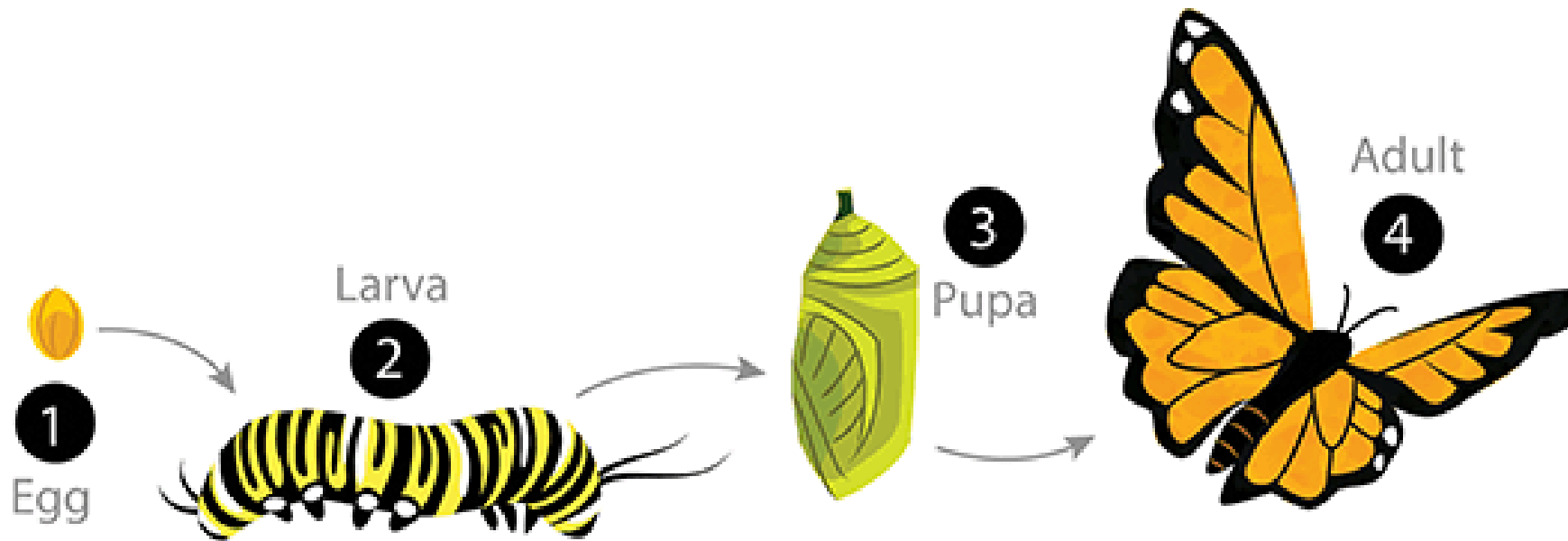


Interacciones durante el desarrollo



METAMORFOSIS



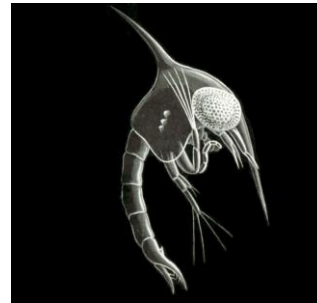
Larva plúteus



Galleta de mar



Larva zoea



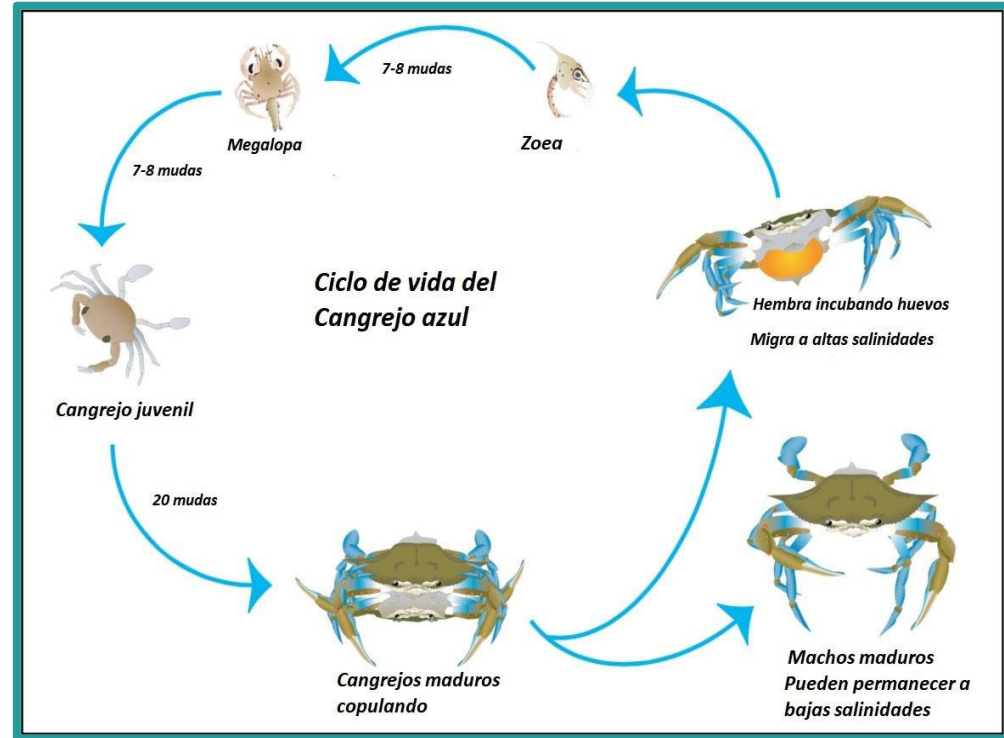
Larva megalopa



Larva urocordado



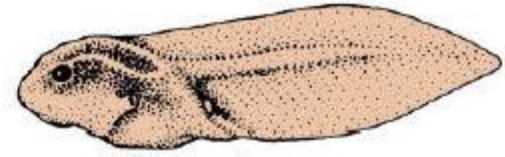
Tunicado adulto



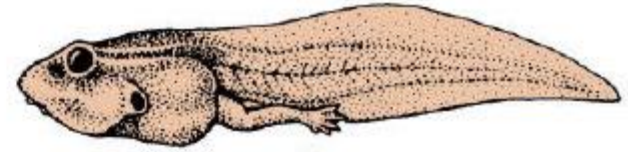
(A)



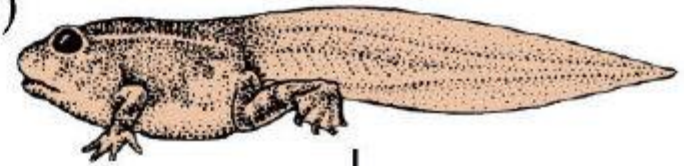
(B)



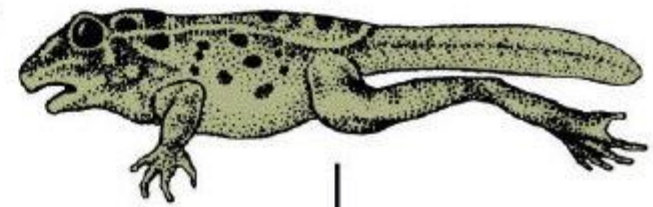
(C)



(D)



(E)



(F)



Metamorfosis

Cambios drásticos

En morfología,
fisiología, ecología



Apoptosis

Estructuras que se pierden

Órganos y estructuras
que no sirven en el
adulto

Organogénesis

Desarrollo de nuevos órganos

A partir del plan
corporal preexistente se
crea un nuevo plan
corporal reorganizando
algunos de los órganos
ya formados para la vida
larvaria



Nueva forma



Origen de una nueva forma

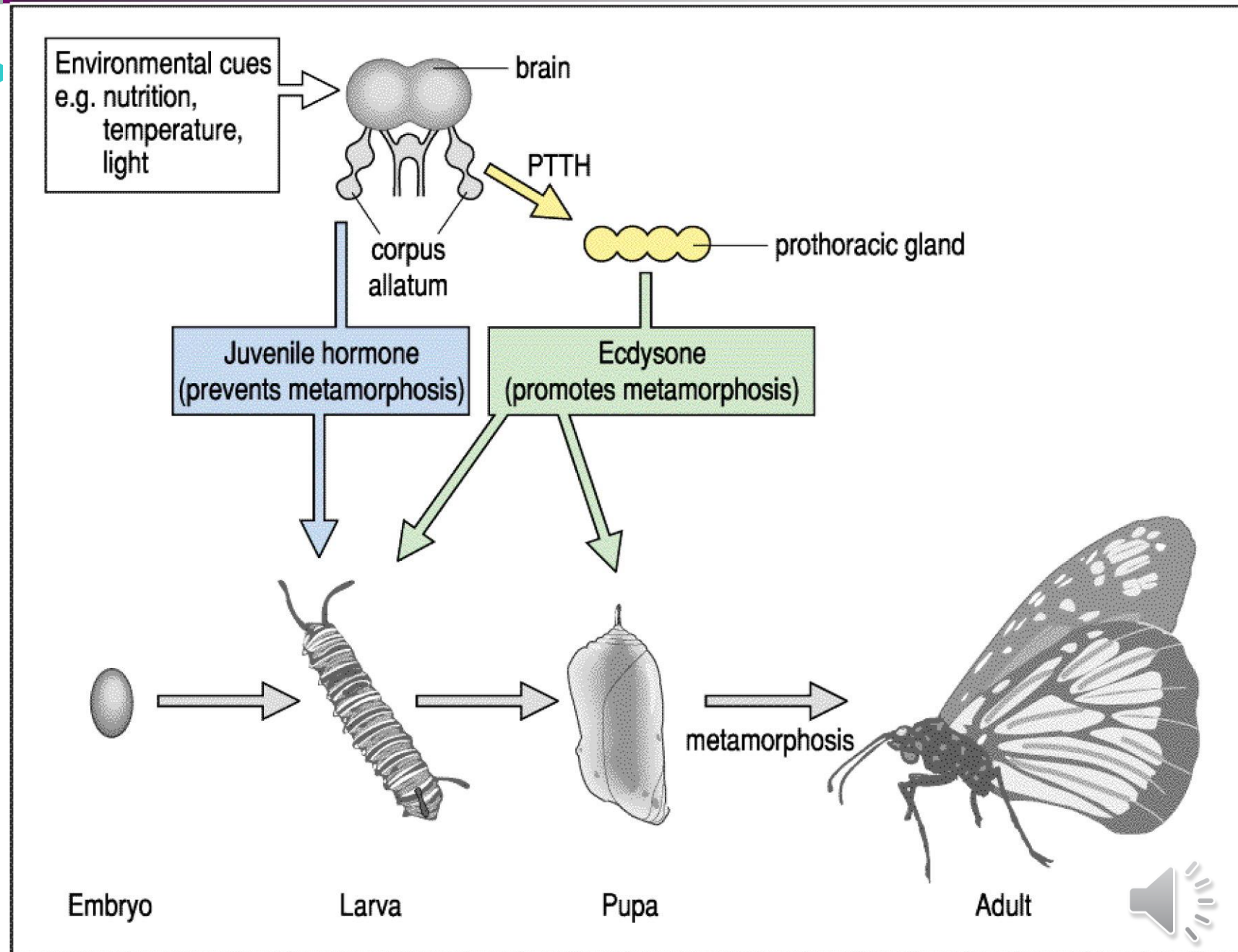
El organismo juvenil
re-formado tiene
aparición de adulto
en miniatura



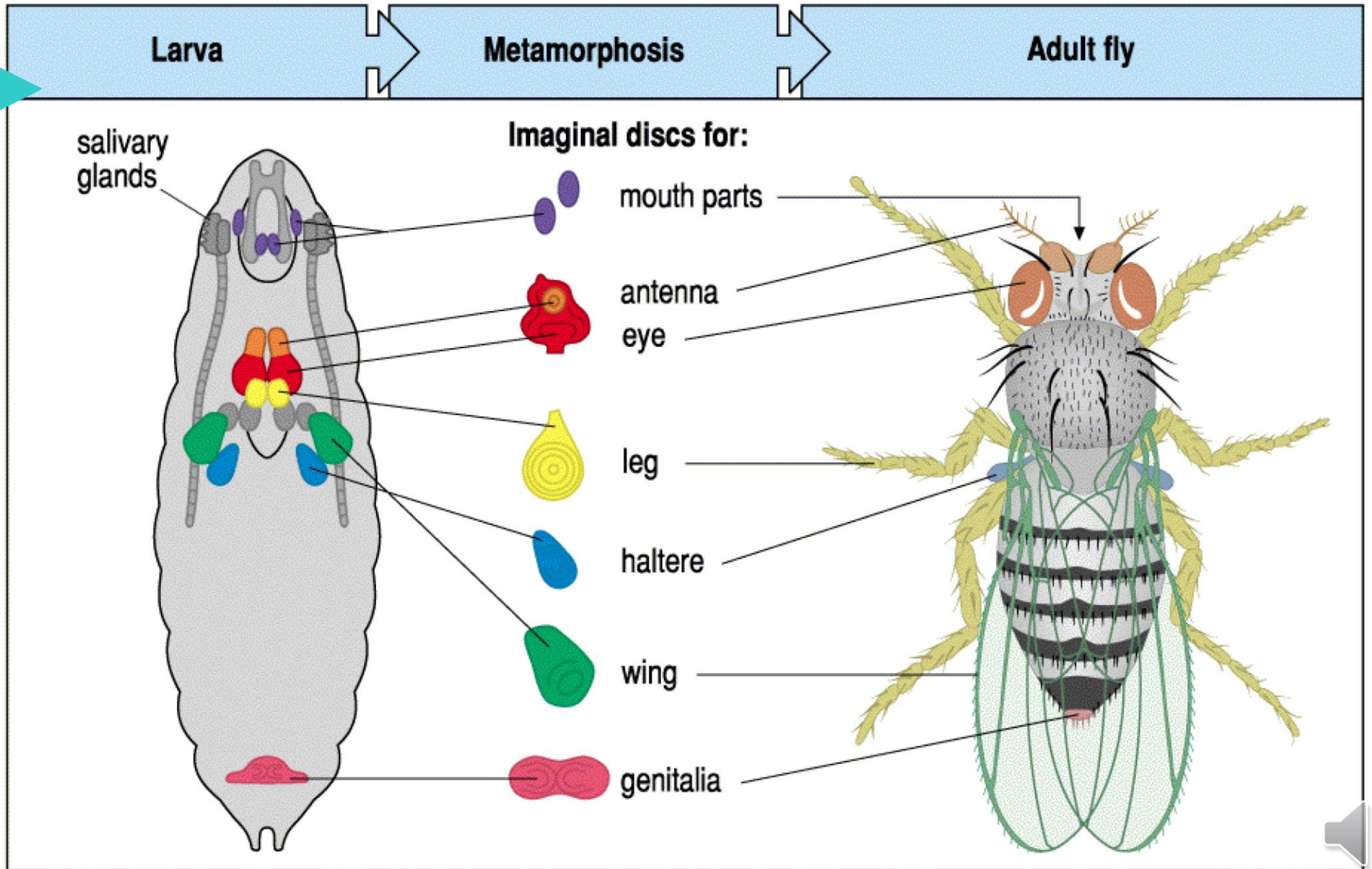
METAMORFOSIS

Interacciones a distancia

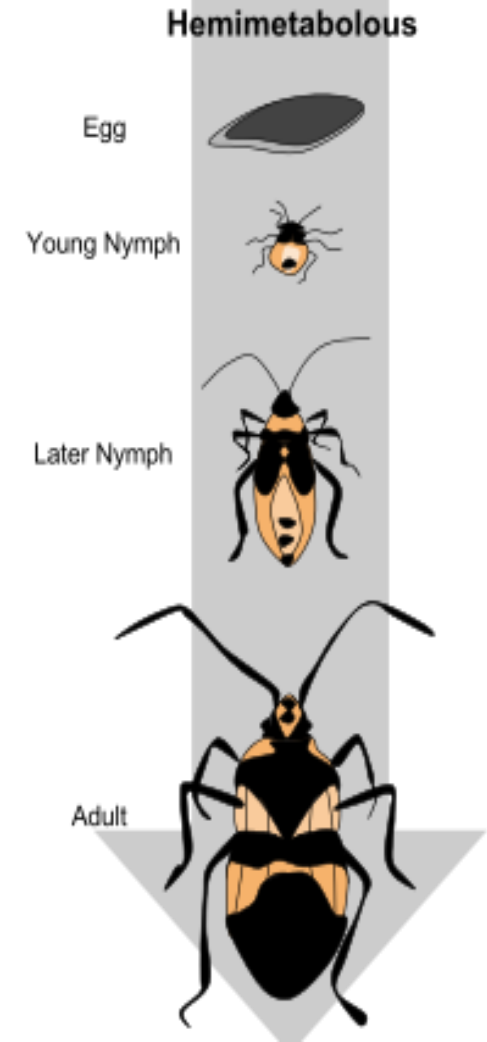
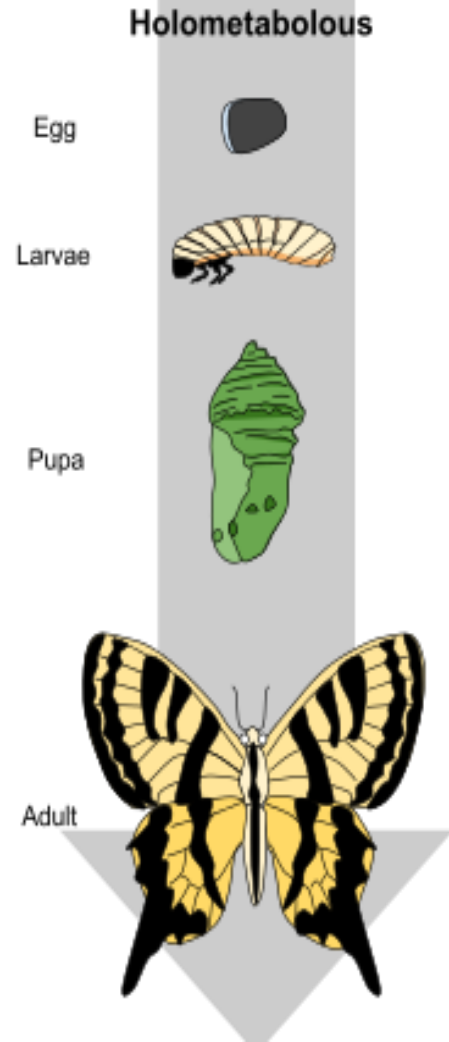
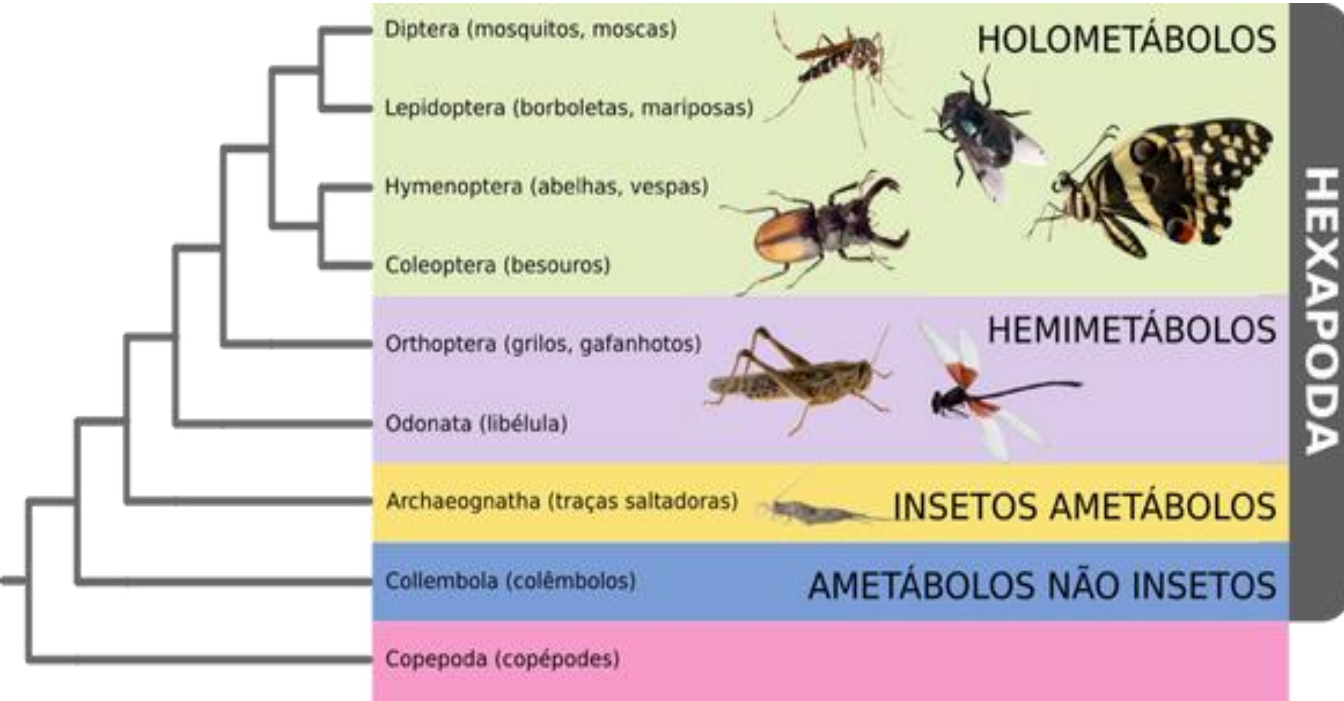
Hormonas



METAMORFOSIS



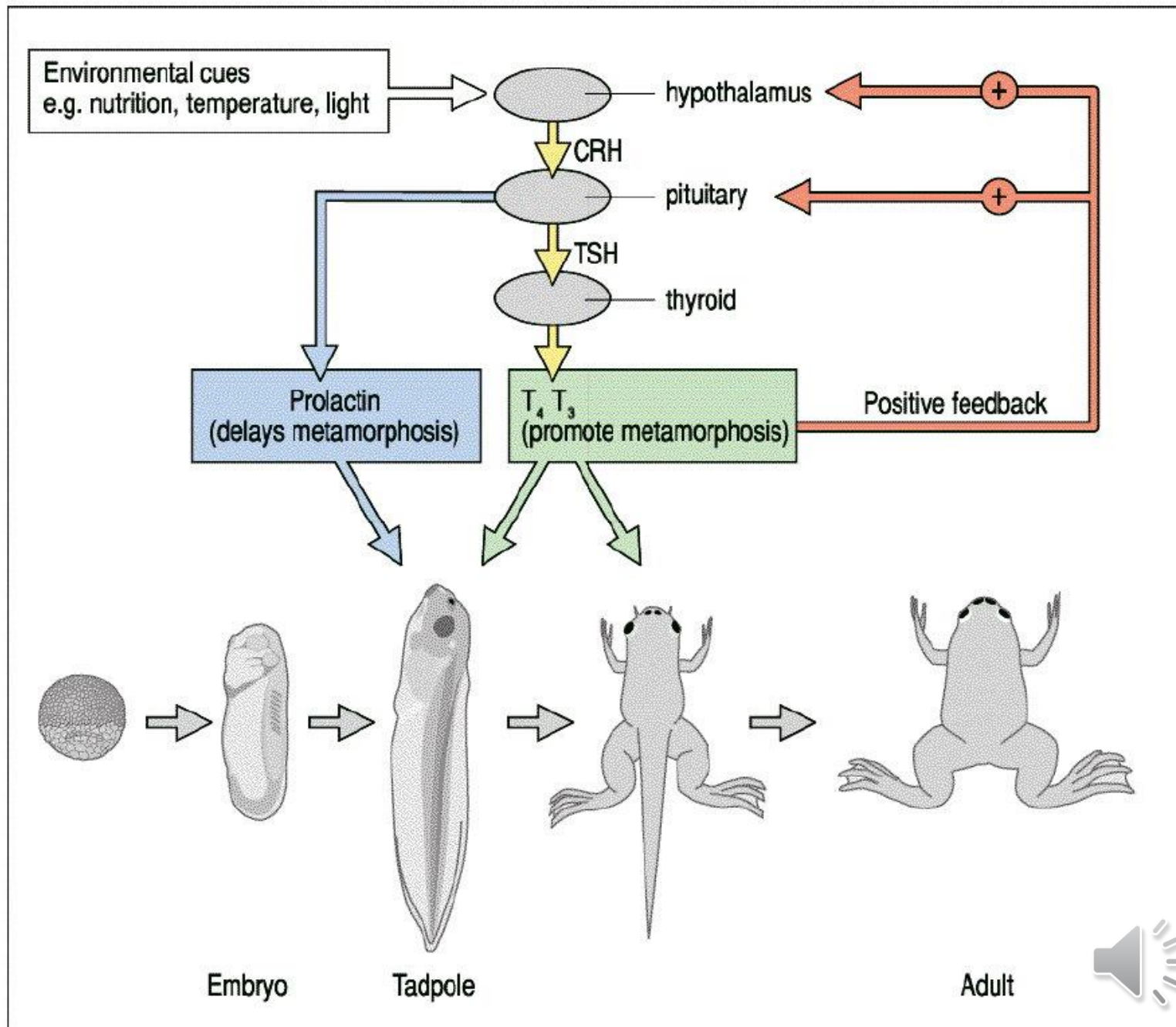
METAMORFOSIS



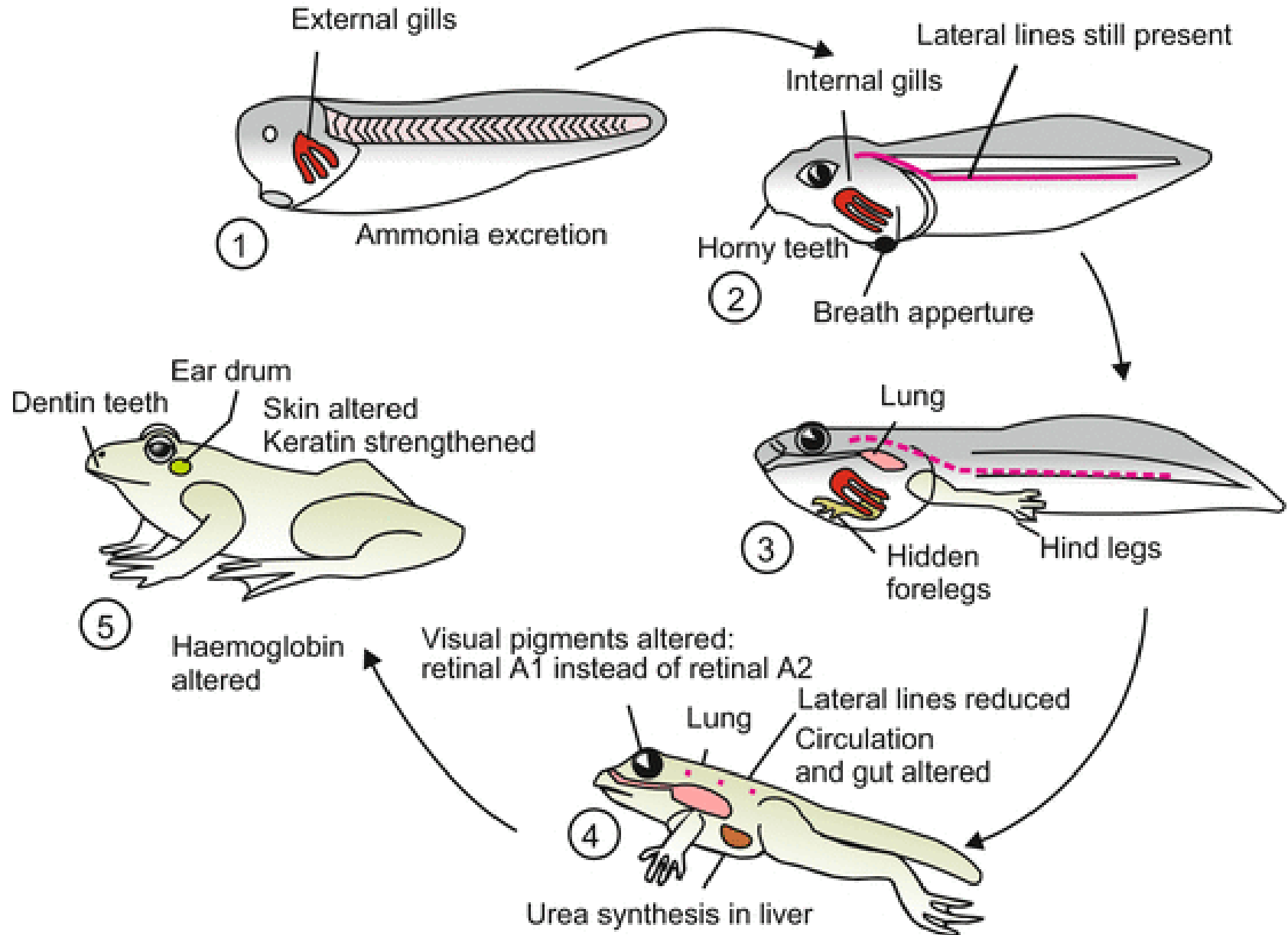
METAMORFOSIS

Interacciones a distancia

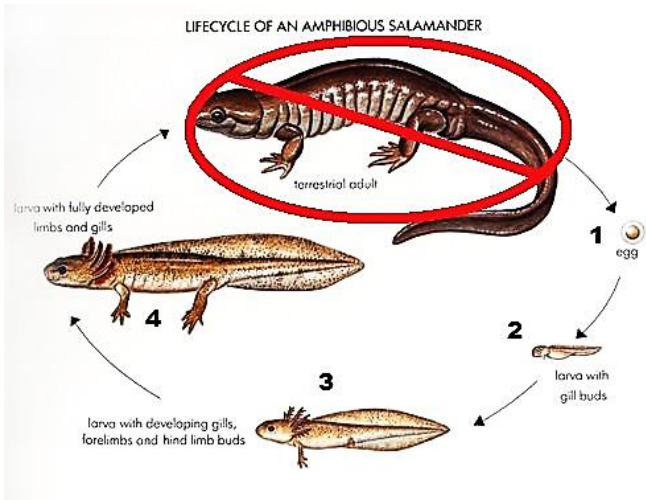
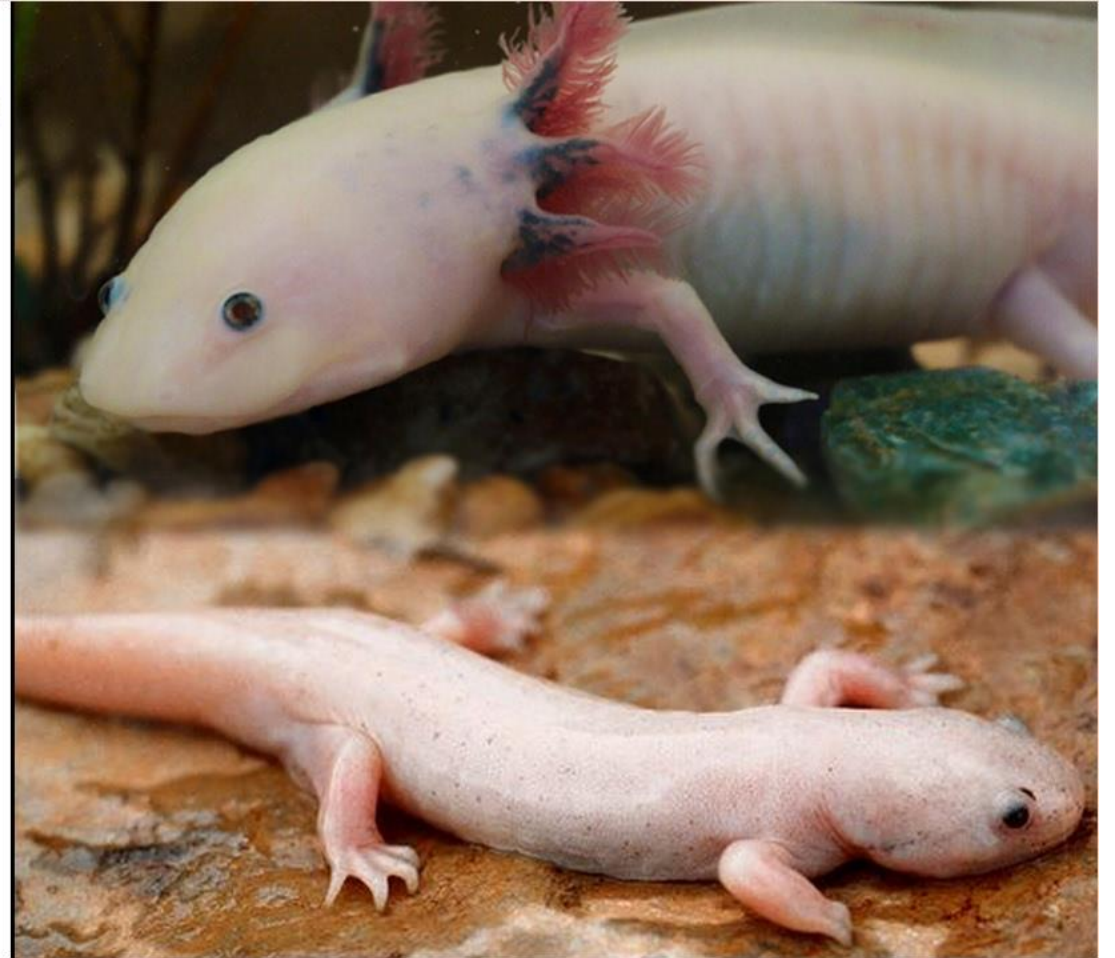
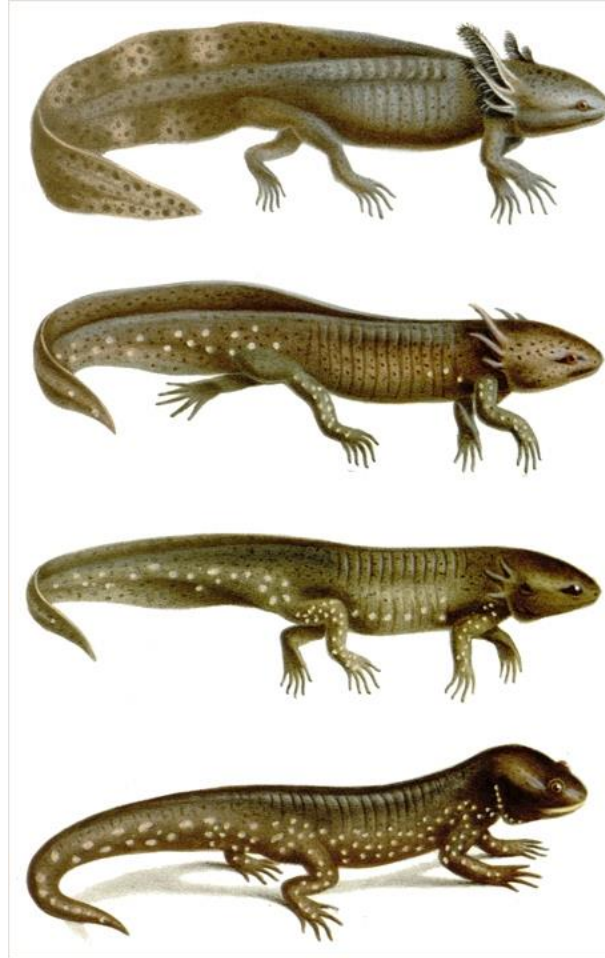
Hormonas



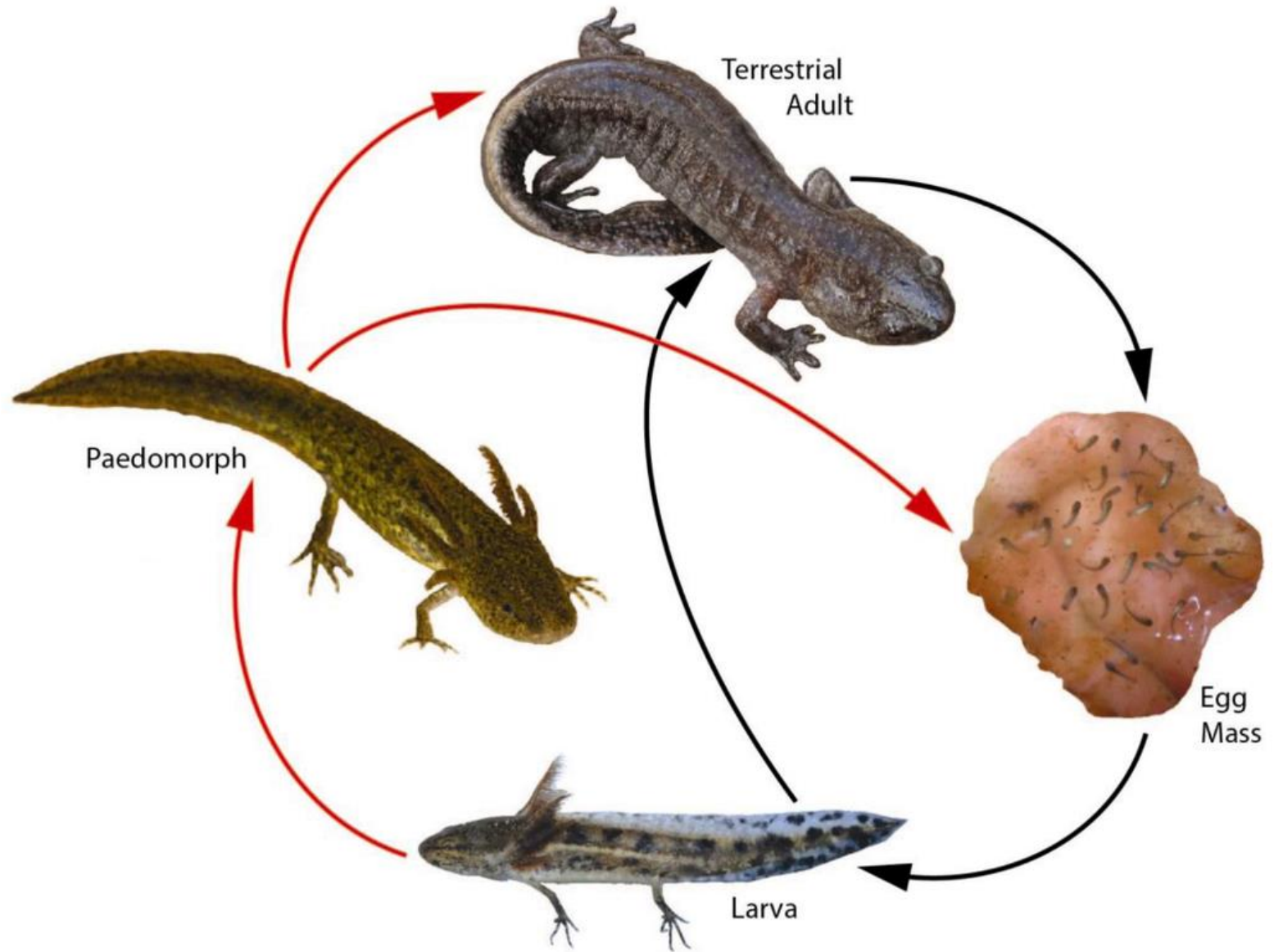
METAMORFOSIS



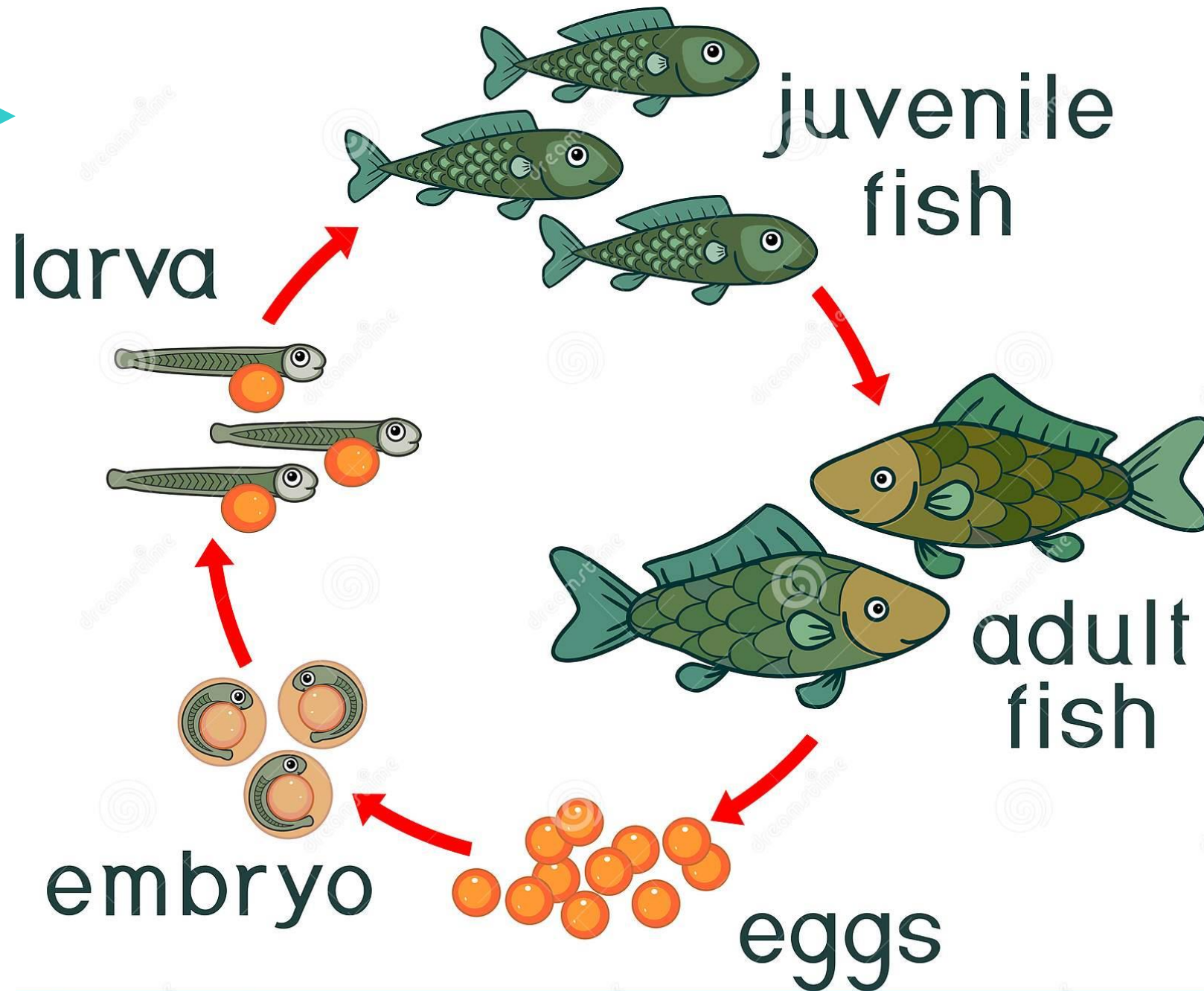
METAMORFOSIS



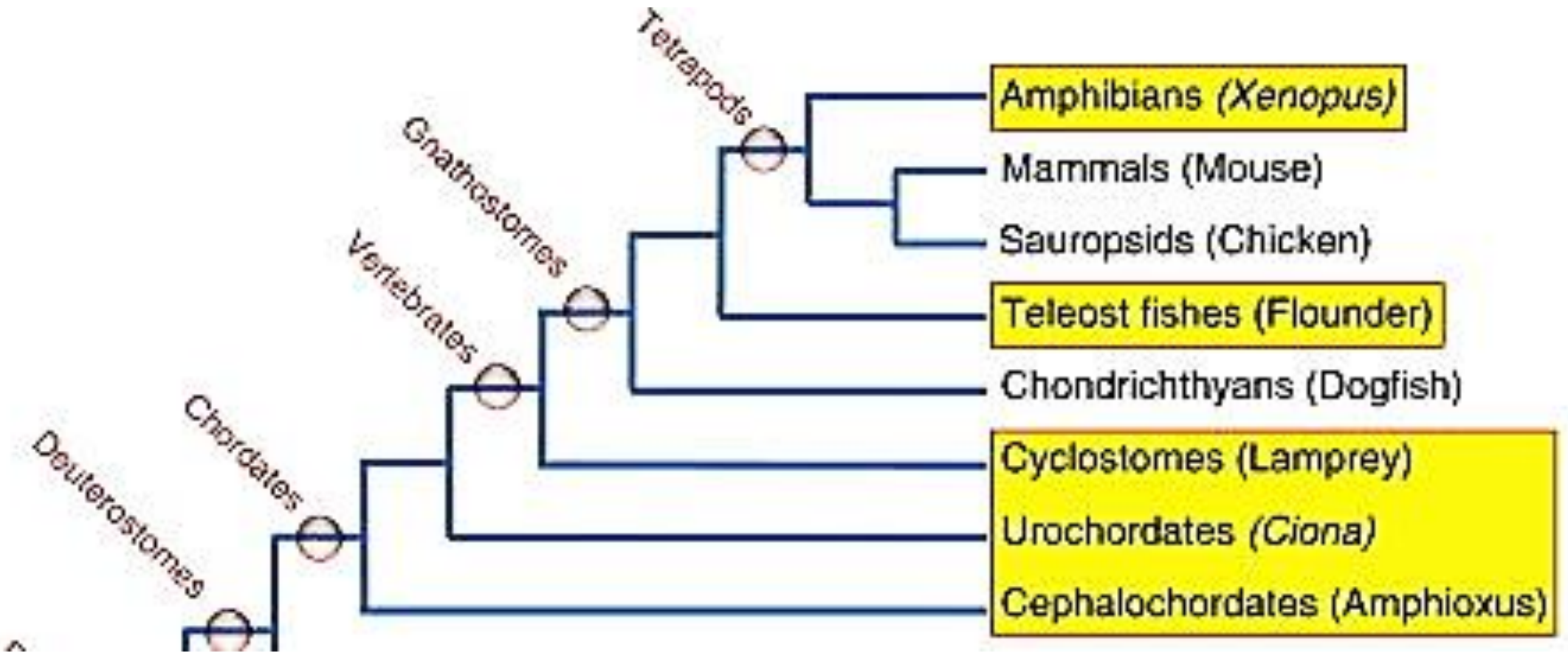
METAMORFOSIS



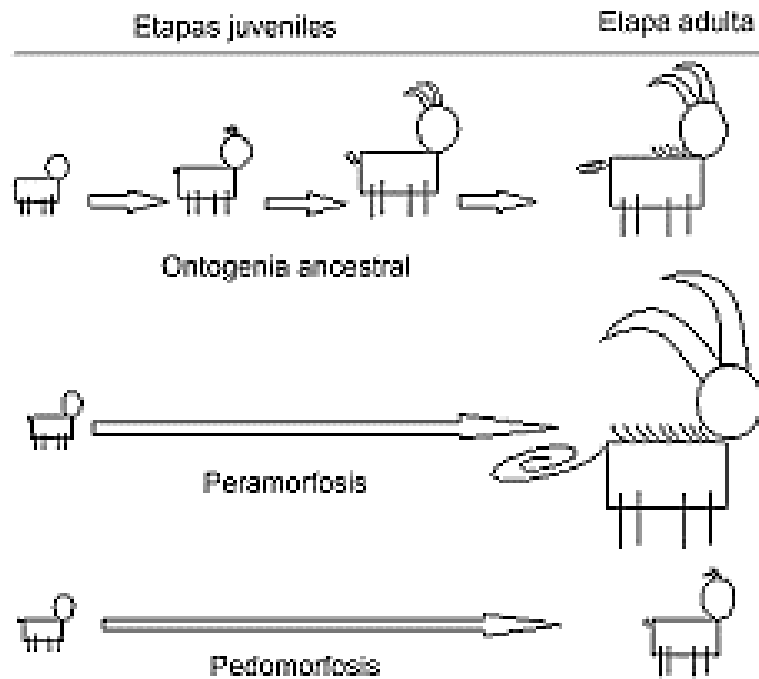
METAMORFOSIS



METAMORFOSIS

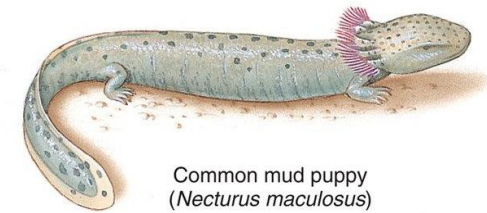


HETEROCRONÍA



Peramorfosis

Pedomorfosis



Common mud puppy
(*Necturus maculosus*)





Heterocronía

Pedomorfosis

Peramorfosis

Progénesis

Neotenia

Post
desplazamiento

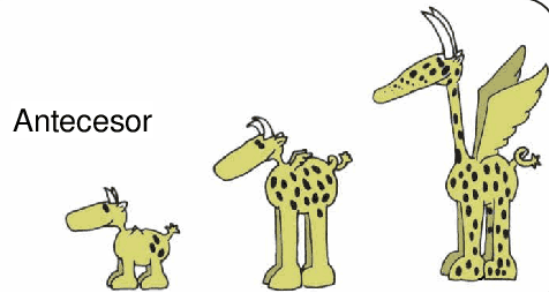
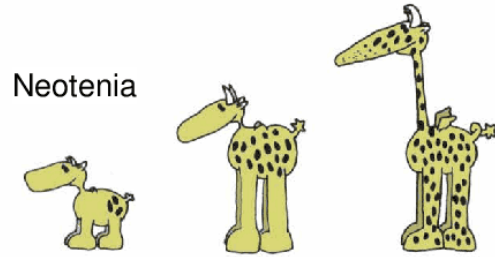
Hipermorfosis

Aceleración

Pre
desplazamiento

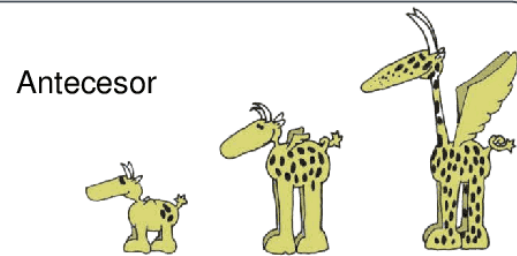
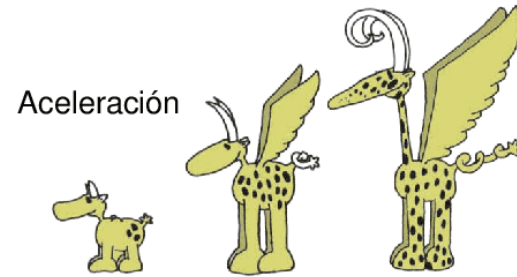
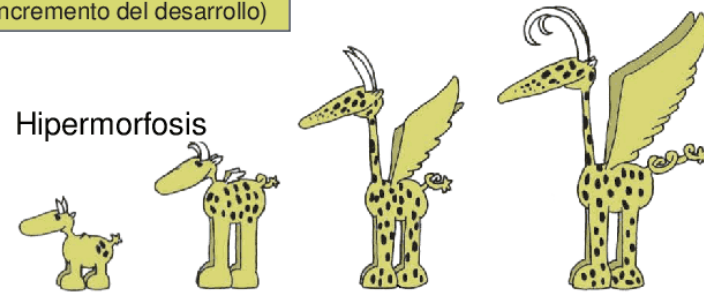


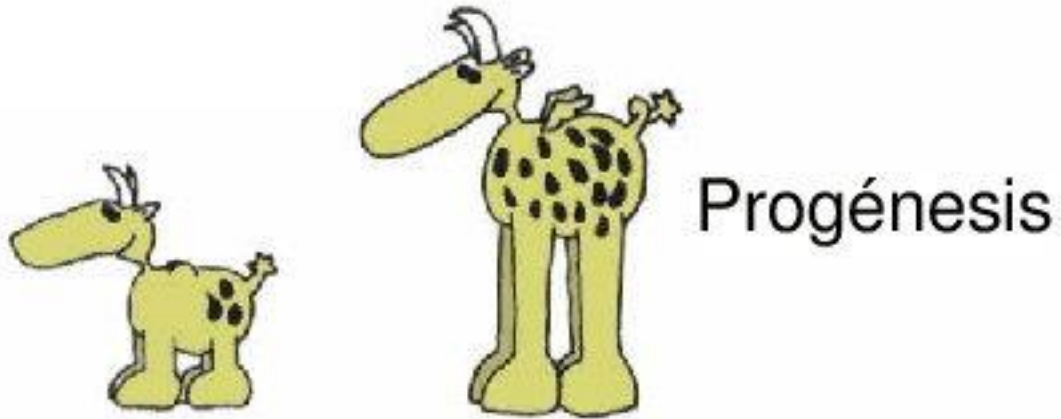
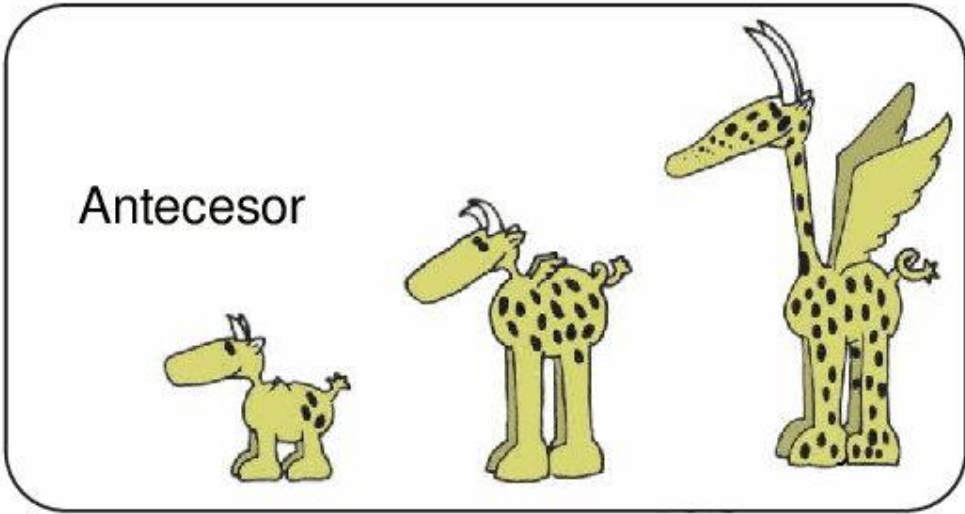
Pedomorfosis
(reducción del desarrollo)



(McNamara 1997)

Peramorfosis
(incremento del desarrollo)



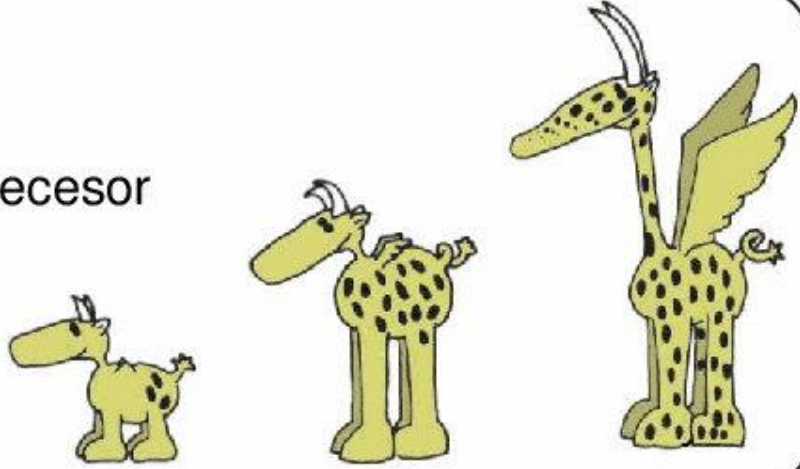


Pedomorfosis

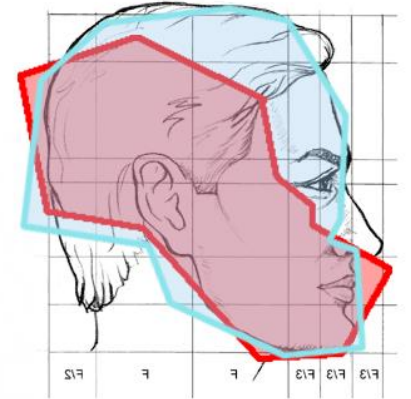
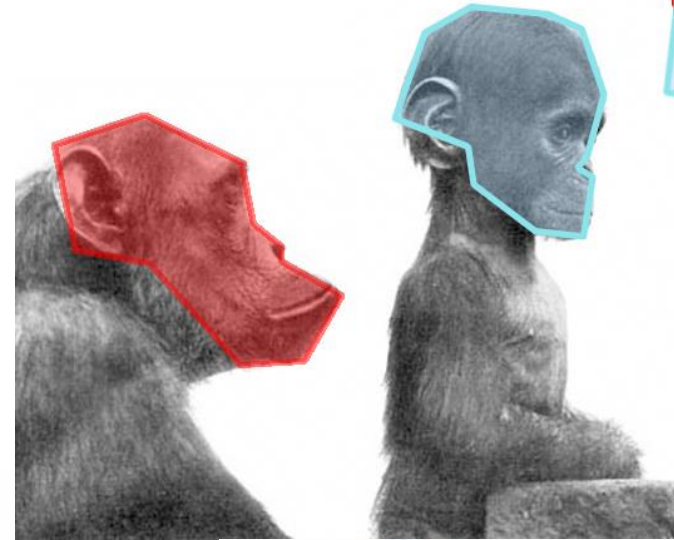
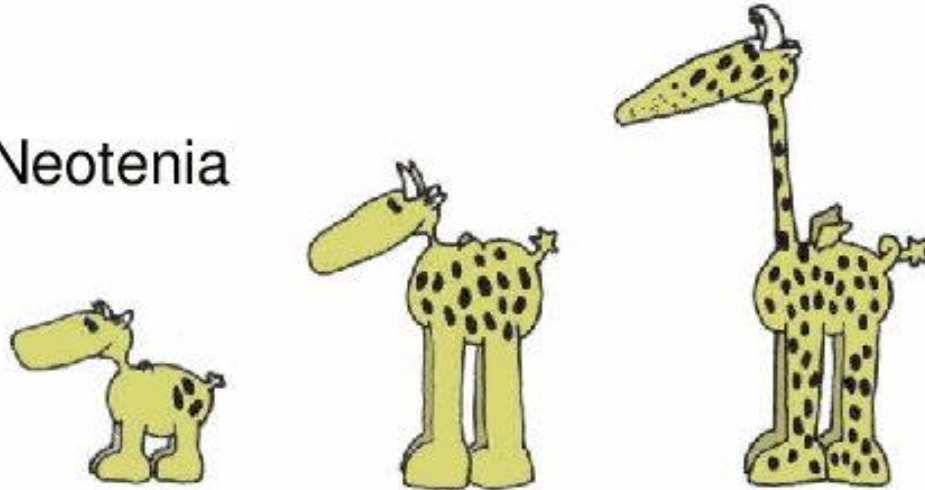


Pedomorfosis

Antecesor

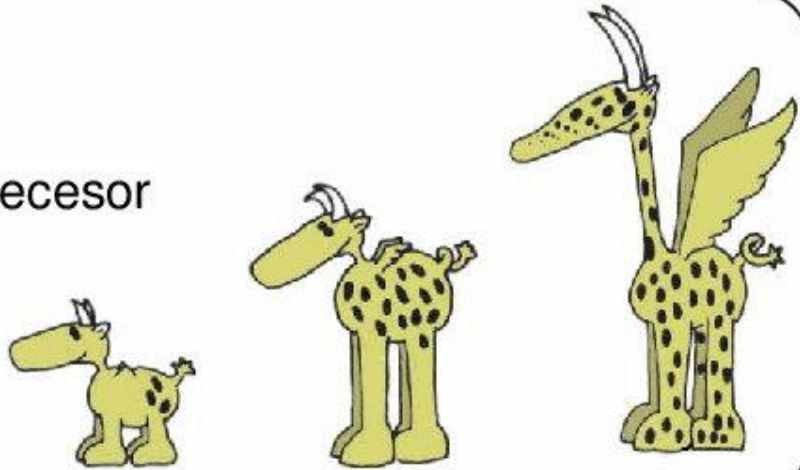


Neotenia



Pedomorfosis

Antecesor

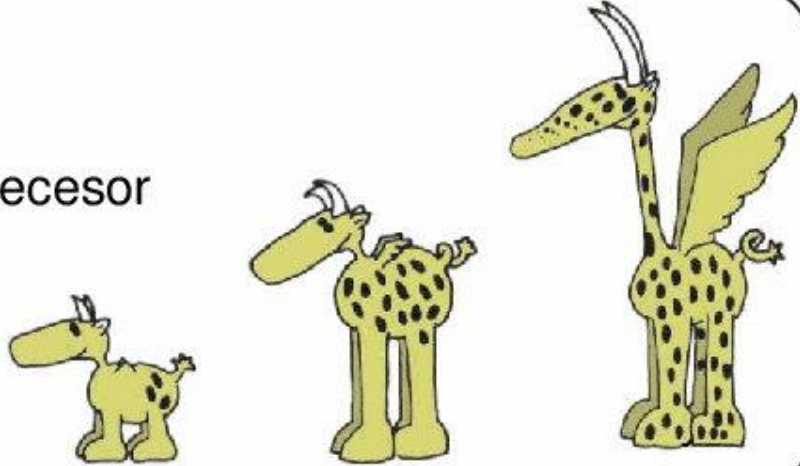


Post-desplazamiento

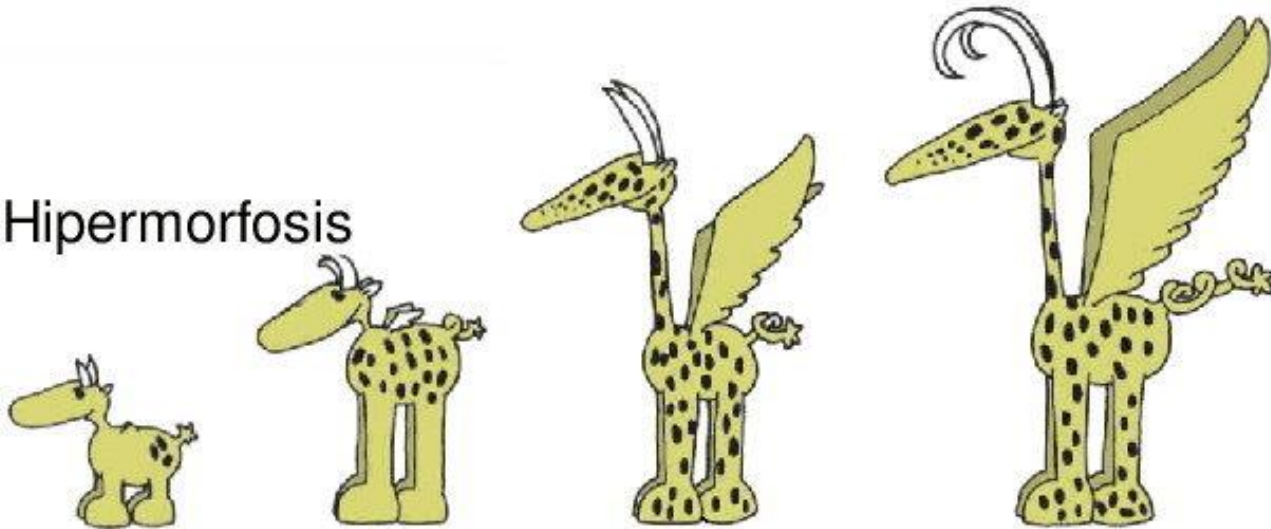


Peramorfosis

Antecesor

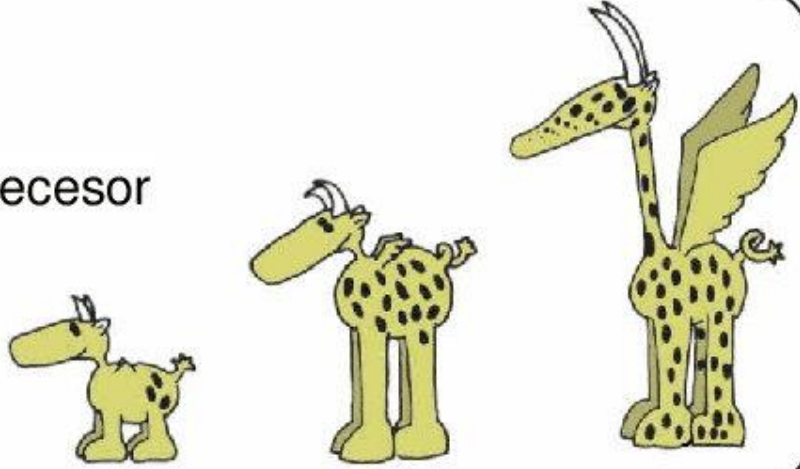


Hipermorfosis

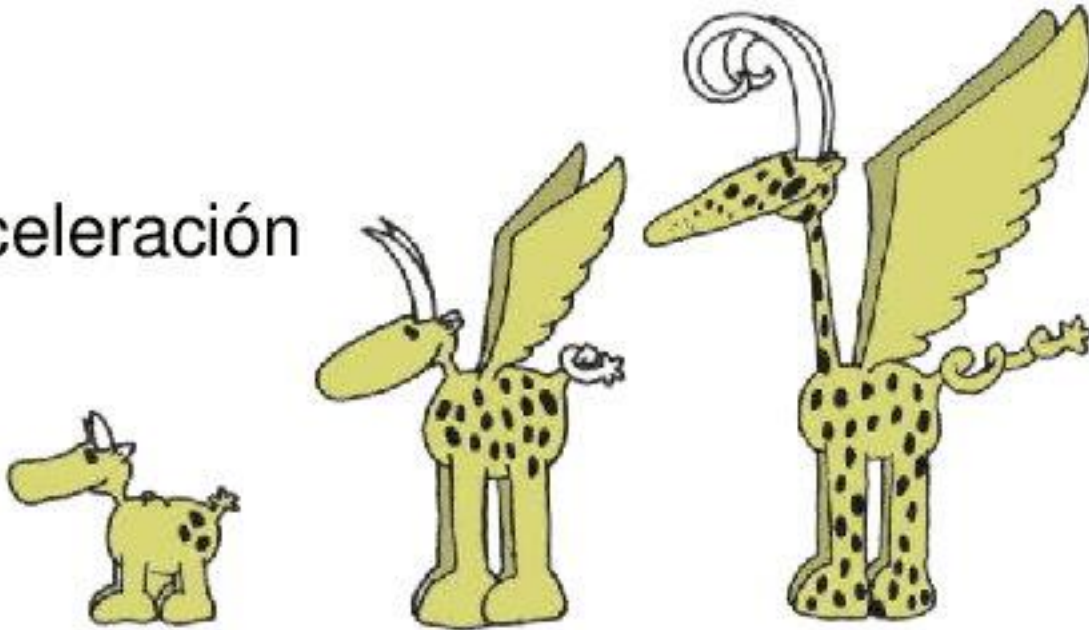


Peramorfosis

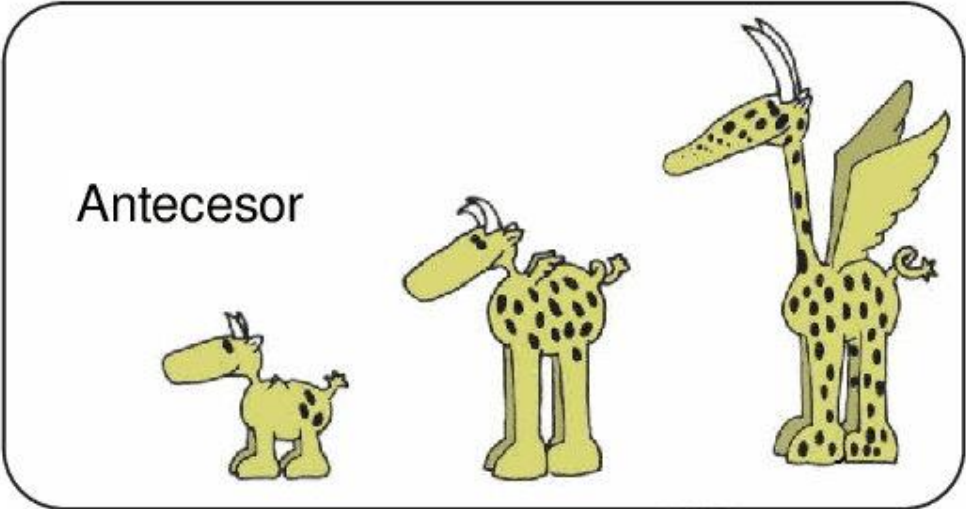
Antecesor



Aceleración



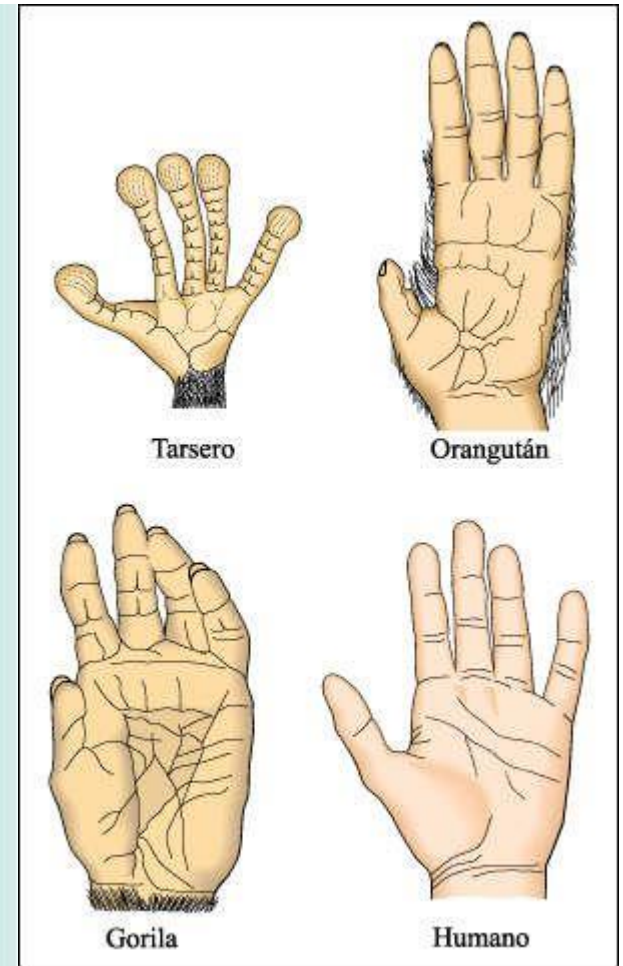
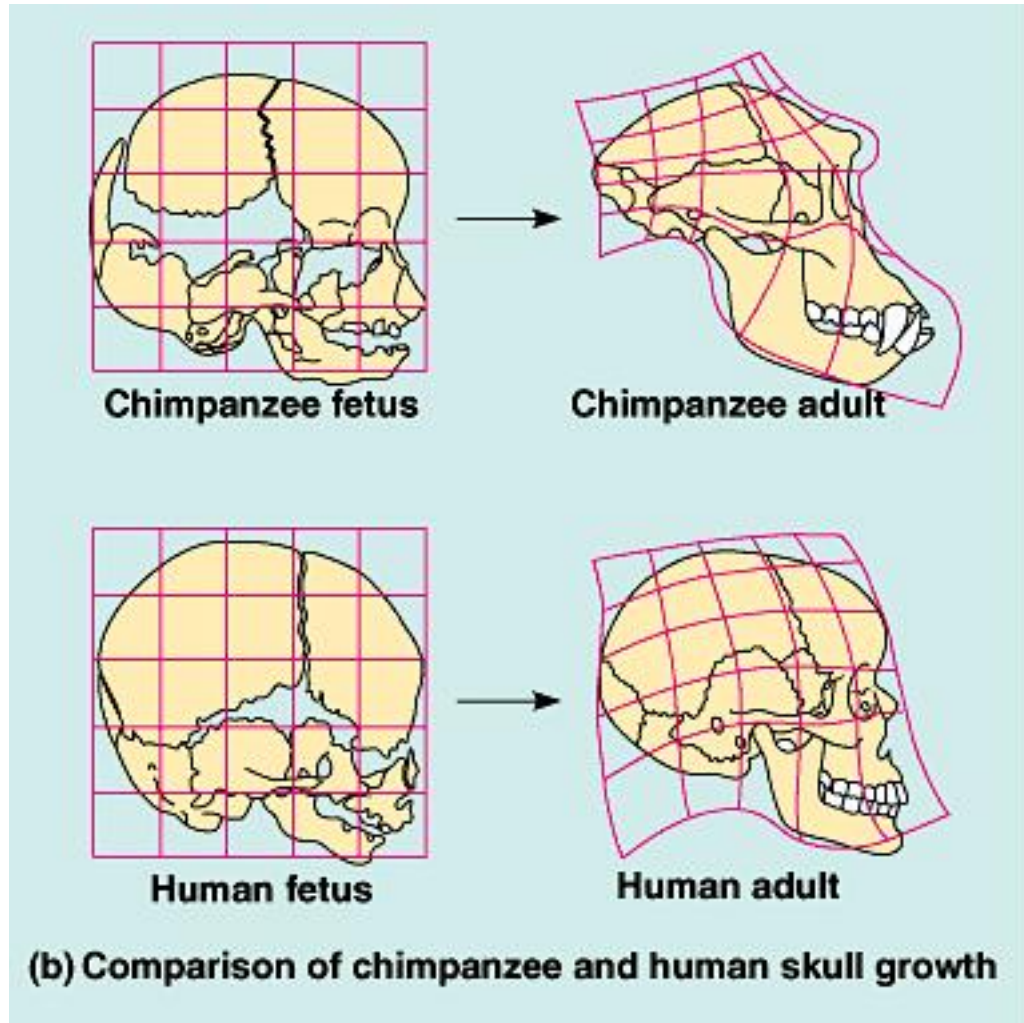
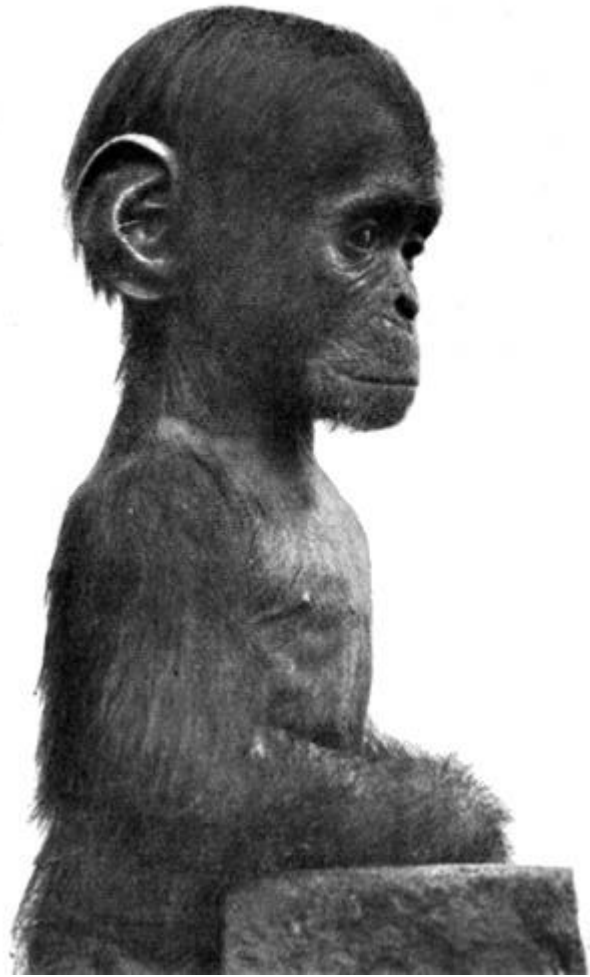
Peramorfosis



Pre-desplazamiento





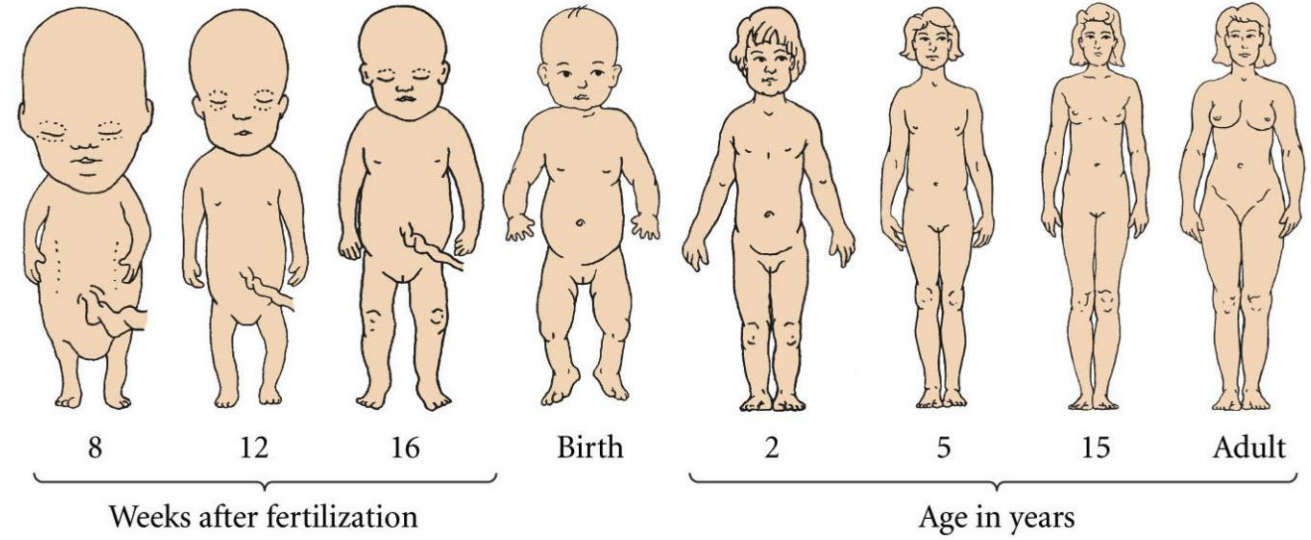


newly hatched



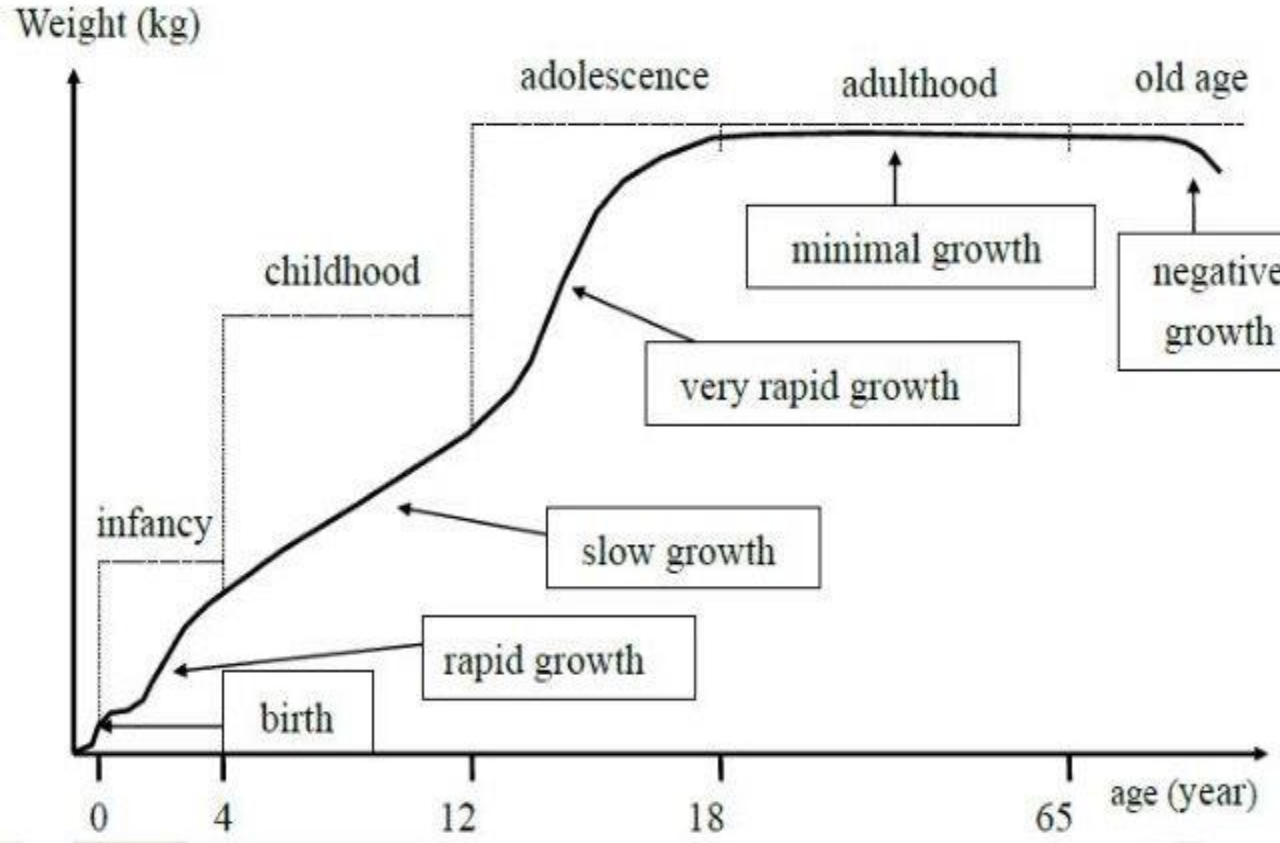
adult

Isométrico

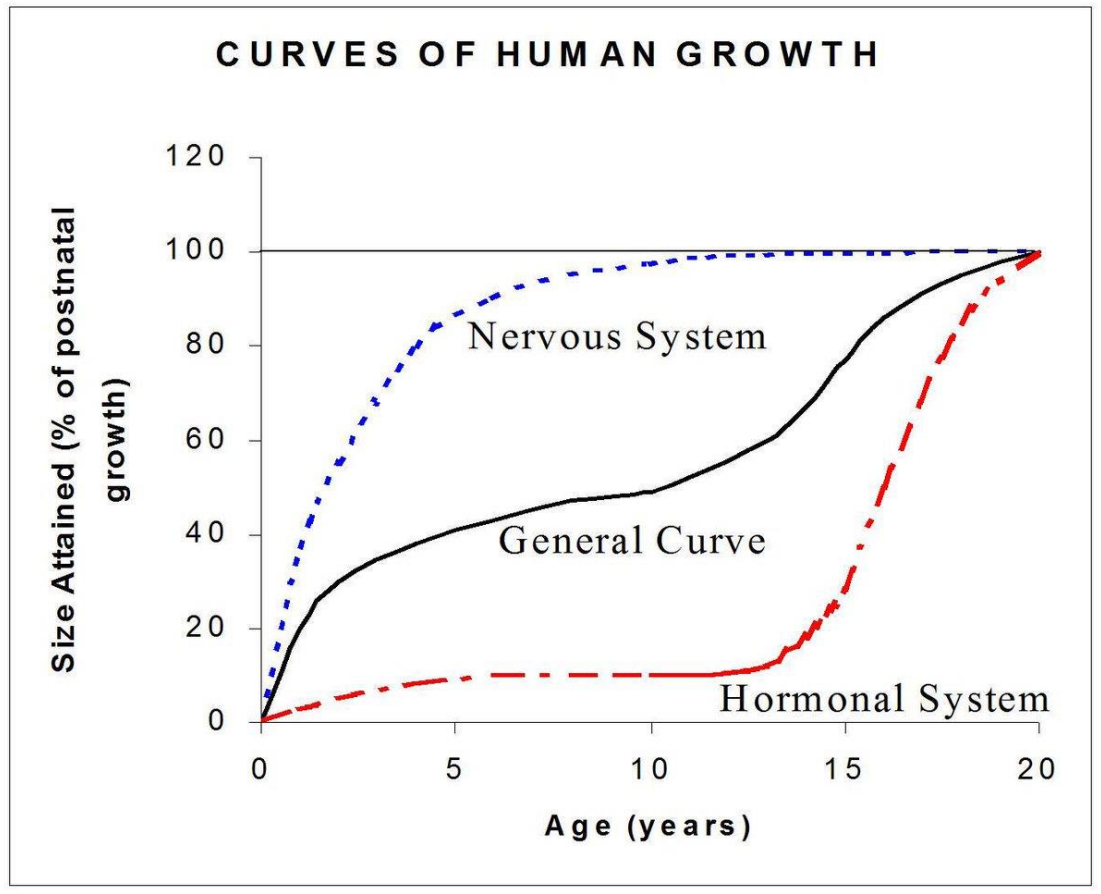


Alométrico



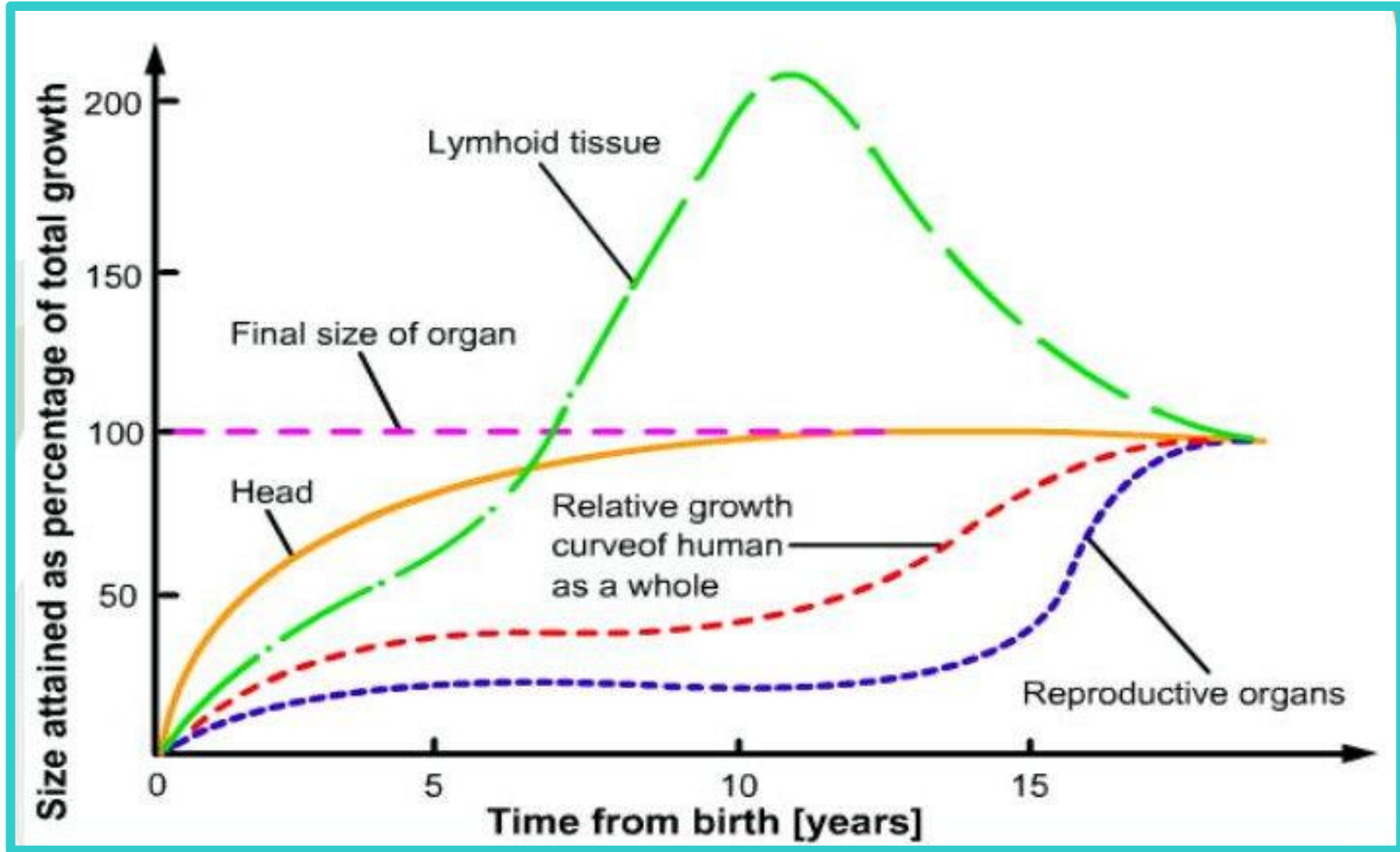


Crecimiento corporal



Crecimiento relativo

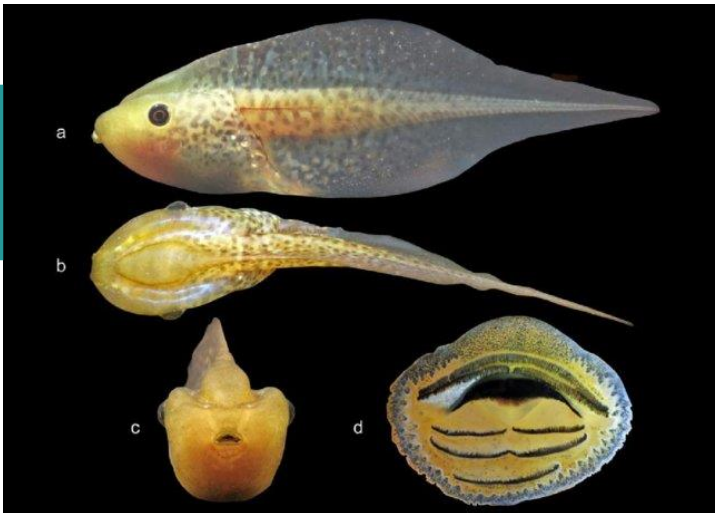


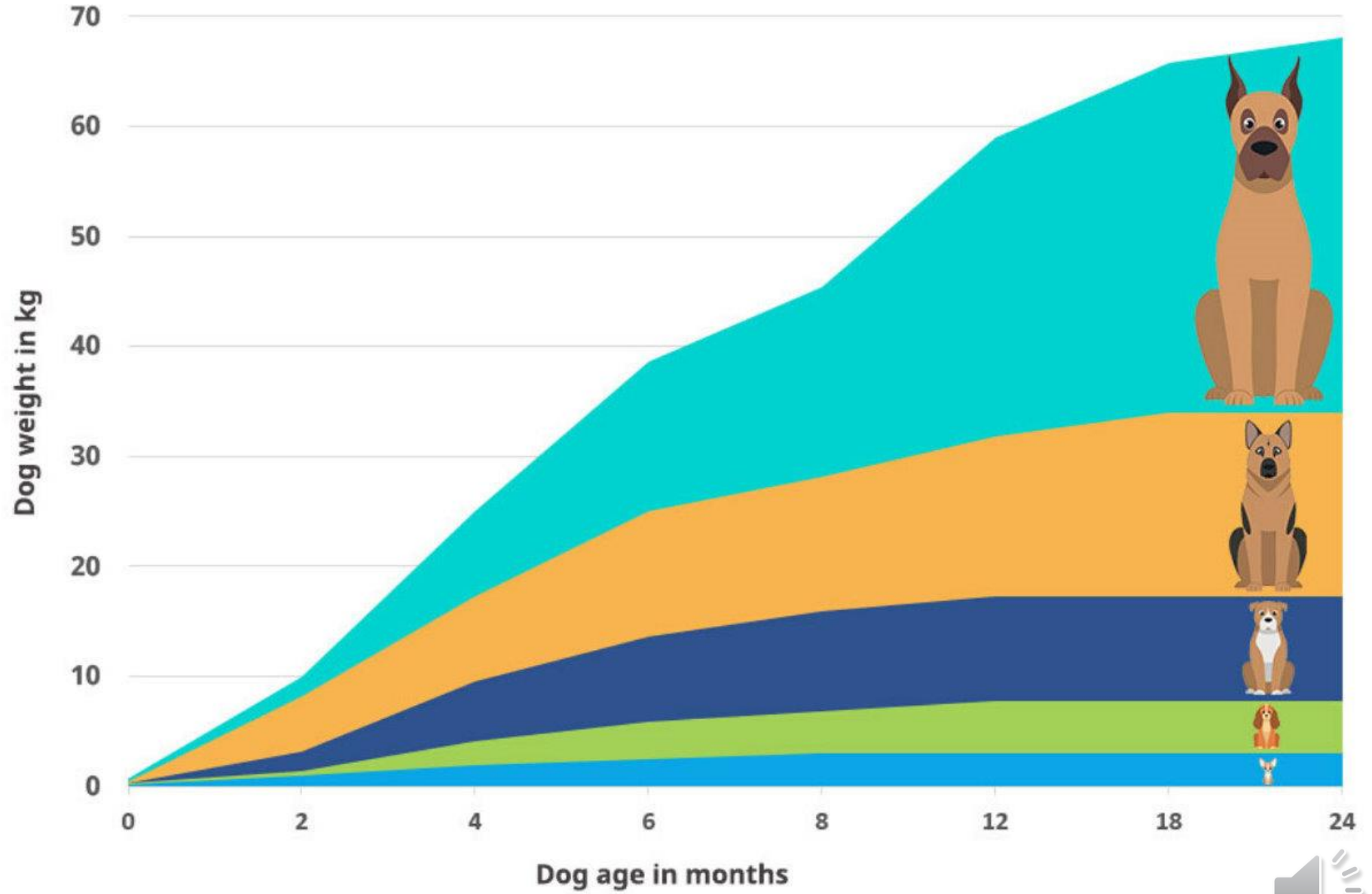
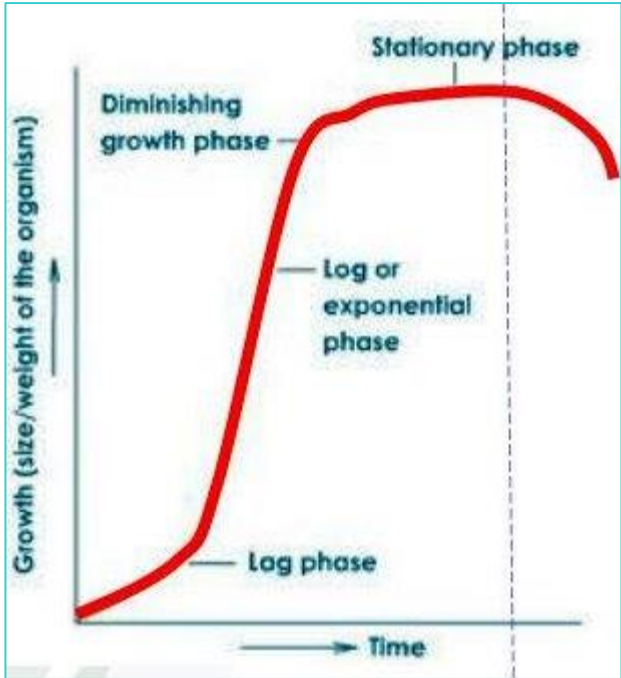




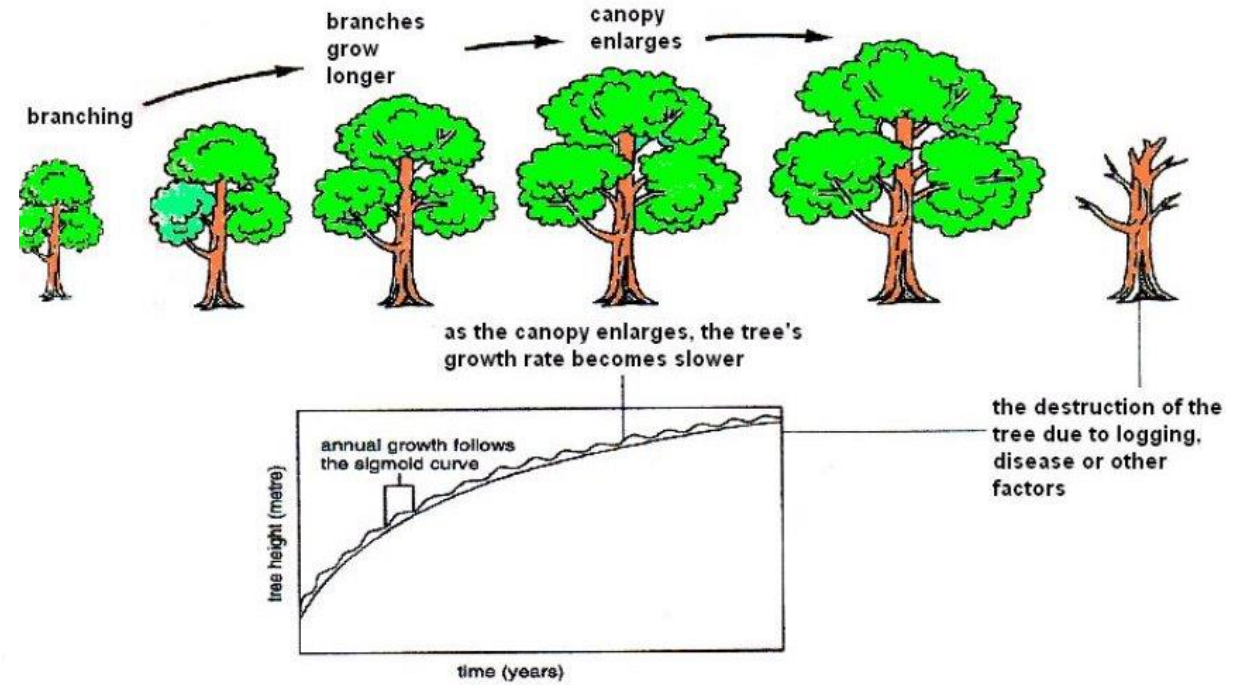
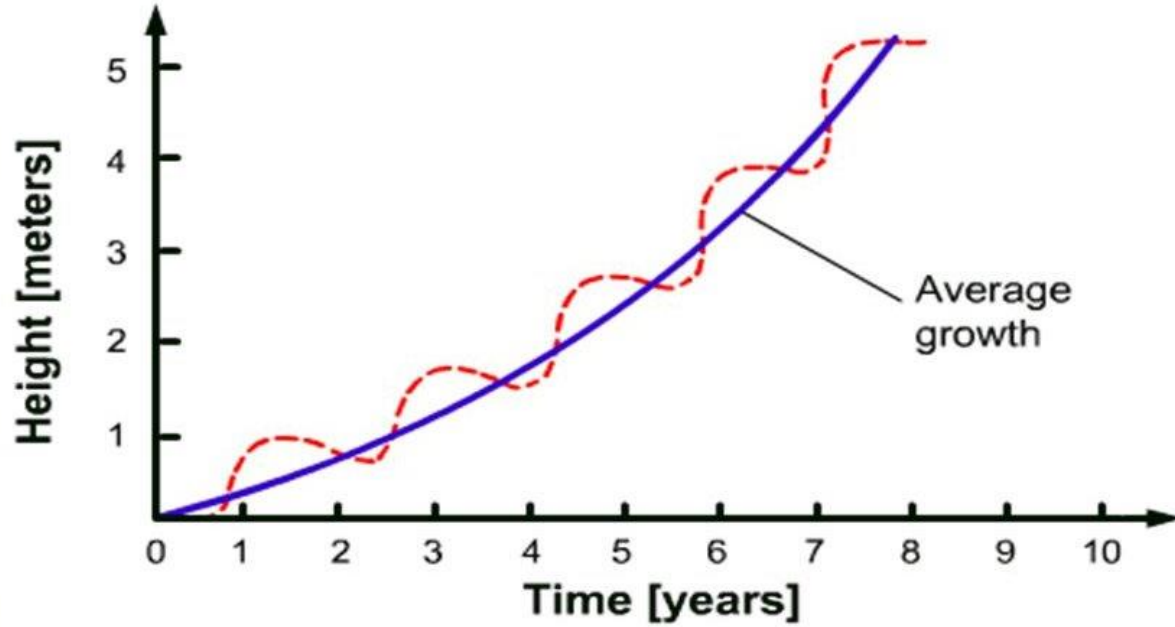
Longitud rostro cloaca
6 cm

Longitud rostro cola
22 cm





Unlimited growth curve (perennial plants)



REGENERACIÓN



Reemplazo

Estructura que ya se había diferenciado



Blastema de regeneración

Estructura o tejido de aspecto embrionario

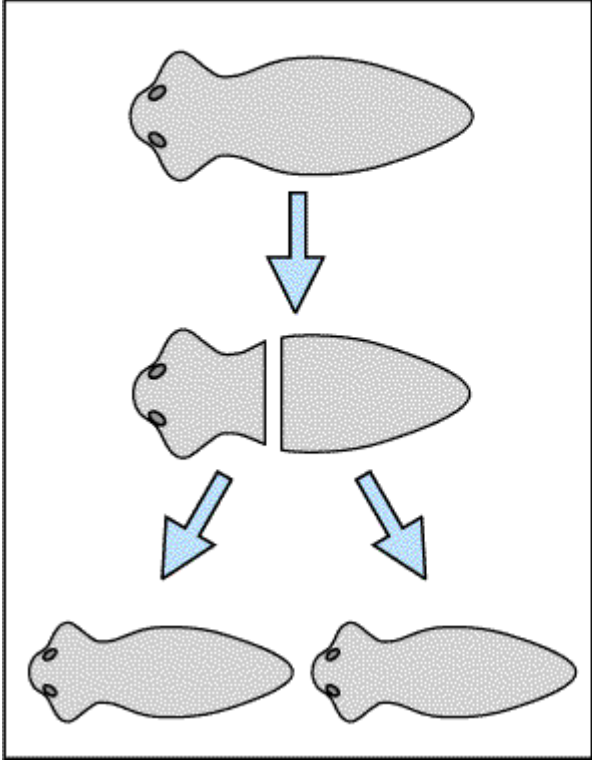


Campo morfogénico

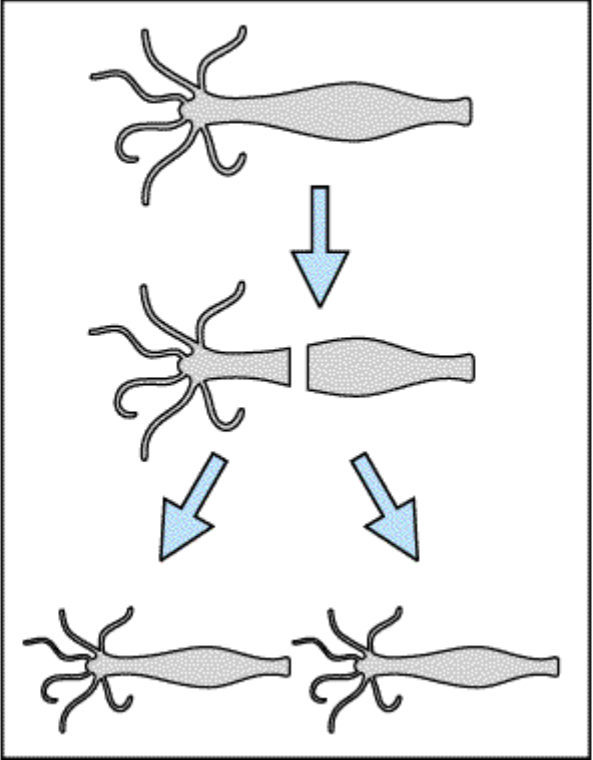
Grupo de células determinadas para la formación de un órgano



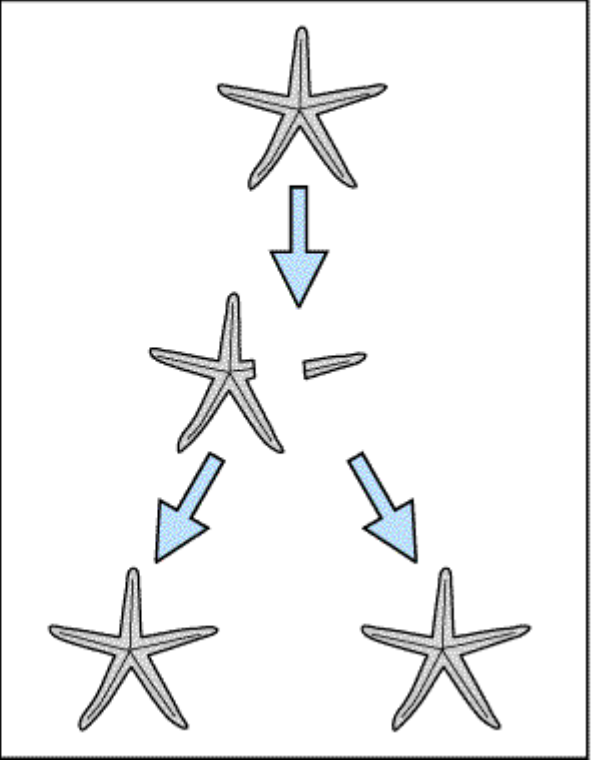
Planarian

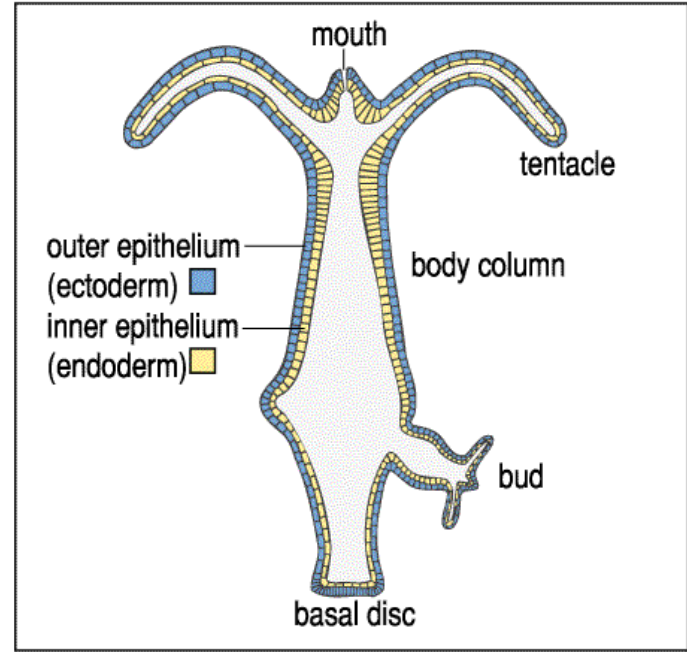
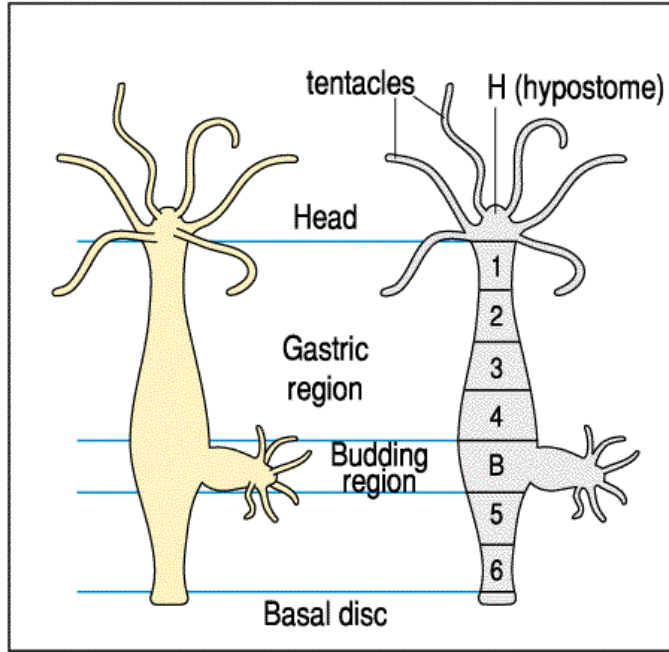
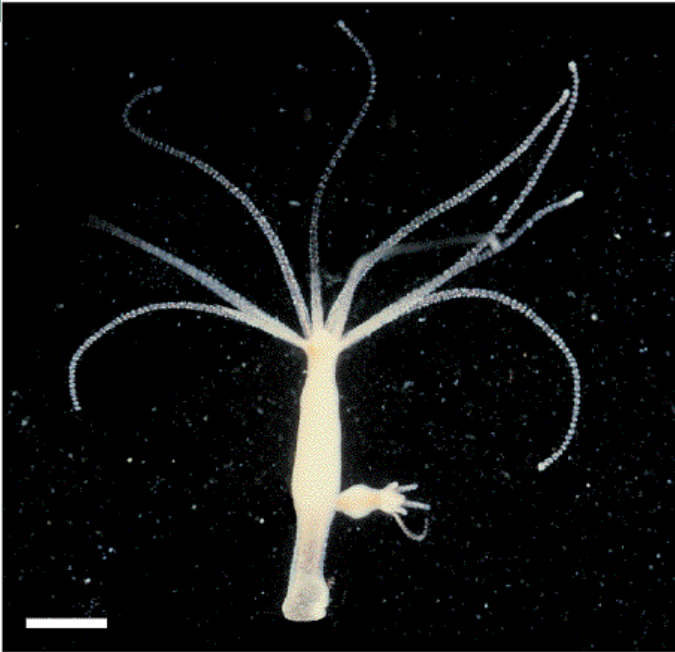


Hydra

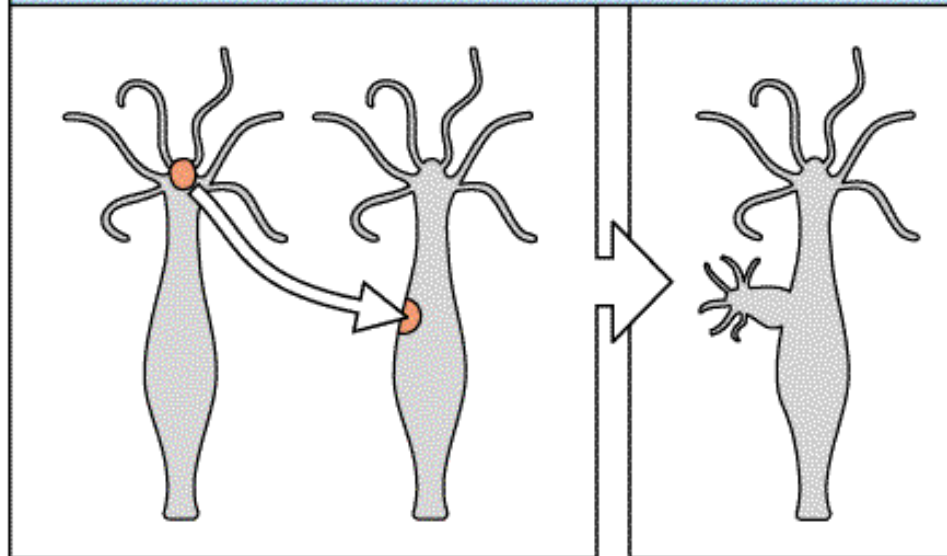


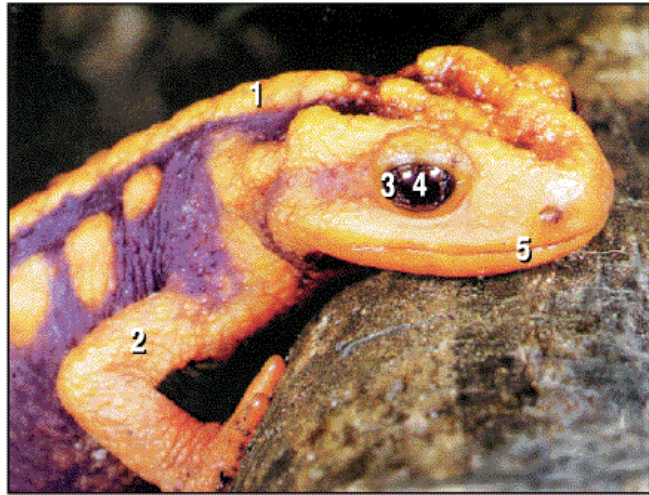
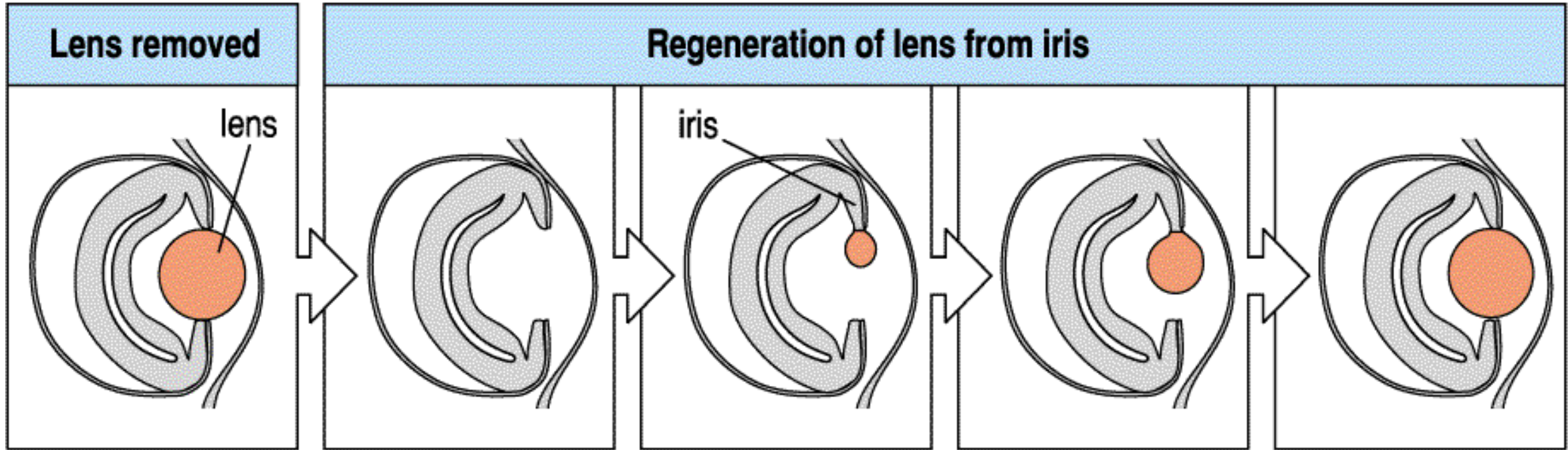
Starfish



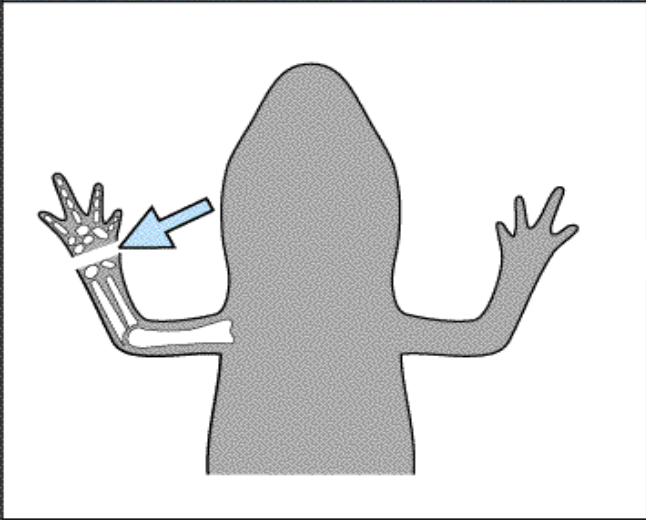


A piece of hypostome induces a secondary axis when grafted to an intact *Hydra*

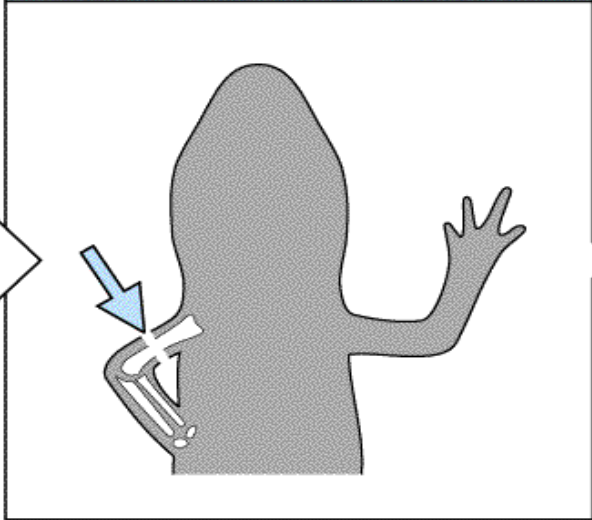




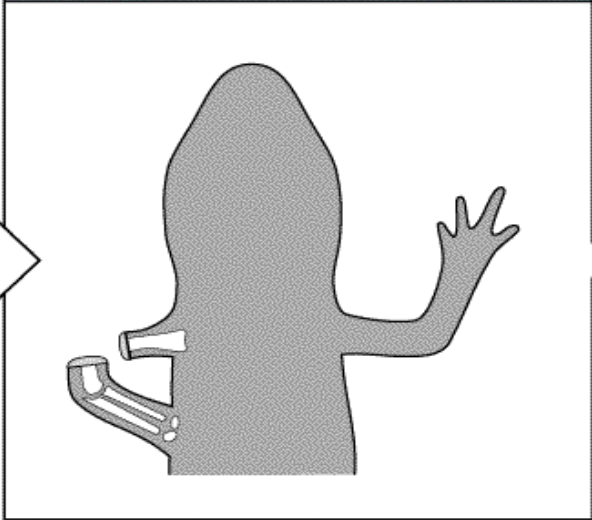
Hand amputated



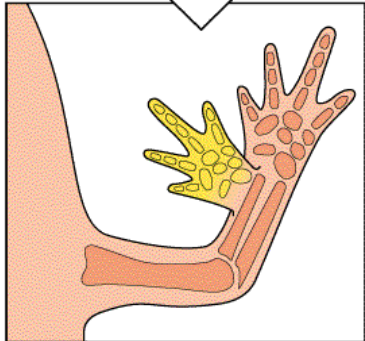
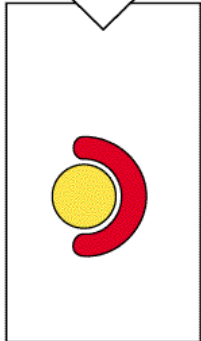
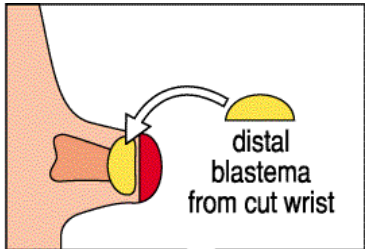
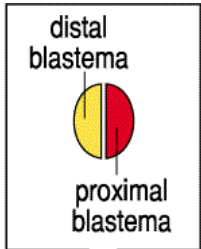
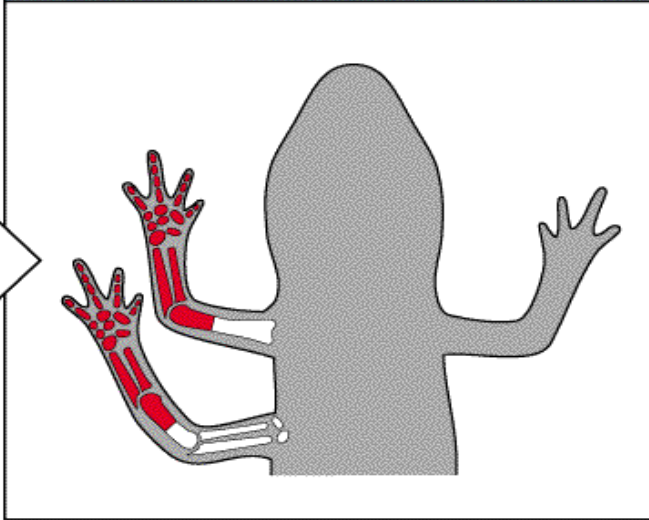
Limb is inserted into belly, vascular connections are established, then humerus is cut





Regeneration starts from proximal and distal surfaces of humerus





Both proximal and distal surfaces regenerate distal structures





1 Regeneración mediada por células madre  Médula ósea

blastema  **Epimorfosis:** formación de un tejido a partir de una estructura compuesta de células indiferenciadas. **2**

3 **Morfalaxis.** La regeneración ocurre a partir de una reorganización de los tejidos existentes.  hidra

Hígado  **Regeneración compensatoria.** La proliferación de células diferenciadas para restaurar el tamaño original del órgano dañado. **4**



