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To: JoVE

Dear JoVE,

We submit for your consideration a manuscript entitled: "*Exploring the Effects of Spaceflight on Mouse Physiology using the Open Access NASA GeneLab Platform*". This manuscript is in response to an invitation to publish from Dr. Jaydev Upponi. The manuscript has not been published and is not under consideration for publication elsewhere while under consideration. In addition, all authors declare no competing financial interests and conflict of interest with the data and information in this manuscript. We are more than excited for this opportunity to present the methodology of space biology experiments from rodent handling to data being processed on our GeneLab platform. We believe due to the wide appeal of this work to Systems Biology, animal handling for NASA experiments, GeneLab usage, and biology in general, JoVE is a most appropriate forum for this work, and we thank you for the invitation and taking this manuscript into consideration.

This paper brings awareness to the NASA GeneLab open science platform (genelab.nasa.gov). NASA has made all spaceflight omics data publicly available through the GeneLab platform and would like to bring awareness to the public to utilize this great resource to generate novel hypothesis-based research. For this manuscript we describe in detail how data is curated on GeneLab, using GeneLab, describing the interactive workspace, and a protocol for using the Galaxy GeneLab interface. In addition, we have also described a novel pipeline for an unbiased systems biology analysis to determine key driving pathways/factors when analyzing omics data. This manuscript not only provides the scientific community direction for designing optimal future microgravity experiments, but also demonstrates how publicly available spaceflight data from GeneLab can be utilized to generate hypotheses for future experiments

We also have provided how the rodent space biology experiments are performed. Although the procedures are trivial, the general public outside of NASA research will not be familiar with the procedures involved with rodent space biology experiments. This information will bring valuable insight on how rodent experiments are carried out and eventually translated to data which is available on GeneLab.

Due to the broad implications of these findings and the novel perspective utilizing systems biology to determine master regulators driving the biological response due to spaceflight, we believe this work will be of interest to your readership.

Please do not hesitate to contact me if I can provide any additional information.

On behalf of the authors,

A handwritten signature in black ink, appearing to read "Afshin Beheshti".

Afshin Beheshti, PhD