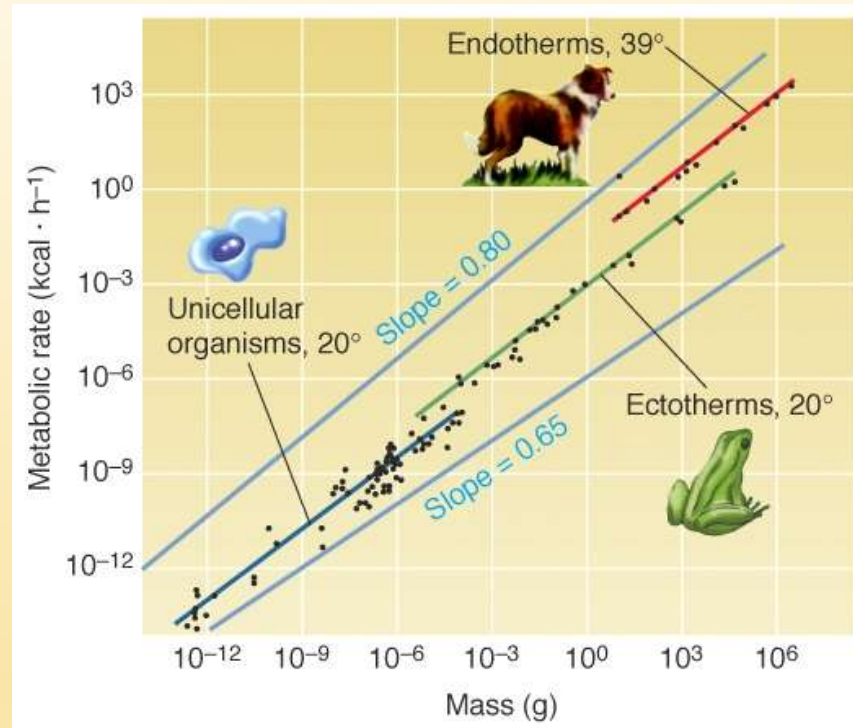


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Energetika metabolismu



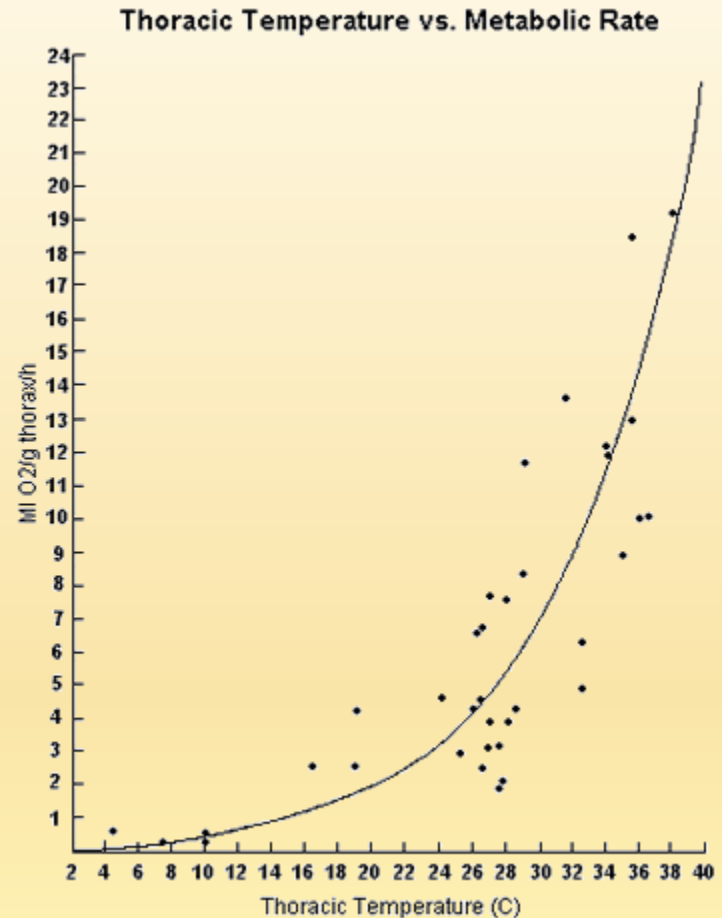
Oldřich Nedvěd

Jihočeská univerzita v Českých Budějovicích



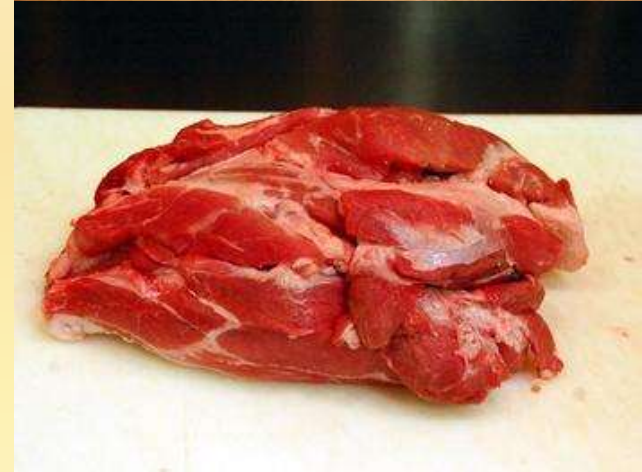
Metabolismus

- Energetické potřeby, metabolismus. Teplota, rychlost funkcí, životní limity.
- reaction rate of enzymes = enzyme activity
 - $mr = \exp(a+kT)$
 - $Q_{10} = 2-3$



Respirační kvocient

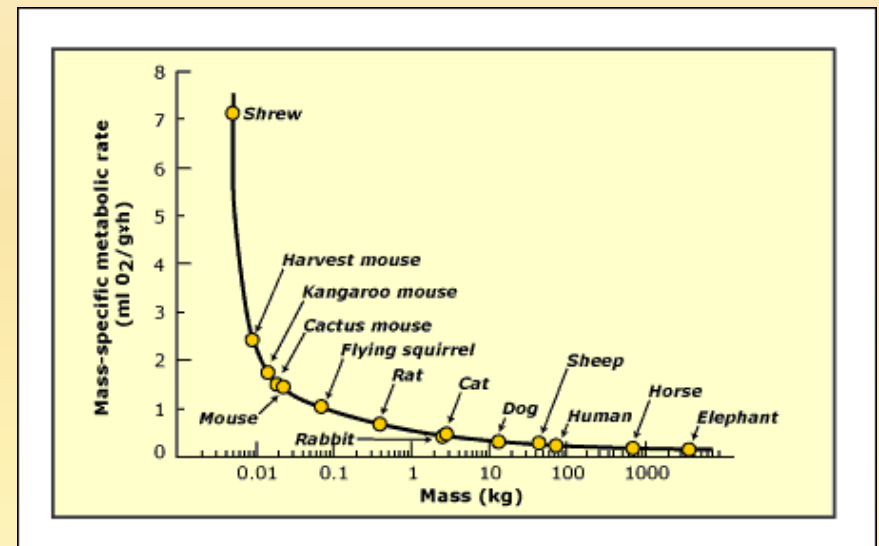
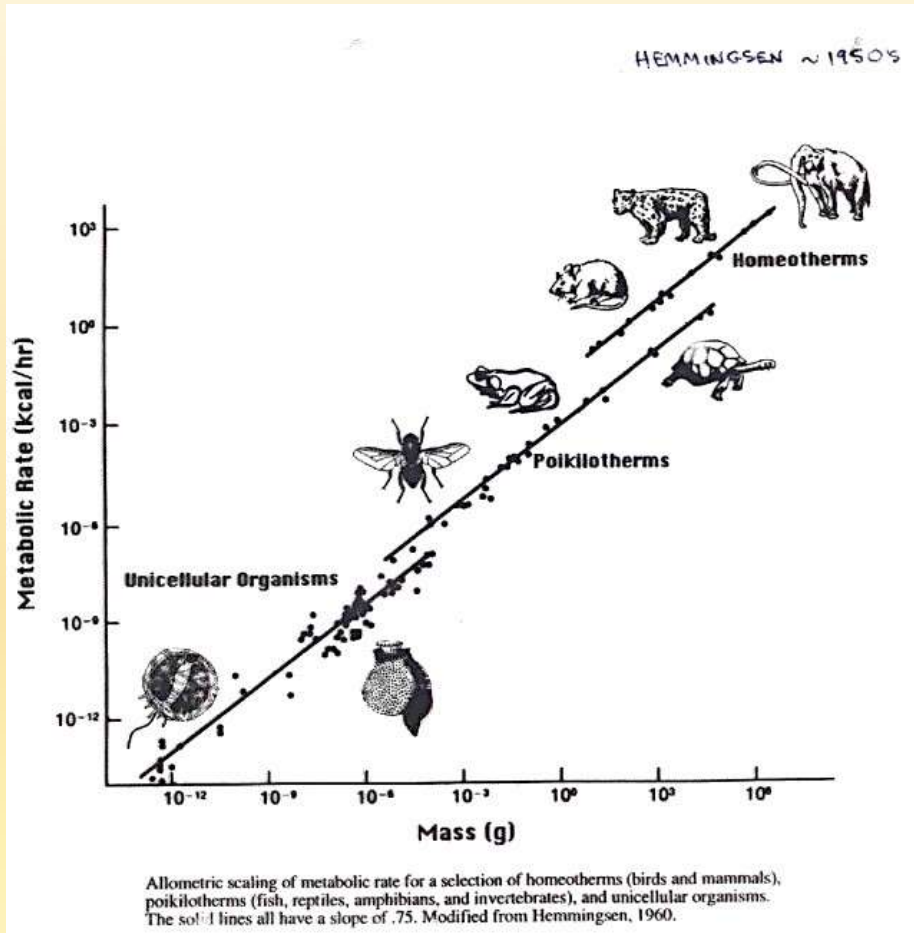
- $RQ = V \text{ CO}_2 / V \text{ O}_2$
- uhlovodany = 1,0
- tuk = 0,7
- proteiny = 0,8-0,9
- Organické kyseliny = 1,5-4,0



Metabolism

metabolism

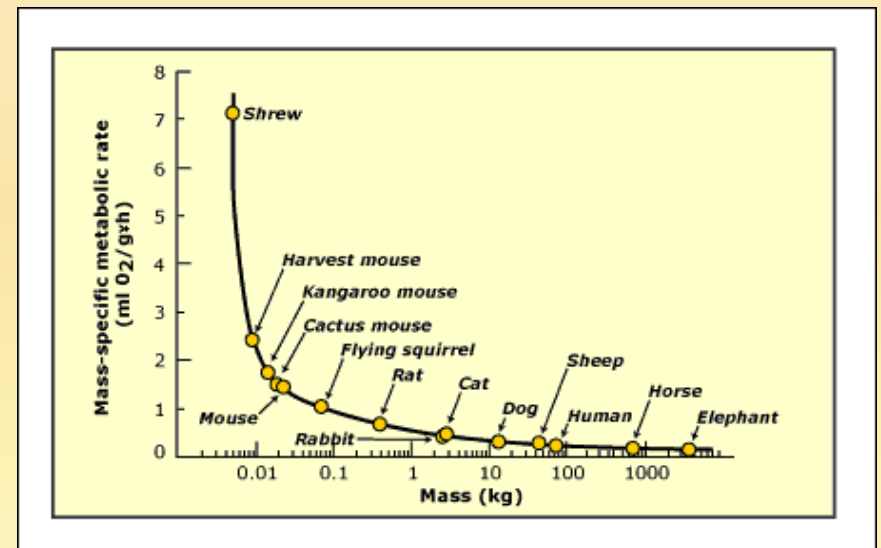
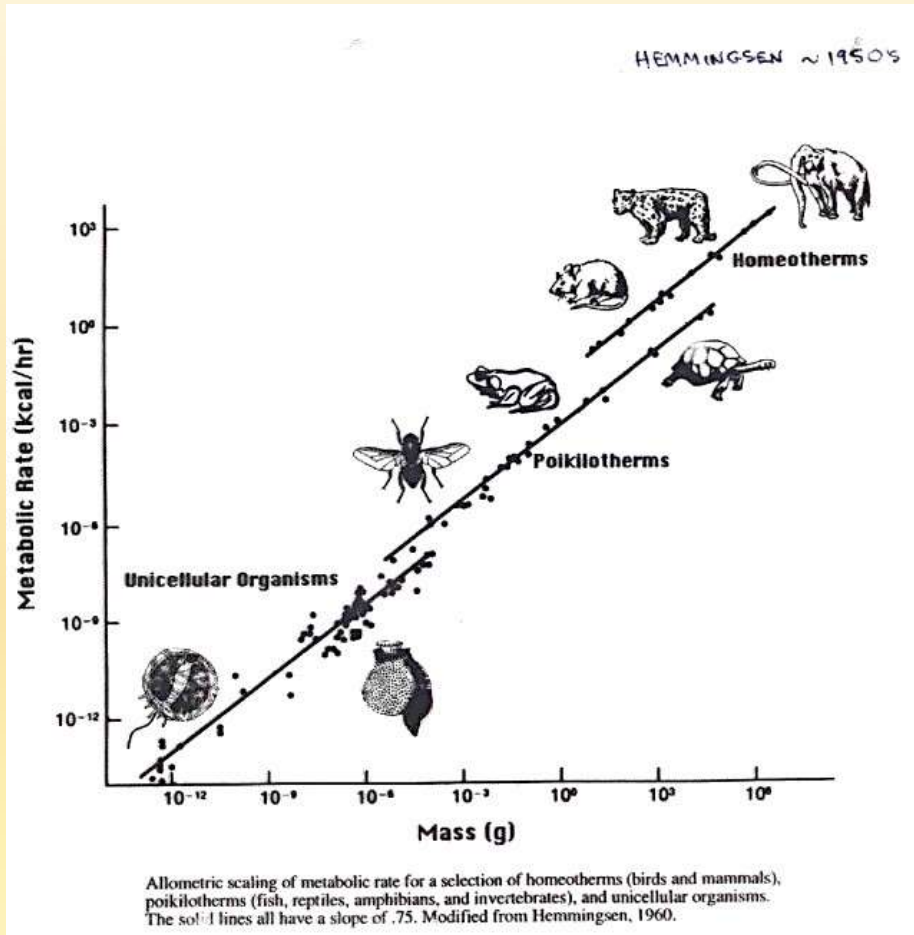
- 100g mammal: 100 ml O₂/h
- = 2 kJ/h
- $B = a \cdot m^b$
- $b = 0.75$
- $10^{0.75} = 5.6$
- $12 \text{ kJ/h/kg}^{3/4}$ ($600 \text{ ml/h/kg}^{3/4}$) (3.3W...



Metabolism

metabolism

- 1 g poikilotherm animal at 20°C
- $<10^{-3}$ kcal/h = 4J/h $>$ 1mW = 200 μ l/h



Metabolism



- mass specific MR
- marmot 1.5 L O₂/h = 30 kJ/h, 4 kg
- chipmunk 70 ml O₂/h=1.4 kJ/h, 45 g

- 1 L O₂
- chocolate 2300 kJ/100 g

- W ?



Alometrie

- Hmotnost vs. Velikost
- $M = a \cdot L^{2,62}$

