Olfactory sensitivity in CD-1 mice for the sperm-attractant bourgeonal and some of its structural analogues

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Final Thesis
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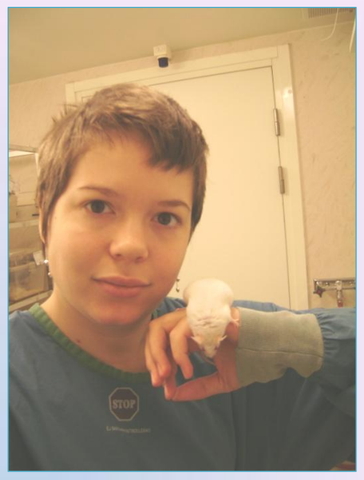

Aim

Determine olfactory detection thresholds for seven aromatic aldehydes, bourgeonal, helional, lyral, 3-phenylpropanal (3-PPA), cyclamal, canthoxal and lilial

Introduction

Little is known regarding olfactory capabilities for odorants other than body-borne odors in mice.

Therefore, olfactory detection thresholds are determined for seven aromatic aldehydes using an automated olfactometer.

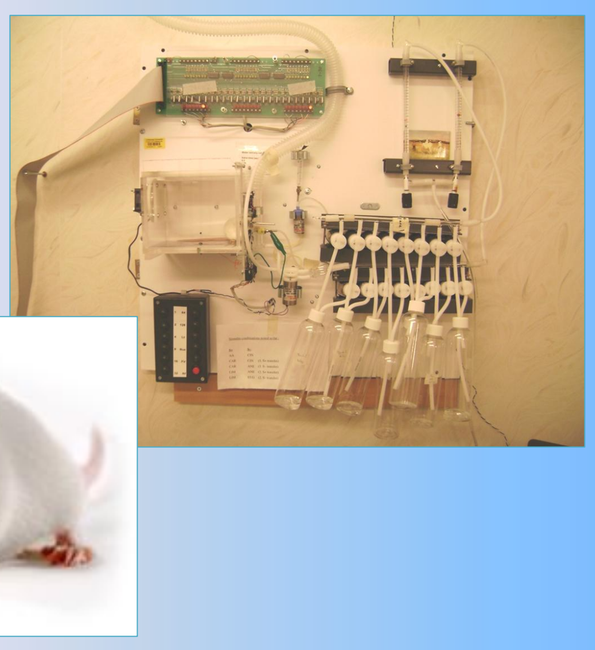

Figure 1. CD-1 mouse and automated olfactometer

Conclusion

The olfactory detection threshold value for bourgeonal is the by far lowest value ever reported for any odorant in mice.

Results

The animals discriminated odorant concentrations as low as:

10 ppb (parts per billion) for canthoxal and 3-PPA

1 ppb for helional, lilial, cyclamal and lyral

0.1 ppq (parts per quadrillion) for bourgeonal from the odorless solvent.

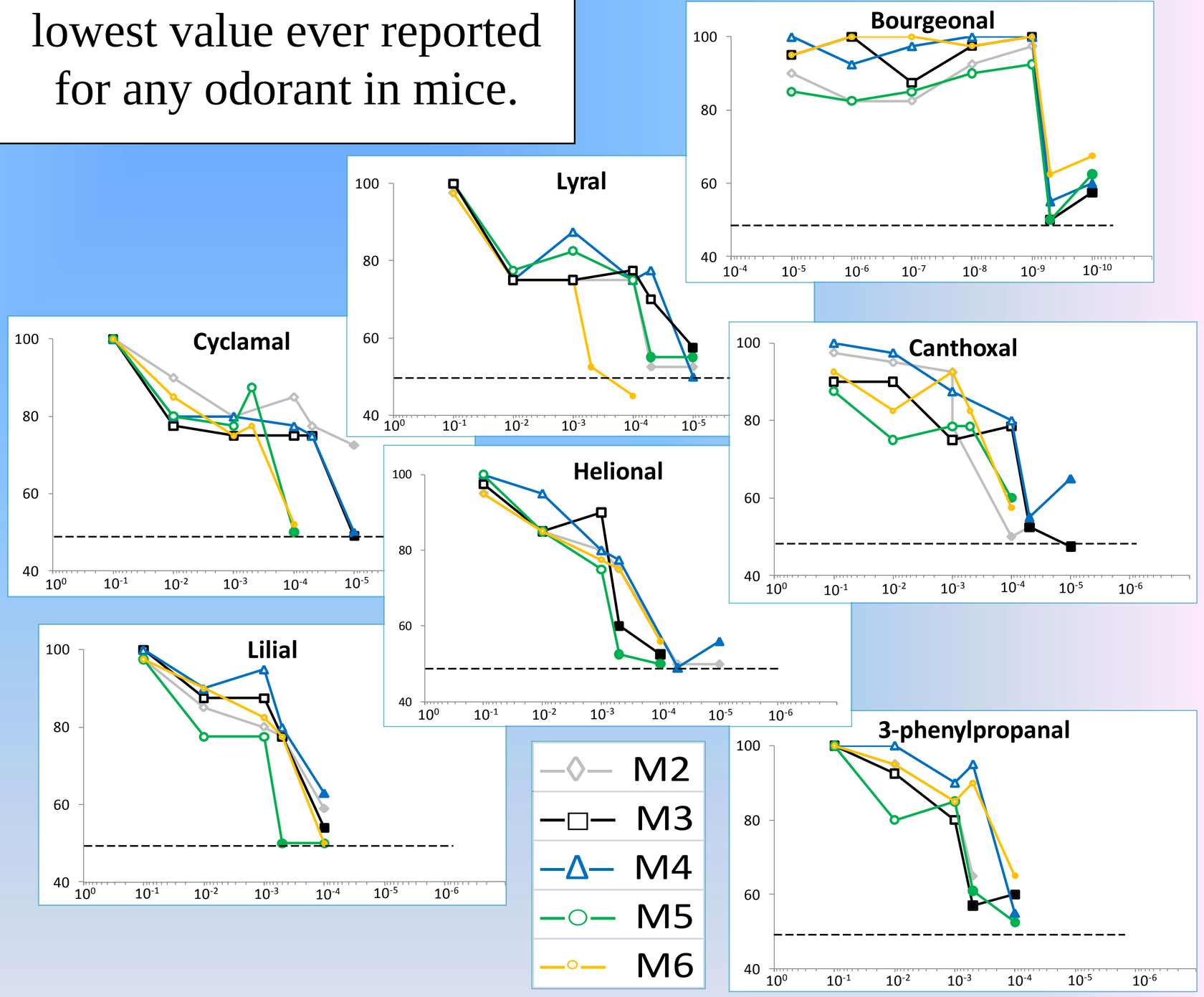

Figure 2. Discrimination performance (discrimination between odorant and odorless solvent) for seven aromatic aldehydes using five CD-1 mice. The x-axis display dilution and y-axis display percentage correct choices out of 40 trials. Dotted line indicate chance level and filled symbols indicate dilutions not discriminated significantly above chance level (binomial test, $P < 0.05$).

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