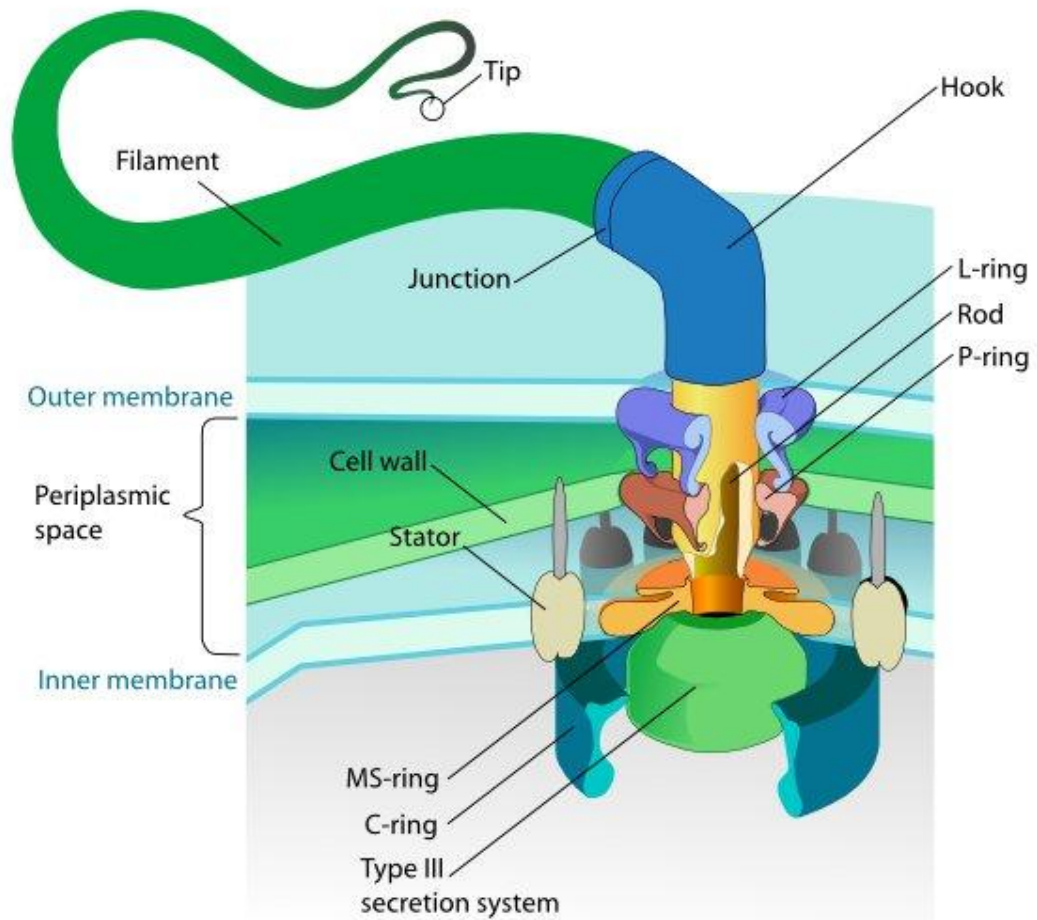


Liikumine

Alo Vanatoa

Liikumise tüübid

- Amöboidne
- Ripsmeline
- Flagellaarne

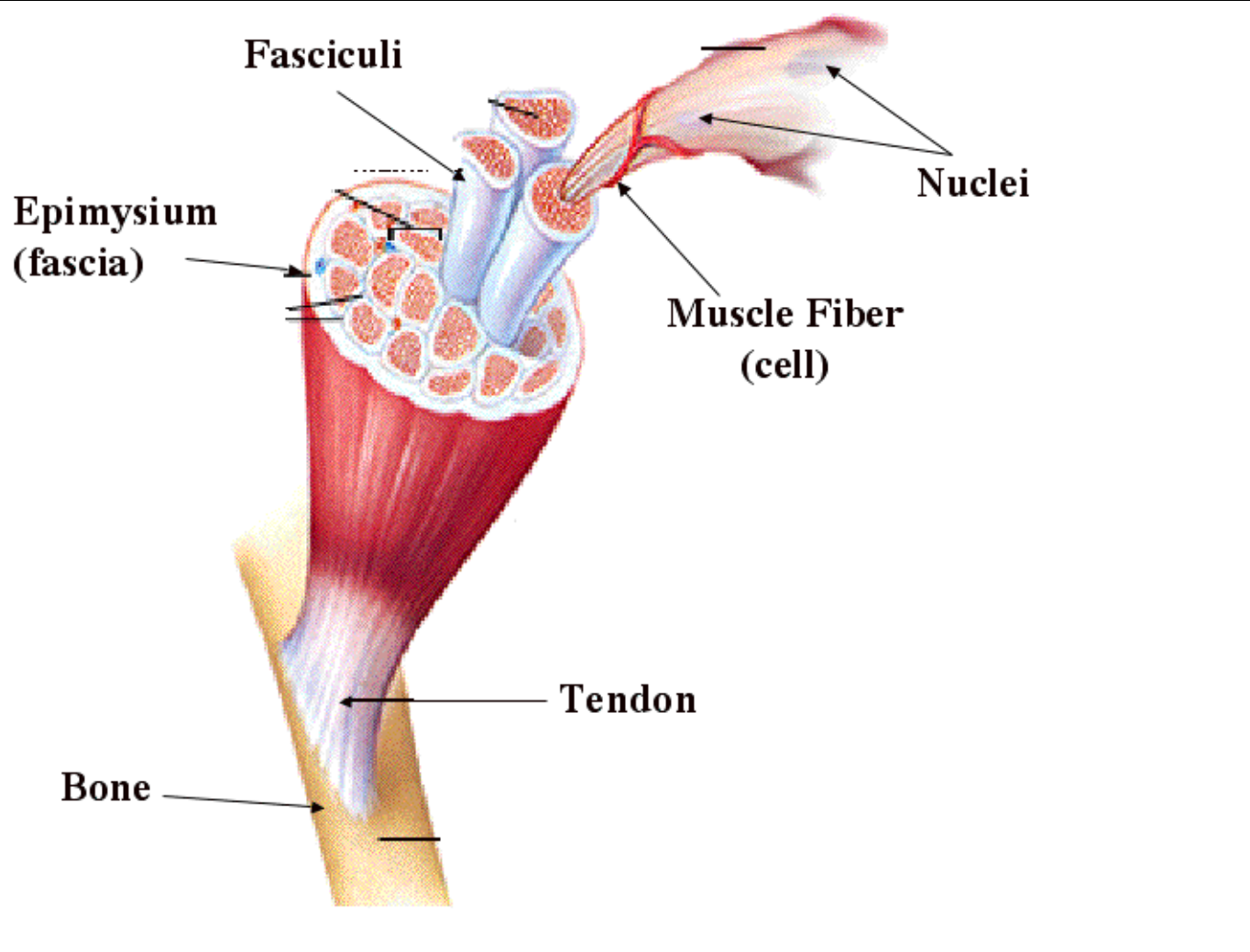


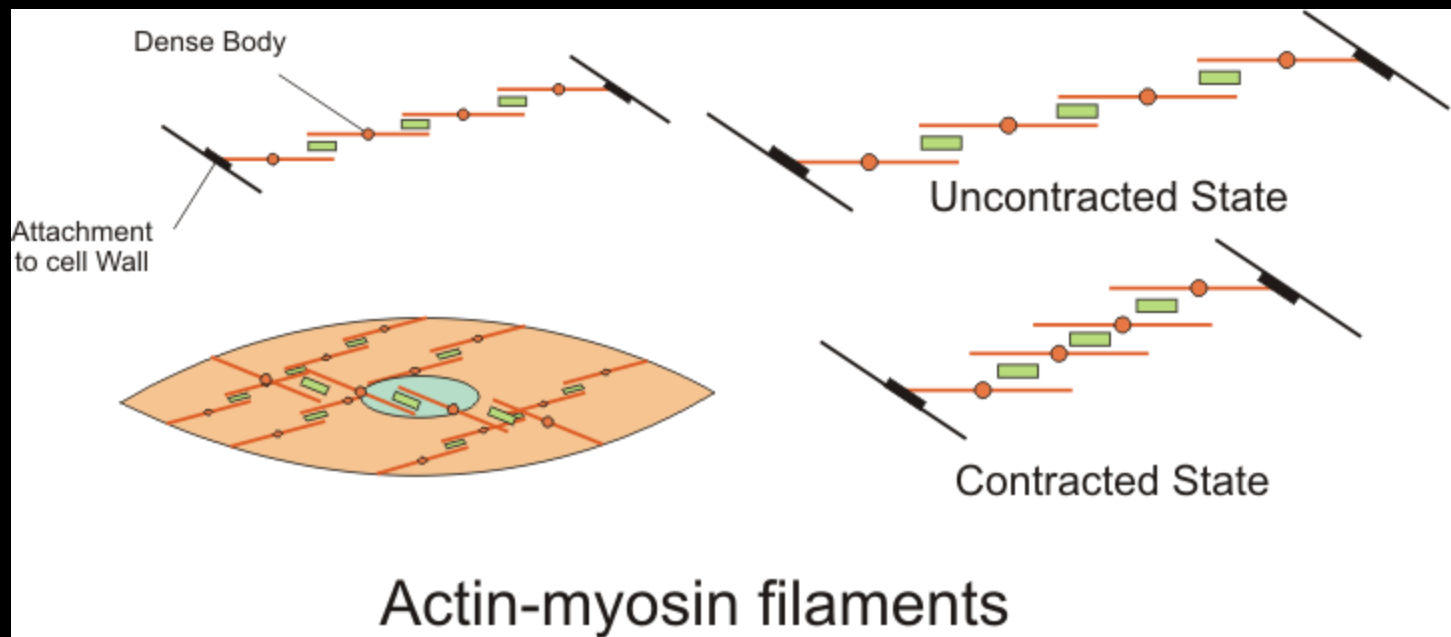
Liikumise tüübid

- Muskulaarne
 - vöötlihased
 - kontrollitud KNS'i poolt
 - silelihased
 - hormonaalne kontroll
 - faasilised
 - toonilised
 - südamelihäs

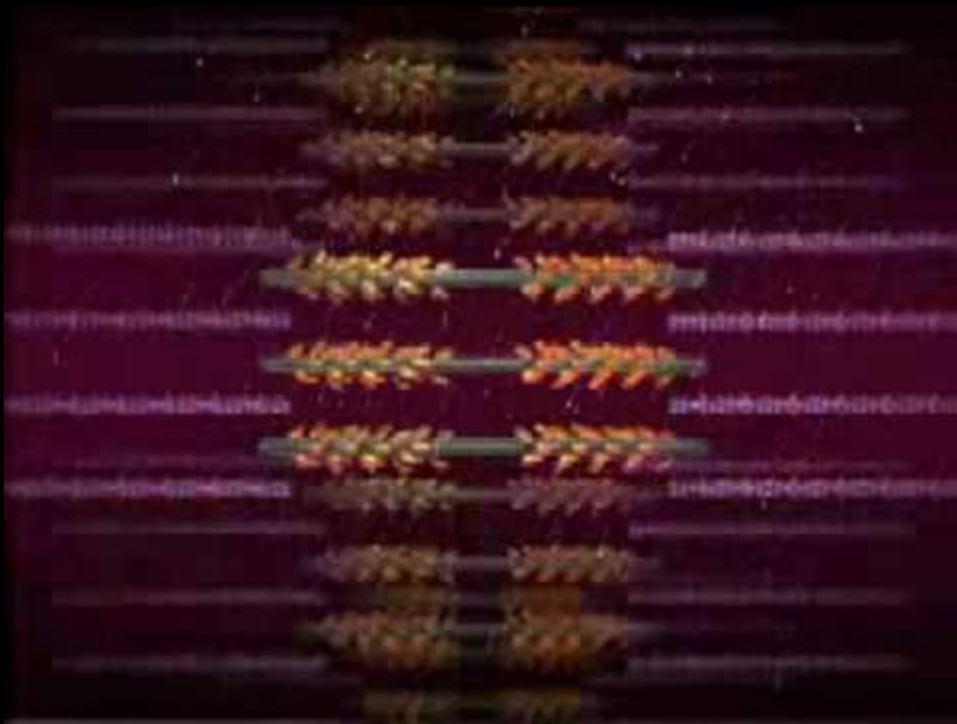
Kontraktsiooni tüübid

- Kotsentriline
- Ekstsentriline
- Isomeetriline
- *Tetaaniline*

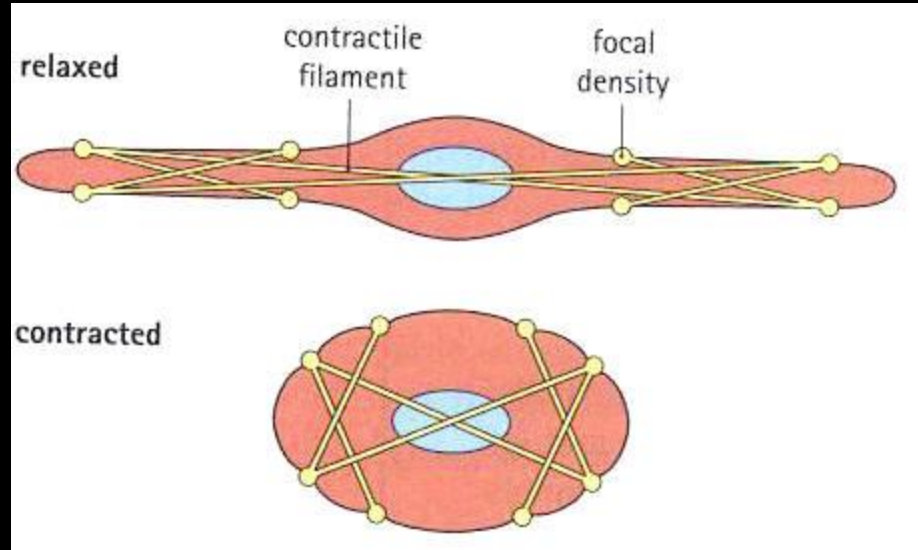


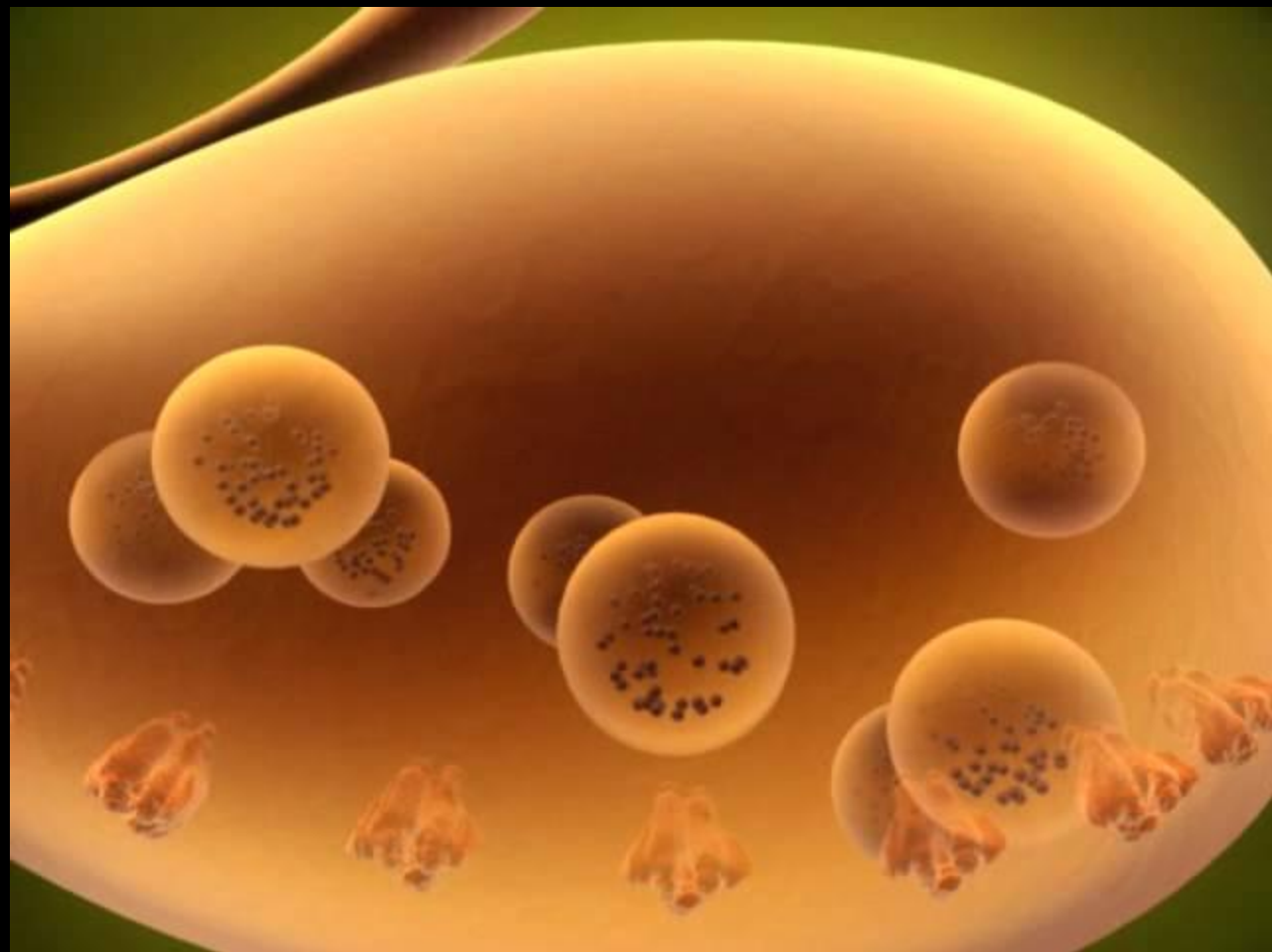


Vöötlihase kokkutõmme



Silelihas



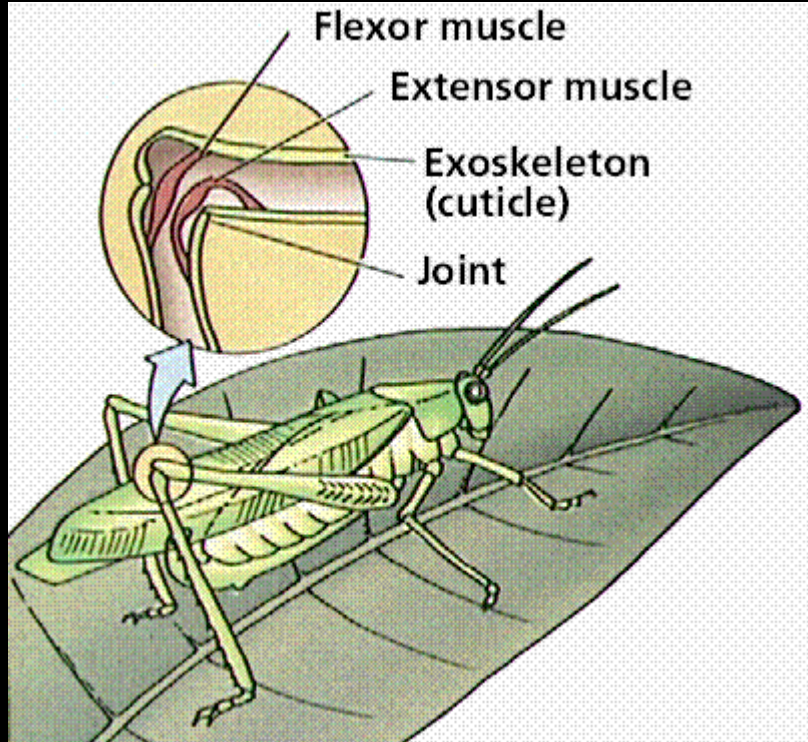


Liikumise tüübid

- asünkroonsed lihased
 - kahetiivalised
 - kiletiivalised
 - mardikalised

Skeletid

- Jäigad skeletid
 - eksoskelett



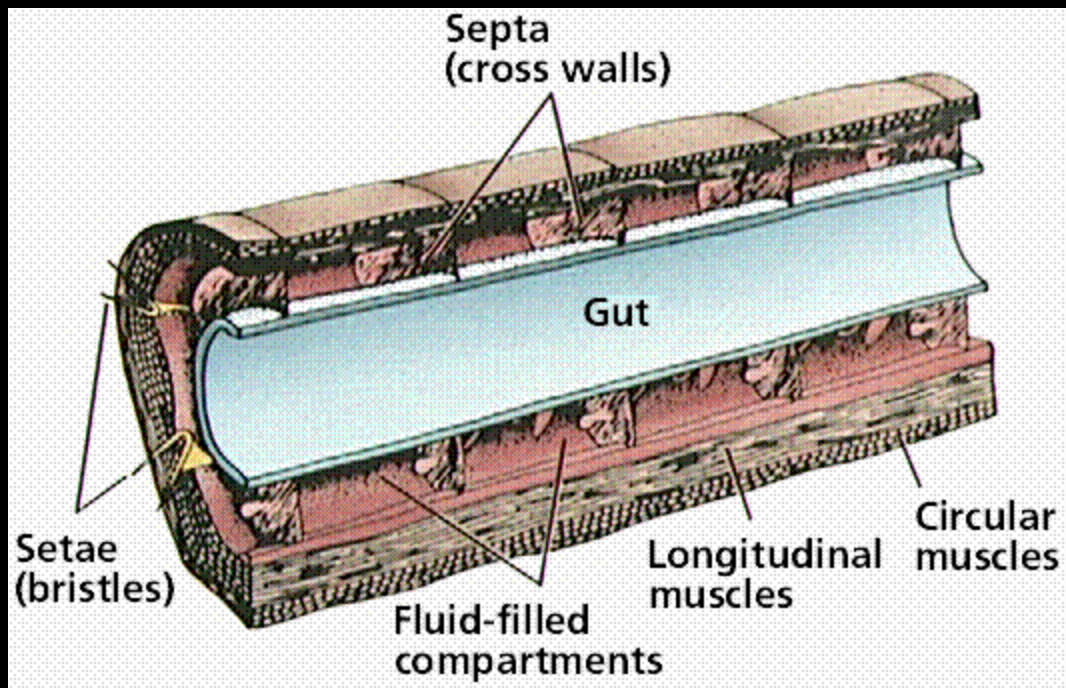
Skeletid

- Jäigad skeletid
 - eksoskelett
 - endoskelett



Skeletid

- Jäigad skeletid
 - eksoskelett
 - endoskelett
- Hüdrostaatiline skelett
 - Vedelik+pehmed seinad



Skeletid

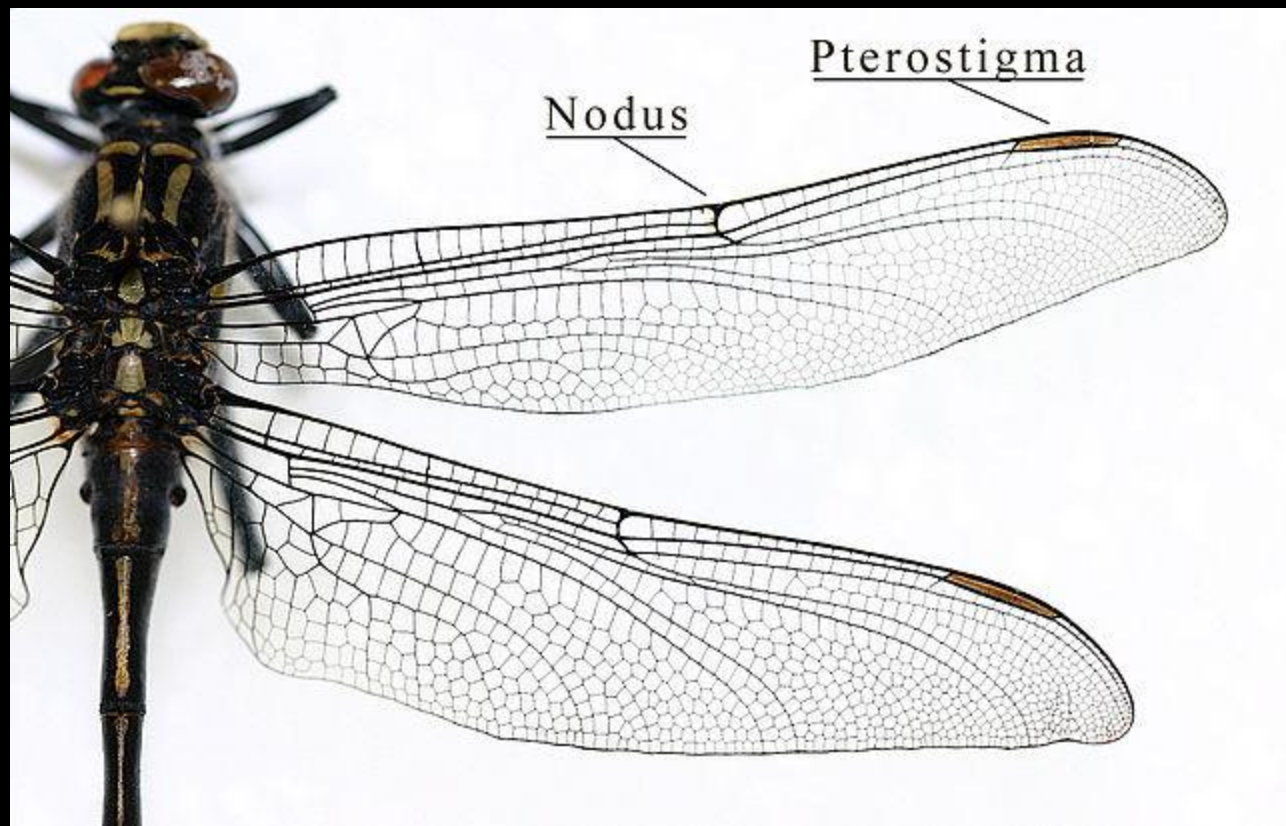
- Jäigad skeletid
 - eksoskelett
 - endoskelett
- Hüdrostaatiline skelett
 - vedelik + pehmed seinad
 - vedelik + jäigad seinad



Liikumiskeskonnad

- gravitatsioon
- tihedus
- viskoossus
- laminaarne vool
- turbulents
 - Reynolds'i arv





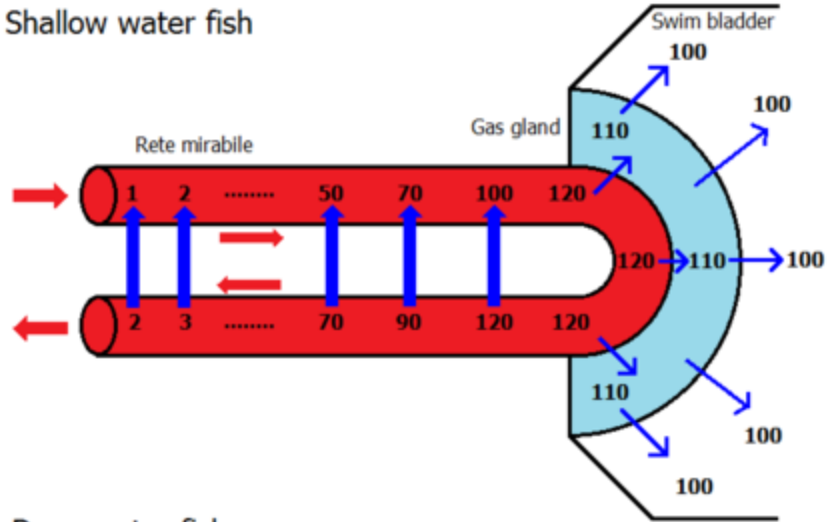
Liikumisviisid

- Kõndimine
- Jooksmine
- Ujumine
 - kavitatsioon
 - turbulents

Ujuvuse tagamise viise

- Raskete ainete hulga vähendamine kehas
- Raskete ionide asendamine
- Suurendada kehas veest kergemate ainete hulka
- Raskete ionide eemaldamine kehast
- Ujupõis
 - pehmeseinaline
 - jäigaseinaline

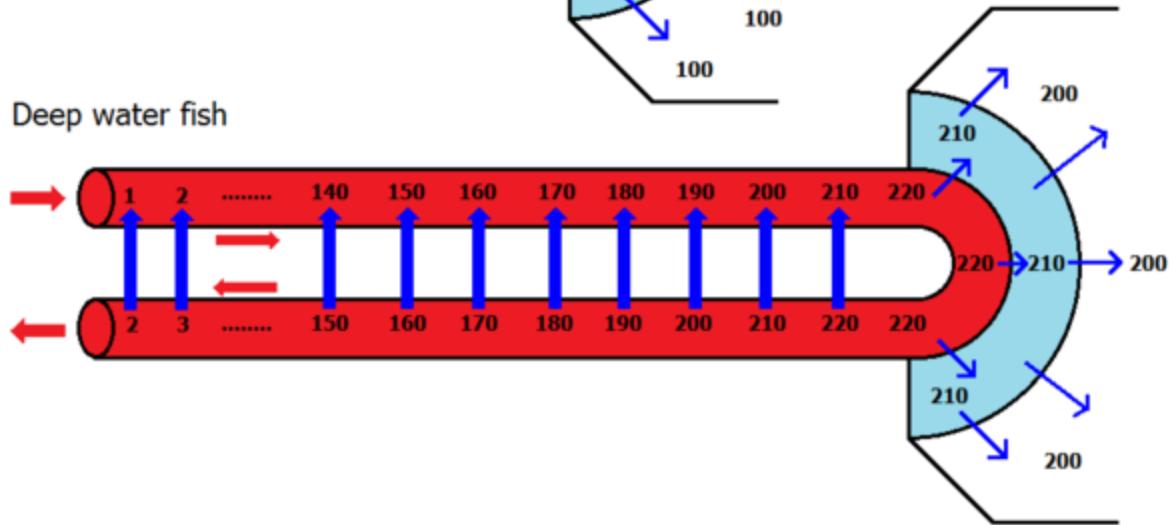
Shallow water fish



- Blood flow
- Air diffusion
- 100** Air concentration

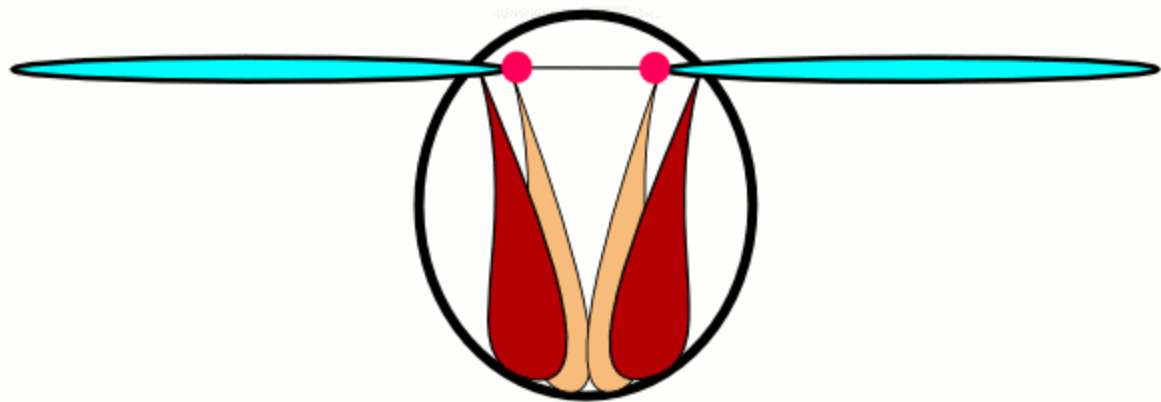
Deep water fishes have longer rete mirabile than shallow water ones, enable them to increase maximum air concentration in swim bladder to cope with high pressure in deep water.

Deep water fish



Liikumisviisid

- Liuglemine
- Lendamine
 - *direct flight* (kiilid)



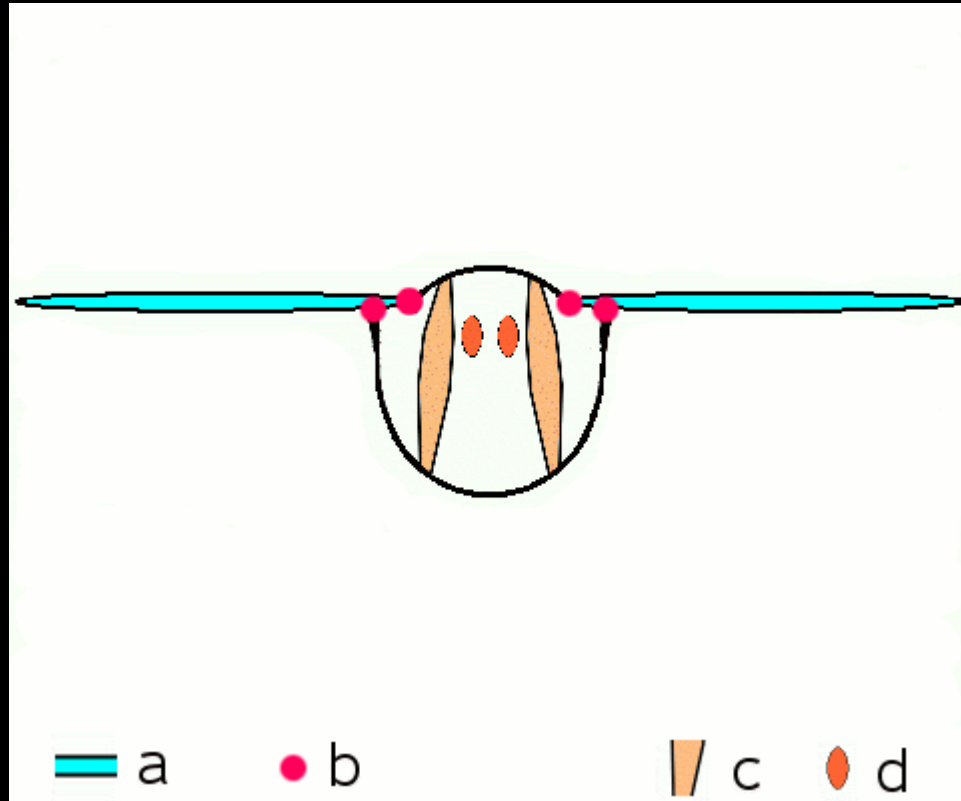
 a

 b

 c

 d

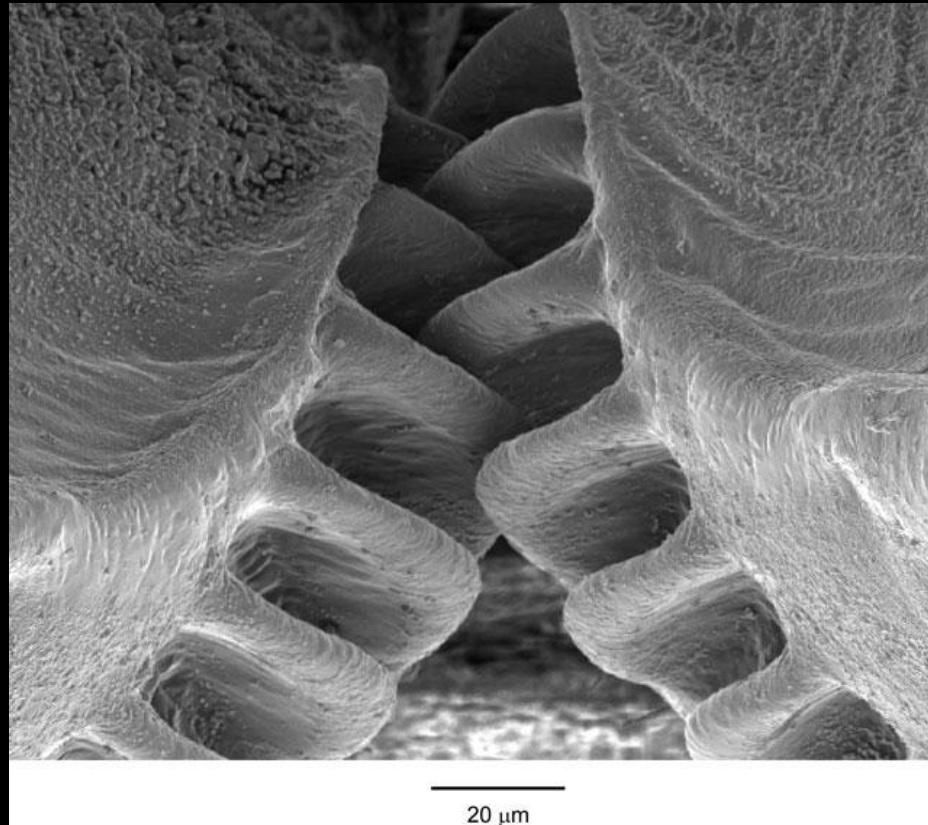
- *indirect flight*



Liikumisviisid

- Hüppamine
 - elastsusjõud

Issus coleoptratus

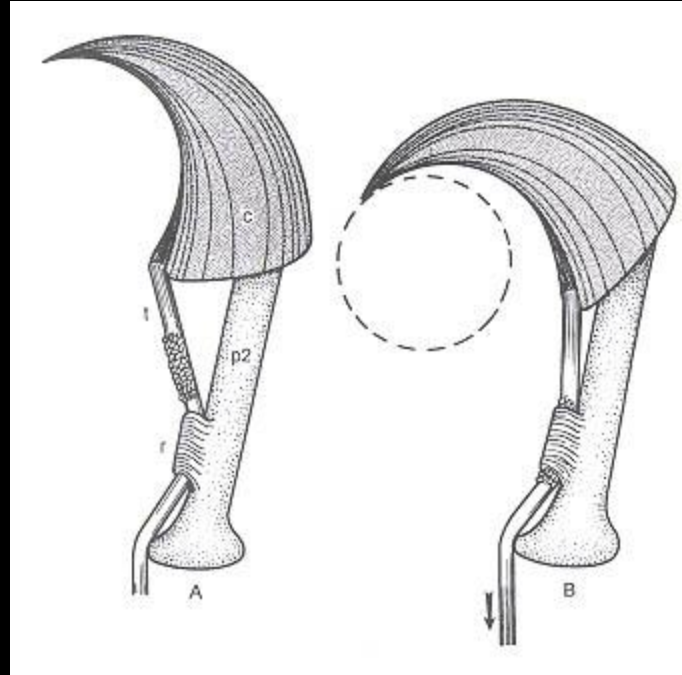


Issus coleoptratus



<http://www.popularmechanics.com/science/environment/the-first-gear-discovered-in-nature-15916433>

TLM (põrkriiv)



Liikumisviisid

- Roomamine



