DEHNELŮV FENOMÉN

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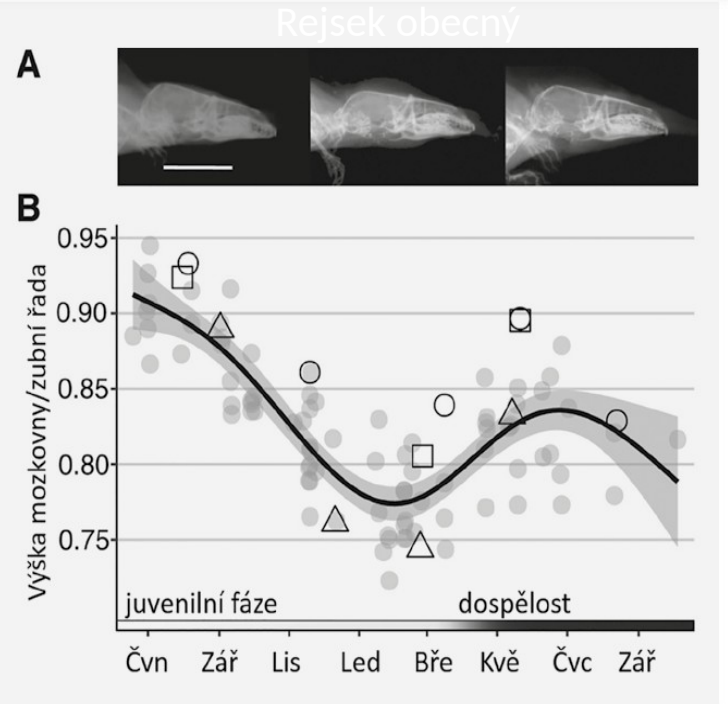
Dehnelův fenomén

- August Dehnel (1949)
- Dina Dechmann (2017)
- malí savci – rychlý metabolismus
- bez migrace / hibernace
- zima = zmenšení, jaro = nárůst zpět



Dehnelův fenomén

- Rejsek obecný
- Lasice kolčava
- Lasice hranostaj
- Krtek obecný
-
- nejasné
- tlak -> nedostatek potravy / teplota
    - krtek obecný / krtek iberský

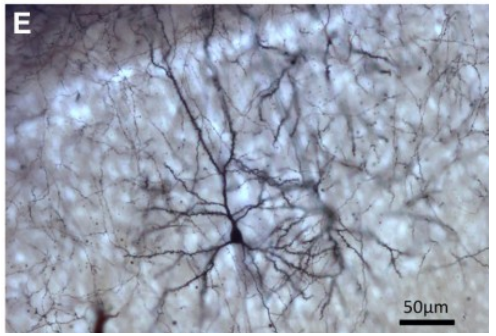
STEJNÝ
ŽIVOTNÍ STYL

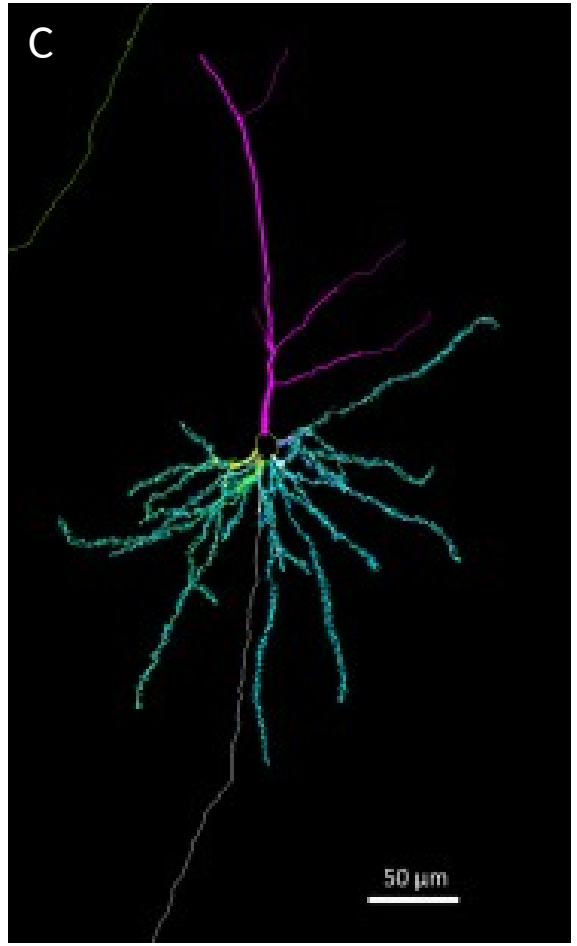
Změny

- energeticky náročné orgány
  - mozek
  - mozková hmota (mass)
  - slezina a játra
- kostra
  - mozkovna (braincase)

Figure 1: Pictures showing the difference in depth of the braincase in S. araneus (J. Taylor)

Photo J. Kupryjanowicz





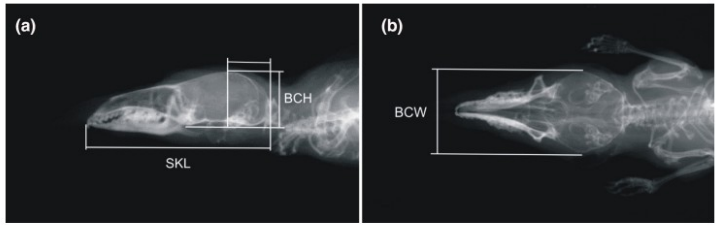


FIGURE 2 X-ray images of *Sorex araneus* skulls and linear measurements taken from the images: (a) skull length (SKL), skull (braincase) height (BCH), and (b) skull width (BCW). See text for details.

Jak to funguj

- předpoklady -> málo dat
    - zima -> aktivace určitých mozkových center -> úprava enzymatického řízení -> resorpce tkání
- kosti – resorpce tkání -> aktivace osteoklastů?
- lebka – vstřebávání vazivových tkání a lebečních švů
- mozek – není zcela jasné, předpoklad -> absorpce mozkové tkáně
-

Změna velikosti mozku

- juvenil x subadult x dospělci
- X -> - 16,1 % -> + 9,8 %
- větší úbytek u samic

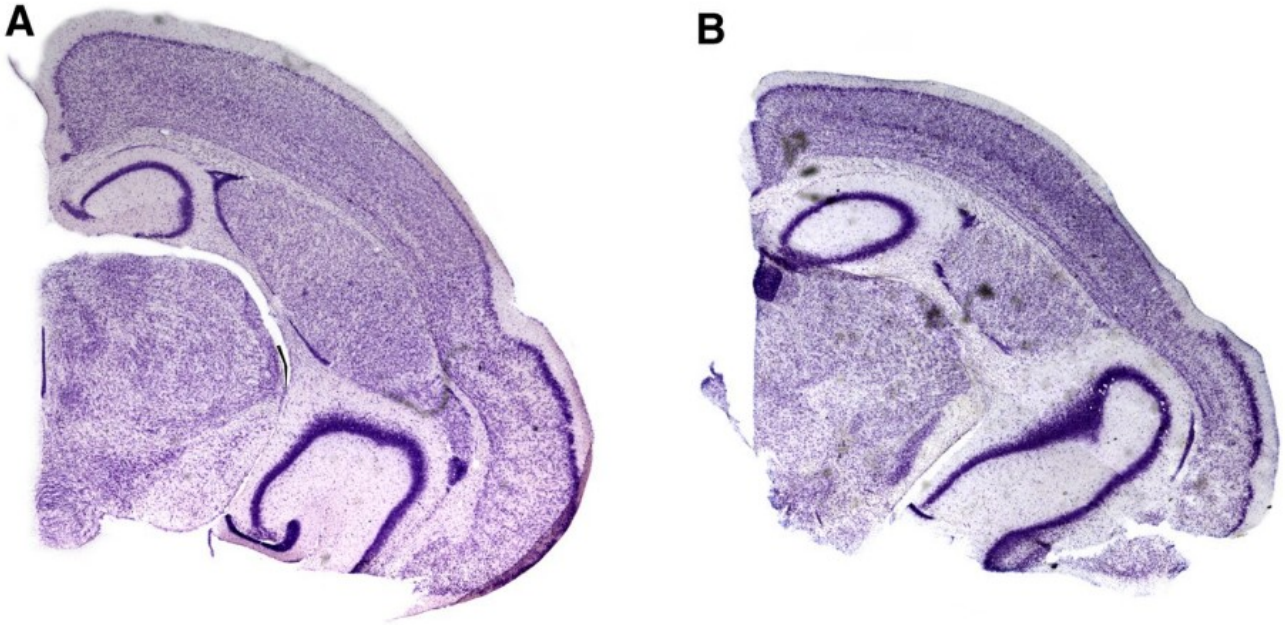
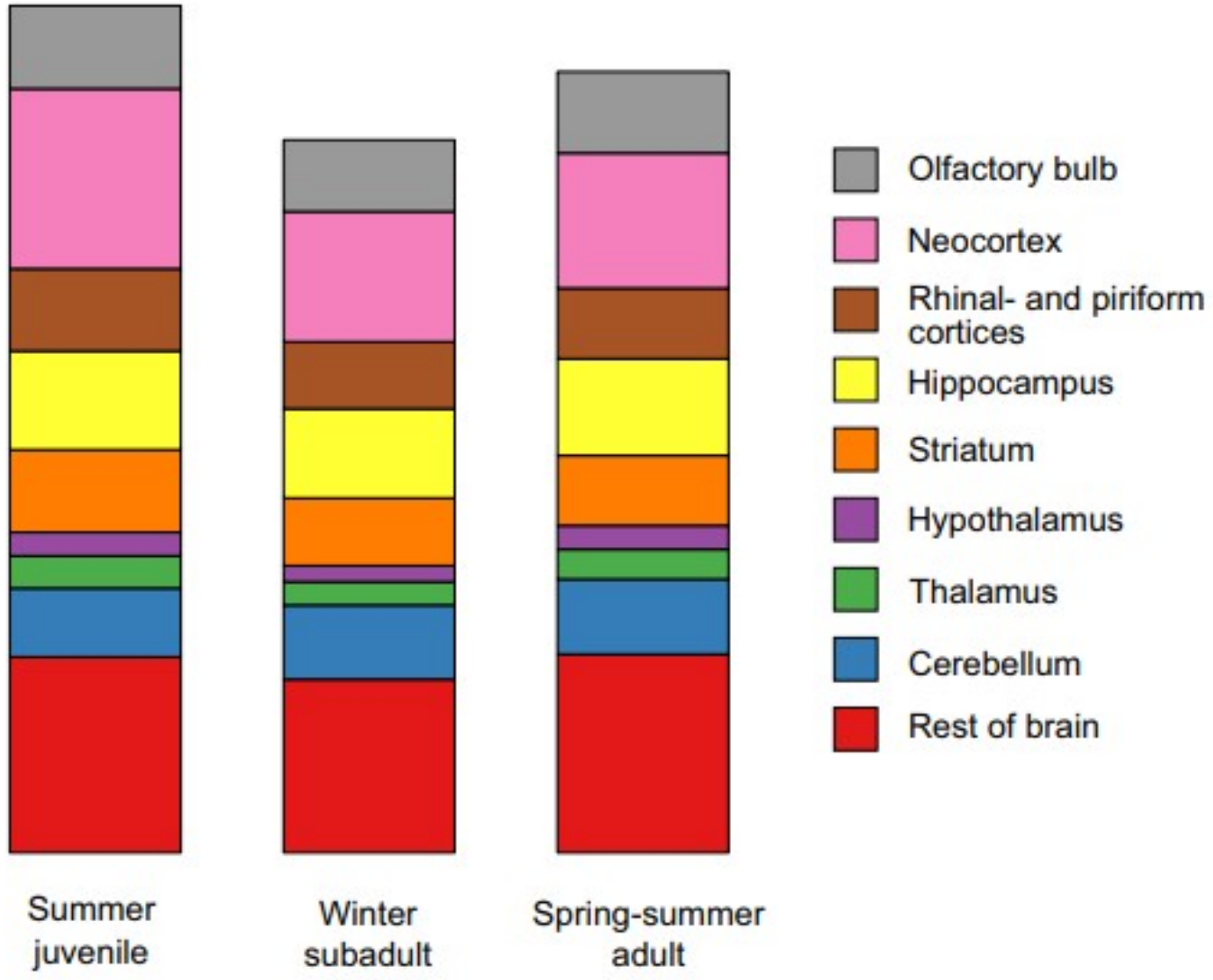
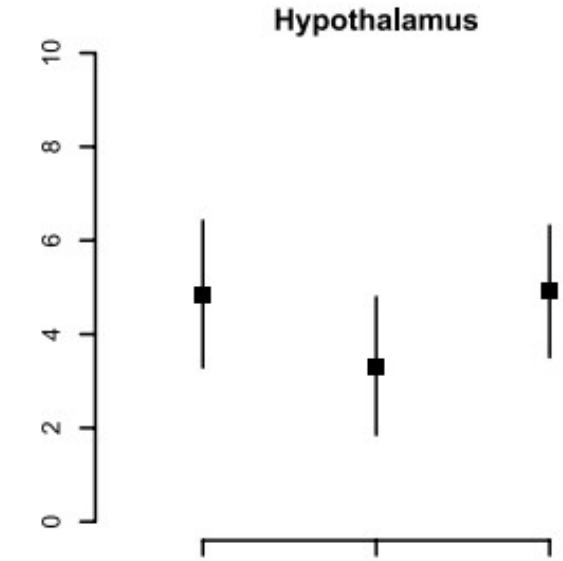
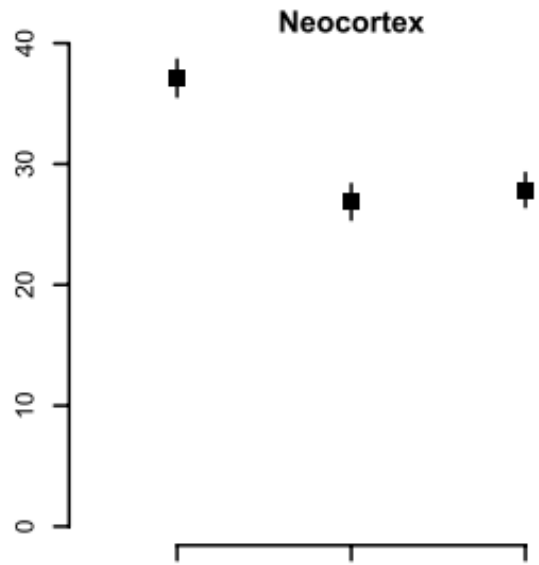


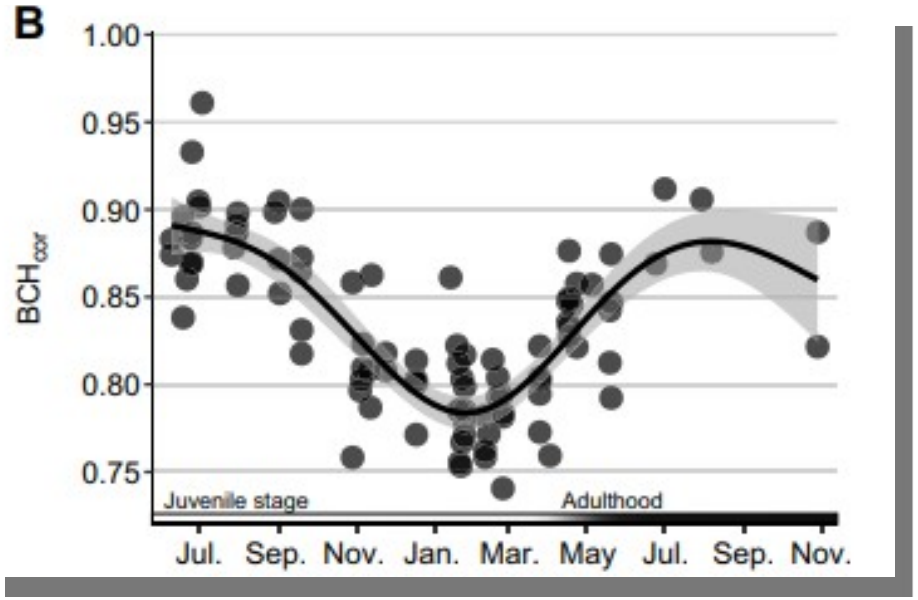
Fig. 7 Exemplary brain coronal sections cut at a similar level in a summer juvenile (**a**) and a winter subadult (**b**) and depicted at the same scale

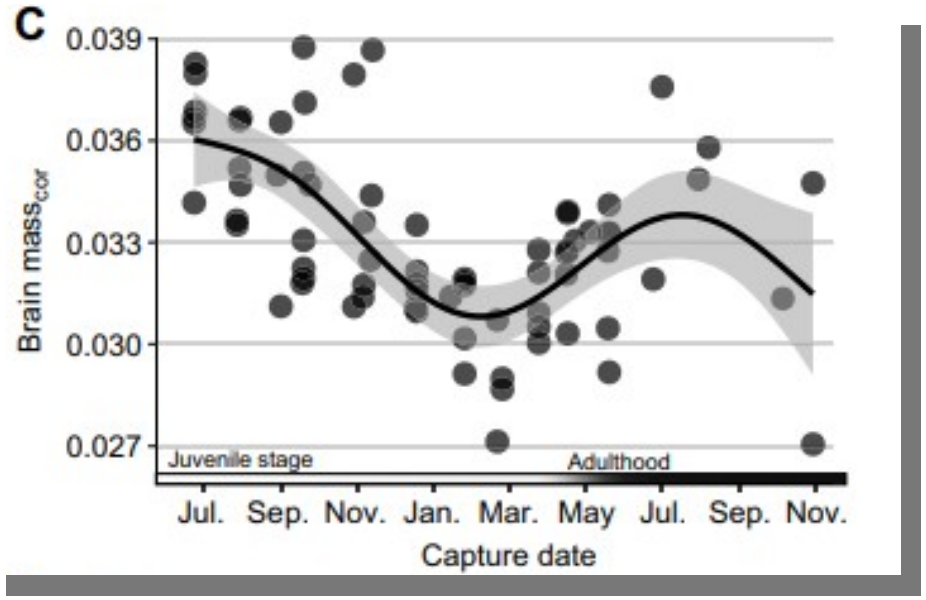

Olfactory bulb
Neocortex
Rhinal- and piriform cortices
Hippocampus
Striatum
Hypothalamus
Thalamus
Cerebellum
Rest of brain
Summer juvenile
Winter subadult
Spring-summer adult

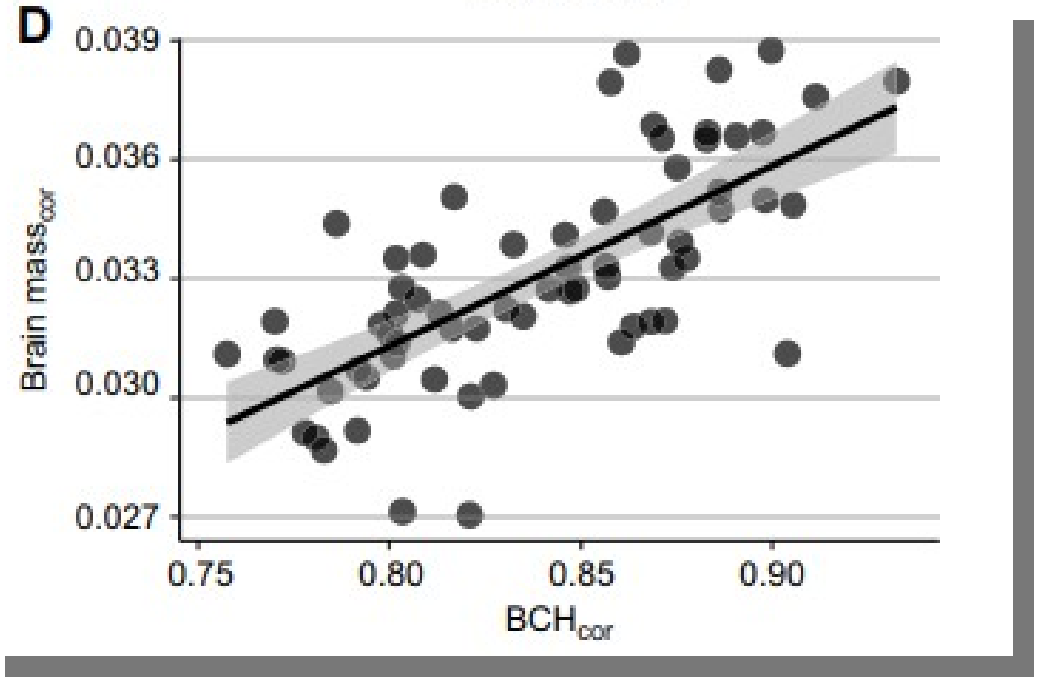

Hypothalamus
0
2
4
6
8
10


Neocortex
0
10
20
30
40

A
volume/tooth row e-8
200
180
160
140
120
Summer
juvenile
Winter
subadult
Spring-summer
adult







Korelace mezi B a C

Ovlivnění kognitivní funkce mozku

- potvrzení změny (- 21,4%; +17,0 %) -> brain mass

- experiment -> zdroj jídla
- kompromis -> energetika vs kognitivní funkce
  - energetická úspora > větší mozek
- Neocortex a hippocampus

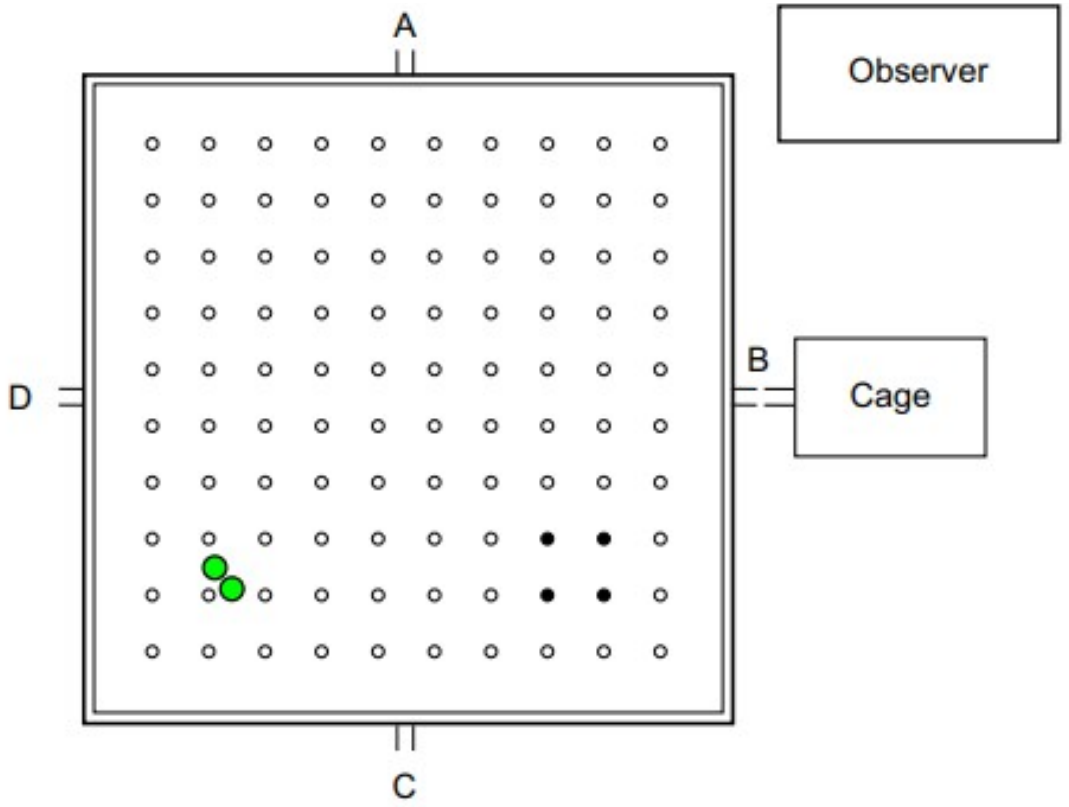
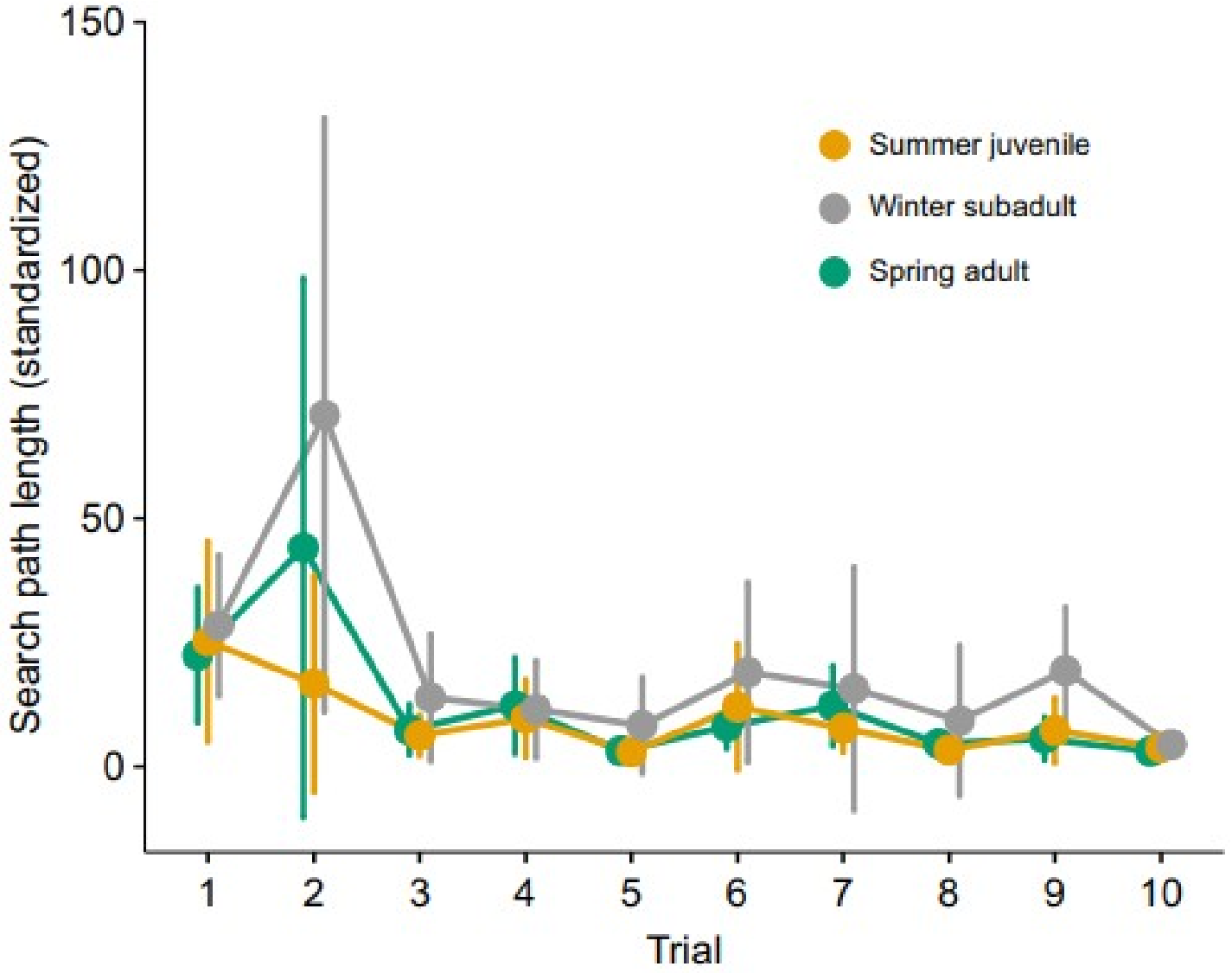
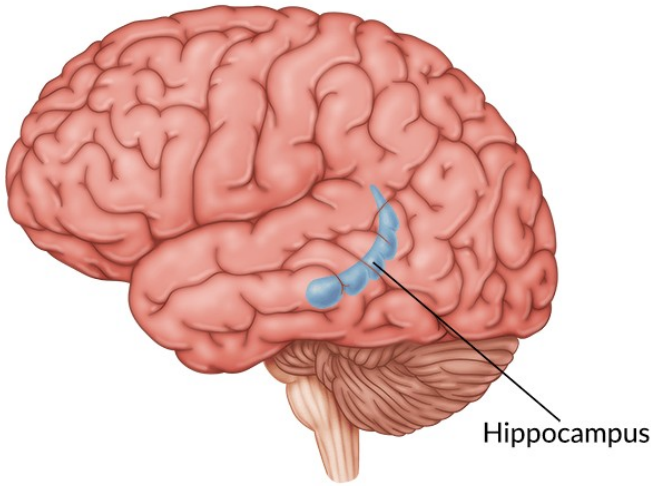
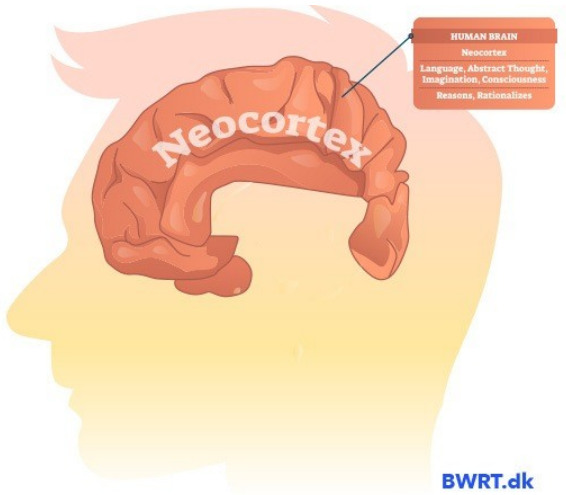


Fig. 1. Experimental setting for behavioral tests. Open circles represent empty wells, green circles the location of the light cue and black circles the wells with food items. The four entrances are located at the cardinal points (A, B, C and D). The cage was connected to a randomly chosen entrance during each trial. See Materials and methods for details.

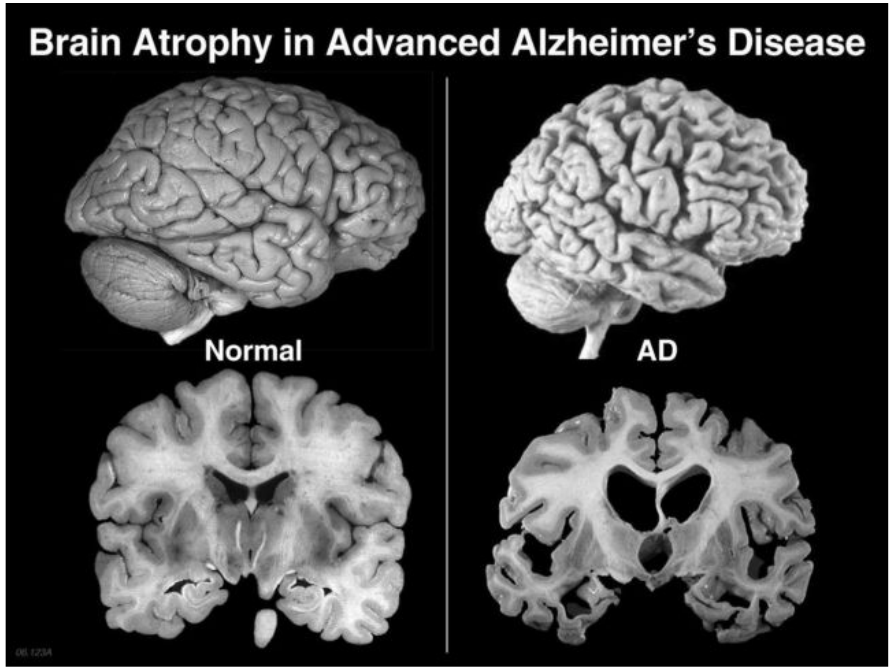

Search path length (standardized)
150
100
50
0
1
2
3
4
5
6
7
8
9
10
Trial
Summer juvenile
Winter subadult
Spring adult

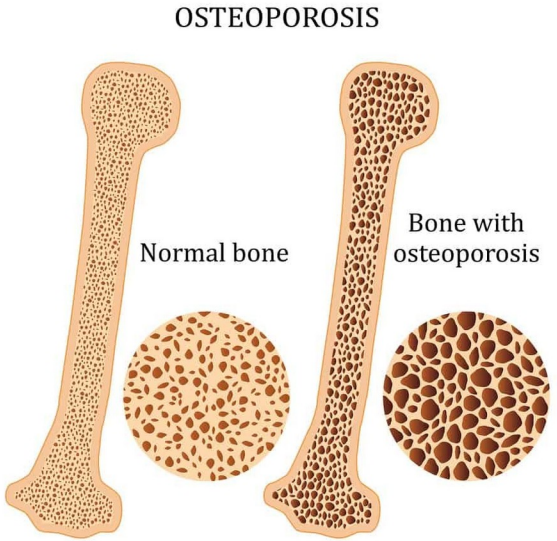

Hippocampus


HUMAN BRAIN
Neocortex
Language, Abstract Thought, Imagination, Consciousness
Reasons, Rationalizes
Neocortex
BWRT.dk

Využití pro nás?

- neurodegenerativní onemocnění
- osteoporóza





Zdroje

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