P212

Theme: otology

Micro-CT analysis of rodent temporal bones: Identifying optimal species for otological research

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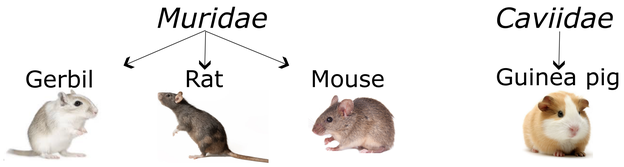
Introduction

The majority of otological research involves rodents



Only a paucity of literature describes and analyzes the middle and inner ear structures

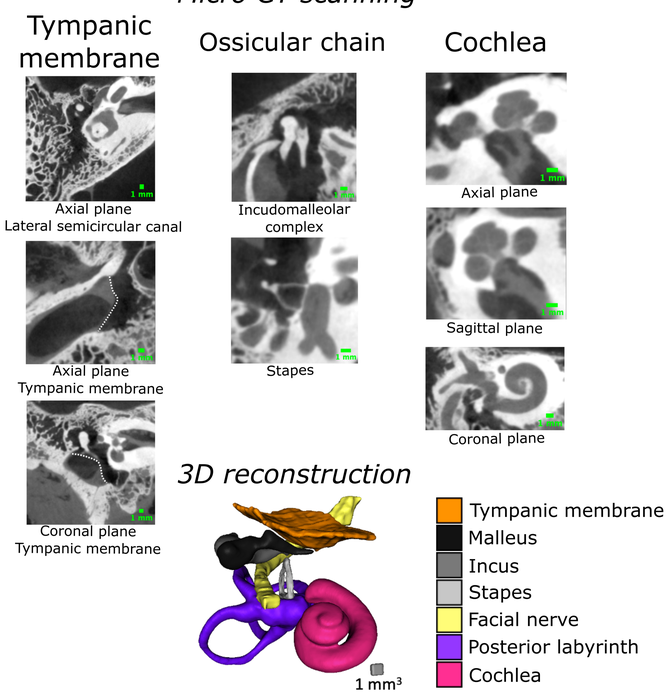
--> difficult to guide researchers in selecting the most suitable rodent species for otological research

Objective = compare the anatomy of the middle and inner ear and 3D reconstructions

Methods

Human, guinea pigs, gerbils, rats and mice
(2 heads of each rodent, 4 temporal bones)

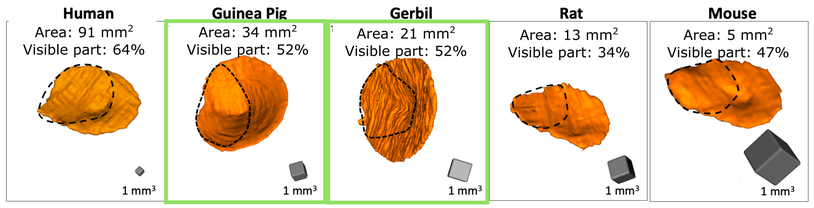
Micro CT scanning



Results

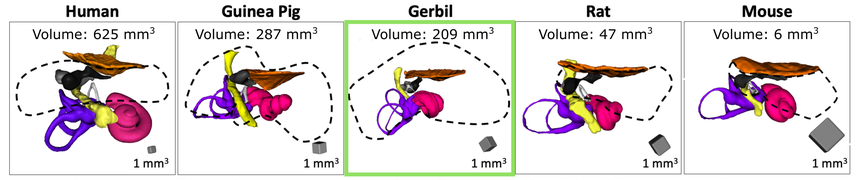
Middle ear

Tympanic membrane



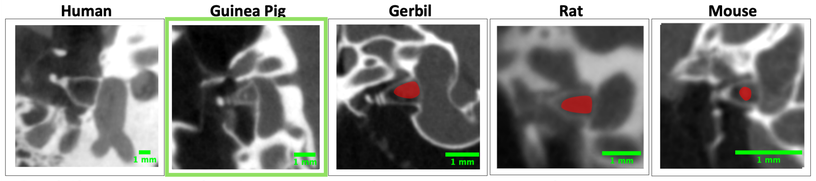
Visible part of the tympanic membrane though the external auditory canal

Tympanic cavity



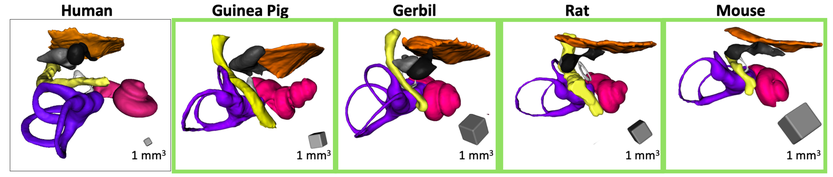
Volume of the tympanic cavity = related to the animal size
Exception = gerbils (209 mm³)

Ossicular chain: Stapes



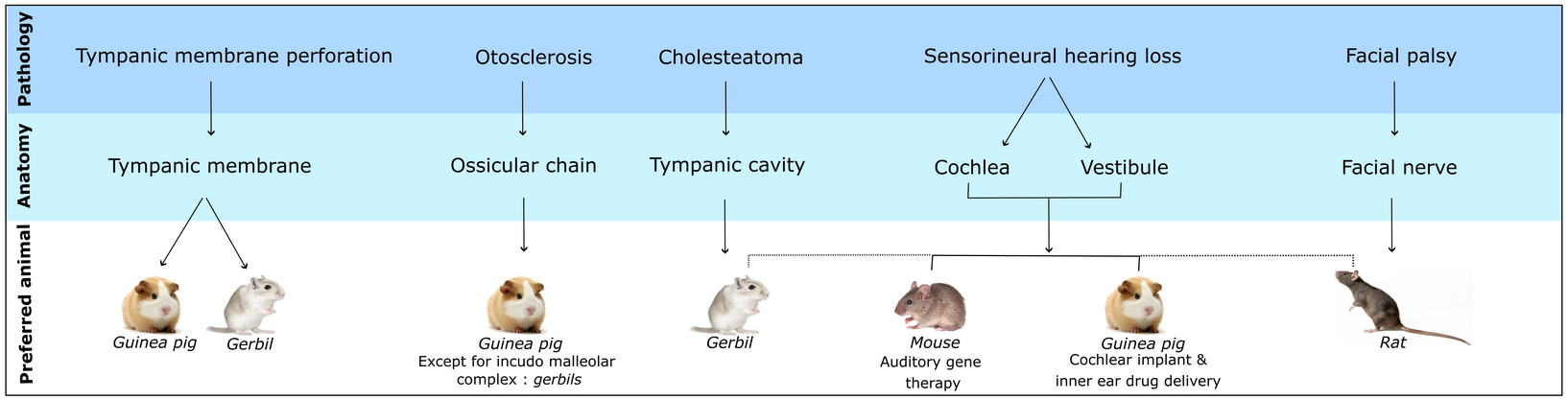
Gerbils, rats and mice: internal carotid artery between stapes crura

Inner ear



Human	Guinea Pig	Gerbil	Rat	Mouse
Cochlea: 2.5 turns	Cochlea: 3.5 turns	Cochlea:3 turns	Cochlea: 2.5 turns	Cochlea: 2 turns
78 mm³	11 mm³	5 mm³	4 mm³	1.1 mm³

Conclusion



Micro-CT analysis of rodents can guide researchers in selecting the most suitable middle or inner ear models based on specific anatomical interests. Our findings highlight the strengths and limitations of each species, providing essential insights that could enhance the precision and applicability of otological studies.

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