

What's That Smell? How Novel Odors Affect Mouse Behavior

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Objective

Mice and rats can be kept in the same secondary housing without adding stress or altering the behaviors of either species[1]. However, in the case of sharing equipment and lab space between the species it is unclear if the presence of rat odor would cause avoidance or fear behaviors in mice and confound results of behavior testing. To explore this question, mice were exposed to novel odors from a mouse, rat, or cat.

Hypothesis

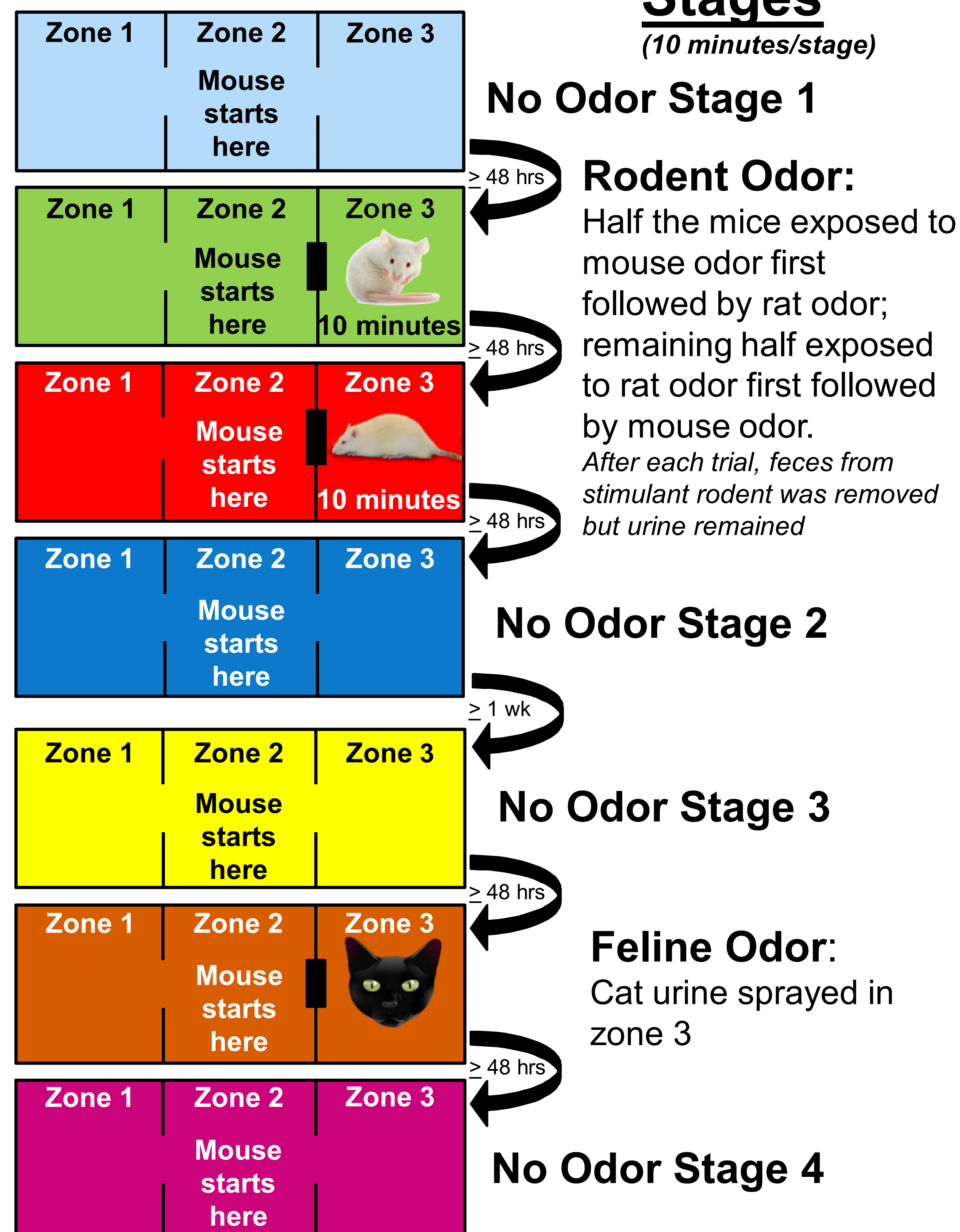
Mice will avoid and freeze more in the zone conditioned with a potential predator odor.

Methods

- Outbred ♀ mice (CD-1) n = 9
- ANY-maze (Stoelting, Wood Dale, IL) used to track and record movements of the mice.
- Apparatus flipped 180° and cleaned with 70% ethanol after each mouse completed its trial.

Stages

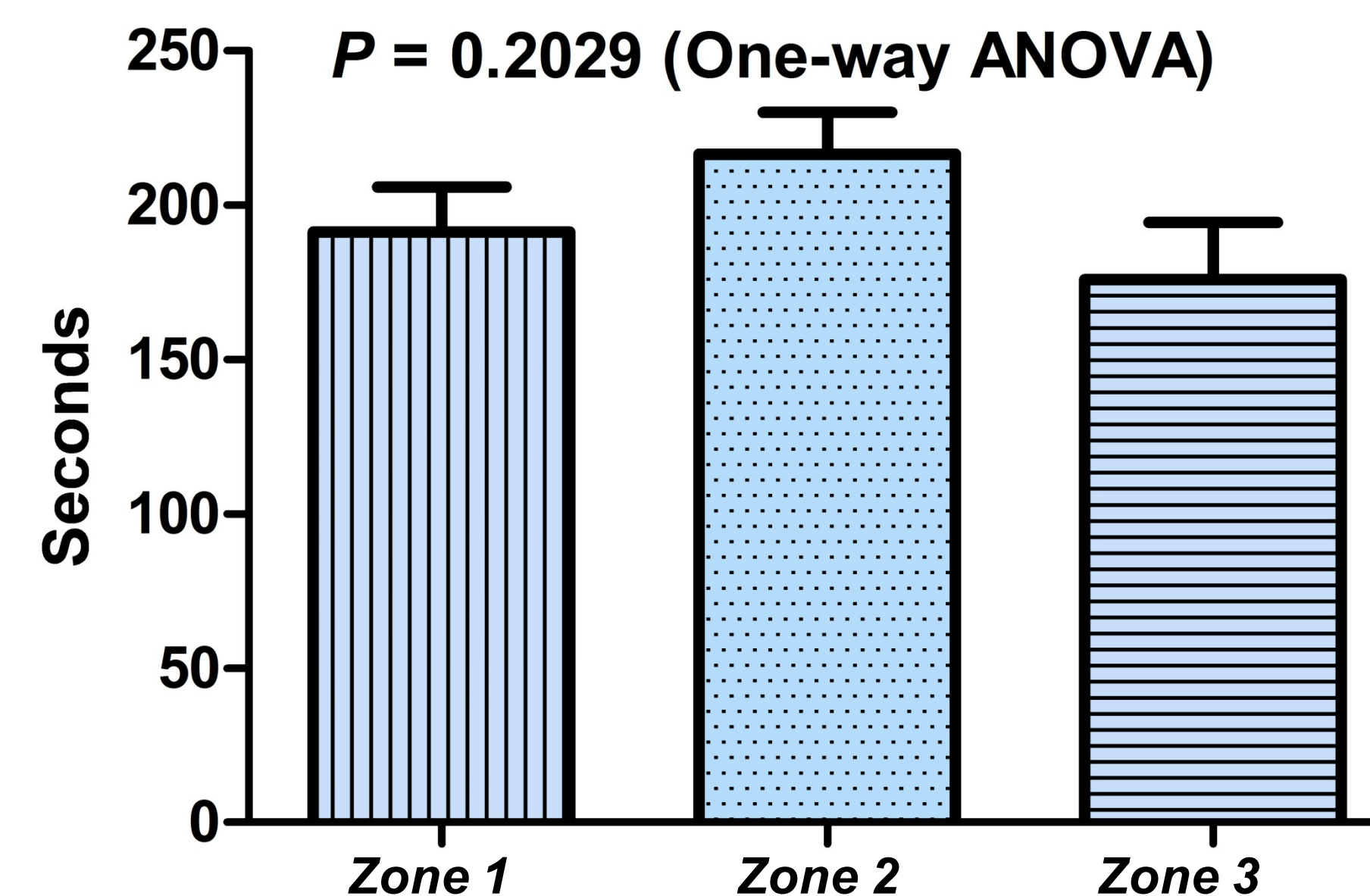
(10 minutes/stage)



No Odor 3, Feline Odor and No Odor 4 were repeated due to technical problems

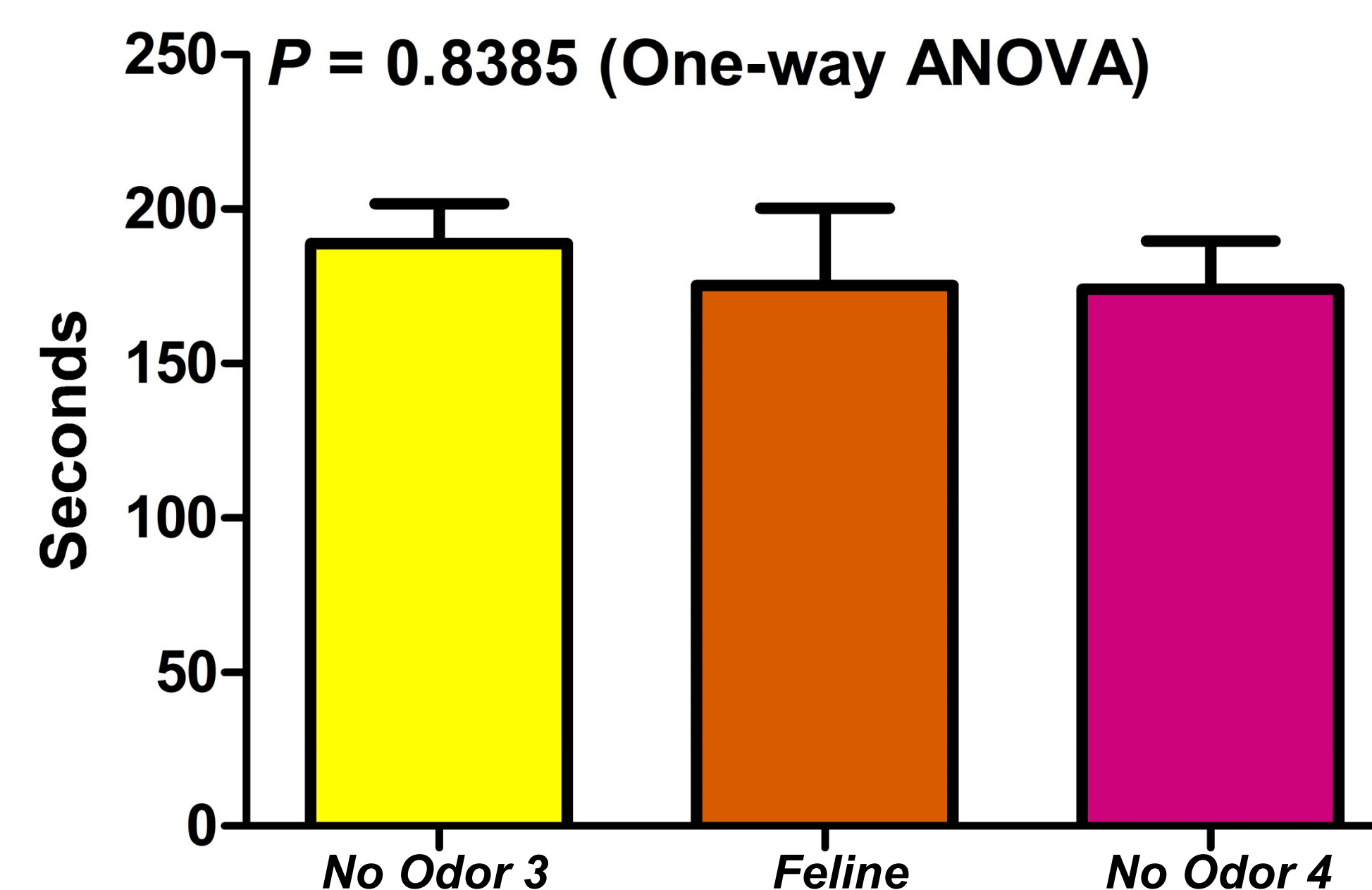
Results

A) Mean Time Spent in Zone: No Odor Stage 1



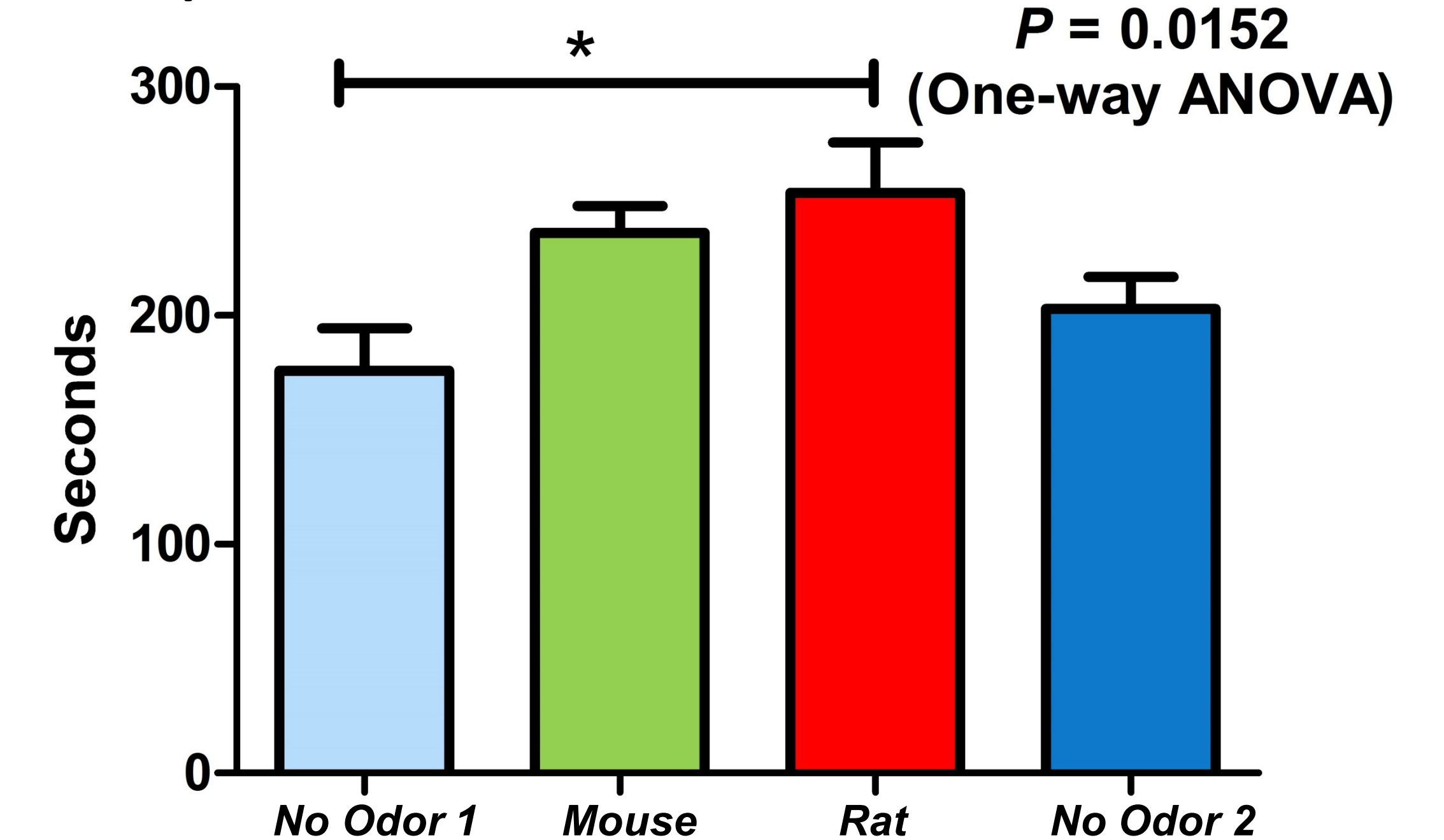
A) Mice have no initial zone preference in the absence of an odor cue as they spent equal amounts of time in each zone.

C) Mean Time Spent in Zone 3



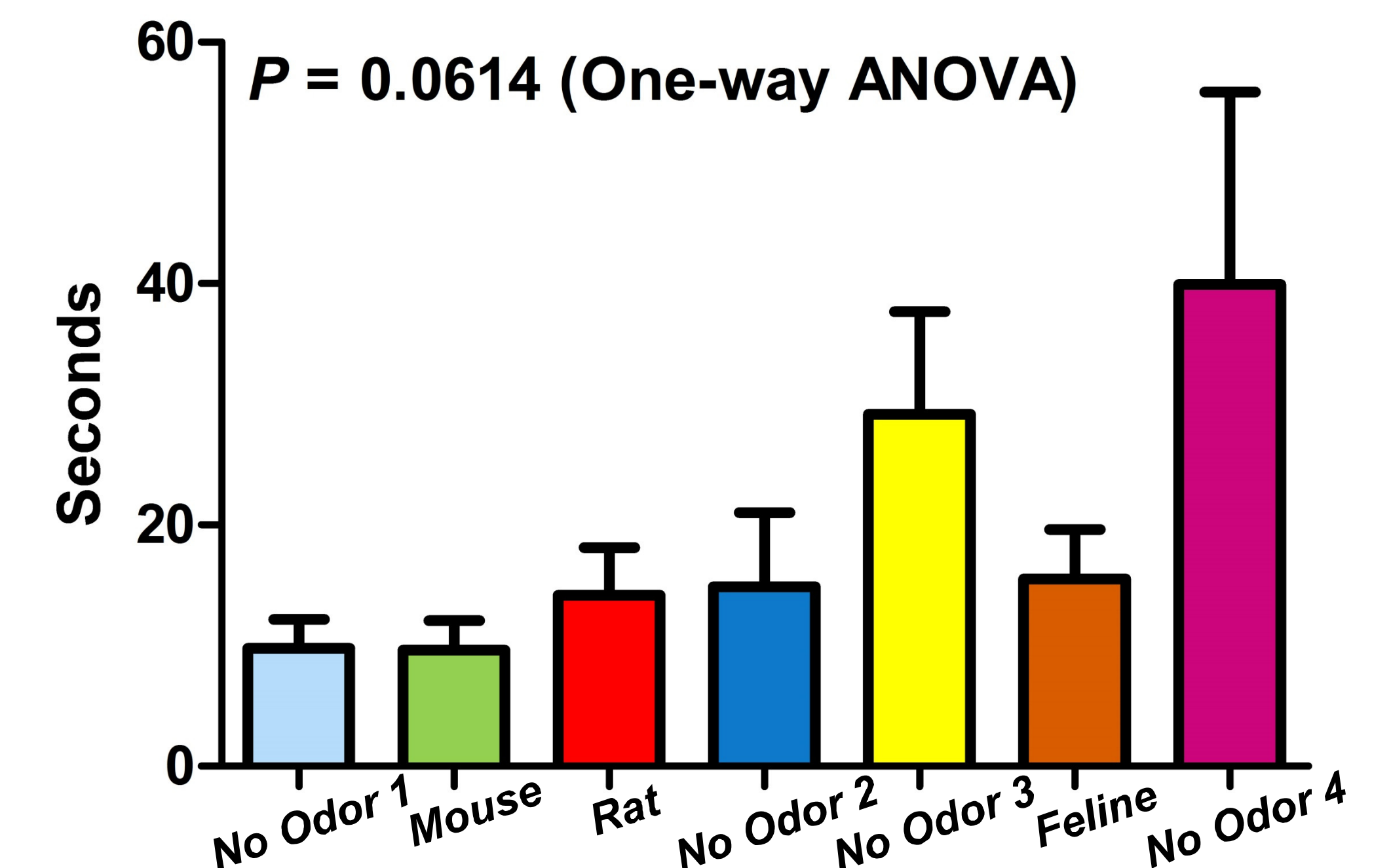
C) Mice did not avoid the feline odor as they spent equal amounts of time in zone 3 during all three stages.

B) Time Spent in Zone 3



B) Mice did not avoid the novel odors as they spent equal if not more time in zone 3 when there was novel odor present.

D) Mean Time Freezing in Zone 3 ***



D) Mice showed no fear in the presence of novel odors as the freezing behavior in zone 3 was not significantly different among any of the stages. ***ANY-maze incorrectly scored grooming behavior as freezing. Hand scoring of freezing and grooming is in progress***

Conclusion

- Mice did not avoid or freeze more when exposed to novel odors
- Mice exhibited grooming behavior while in the zone where novel odors were present
- Our data does not support current theories about innate fears of inbred mice to potential predator odors

Ongoing Studies

- Testing male CD1 and male and female C57BL/6 mice for similar responses
- Identifying proper cleaning protocols to eliminate animal odors on behavior equipment between subjects
- Reassessing innate fears of mice

Acknowledgements

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References

- ¹ Pritchett-Corning KR, Chang FT, Festing M. 2009. Breeding and Housing Laboratory Rats and Mice in the Same Room Does Not Affect the Growth or Reproduction of Either Species. JAALAS 48(5): 492-498.