

Using R to quantify the buildup in extent of free exploration in mice

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Keywords: Quantile loess, sequences of repeated motion, dynamics of behavior, open field test, phenotyping mouse behavior

Background: ^(ref 1) To obtain a perspective on an animal's own functional world, we study its behavior in situations that allow the animal to regulate the growth rate of its behavior and provide us with the opportunity to quantify its moment-by-moment developmental dynamics. Thus, we are able to show that a mouse's exploratory behavior consists of sequences of repeated motion: iterative processes that increase in extent and complexity, whose presumed function is a systematic active management of input acquired during the exploration of a novel environment. We use this study to demonstrate our approach to quantifying behavior: targeting aspects of behavior that are shown to be actively managed by the animal, and using measures that are discriminative across strains and treatments and replicable across laboratories.

The R perspective: In our research, R was our central tool of choice (^{ref 1, citation 39}). We employed various existing R facilities for preparing, analyzing, and visualizing the data. We implemented the Quantile.loess algorithm in R (the code was published online ^{ref 2}) in order to quantify various measurements of the buildup in the mouse's exploration of the ring.

In this talk I will provide the context of this study and present how R was used for devising and implementing known and new methods in order to support our investigation.

References

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