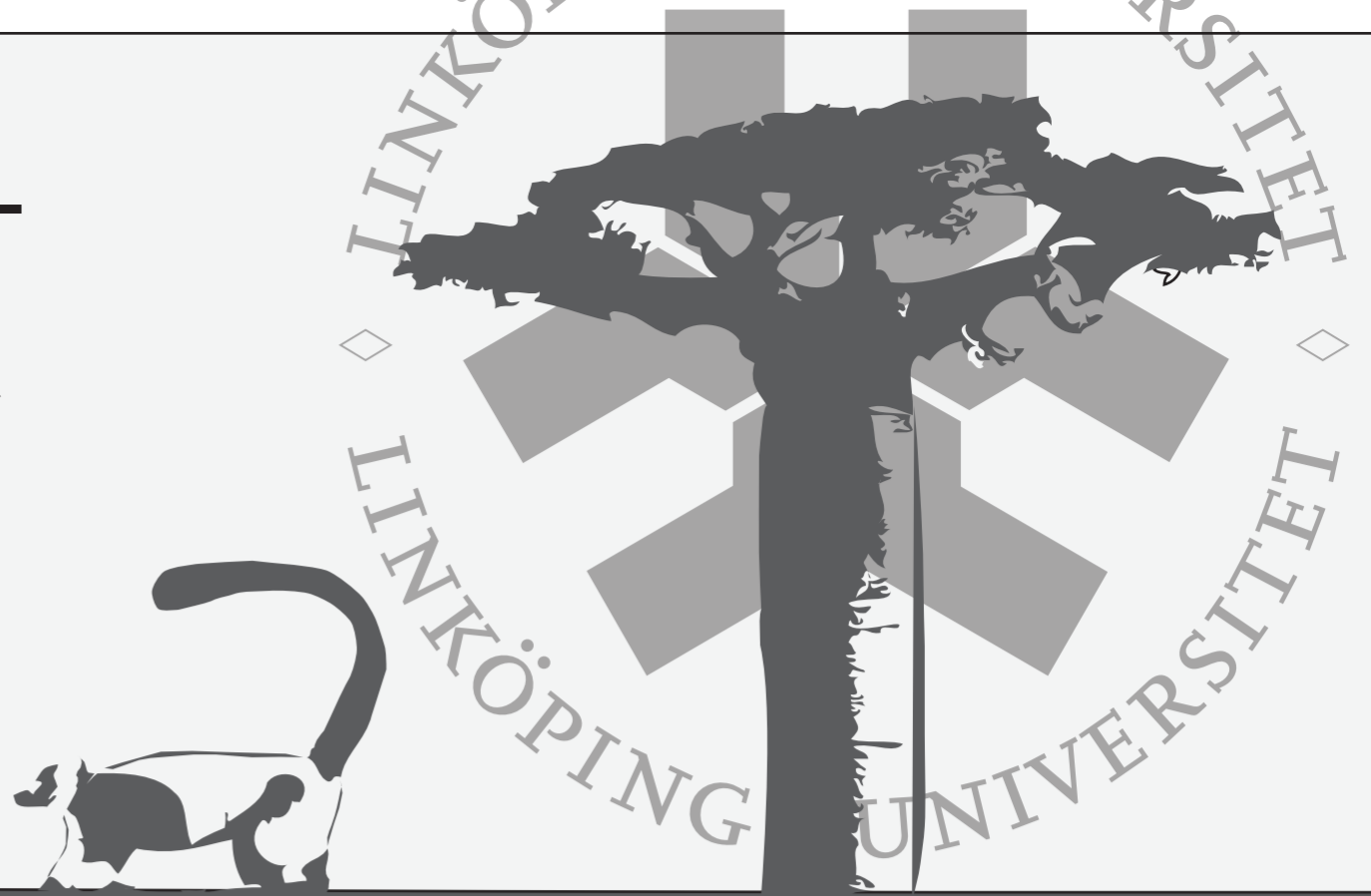


Taste responsiveness for food-associated sugars in the black and white ruffed lemur.

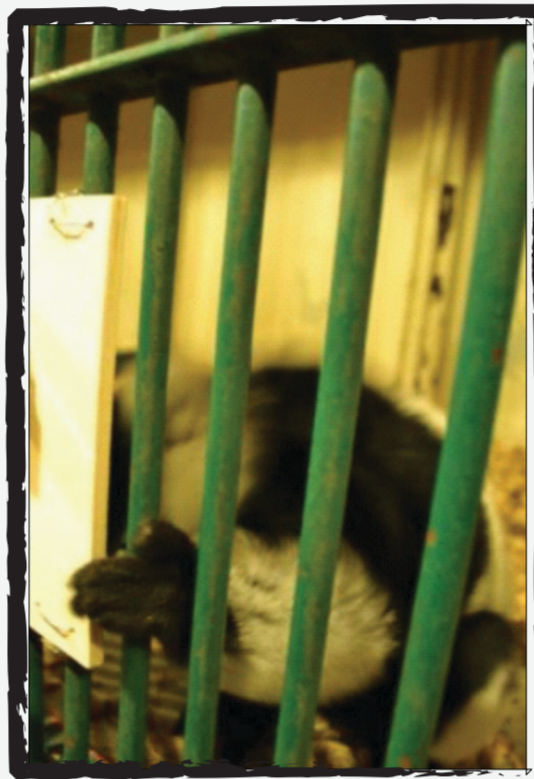
Alexander Wielbass

MSc project; Applied Ethology and Animal Biology, Linköping University
Supervisors: Matthias Laska, IFM Biology, Linköping University and Mats Amundin, IFM Biology, Linköping University.



Background: The mechanisms underlying the evolution of taste perception across the animal kingdom continues to be a subject of inquiry. Comparative studies of sugar taste sensitivity show notable differences among primate species, raising the question if these differences are due to diet specializations, phylogenetic relatedness or allometric relationships.

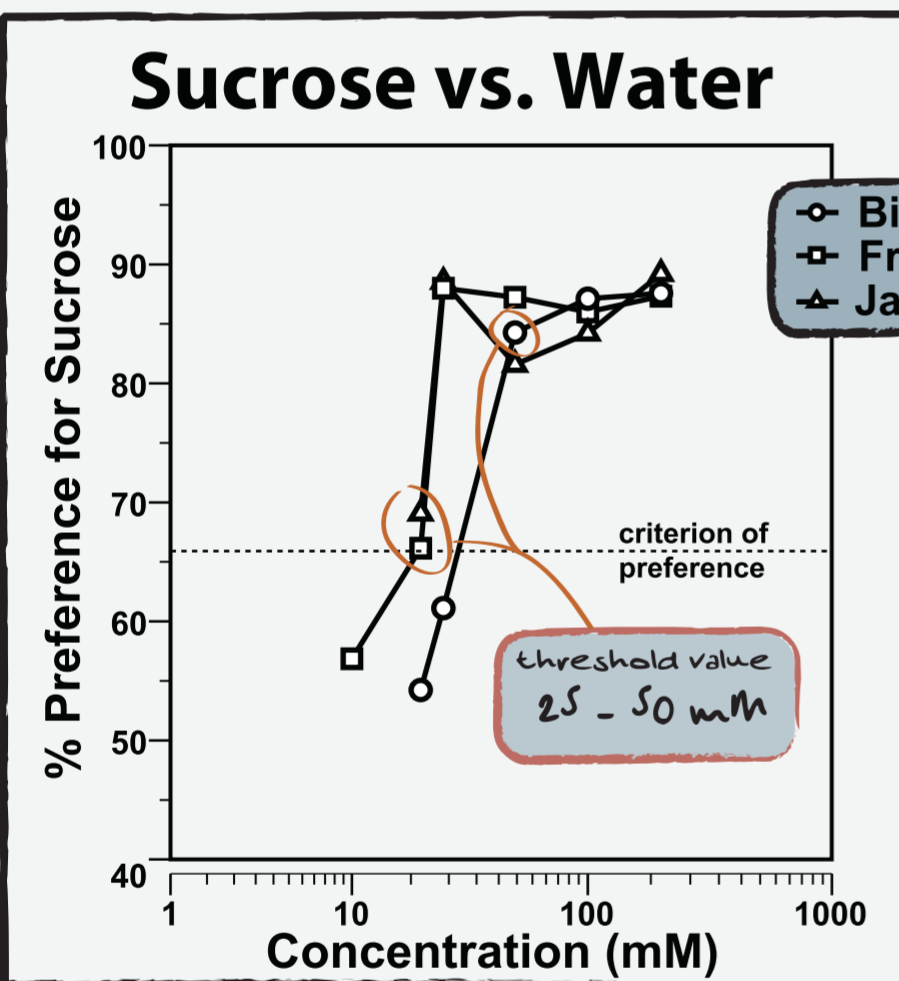
Aim: is two-fold: (1) to determine the lemurs' taste preference thresholds for sucrose, fructose, glucose, maltose, and lactose (2): To determine the lemurs' relative preferences of these five saccharides.



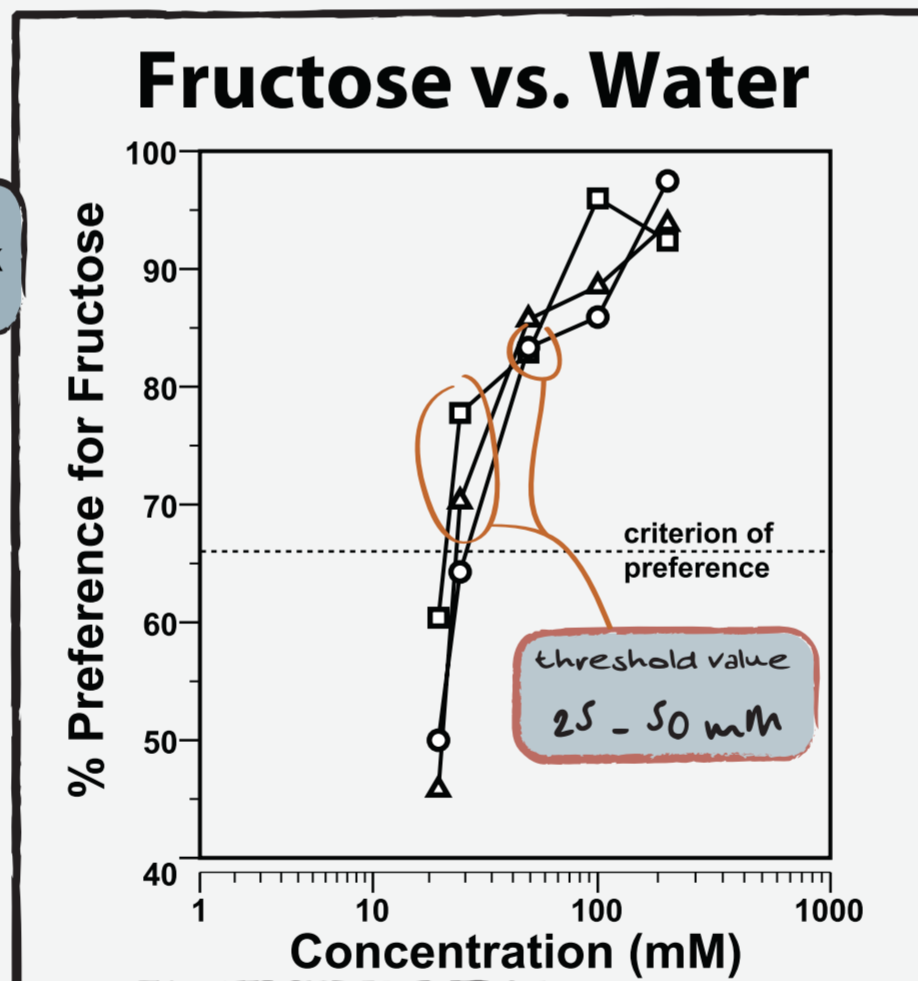
Conclusions:

The black and white ruffed lemur was shown to have a **medium to high taste sensitivity** towards the tested sugars compared to other primates.

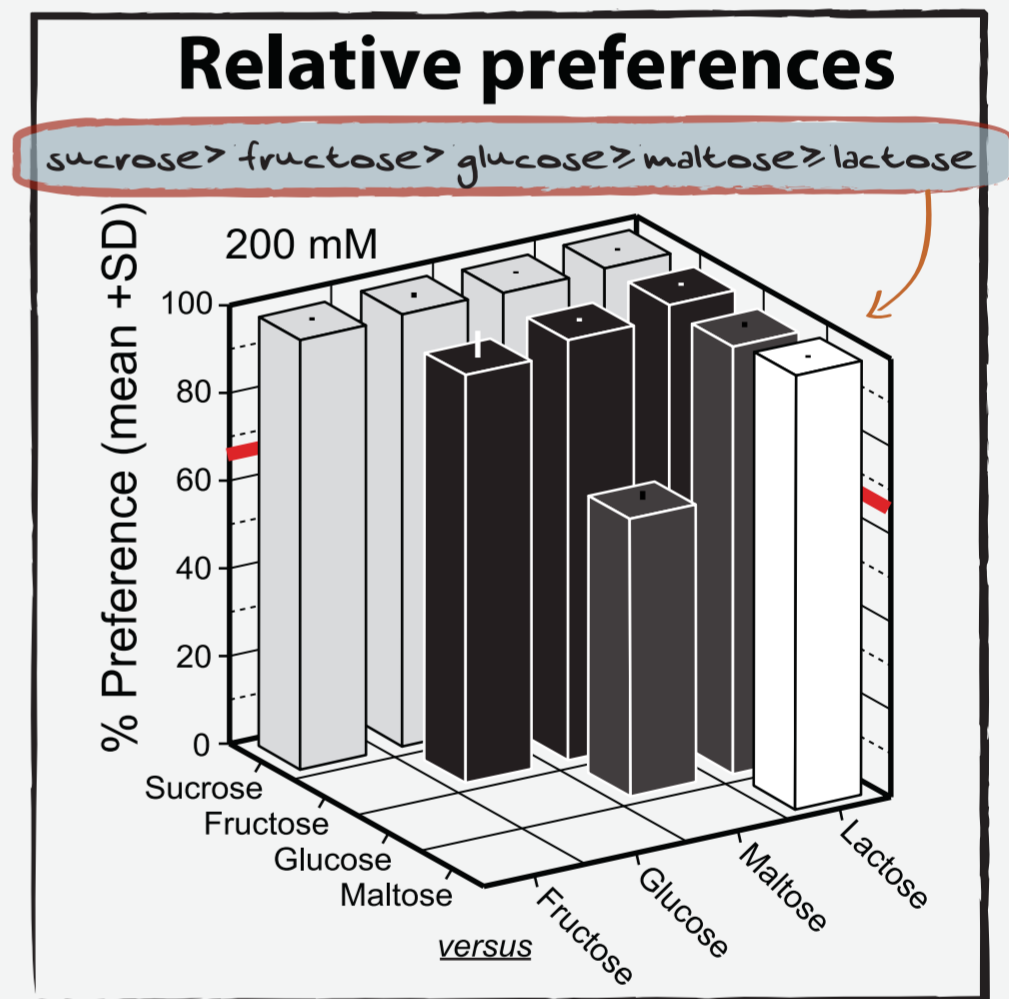
Sucrose was found to be the most preferred sugar, which is similar to the results from other primate species.



Taste responsiveness of the lemurs to aqueous solutions of sucrose tested against tap water. Each data point represents the mean value of 10 test trials of 1 min per individual.

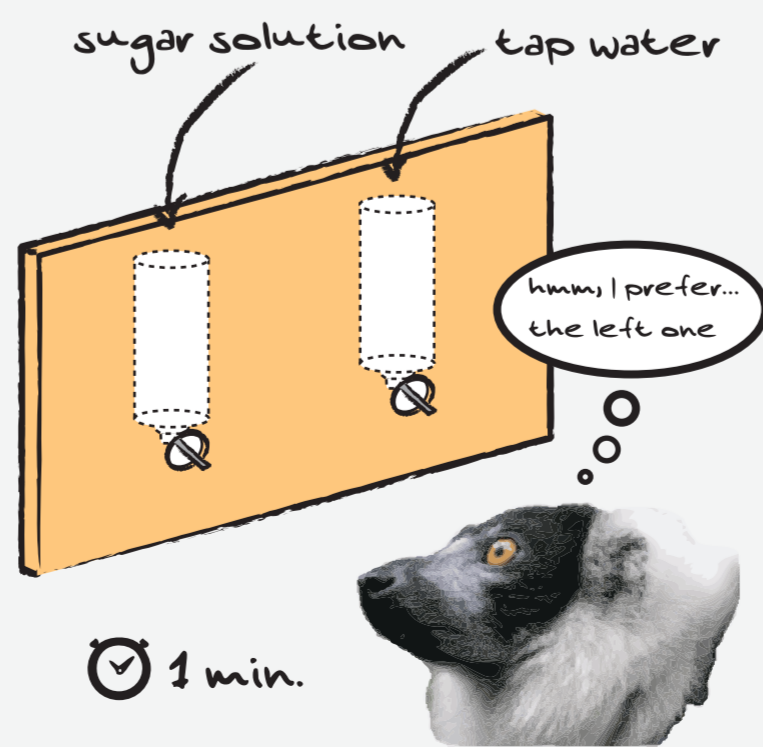


Taste responsiveness of the lemurs to aqueous solutions of fructose tested against tap water. Each data point represents the mean value of 10 test trials of 1 min per individual.



Relative taste preferences of the lemurs between two aqueous saccharide solutions presented at equimolar concentrations of 200 mM. Each bar represents the mean preference for the saccharide to the left relative to the saccharide to the right.

Results: Taste preference thresholds were found to be **25-50 mM for sucrose, 25-50 mM for fructose, 75 mM for glucose, 50 mM for maltose and 50 mM for lactose**. The lemurs significantly **preferred sucrose** over all other saccharides and fructose over glucose, maltose and lactose when presented at equimolar concentrations.



Methods: Taste preference thresholds were assessed using two-bottle preference tests of short duration, in where sugar concentrations were lowered in binary steps until the animals stop showing a significant preference between the two solutions (sugar solution vs. tap water or sugar vs. sugar solution).