

SARCOPTERIGI

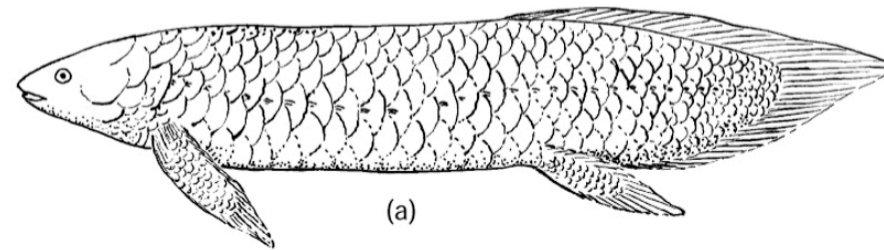
DIPNOI (Pesci polmonati)

CROSSOPTERIGI - Osteolepiformi - Actinisti (Celacanti)

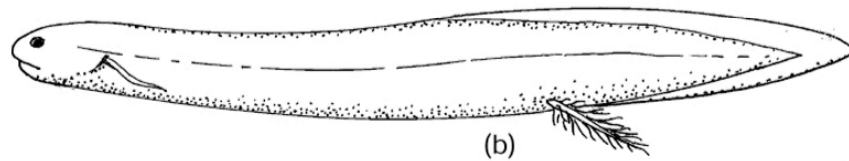
- PINNE PARI CARNOSE CON RAGGI DERMICI
- DUE PINNE DORSALI
- CODA ETEROCERCA
- SCAGLIE COSMOIDI

DIPNOI

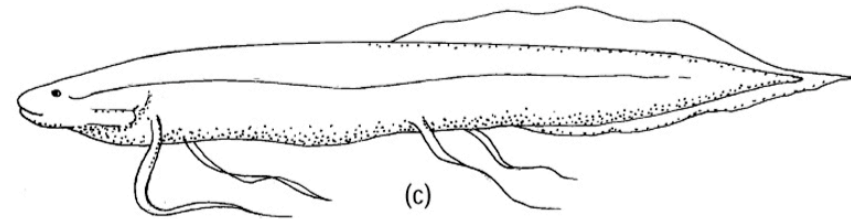
- *Neoceratodus* (Australiano)
- *Lepidosiren* (Sudamericano)
- *Protopterus* (Africano)
- Assenza di pre- e mascellare
- Apparato durofago (denti palatali e fusi tra loro)
- Pinne pari a simmetria bilaterale (Archipterigio)
- Variabilità nell'uso dei polmoni per la respirazione
- Scheletro prevalentemente cartilagineo
- Notocorda nuda (archi neurali)
- Scaglie cosmoidi



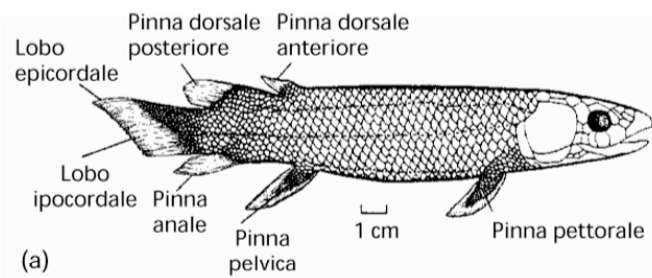
(a)



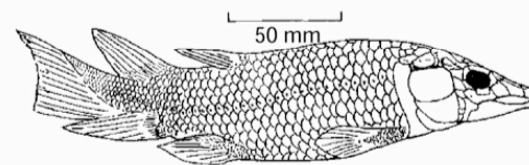
(b)



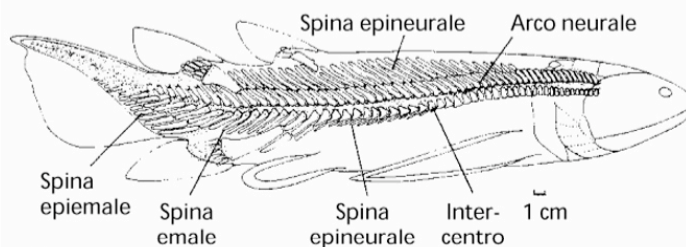
(c)



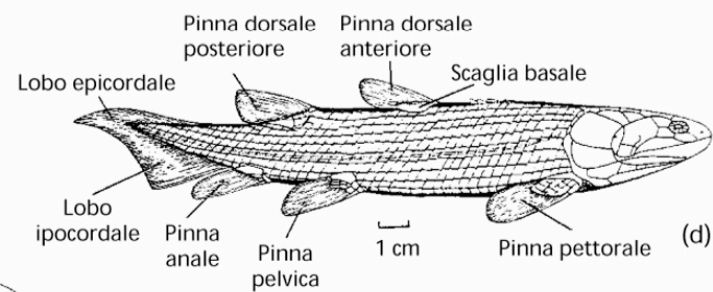
(a)



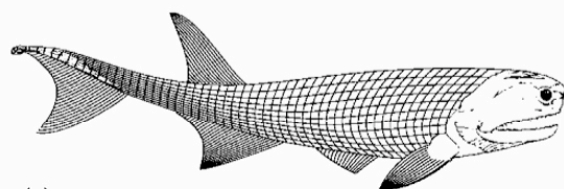
(b)



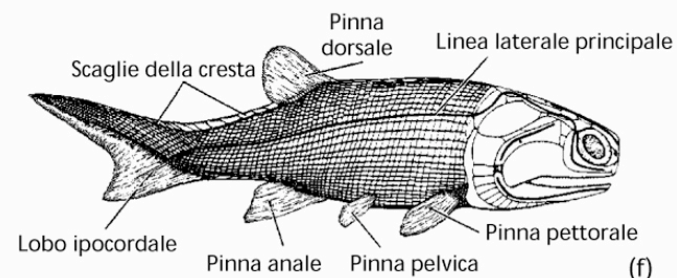
(c)



(d)



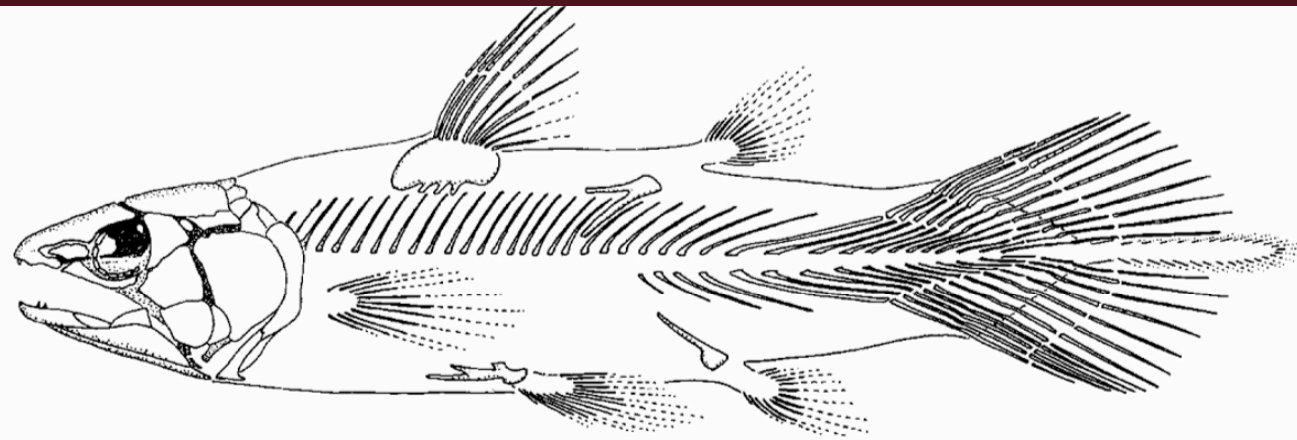
(e)



(f)

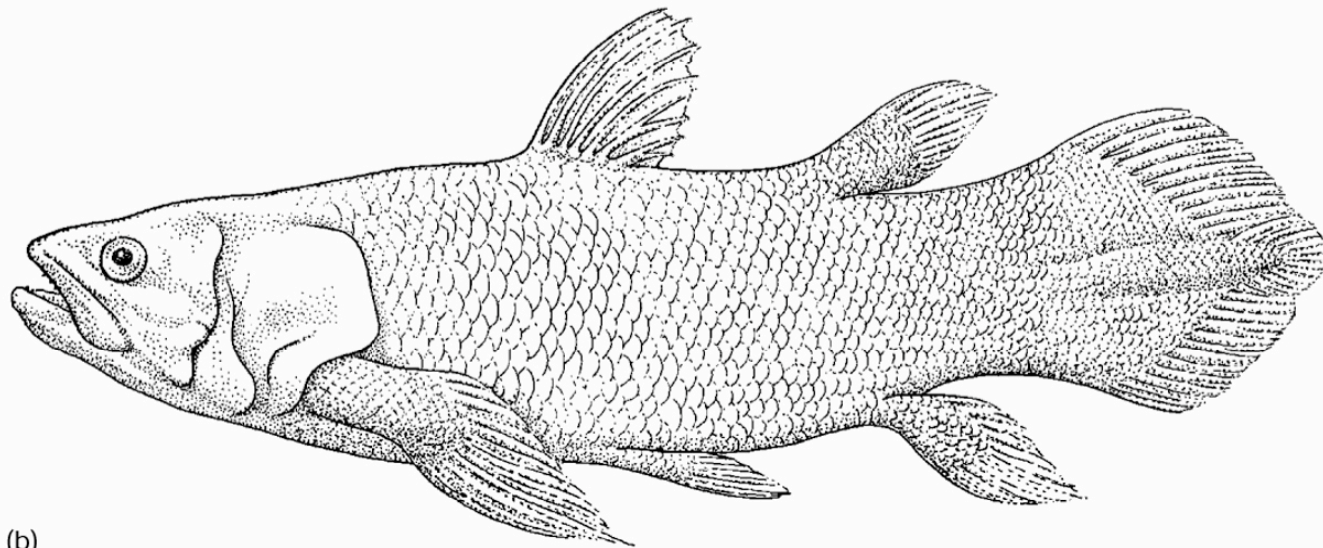
CROSSOPTERIGI-ACTINISTI (CELACANTI)

- Coda trilobata
- Denti labirintodonti
- Prevalenza di cartilagine
- Iperosmotici
- Polmoni ripieni di grasso



(a)

20 mm



(b)

1 m

CROSSOPTERIGI-OSTEOLEPIFORMI (RIPIDISTI)

TETRAPOD LIMB EVOLUTION

237

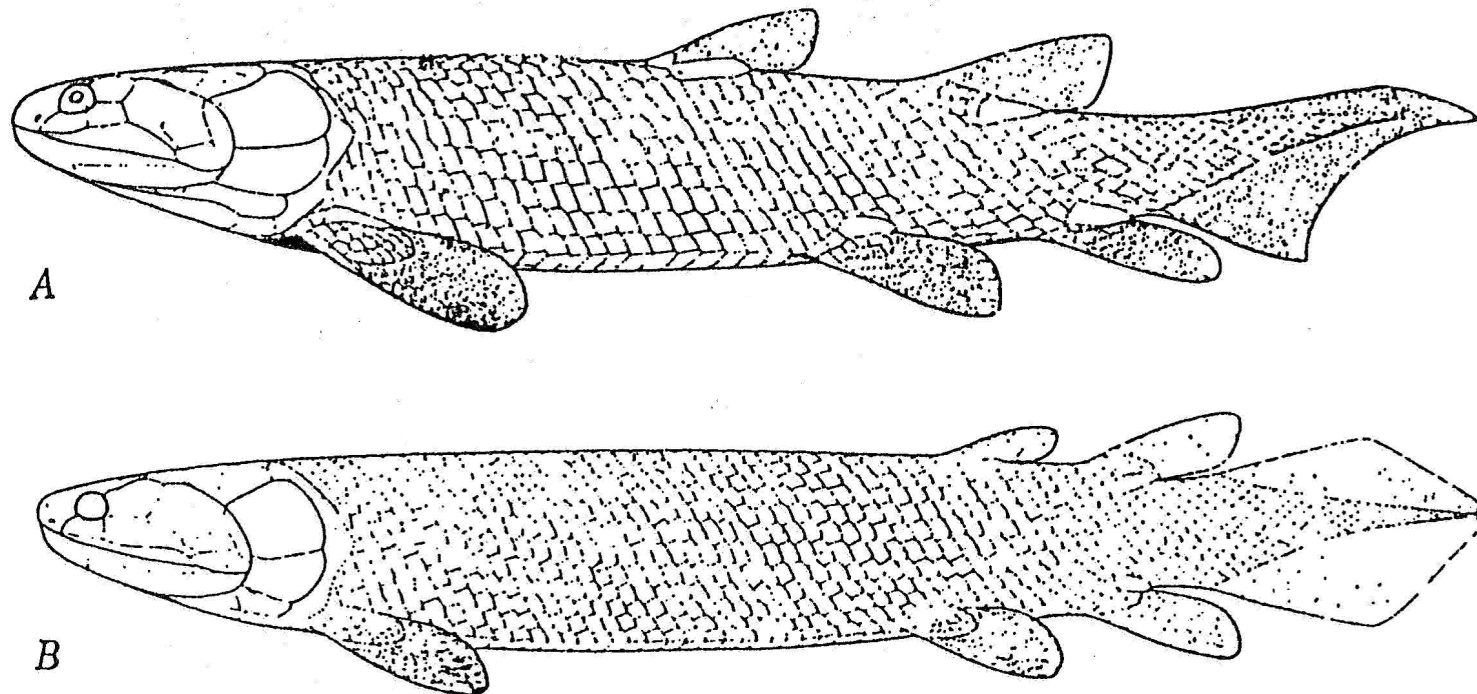
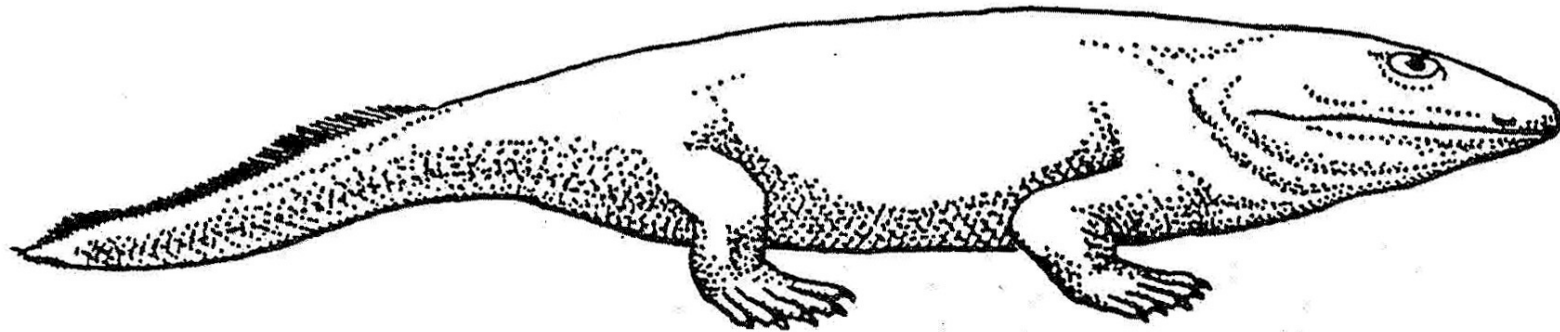
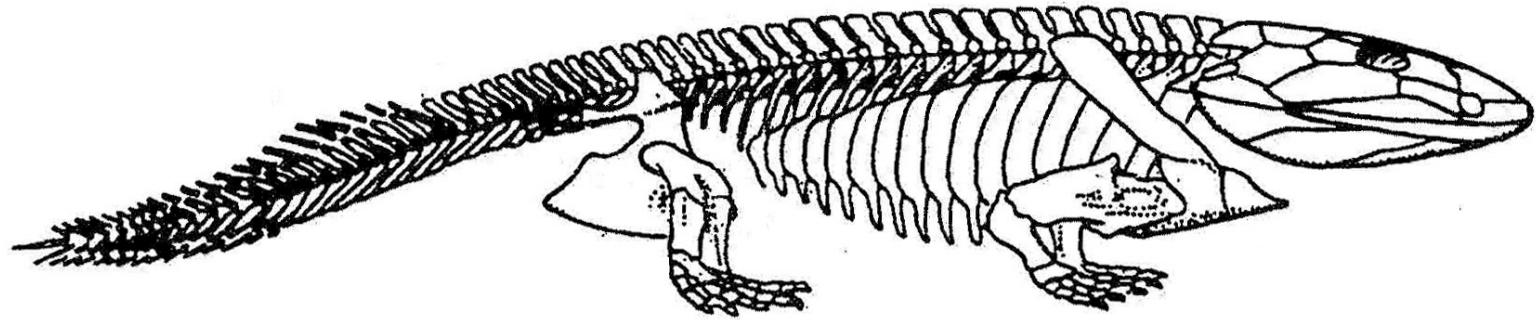
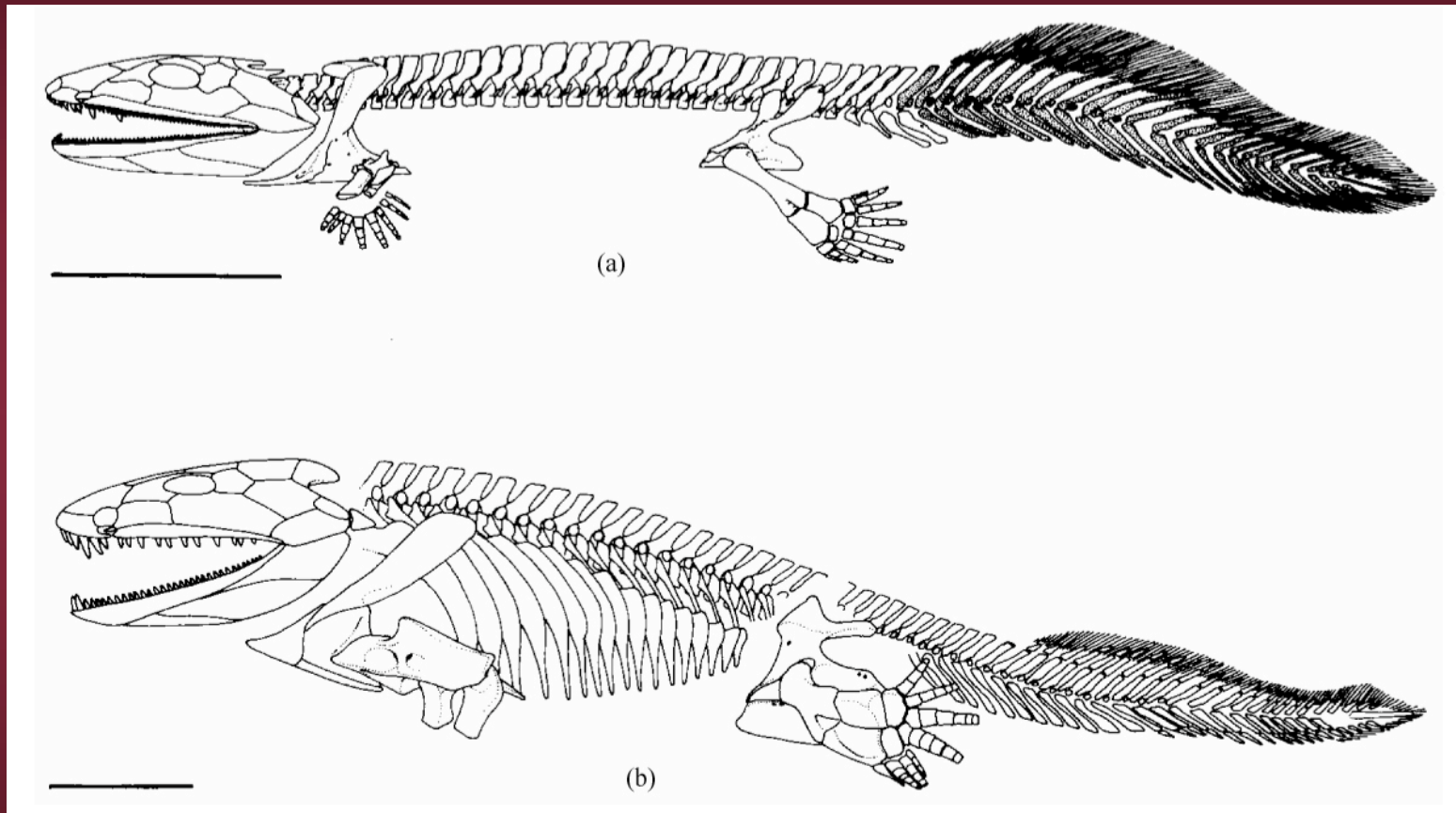


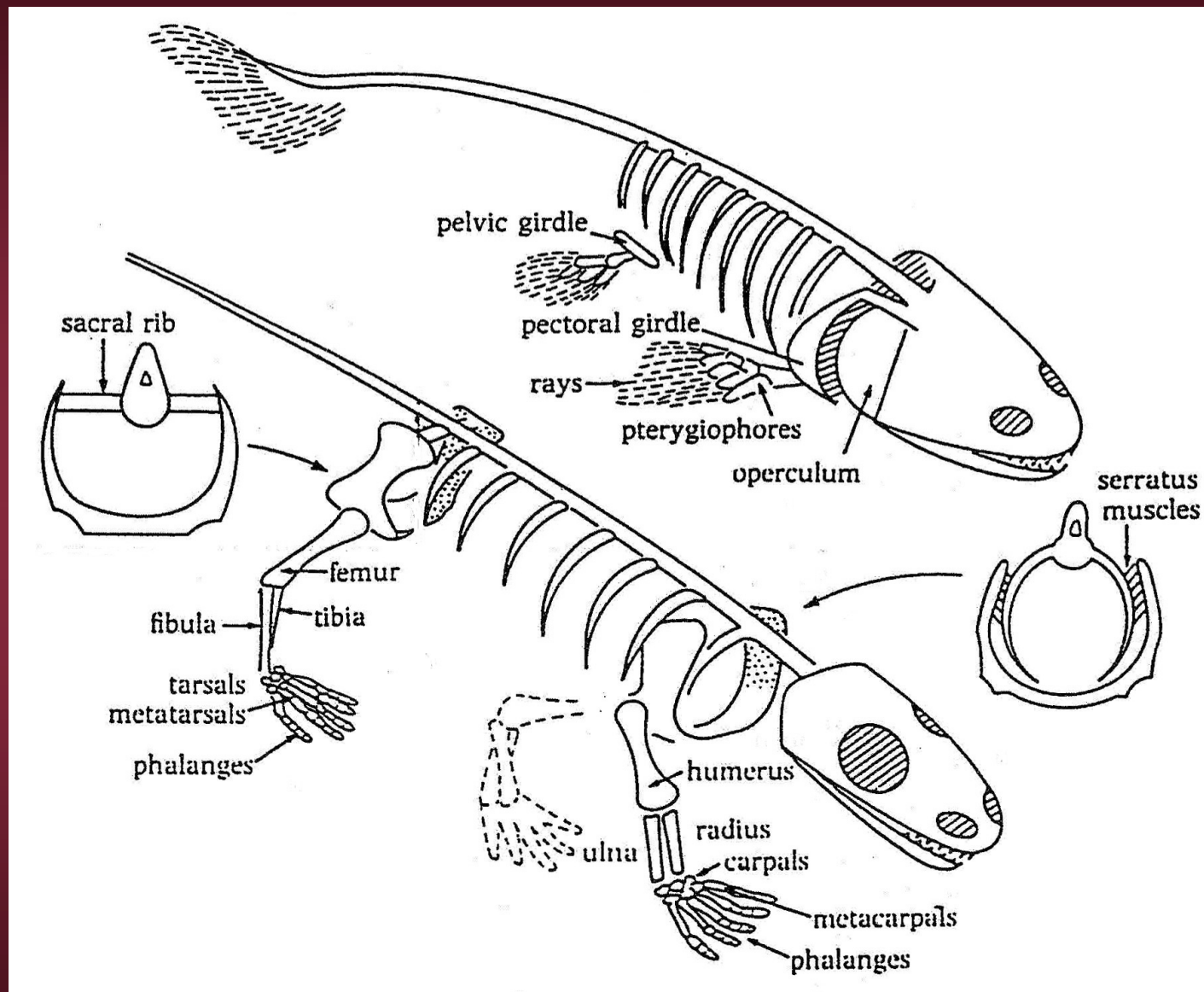
FIG. 2. Reconstructions of two genera of osteolepid rhipidistians: A. *Osteolepis*. B. *Eusthenopteron*. (From Olson, 1971)

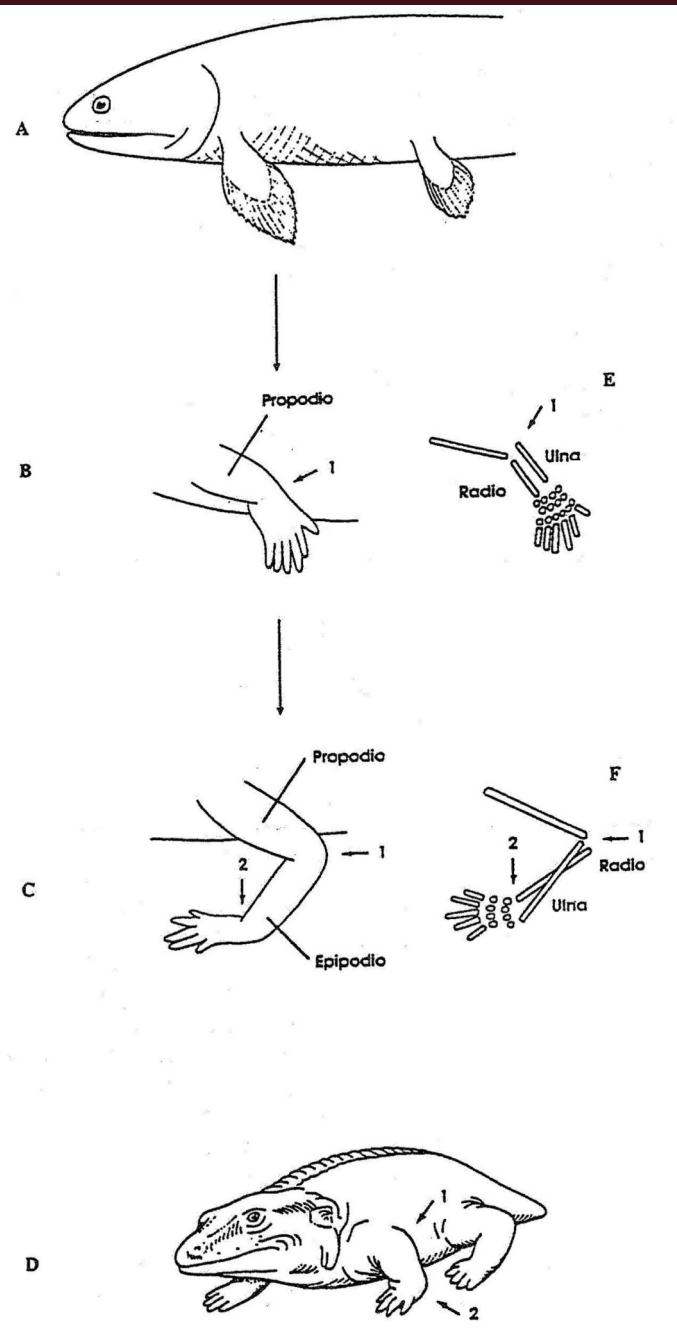


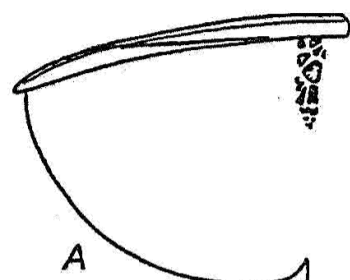
ACANTHOSTEGA



ICHTHYOSTEGA

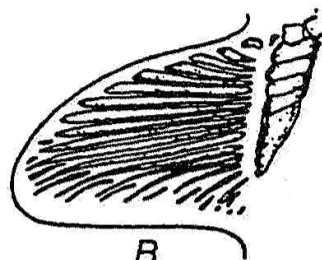






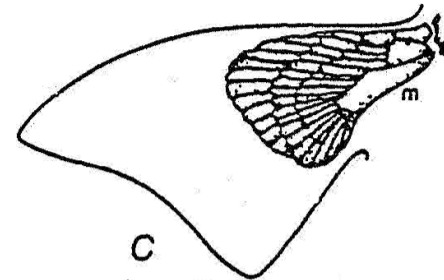
A

Acanthodes



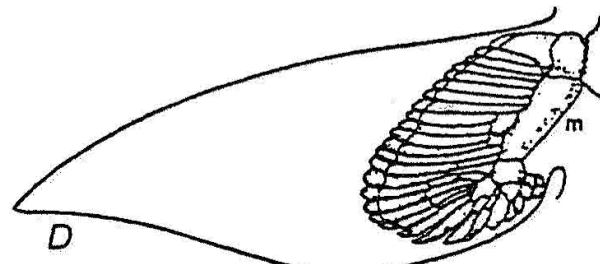
B

Cladoselache



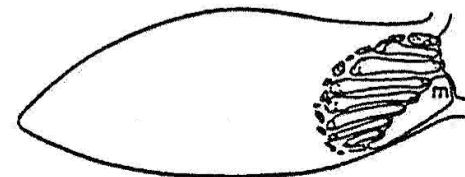
C

Isurus



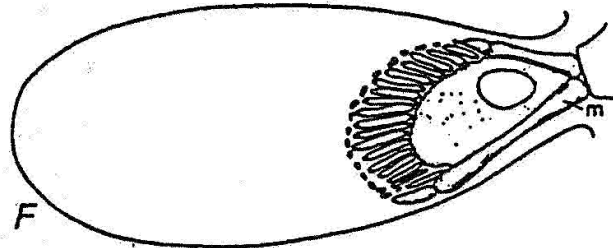
D

Callorhynchus



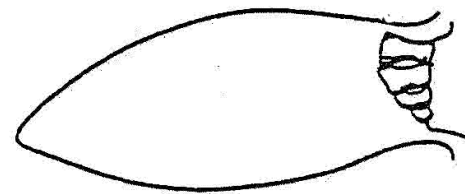
E

Amia



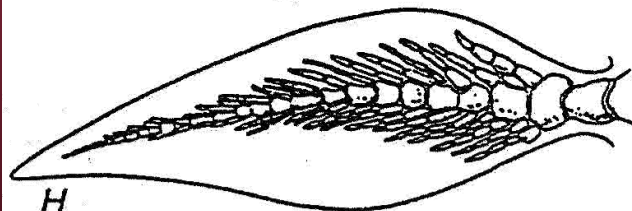
F

Polypterus



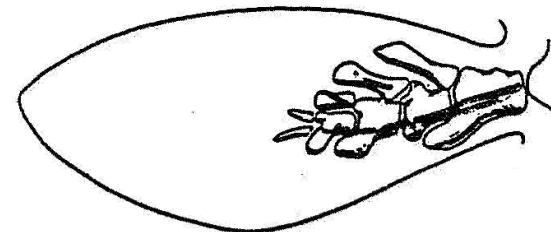
G

Serranus

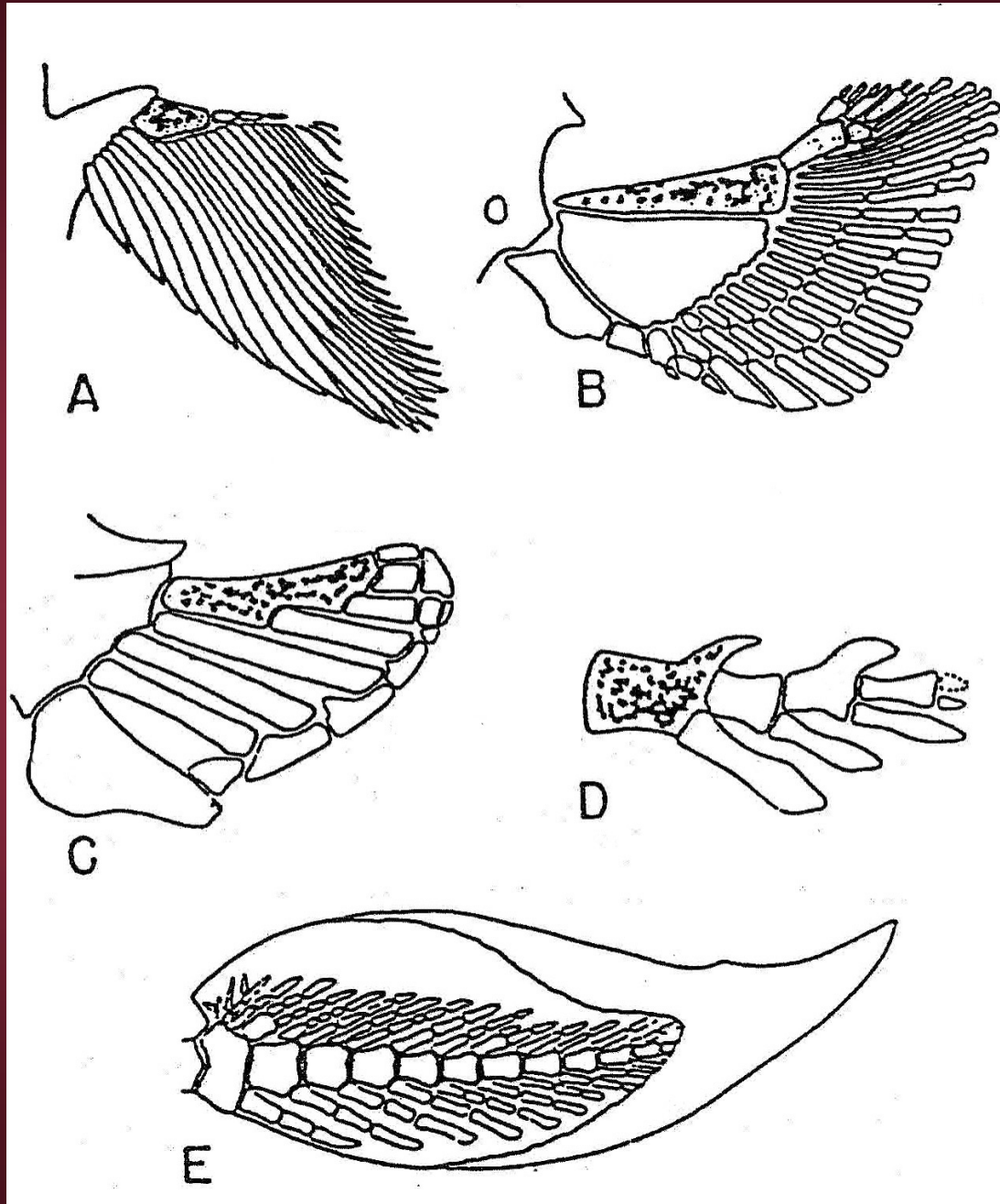


H

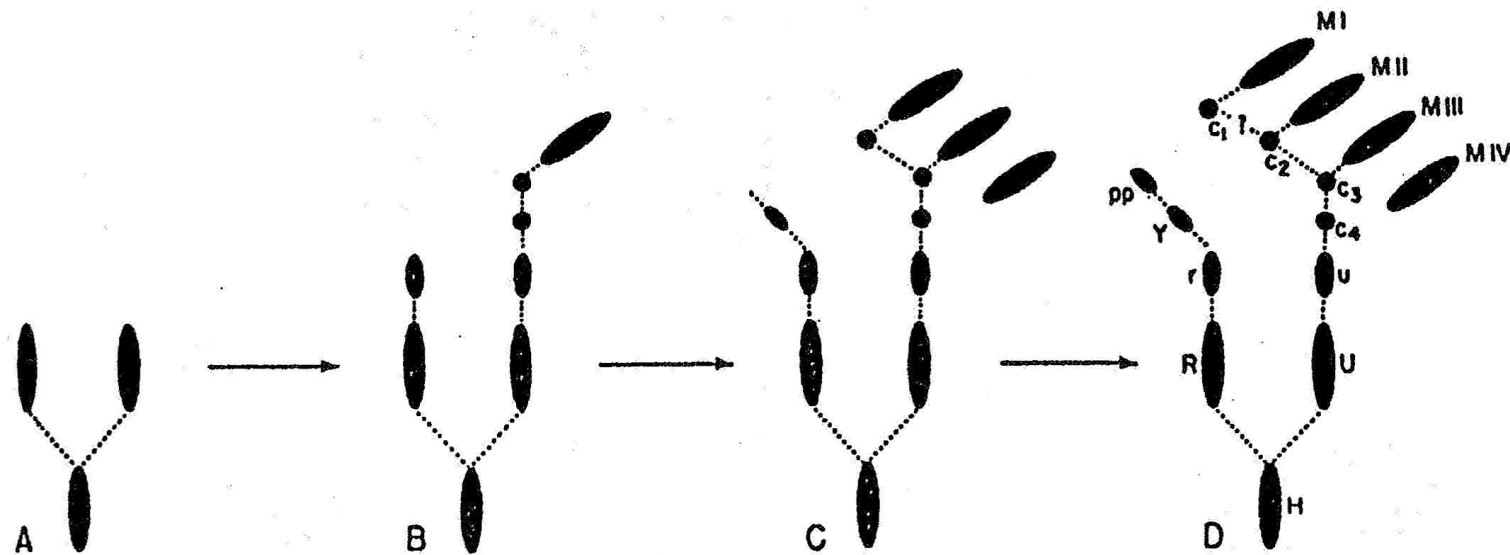
Neoceratodus



Eusthenopteron

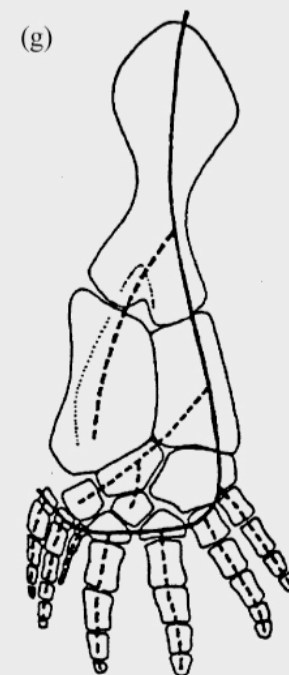
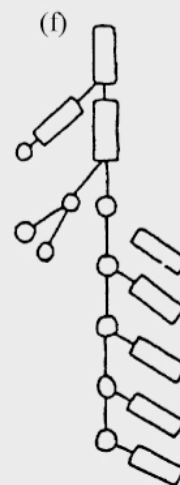
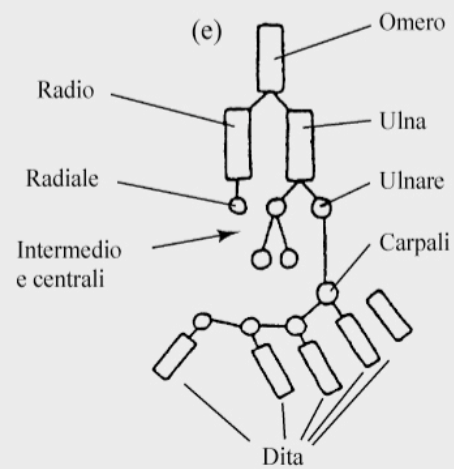
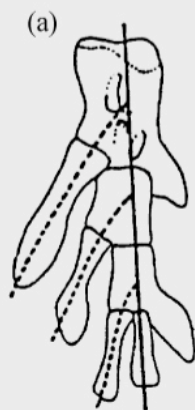


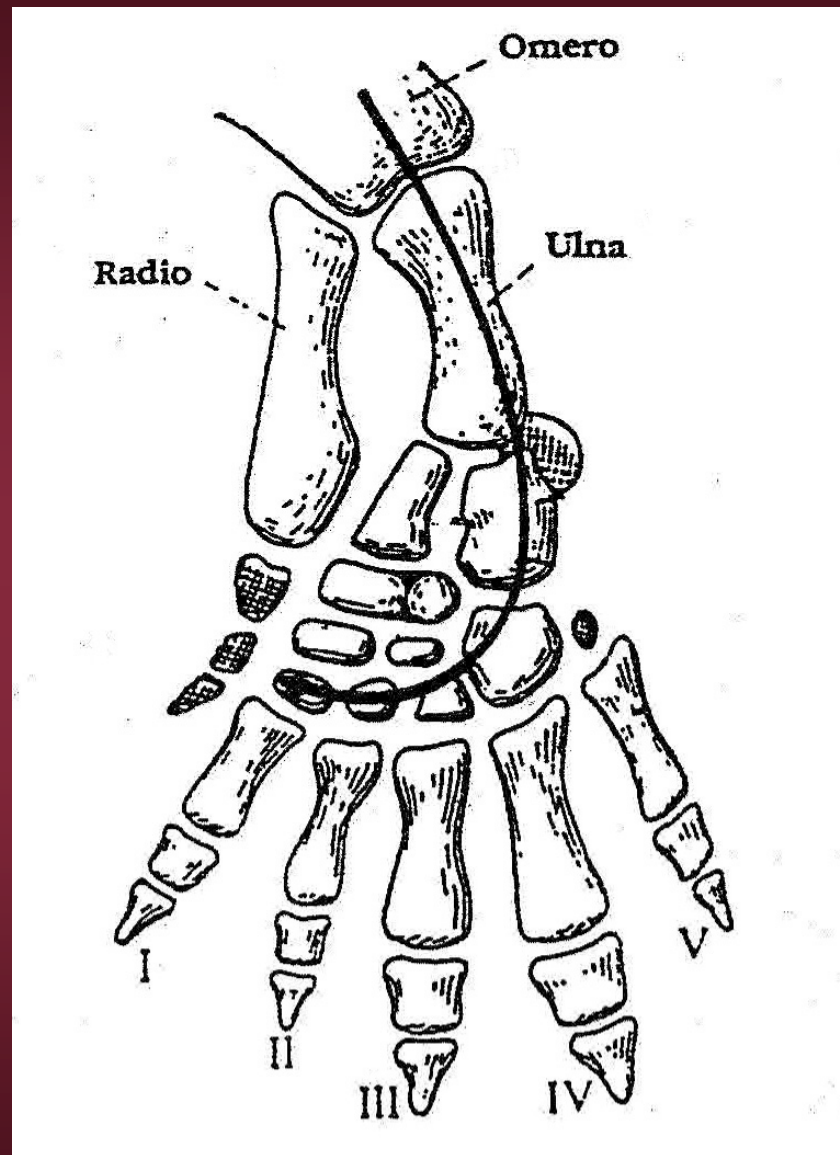
TETRAPOD LIMB EVOLUTION

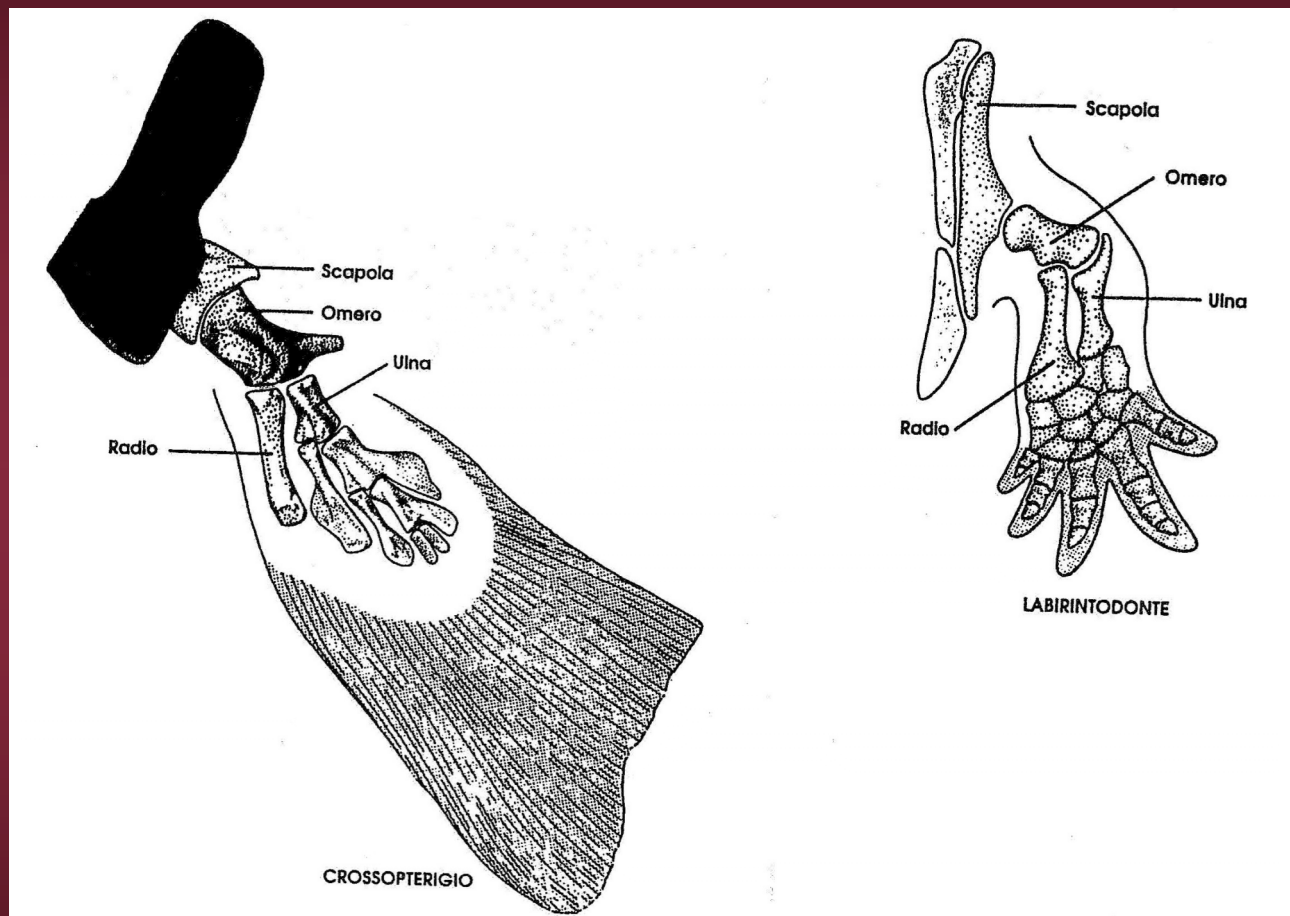


Xenopus laevis forelimb

FIG. 4. Developmental series showing formation of the skeletal elements of the frog *Xenopus laevis*. With minor modifications, the same pattern is seen in all non-urodele tetrapods. c1-c4, distal carpals 1-4; H, humerus; M I-M IV, metacarpals I-IV; pp, prepollex; R, radius; r, radiale; U, ulna; u, ulnare; Y, "Y" element. (From Shubin and Alberch, 1986)

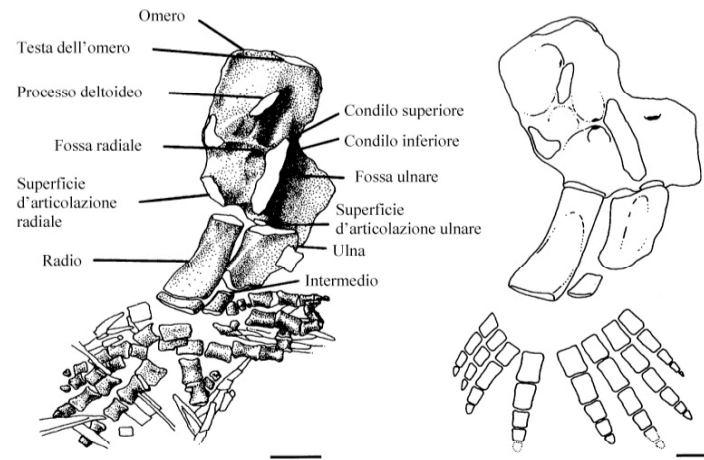






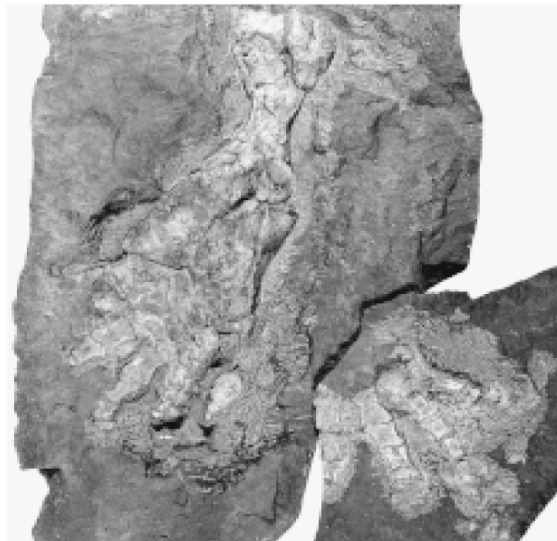


(a)

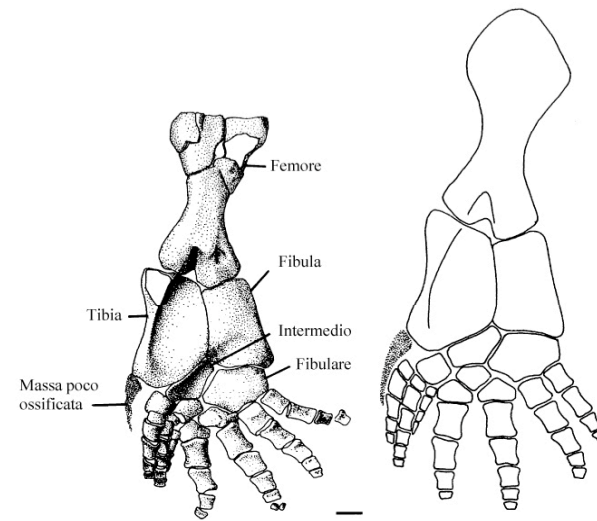


(b)

(c)



(d)



(e)

(f)

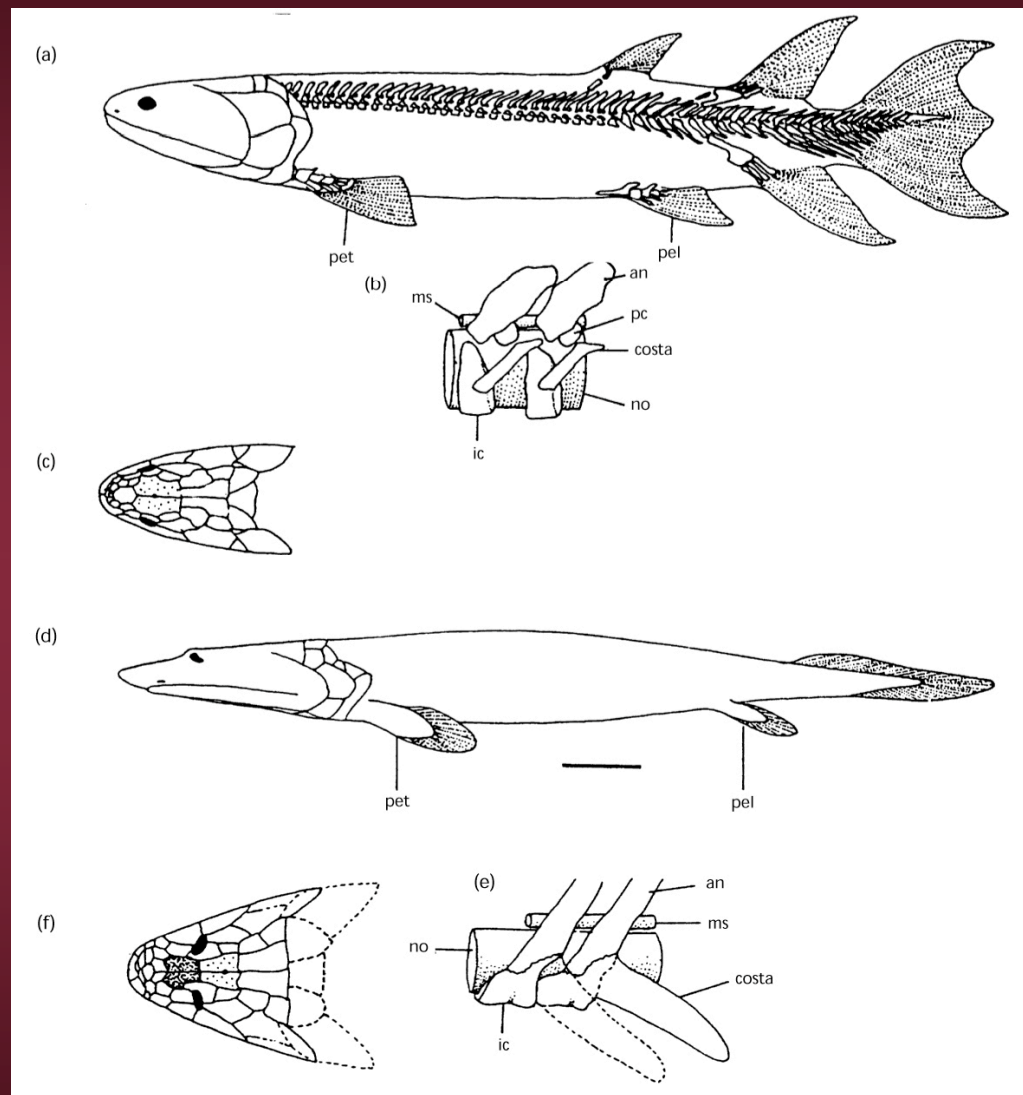
OSTEOLEPIFORMI

- DIVISIONE DELLA SCATOLA CRANICA (NEUROCRANIO) IN UNA PARTE ANTERIORE E POSTERIORE ARTICOLATE IN MANIERA MOBILE (COMPATTA NEI DIPNOI)
- STRUTTURA DELLA VOLTA CRANICA (OSSA NASALI E FRONTALI) CON SPOSTAMENTO DORSALE DEGLI OCCHI
- STRUTTURA DELLE VERTEBRE (SOLO ARCHI NEURALI ED EMALI NEI DIPNOI)
- DENTI LABIRINTODONTI (PIASTRE BOCCALI NEI DIPNOI)
- SCHELETRO DELLA PINNA METAPTERIGIALE

IN COMUNE CON I PRIMI ANFIBI

- PINNA CAUDALE
- SCAGLIE DERMICHE

EUSTHENOPTERON



PANDERICHTHYS

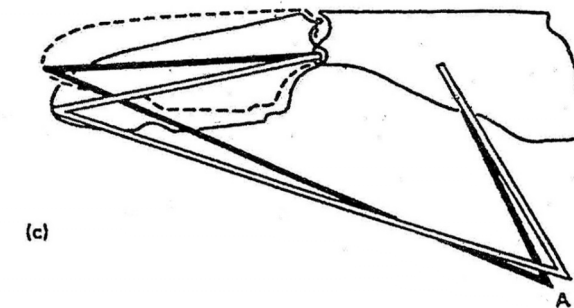
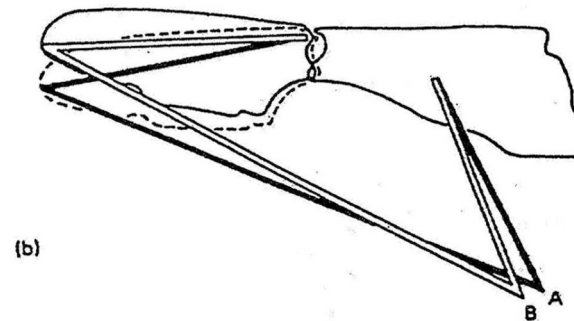
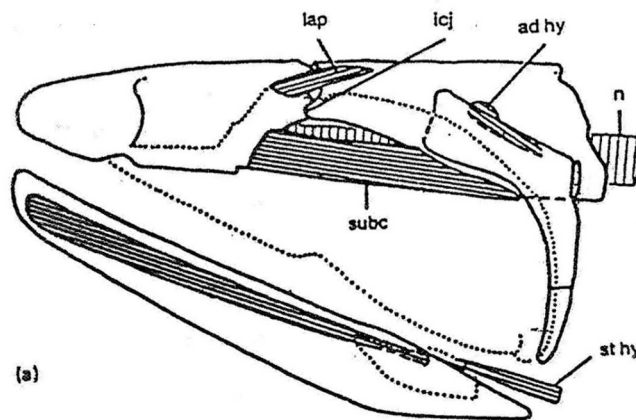
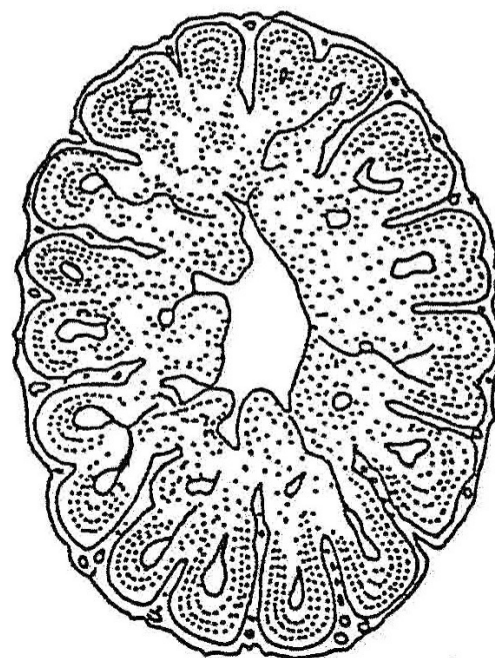


Figura 10-1. Cranio cinetico di osteolepiformi.
 (a) La scatola cranica di *Ectosteorhachis* mostra una divisione in una parte anteriore e una posteriore che era caratteristica degli osteolepiformi. Le linee tratteggiate indicano la regione delle guance. La parte anteriore della scatola cranica oscilla verso l'alto quando le mascelle si aprivano (b) e verso il basso quando si chiudevano (c). La zona con i contorni scuri indicata con A mostra la posizione del muso a riposo; B mostra l'elevazione del muso quando la bocca si apriva, e C mostra la depressione del muso quando la bocca si chiudeva. Abbreviazioni: adhy, adduttore iomandibolare; icj, giuntura intracraniale; lap, levator arcus palatini; n, notocorda; subc, subcefalico; st hy, sternoioideo. (Da K.S.Thomson, 1967, *Zoological Journal of the Linnean Society*, 5:223-253).

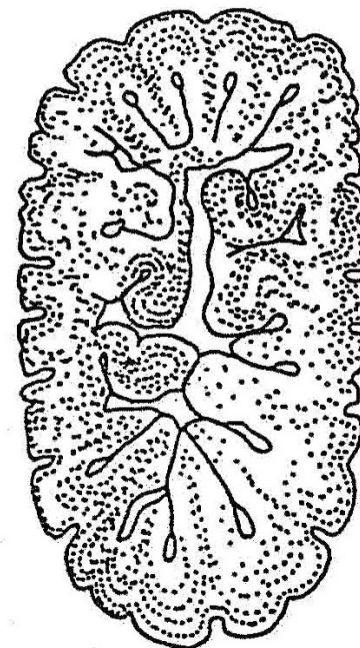
Figura 10-4. Una delle caratteristiche morfologiche comuni agli osteolepiformi e ai tetrapodi del Paleozoico era il dente labirintodonte. Un complesso sistema di pieghe nelle pareti della cavità della polpa produceva la struttura labirintica che caratterizza questo tipo di dente. (a) Visione esterna che mostra striature sul lato esterno del dente; (b) sezione trasversale di un dente dell'osteolepiforme *Polyplacodus*; (c) sezione trasversale di un dente del temnospondilo *Benthosuchus*.
(Da A.P. Bystrow, 1935, *Acta Zoologica* 16:65-141).



(a)

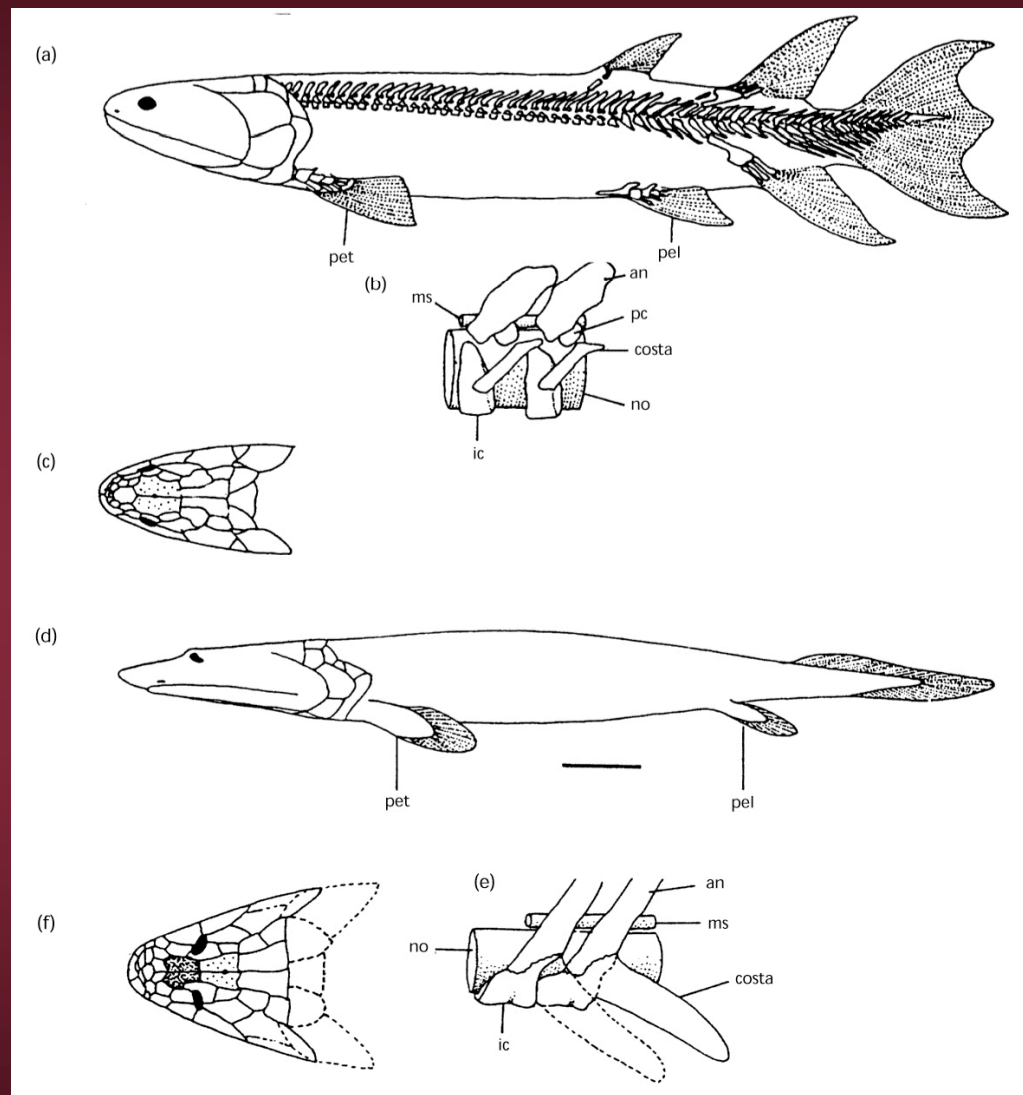


(b)

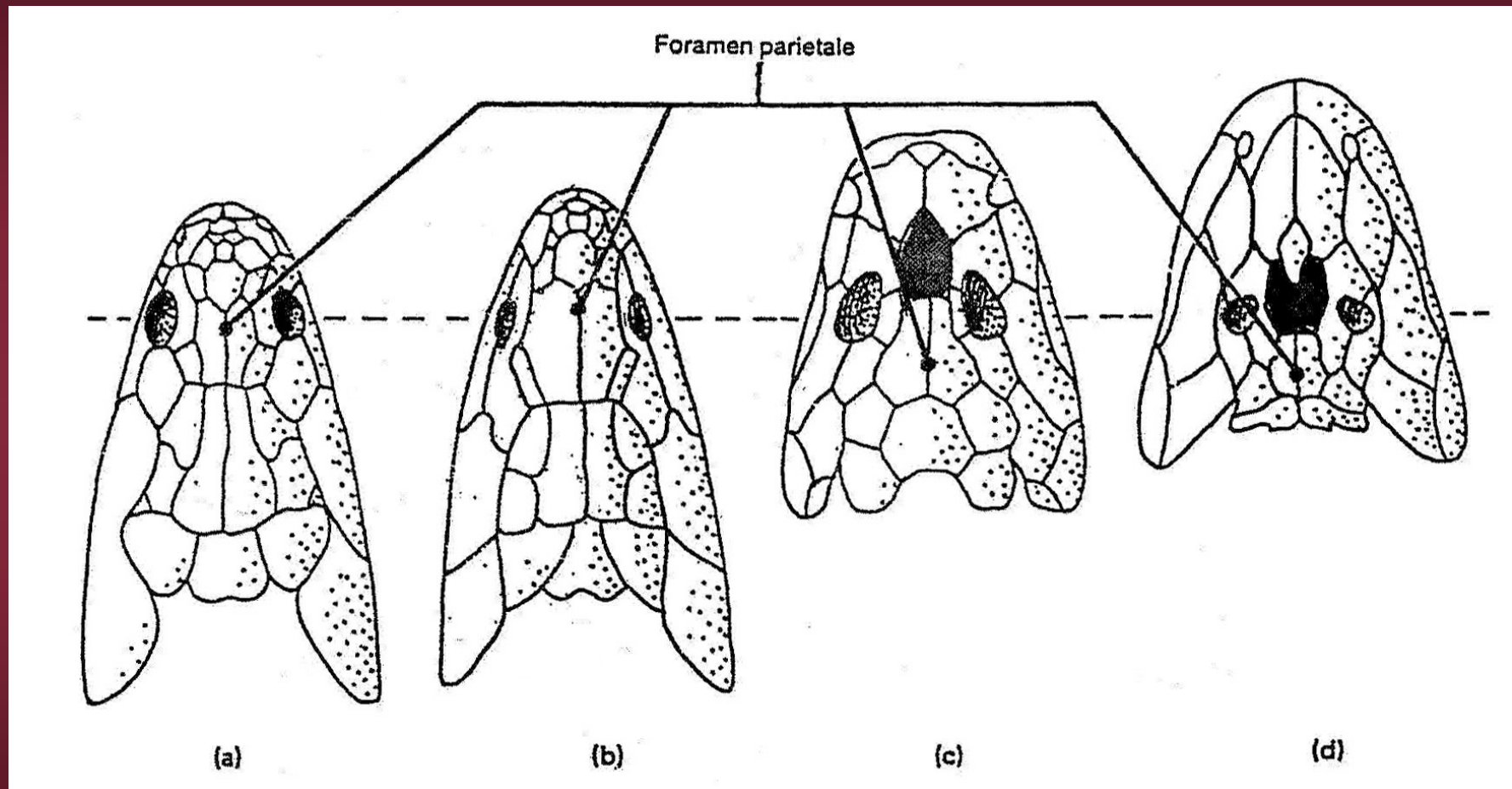


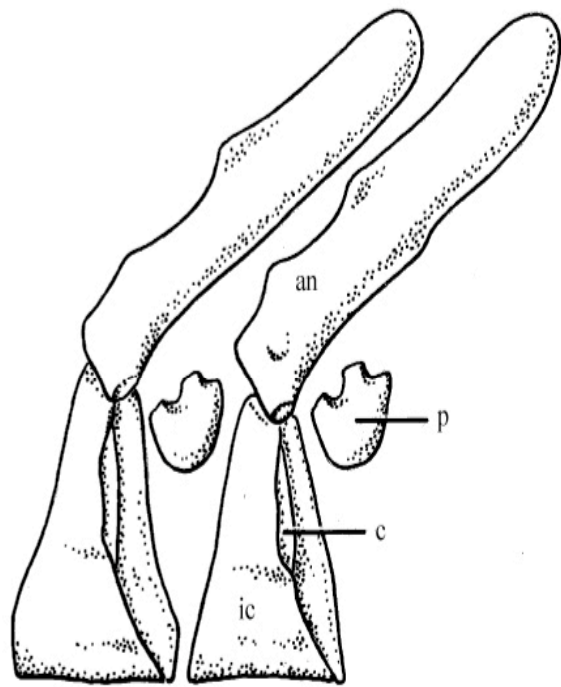
(c)

EUSTHENOPTERON

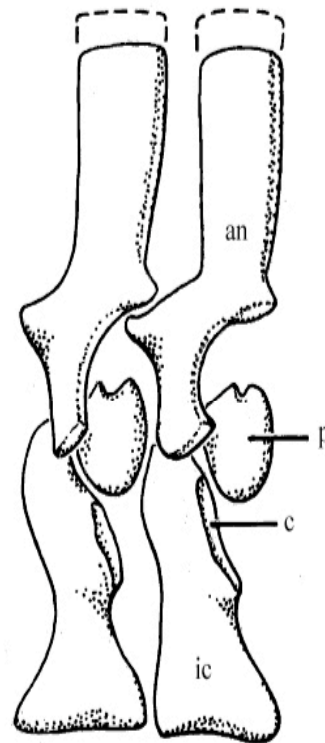


PANDERICHTHYS

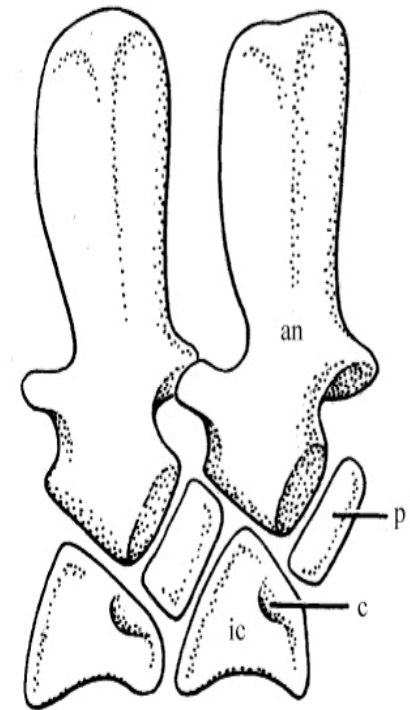




(a)

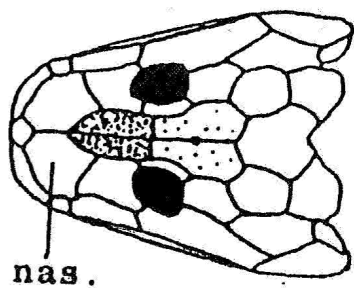


(b)

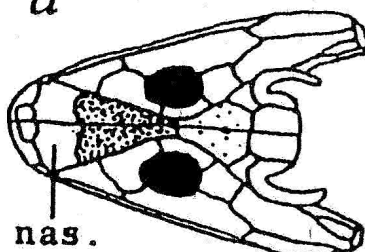


(c)

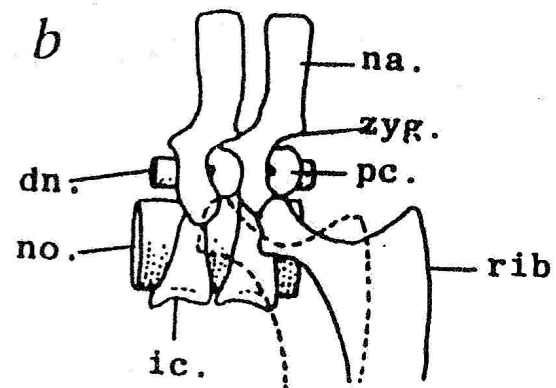
c



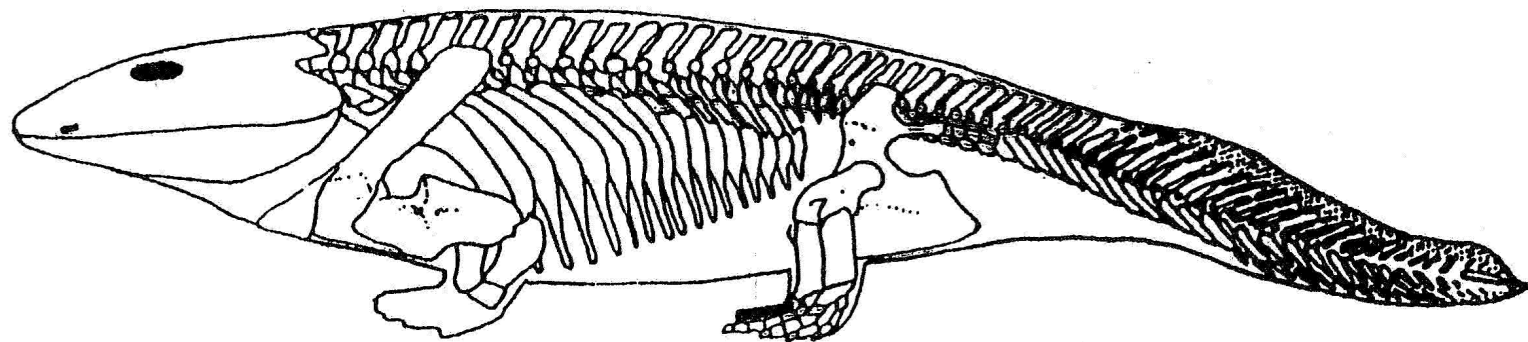
d

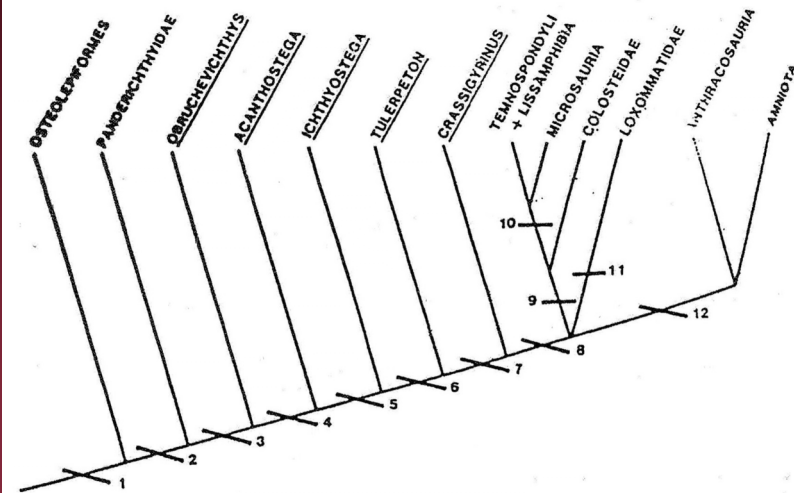


b

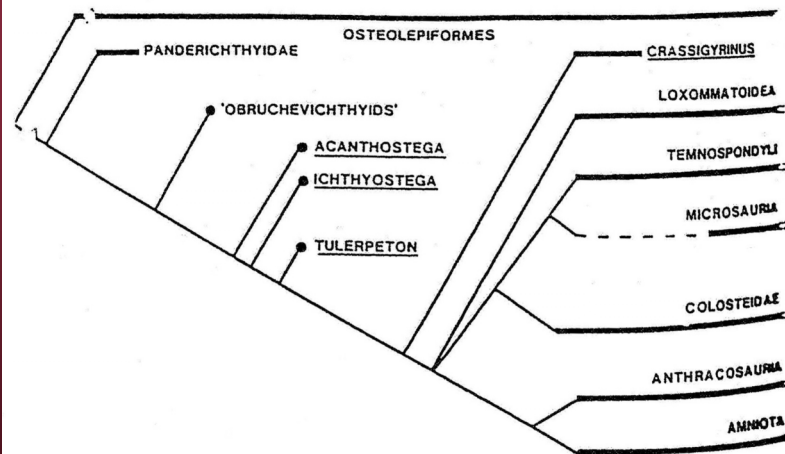


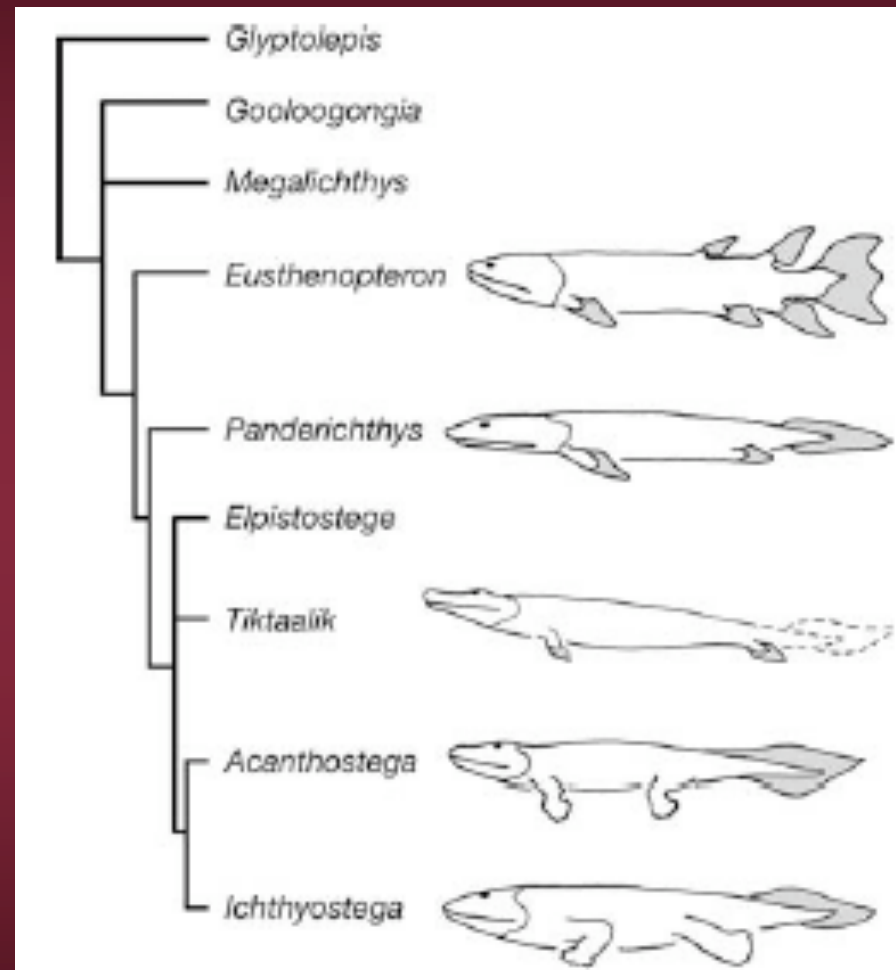
a





378	367	362	350	332
FRASNIAN	FAM	TOURNAIS	VIÉAN	AMURIAN





a



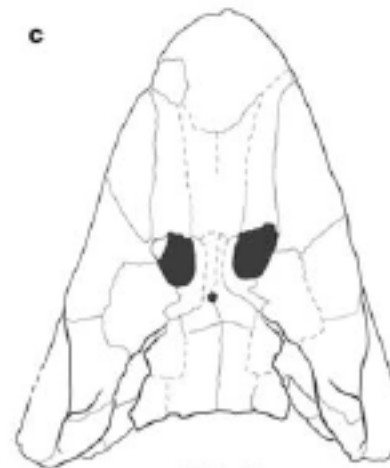
Panderichthys

b



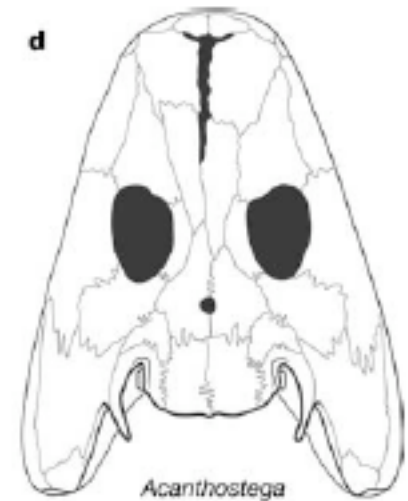
Elpistostege

c



Tiktaalik

d



Acanthostega

