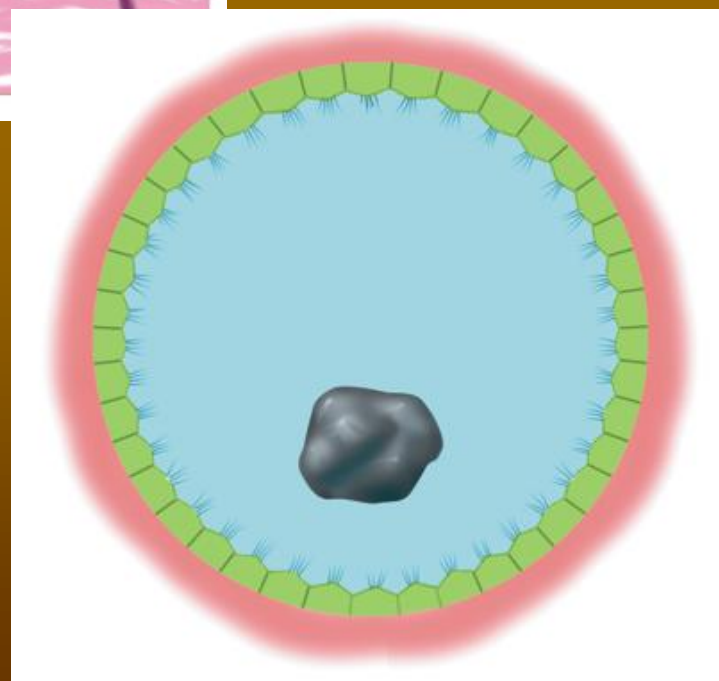
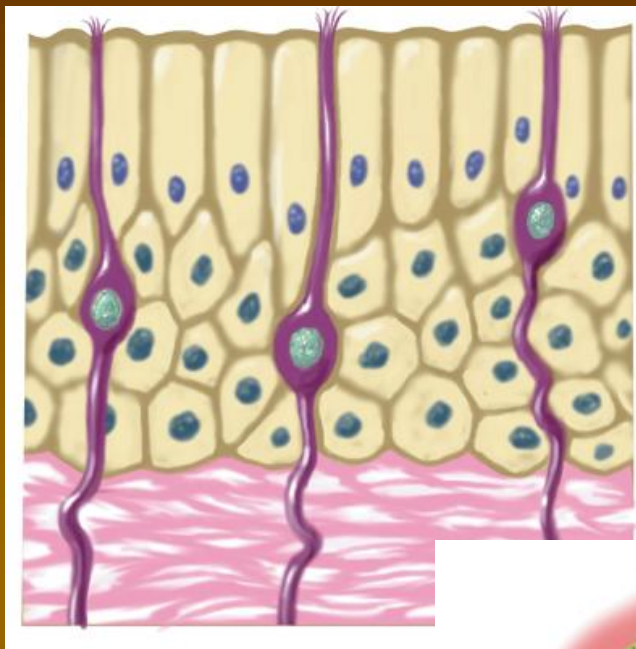
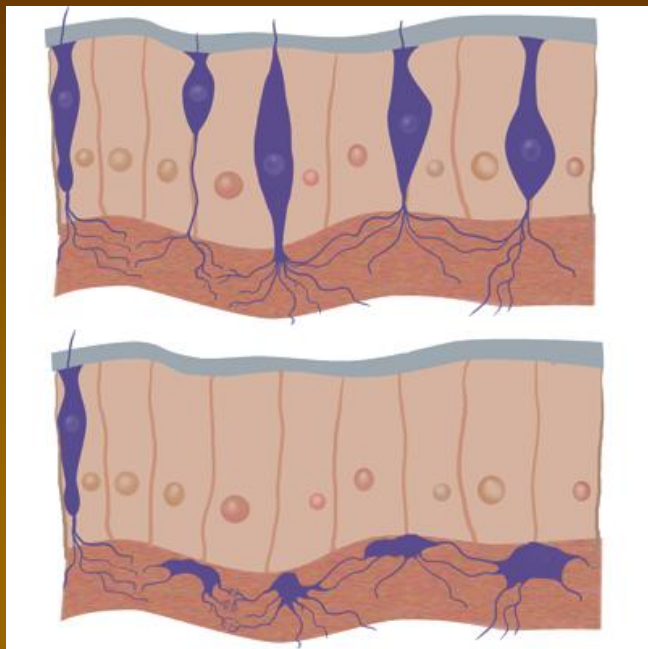


Vývojová morfologie živočichů

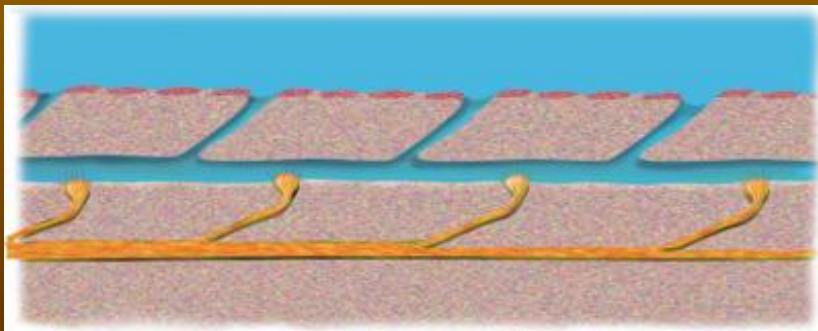
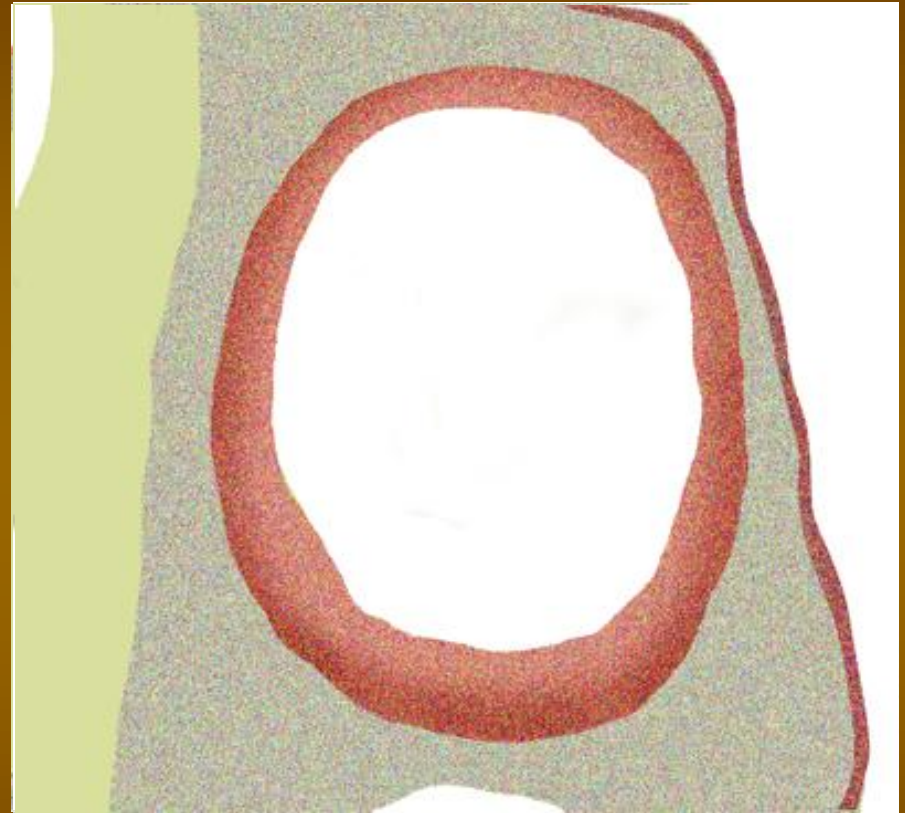
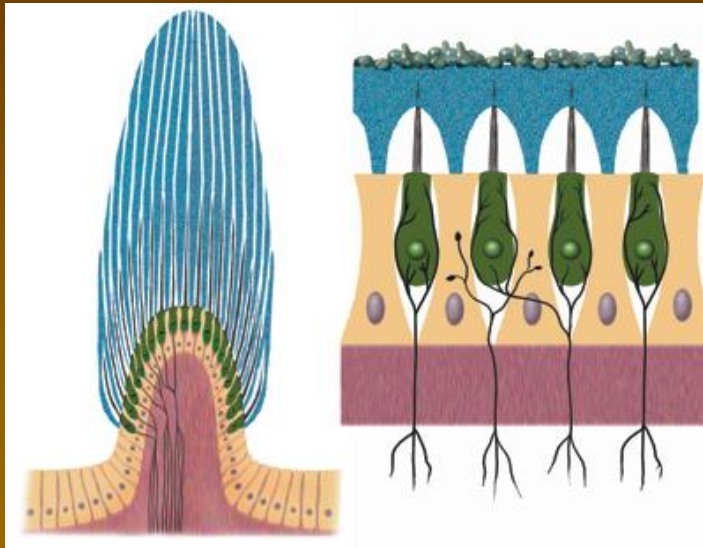
9.

Smyslové orgány

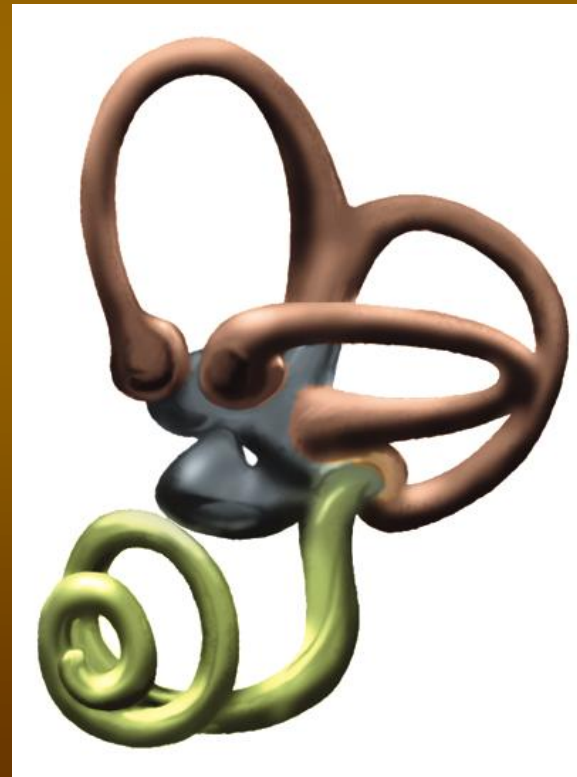
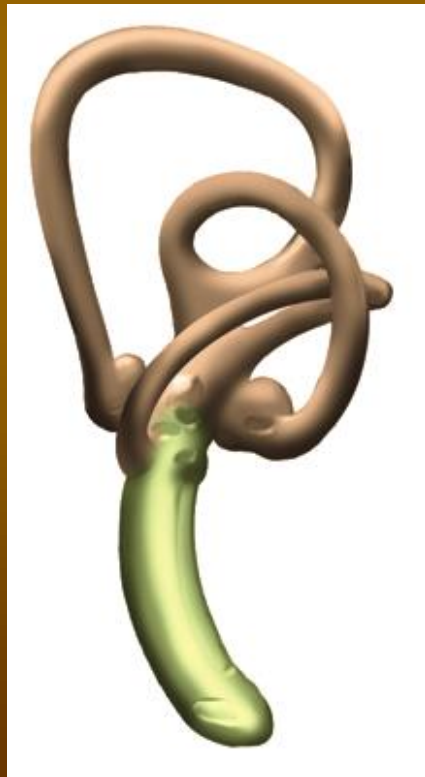
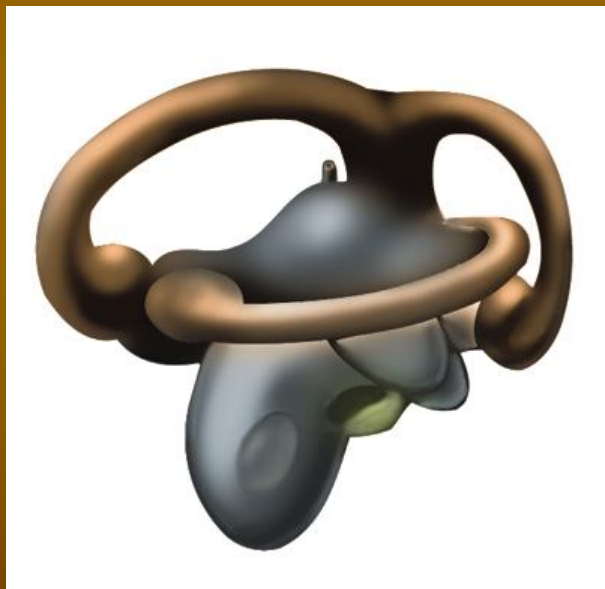
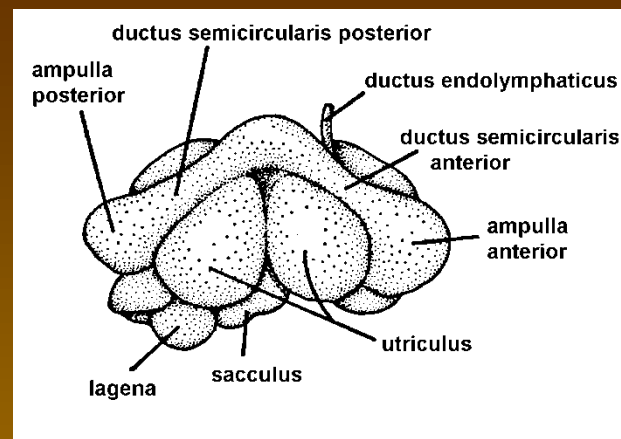
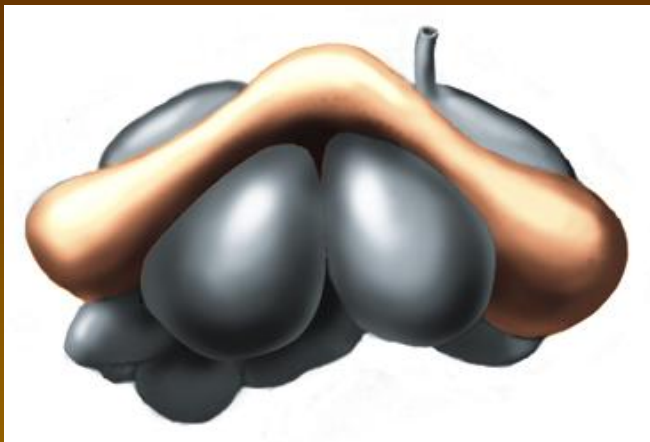
Smyslové orgány



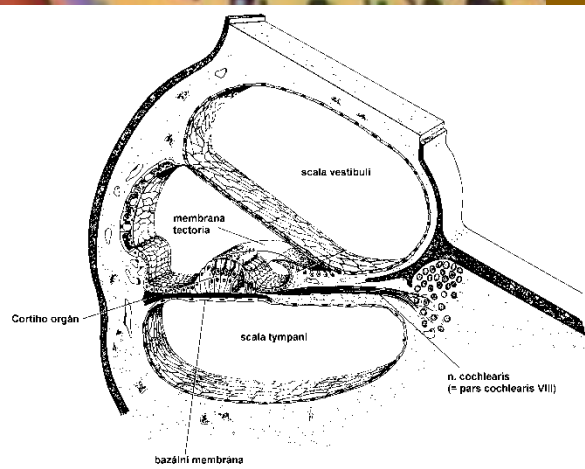
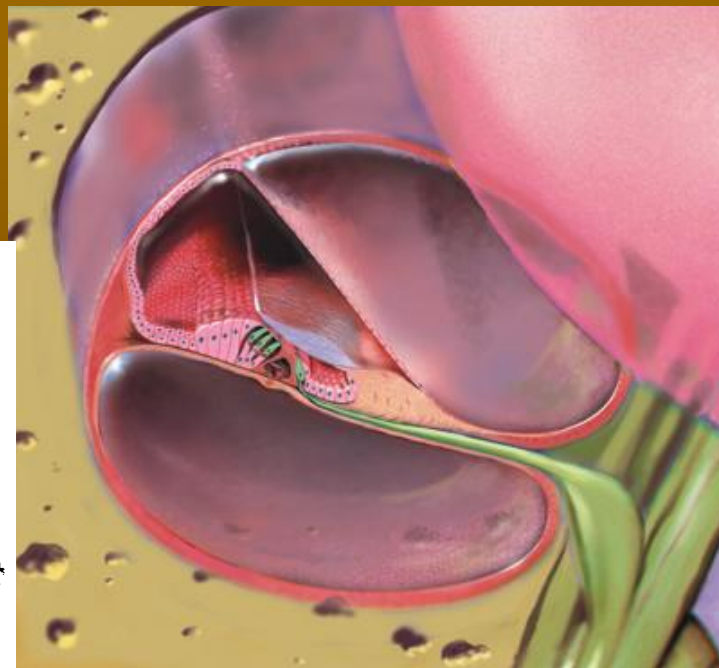
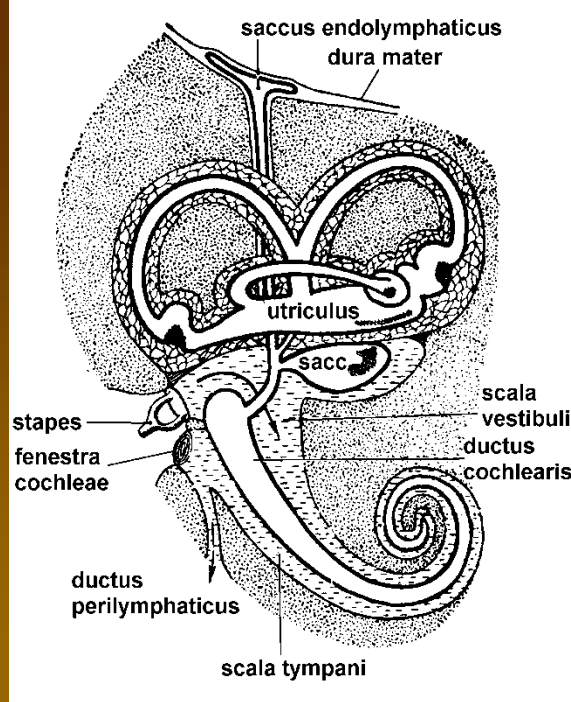
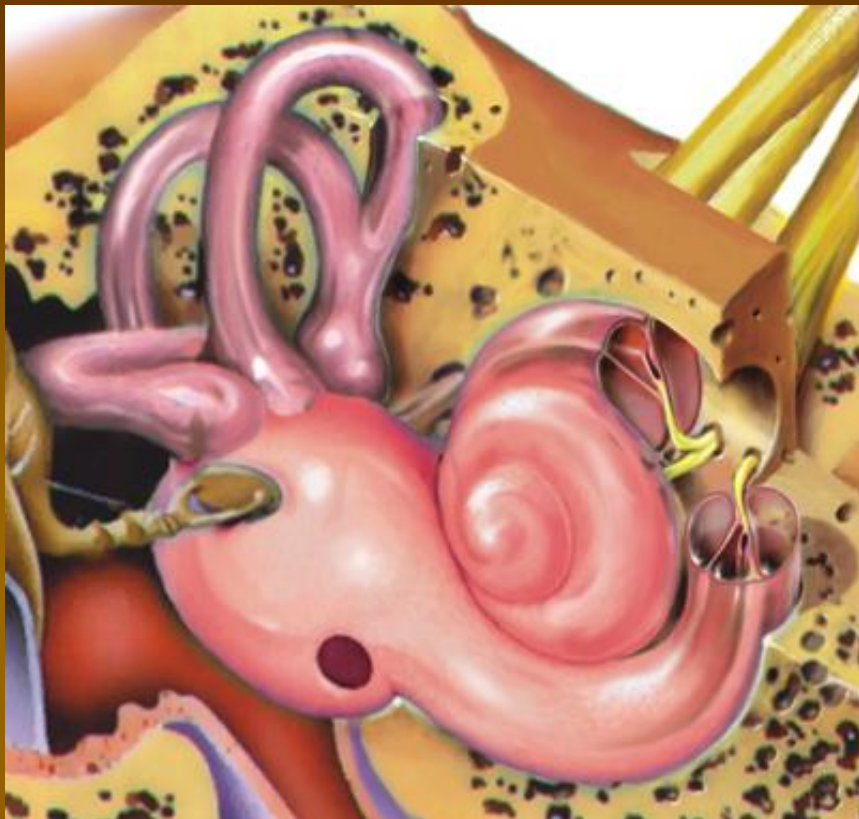
Smyslové orgány



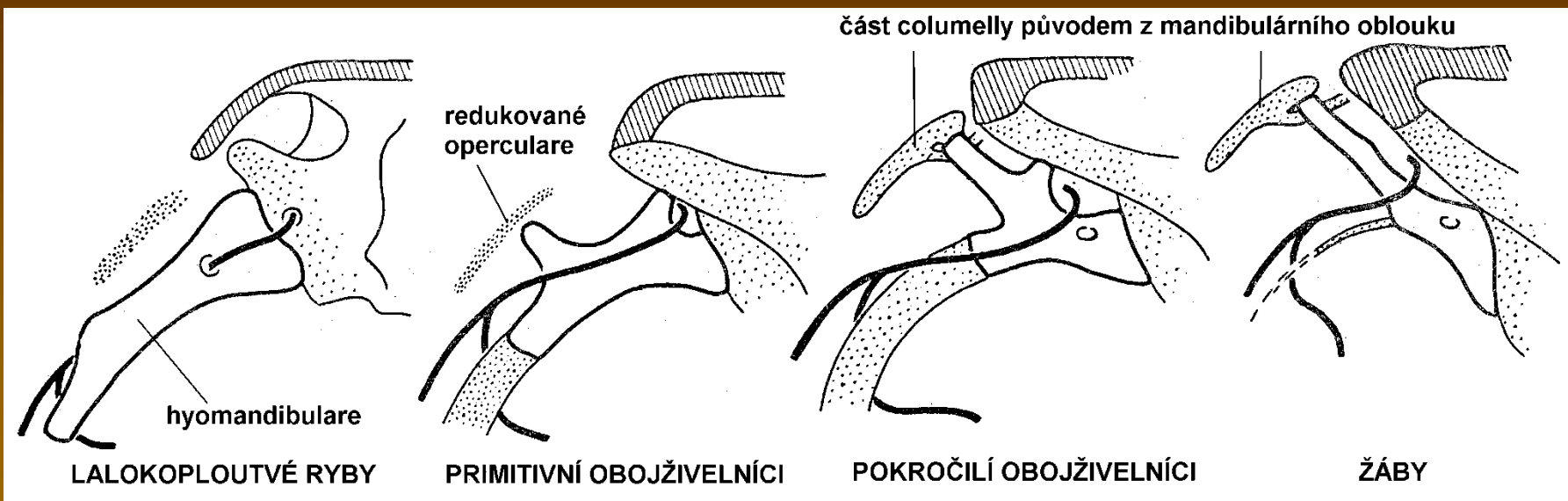
Smyslové orgány



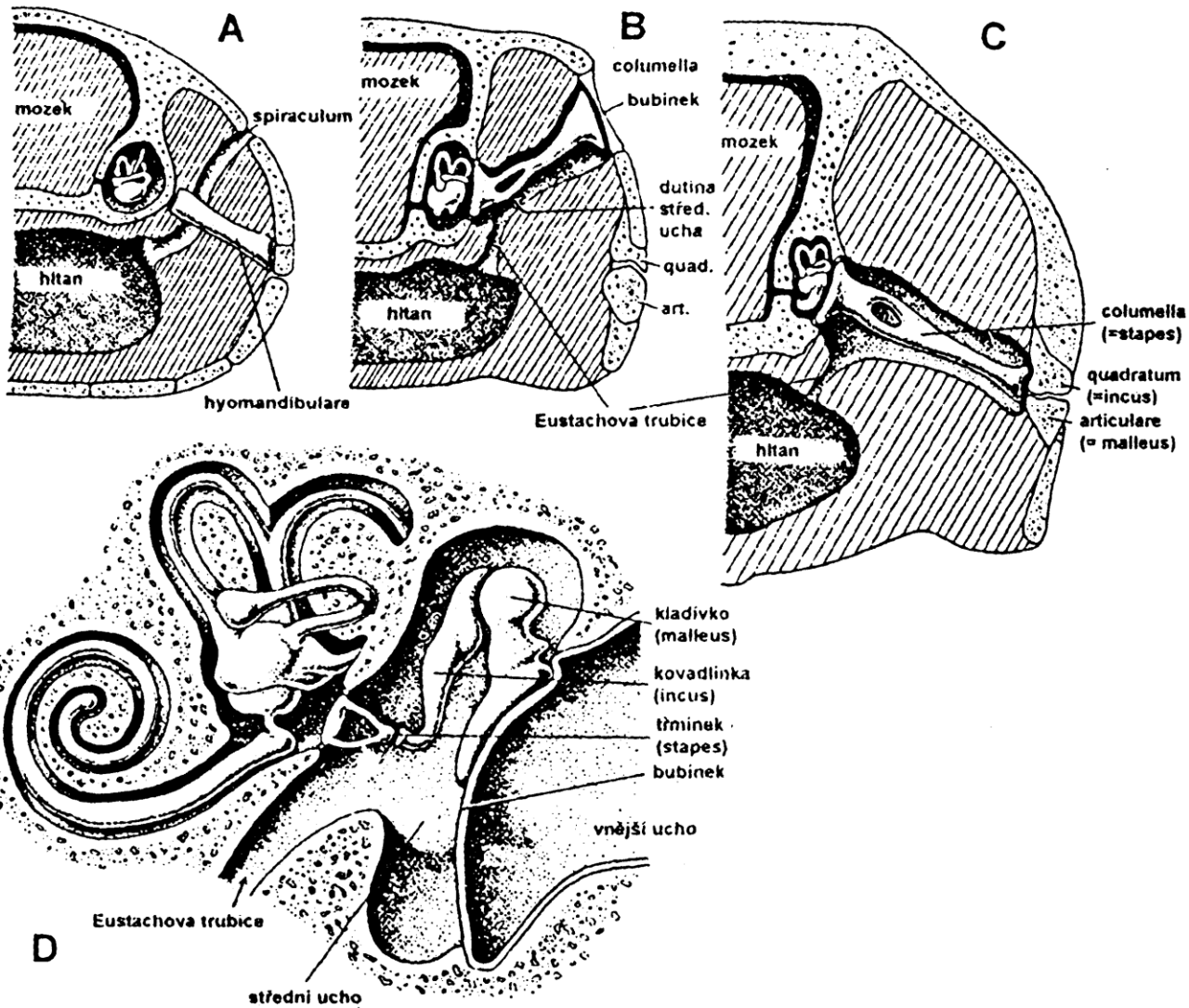
Smyslové orgány



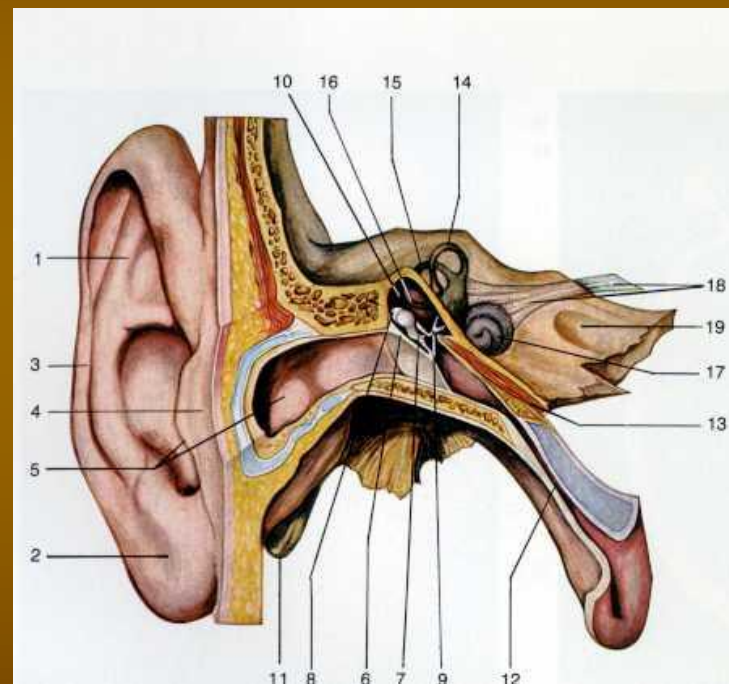
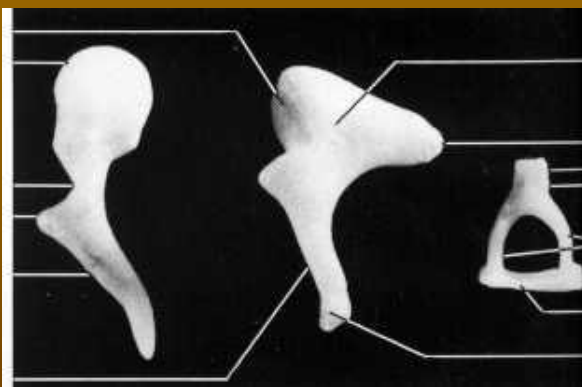
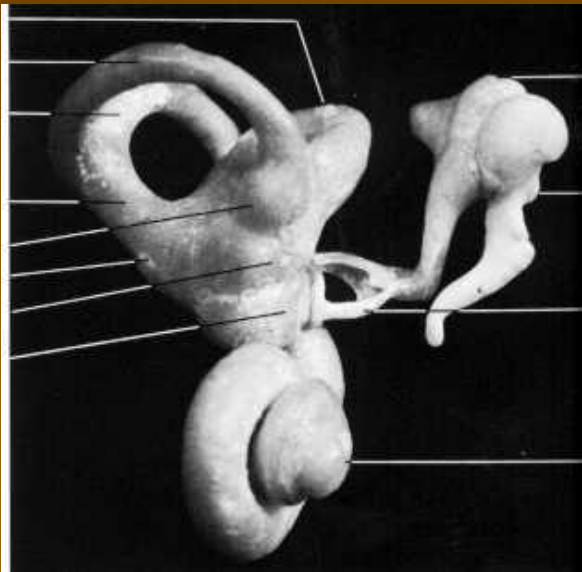
Smyslové orgány



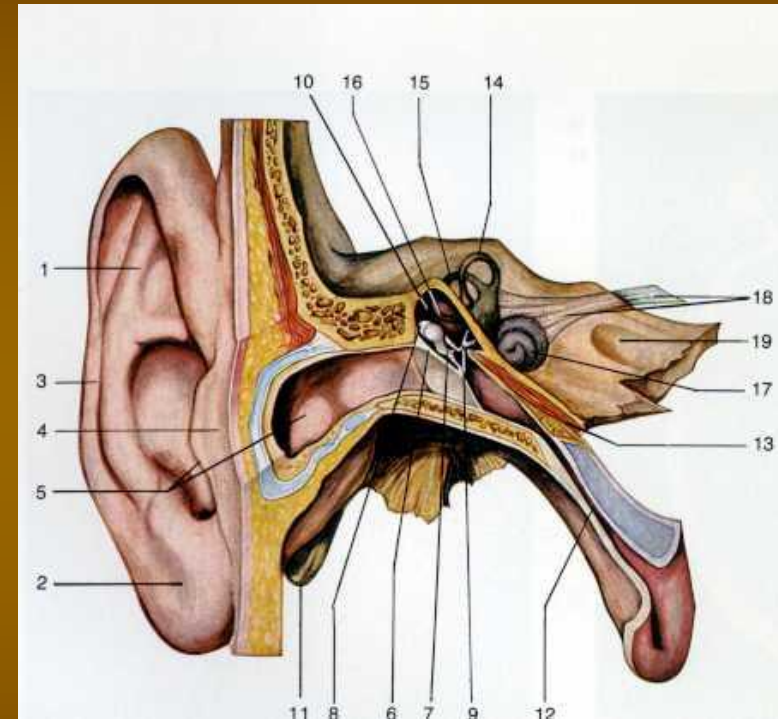
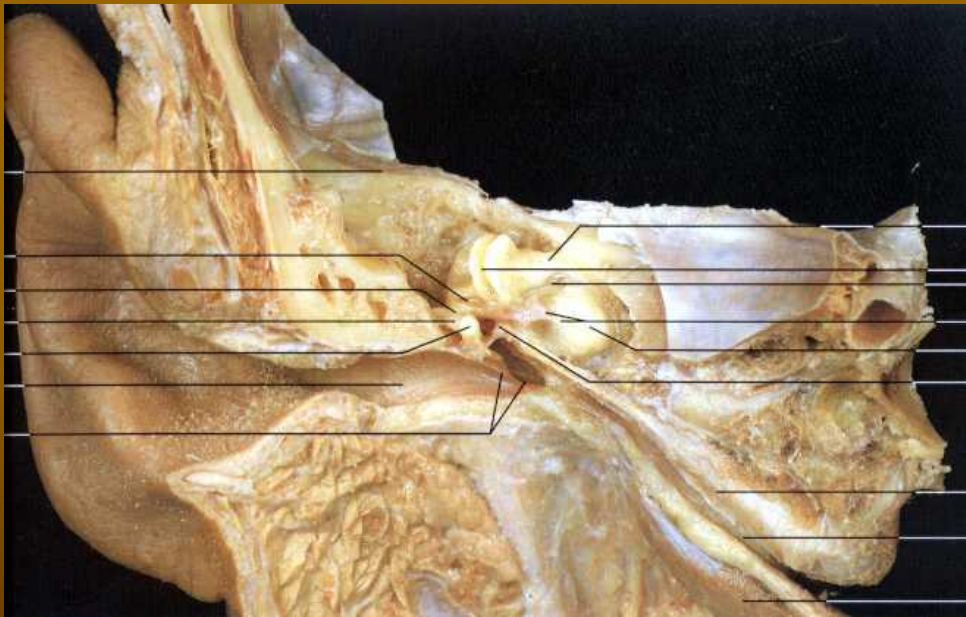
Smyslové orgány



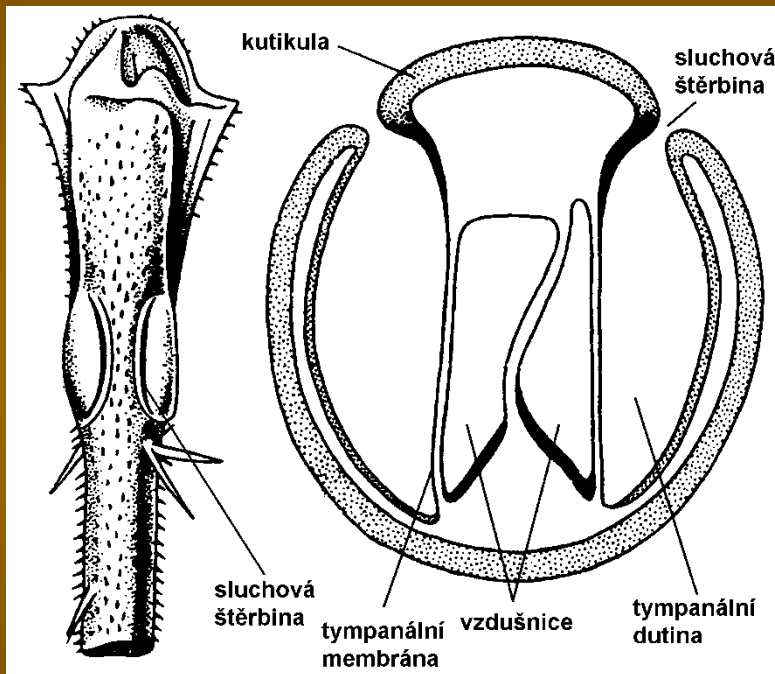
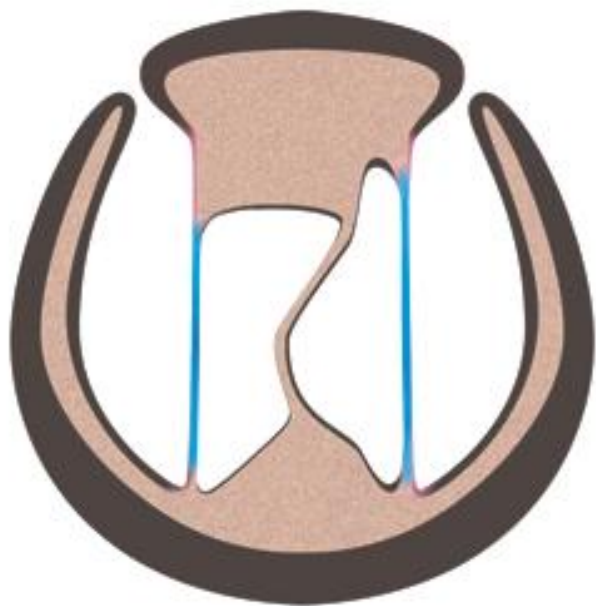
Smyslové orgány



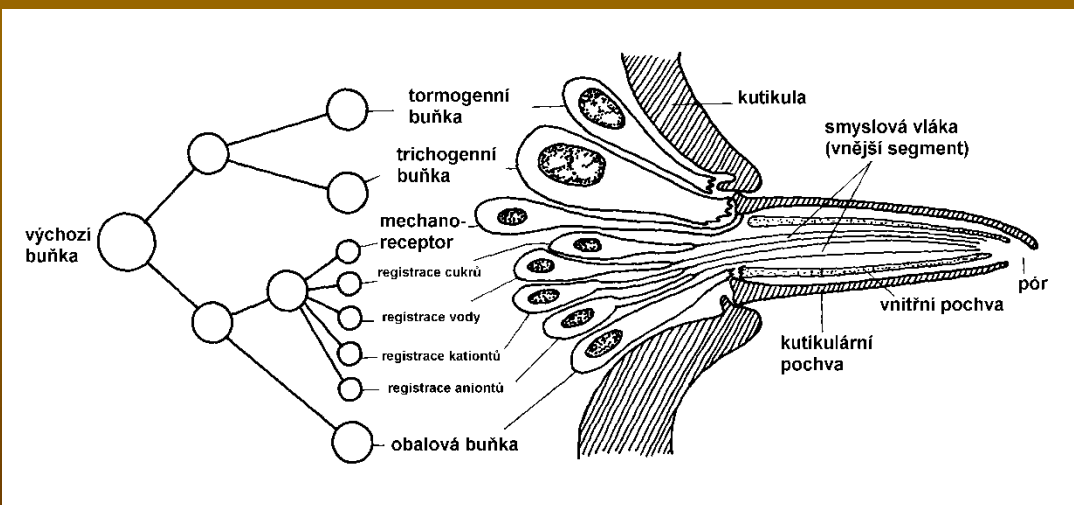
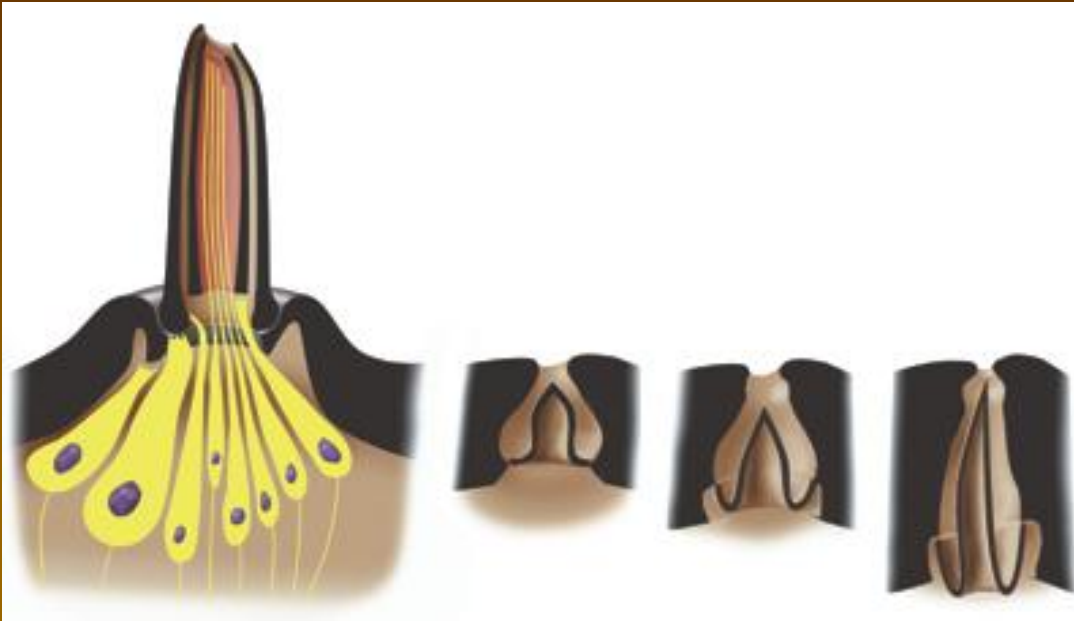
Smyslové orgány



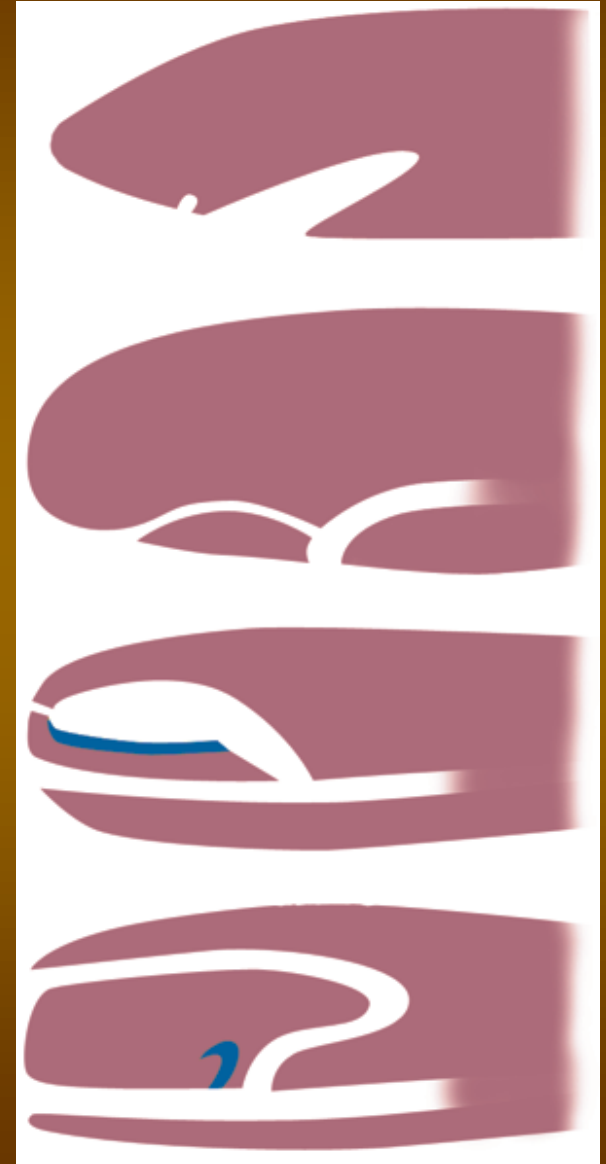
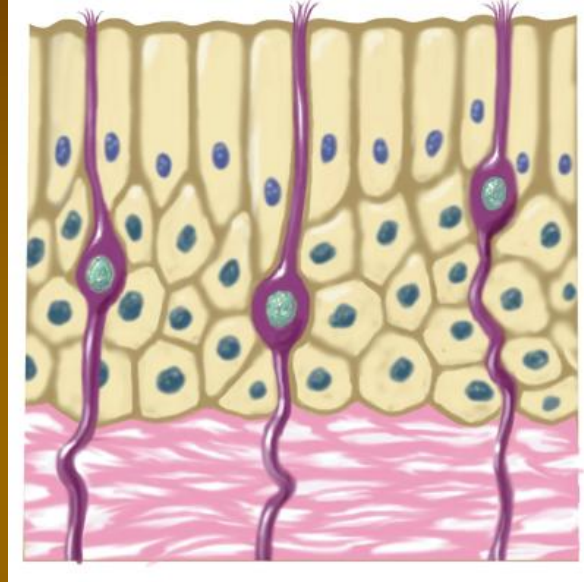
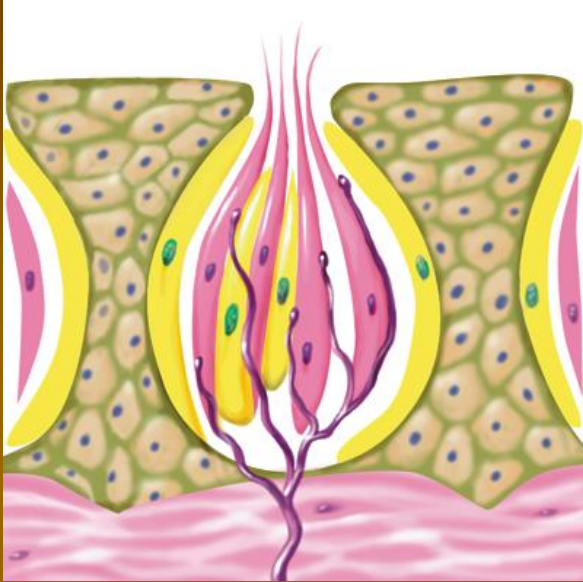
Smyslové orgány



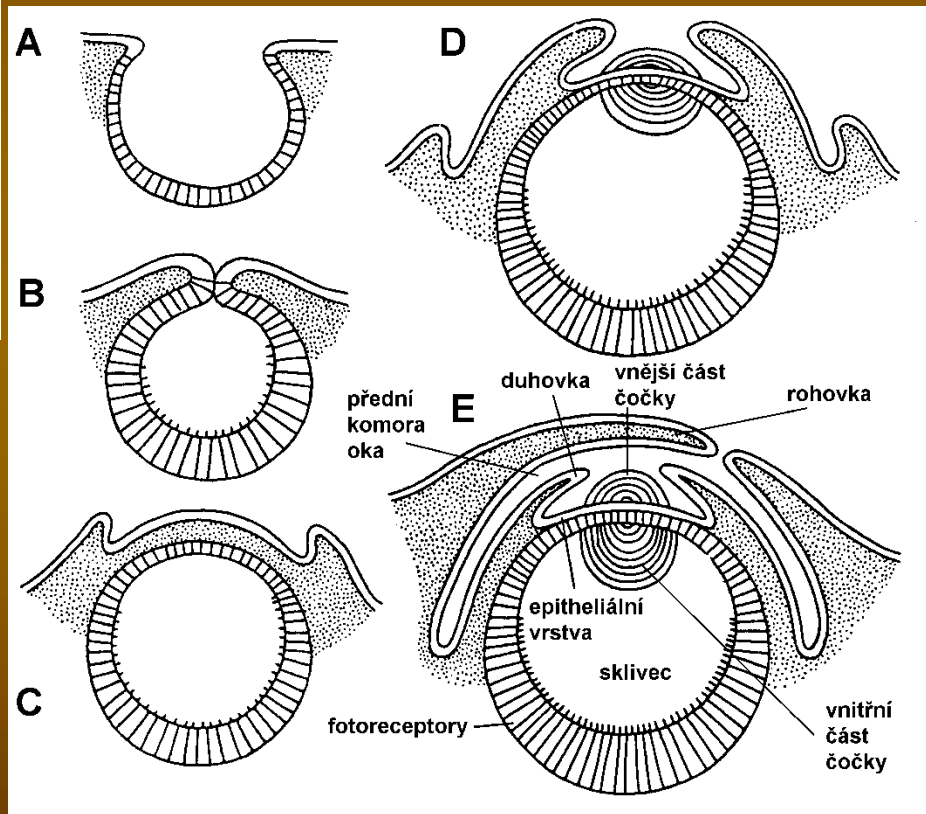
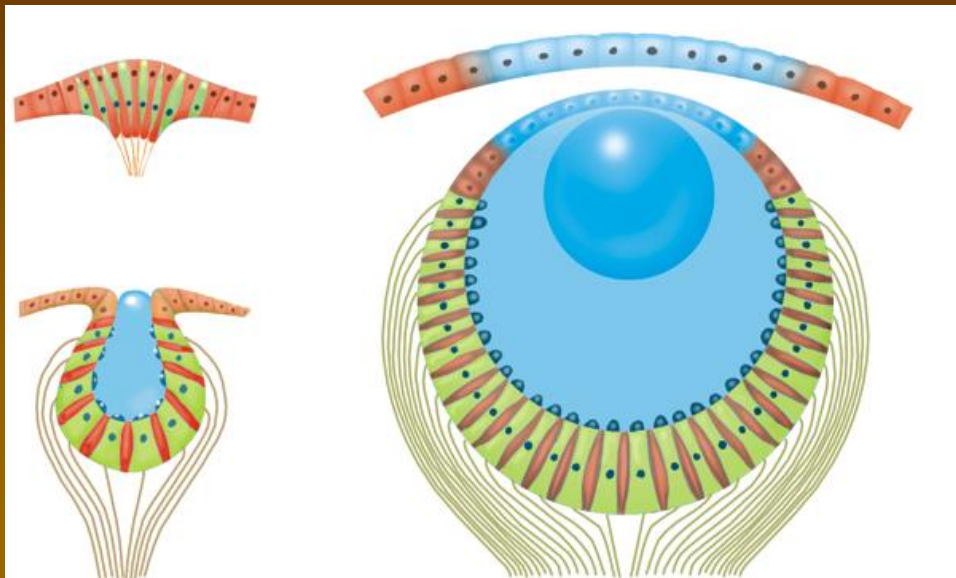
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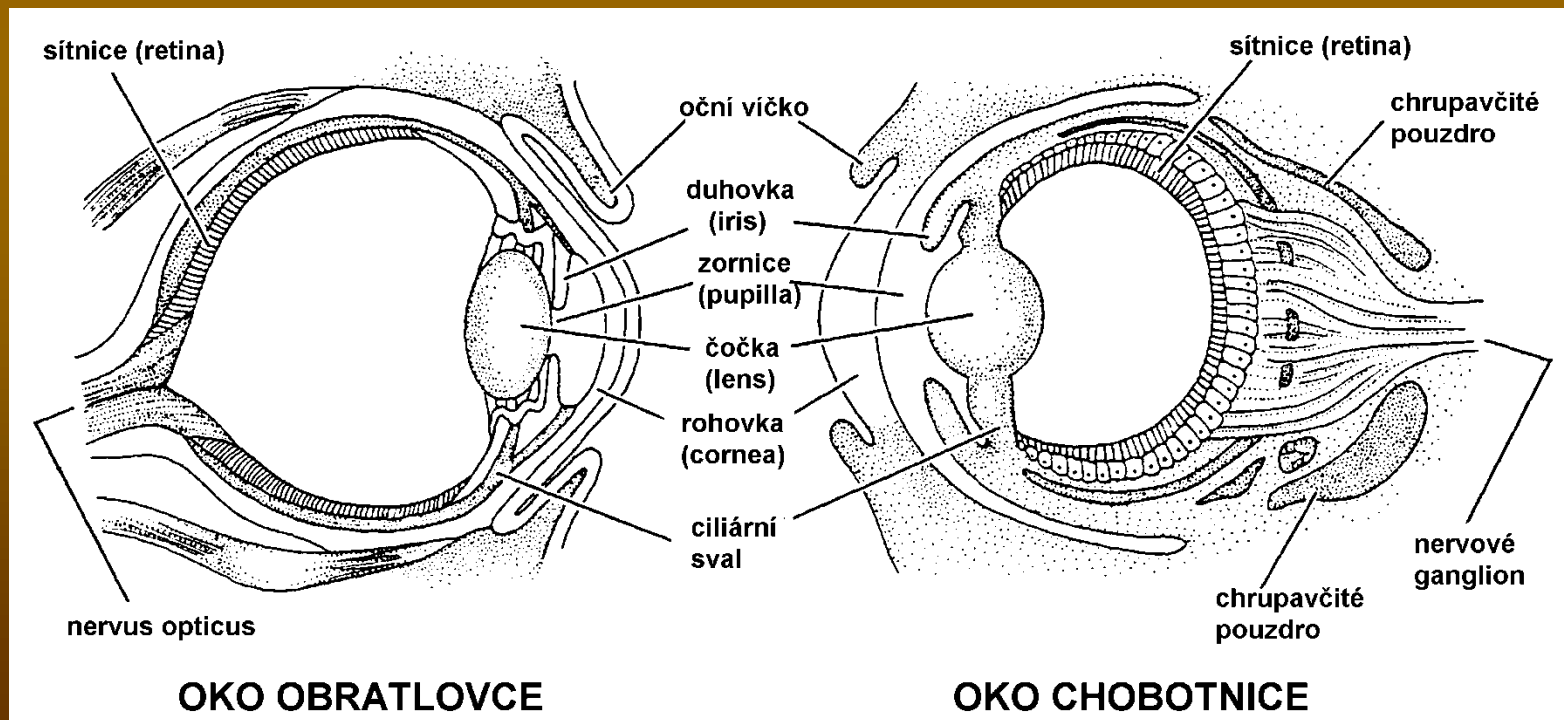
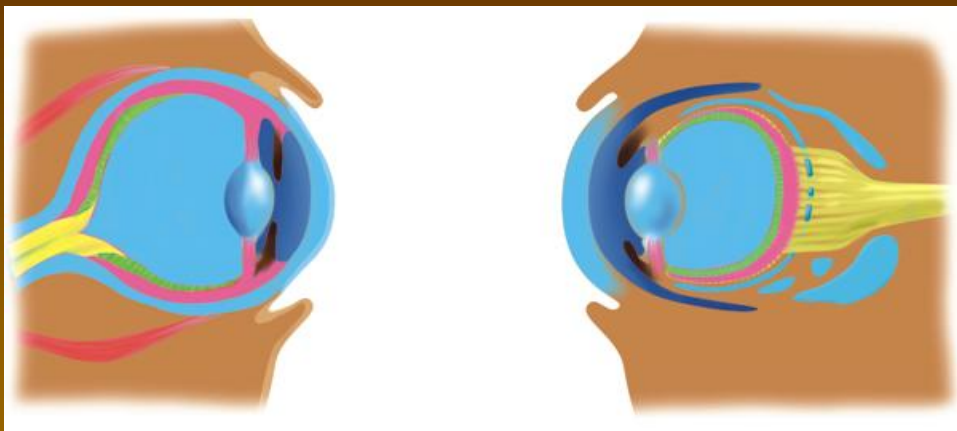
Smyslové orgány



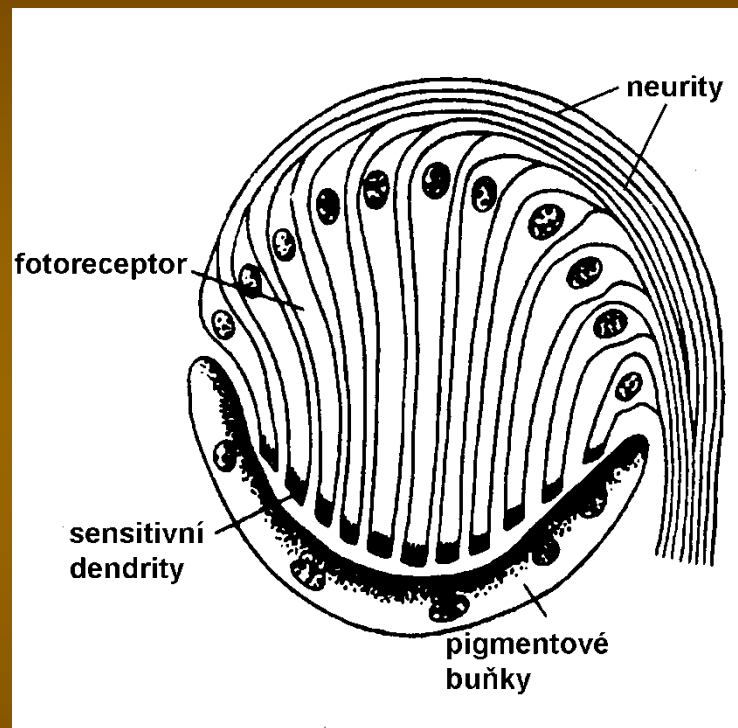
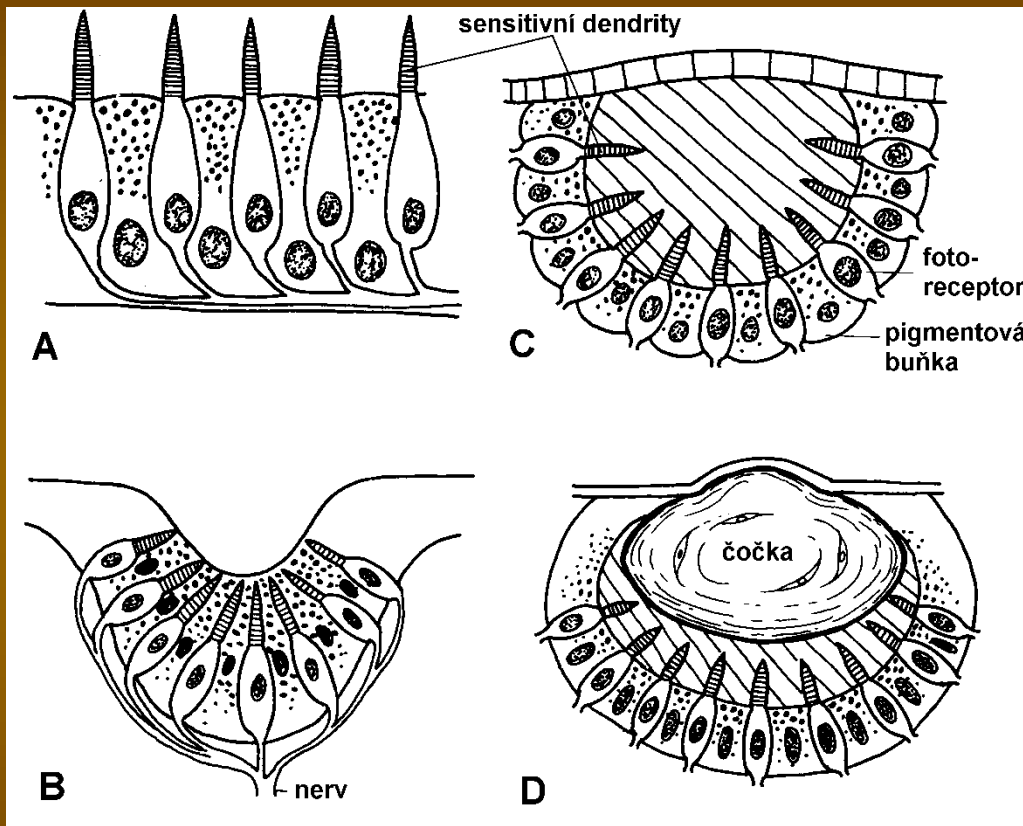
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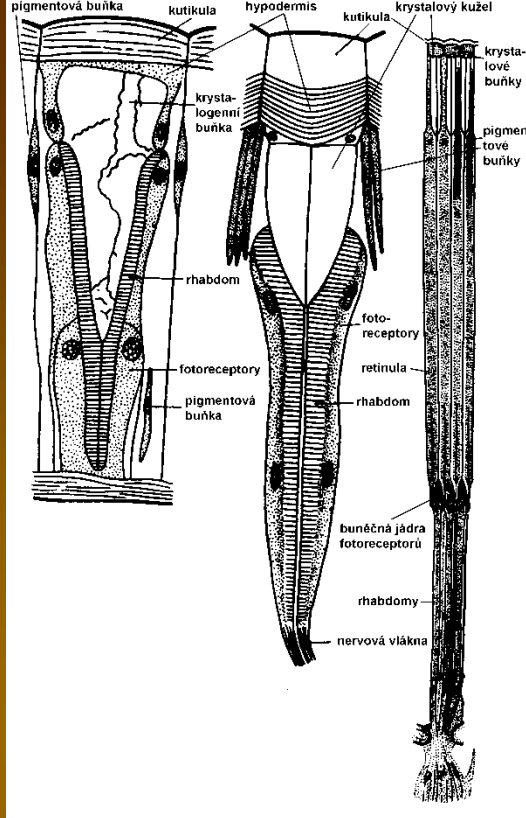
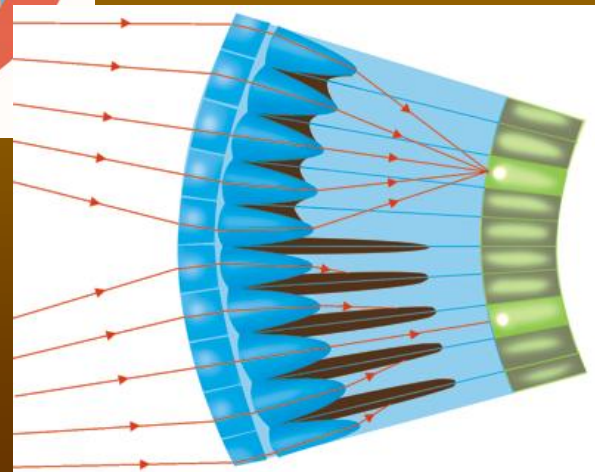
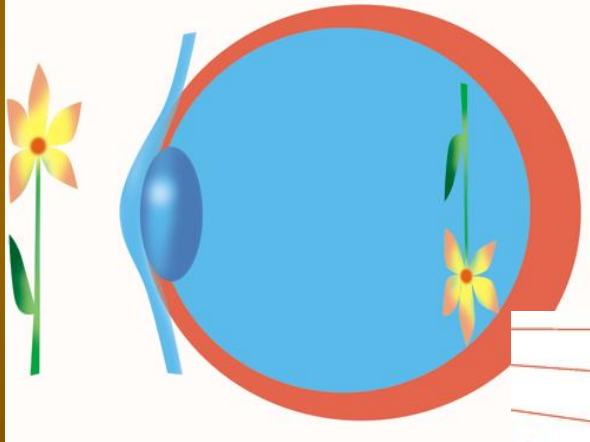
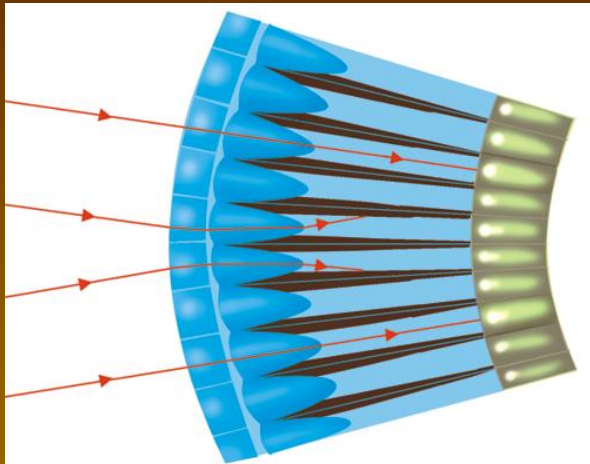
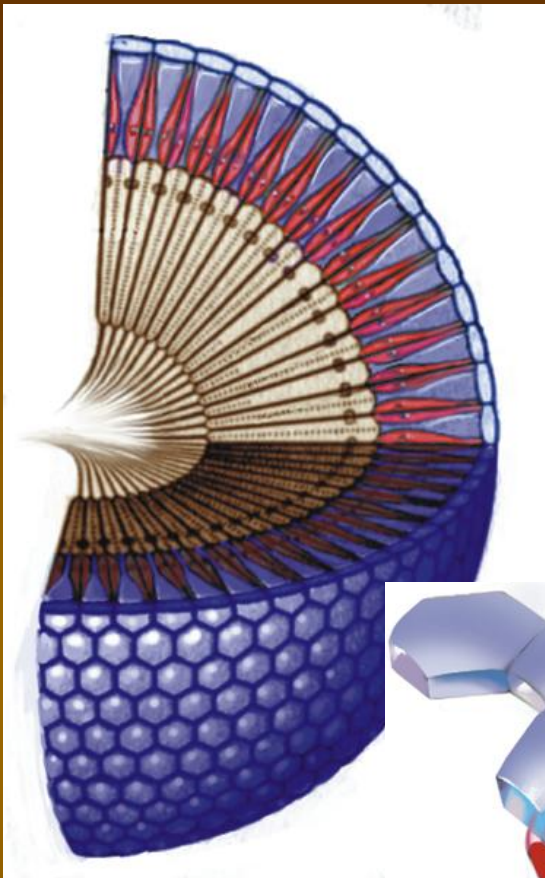
Smyslové orgány



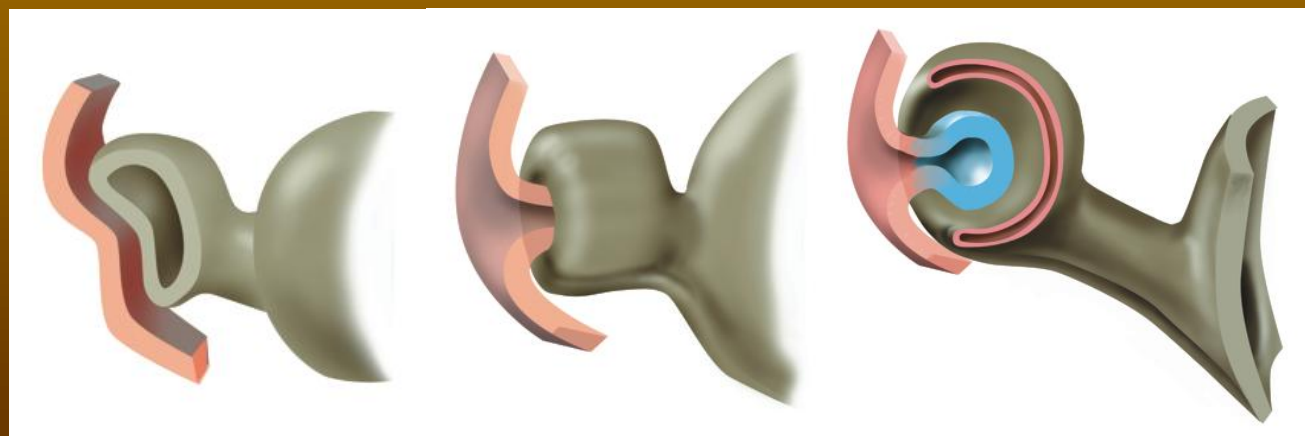
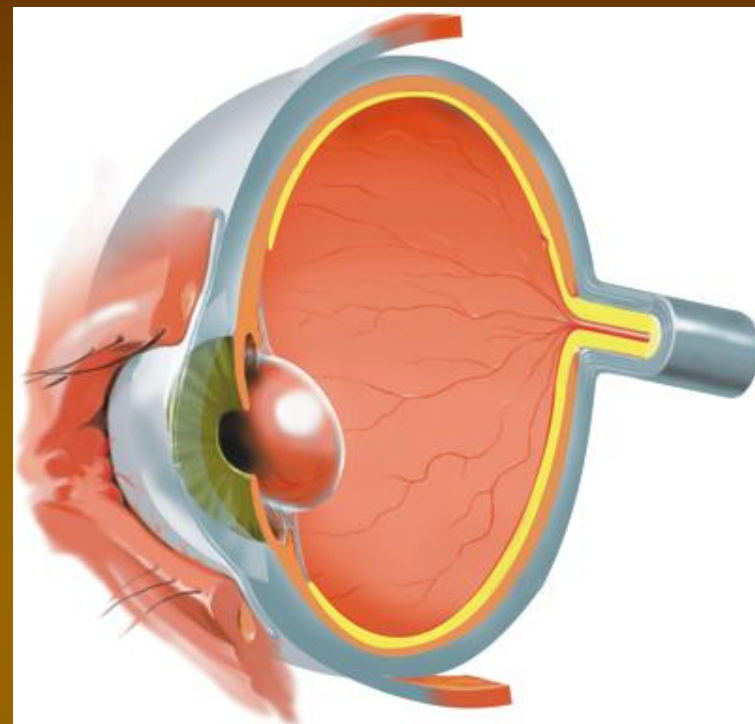
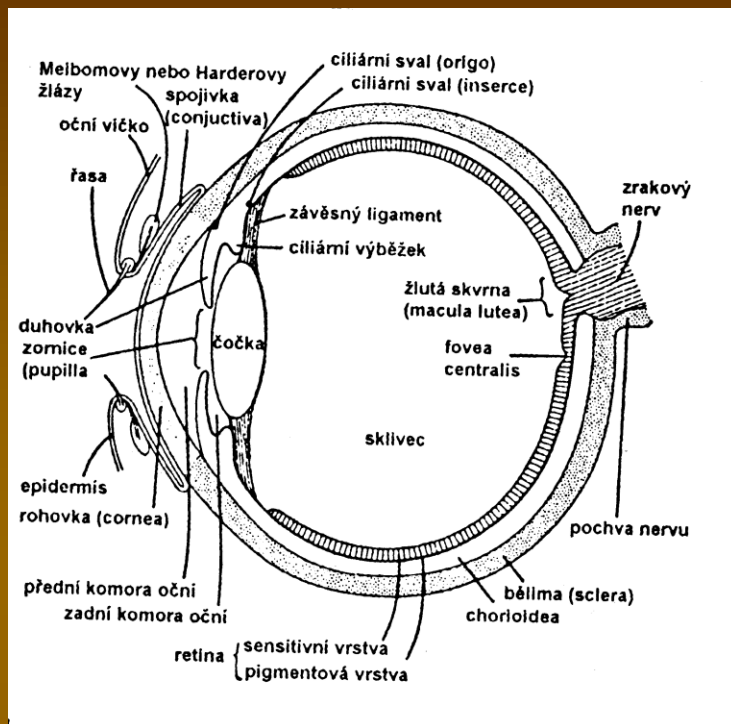
Smyslové orgány



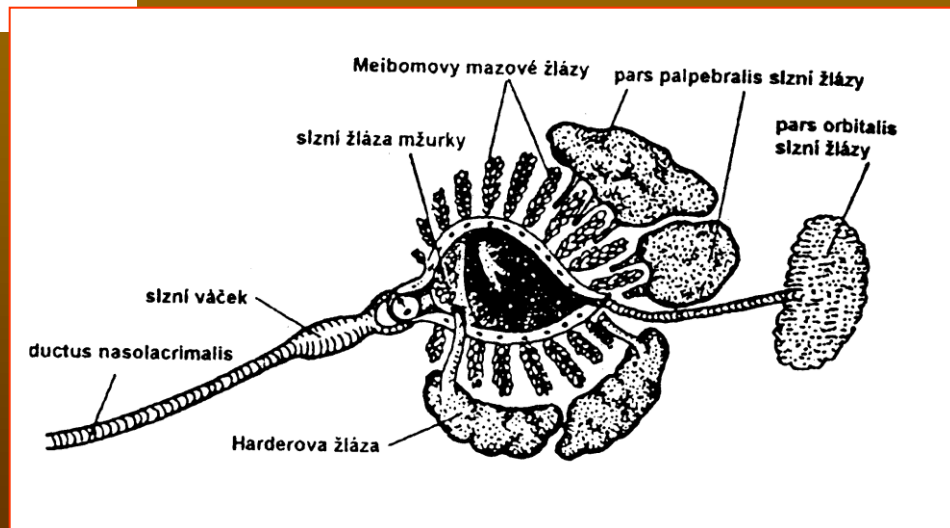
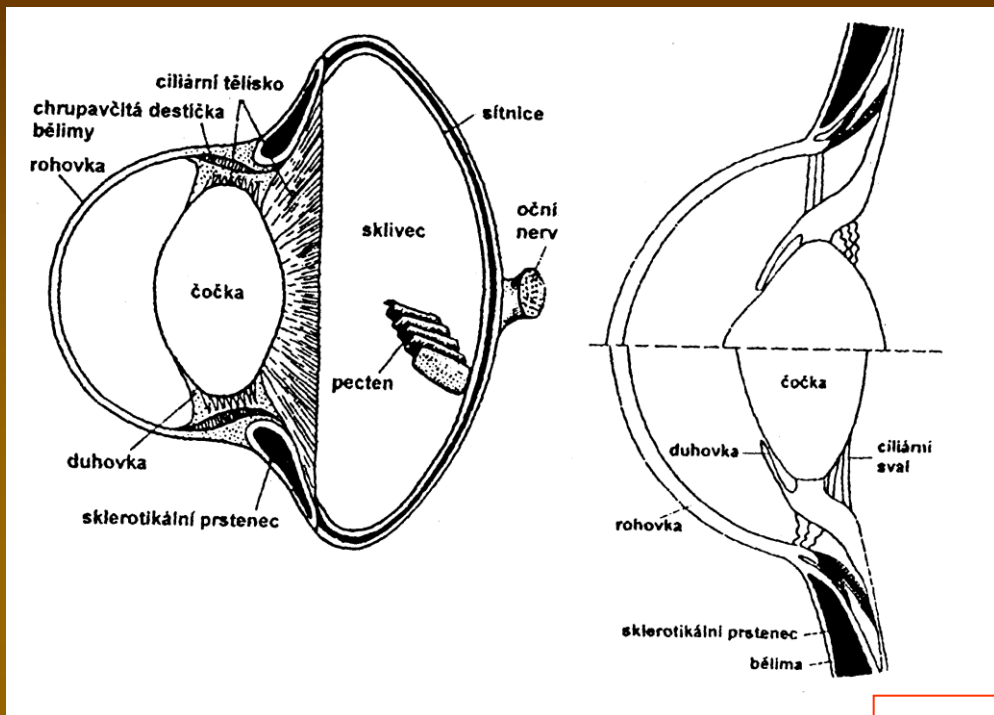
Smyslové orgány



Smyslové orgány



Smyslové orgány



Smyslové orgány

Smyslové buňky: primární a sekundární

Receptory: a) extero-, propio-, entero-;

b) chemo-, mechano-, radio- (foto-, termo-)

• kožní receptory (exteroreceptory)

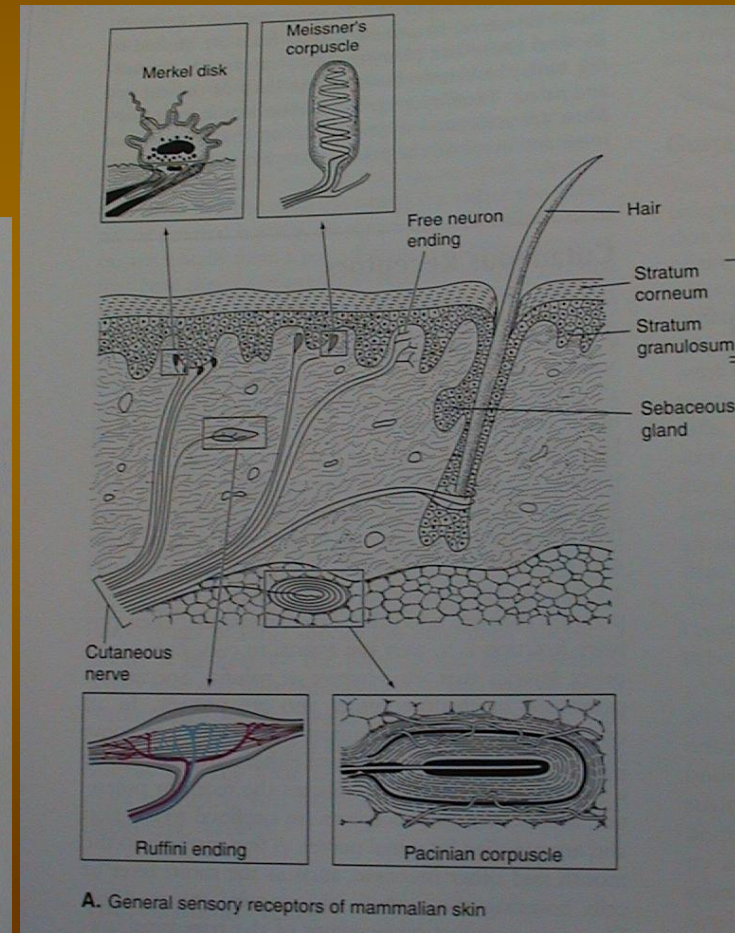
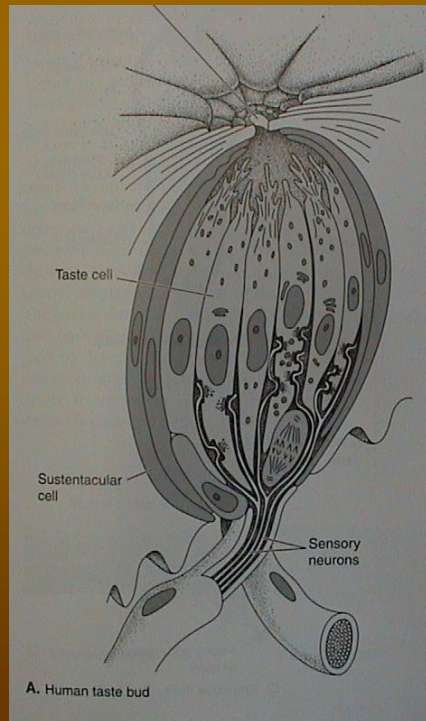
Volná nervová zakončení - bolest; Merkelovy

terčky (sek.) - dotek

Tělíška - Meissner, Pacini, Herbst - hmat;

Krause, Rufini - chlad, teplo

• chuťové pupeny a pohárky



Smyslové orgány

• zrak - inverzní komorové oko

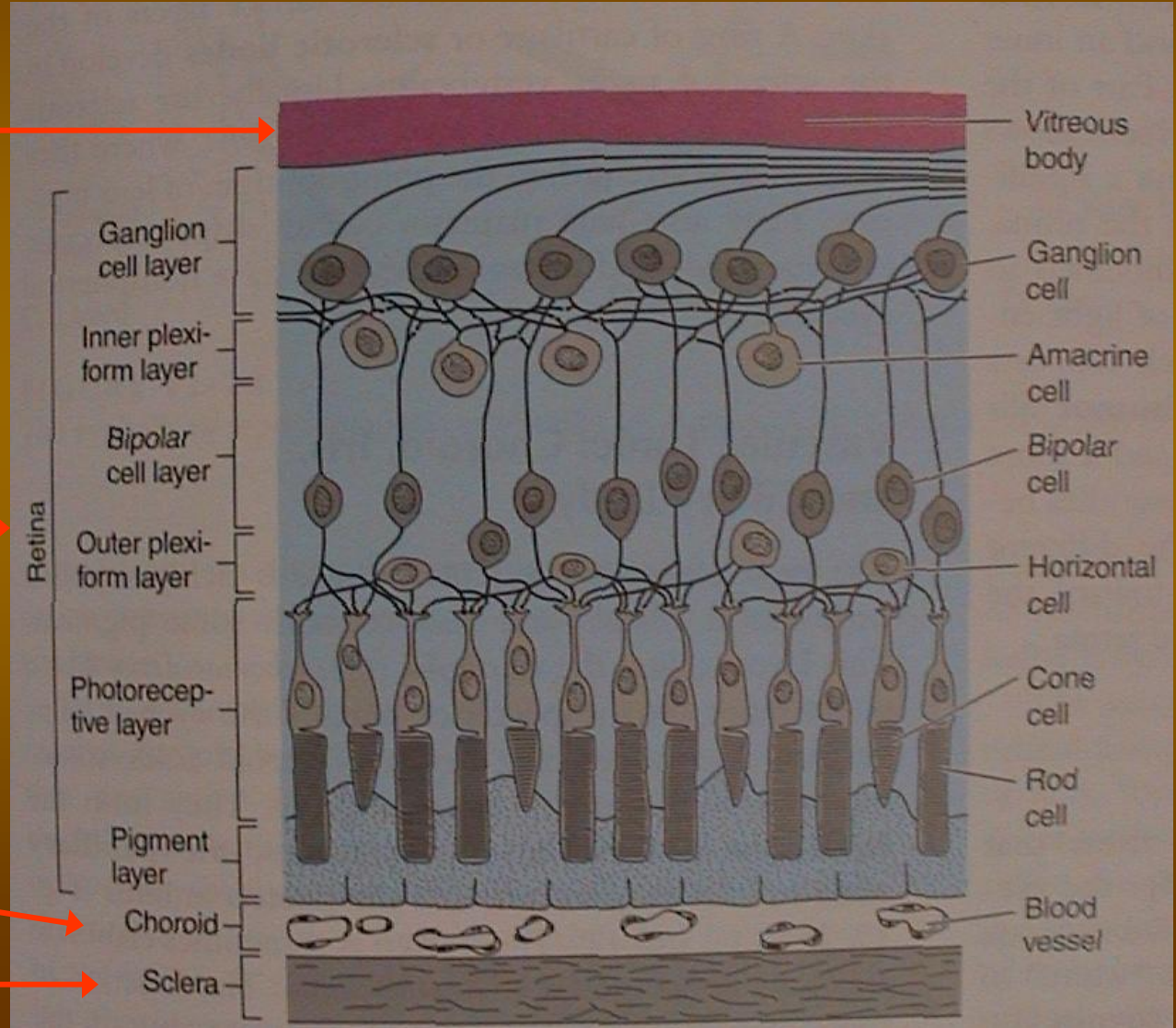
1. bělima (+ rohovka), 2. cévnatka (+ duhovka, pupilla), 3. sítnice;
přední a zadní komora, čočka (lens), řasnatý val (corpus ciliare)

sklivec
(corpus vitreum)

sítnice (11 vrstev)
(retina)

cévnatka
(chorioidea)

bělima
(sclera)



• zrak - akomodace

Smyslové orgány

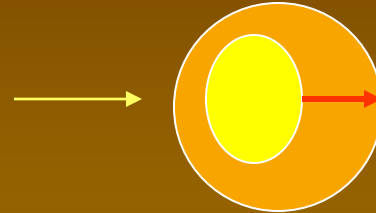
klid

zaostřování - akomodace

na blízko

mihule a kostnaté ryby

na dálku

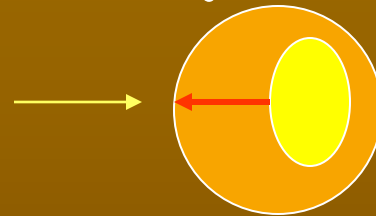


m. retractor lentis

na dálku

paryby, starobylé ryby,
obojživelníci

na blízko



m. protractor lentis

na dálku

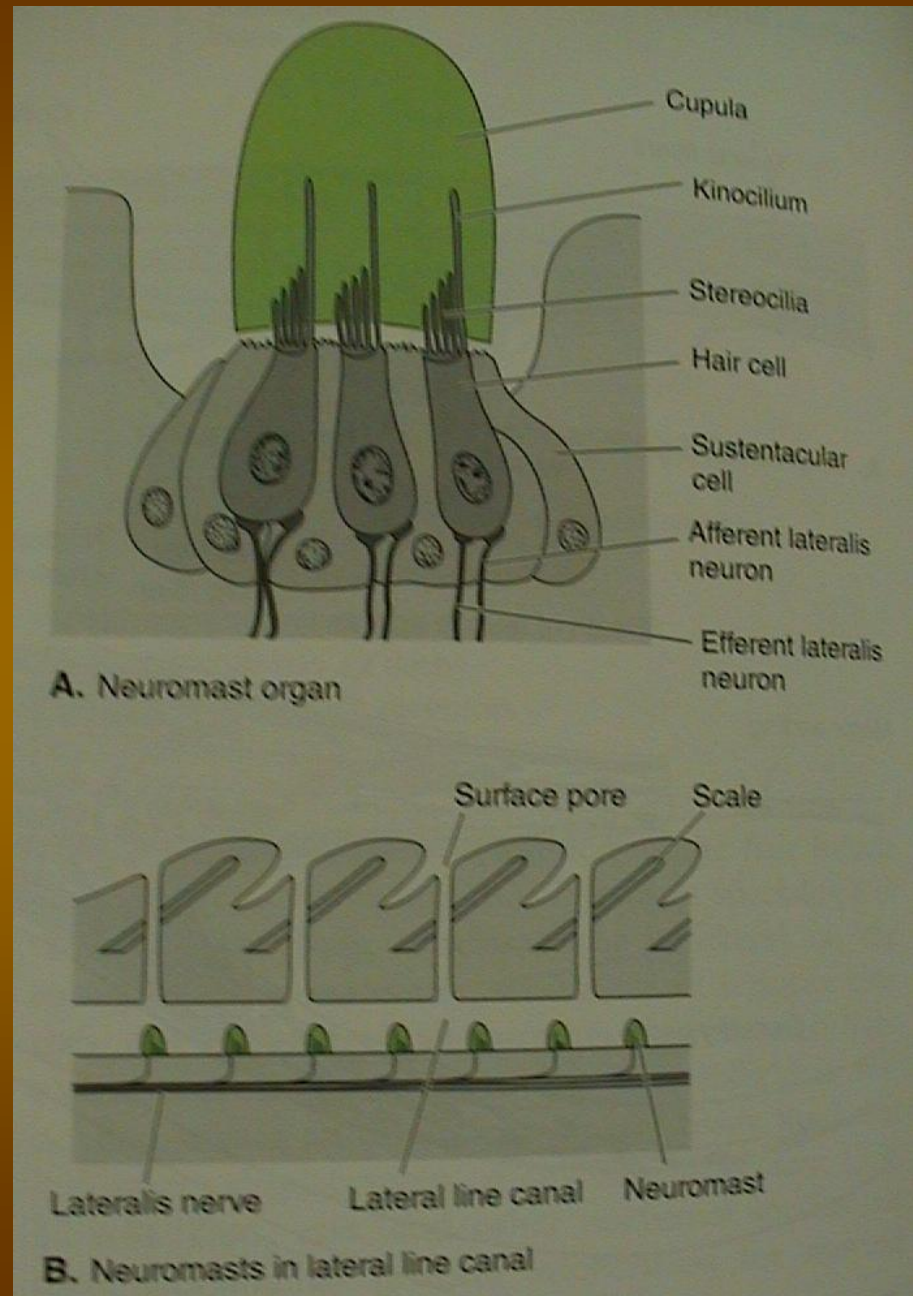
Amniota - plazi, ptáci, savci

na blízko



Smyslové orgány

- proudový orgán - neuromasty



u ryb na bocích - postranní čára

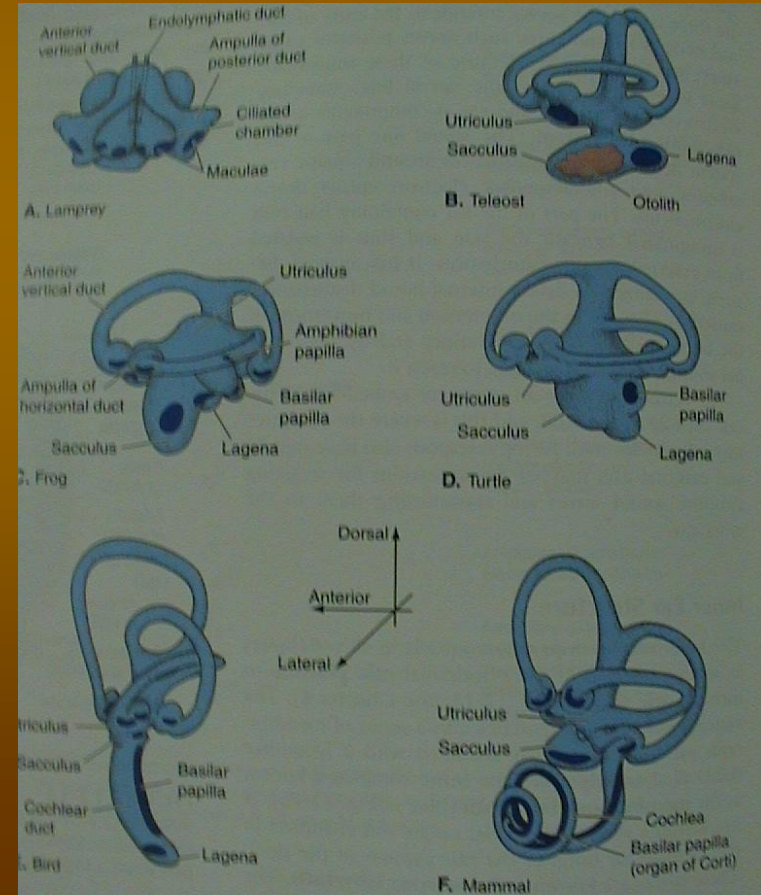
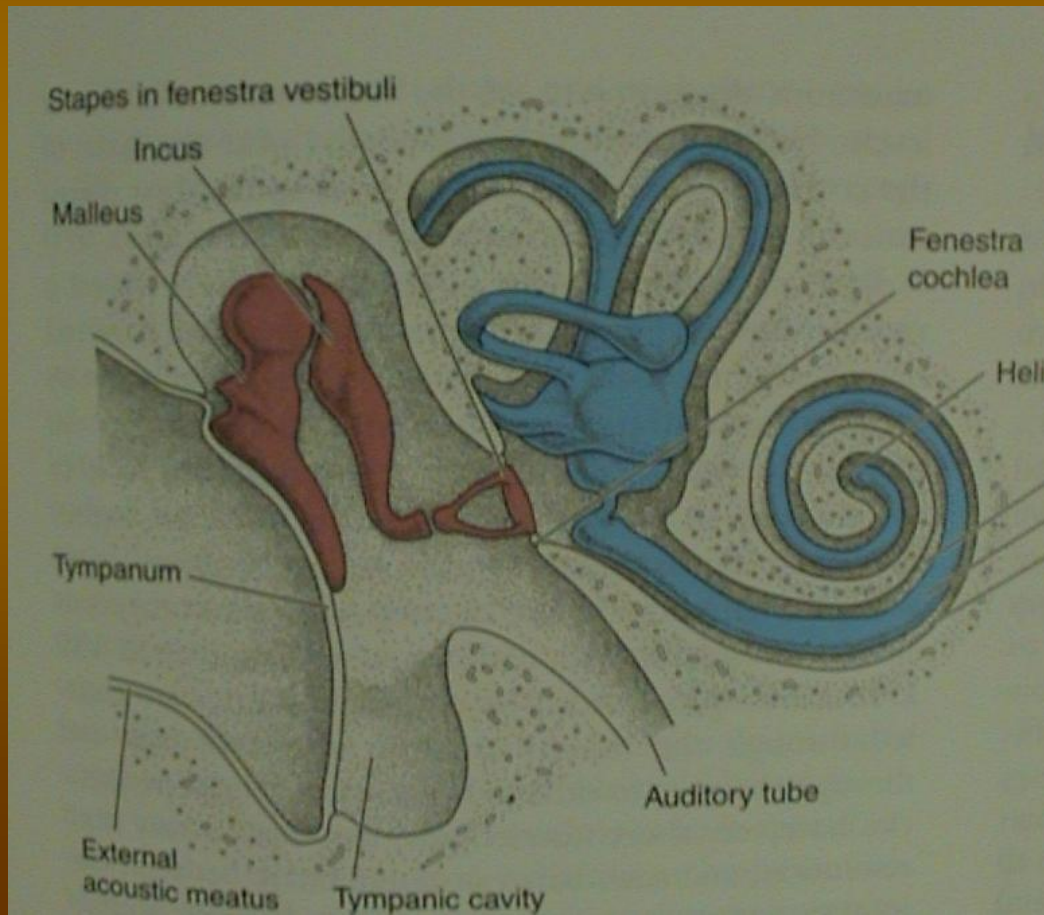
Smyslové orgány

- sluchově rovnovážný orgán - ucho

A. vnitřní ucho - kostěný (perilymfa) a blanitý labyrint (endolymfa); vestibulární aparát (U, S, DS) + sluch (lagena - cochlea)

B. střední ucho - středoušní dutina, tympanum, sluchové kůstky (1-columella, 3 - malleus, incus, stapes), oválné a kruhové okénko, Eustachova trubice

C. vnější ucho - zevní zvukovod, boltec



Smyslové orgány

- sluchově rovnovážný orgán - ucho

A. vnitřní ucho

utricleus (U)

sacculus (S)

lagena (L) - cochlea

ducti semicirculares (2, 3),
ampullae

Statické receptory:

maculae U, S, L

statokonie - drobné,
statolity (3 otolity) - velké

Kinetické receptory:

cristae d. semicircularii

Akustické receptory:

maculae L - papilla basilaris

(+ macula amphibiorum) -

Cortiho orgán

