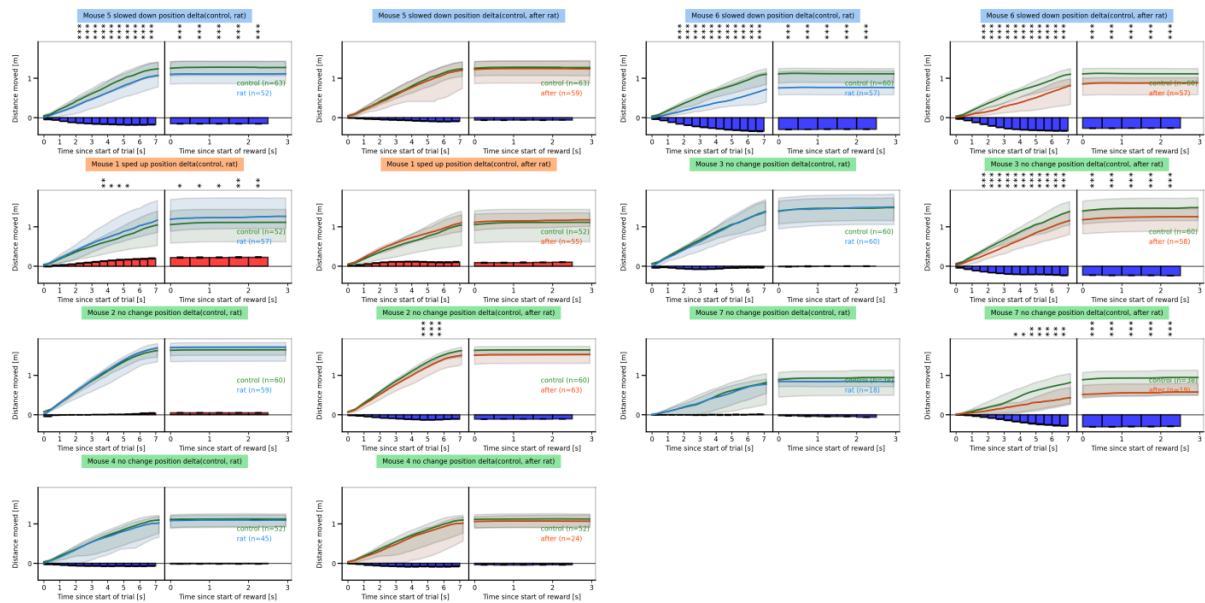
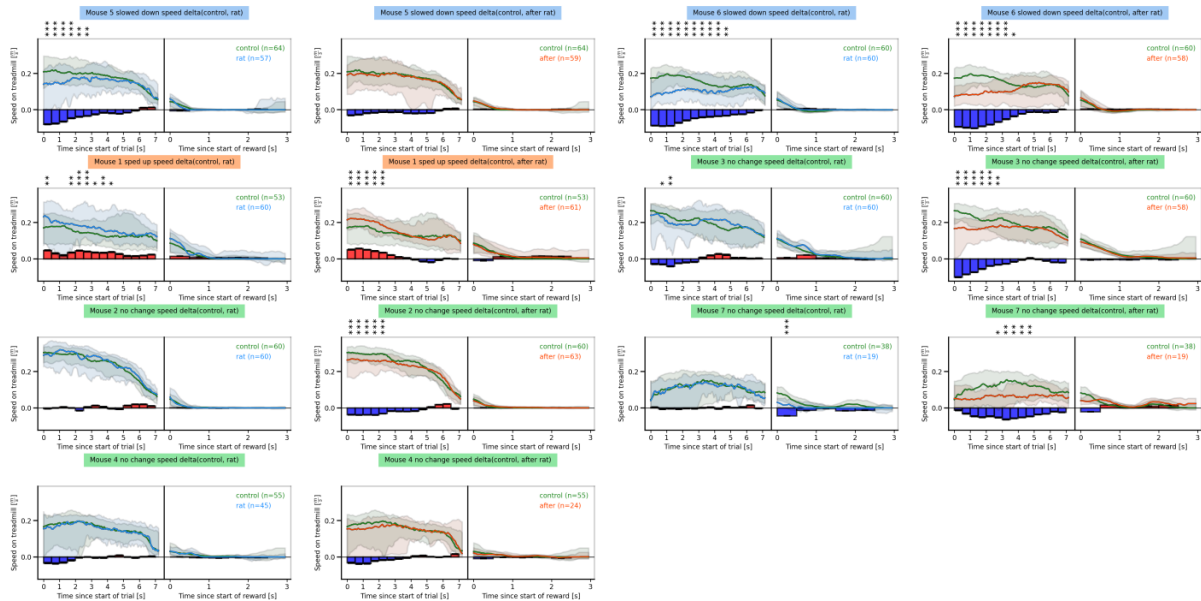


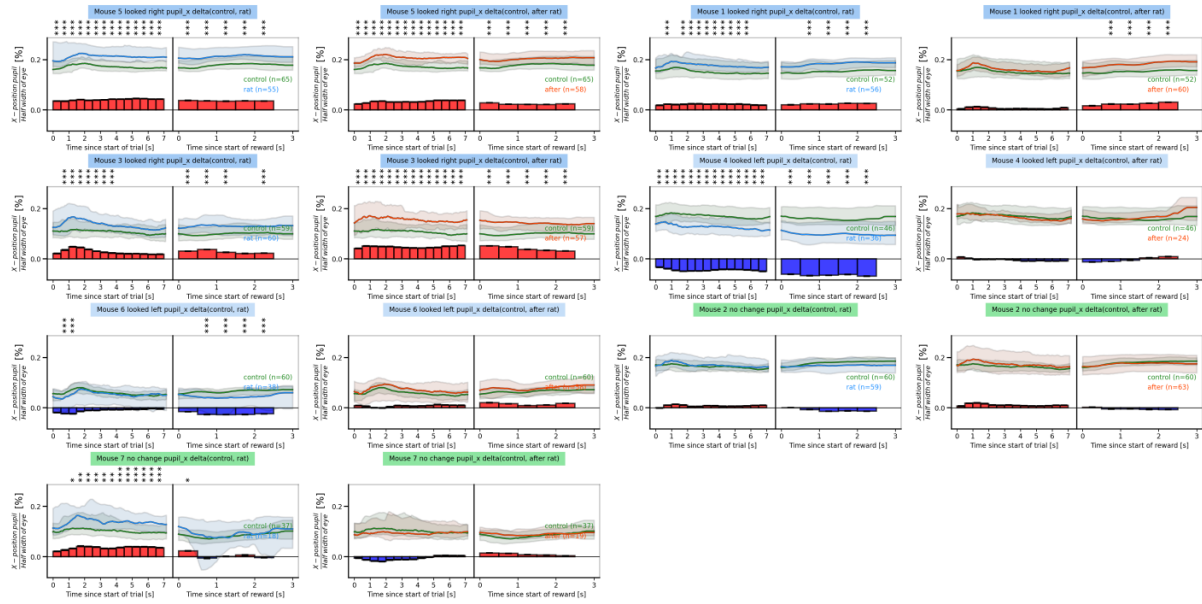
Supplementary Figure 1. *Connections in the simulated foraging setup.* The simulated foraging paradigm (see Methods) was run in the shown setup. Signal and data flows are marked in color.



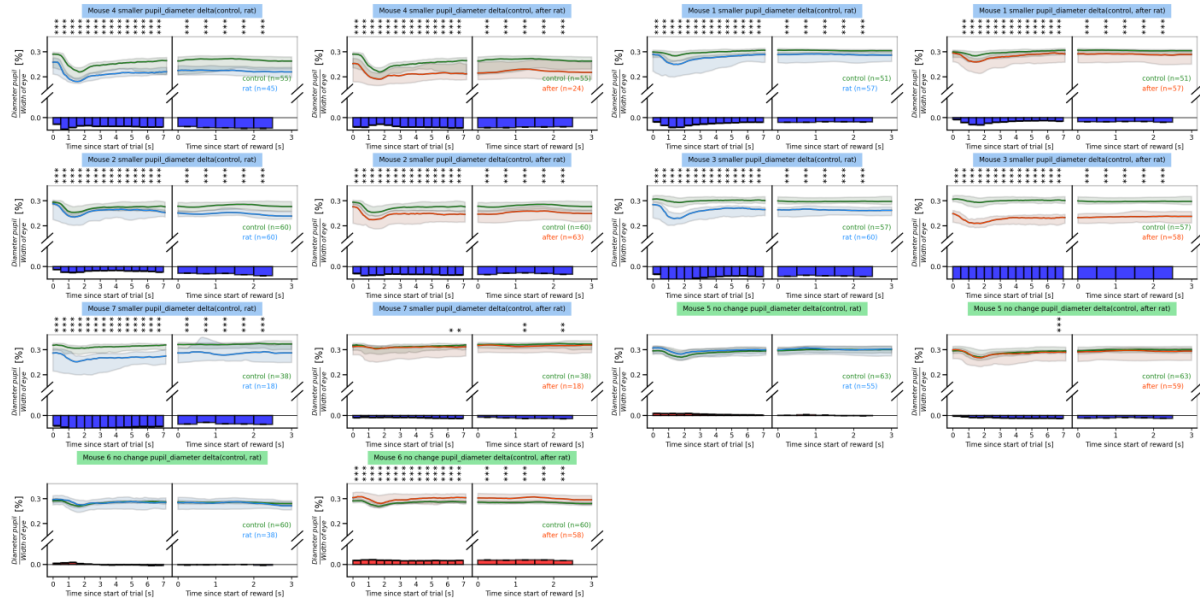
4 **Supplementary Figure 2.** Analysis of position over time for individual mice. Position analysis
 5 for all 7 mice in the simulated foraging paradigm. Same visualization as in Figures 2-4.



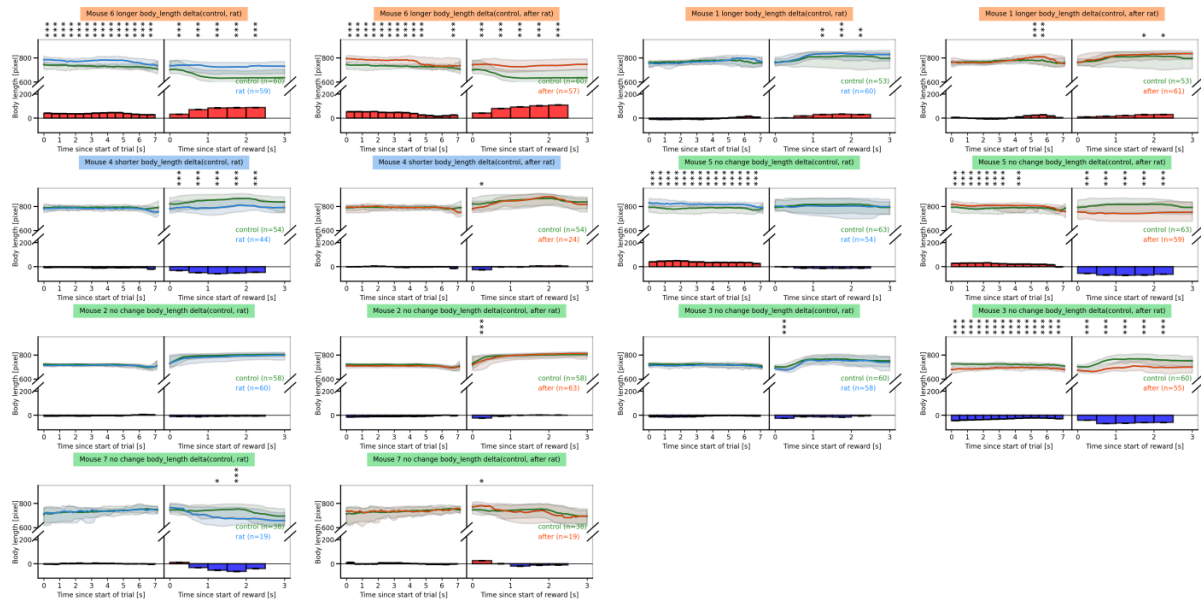
Supplementary Figure 3. Analysis of speed over time for individual mice. Velocity analysis for all 7 mice in the simulated foraging paradigm. Same visualization as in Figures 2-4.



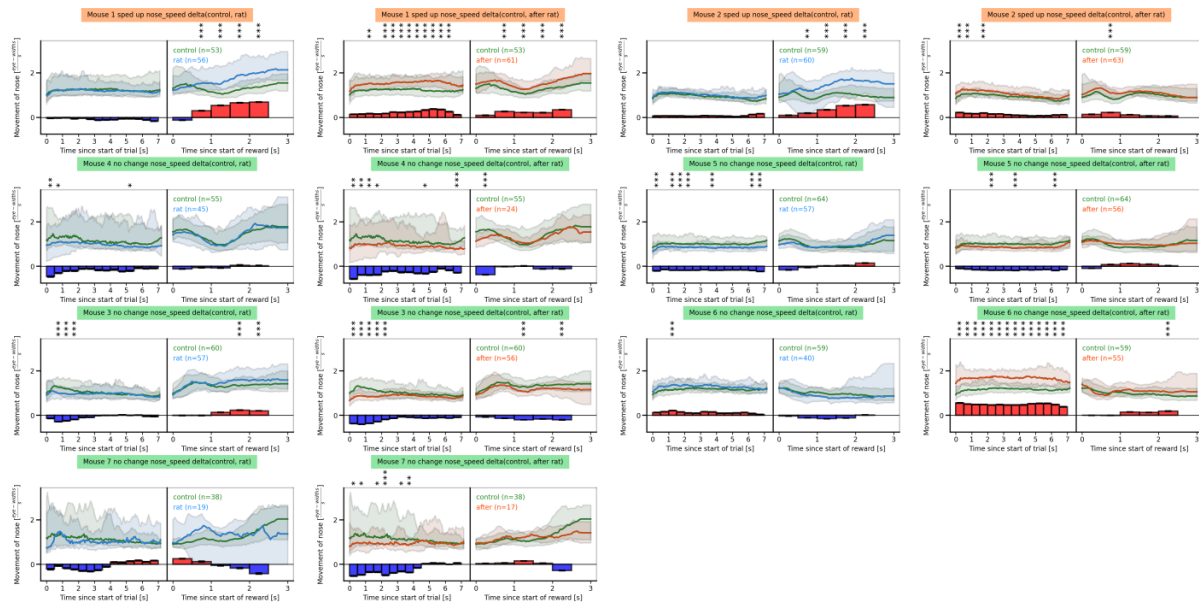
Supplementary Figure 4. Analysis of horizontal pupil position over time for individual mice. Pupil position analysis for all 7 mice in the simulated foraging paradigm. Same visualization as in Figures 2-4.



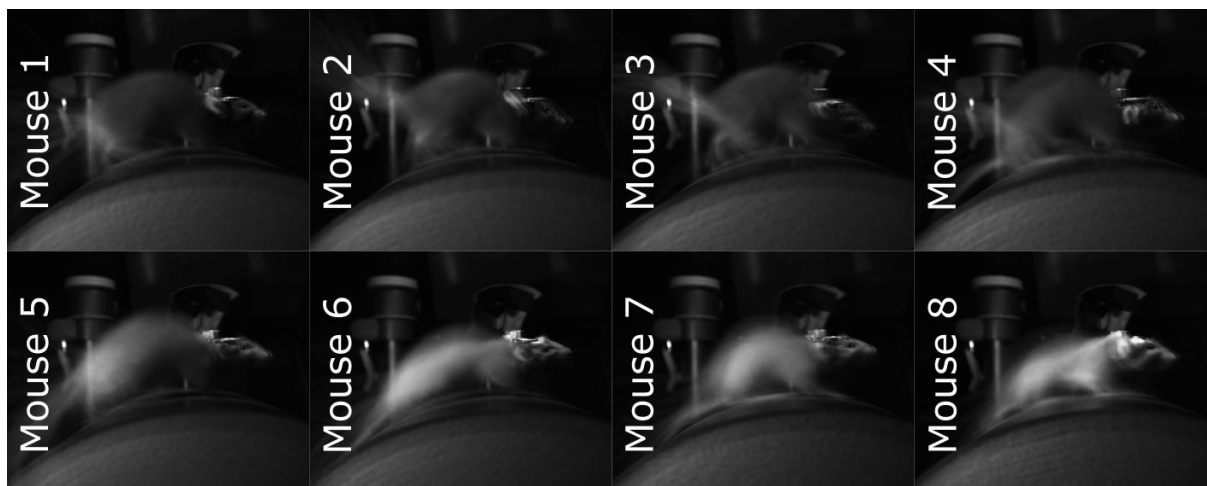
Supplementary Figure 5. Analysis of pupil diameter over time for individual mice. Pupil diameter analysis for all 7 mice in the simulated foraging paradigm. Same visualization as in Figures 2-4.



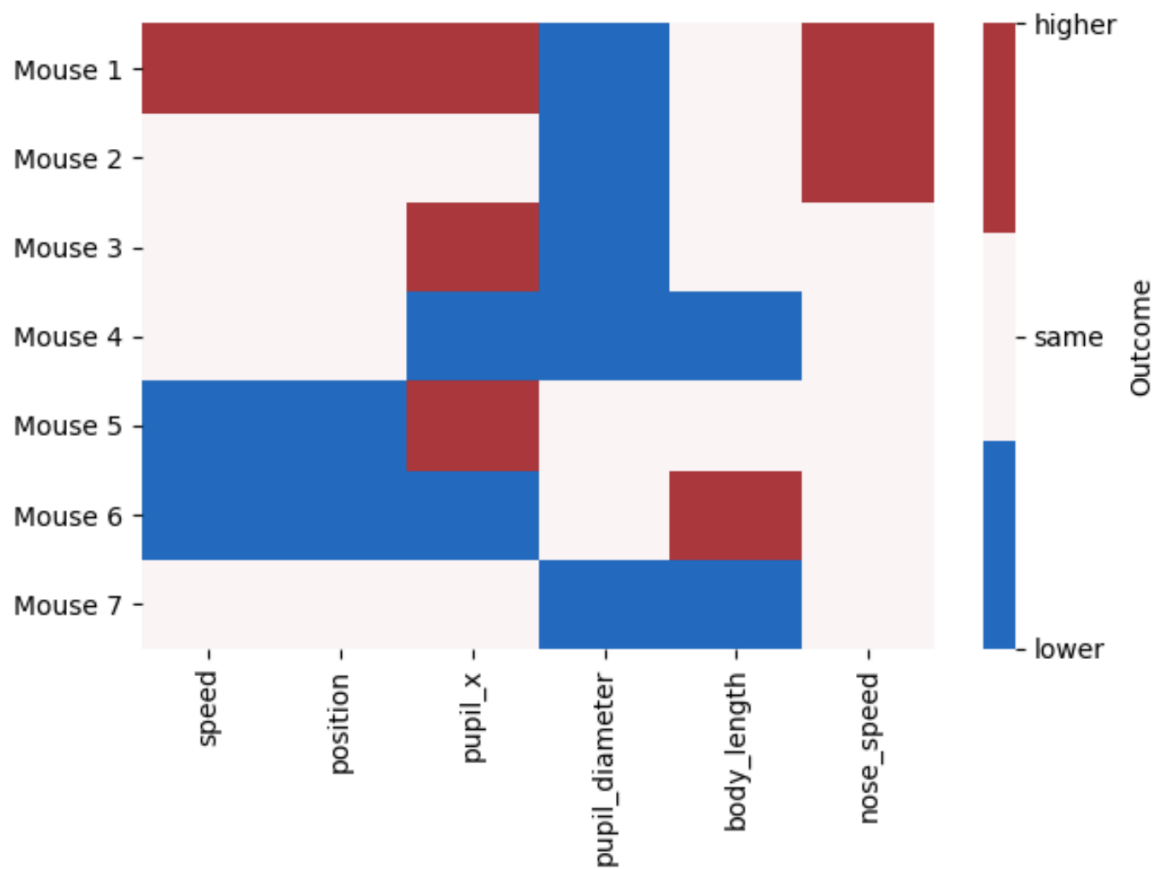
Supplementary Figure 6. *Analysis of body length over time for individual mice.* Body length analysis for all 7 mice in the simulated foraging paradigm. Same visualization as in Figures 2-4.



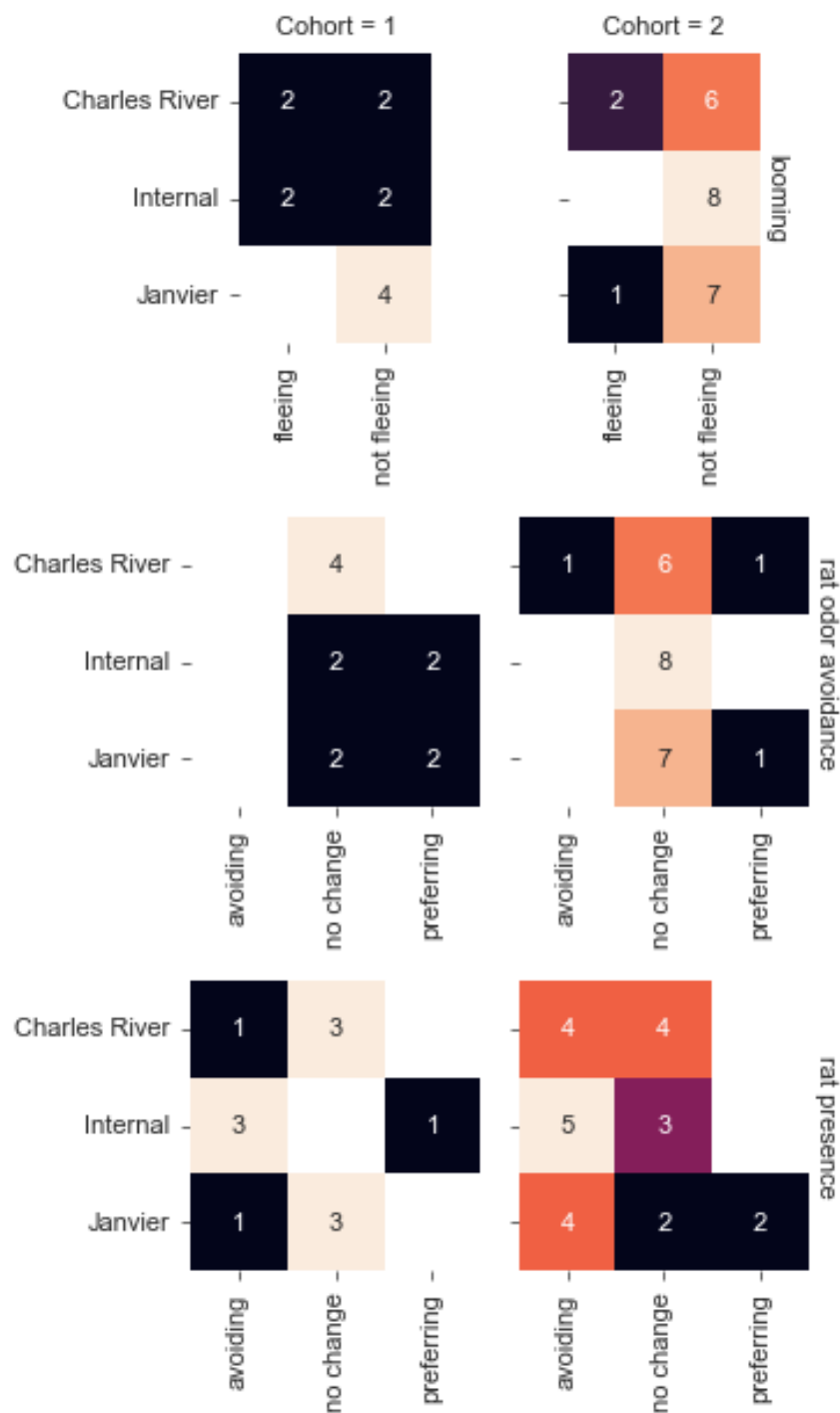
Supplementary Figure 7. Analysis of nose speed over time for individual mice. Nose speed analysis for all 7 mice in the simulated foraging paradigm. Same visualization as in Figures 2-4.



Supplementary Figure 8. *Superimposed first frames of each trial.* Randomly sampled superimposed frames for each recording session, for each mouse. The body posture changes, while the head position does not.



Supplementary Figure 9. *Summary of simulated foraging experiment results.* An overview mapping each mouse used in the simulated foraging paradigm to its outcome.



Supplementary Figure 10. Summary of looming, rat odor & presence avoidance experiment results. An overview mapping each mouse used in the verification experiments to its outcome. Grid rows are the 3 paradigms (looming, rat odor avoidance, and rat presence) and grid columns are the two cohorts. Each field consists of 3 rows, one per source, and 2-3 columns, based on the possible outcomes in the given paradigm. Color scale based on the number of mice.

37 **Extended Media**

38 **Video 1.** Three simultaneous views of rat and mouse interaction from 3 cameras.

39 **Video 2.** Mouse position on treadmill.

40 **Video 3.** Pupil Position.

41 **Video 4.** Pupil size.

42 **Video 5.** Body posture.

43 **Video 6.** Nose movement.