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Automated classification of self-grooming in mice using open-source software

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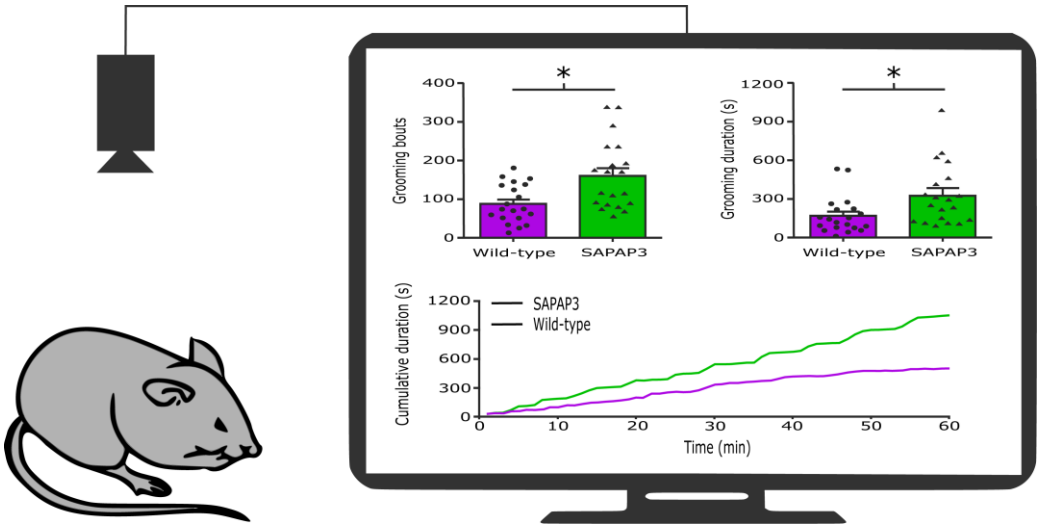
Graphical abstract



Highlights

- Automated self-grooming classification with open-source software
- Automated classification with annotation precision comparable to human experts
- High throughput of quantitative grooming measurements
- How-to instruction of the complete operation pipeline

Abstract

Background: Manual analysis of behavior is labor intensive and subject to inter-rater variability. Although considerable progress in automation of analysis has been made, complex behavior such as grooming still lacks satisfactory automated quantification.

New method: We trained a freely available, automated classifier, Janelia Automatic Animal Behavior Annotator (JAABA), to quantify self-grooming duration and number of bouts based on video recordings of SAPAP3 knockout mice (a mouse line that self-grooms excessively) and wild-type animals.

Results: We compared the JAABA classifier with human expert observers to test its ability to measure self-grooming in three scenarios: Mice in an open field, mice on an elevated plus-maze, and tethered

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