

The Switchmaze is a new device for measuring motivation and drive switching in mice, enabling the observation of behavioral features not accessible in classical motivation tests. These features include the ability to monitor the switching between different rewards over extended periods. The Switchmaze employs a clever idea to spatially separate appetitive, consumatory, and termination phases of feeding. Importantly, it does not require food or water restriction and mirrors the feeding and drinking patterns observed in mice living in their natural environment. The device has the potential to unveil new patterns of behavior in mice and their corresponding neuronal correlates. Moreover, the system is open source, ensuring easy accessibility to the community. While the manuscript is generally well-written, I have some comments that could enhance its readability.

1. Abstract: The phrase "measured as the ratio of single probe entries to continuous exploitation runs" may not be clear to readers unfamiliar with the paper's context.
2. Introduction: It would be beneficial to provide a clear definition of the drive being referenced. Now it is stated that it is a contemporary one that is distinct from earlier drive reduction theory.
3. Two viral constructs were used in H-hM4Di animals: 'For 4 out of 9 H-hM4Di animals, the injections contained 30-150 nl of 1:5 mixture of AAV9-CMV-Cre-tdTomato (1012 GC/ml) and AAV8-hSyn-DIO-HA-hM4Di-mCitrine (1013 GC/ml), and the other 5 out of 9 animals received 30 nl of AAV8-hSyn-hM4Di-mCherry (2\*1013 GC/ml.'. Did the behavioral results for these subgroups differ?
4. In the methods section, it is stated that 'In PFC-hM4Di specimens, the hypothalamic injection centroid was always within the lateral hypothalamic area (LH) with a minority of cases with expression elsewhere (1/11) or difficult to detect expression (1/11). In all cases the mPFC layer 5 (L5) neurons expressed hM4Di-mCitrine, with difficult to detect expression in 1 case out of 11 (same individual as the above difficult to detect hypothalamic expression) and abundant expression in all others.'. It is unclear whether the case with difficult-to-detect expression was included in the analysis.
5. The description of upward closing doors is not entirely clear. Including additional explanation or a short video illustrating their operation would enhance understanding.
6. In the description of behavioral experiments, the total number of tested animals should be clearly stated (Figures 2 and 3), and any potential differences between groups should be discussed. Is it possible that dominant mice in some groups might attempt to block access to food or water for others?
7. The data in Figure 4 are difficult to follow. The time series data (left and middle panels) have a 4-hour bin width, while the bar graphs (right panels) are measured from the last 6 hours before lights-on. It would be helpful to explain the rationale behind choosing 4-hour and 6-hour bins for data quantification. Do shadowed areas mark dark

phases of the light-dark cycle? Also, why is N=20 for habituation and N=22 for challenges? Are these the same animals?

8. Figure 6 presents data for the entire 6-hour period, but actual chemogenetic modulation might have lasted for a shorter duration (not controlled). It would be beneficial to show the data in shorter time bins, such as 3-hour intervals.

- **Title and abstract**

- Does the title clearly reflect the content of the article?  Yes,  No (please explain),  I don't know
- Does the abstract present the main findings of the study?  Yes,  No (please explain),  I don't know

- **Introduction**

- Are the research questions/hypotheses/predictions clearly presented?  Yes,  No (please explain),  I don't know
- Does the introduction build on relevant research in the field?  Yes,  No (please explain),  I don't know

- **Materials and methods**

- Are the methods and analyses sufficiently detailed to allow replication by other researchers?  Yes,  No (please explain),  I don't know
- Are the methods and statistical analyses appropriate and well described?  Yes,  No (please explain),  I don't know

- **Results**

- In the case of negative results, is there a statistical power analysis (or an adequate Bayesian analysis or equivalence testing)?  Yes,  No (please explain),  I don't know n/a
- Are the results described and interpreted correctly?  Yes,  No (please explain),  I don't know

- **Discussion**

- Have the authors appropriately emphasized the strengths and limitations of their study/theory/methods/argument?  Yes,  No (please explain),  I don't know

The limitations of the method are not discussed. For instance, the role of social hierarchy as a potential confound of the results should be mentioned.

- Are the conclusions adequately supported by the results (without overstating the implications of the findings)?  Yes,  No (please explain),  I don't know