

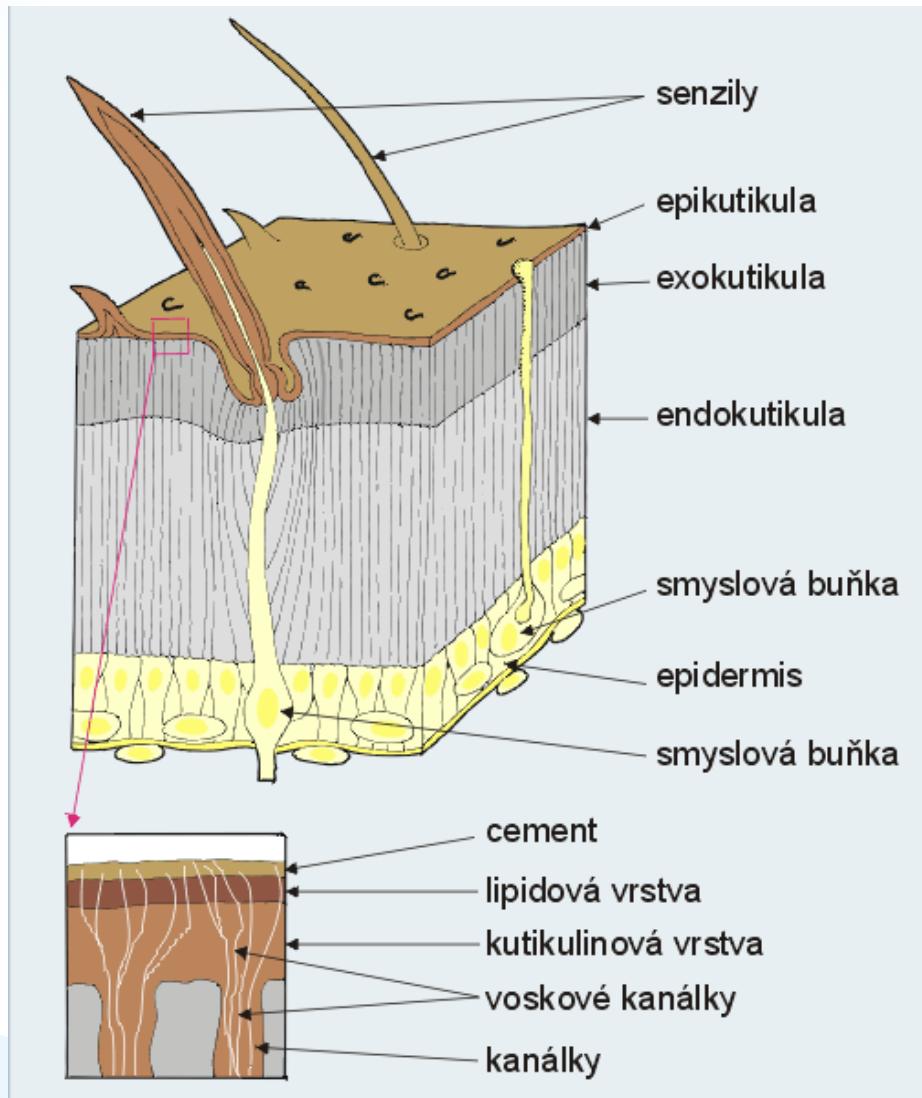
Základy entomologie

8. cvičení:

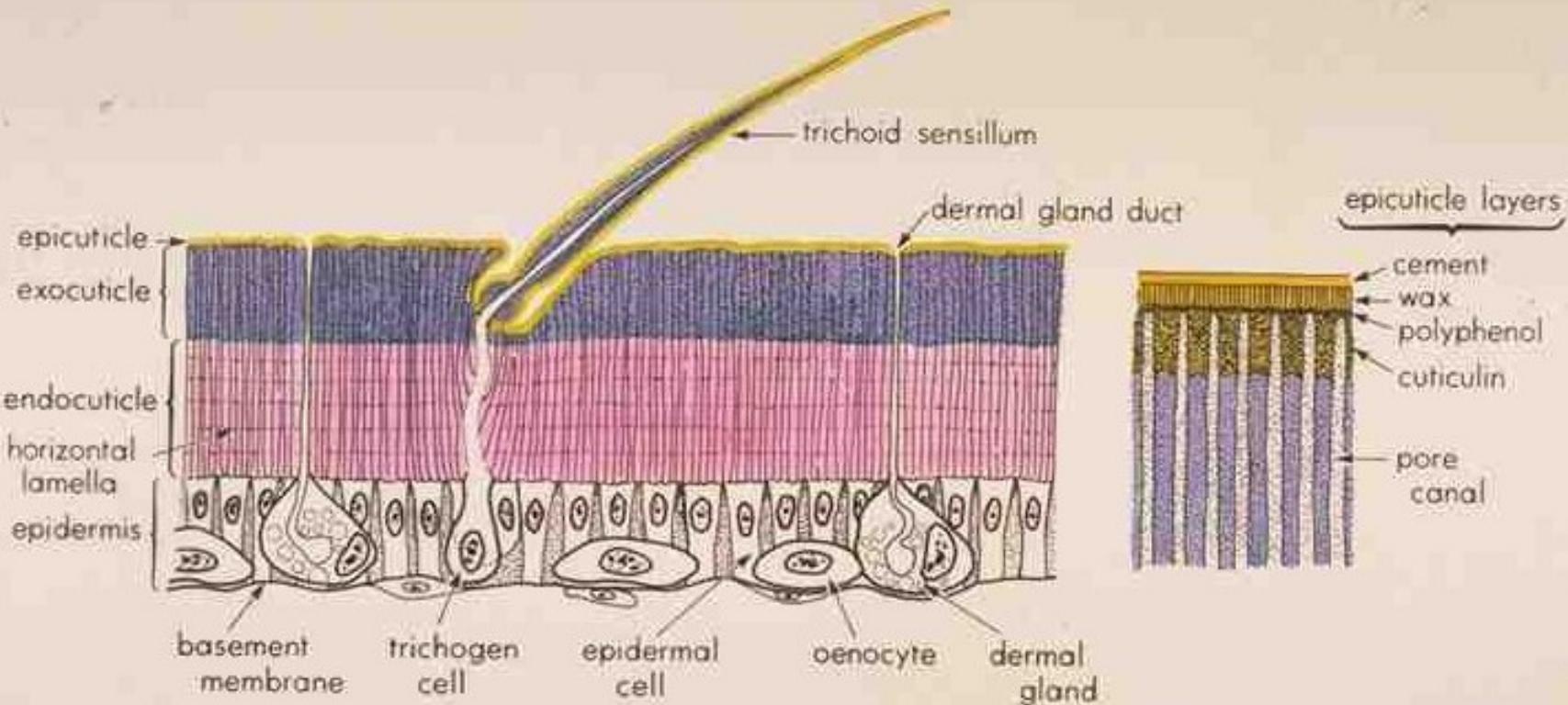
Integument
Dýchání

Integument

= Kutikula + Epidermis



Kutikula

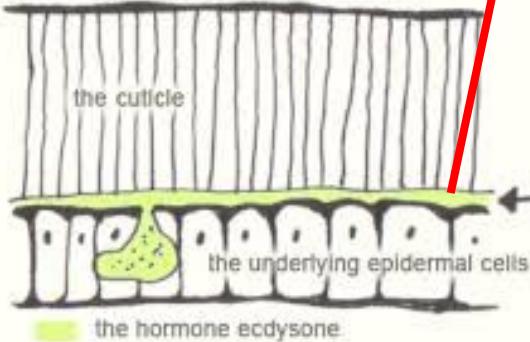


Section of typical insect cuticle (after WIGGLESWORTH)

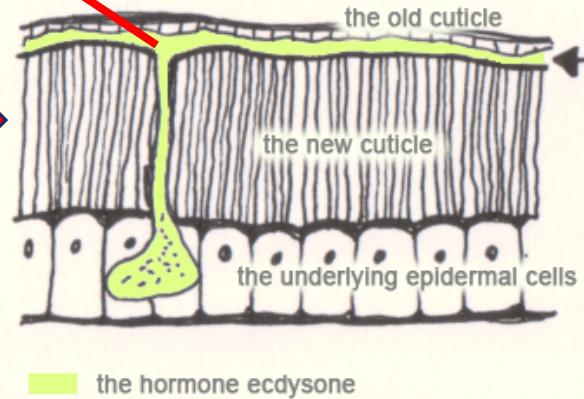
Svlékání - Ecdysis

Schmidtova vrstva

After the separation, moulting fluid is secreted into the space between the old cuticle and the epidermis (the exuvial space), this contains inactive enzymes which are activated only after the new epicuticle is secreted.



The lower regions of the old cuticle are then digested by the enzymes and subsequently absorbed. The process of moulting can start.



Integument - zbarvení



Modrá - fyzikálně, lom světla
(vzduch. prostor mezi lamelami)



2010 Massimo Romagnoli
othersign.com

Integument - zbarvení



Červená - pigmenty (karotenoidy)

Integument - zbarvení

Žlutá - papiliochromy,
flavony



Bílá - leukopteriny

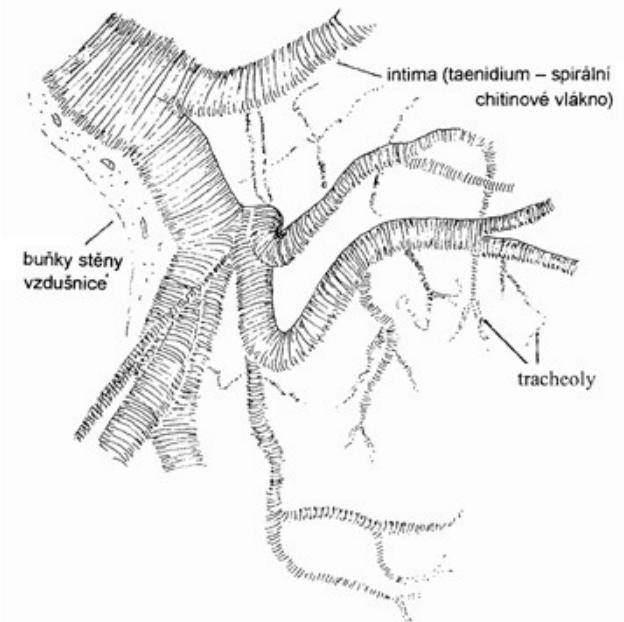
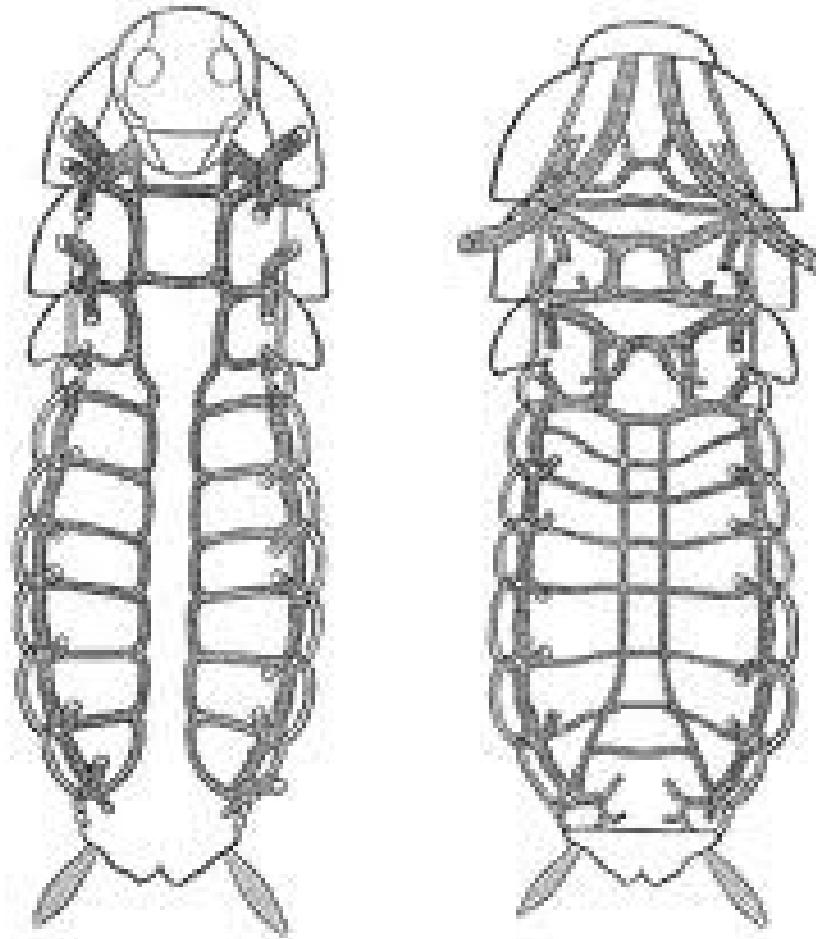


Černá, hnědá - melanin



Dýchání

Tracheální systém - longitudinální kmeny



Stigma (spiraculum)



Stigmata - max. 10 párů

dle počtu stigmat na hrudi a zadečku:

POLYPNEUSTIČTÍ

holopneu- 2 + 8 (kobylky)

peripneu- 1 + 8 (bejlomorky)

hemipneu- 1 + 7 (bedlobitky)

OLIGOPNEUSTIČTÍ

amfi- 1 + 1 (koutule)

meta- 0 + 1 (komár - larva)

pro- 1 + 0 (komár - kukla)

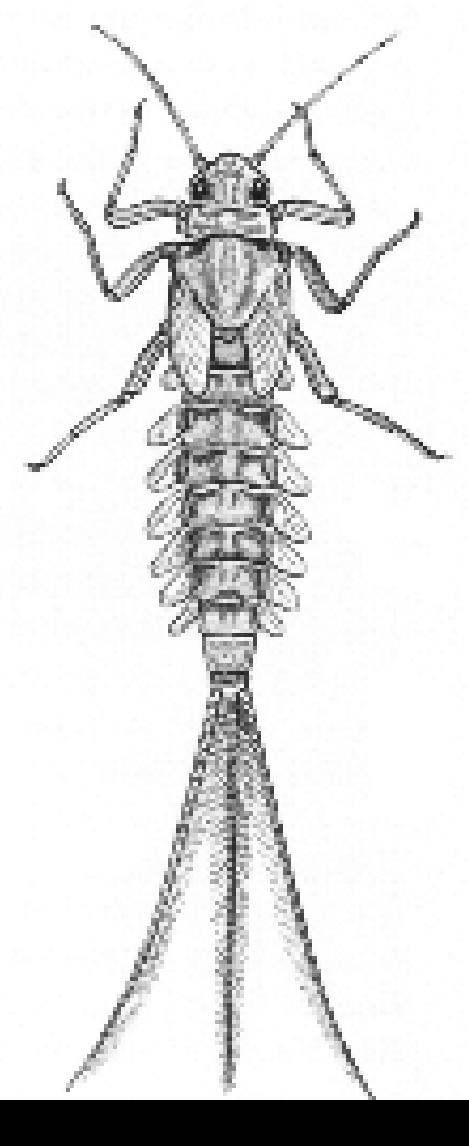
APNEUSTIČTÍ

0 (žábra, celý povrch těla, parazitoidi)



Ephemeroptera

- larva - lupenitá žábra na zadečku



Odonata

Anisoptera

- anální pyramida



© Josef Hlasek
www.hlasek.com
Anax imperator (L.)

Zygoptera

- tracheální žábra

Jason Neuswanger
www.troutnut.com



Plecoptera

- žábra na hrudi, na končetinách

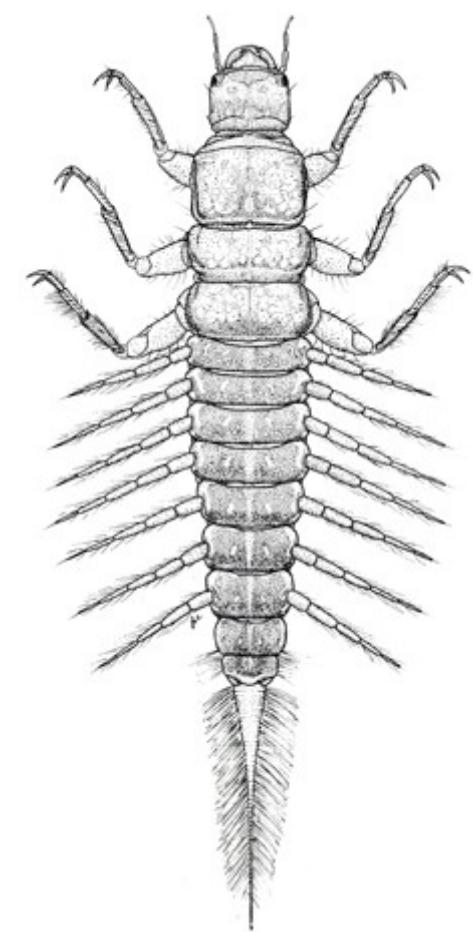


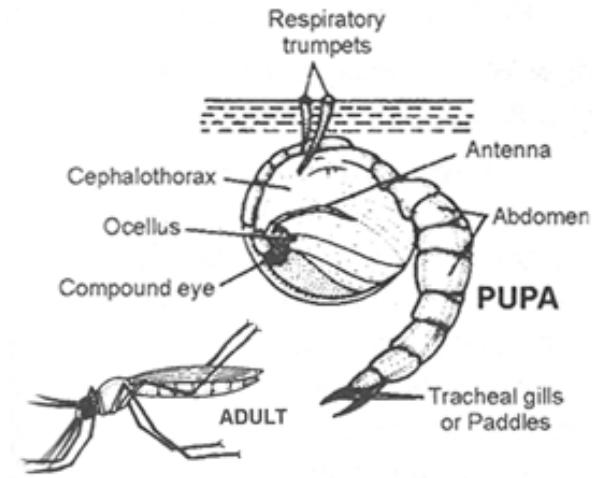
Heteroptera - vodní

- plastron, dýchací trubičky



Megaloptera - Střechatky



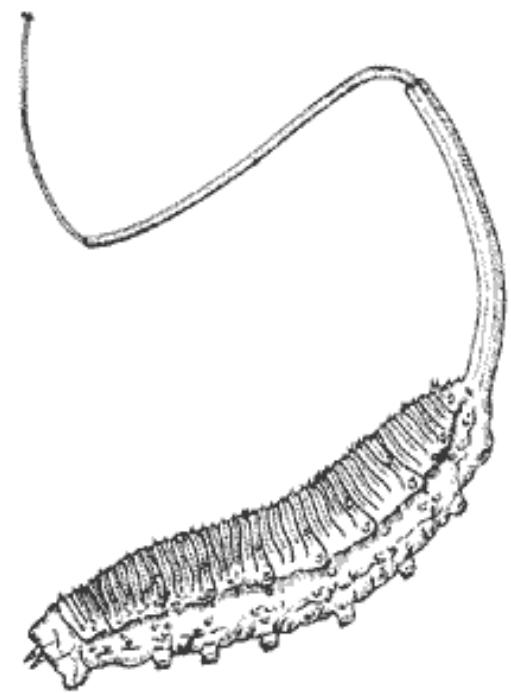


Anopheles (Diptera: Culicidae) - dýchací trubičky



Diptera - Syrphidae (Pestřenkovití)

larvy r. *Eristalis*



Diptera - Calliphoridae

- stigma na prothoraxu !!!

