# Olfactory sensitivity in CD-1 mice for aliphatic carboxylic acids



# Selçuk Can Güven

Supervisor: Matthias Laska Molecular Genetics and Physiology Masters Program 2011

## Introduction

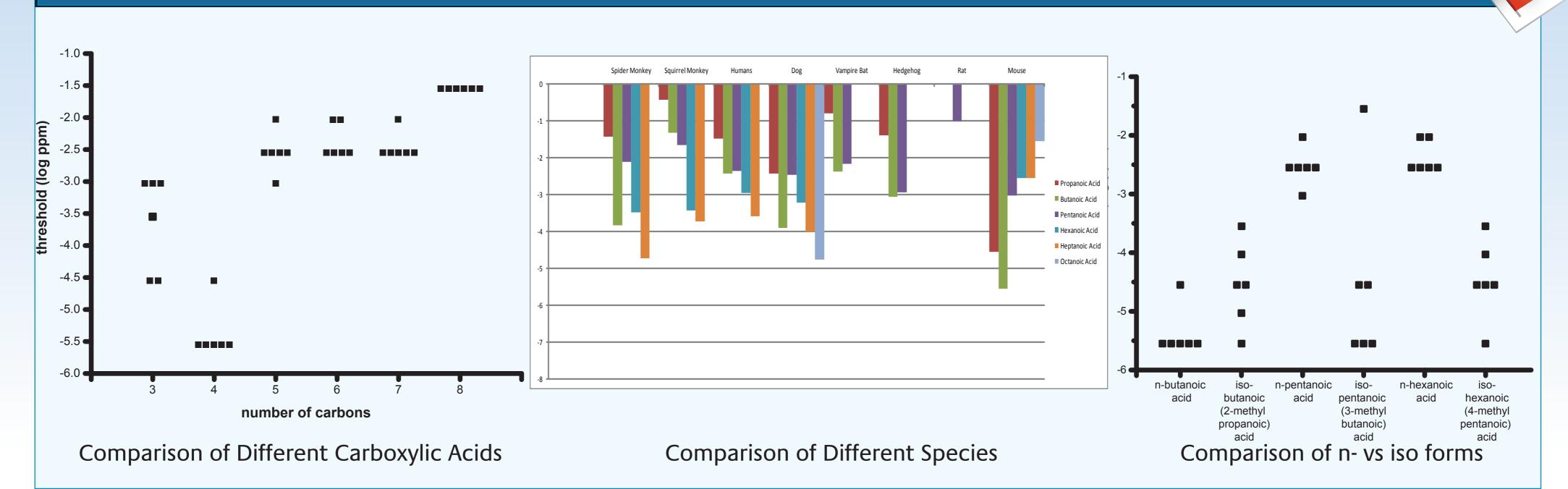
Genetics, physiology and anatomy of olfaction is widely studied in Mus musculus. However very few studies are conducted on organismal level, with regard to olfactory sensitivity.

Basic data on olfactory sensitivity for the choice of adequate stimulus concentrations in electrophysiological or functional imaging studies is very important.

#### Aim

- is to determine olfactory detection thresholds in CD-1 mice for aliphatic carboxylic acids
- is to assess the impact of molecular structural features on detectability of the odorants tested
- is to compare the threshold data obtained here to those of other species tested previously

#### Results



## Conclusions

- There is a U-shaped correlation between olfactory detection thresholds and carbon chain length of unbranched carboxylic acids.
- Branching of the carbon backbone and the position of the methyl group attached to it has an effect on detectability.
- A comparison of the present data with those obtained in other species found no clear correlation between a species' olfactory sensitivity and the size of its olfactory receptor repertoire.

### Materials & Methods

Six male CD-1 mice were tested with eleven odorants: n-propanoic acid, n-butanoic acid, n-pentanoic acid, n-hexanoic acid, n-heptanoic acid, n-octanoic acid, 2-methyl propanoic acid (iso-butanoic acid), 3-methyl butanoic acid (iso-pentanoic acid), 2-methyl pentanoic acid, 3-methyl pentanoic acid and 4-methyl pentanoic (iso-hexanoic) acid.

Olfactory detection thresholds were determined using an automated olfactometer and mice were trained using standard operant conditioning procedures

