

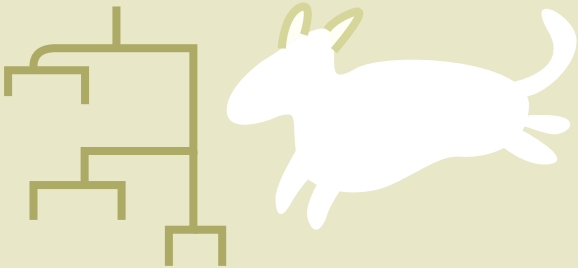
Linking form to function:
A scoping review of the evolution of paranasal sinuses in mammals

Method

24
articles
included

- Ovid MEDLINE database
- Analysis of representative species across mammalian orders

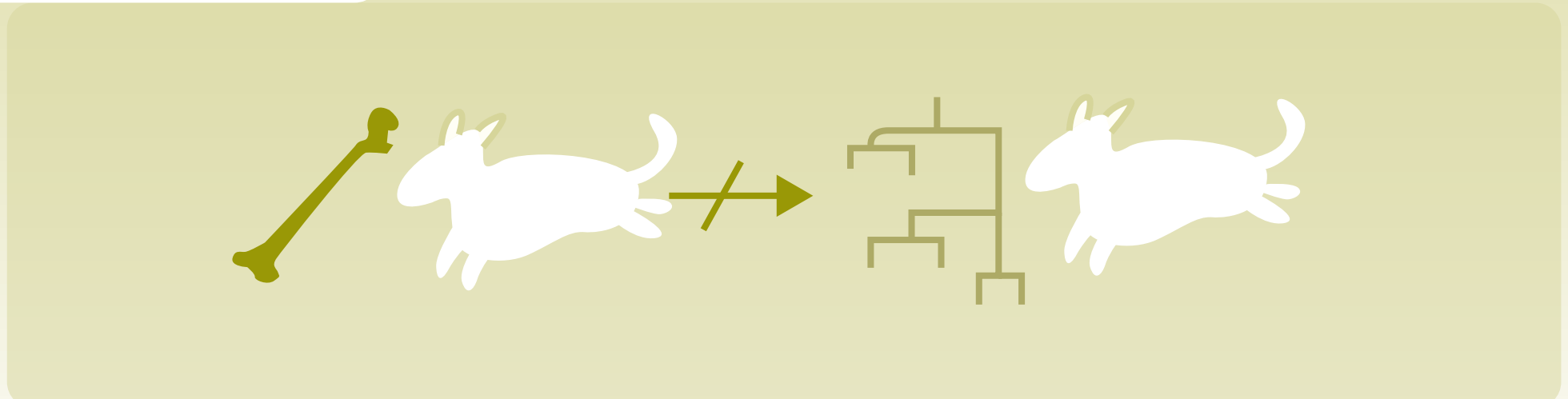
Phylogenetic



Phenetic

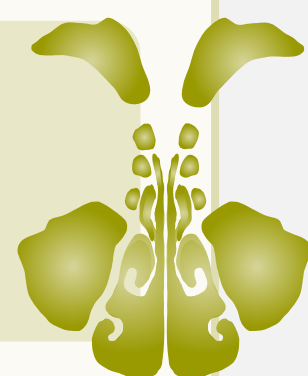


Distribution

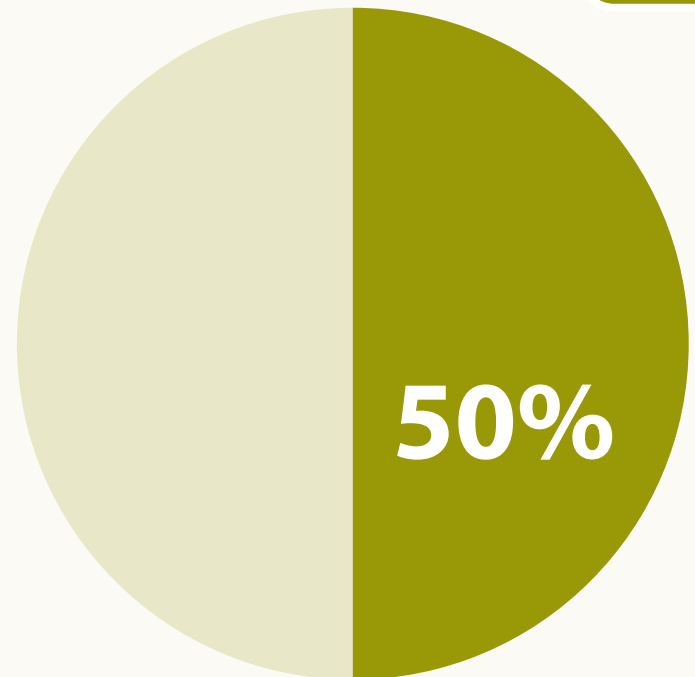


Phenetic clustering by sinus characteristics often contradicted phylogeny

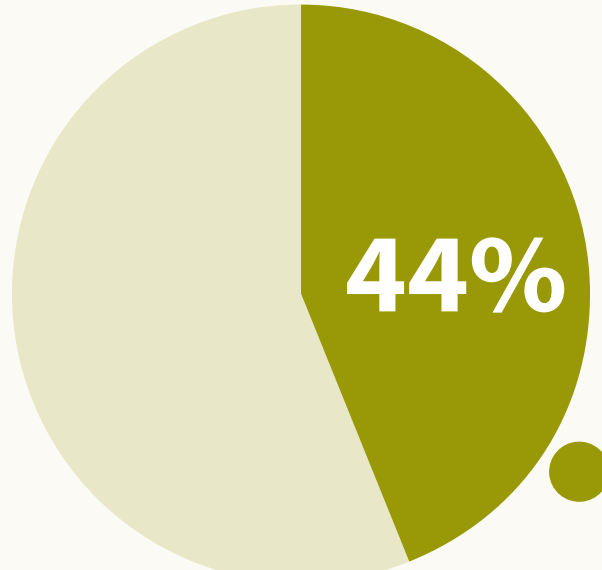
Suggestive of parallel evolution in unrelated species



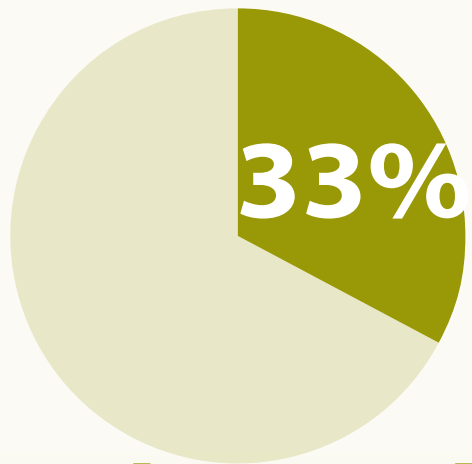
Presence



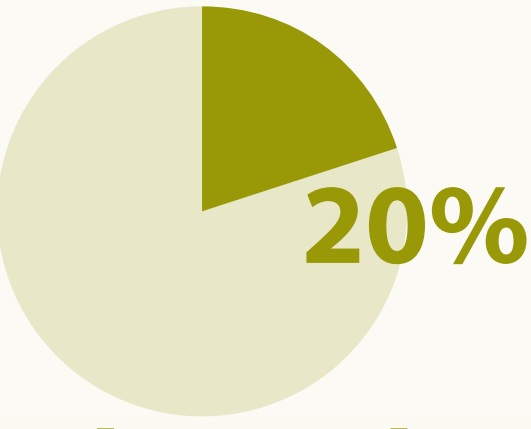
Maxillary



Frontal



Sphenoid



Ethmoid

Drainage orientation

Despite variation in skull morphology, drainage pathways remained conserved



Significantly more prevalent in behaviorally complex orders (71%) compared to those with basal behavioral grades (22%)

- Paranasal sinus distribution in mammals appears more ecologically than phylogenetically determined
- Convergent evolution likely influences sinus presence
- Conserved drainage patterns suggest developmental constraints over selective advantages