ROUND AND ROUND AND ROUND WE GO: BEHAVIOR OF ADULT FEMALE MICE ON THE ISS

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The NASA Decadal Survey (2011) emphasized the importance of long duration rodent experiments on the International Space Station (ISS). To accomplish this objective, flight hardware and science capabilities supporting mouse studies in space were developed at Ames Research Center. Here we present a video-based behavioral analysis of ten C57BL/6 female adult mice exposed to a total of 37 days in space compared with identically housed Ground Controls. Flight and Control mice exhibited the same range of behaviors, including feeding, drinking, exploratory behavior, grooming, and social interactions. Mice propelled themselves freely and actively throughout the Habitat using their forelimbs to push off or by floating from one cage area to another. Overall activity was greater in Flt as compared to GC mice. Spontaneous, organized 'circling' or 'race-tracking' behavior emerged within the first few days of flight and encompassed the primary dark cycle activity for the remainder of the experiment. I will summarize qualitative observations and quantitative comparisons of mice in microgravity and 1g conditions. Behavioral phenotyping revealed important insights into the overall health and adaptation of mice to the space environment, and identified unique behaviors that can guide future habitat development and research on rodents in space.

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