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How Social Behavior and Interactions Scale with Group Size in *Drosophila Melanogaster*

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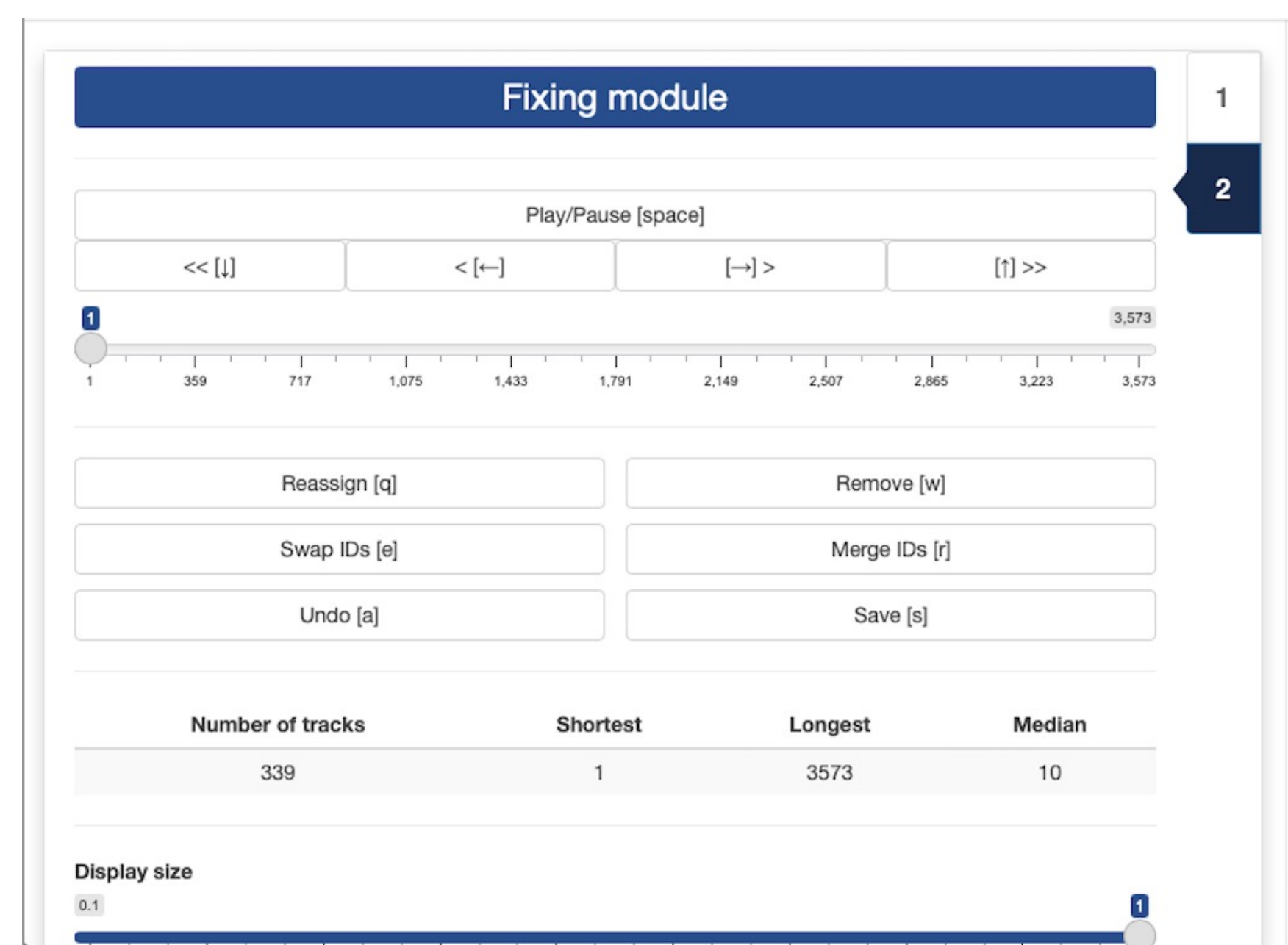
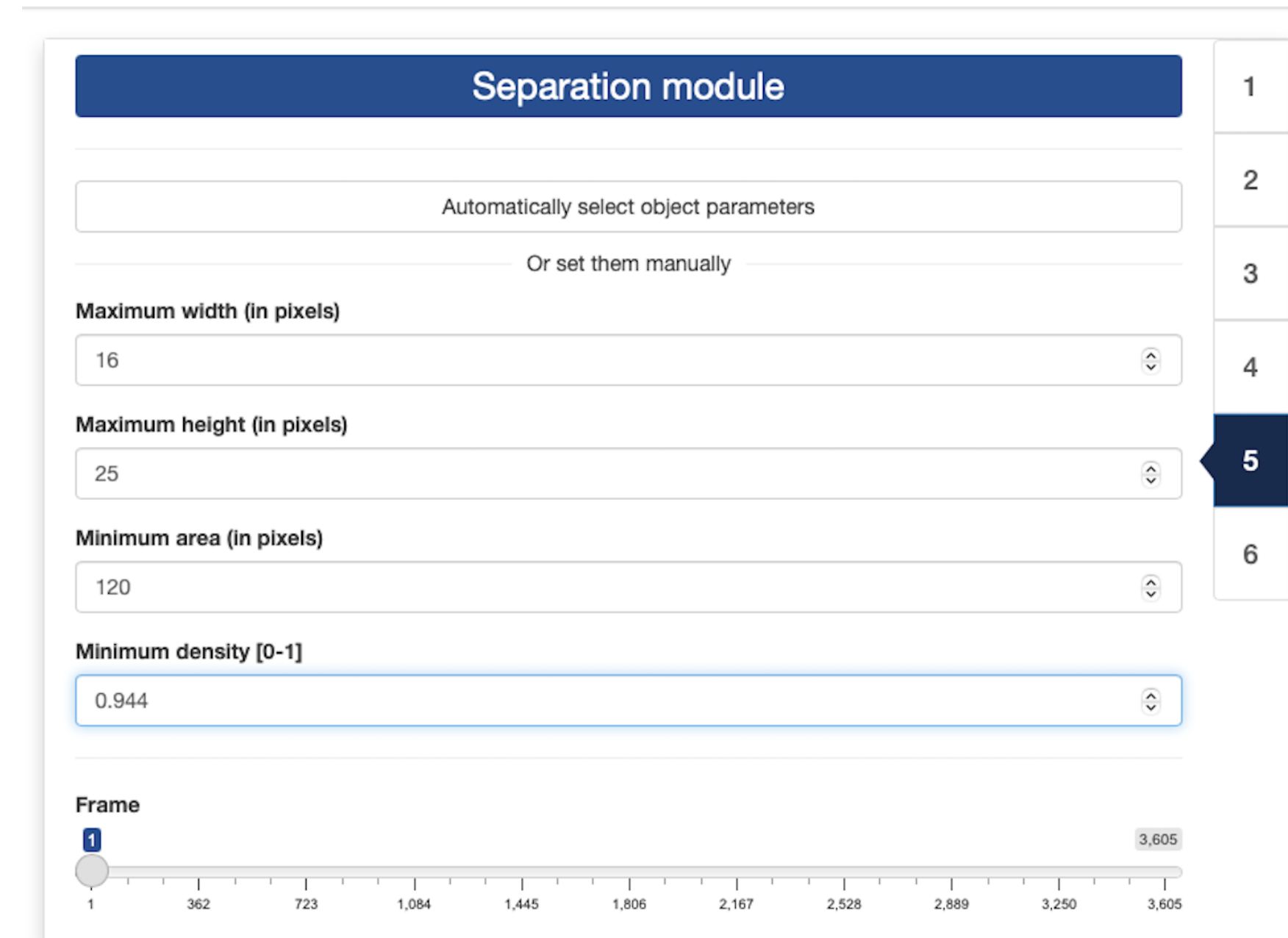
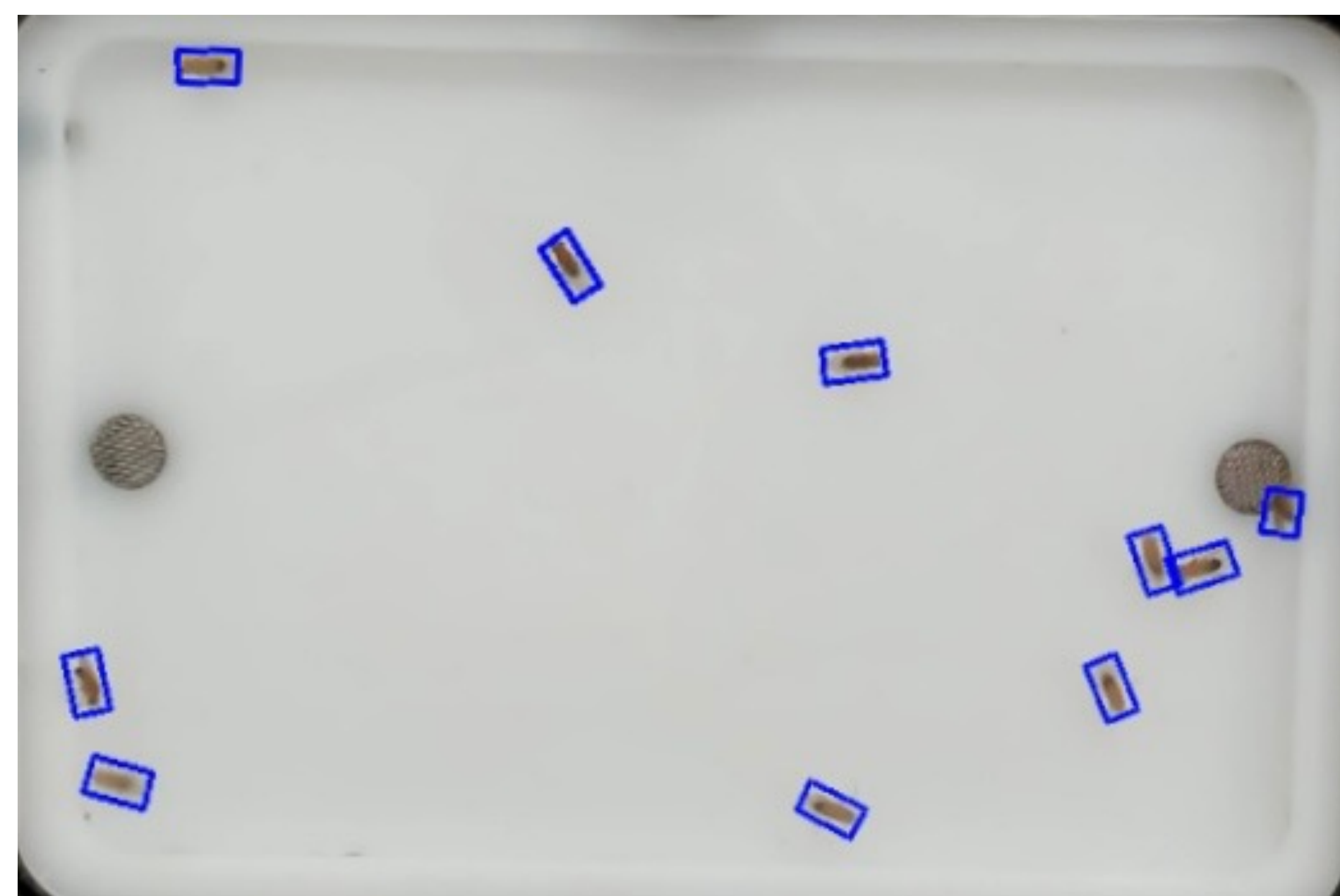
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How social behavior and interactions scale with group size in *Drosophila melanogaster*.

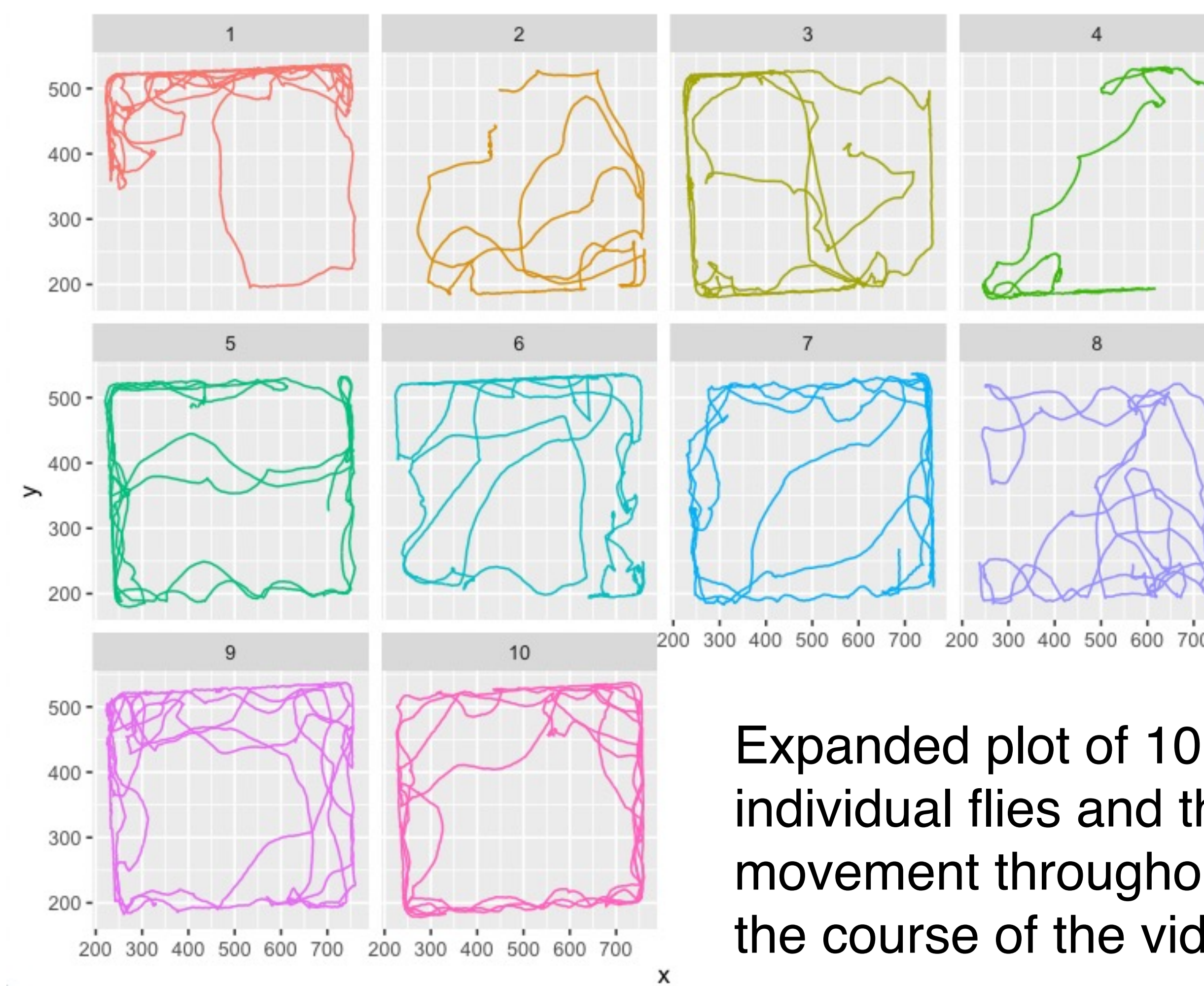
Leigh Paradis and James Waters

Scientific research on the behavior of *D. melanogaster* is usually focused on their genetics and courtship. Fruit flies are not eusocial, but they do engage in social interactions.

Does the behavior of an individual change in different social groups? How does group behavior affect metabolic rates? Does the density of flies in a group affect interactions? Is there any specificity to which flies interact with each other? To address these questions, we are using machine vision to quantify fly behavior.



Using the trackR library for R, we are able to uniquely identify individual flies and track their movement in pre-recorded videos from the lab.



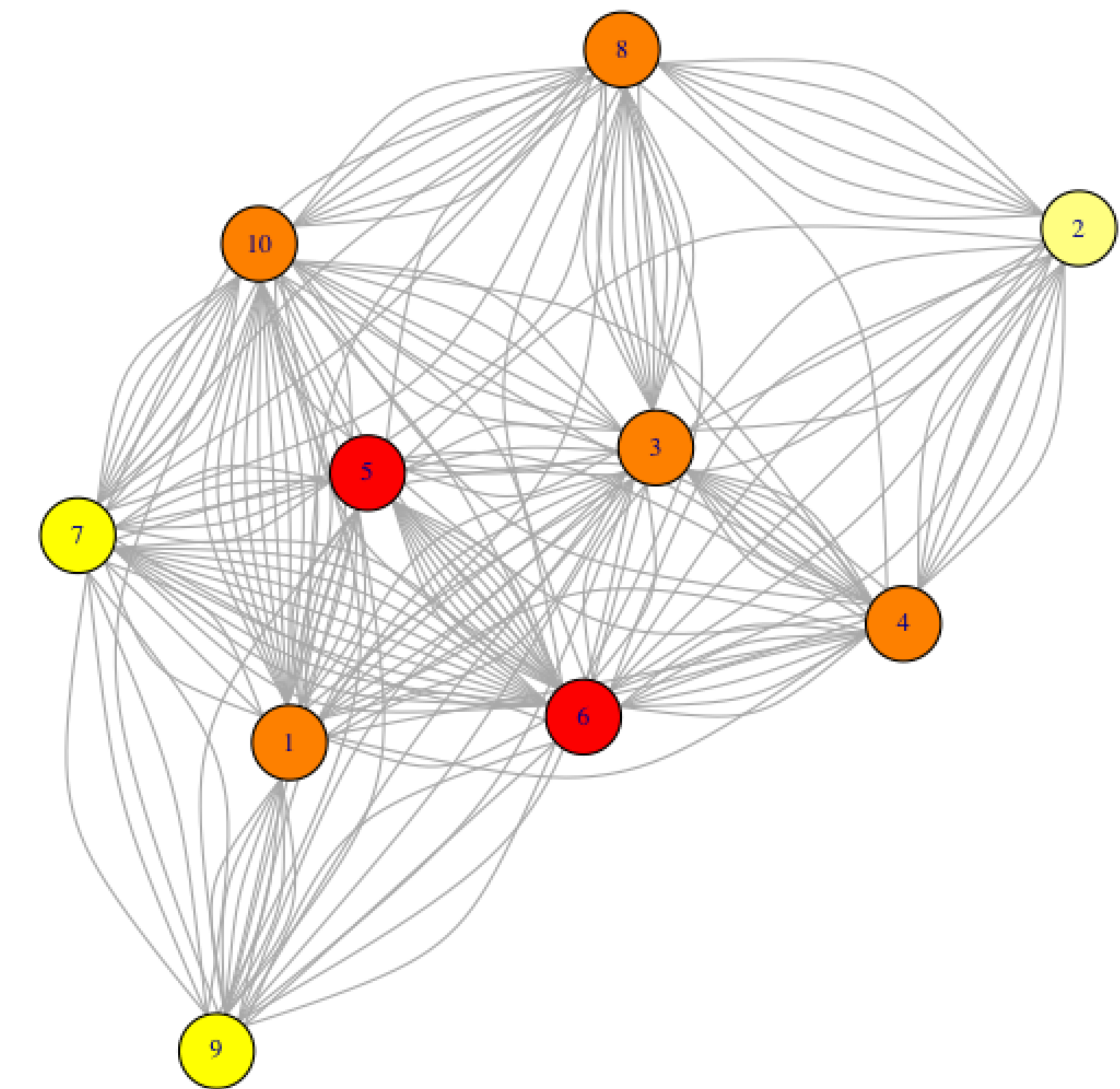
Expanded plot of 10 individual flies and their movement throughout the course of the video.



Sample snapshot of fly movements illustrated by assigned numbers that stay consistent throughout the video.



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Based on the social network above derived from scoring the interactions of each fly, flies tend to interact with multiple other flies in the social group, and there are no flies present that avoid social interactions; a pattern strikingly different from the kinds of social networks we've observed in ant colonies.

Acknowledgements:

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