previous work by Dr. McKenzie-Smith where she developed experimental procedures to measure long-term animal behavior. These procedures, however, generate terabytes of data each week, which must then be analyzed. Dr. McKenzie-Smith’s research group is interested in using machine vision and machine learning to further analyze and process these data sets, in order to probe into the underlying principles surrounding how animals share and process information.

In this upcoming year at Wesleyan, the research group will focus on the design of the lab itself—asking themselves how to create a stable environment for these insects that can also collect good long-term data. This will involve the construction of arenas for the insects, along with the actual collection of these insects from the surrounding environment. Dr. McKenzie-Smith’s research group will also work to analyze videos received from collaborators, including an upcoming study of solitary bee mating behaviors (which are not present in their lab at Wesleyan).