discovering a new rule in the evolution of mammals

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what's a rule?

Trend in change among closely related species in mammalian morphological evolution.

E.g., Bergmann's rule.

(general trend; not a strict rule; plenty of exceptions)
'my' rule is about evolutionary allometry
size-related shape changes among species

FIGURE 4.8  Body size and limb design in pelycosaurus. Relative sizes of three pelycosaur species are illustrated. The femurs of each, drawn to the same length, are shown to the right of each species. The larger pelycosaur carries a relatively larger mass, and its more robust femur reflects this supportive demand.
'my' rule is about **evolutionary allometry** of crania (averaged across adults within each species)
1st we showed it in 4 placental orders* (SYNTHESYS 2007)

*ca subfam./tribe representative of an order
now hoping to show it in several more
(SYNTHESYS 2015 + 2007 + Leverhulme 2004) samples

3D configuration

new & old – $N_{\text{total}} = 6483$
and it looks promising!

allometric analyses
RESULTS?

e.g.,
$N_{sp.} = 13$
size max/min = 2.3
$R^2_{(allom. var.)} = 16\%$

visualization ca. x4
(allometric predictions min-max
in side view – wireframe/TPS)
then, if it's a pervasive macroevolutionary trend ('rule'?), why is it so?
why?? don't ask me: I am a *patternologist* 'measuring the shape of hills behind the fog'
(modified from Bookstein)
my 'favourite' guess: evodevo-constraints

Ontogeny of the cranial system in Laonastes aenigmamus

Anthony Herrel,†, Anne-Claire Fabre,‡, § Jean-Pierre Hugot,‡ Kham Keovichit,‡ Dominique Adriaens,† Loes Brabant,‡ Luc Van Hoorebeke‡ and Raphael Corsette§

Three-dimensional cranial ontogeny in pantherines (Panthera leo, P. onca, P. pardus, P. tigris; Carnivora, Felidae)

VALENTINA SEGURA1,2§, GUILLERMO H. CASSINI1,3,4 and FRANCESCO J. PREVOSTI1,5
conclusions?

with low cost morphometrics and great museum collections, mammals may have another 'evo-rule'
but without support from SYNTHESYS, this would not have happened
if I may, 2 suggestions for SYNTHESYS 4?

feedback from applicants (even if not funded)

'capitalize' on visits by experts
(maybe in coop. with local universities):

practical demos? lectures? workshops?
many thanks for inviting me! & 1000 thanks to: SYNTHESYS, all organizers & administrators, museum curators and staff, and all collaborators including recent ones on big cats and kangaroos