

A metamorfose

1. **Metamorfose – Vertebrados**
2. Metamorfose – Insetos

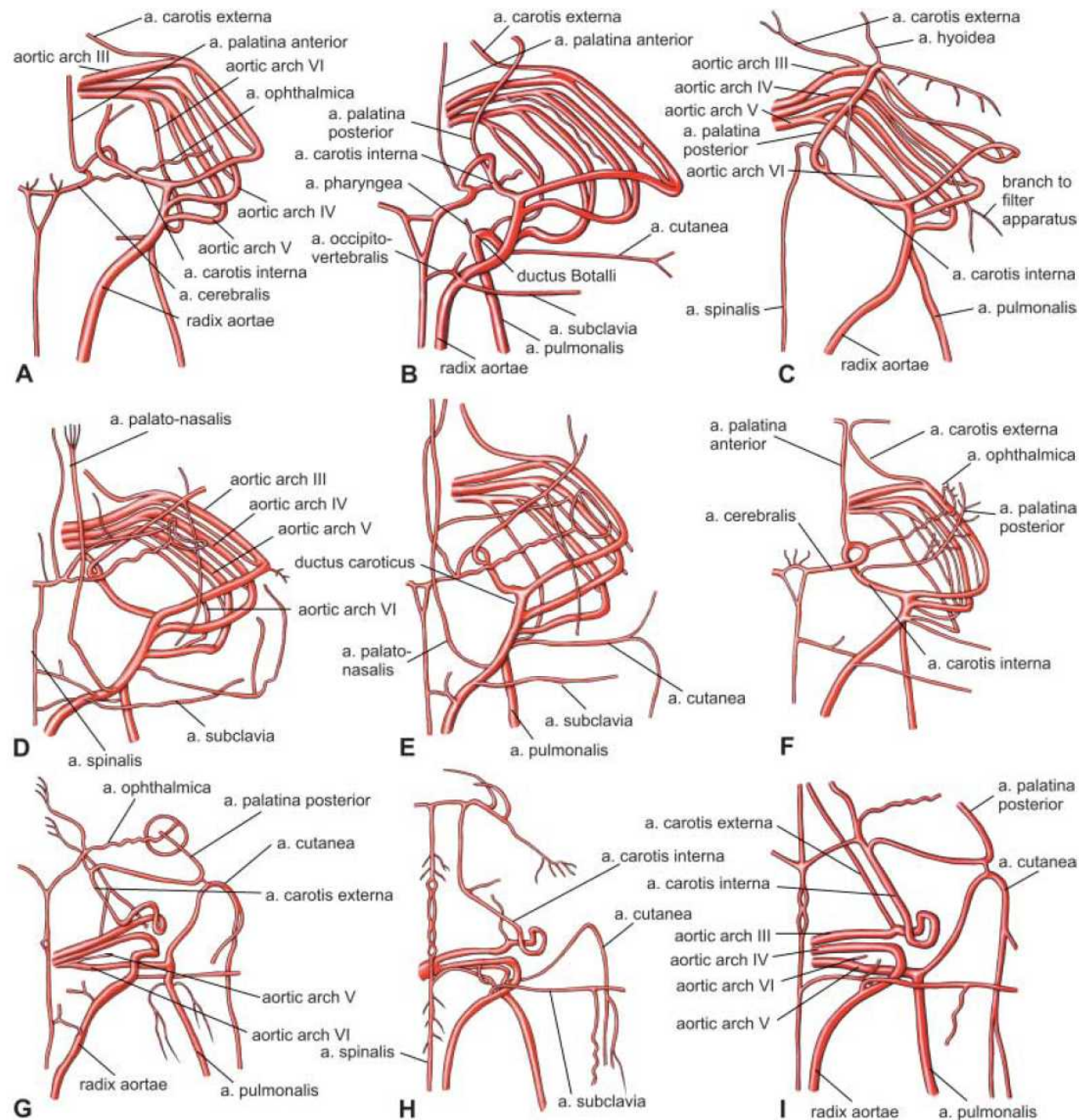


TABLE 18.1 Summary of some metamorphic changes in anurans

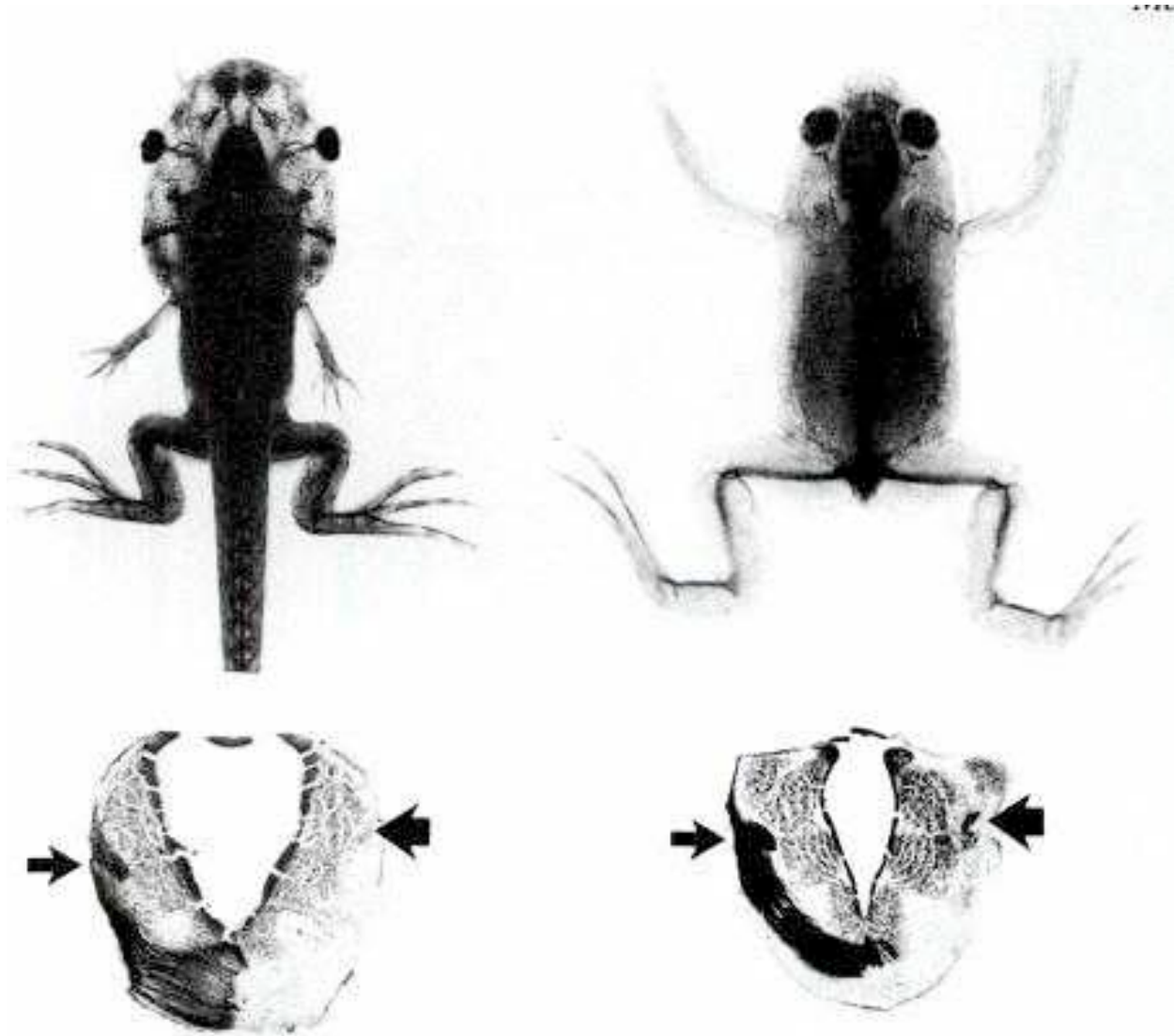
System	Larva	Adult
Locomotory	Aquatic; tail fins	Terrestrial; tailless tetrapod
Respiratory	Gills, skin, lungs; larval hemoglobins	Skin, lungs; adult hemoglobins
Circulatory	Aortic arches; aorta; anterior, posterior, and common jugular veins	Carotid arch; systemic arch; cardinal veins
Nutritional	Herbivorous: long spiral gut; intestinal symbionts; small mouth, horny jaws, labial teeth	Carnivorous: short gut; proteases; large mouth with long tongue
Nervous	Lack of nictitating membrane; porphyropsin, lateral line system, Mauthner's neurons	Development of ocular muscles, nictitating membrane, rhodopsin; loss of lateral line system, degeneration of Mauthner's neurons; tympanic membrane
Excretory	Largely ammonia, some urea (ammonotelic)	Largely urea; high activity of enzymes of ornithine-urea cycle (ureotelic)
Integumental	Thin, bilayered epidermis with thin dermis; no mucous glands or granular glands	Stratified squamous epidermis with adult keratins; well-developed dermis contains mucous glands and granular glands secreting anti-microbial peptides

Source: Data from Turner and Bagnara 1976 and Reilly et al. 1994.

Mudanças no sistema circulatório do *Pelobates fuscus*

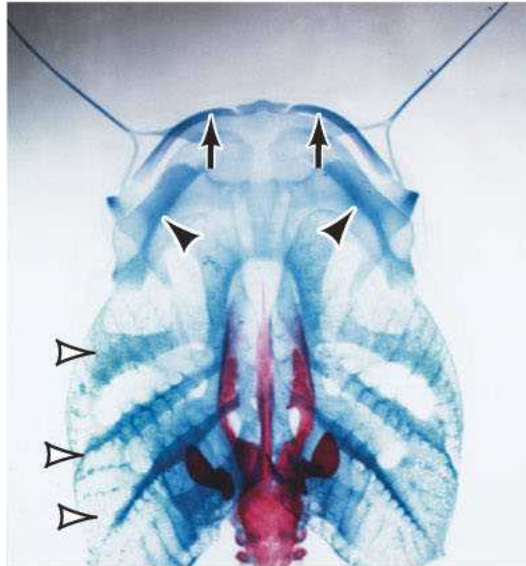


Migração dos olhos e mudanças neurais na metamorfose de *Xenopus laevis*

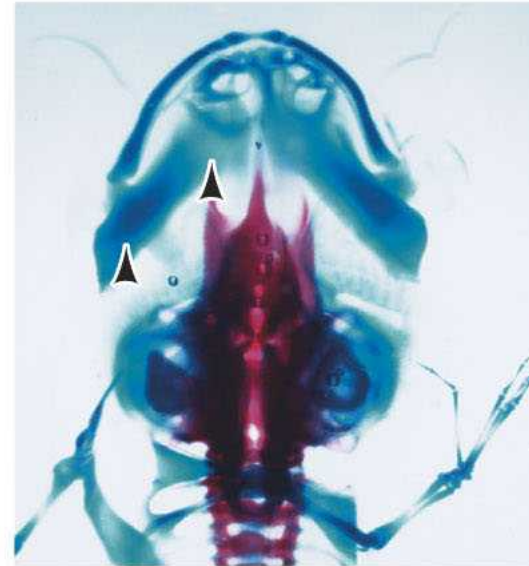


Câmbios no desenvolvimento do crânio de *Xenopus*

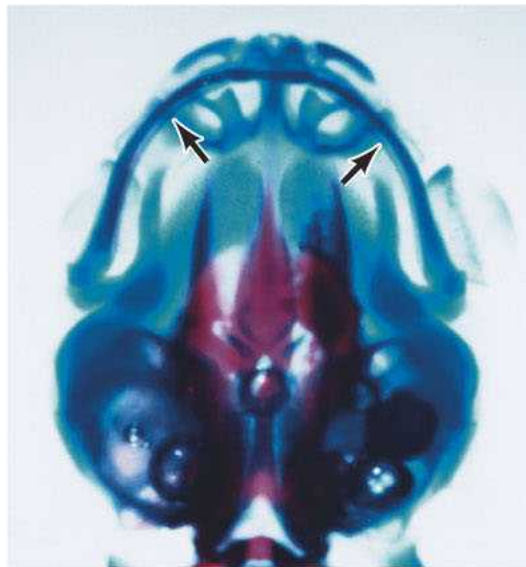
(A)



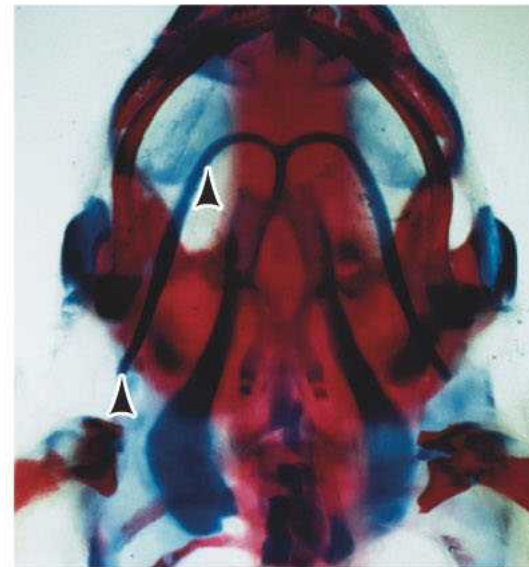
(B)



(C)

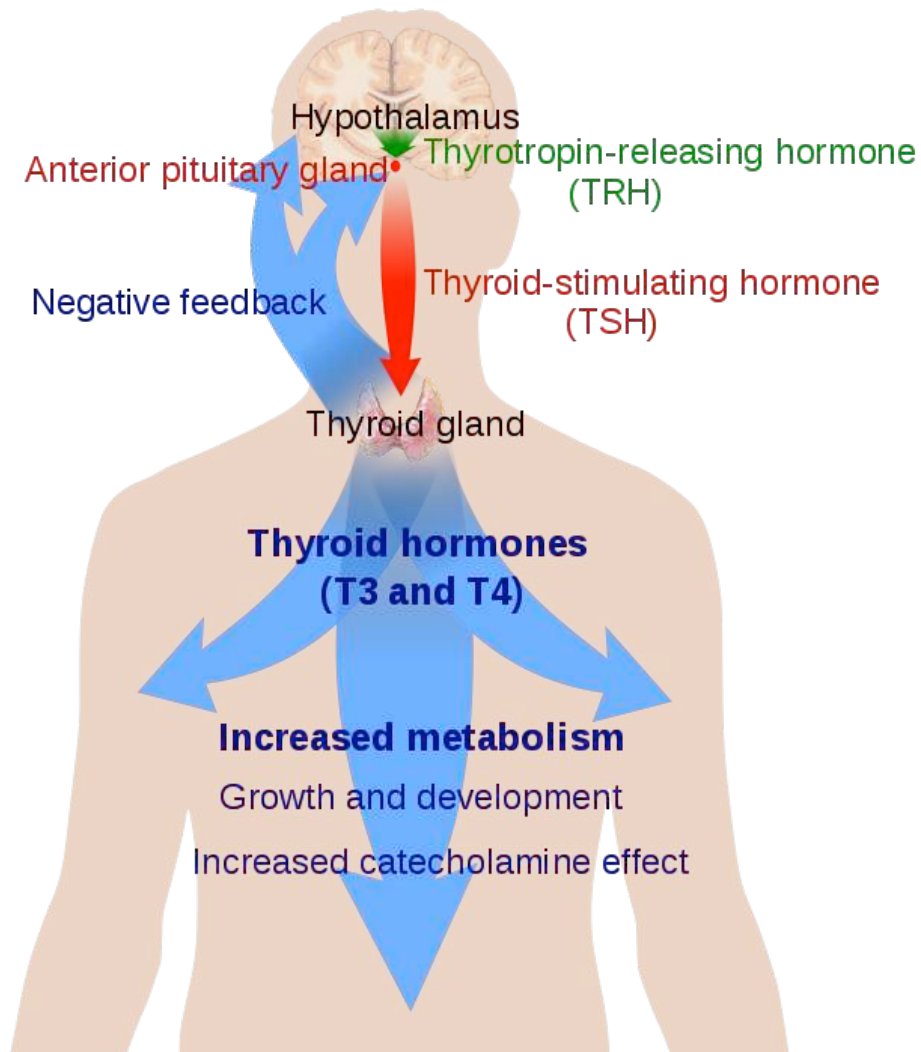


(D)



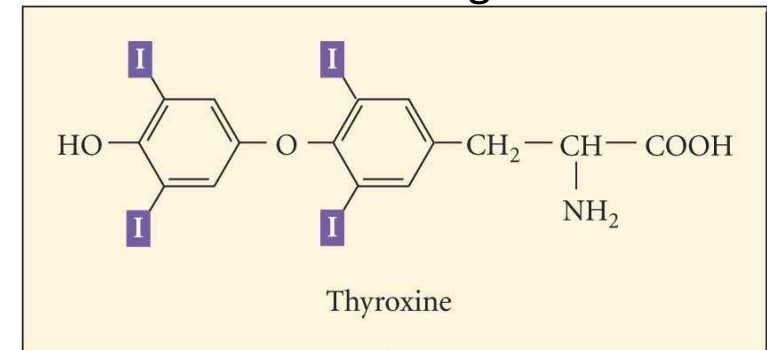
Metabolismo de tiroxina (T_4) e triiodotironina (T_3)

Thyroid system

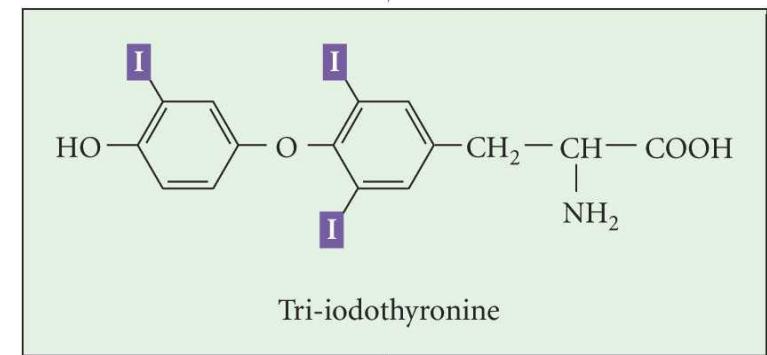


Tiroxina (T_4)

Predominantemente na sangue



Type II deiodinase



Triiodotironina (T_3)

Em células e mais potente do que T_4

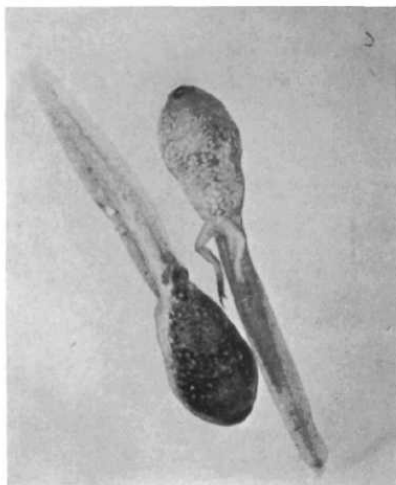


Fig. 1. Ventral view of tadpoles after seven days; (1) control, (2) anterior pituitary injected.

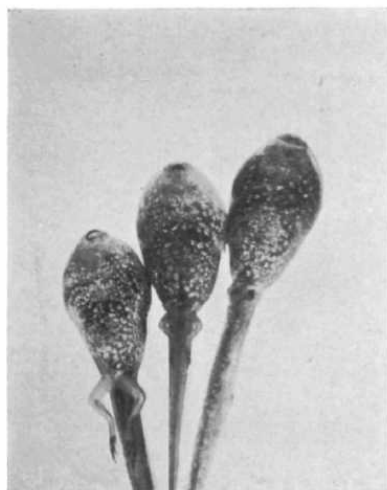


Fig. 2. Ventral view of tadpoles after eight days; (1) control, (2) anterior pituitary injected, (3) anterior pituitary injected and kept in 1 in 250 iodine solution.



Fig. 3. Side of view of tadpoles after eight days; (1) control, (2) anterior pituitary injected, (3) anterior pituitary injected and kept in 1 in 250 iodine solution.

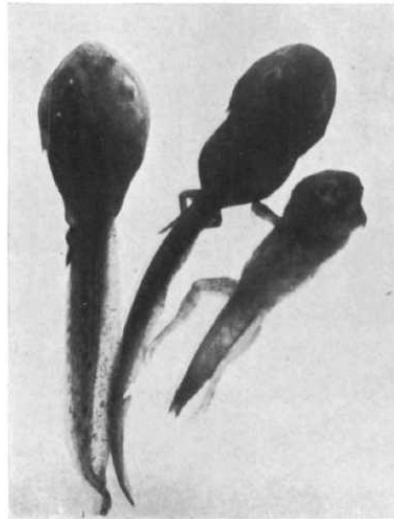


Fig. 4. After sixteen days; (1) control, (2) anterior pituitary injected, (3) anterior pituitary injected and kept in 1 in 250 iodine solution.

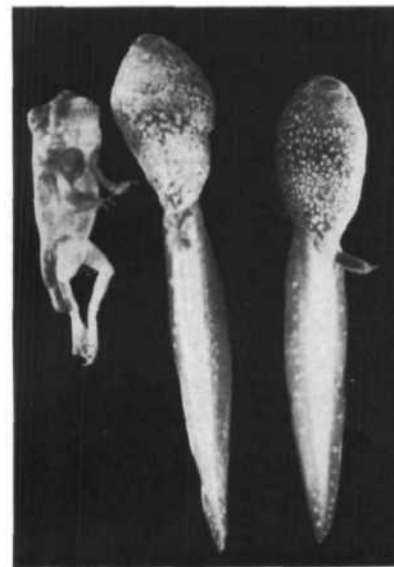


Fig. 5. Tadpoles kept in iodine solution twenty-four days; (1) 1 in 100, (2) 1 in 500, (3) 1 in 1000.



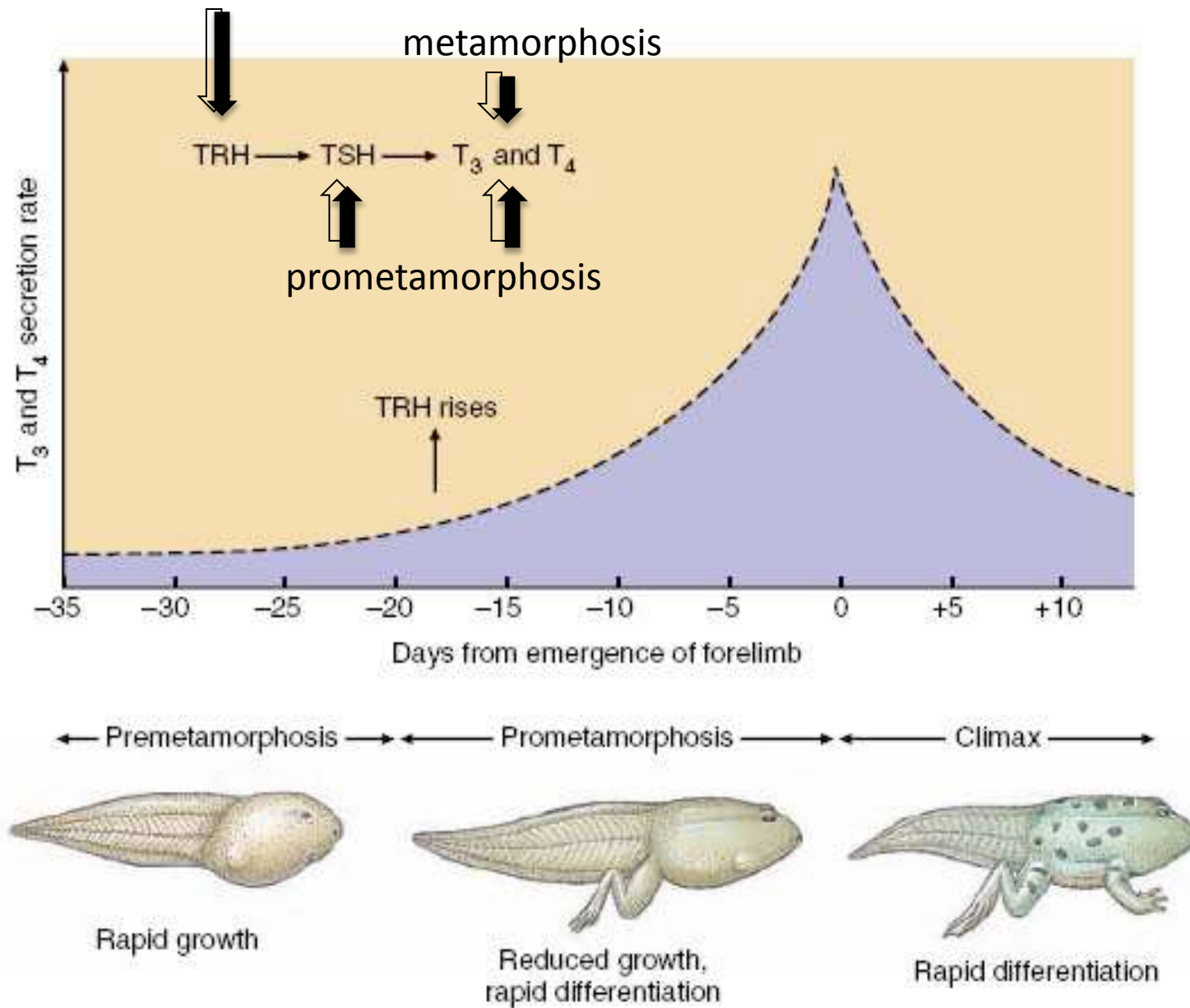
Fig. 6. Tadpoles kept in iodine solution twenty-four days; (1) control, (2) 1 in 300, (3) 1 in 100.

ACCELERATED METAMORPHOSIS OF FROG TADPOLES BY INJECTIONS OF EXTRACT OF ANTERIOR LOBE PITUITARY GLAND AND THE ADMINISTRATION OF IODINE.*

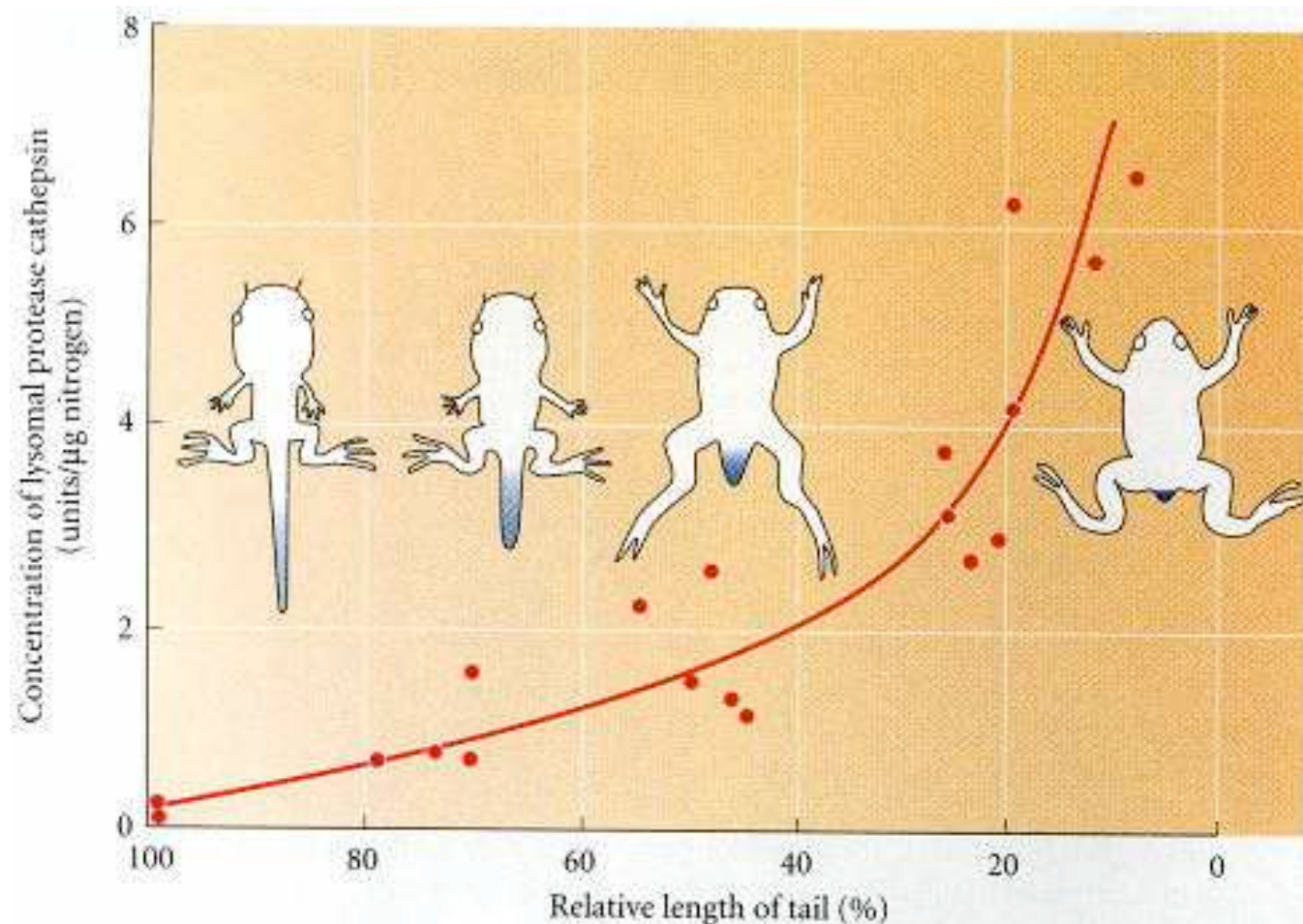
By E. A. SPAUL, Birkbeck College (University of London).

Spaul, 1923

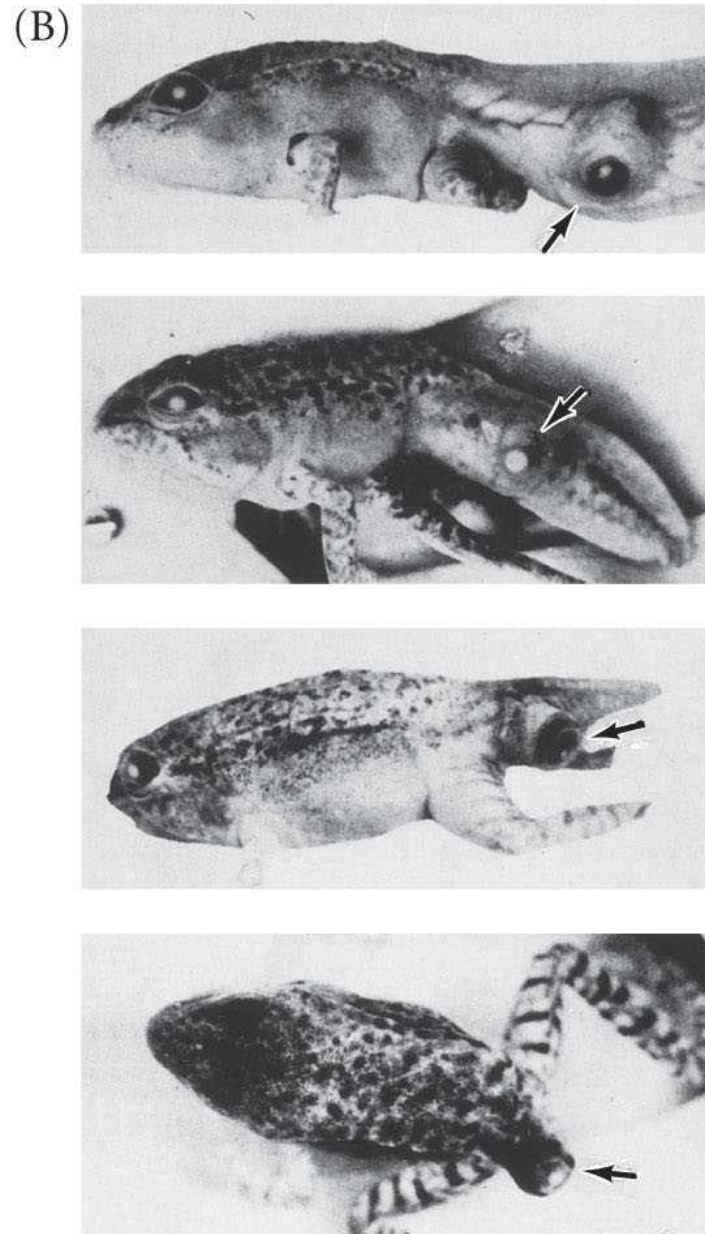
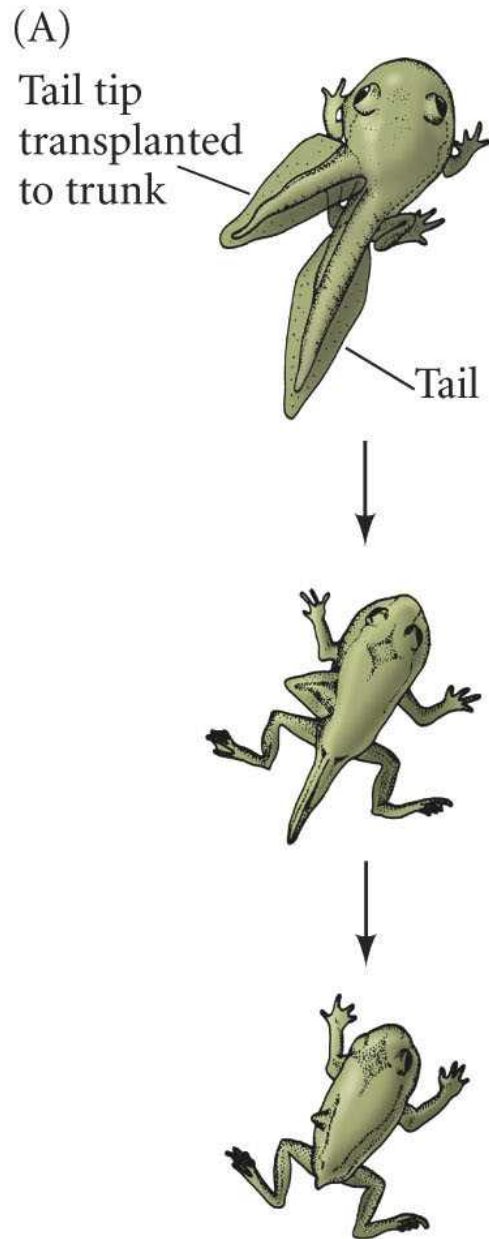
no final da premetamorphosis



Atividade lisosômica de cathepsina durante a regressão da cauda

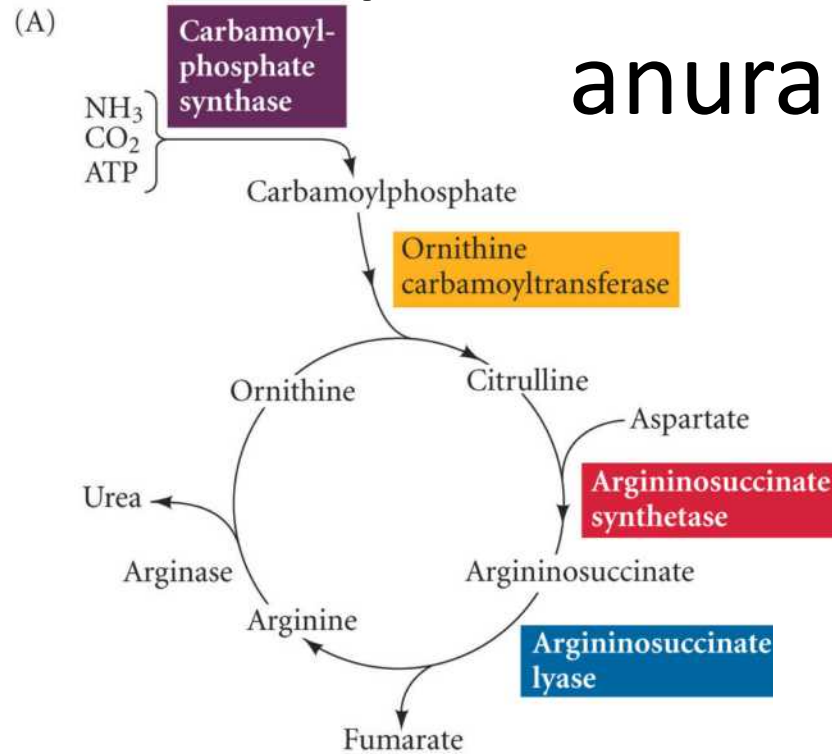


Especificidade regional durante a metamorfose de anuros



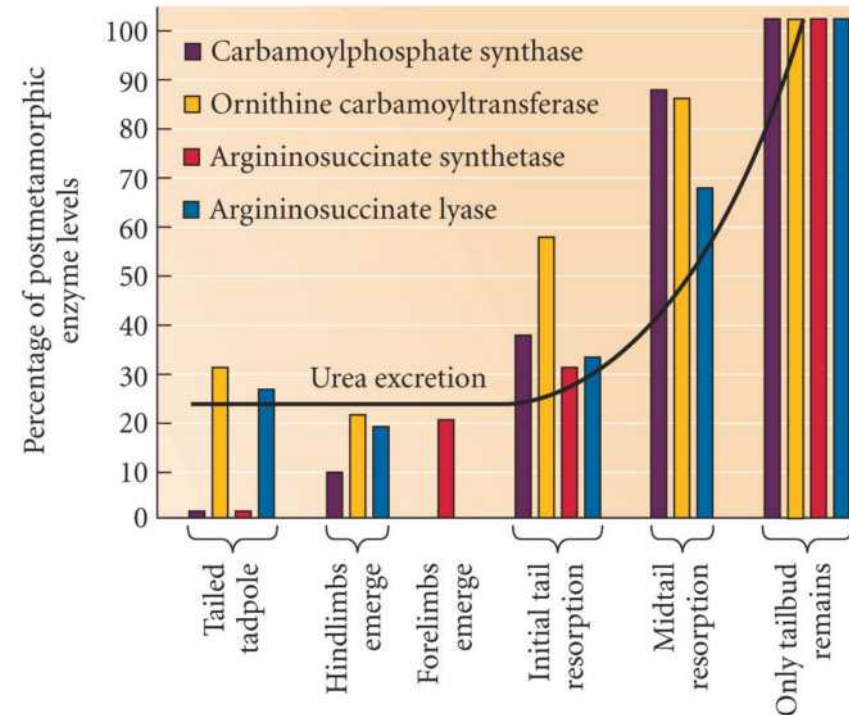
human week 4 embryo
(time for tail regression)

Development of the urea cycle during anuran metamorphosis (I)



DEVELOPMENTAL BIOLOGY, Eighth Edition, Figure 18.3 (I)

(B)

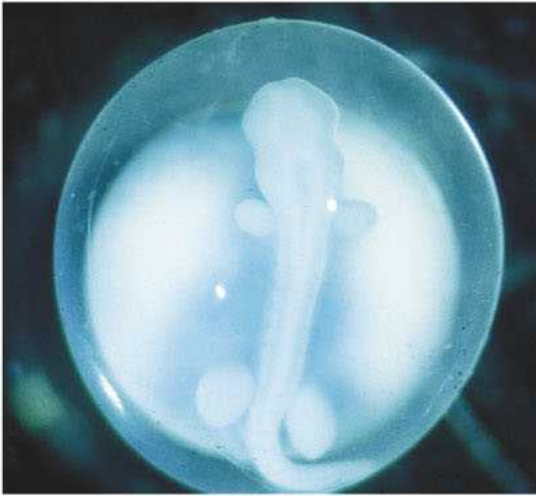


Metamorfosis en otros anfibios - *Ambystoma*

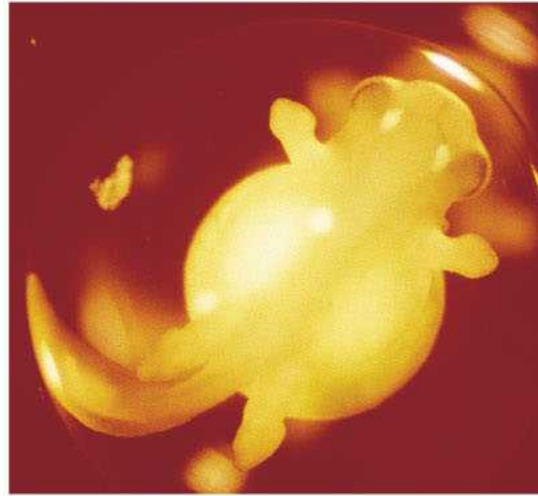


Metamorfosis en otros anfibios – *Eleutherodactylus coqui*

(A)



(B)



(C)



Metamorfosis en otros anfibios – *Dendrobates* y *Rheobatrachus*



(A)



(B)

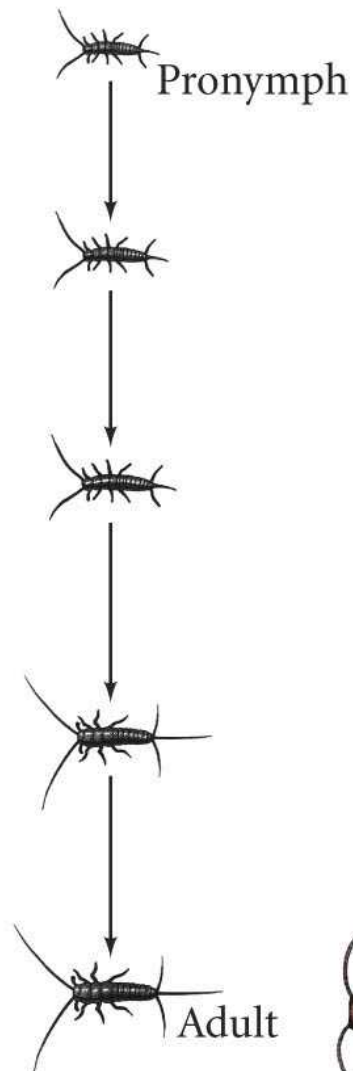
A metamorfose

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- 2. Metamorfose – Insetos**

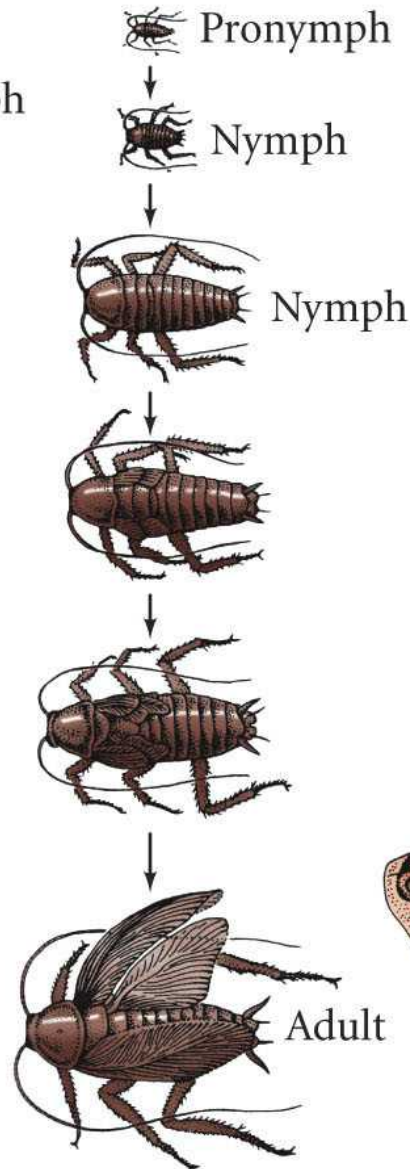


Modos de desarrollo de insectos

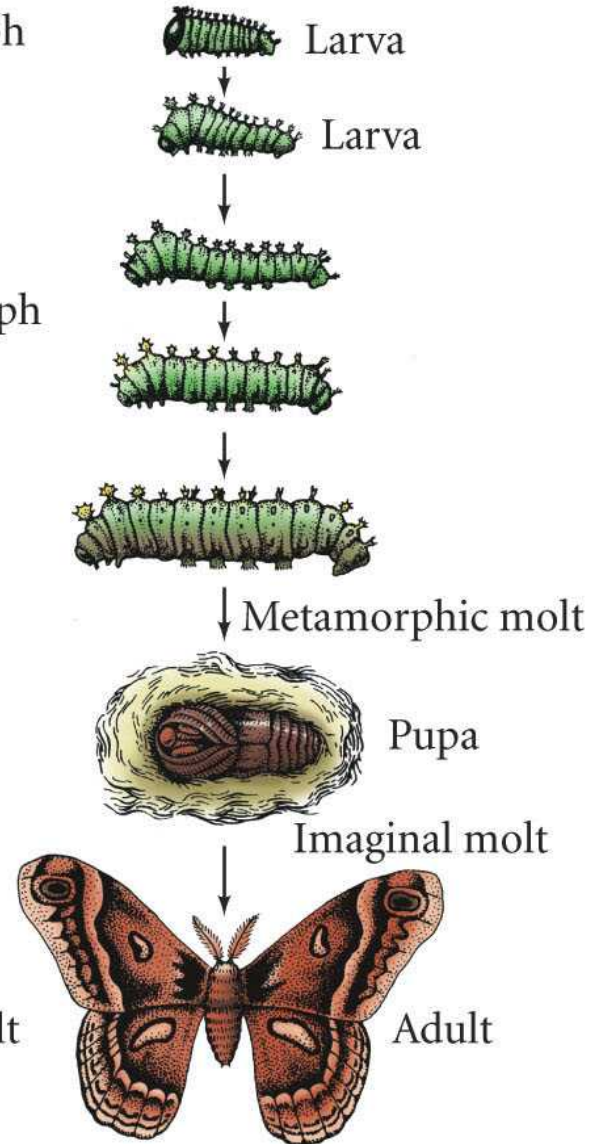
(A) AMETABOLOUS DEVELOPMENT



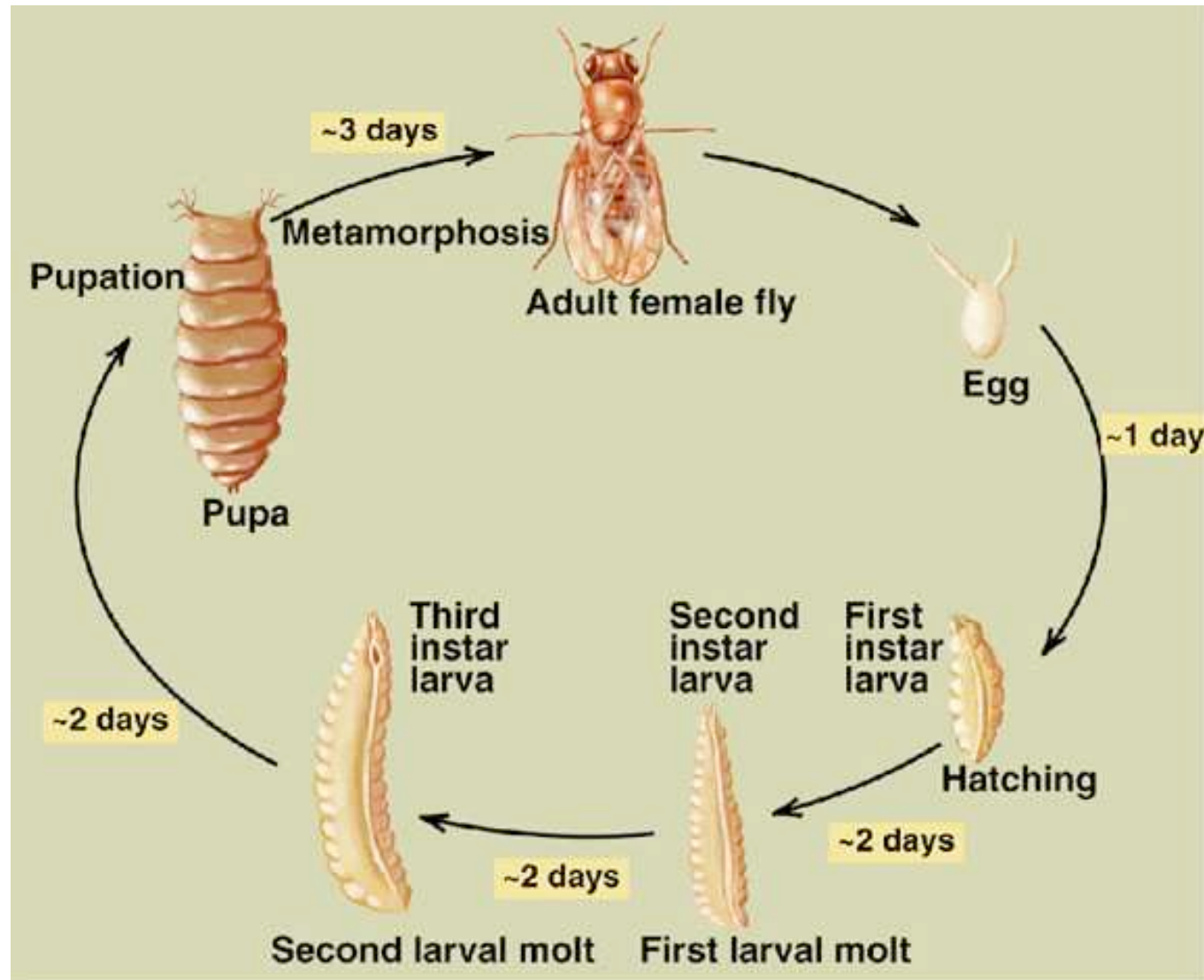
(B) HEMIMETABOLOUS DEVELOPMENT



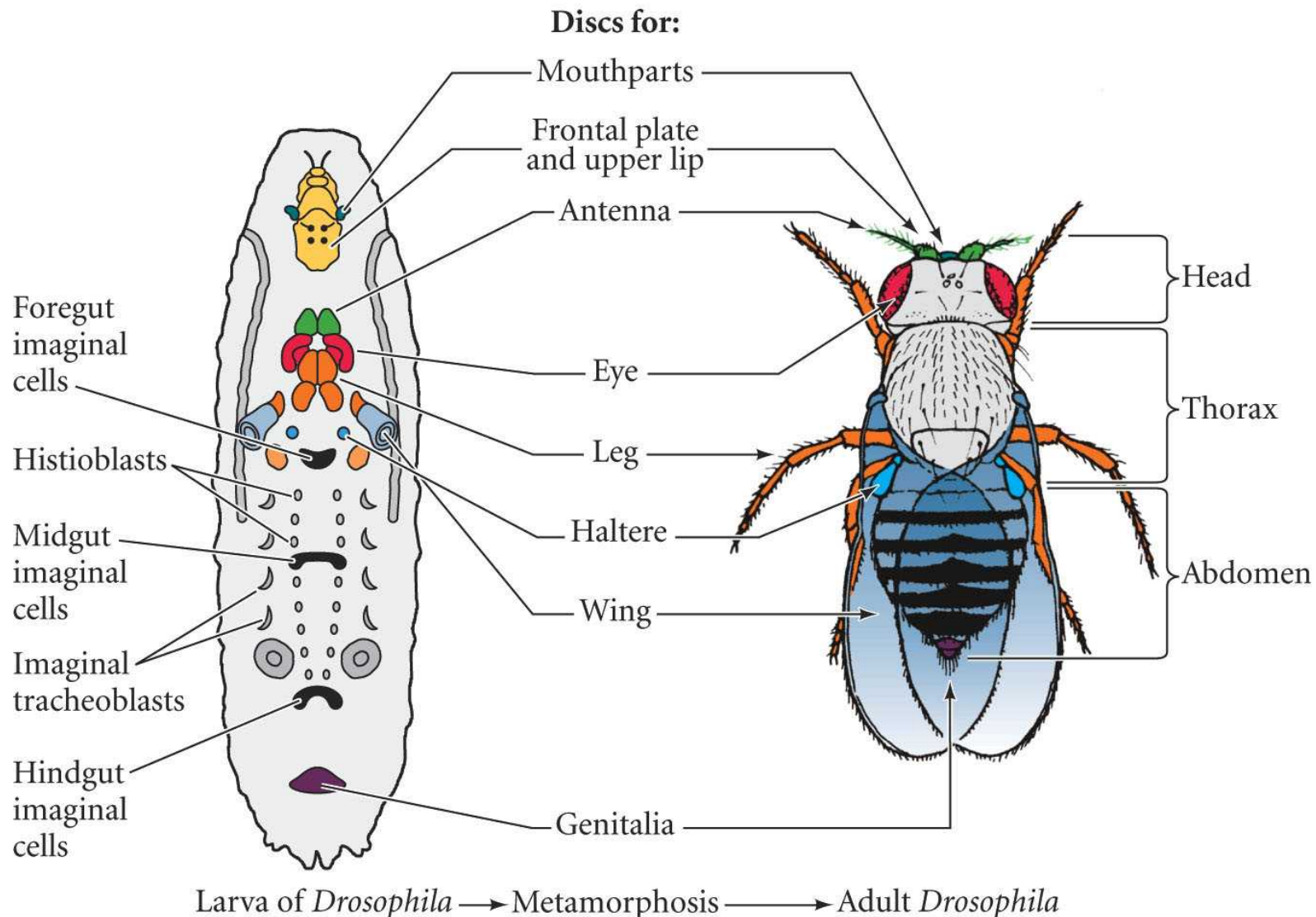
(C) HOLOMETABOLOUS DEVELOPMENT



Drosophila ciclo de vida

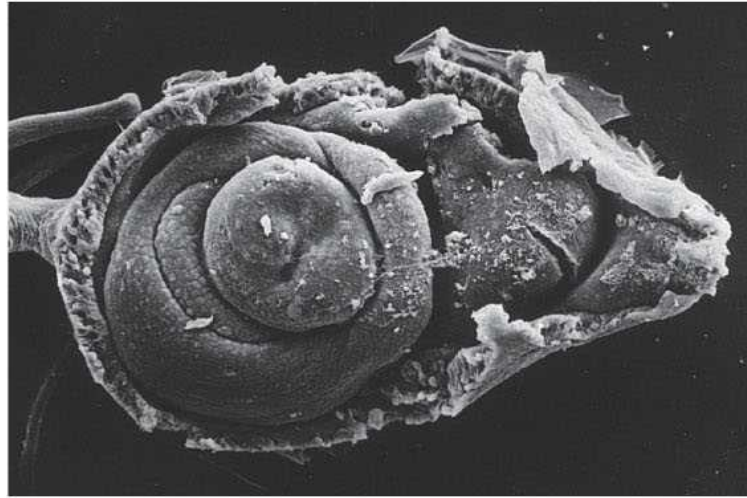


Localización y destinos del desarrollo de los discos imaginales y tejidos imaginales de la tercera muda de la larva en *D. melanogaster*

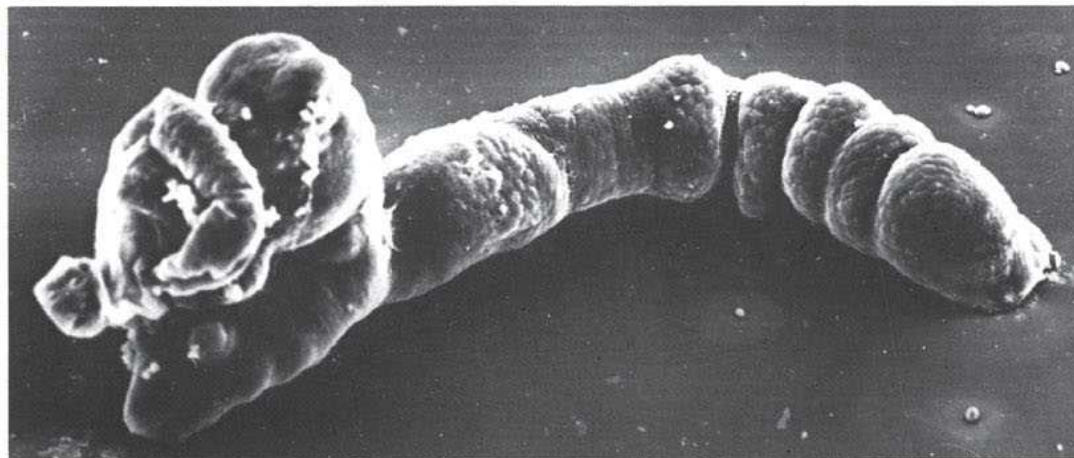


Extensión del disco imaginal

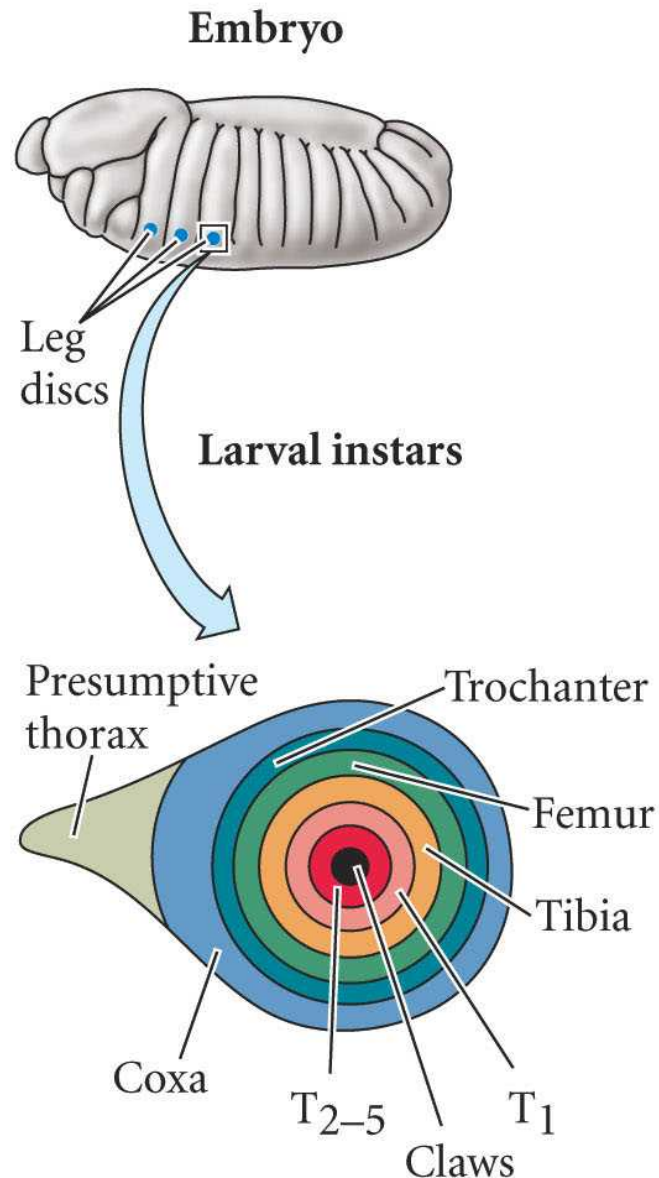
(A)



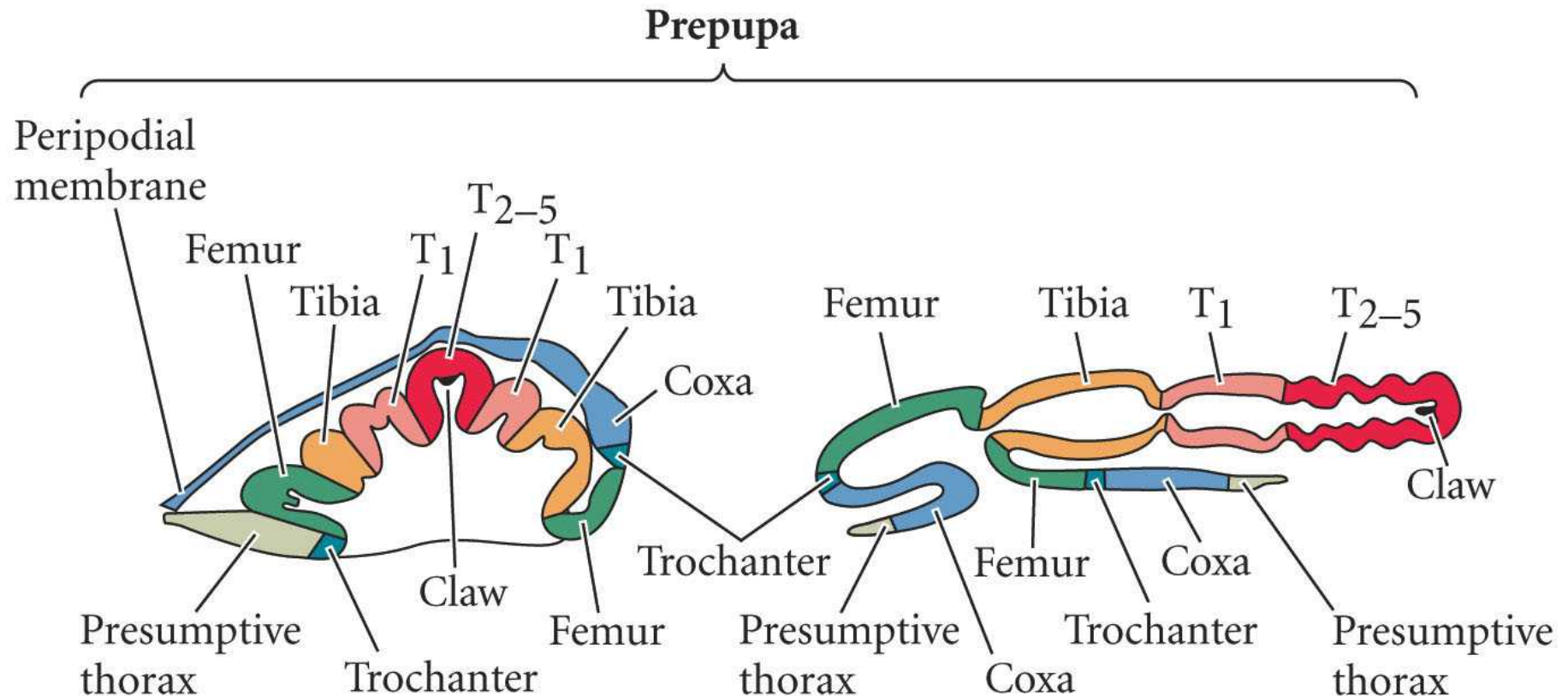
(B)



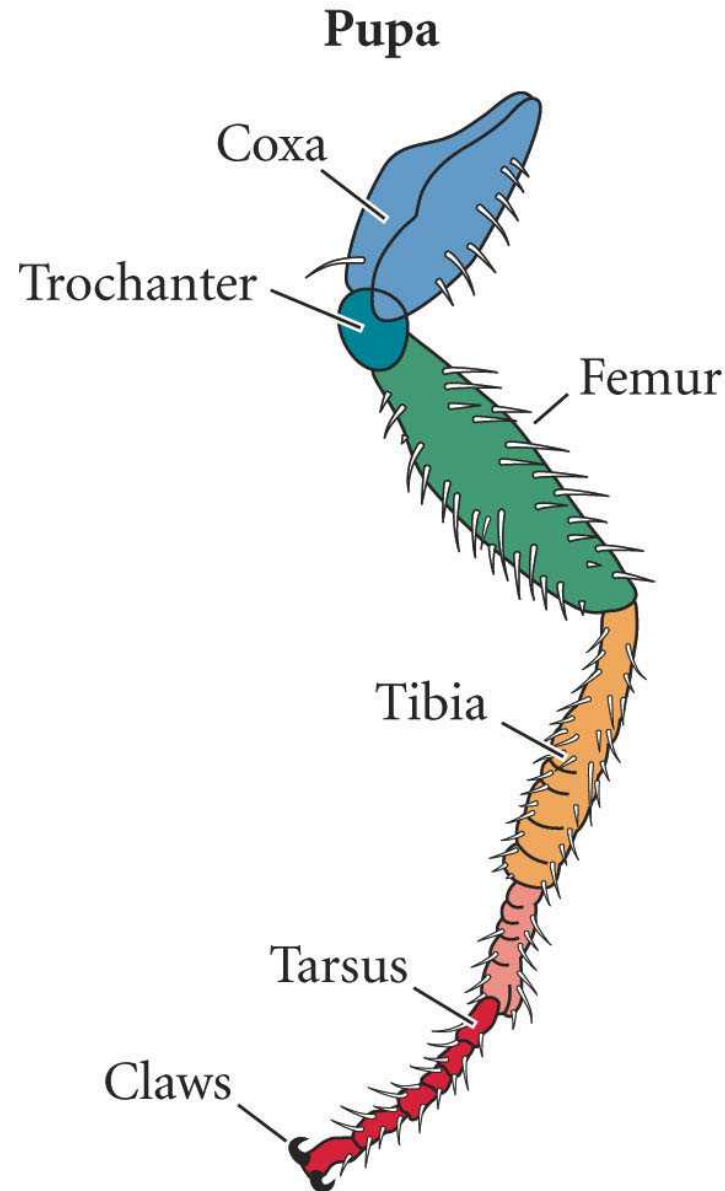
Secuencia del desarrollo del disco imaginal en *Drosophila* (Parte I)



Secuencia del desarrollo del disco imaginal en *Drosophila* (Parte II)



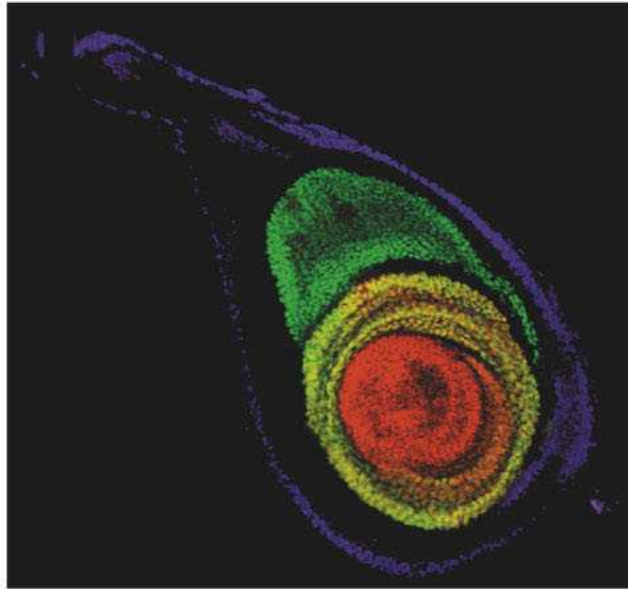
Secuencia del desarrollo del disco imaginal en *Drosophila* (Parte III)



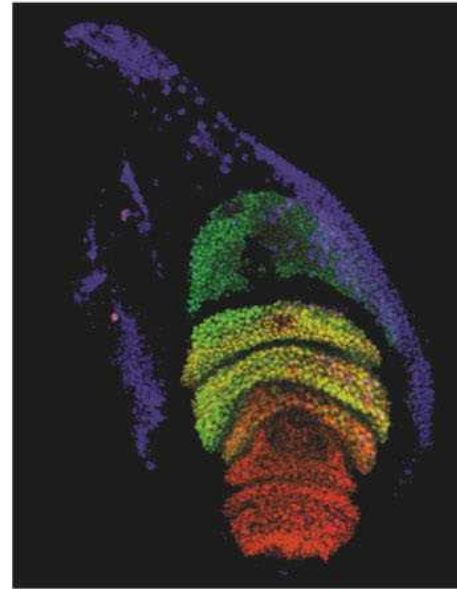
Destinos de células de discos imaginales están dirigidos por factores de transcripción encontrados en diferentes sitios

Estableciendo o eixo proximal-distal:

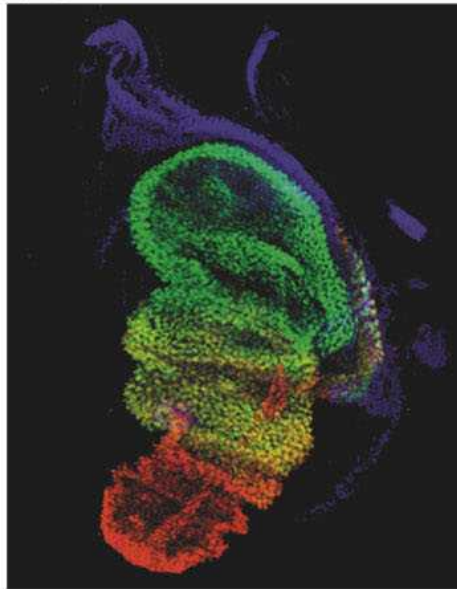
(A)



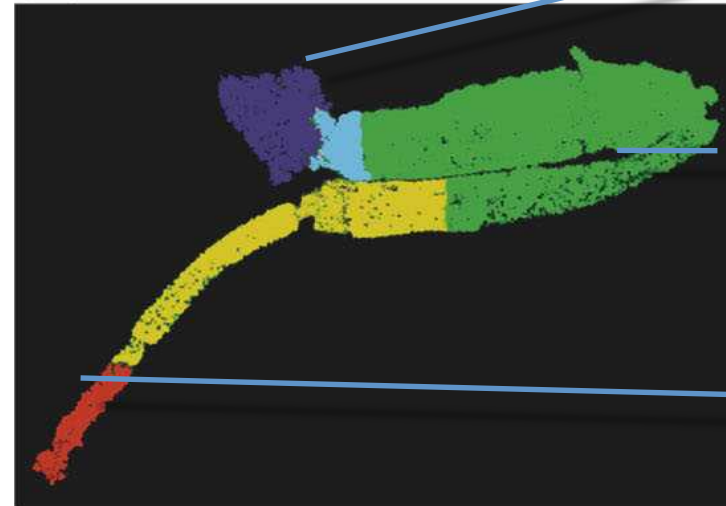
(B)



(C)



(D)

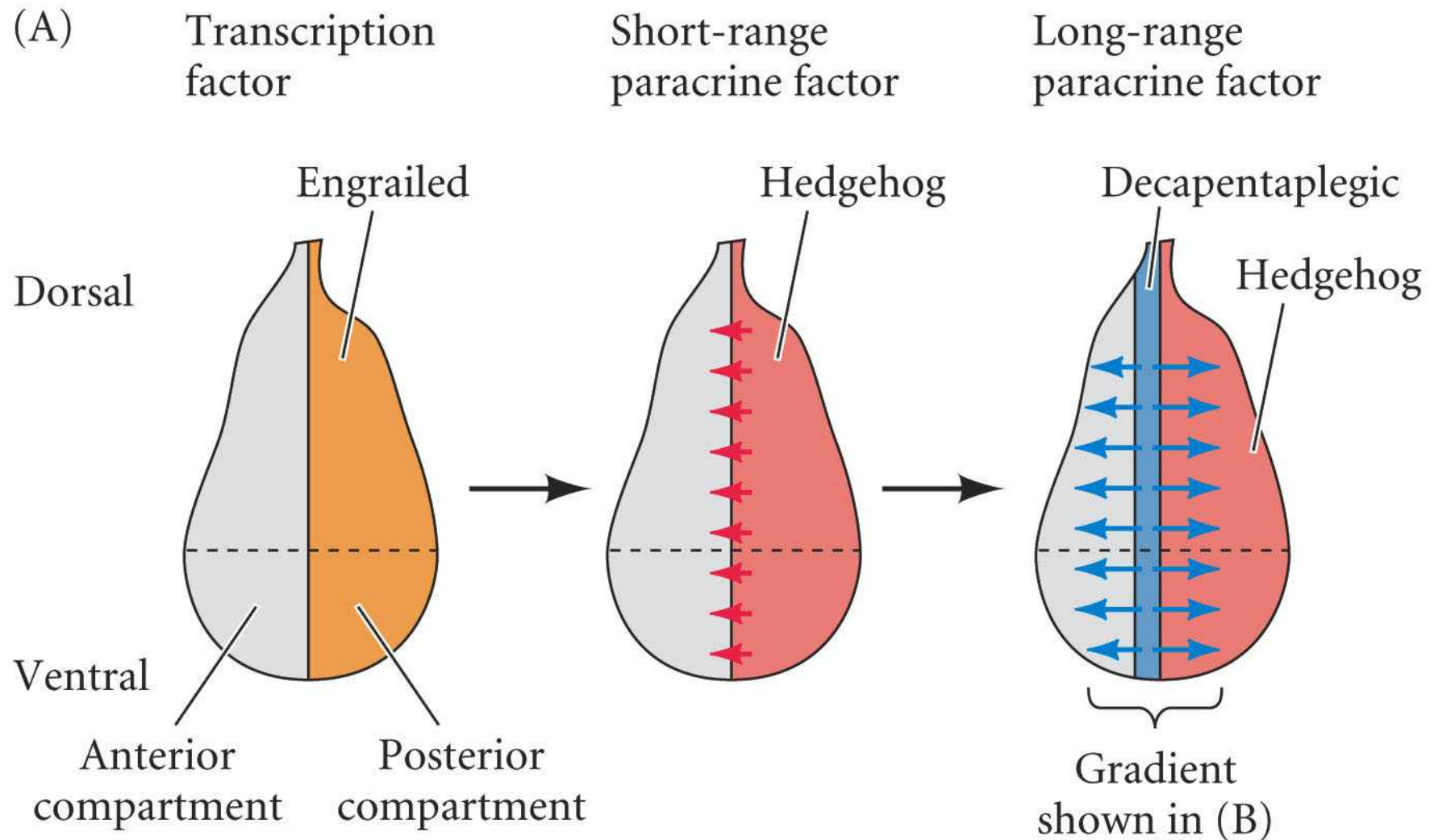


Homothorax

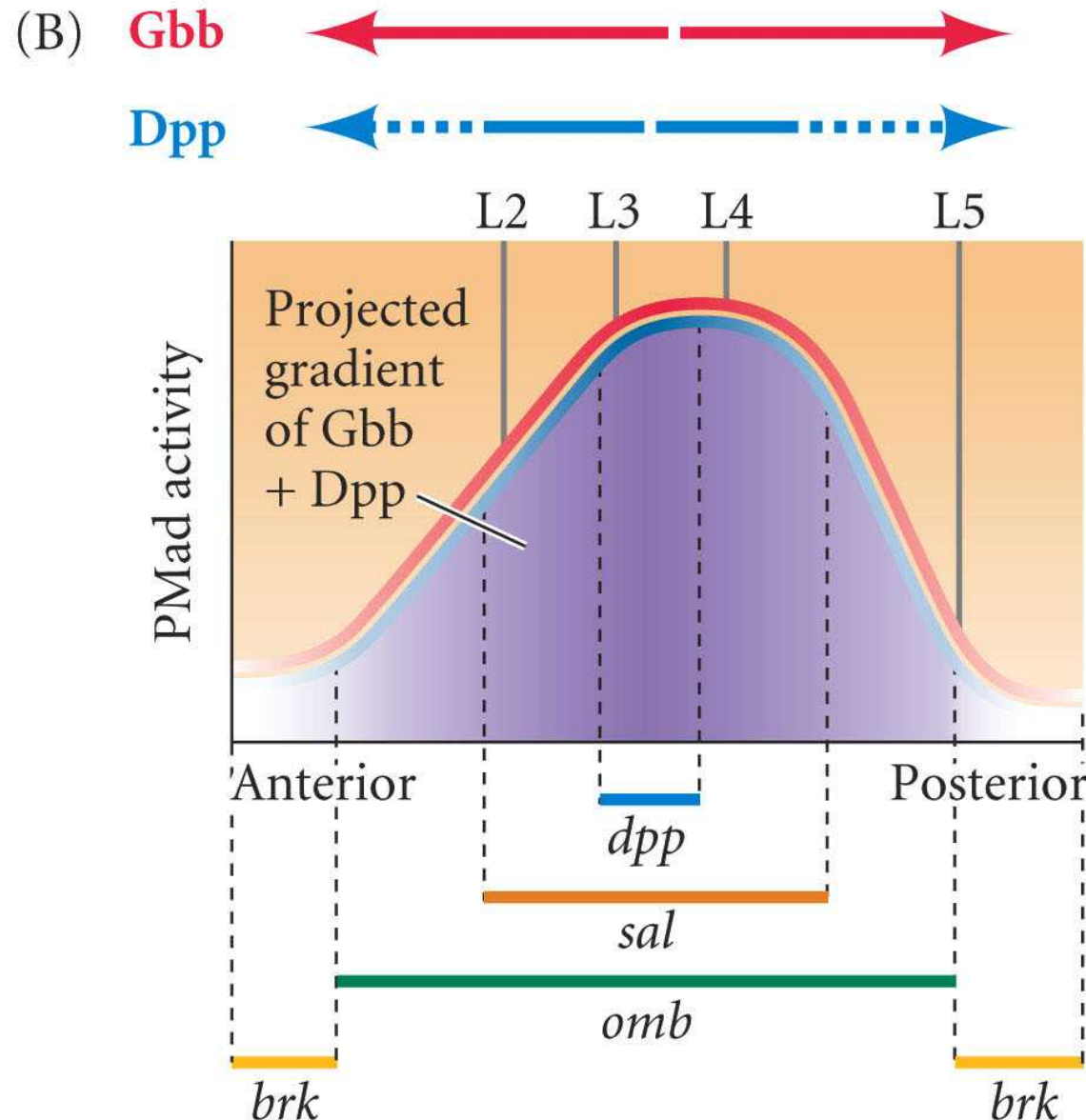
Dachshund

Distal-less

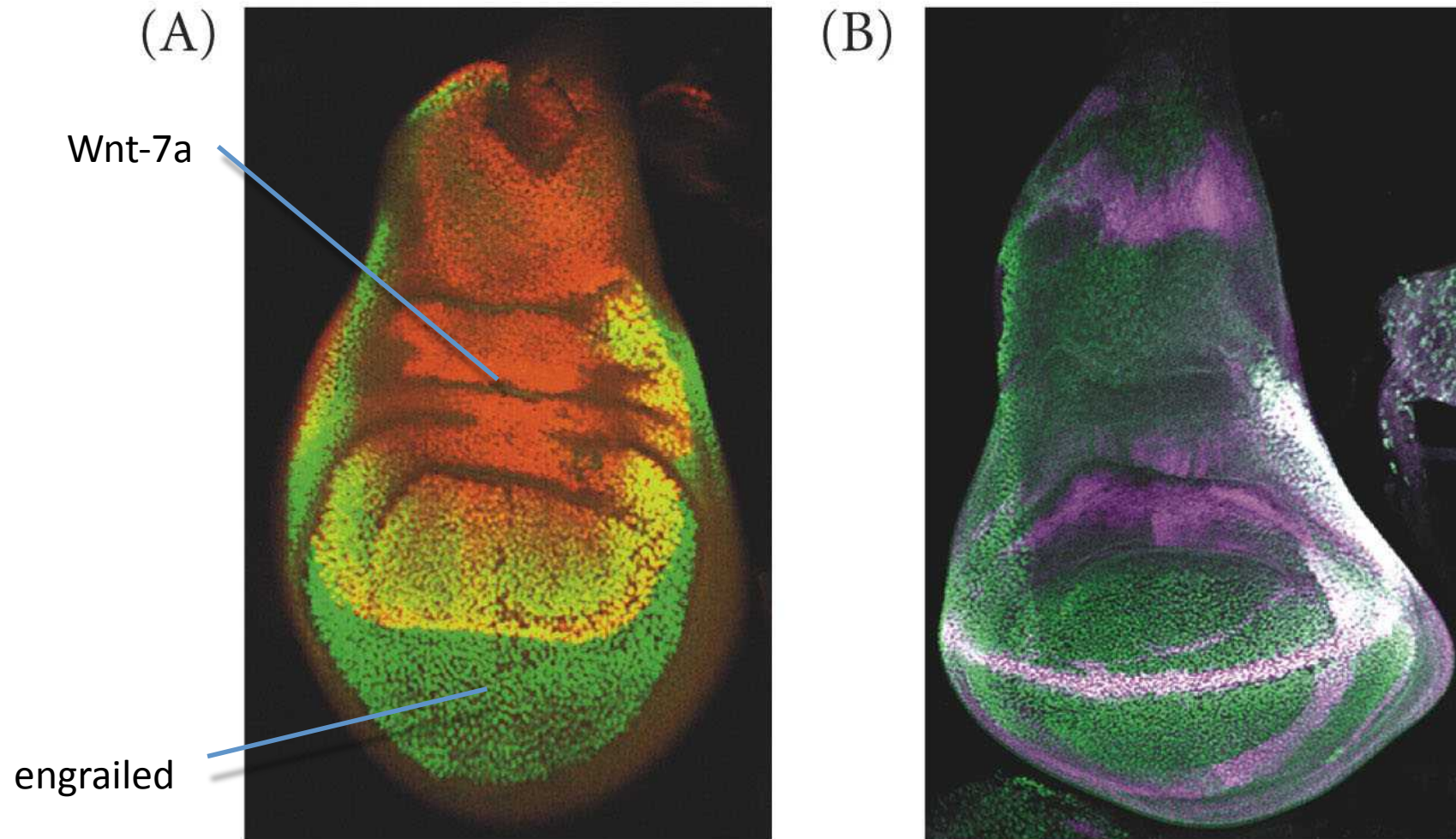
Compartimentalización y patronamiento del eje anterior-posterior en el disco imaginal del ala (A)



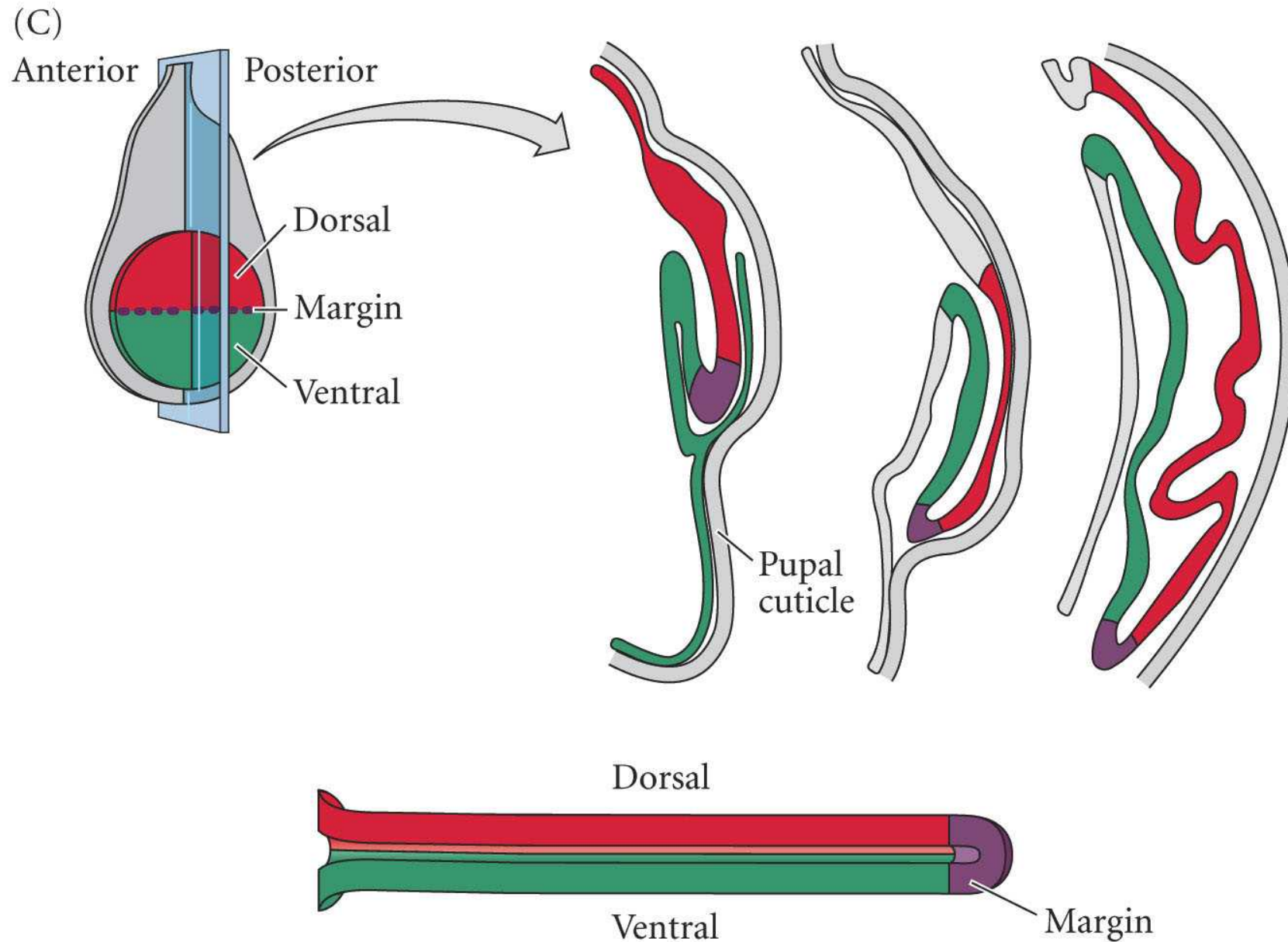
Compartimentalización y patronamiento del eje anterior-posterior en el disco imaginal del ala (B)



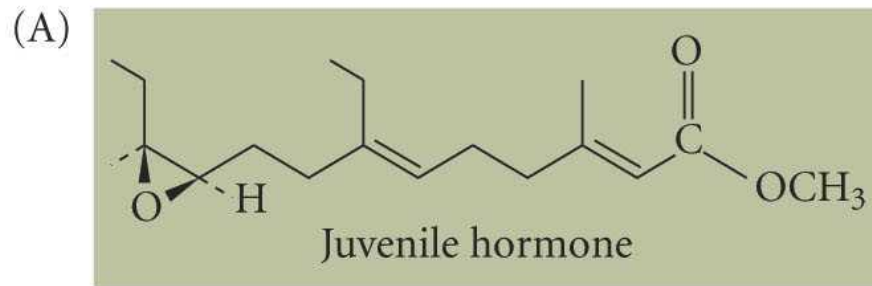
Determining the dorsal-ventral axis (Part 1)



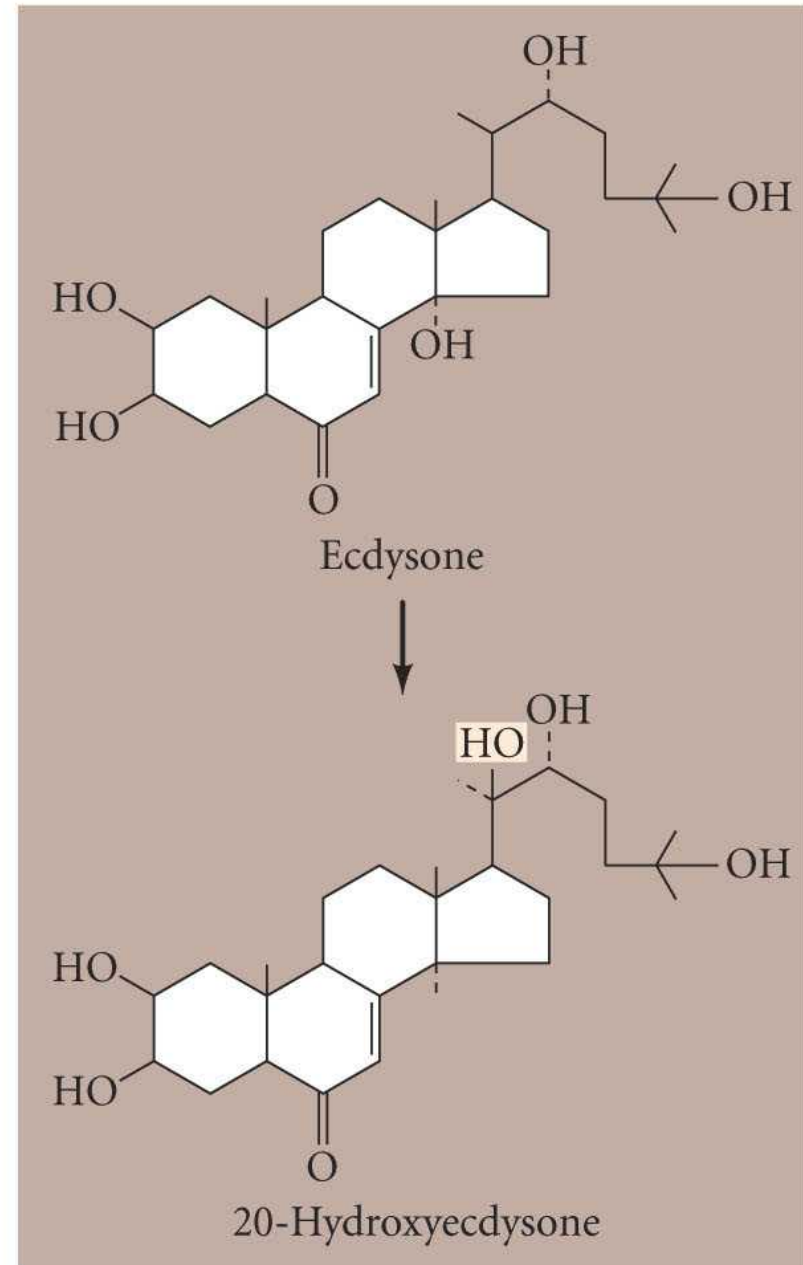
Determining the dorsal-ventral axis (Part 2)



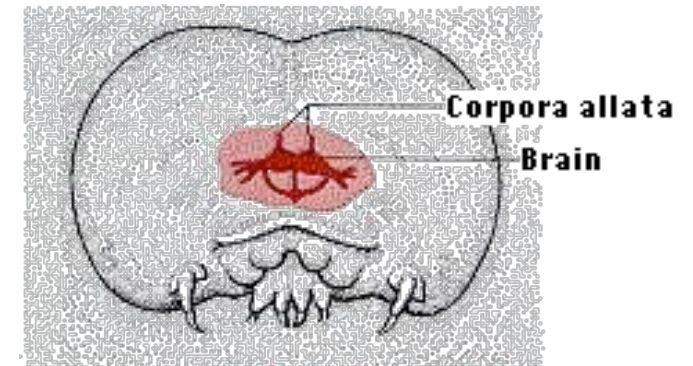
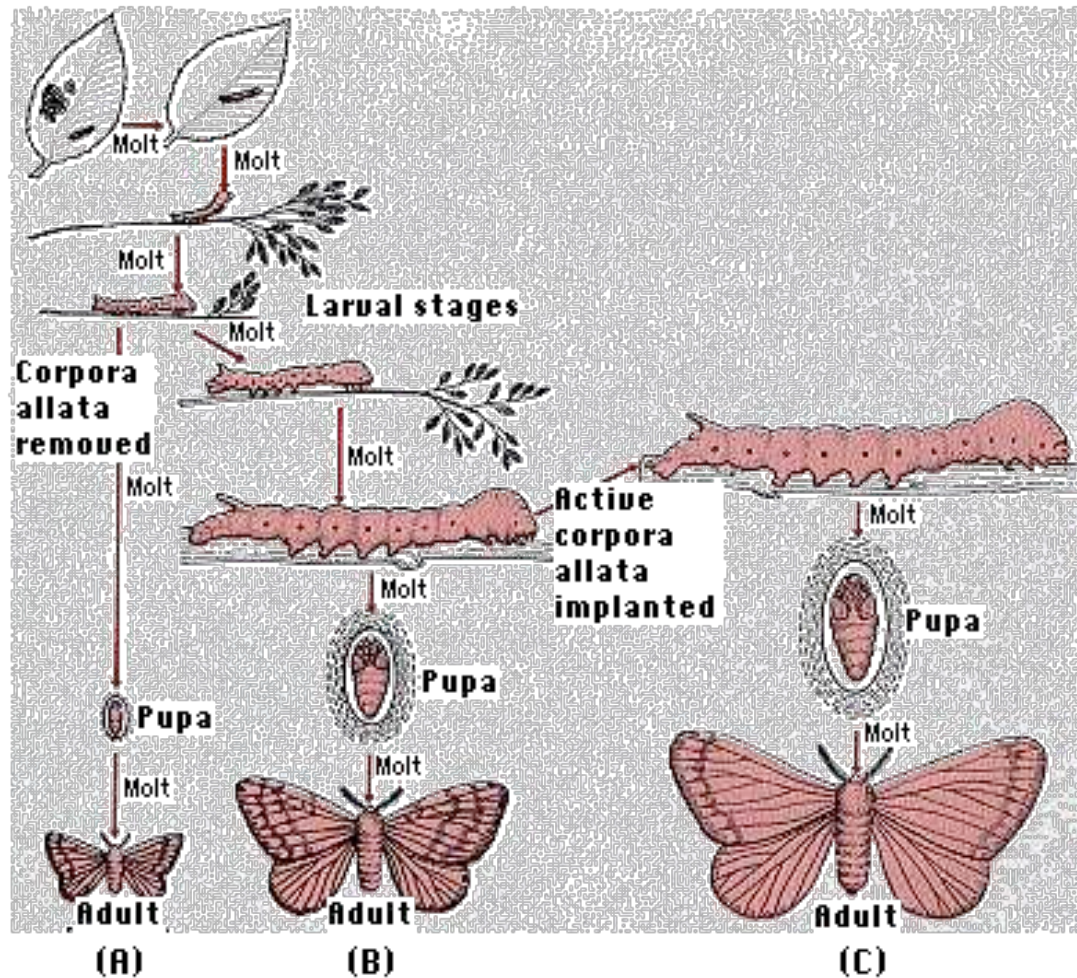
Regulation of insect metamorphosis (Part 1)



Karel Sláma viaja al laboratorio de Williams en Harvard y se encuentra con un sexta muda...

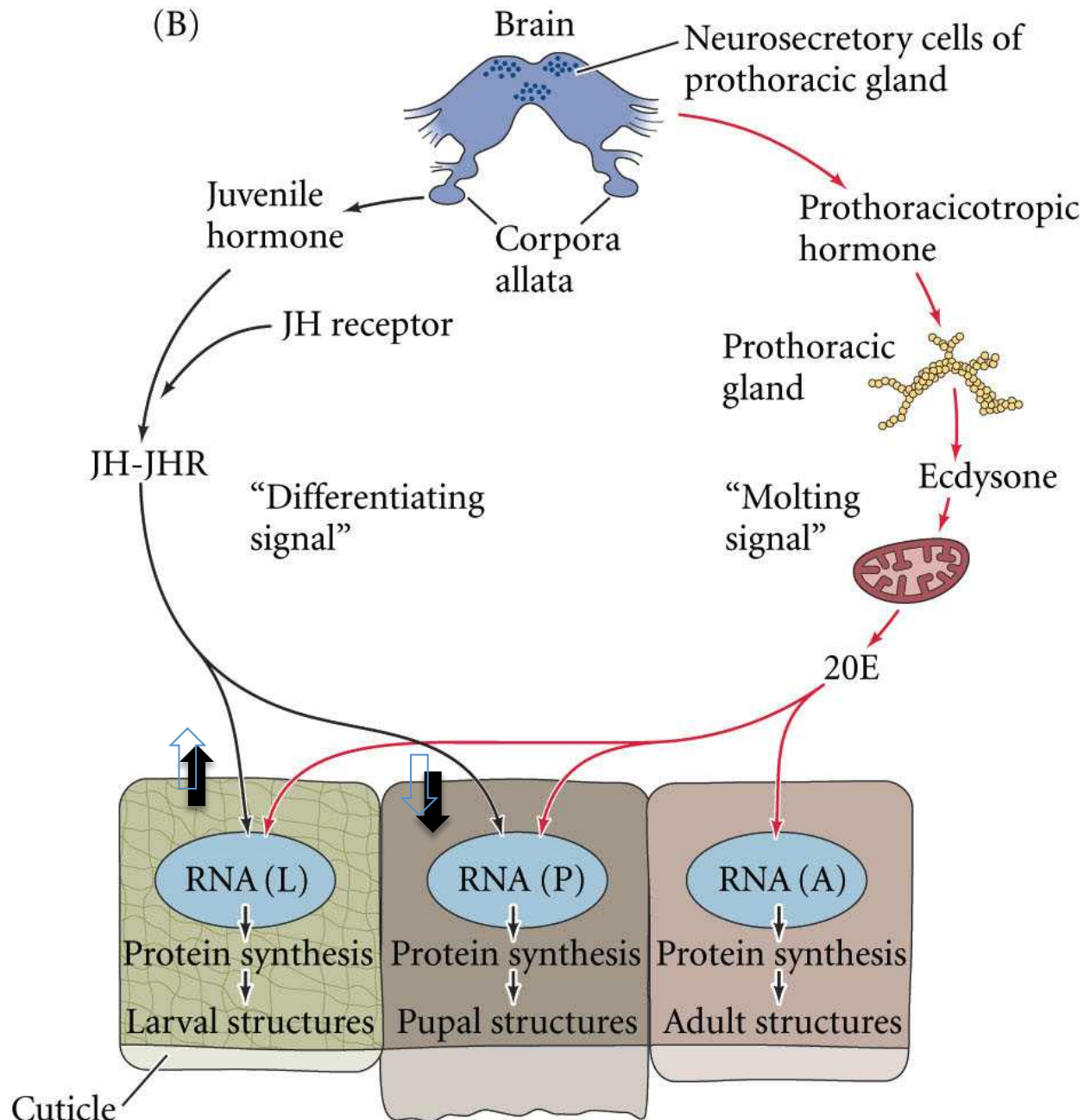


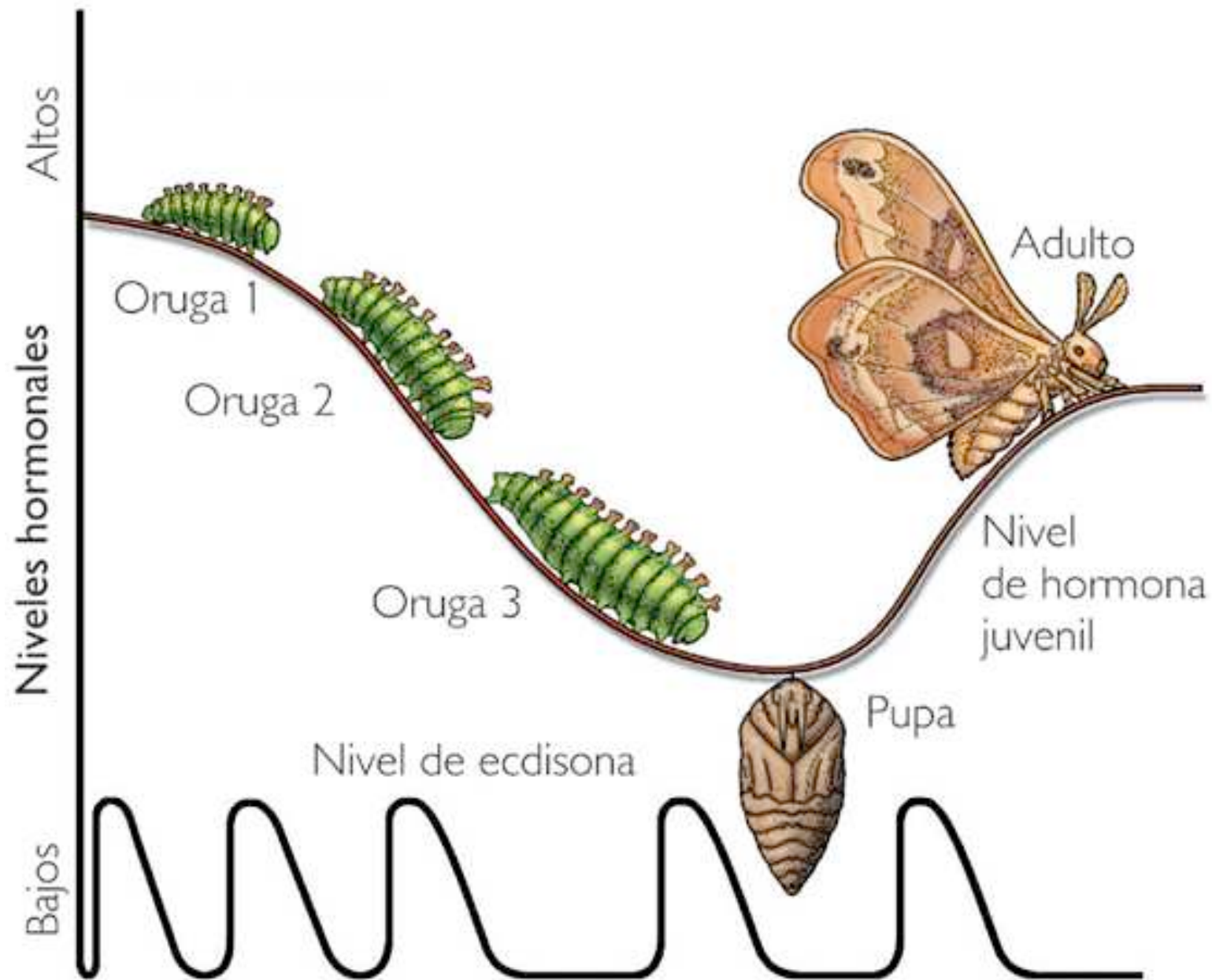
Acción de la corpora allata en los insectos



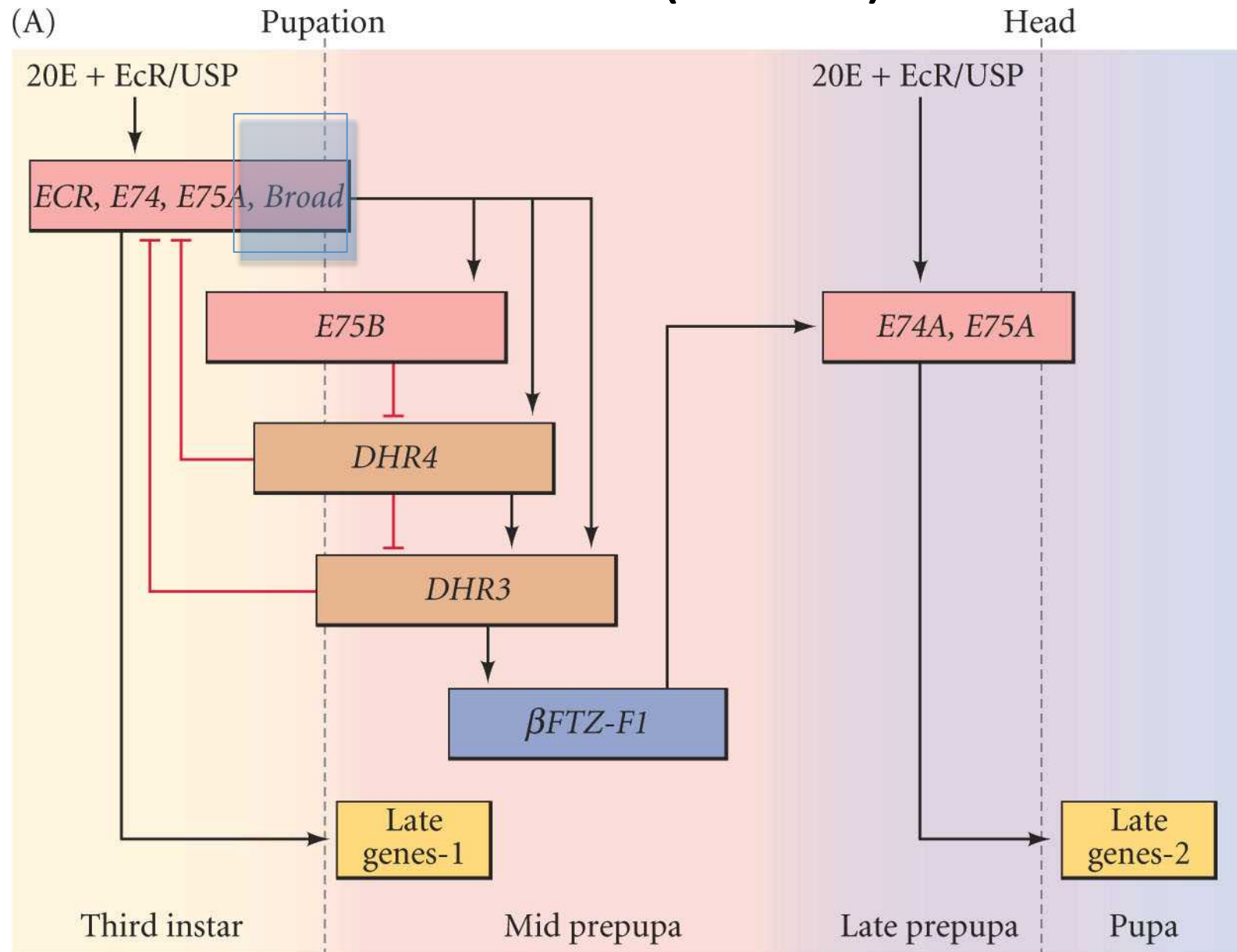
http://www.youtube.com/watch?v=gR_MK8qpq68

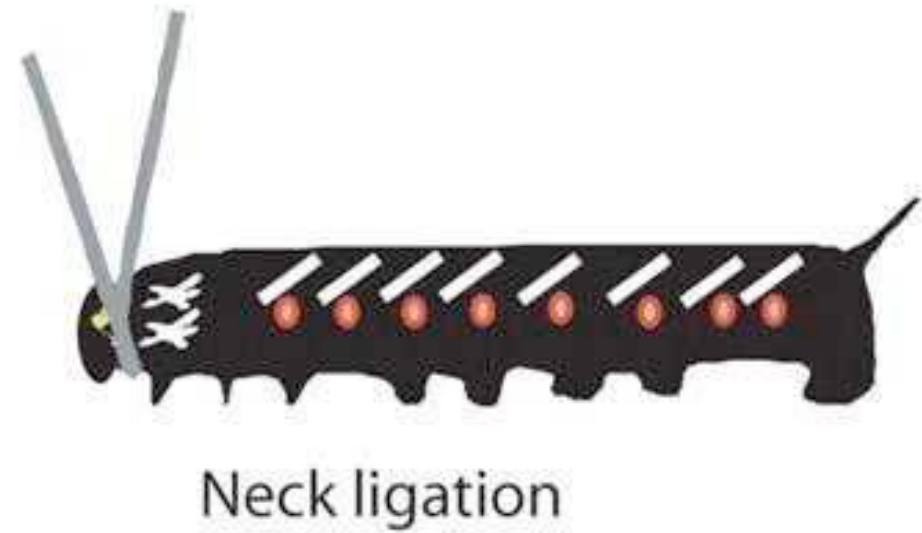
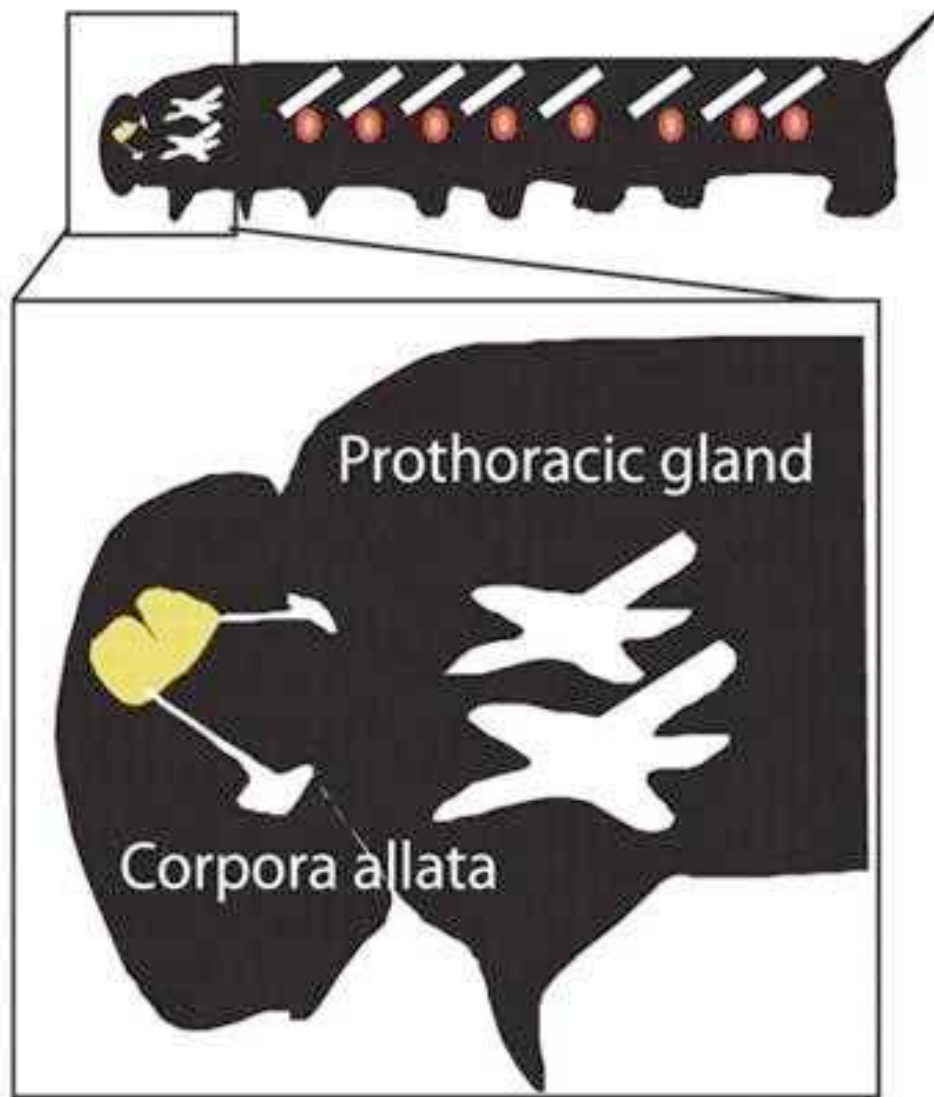
Regulation of insect metamorphosis (Part 2)





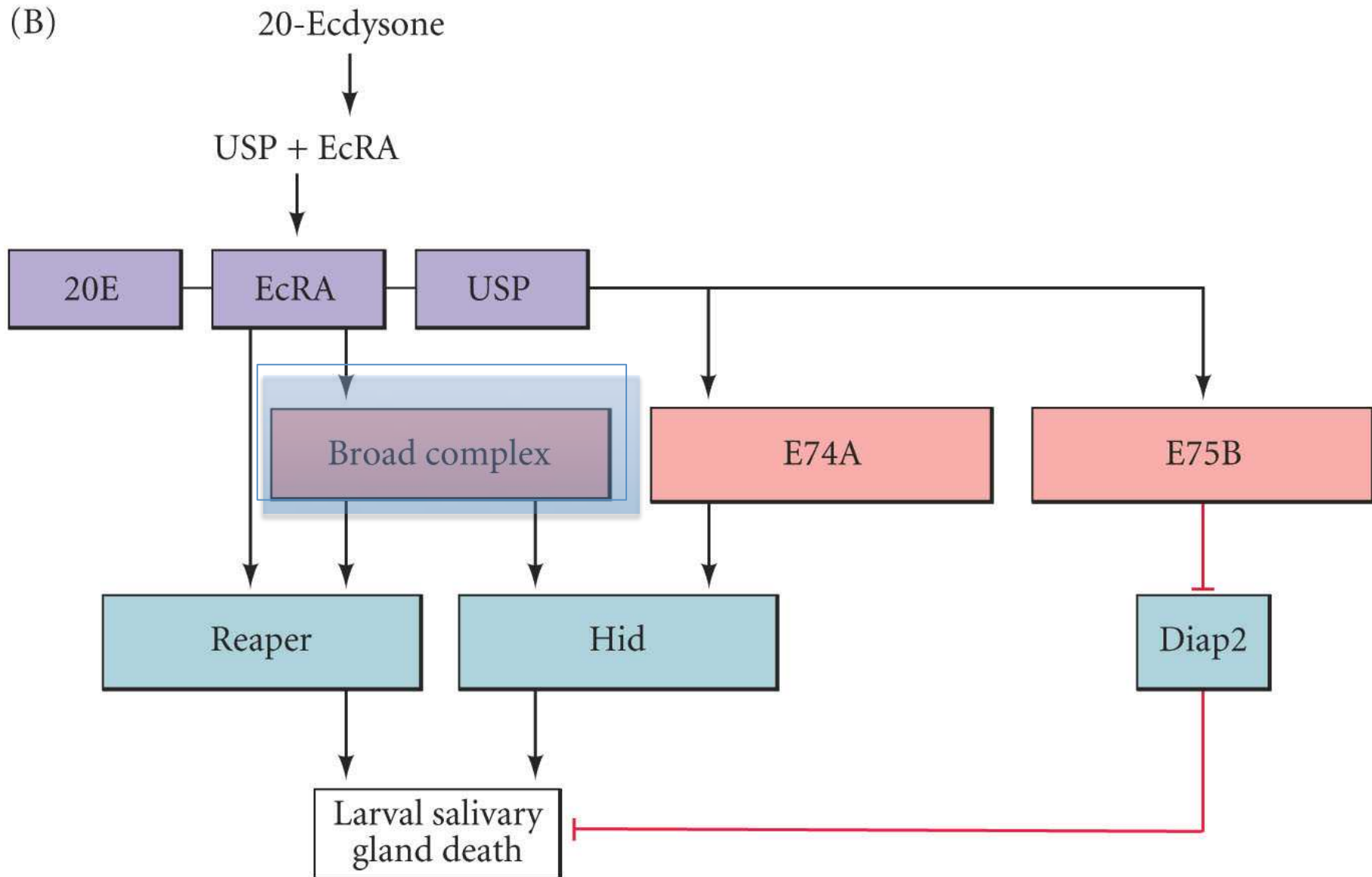
20-Hydroxyecdysone initiates developmental cascades (Part 1)





O Qué pasaria?

20-Hydroxyecdysone initiates developmental cascades (Part 2)



“Teoría” de hibridogénesis

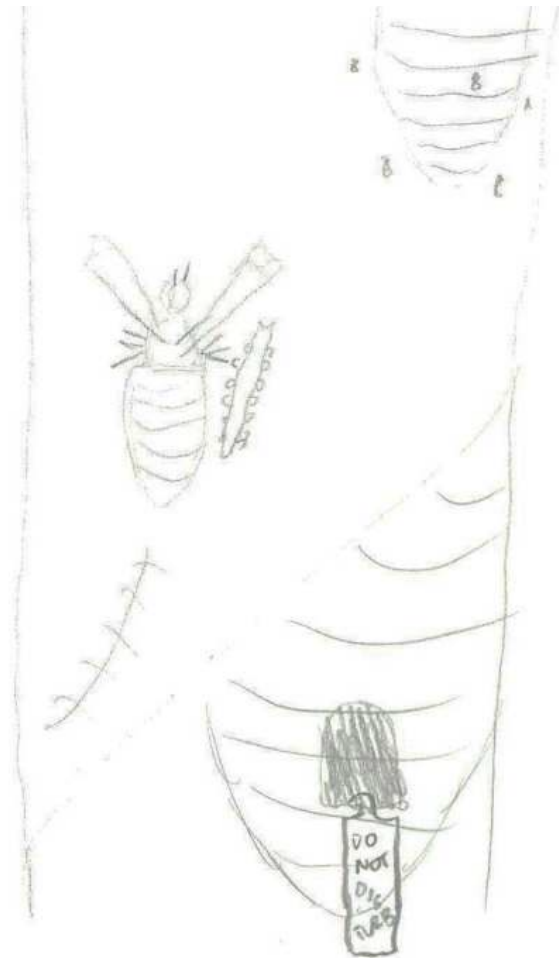


Donald I. Williamson

U. Liverpool



Vivian the Velvet worm
minds her own business,
whilst Walter the Wasp
has an idea...



20E-induced puffs in cultured salivary gland cells of *D. melanogaster*

