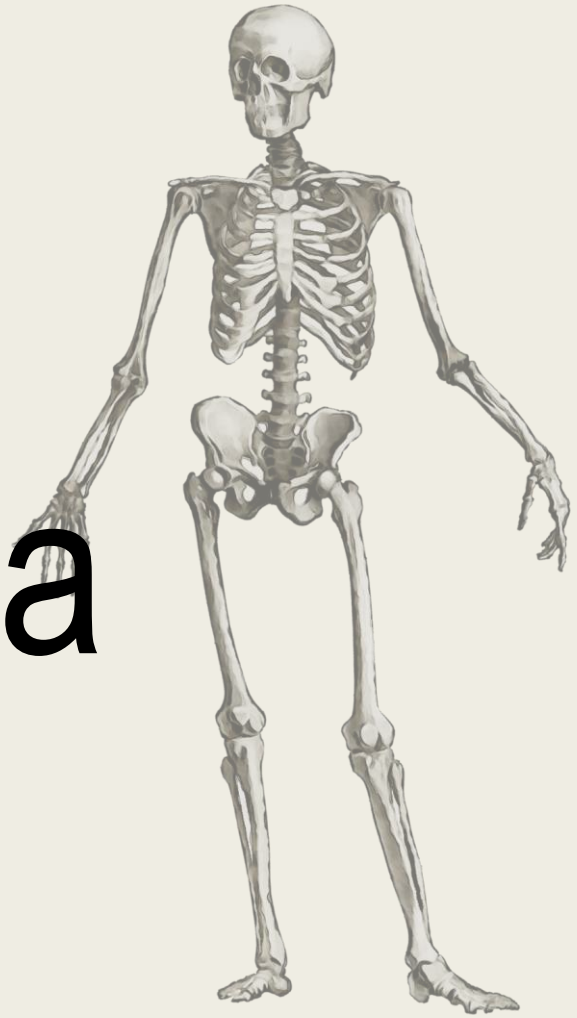
Nozioni di Anatomia umana



Università degli Studi di Ferrara

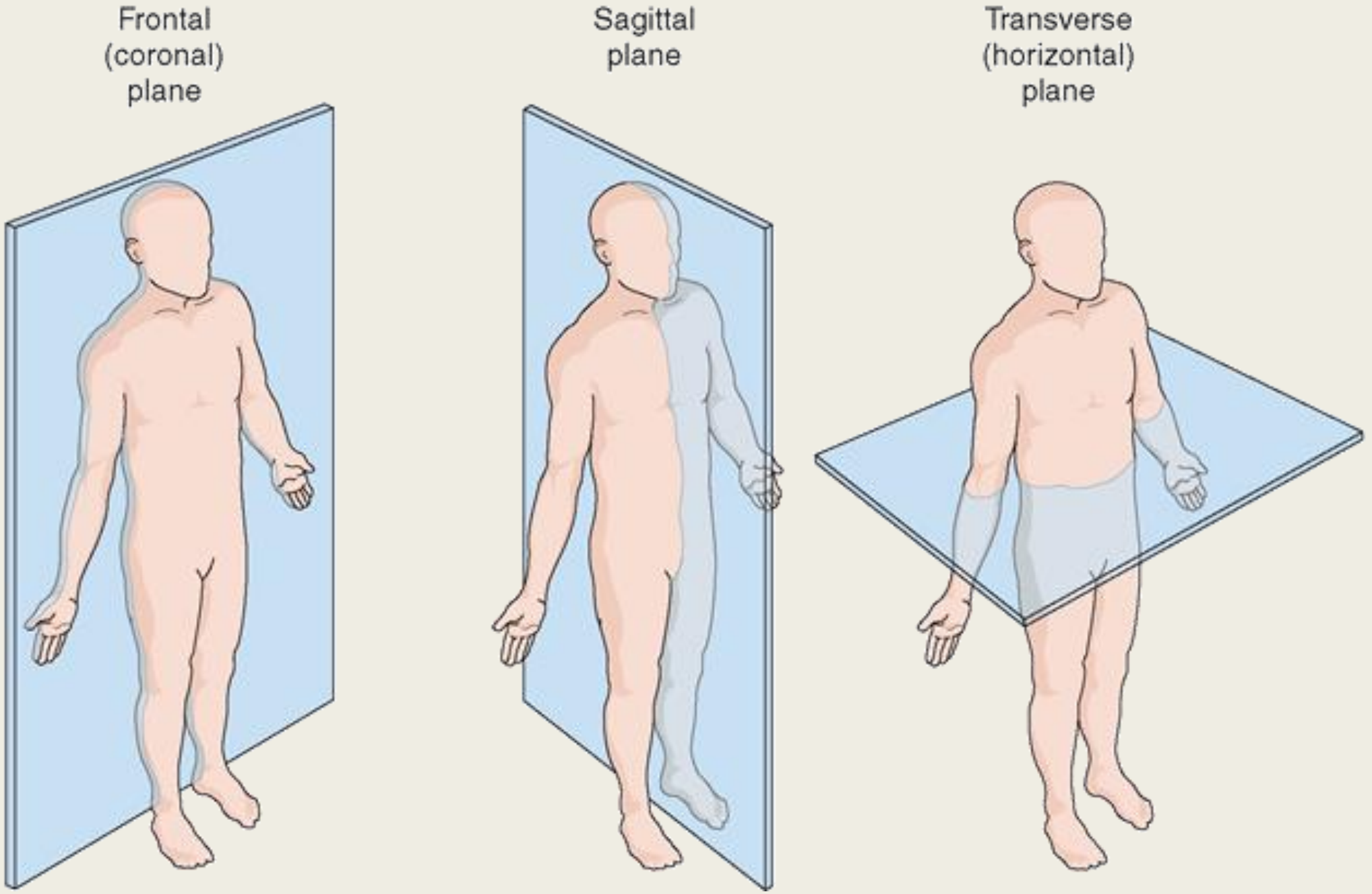
Julie Arnaud
julie.arnaud@unife.it

A cosa serve studiare le ossa umane?

A cosa serve studiare le ossa umane?

- Costituiscono evidenze per lo studio dei ominini fossili
- Sono la base per lo studio interspecifico ed intraspecifio
- Permettono di fare confronti morfologici e biologici tra le popolazione preistoriche (e il vivente)
- Si possono vedere evidenze di trattamento funerario e quindi dare indicazioni sulla cultura delle popolazione studiate
- Sono la fonte maggiore per lo studio delle malattie antiche (paleopatologie)
- La loro identificazione può aiutare a risolvere casi forensi

ORIENTAMENTO



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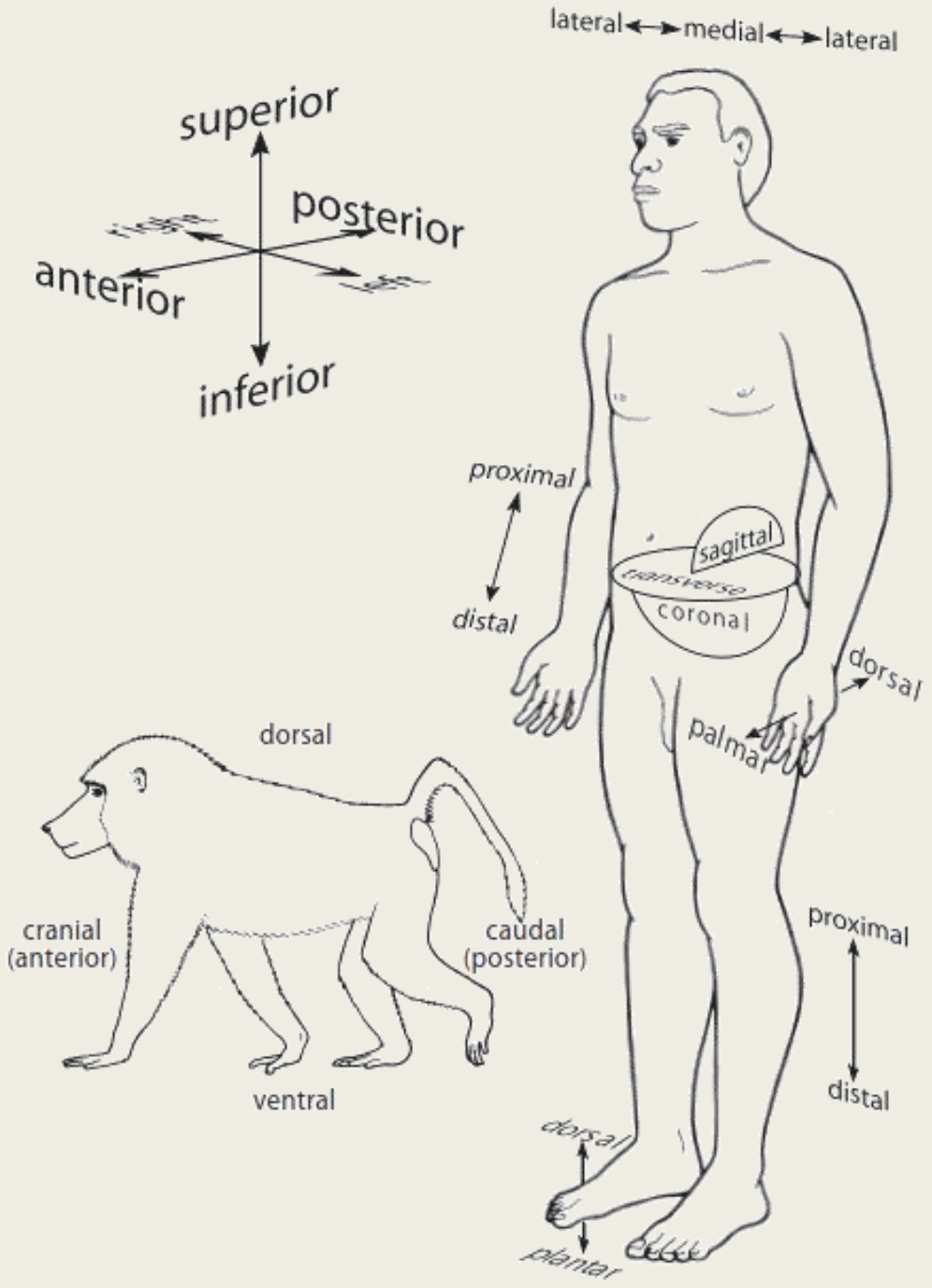

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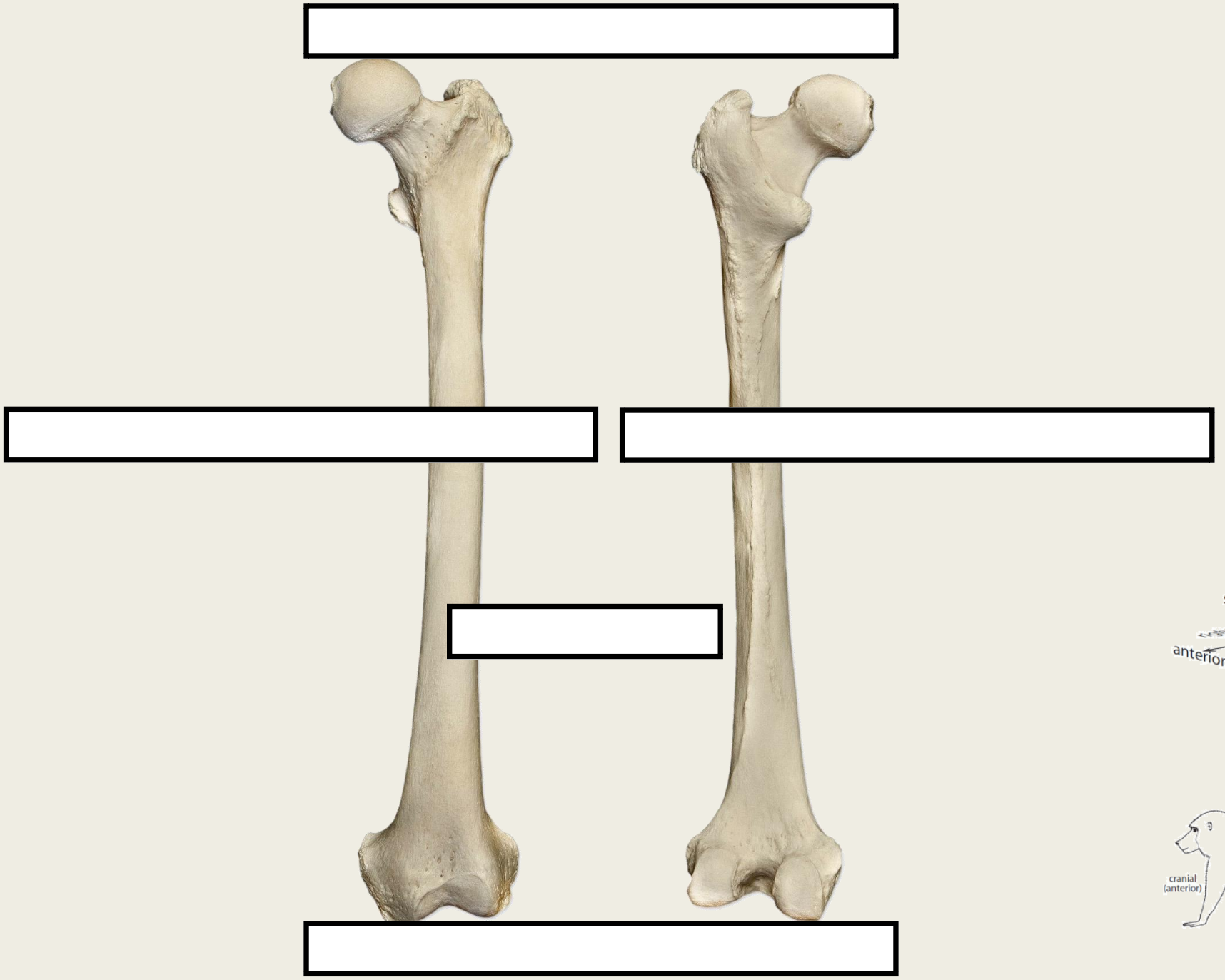
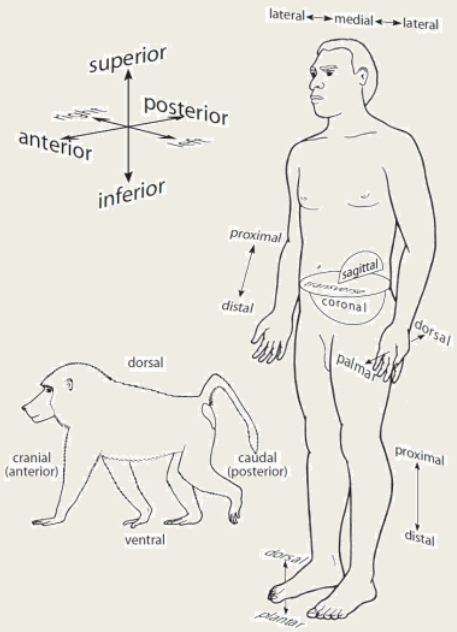
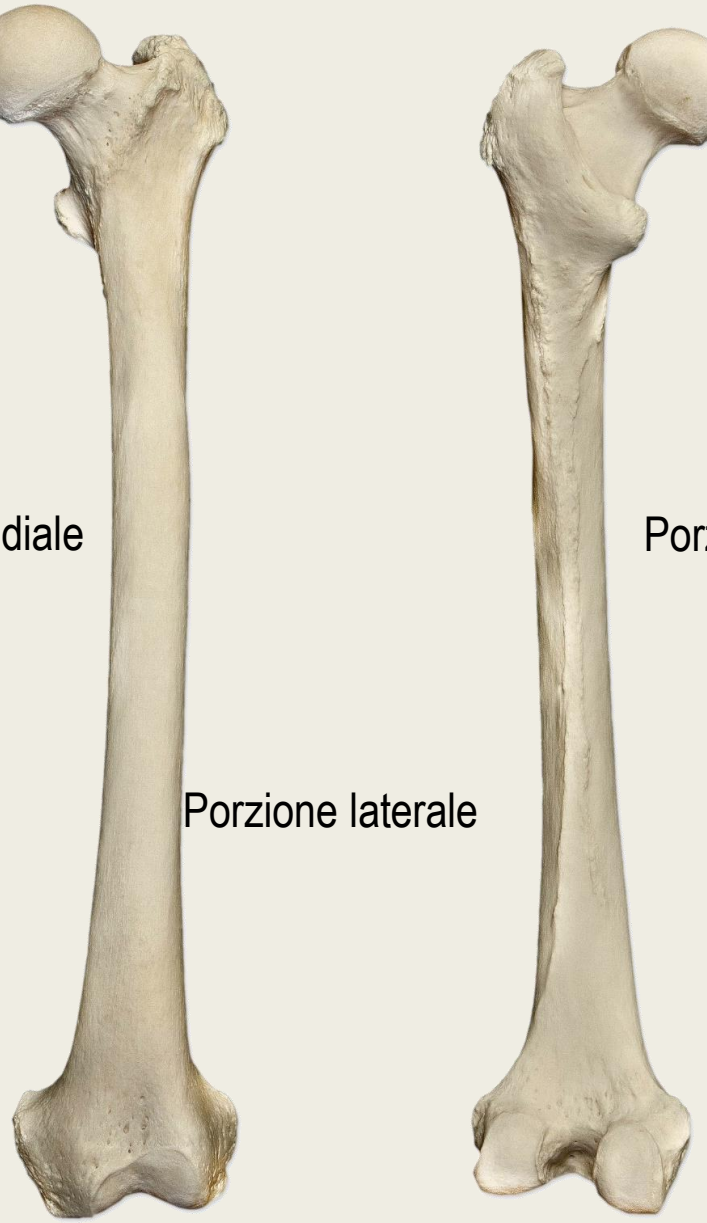




ORIENTAMENTO

Porzione prossimale

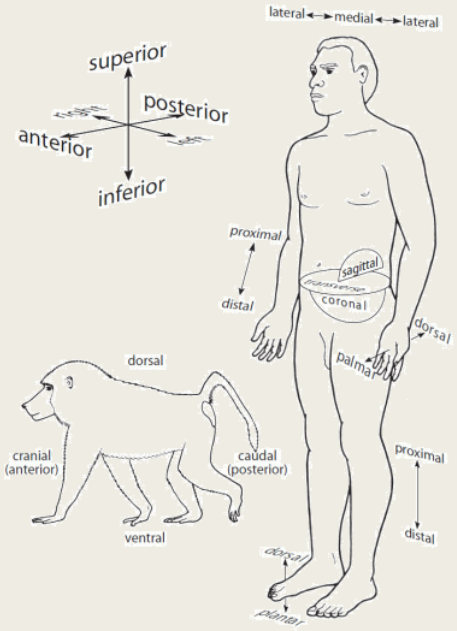


Porzione mediale

Porzione laterale

Porzione mediale

Porzione distale



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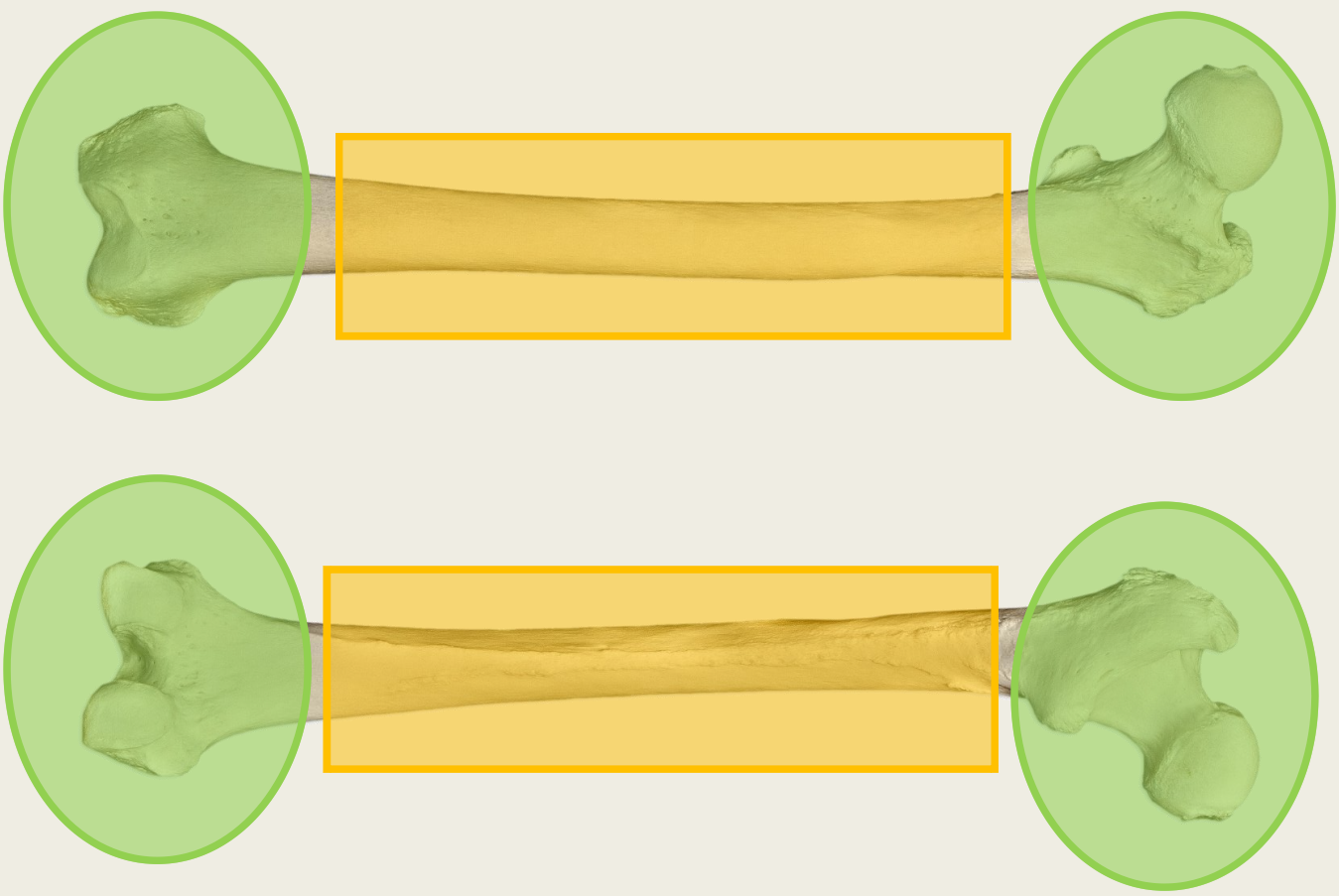

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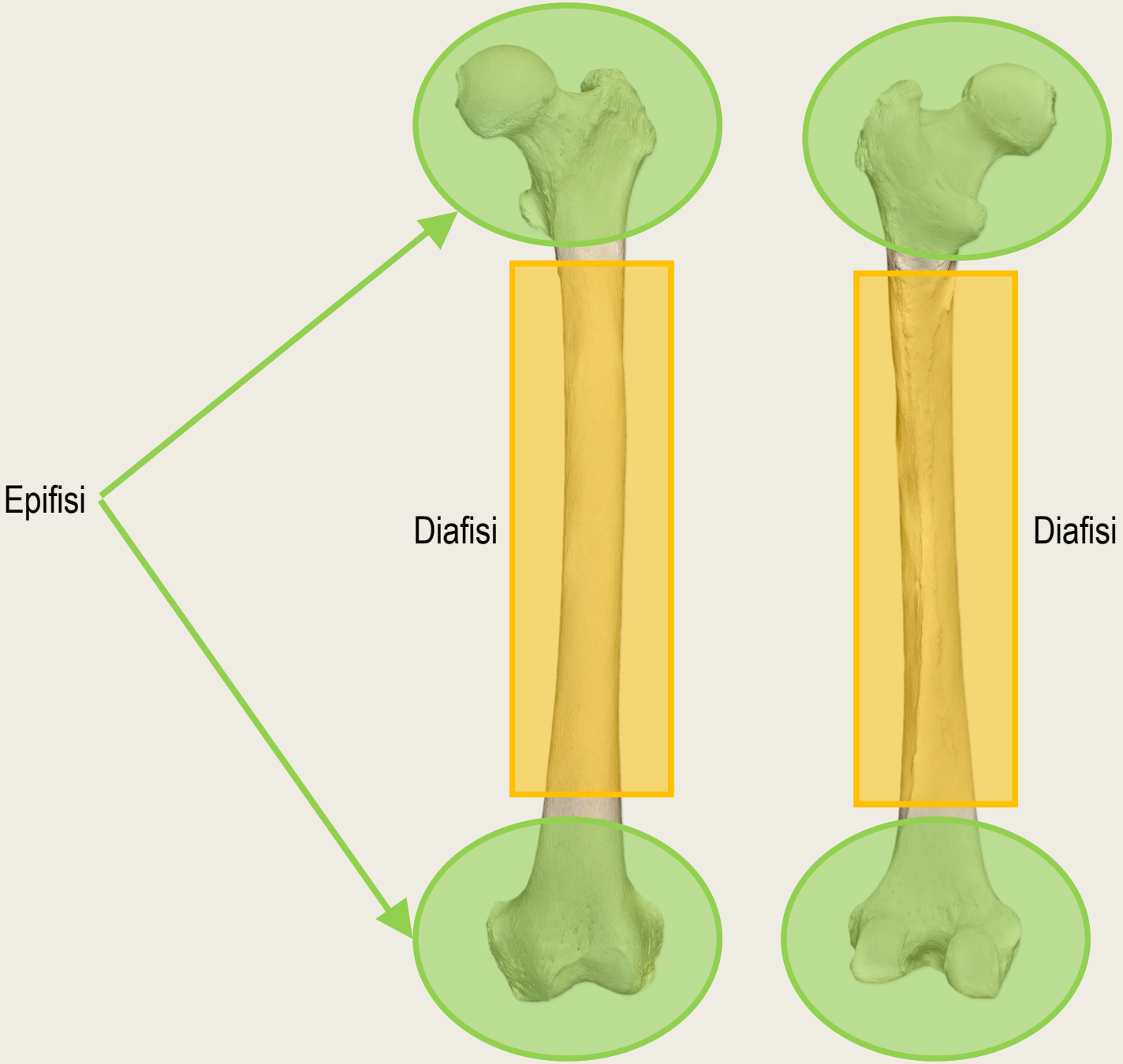

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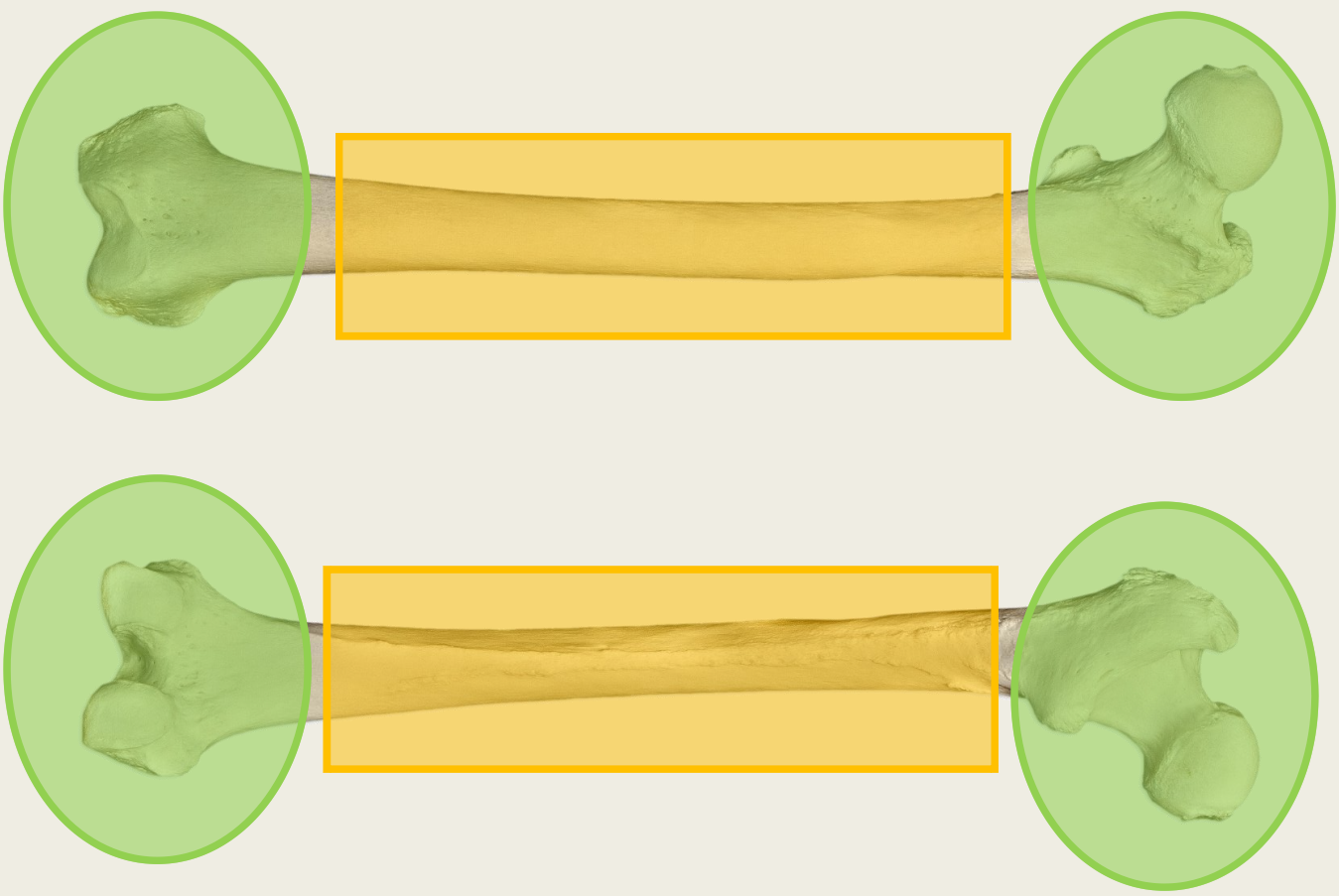

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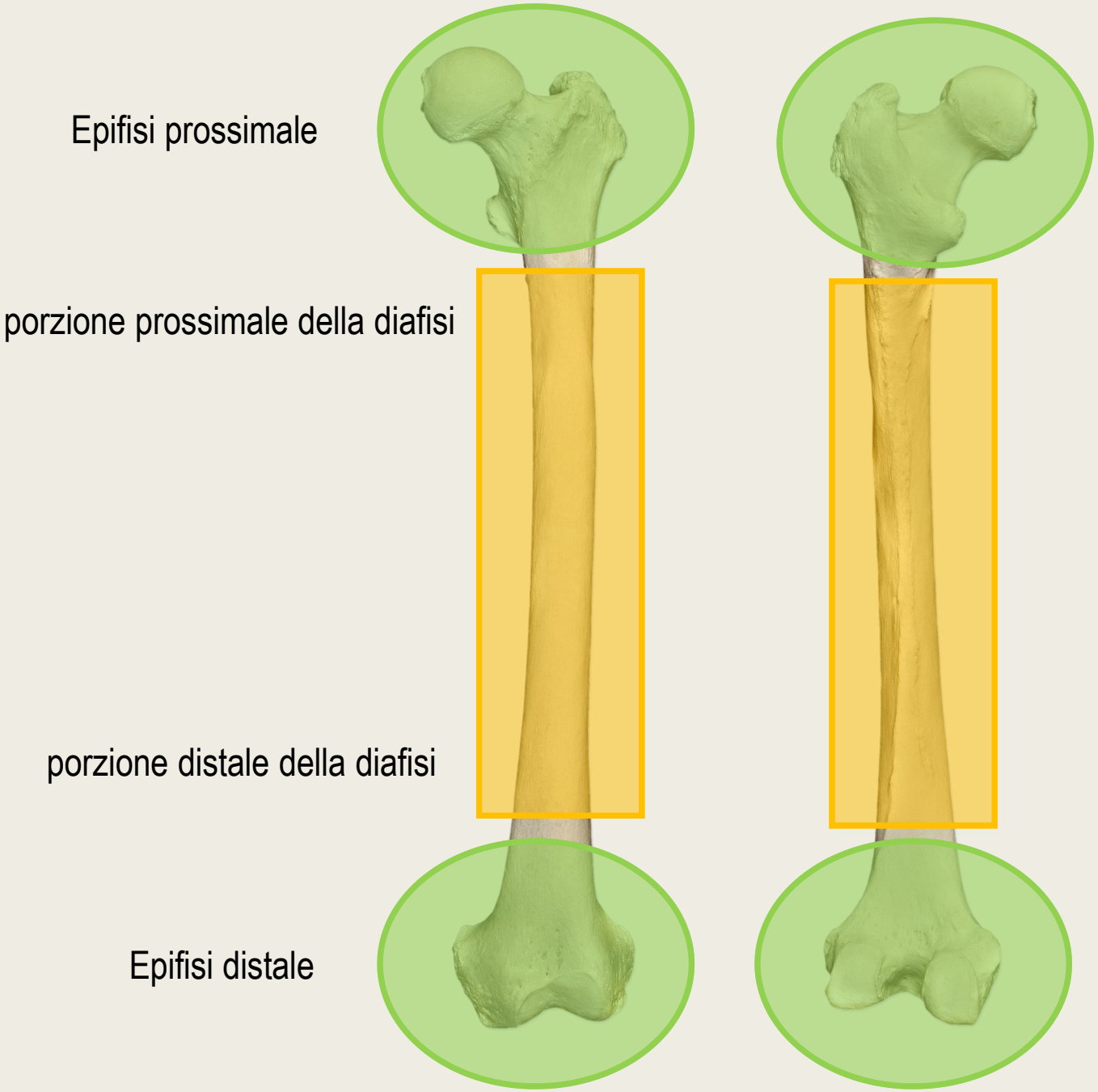

COMPLESSI ANATOMICI

Più di 200 ossa articolati
(+ ossa dell'orecchio e
mano/piedi)

Scheletro assile
cranio
colonna vertebrale
coste e sterno
(80 ossa)

Scheletro appendicolare
arti superiore
arti inferiore
(126 ossa)

COMPLESSI ANATOMICI

- Rachide: Colonna vertebrale
- Coste e sterno
- Testa ossea (cranio, mandibola e denti)
- Arti (superiori e inferiori)
- Cinto (scapolare e pelvico)

COMPLESSI ANATOMICI

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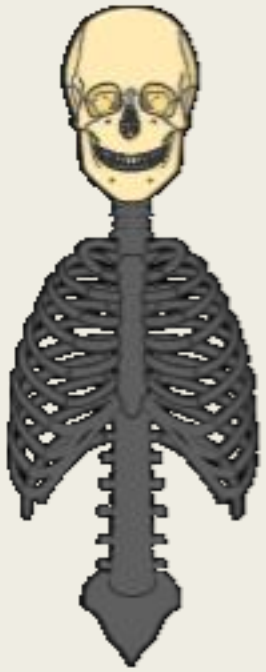
COMPLESSI ANATOMICI



- Rachide: Colonna vertebrale
- Coste e sterno
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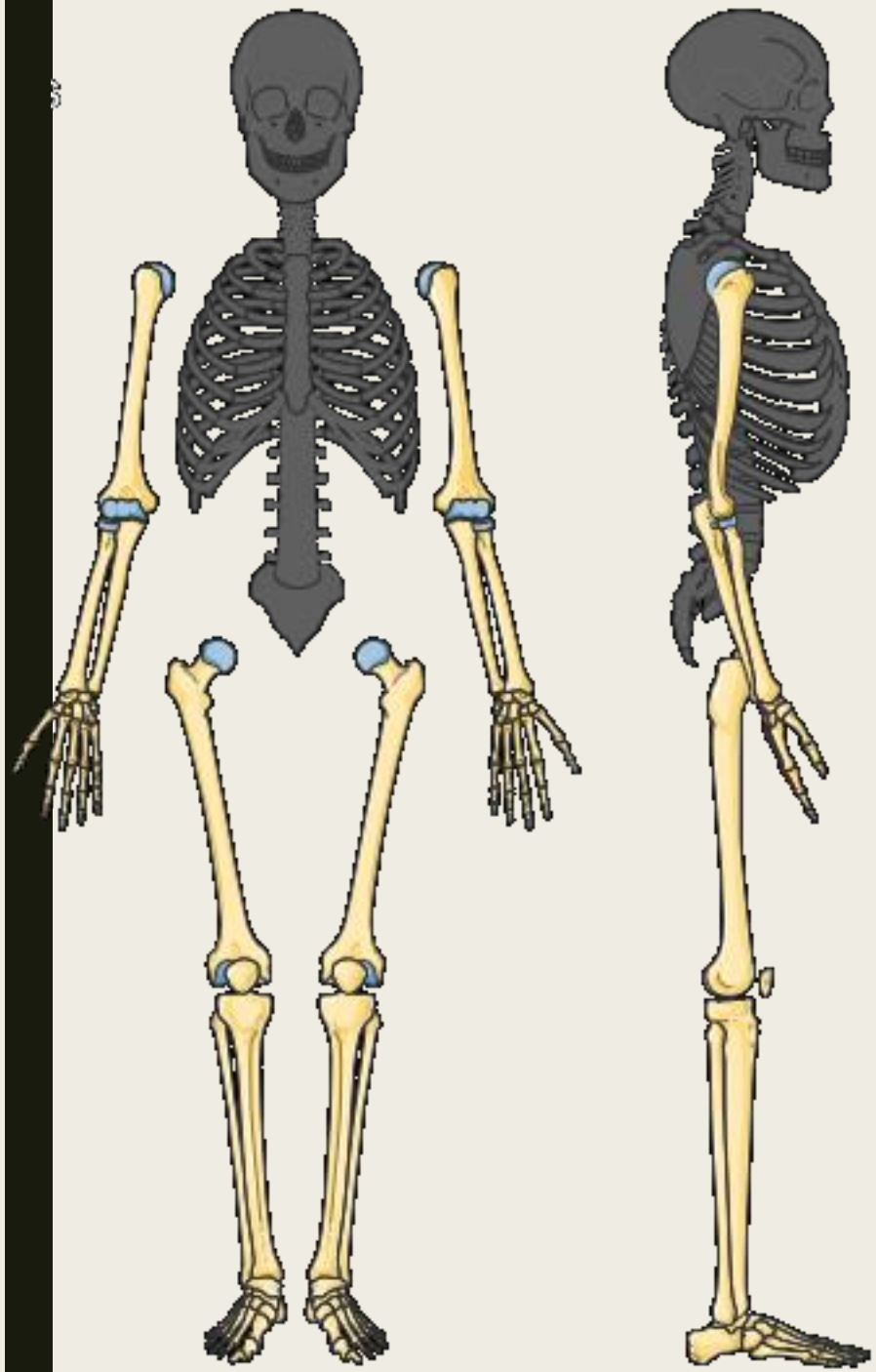
- Arti (superiori e inferiori)
- Cinto (scapolare e pelvico)

COMPLESSI ANATOMICI



- Rachide: Colonna vertebrale
- Coste e sterno
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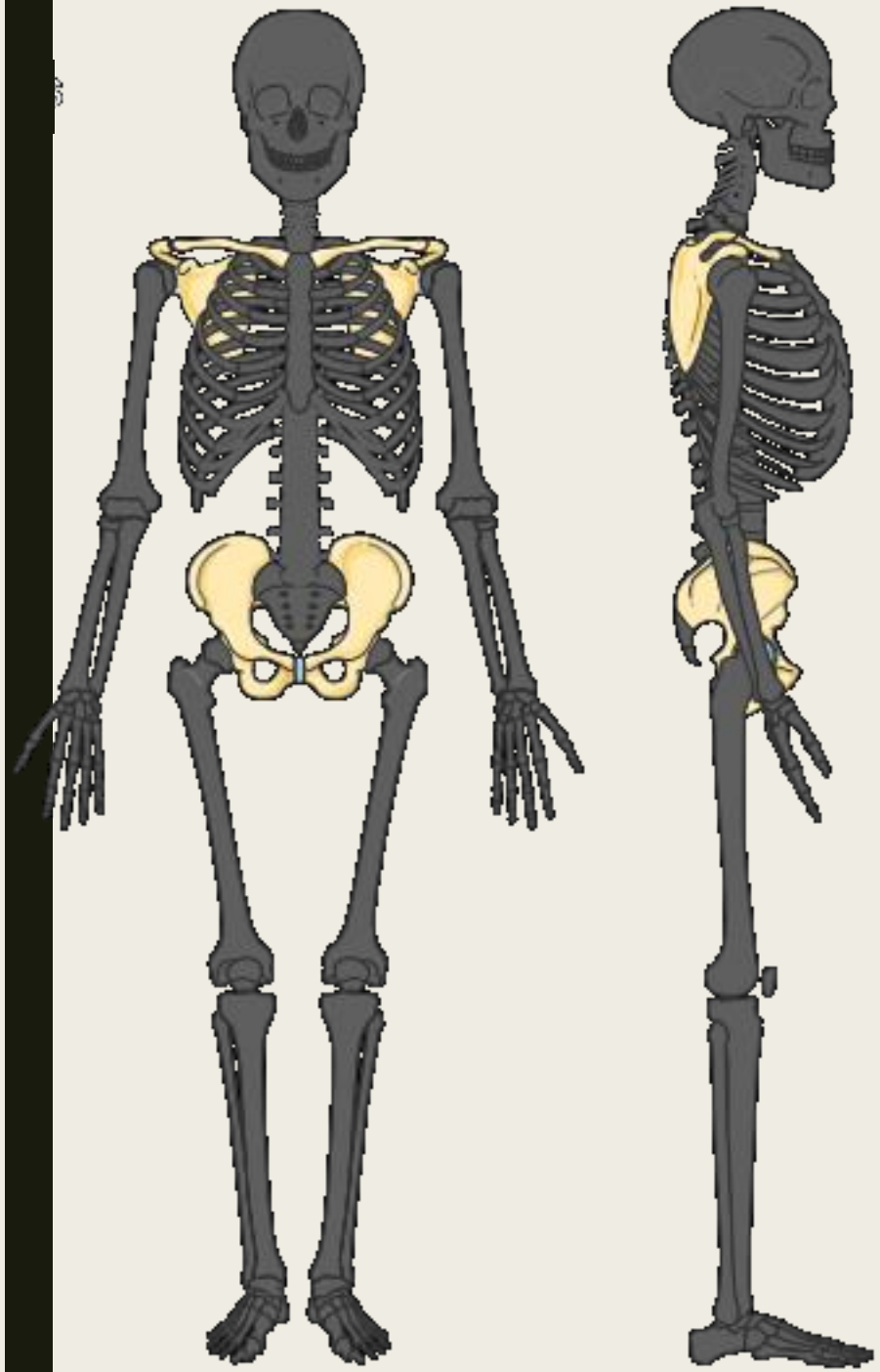
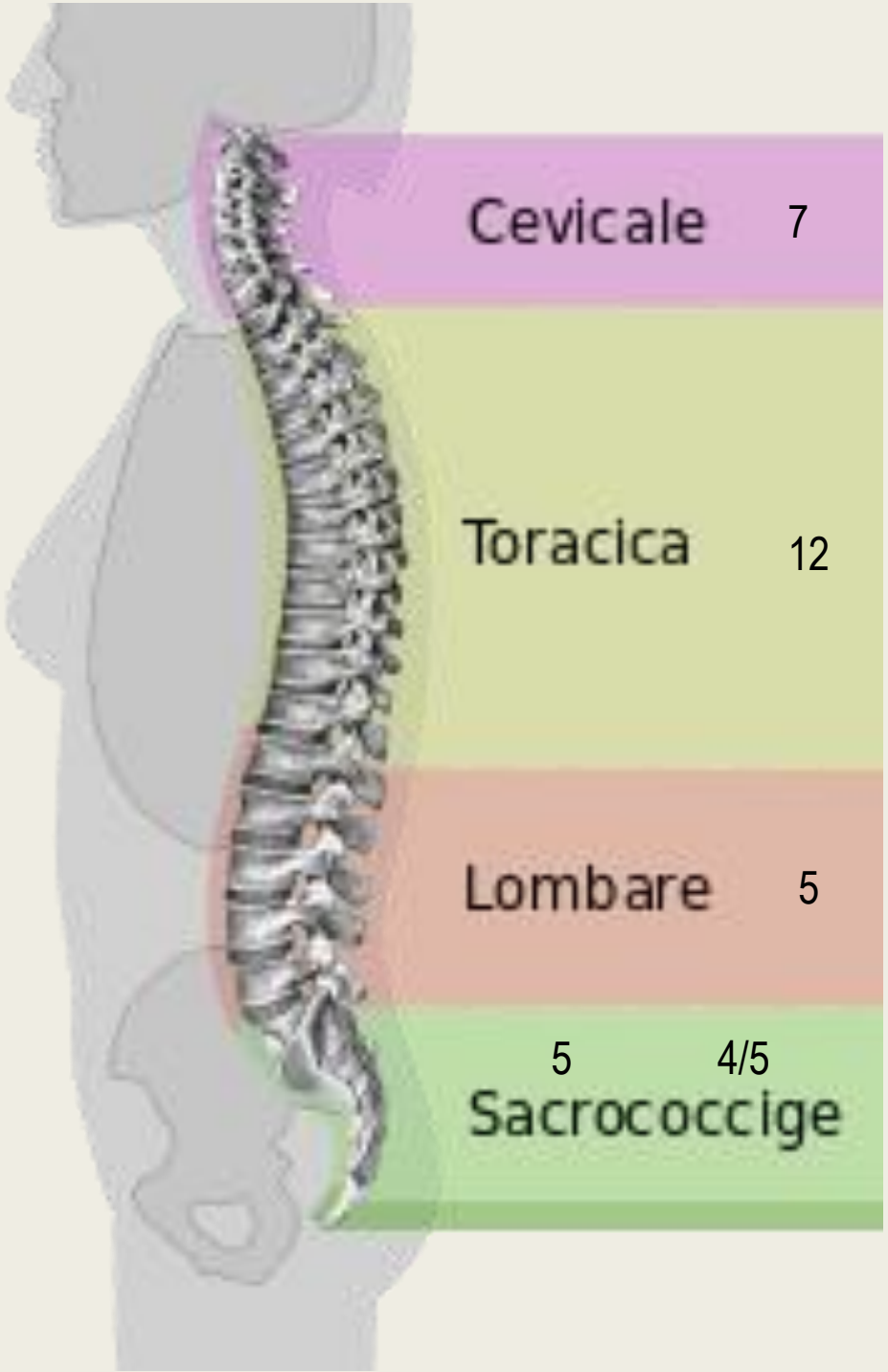
- Arti (superiori e inferiori)
- Cinto (scapolare e pelvico)

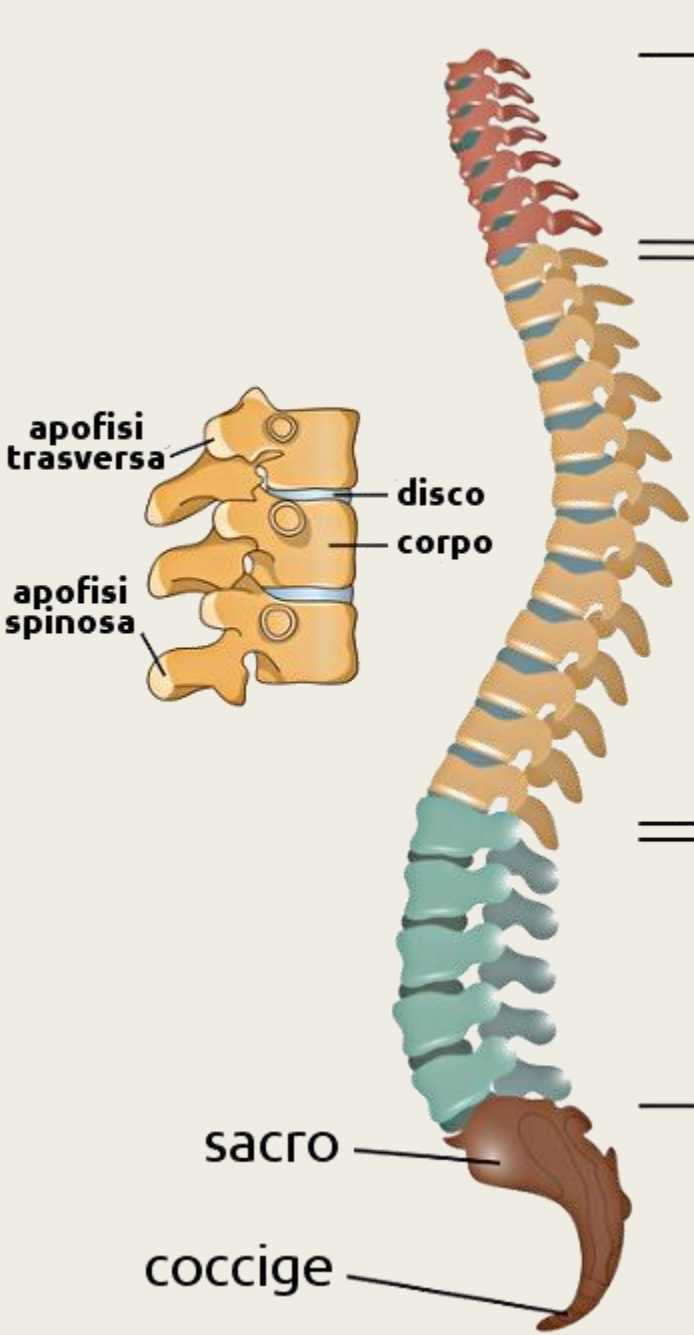
COMPLESSI ANATOMICI

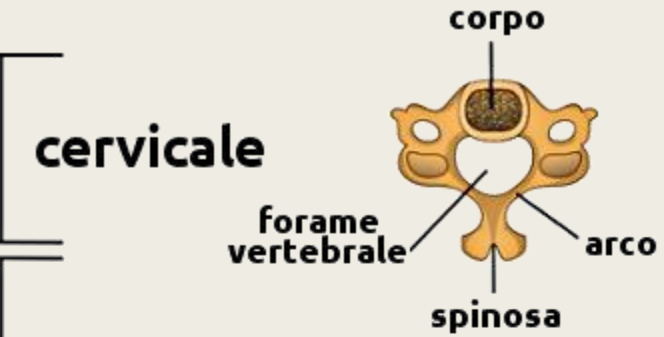


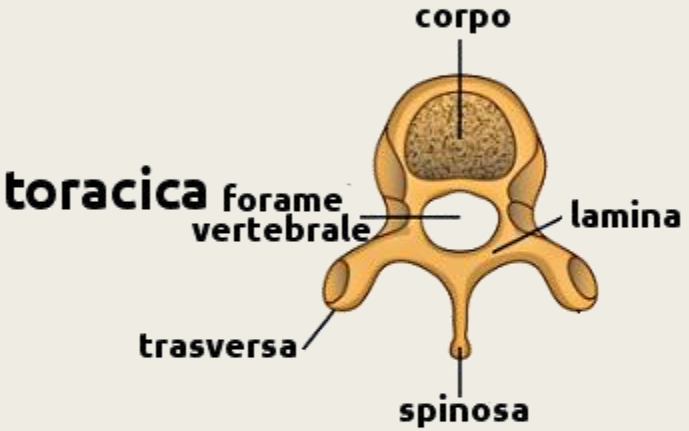
- Rachide: Colonna vertebrale
- Coste e sterno
- Testa ossea (cranio, mandibola e denti)
- Arti (superiori e inferiori)
- Cinto (scapolare e pelvico)

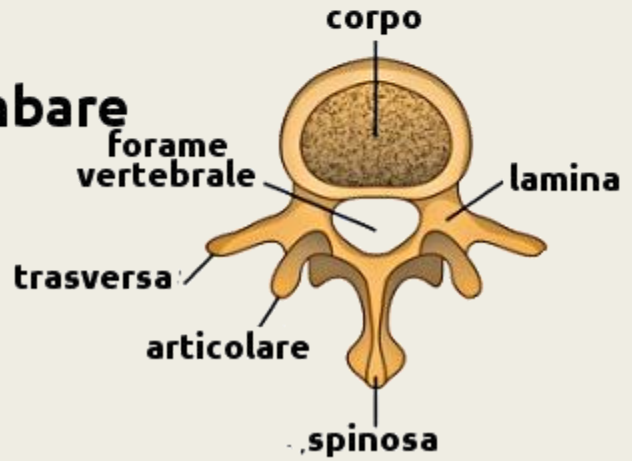
COLONNA VERTEBRALE











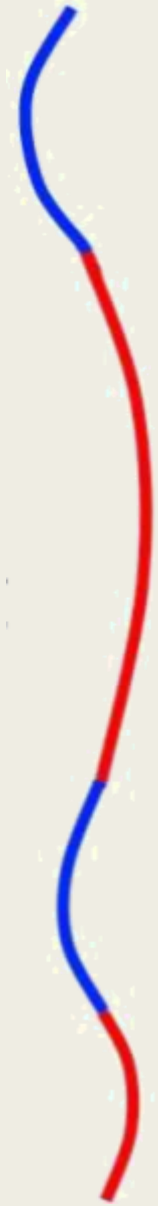
COLONNA VERTEBRALE

concavità

convessità

concavità

convessità



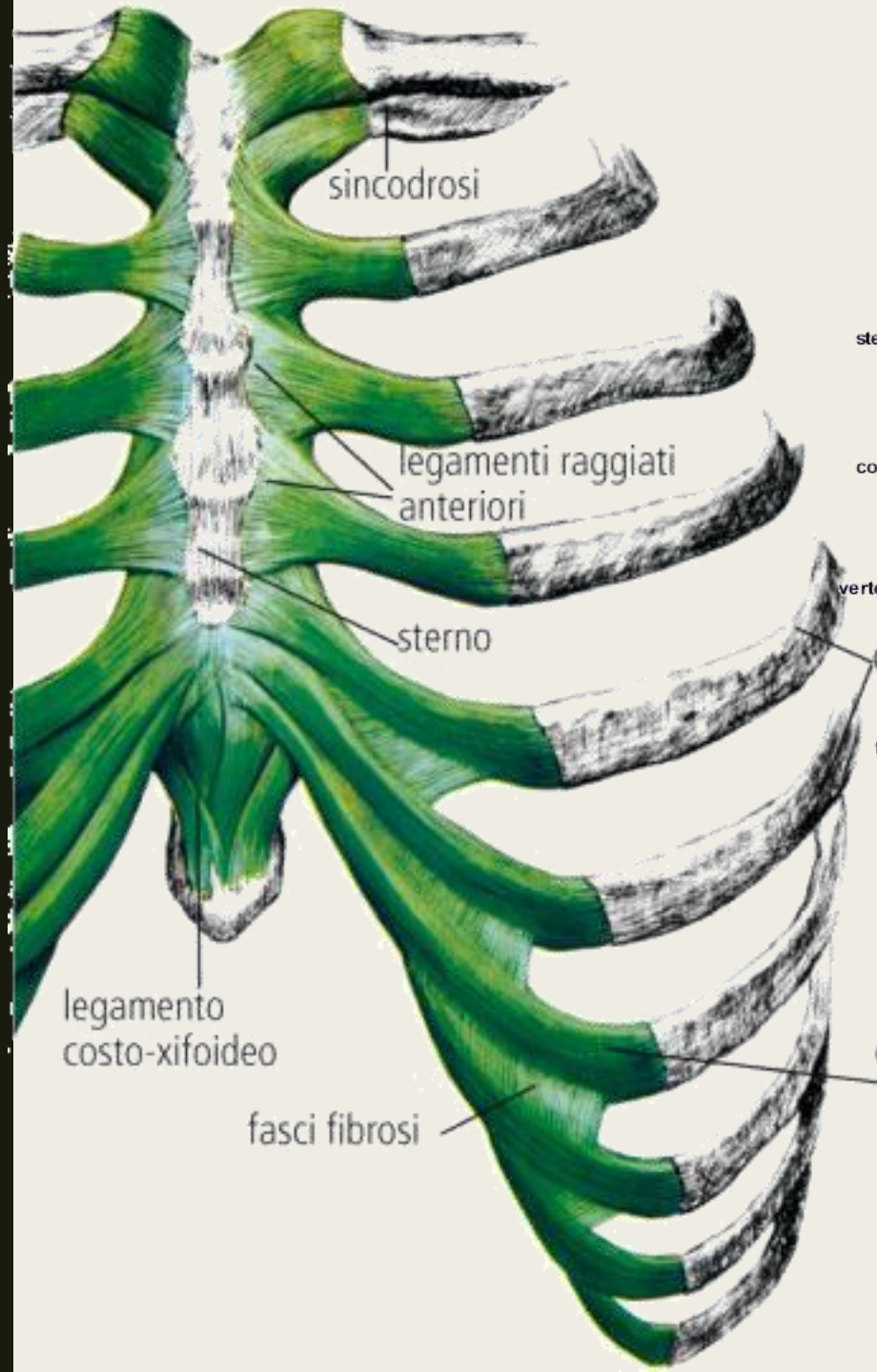
lordosi Cervicale

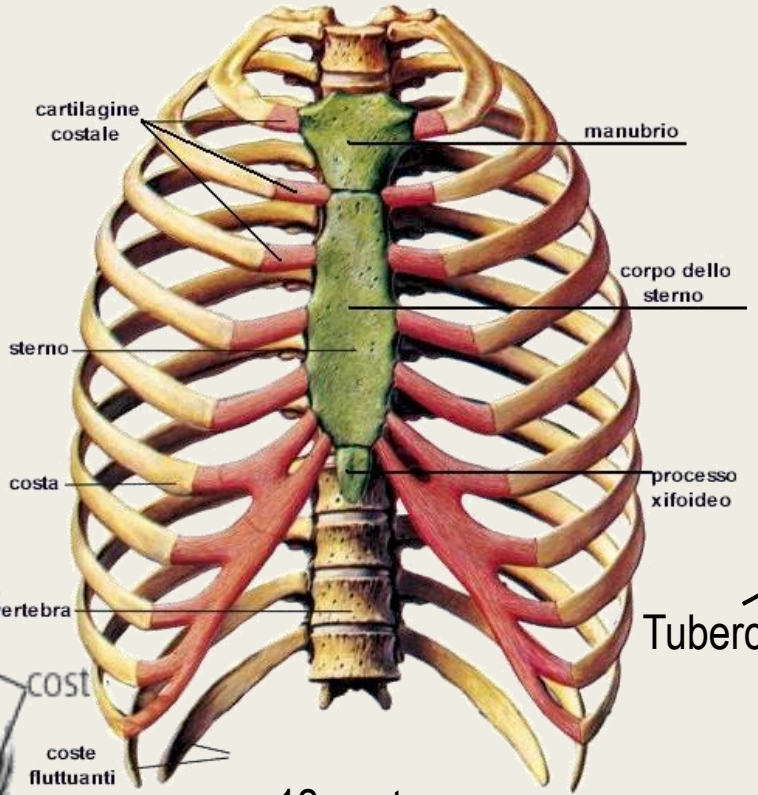
cifosi dorsale

lordosi lombare

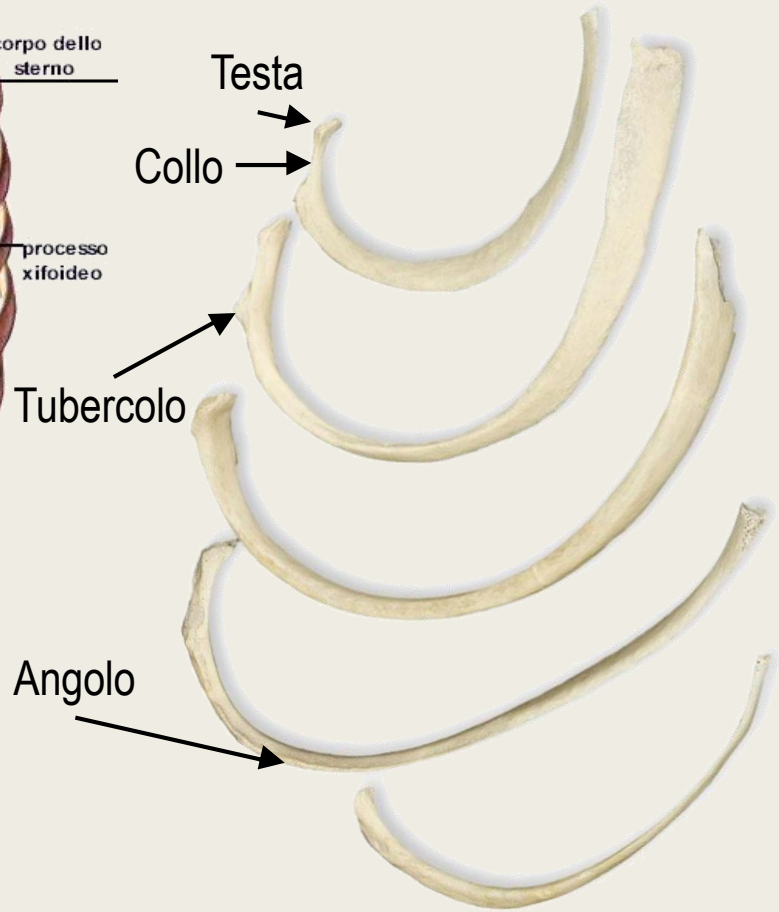
cifosi sacrale

COSTE E STERNO



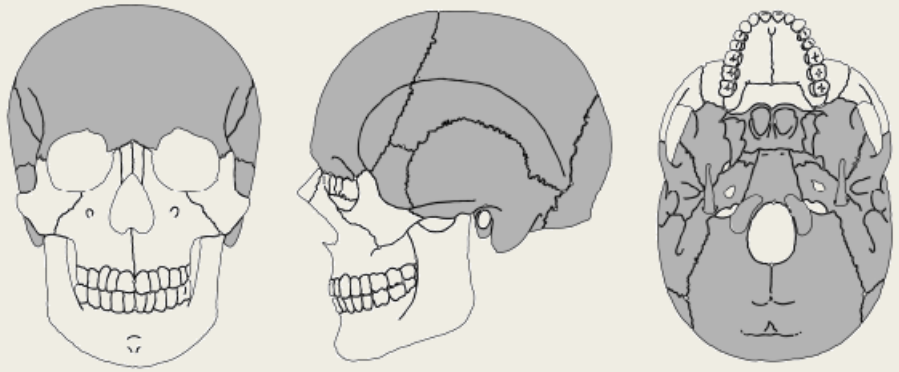


12 coste



TESTA OSSEA

Il neurocranio

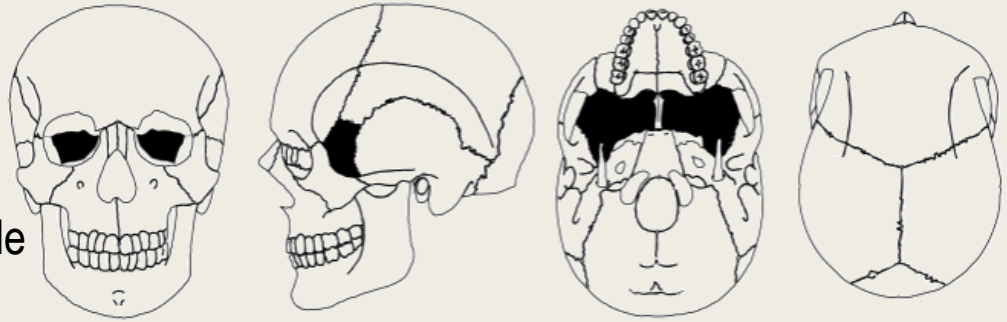


occipitale

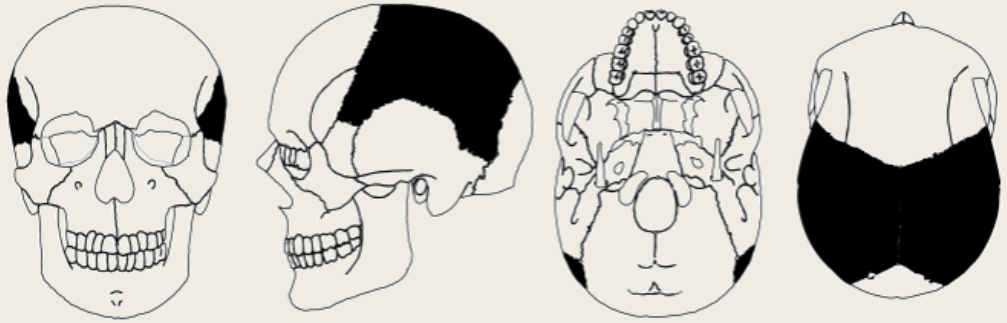
frontale

temporale
(x2)

sfenoide

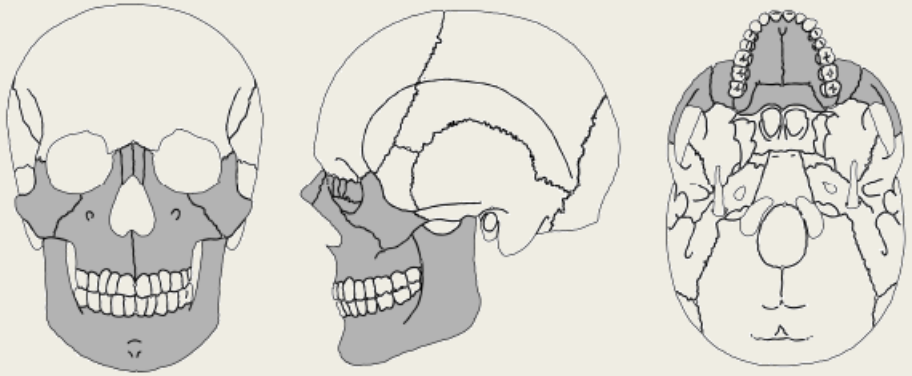


parietale
(x2)

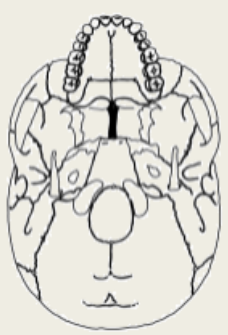


TESTA OSSEA

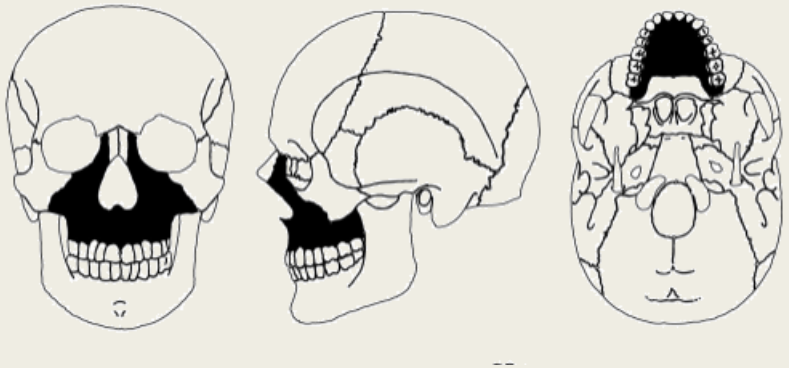
La faccia



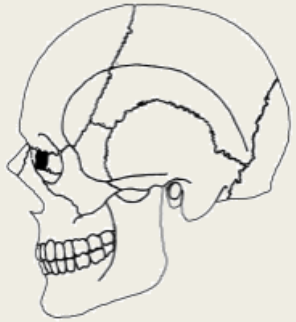
vomere



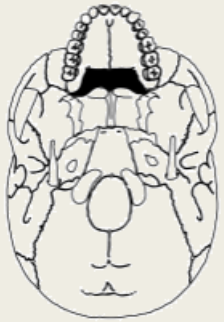
mascellare



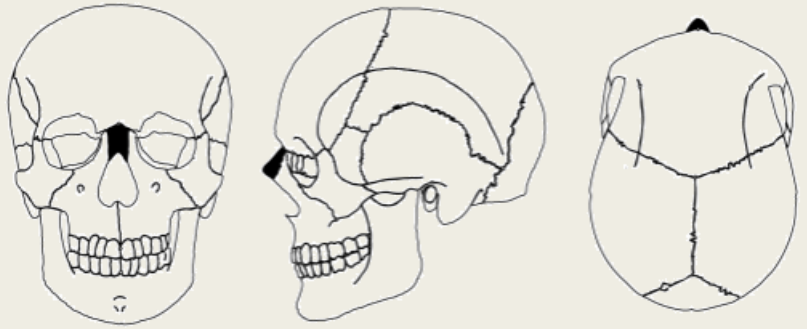
lacrimale
(x2)



palatino
(x2)

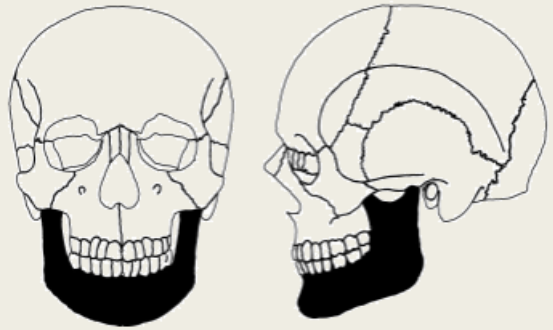


nasale
(x2)

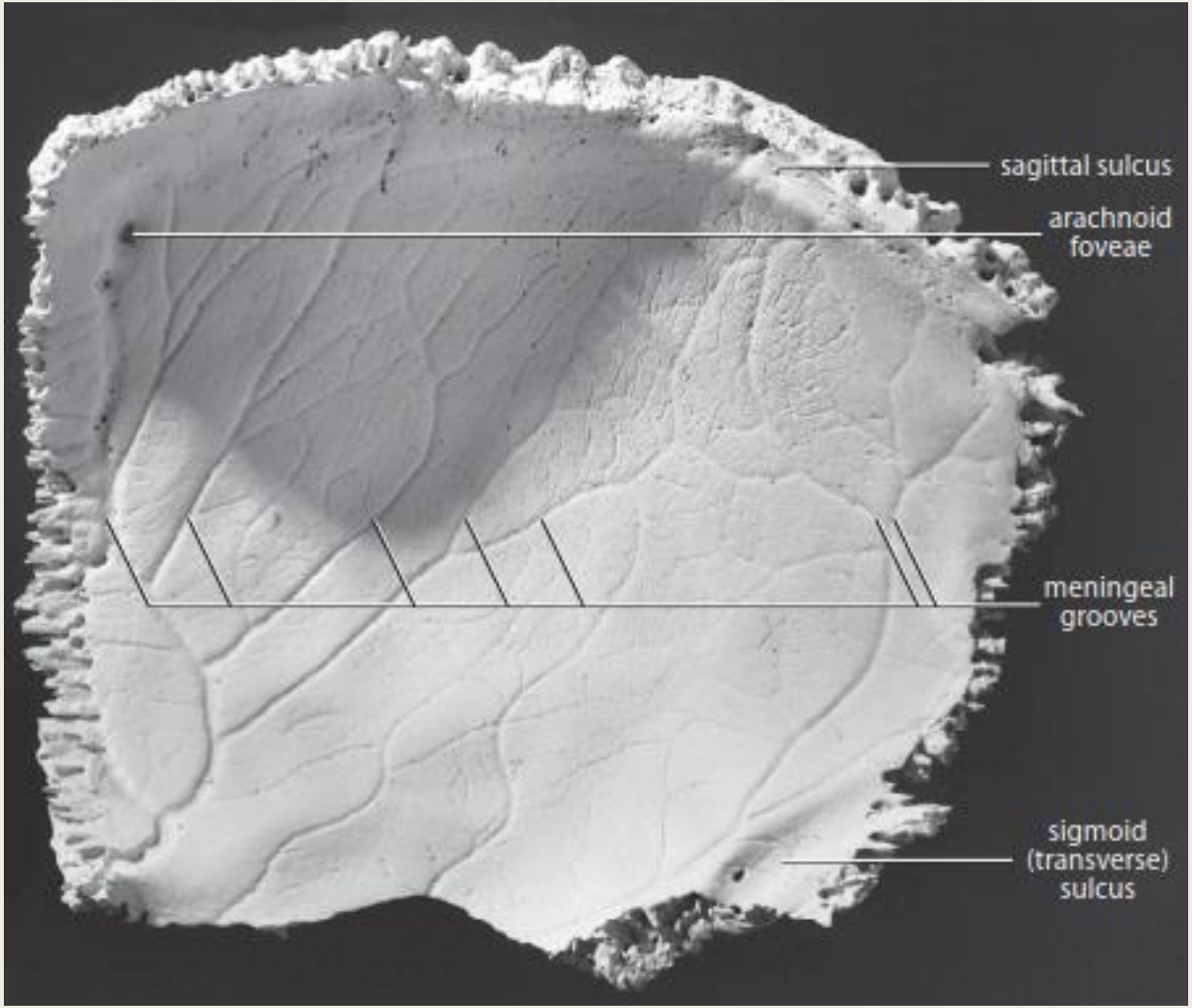


zigomatico
(x2)

mandibola

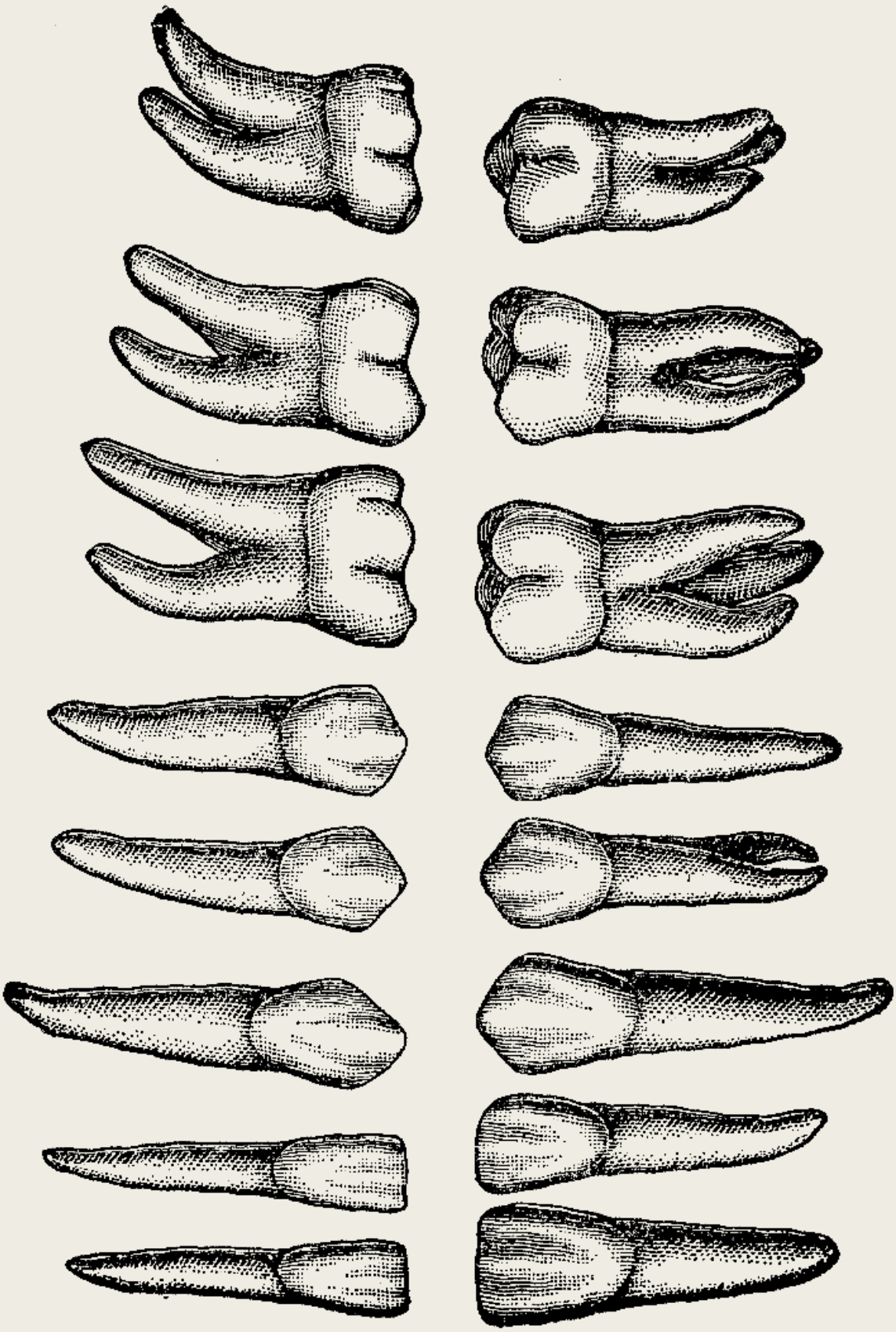


TESTA OSSEA



White

TESTA OSSEA



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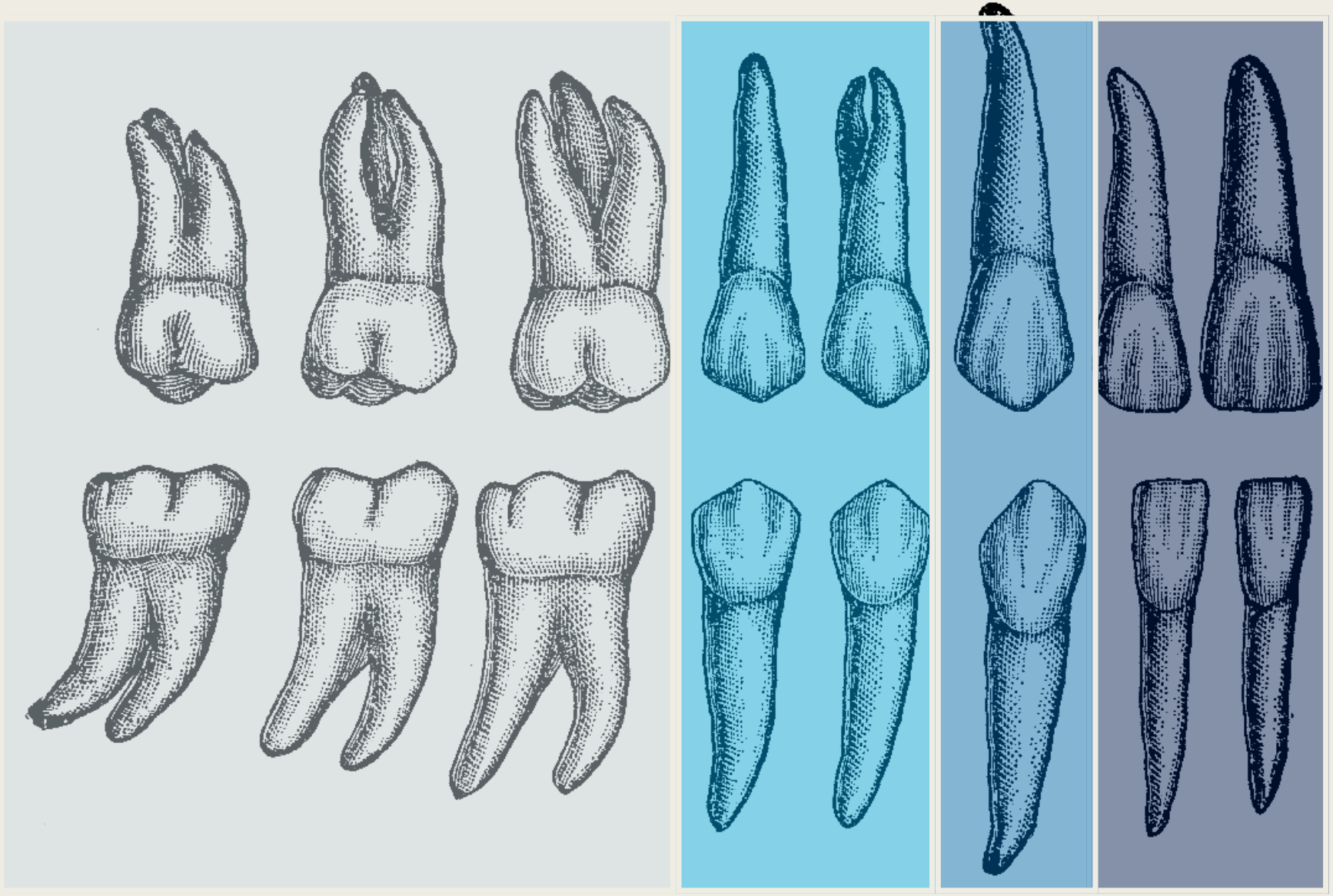
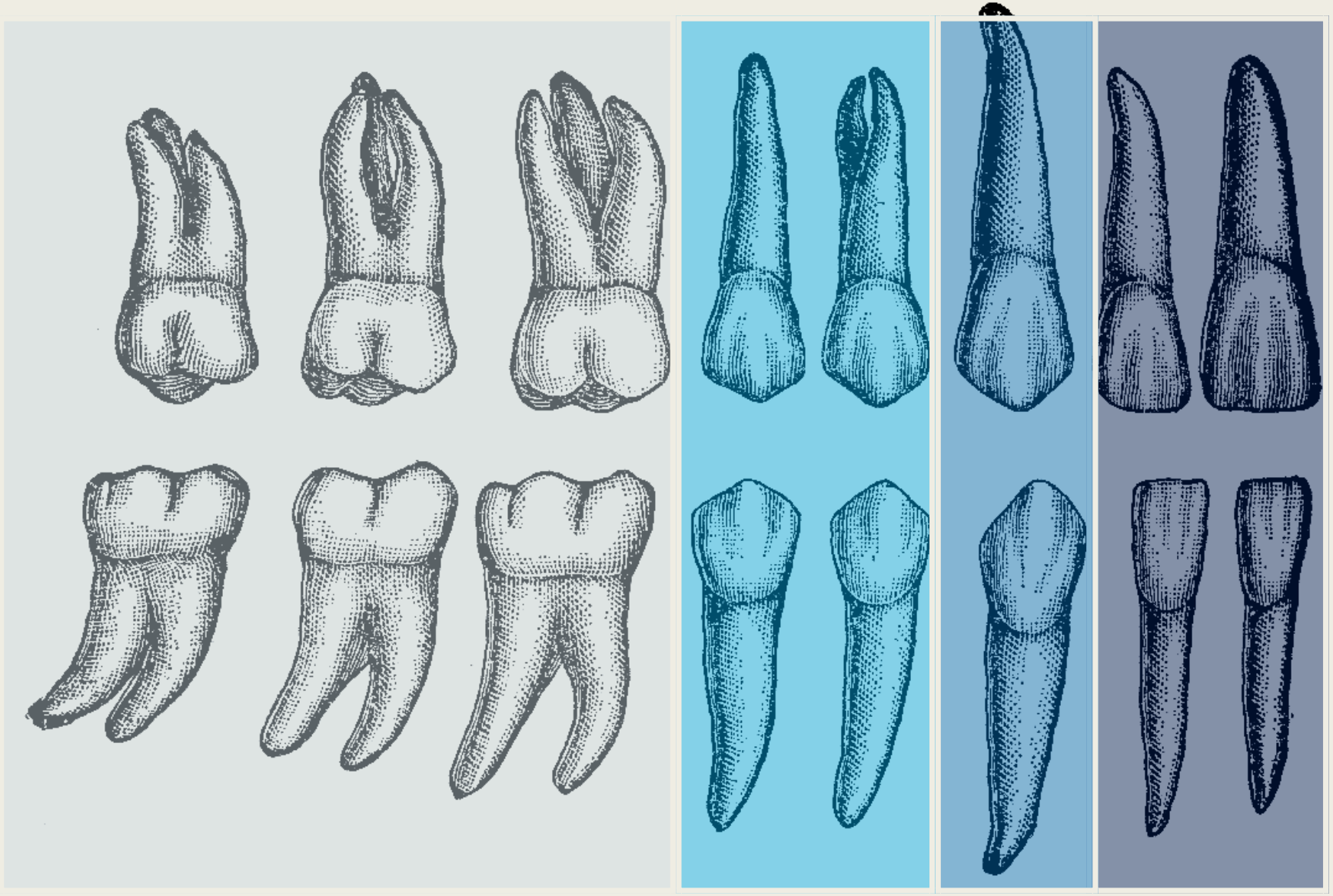


Superiore
(mascellare)

inferiore
(mandibola)

TESTA OSSEA



Superiore
(mascellare)

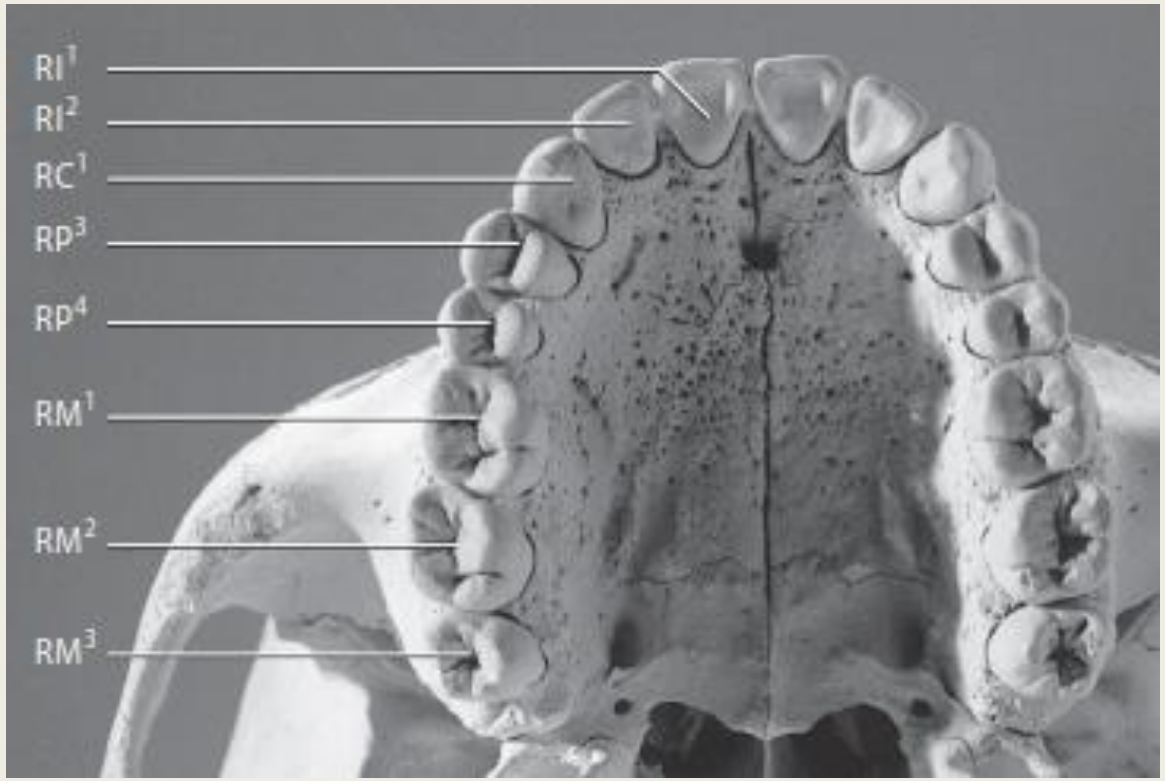
inferiore
(mandibola)

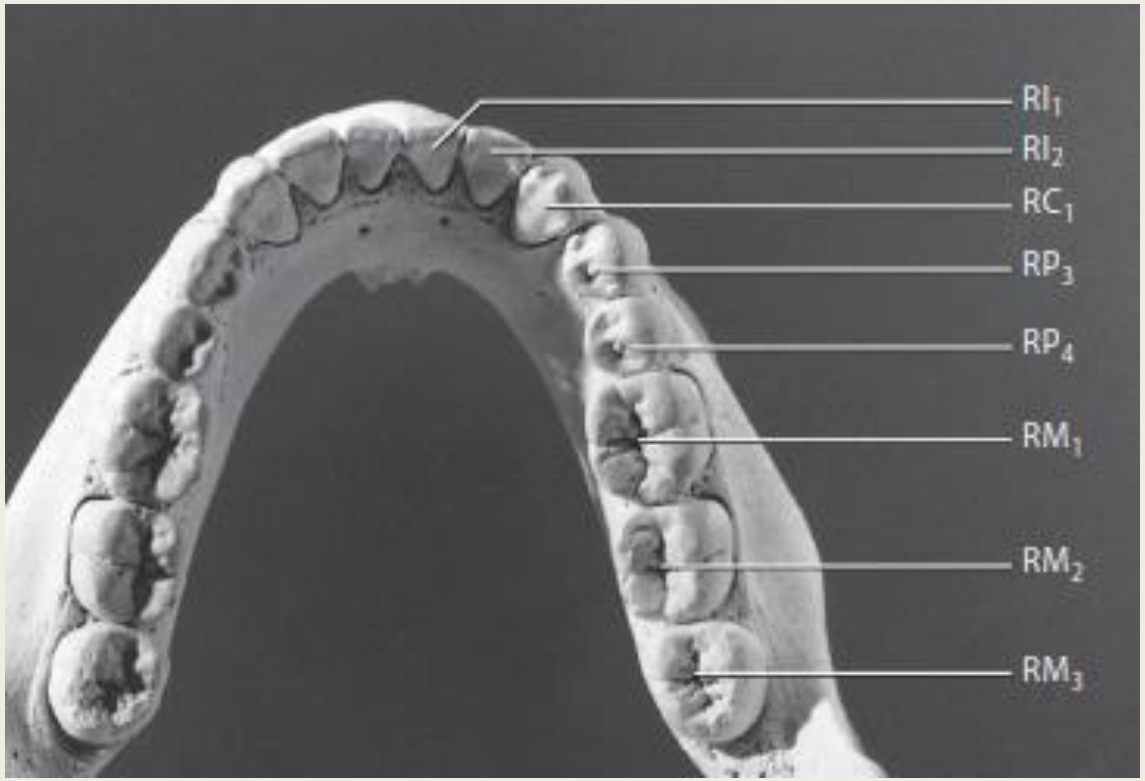
Molari

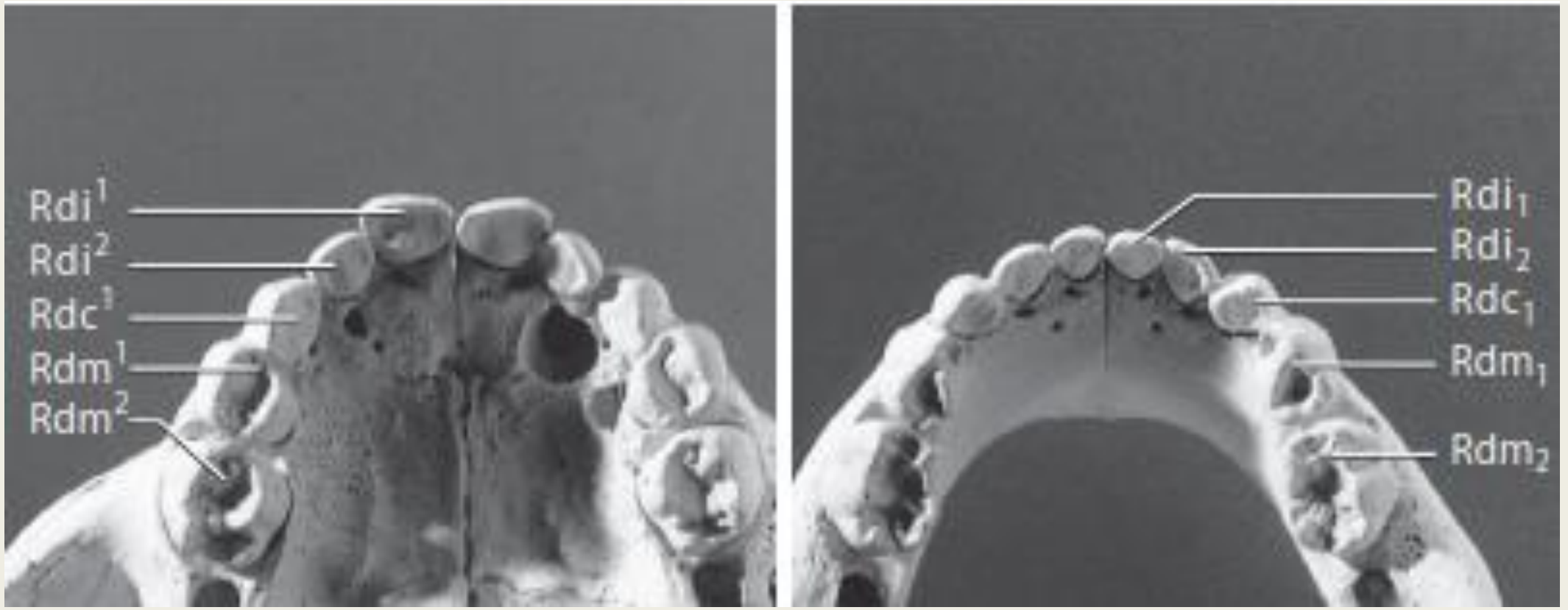
Premolari

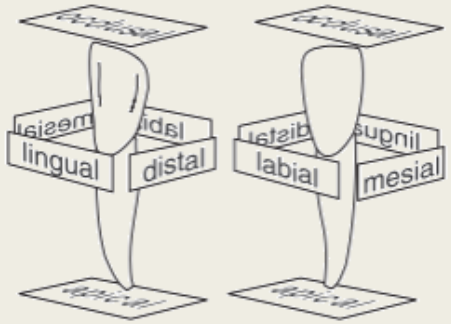
Canini

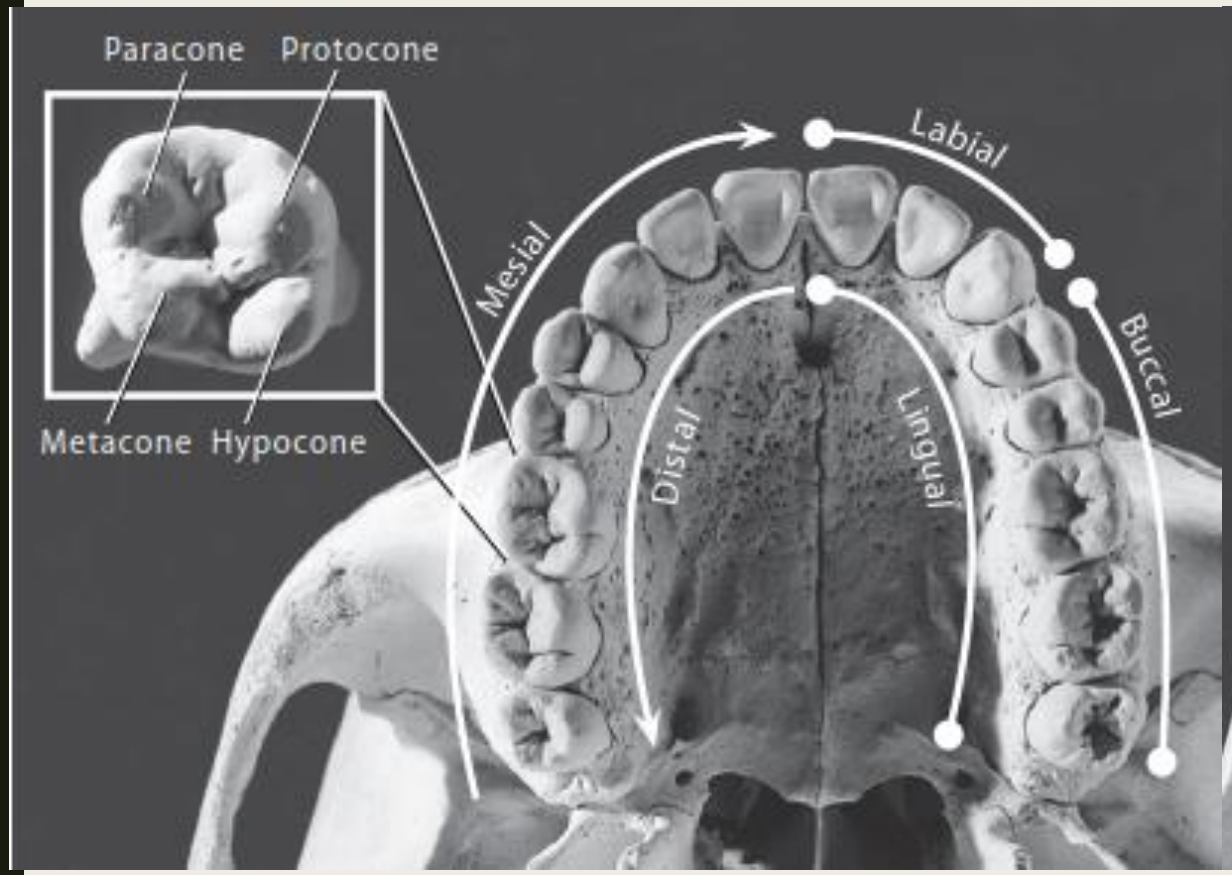
Incisivi

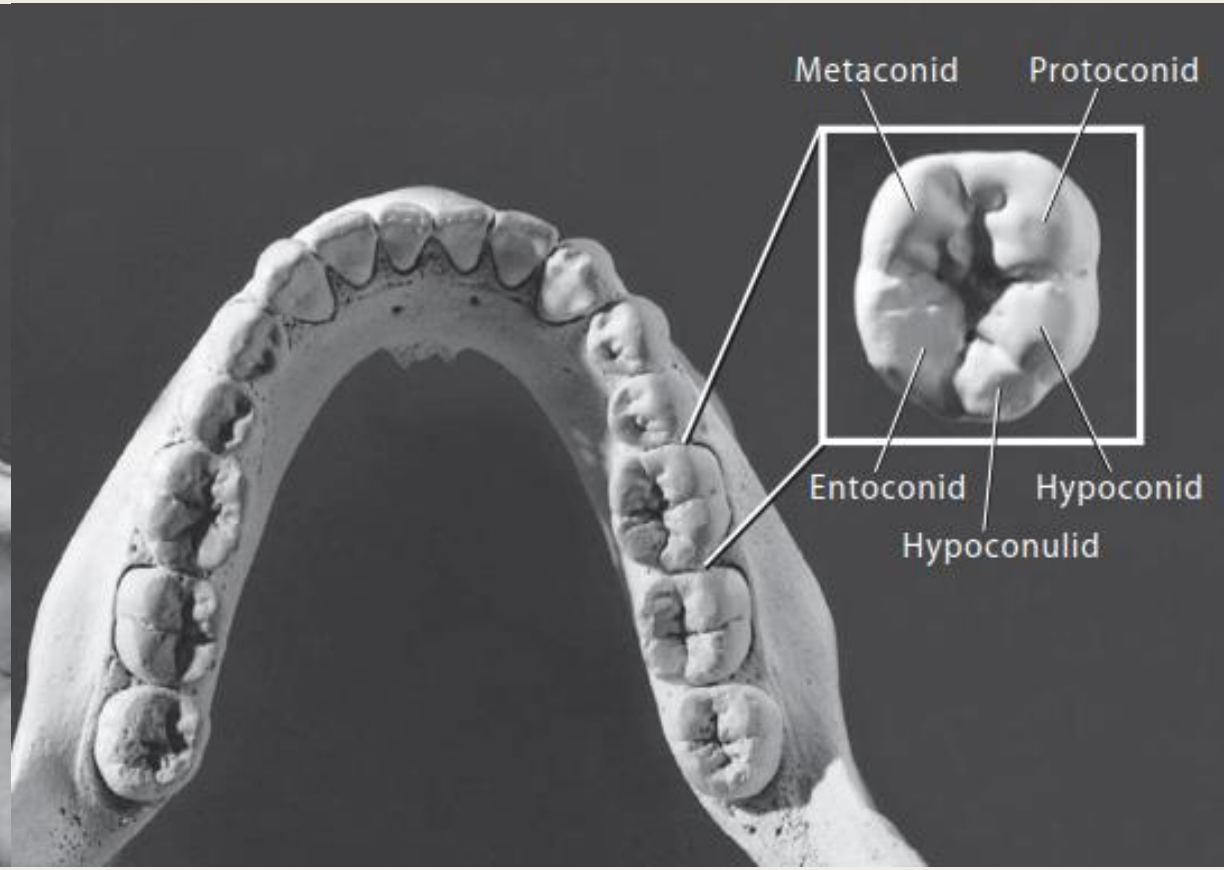

RI1
RI2
RC1
RP3
RP4
RM1
RM2
RM3


RI1
RI2
RC1
RP3
RP4
RM1
RM2
RM3

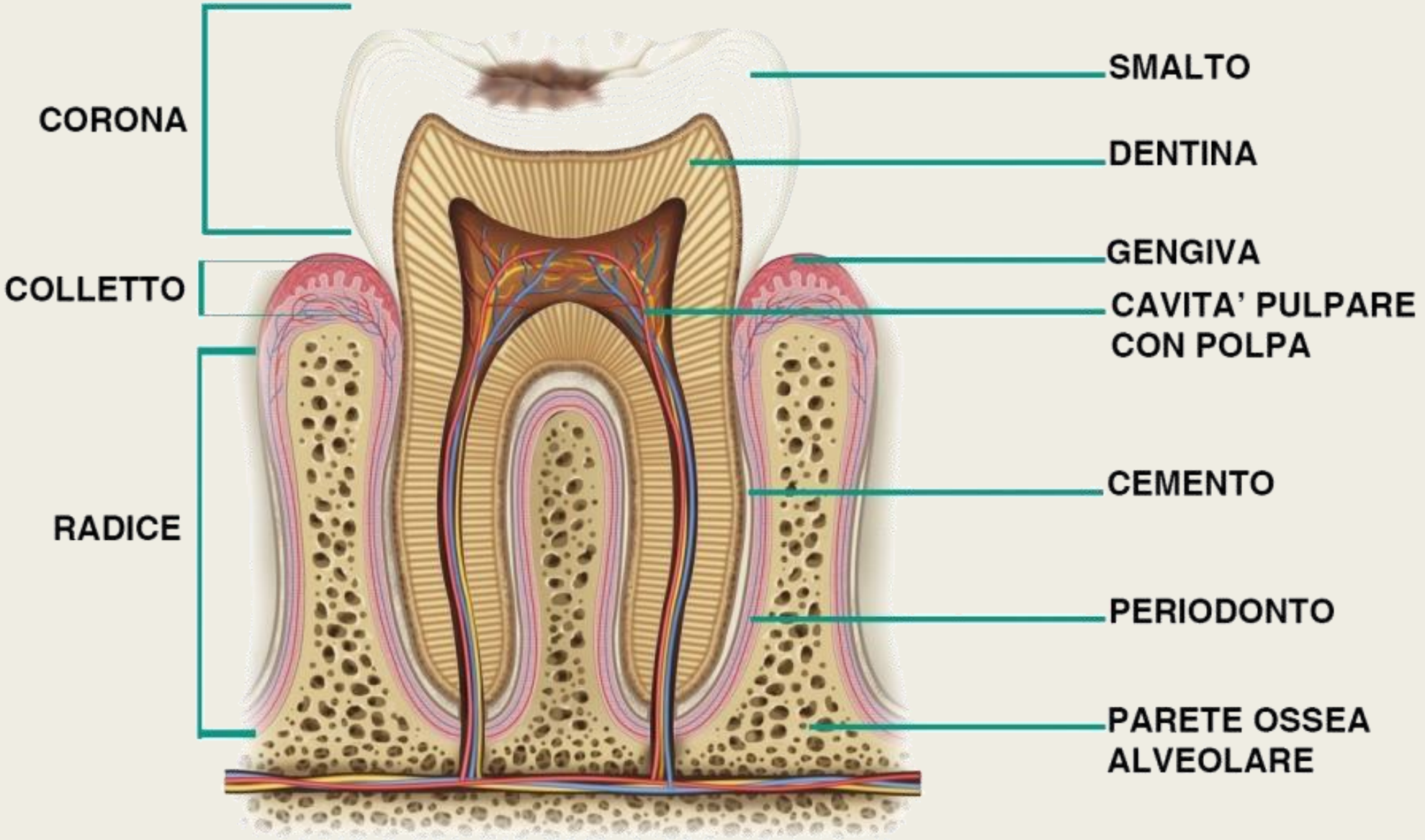

Rdi1
Rdi2
Rdc1
Rdm1
Rdm2
Rdi1
Rdi2
Rdc1
Rdm1
Rdm2


lingual
distal
labial
mesial

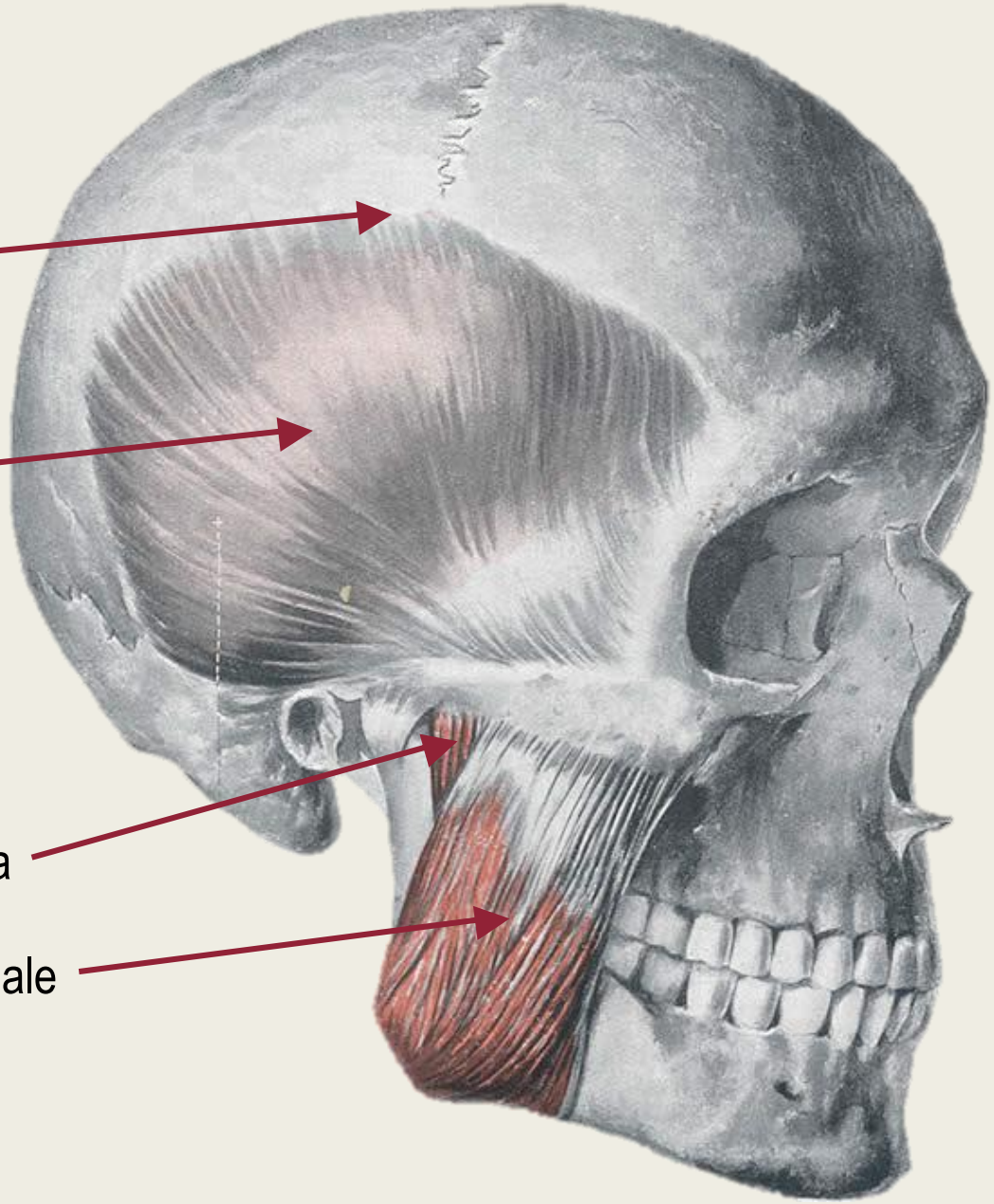

Paracone
Protocone
Metacone
Hypocone
Mesial
Labial
Buccal
Distal
Lingual


Metaconid
Protoconid
Entoconid
Hypoconid
Hypoconulid

TESTA OSSEA

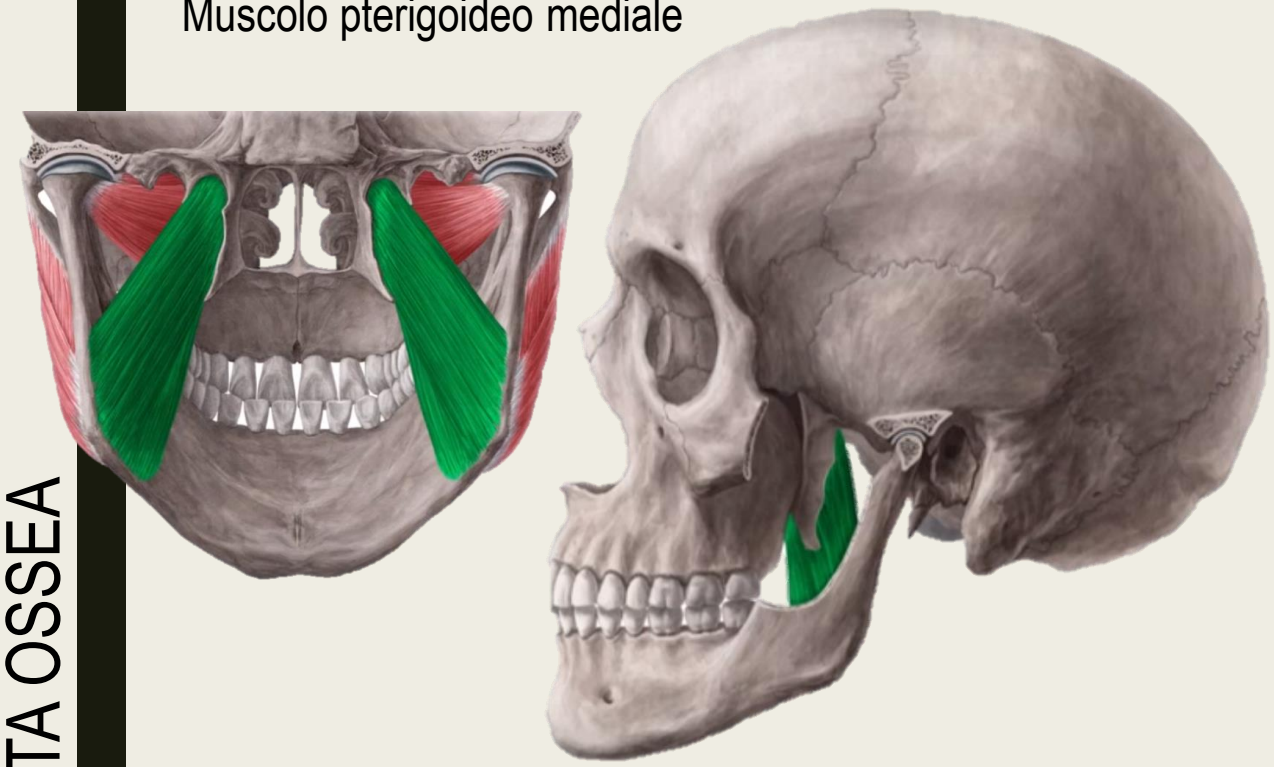

CORONA
COLLETTO
RADICE
SMALTO
DENTINA
GENGIVA
CAVITA' PULPARE
CON POLPA
CEMENTO
PERIODONTO
PARETE OSSEA
ALVEOLARE

TESTA OSSEA

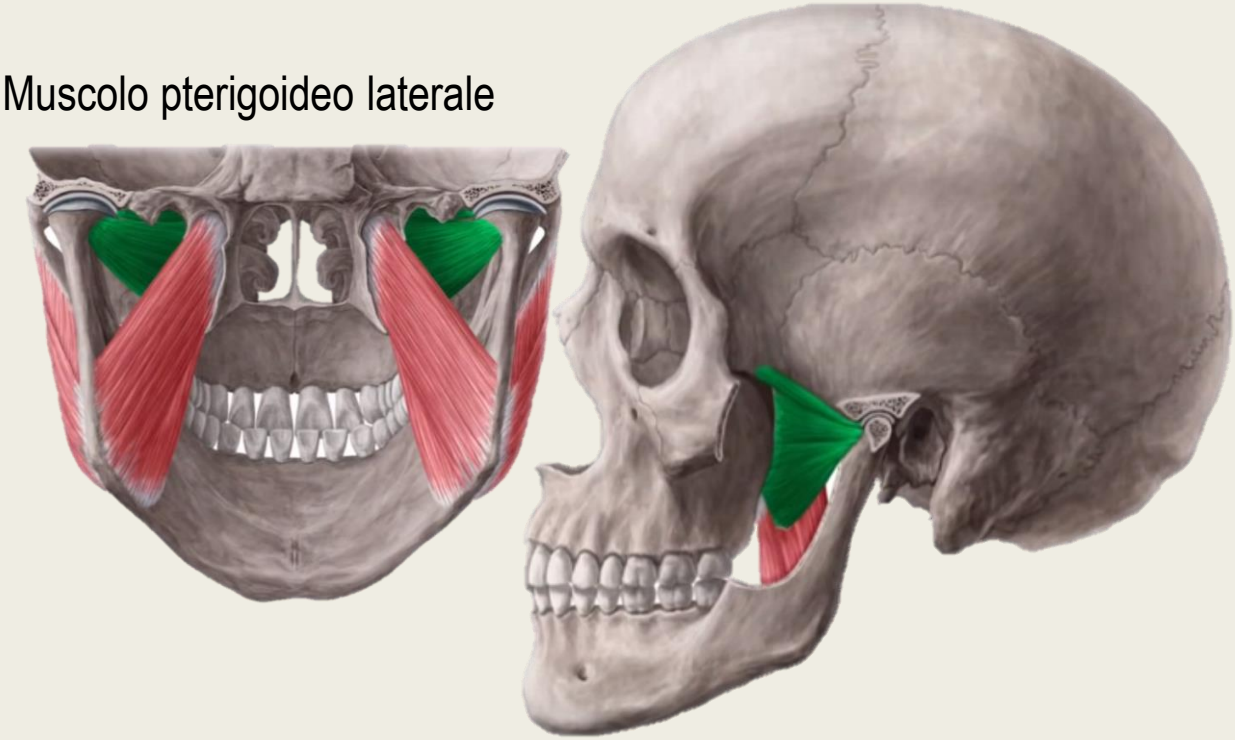

Linea temporale
Muscolo temporale
parte profonda
Muscolo massetere
parte superficiale

TESTA OSSEA

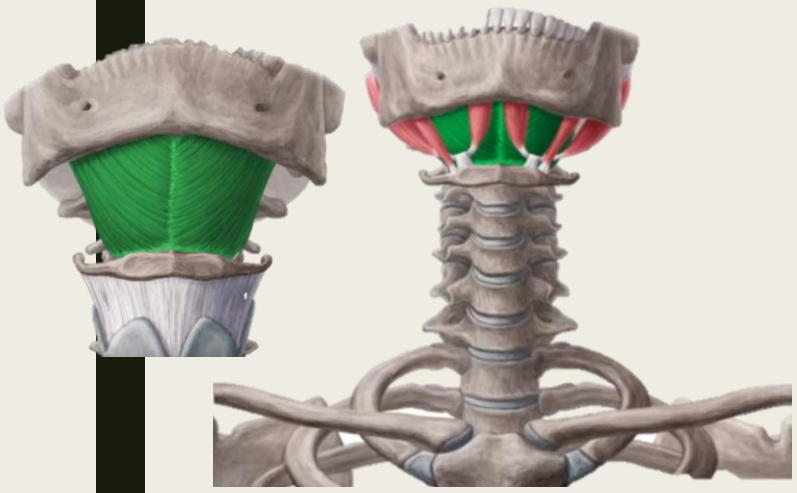
Muscolo pterigoideo mediale



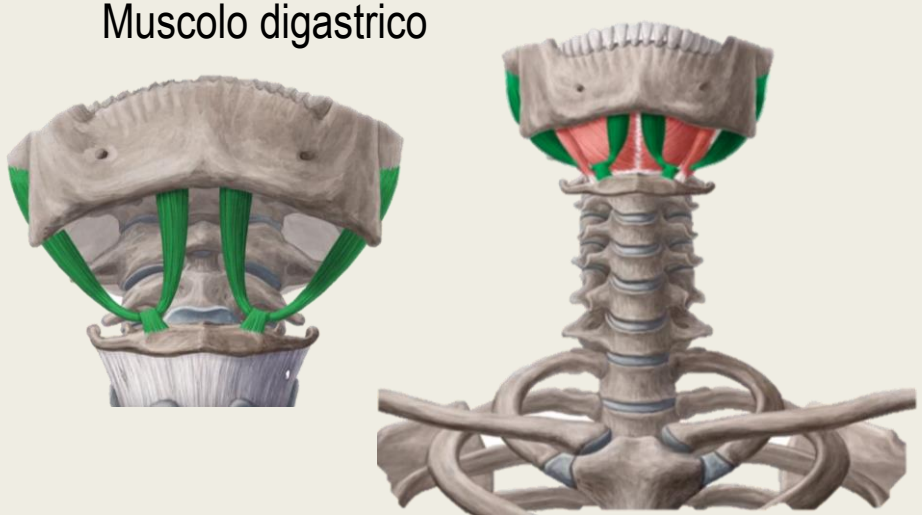
Muscolo pterigoideo laterale



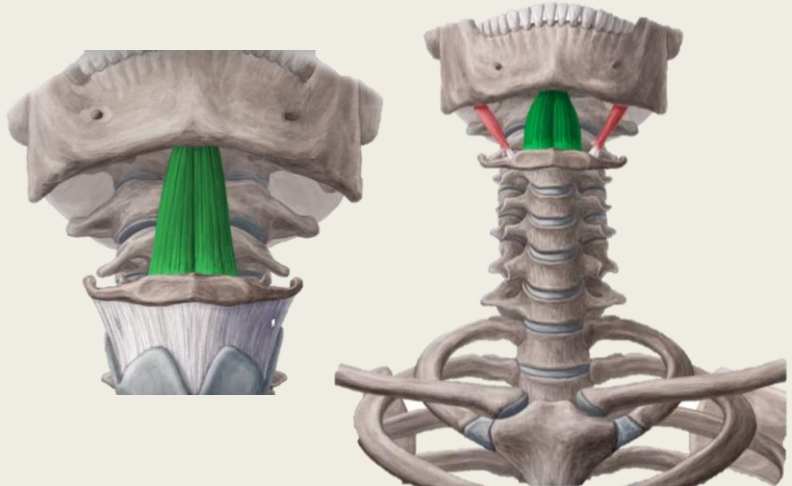
Muscolo milojoideo



Muscolo digastrico



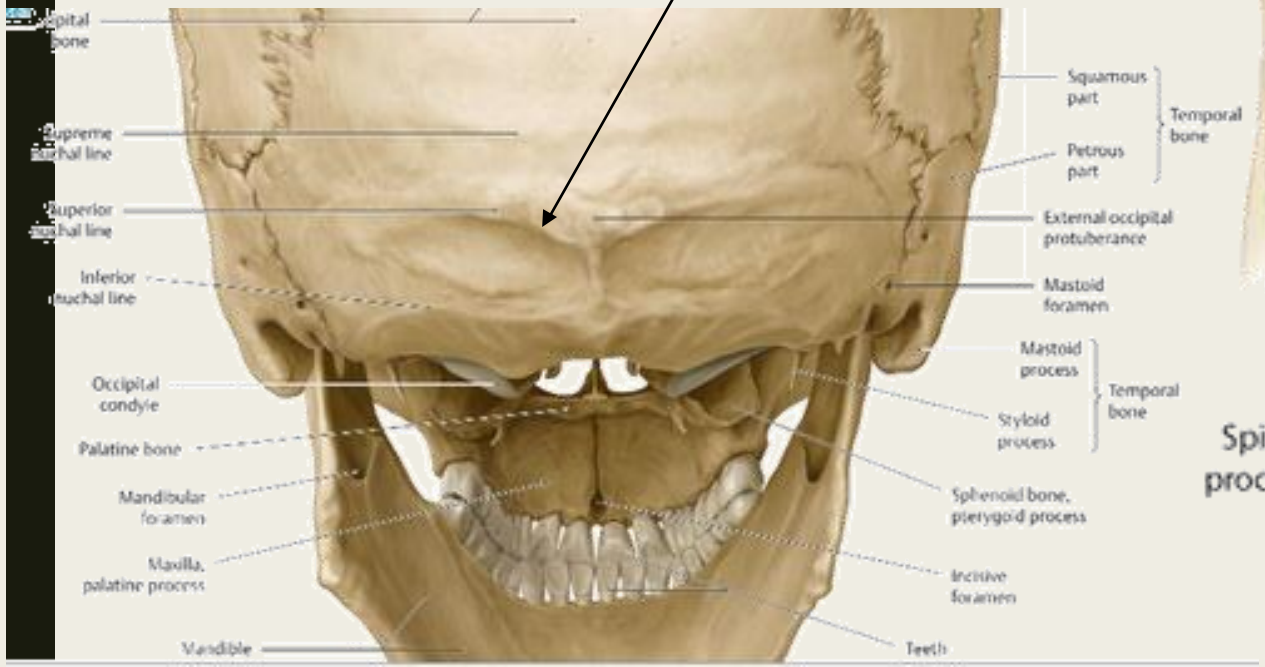
Muscolo geniojoideo

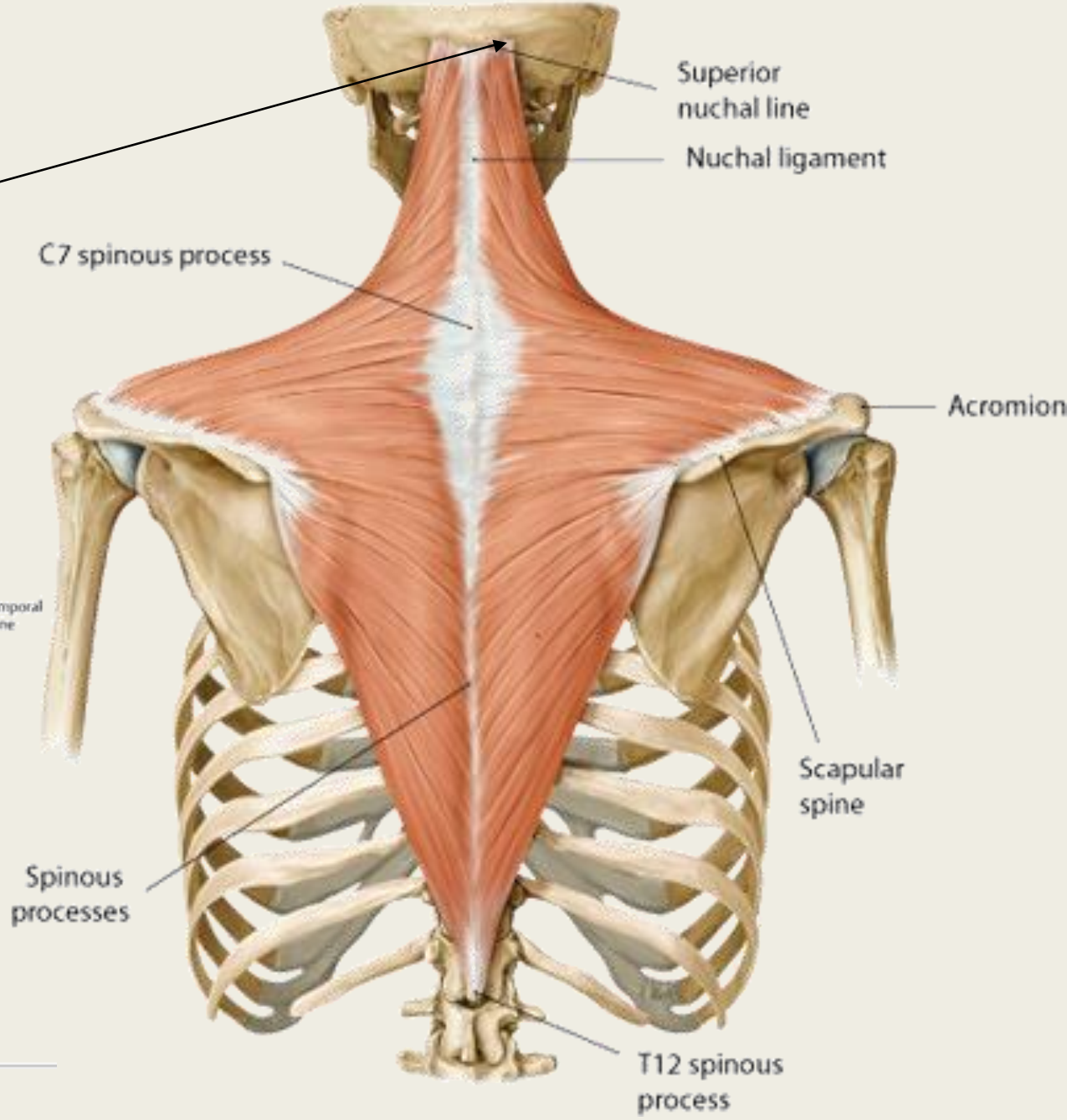


TESTA OSSEA

Muscoli del collo

Linea nucale

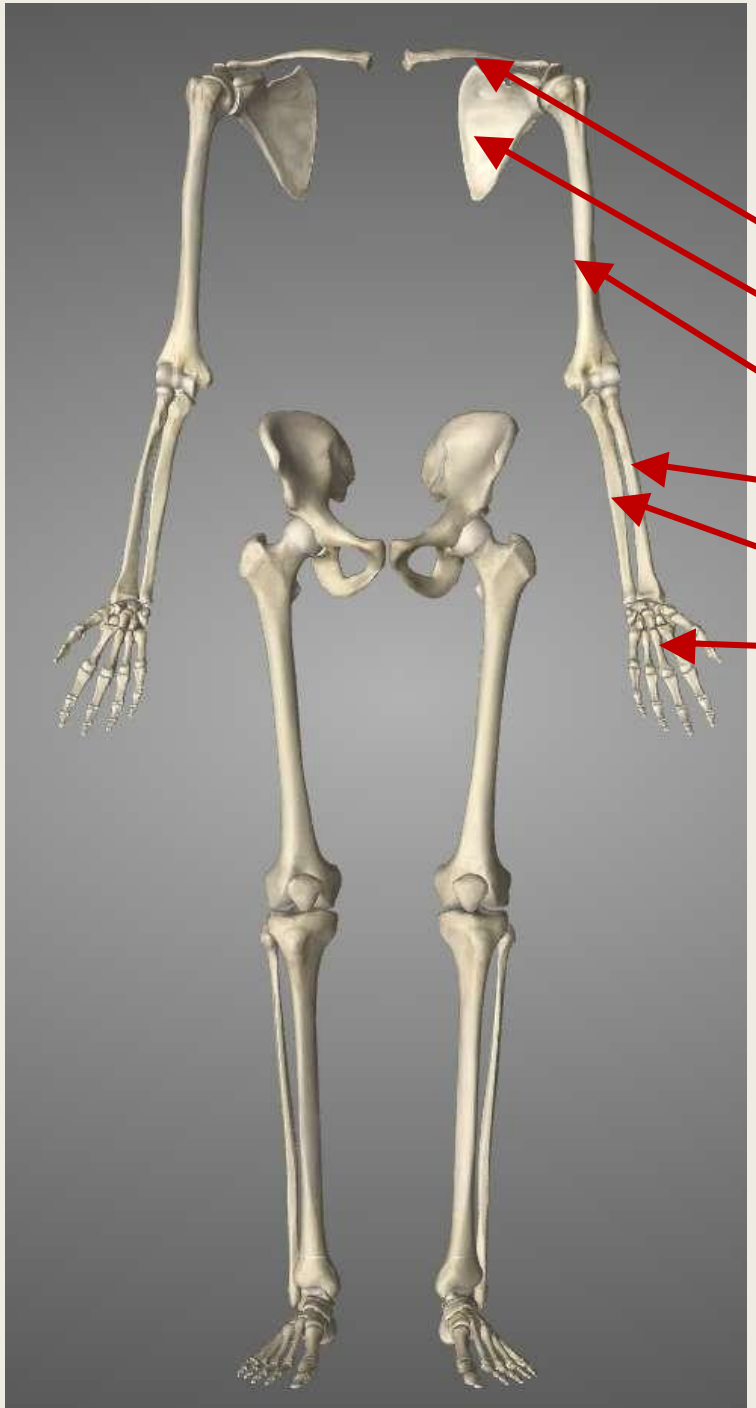




ARTI

Arto superiore

ARTI

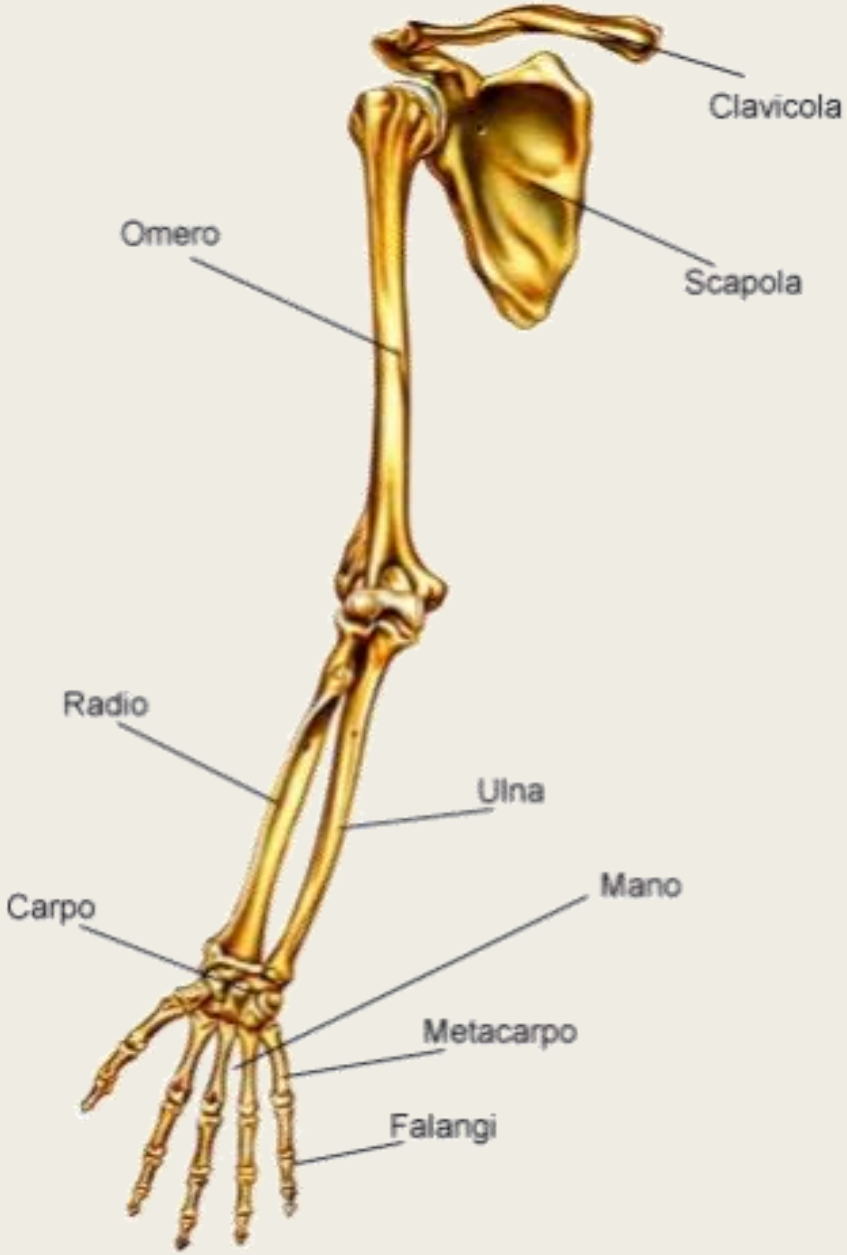


Arto superiore

- Clavicola
- Scapola
- Omero
- Radio
- Ulna
- Carpali, metacarpali, falangi

ARTI

Arto superiore



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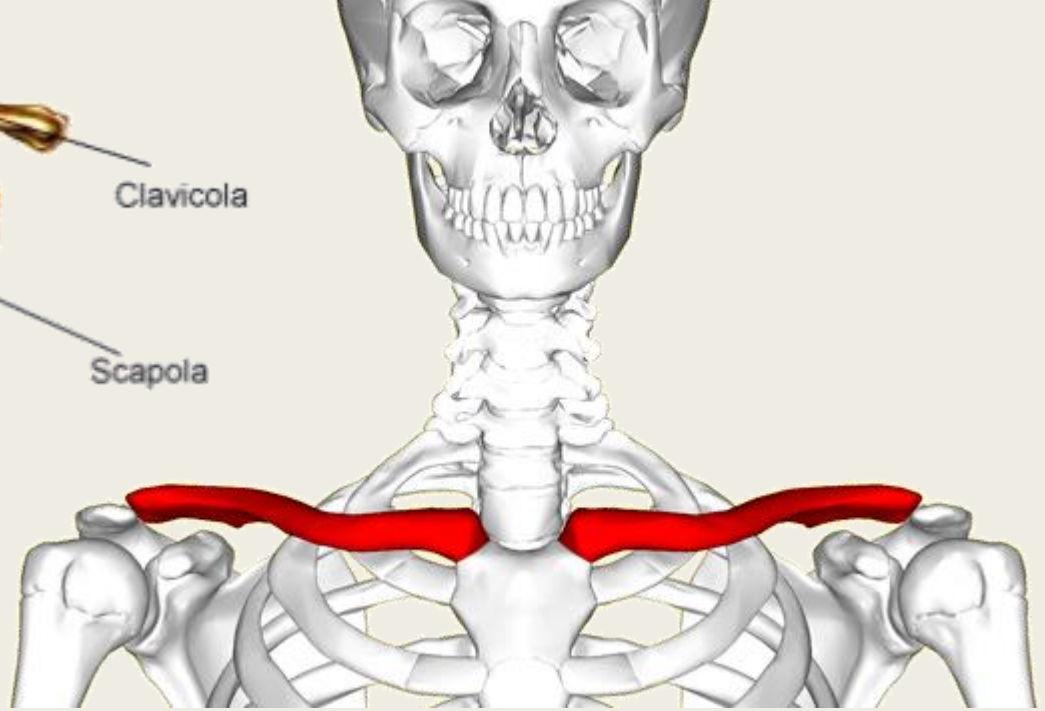
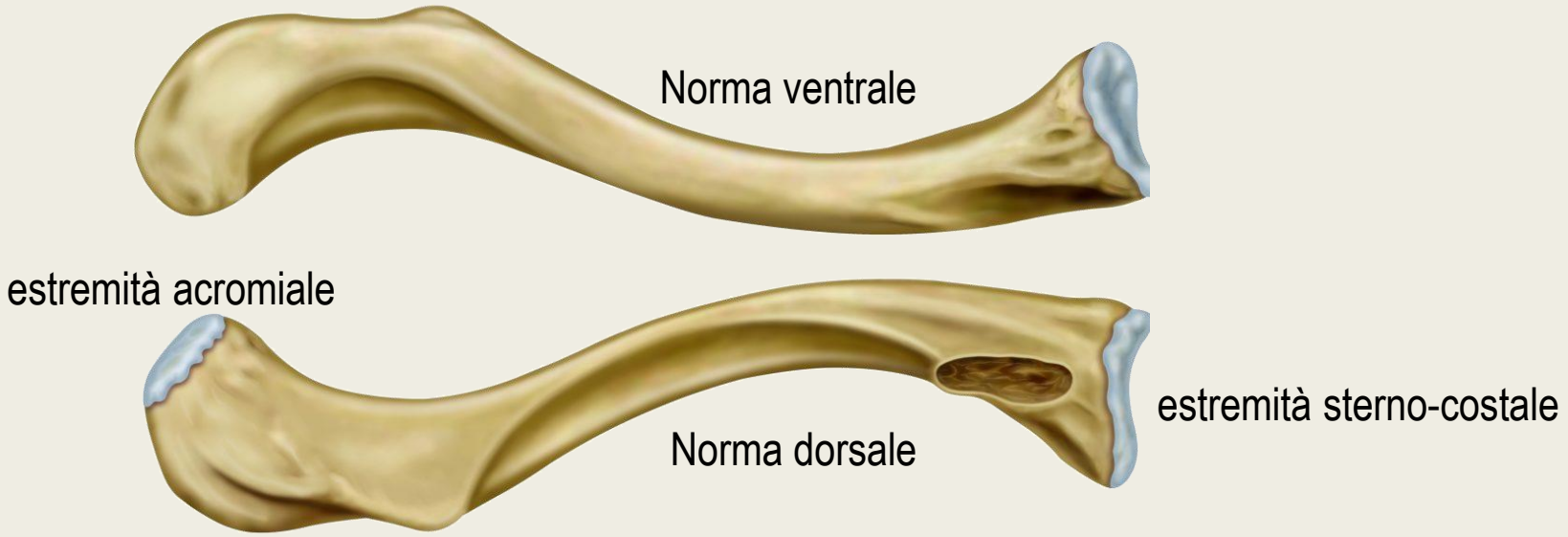


Clavicola



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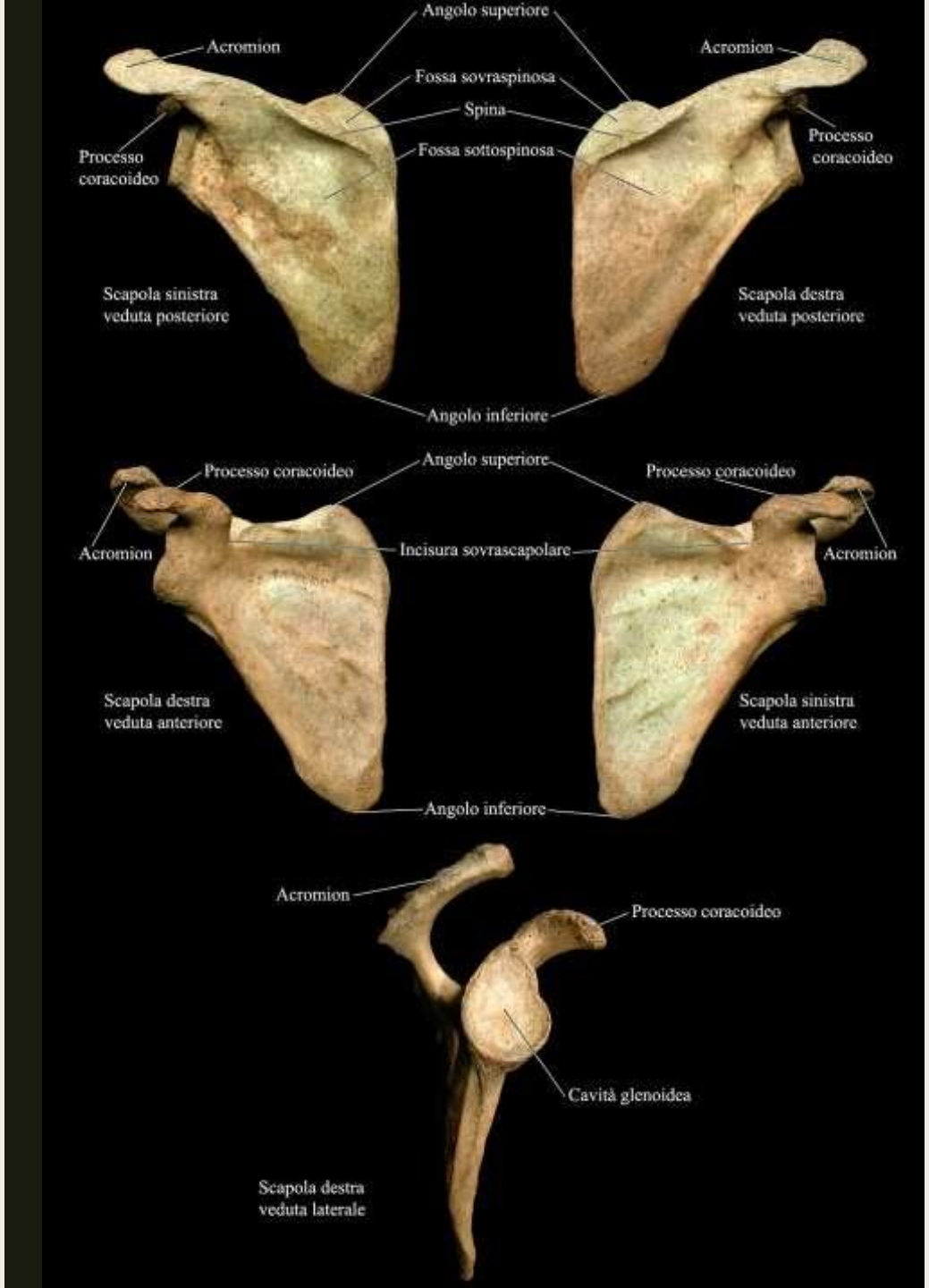
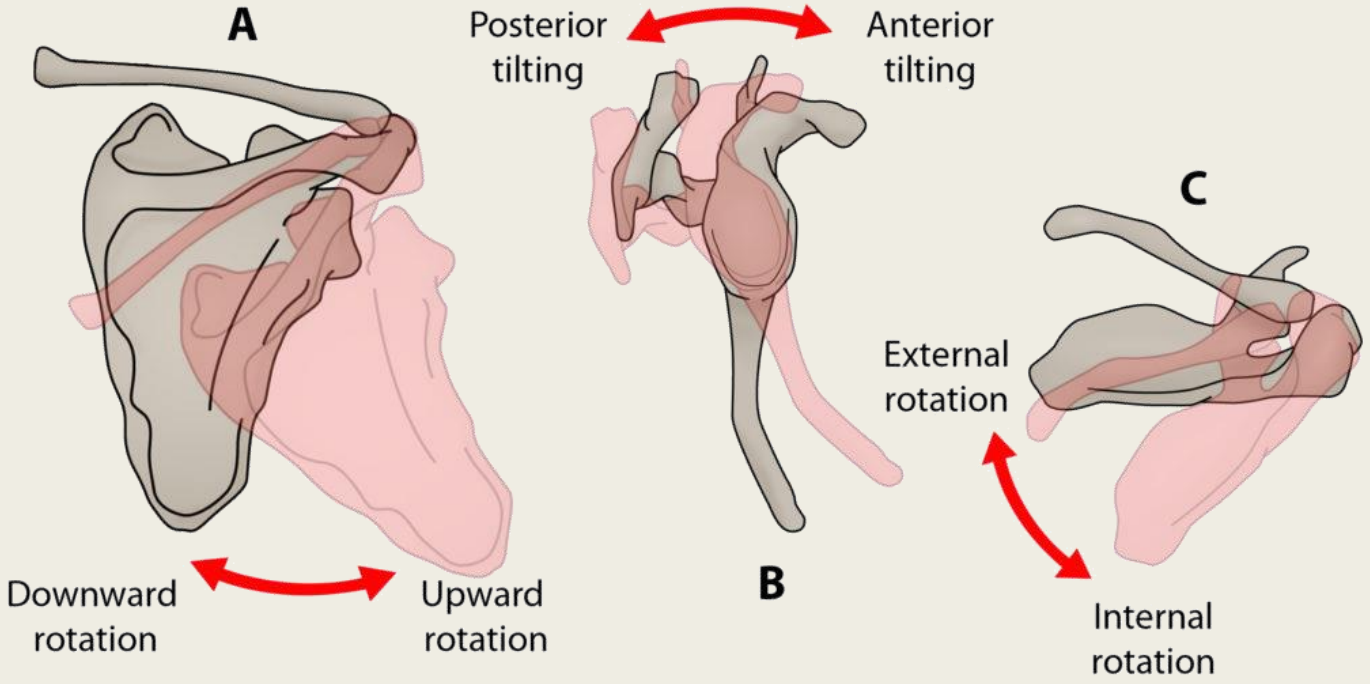


Scapola



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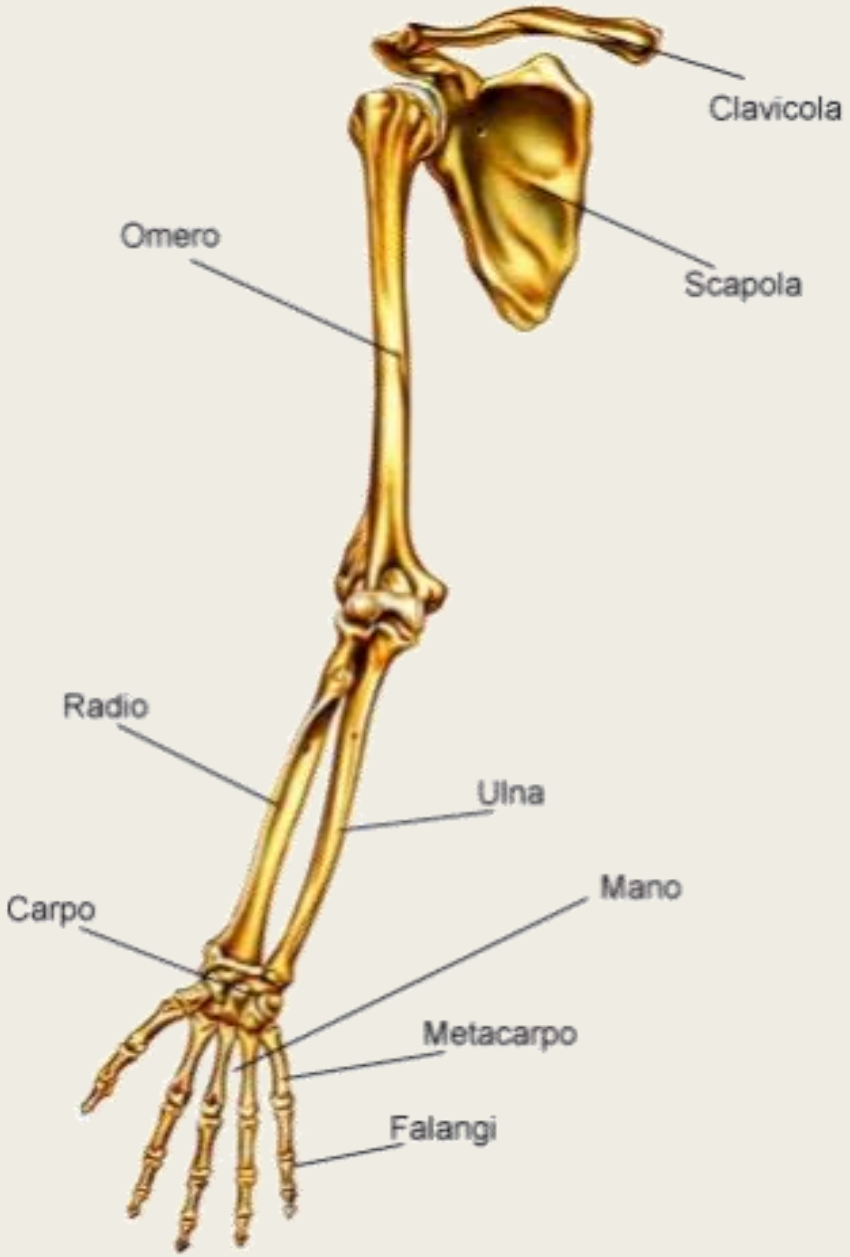
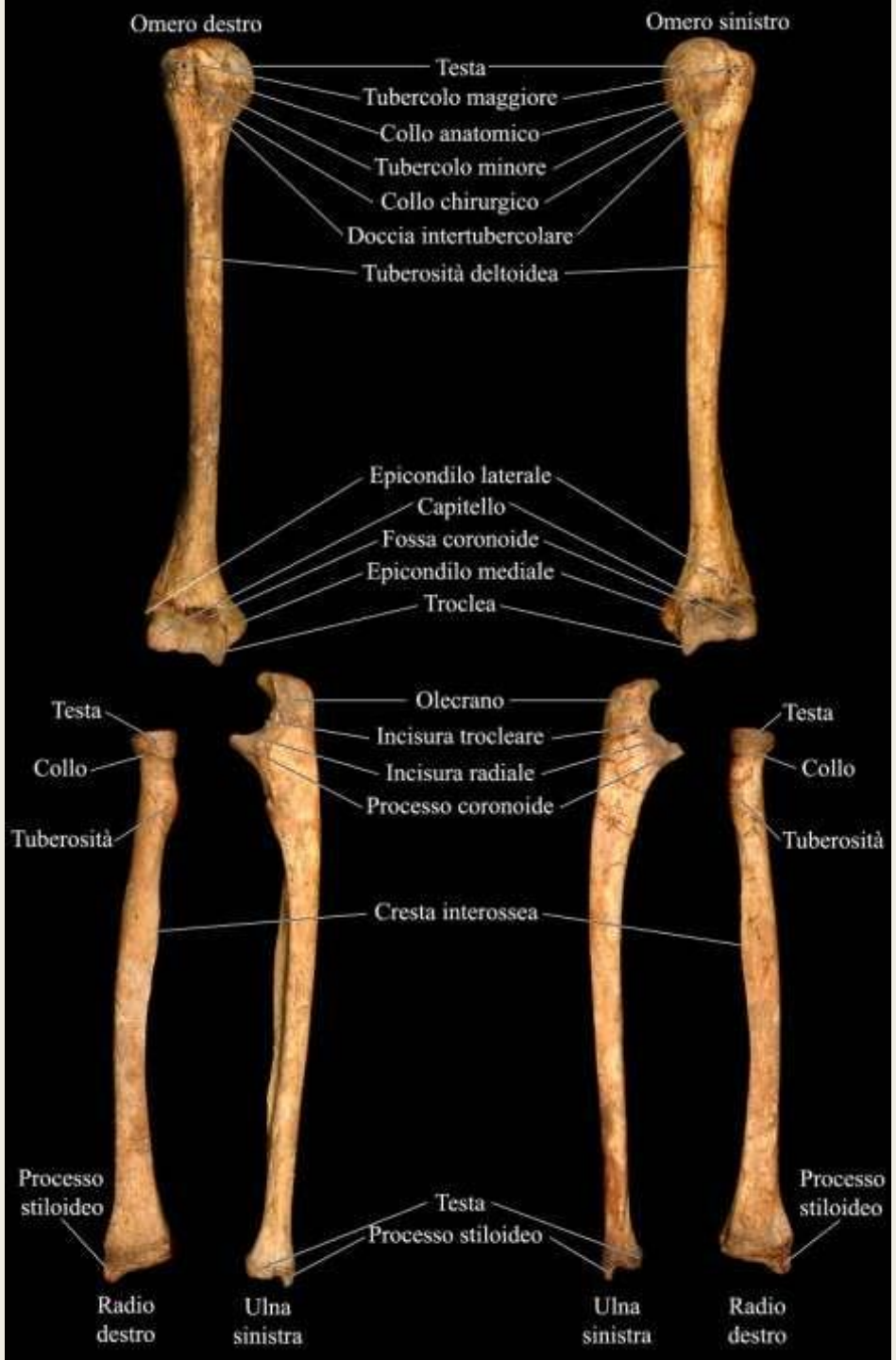
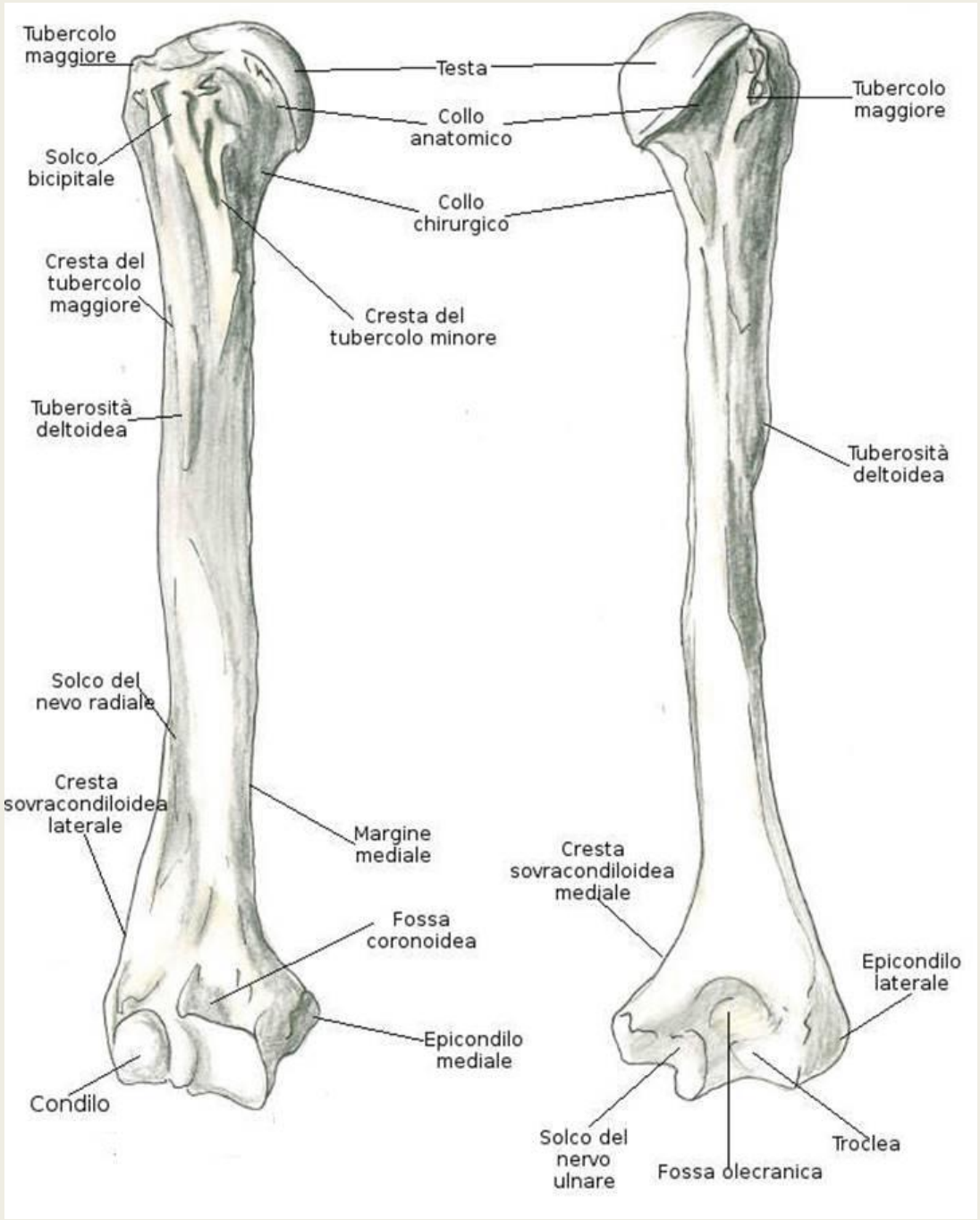
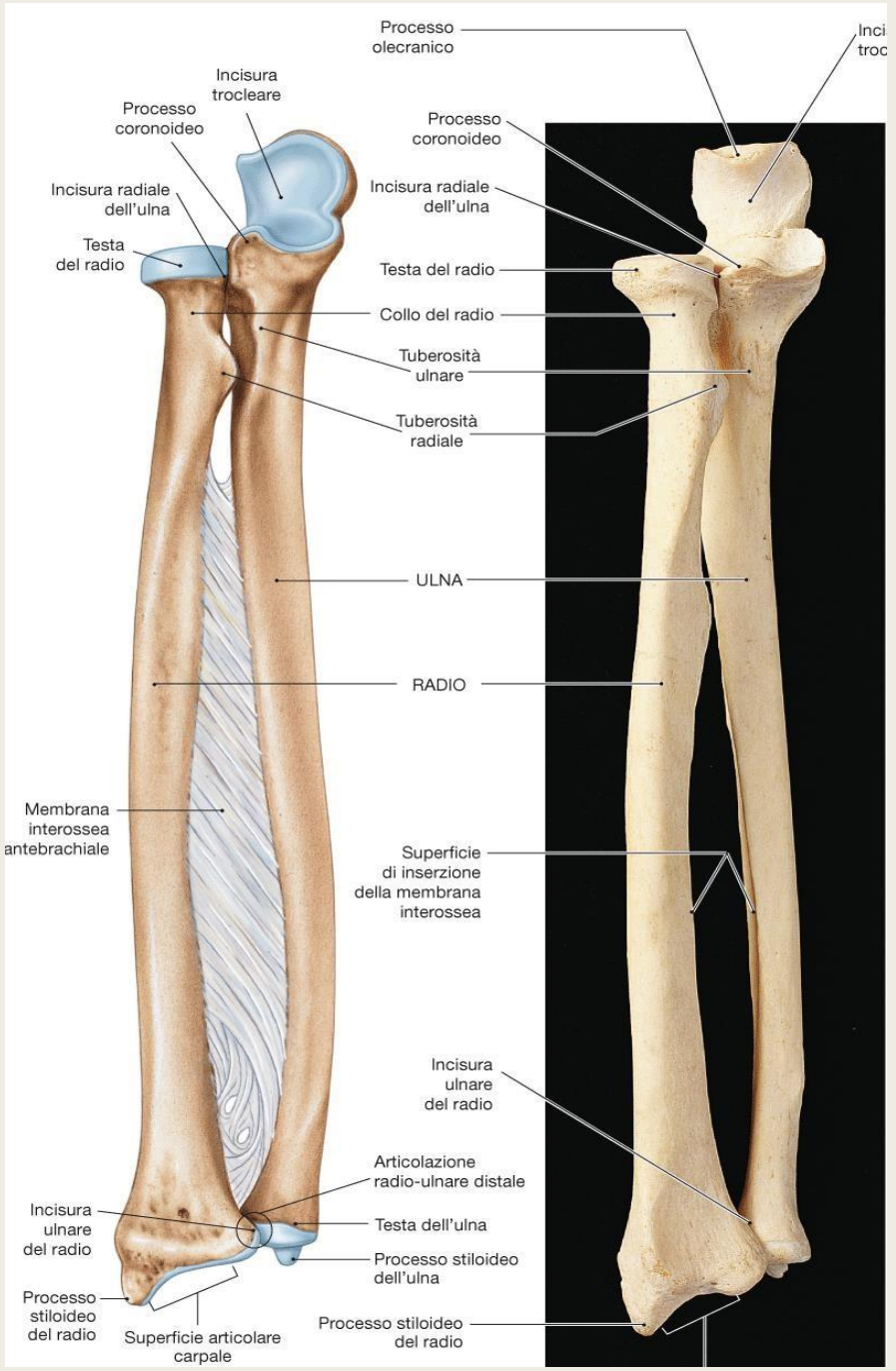

Clavicola
Omero
Scapola
Radio
Ulna
Carpo
Mano
Metacarpo
Falangi

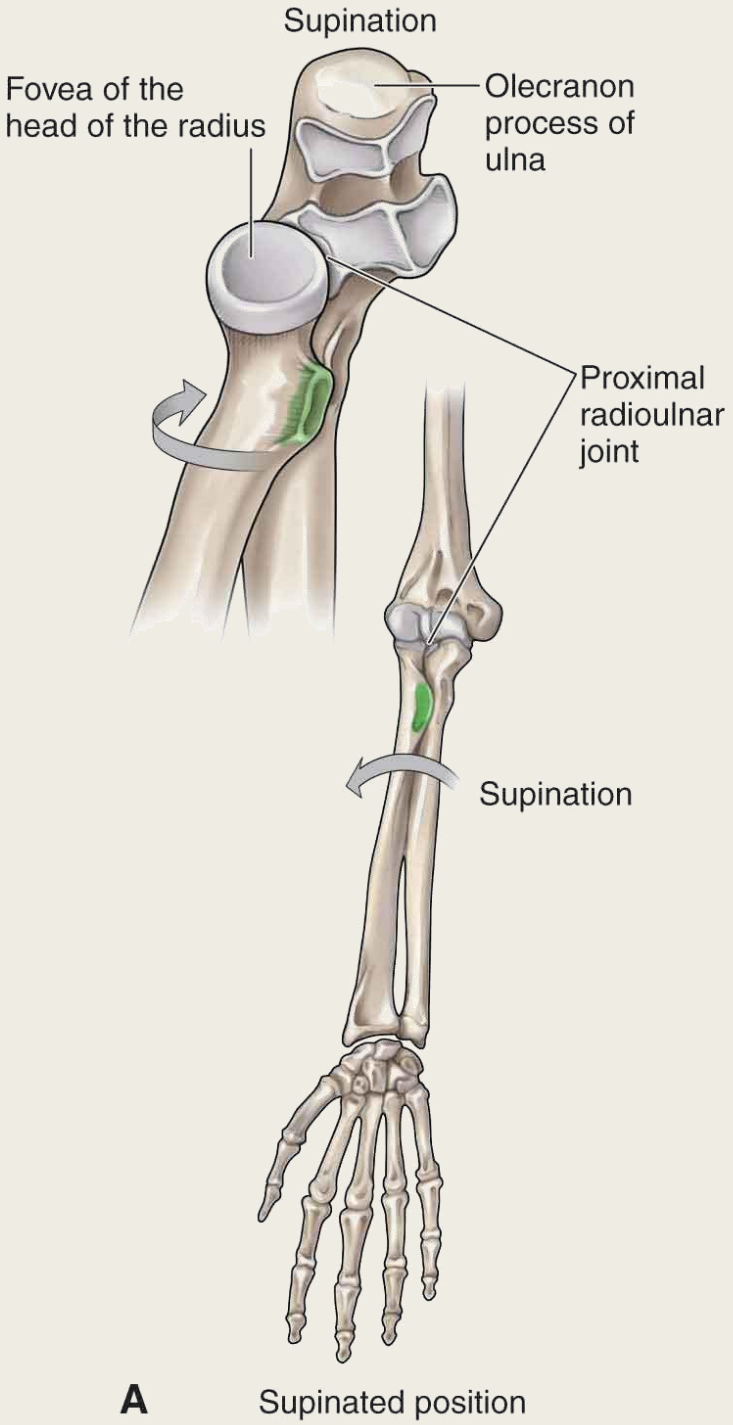

Omero destro
Omero sinistro
Testa
Tubercolo maggiore
Collo anatomico
Tubercolo minore
Collo chirurgico
Doccia intertubercolare
Tuberosità deltoidea
Epicondilo laterale
Capitello
Fossa coronoide
Epicondilo mediale
Troclea
Testa
Collo
Tuberosità
Olecrano
Incisura trocleare
Incisura radiale
Processo coronoide
Testa
Collo
Tuberosità
Cresta interossea
Processo stiloideo
Testa
Processo stiloideo
Processo stiloideo
Radio destro
Ulna sinistra
Ulna sinistra
Radio destro

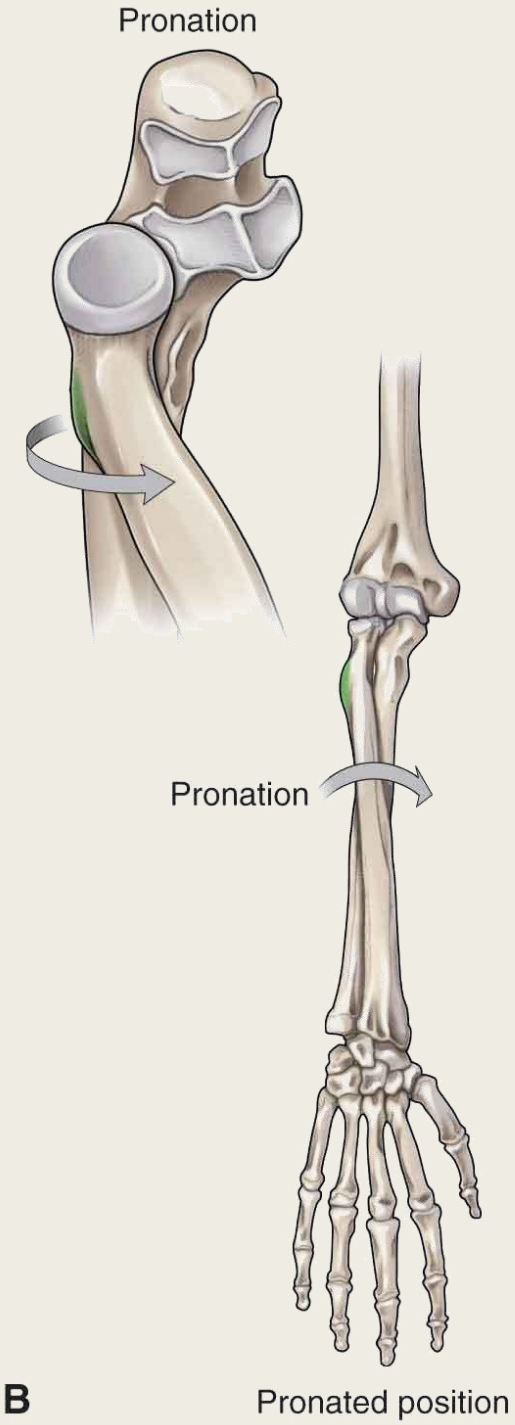
ARTI

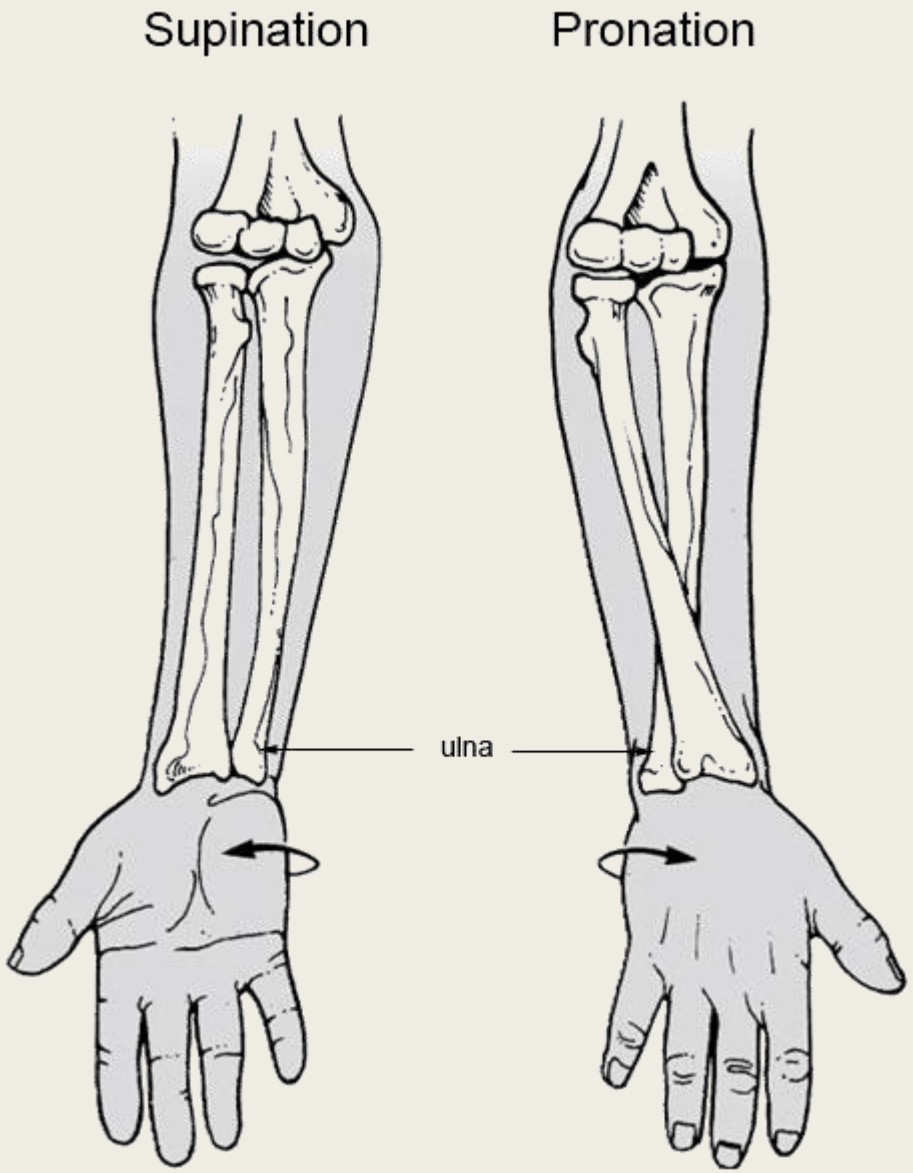

Tubercolo maggiore
Testa
Collo anatomico
Solco bicipitale
Collo chirurgico
Cresta del tubercolo maggiore
Cresta del tubercolo minore
Tuberosità deltoidea
Solco del nevo radiale
Cresta sovracondiloidea laterale
Margine mediale
Fossa coronoidea
Epicondilo mediale
Condilo
Tubercolo maggiore
Tuberosità deltoidea
Cresta sovracondiloidea mediale
Epicondilo laterale
Solco del nervo ulnare
Fossa olecranica
Troclea


Processo olecranico
Incisura trocleare
Processo coronoideo
Incisura radiale dell'ulna
Testa del radio
Collo del radio
Tuberosità ulnare
Tuberosità radiale
ULNA
RADIO
Membrana interossea antebrachiale
Superficie di inserzione della membrana interossea
Incisura ulnare del radio
Articolazione radio-ulnare distale
Testa dell'ulna
Processo stiloideo dell'ulna
Processo stiloideo del radio
Superficie articolare carpale
Processo stiloideo del radio

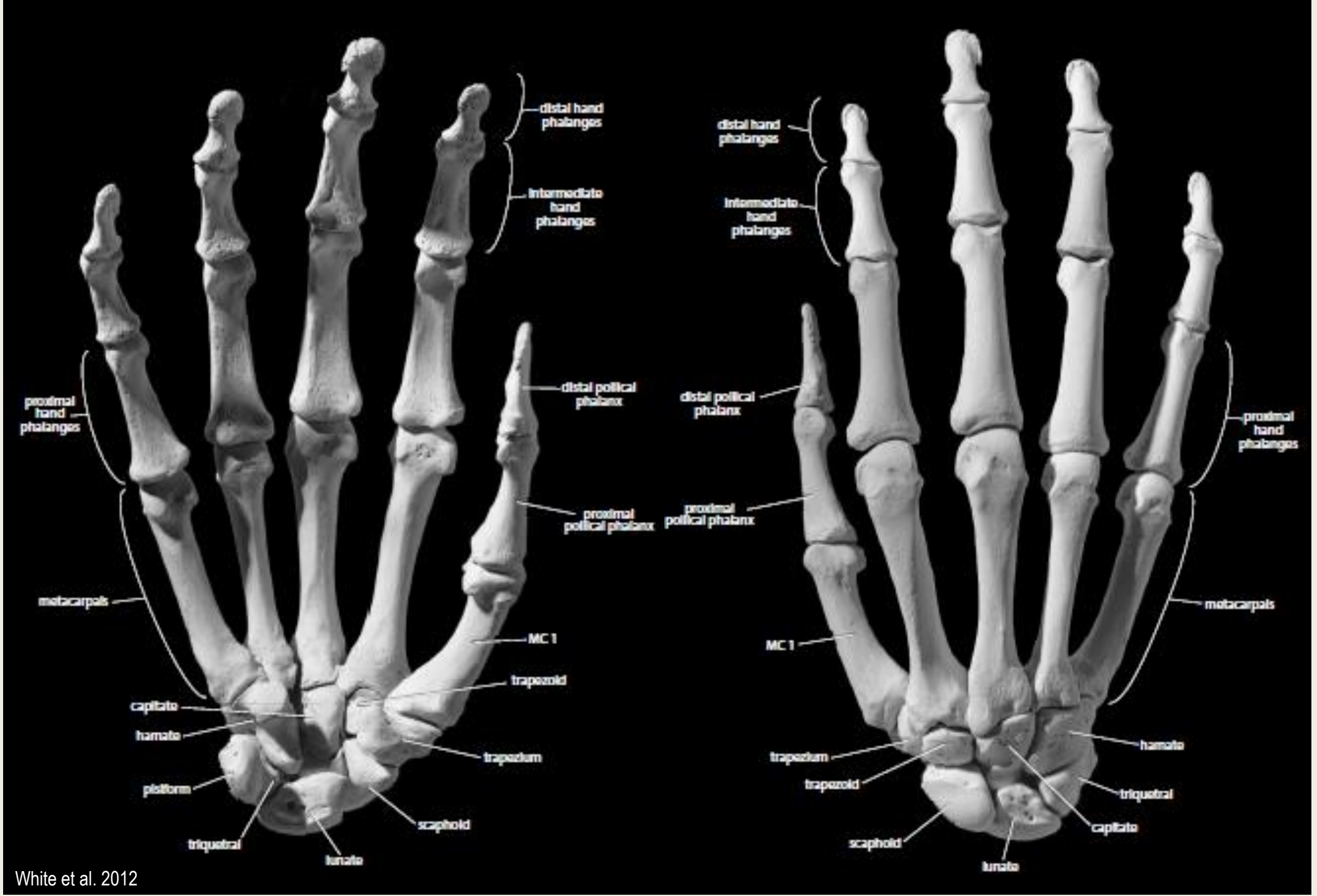
ARTI


Supination
Fovea of the head of the radius
Olecranon process of ulna
Proximal radioulnar joint
Supination
A
Supinated position


Pronation
Pronation
B
Pronated position


Supination
Pronation
ulna

ARTI



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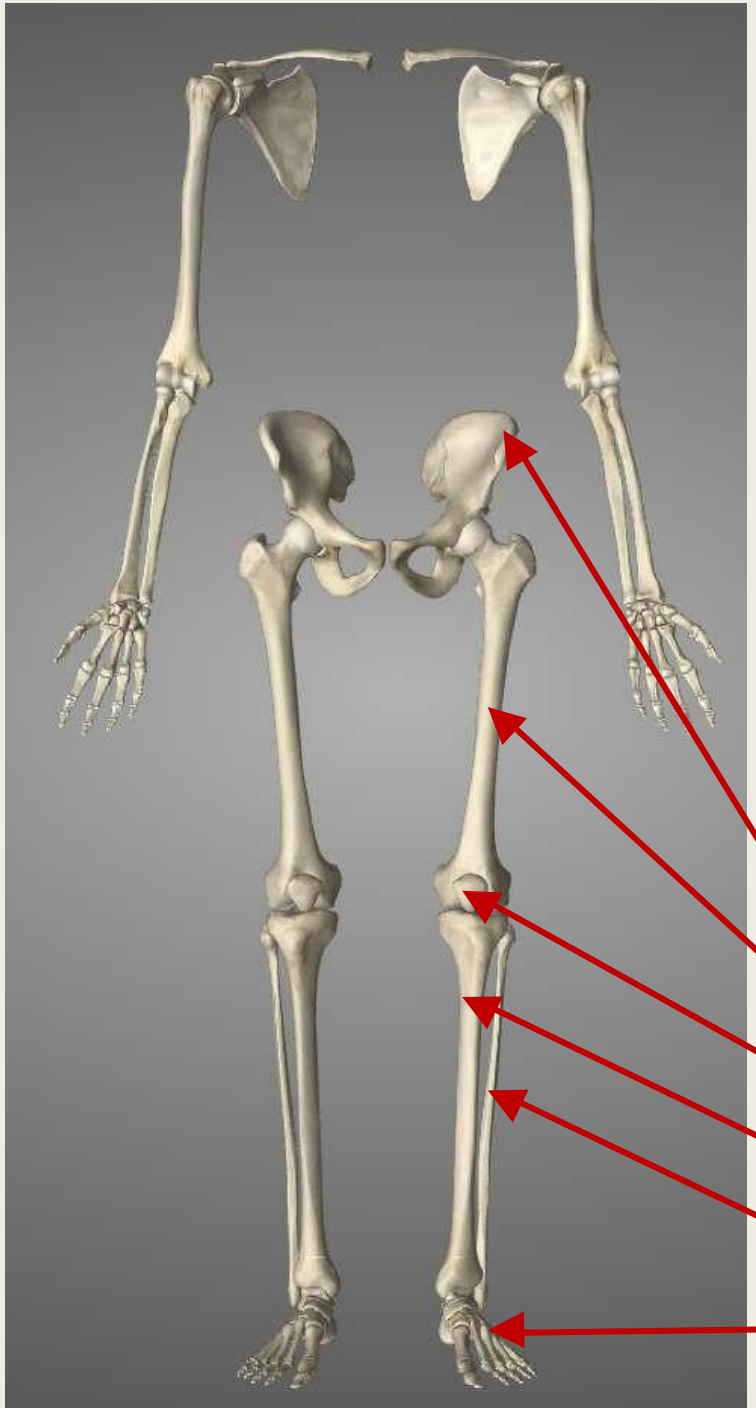
ARTI

Arto inferiore

ARTI

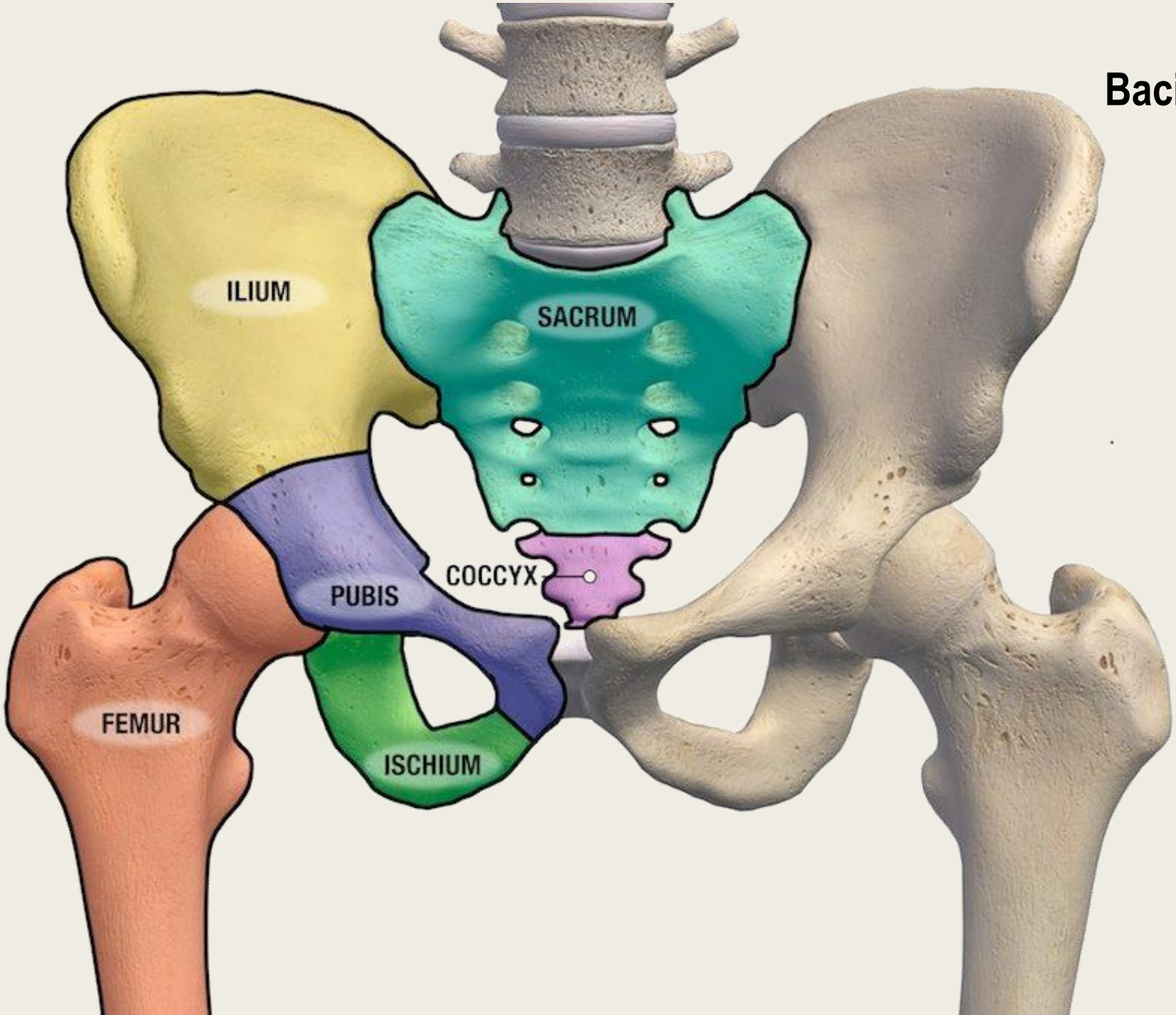


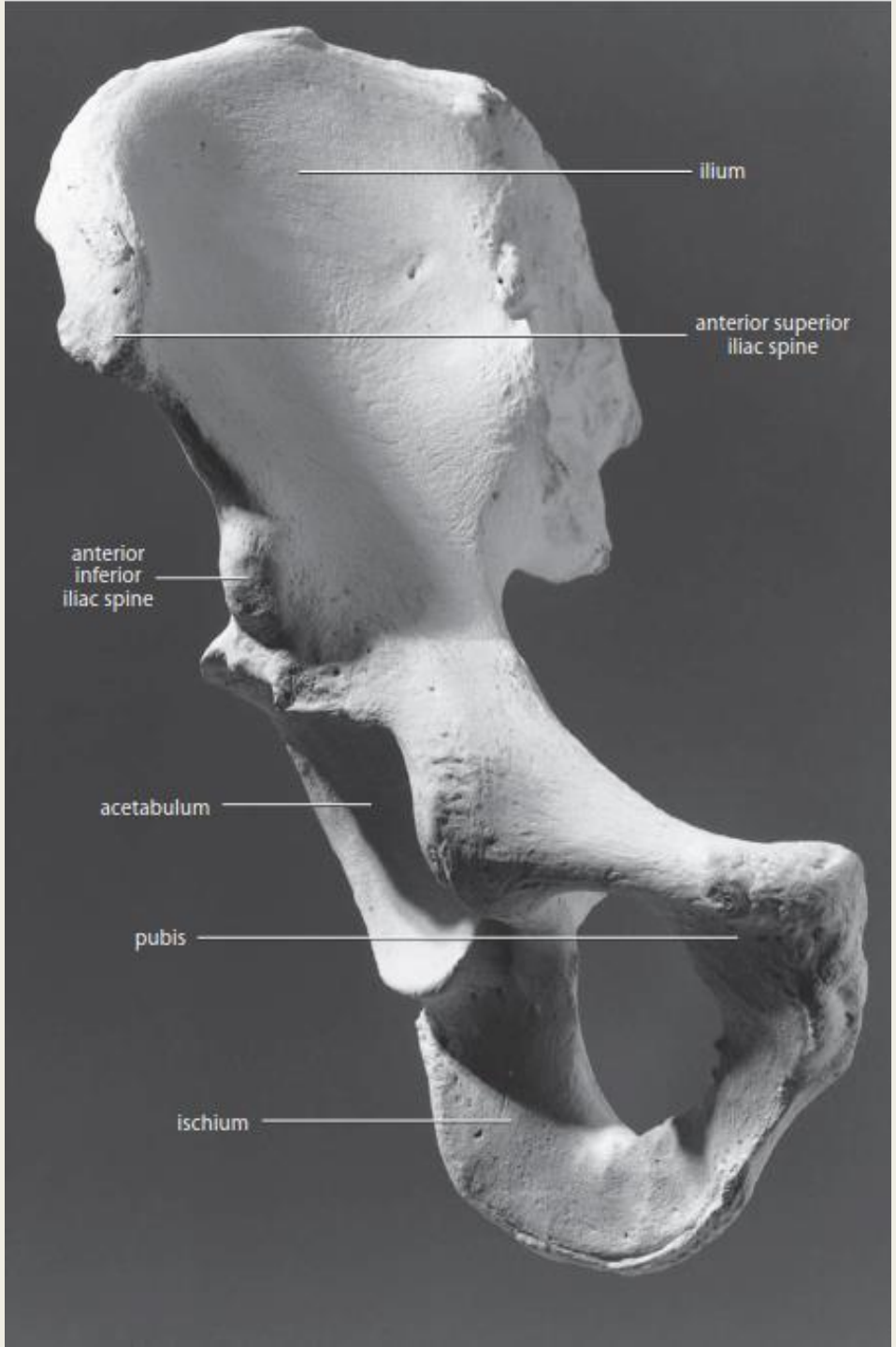
Arto inferiore

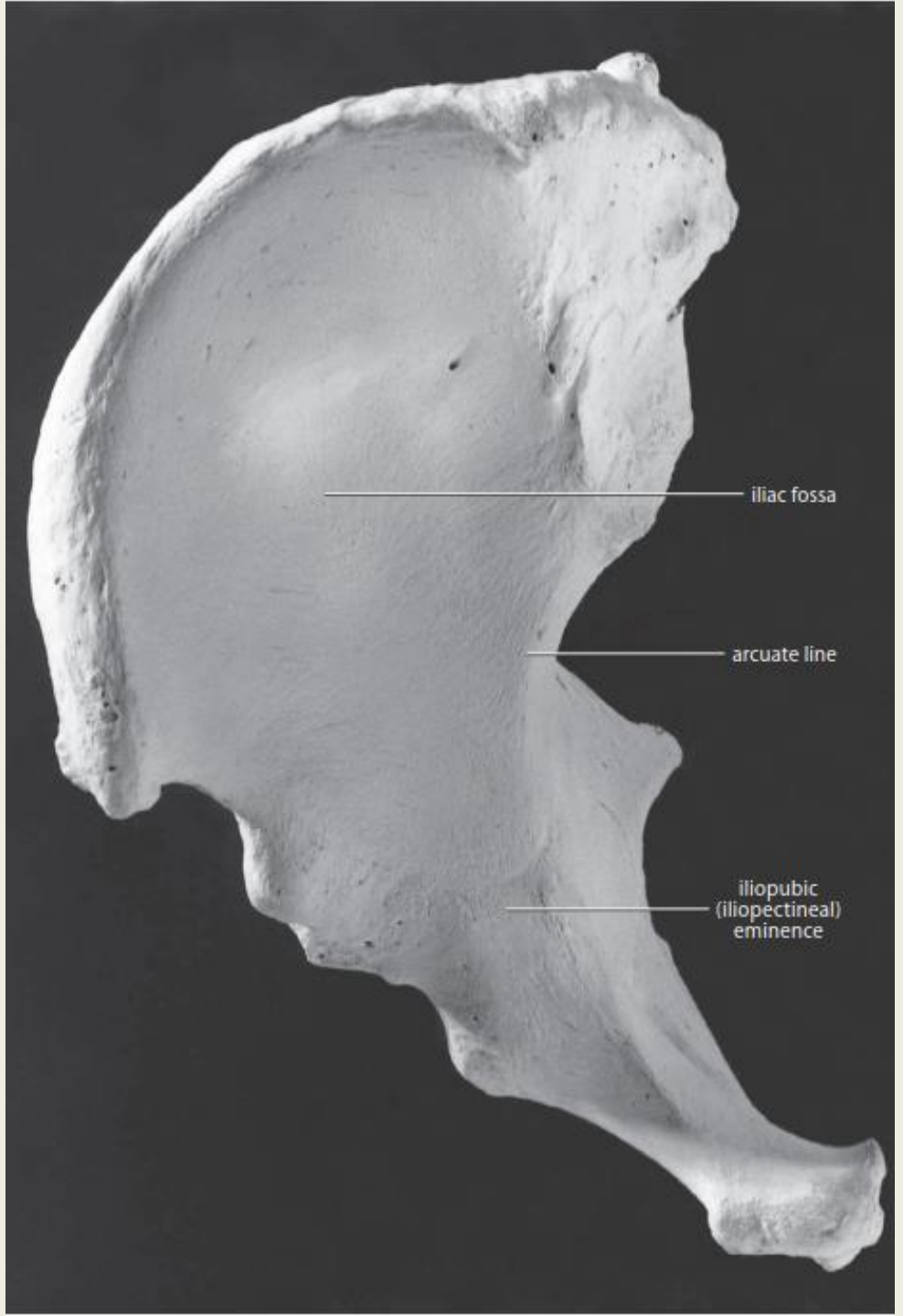
- Bacino
- Femore
- Rotula (patella)
- Tibia
- Fibula (perone)
- Tarsali, metatarsali, falangi

ARTI

Bacino

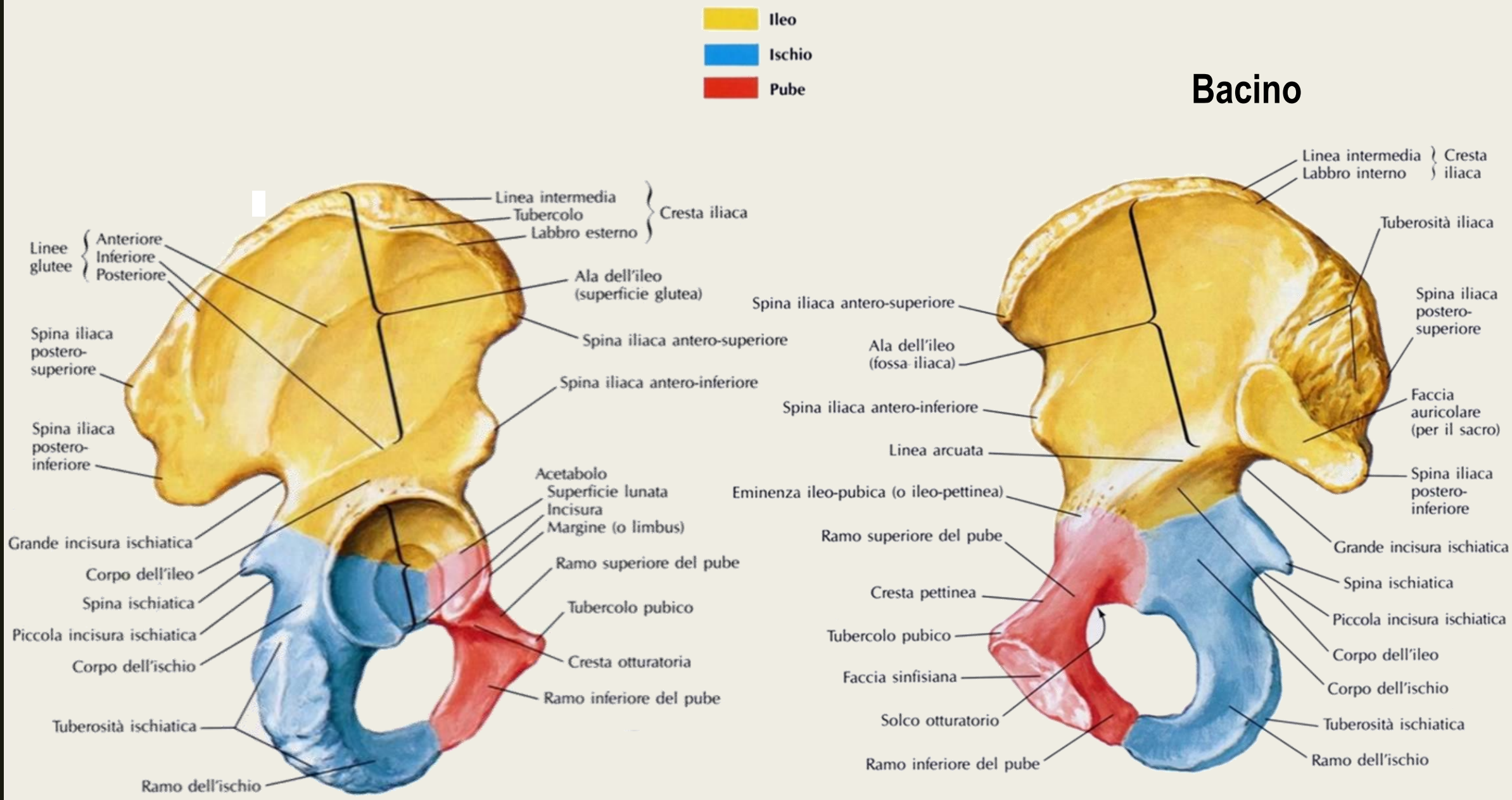



ilium
anterior superior iliac spine
anterior inferior iliac spine
acetabulum
pubis
ischium


iliac fossa
arcuate line
iliopubic (iliopectineal) eminence

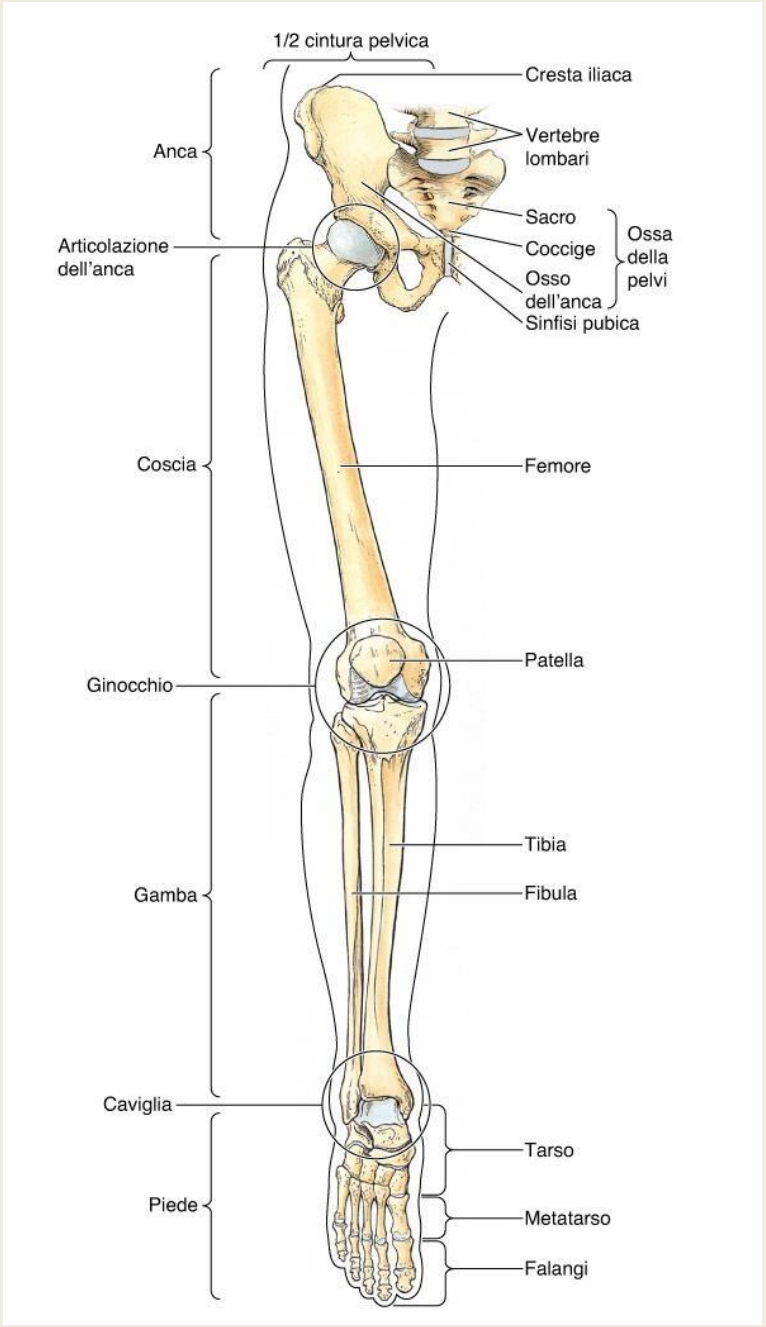
ARTI

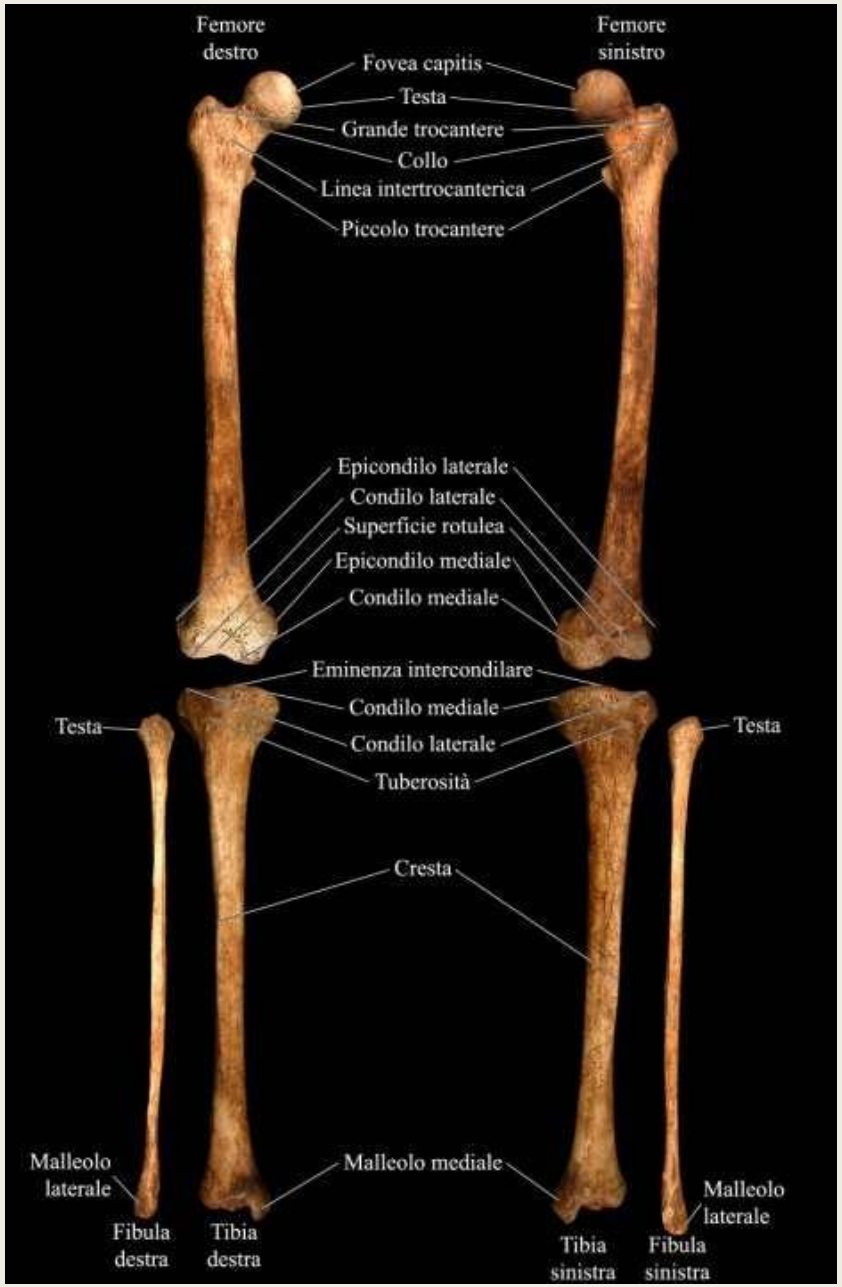
Bacino



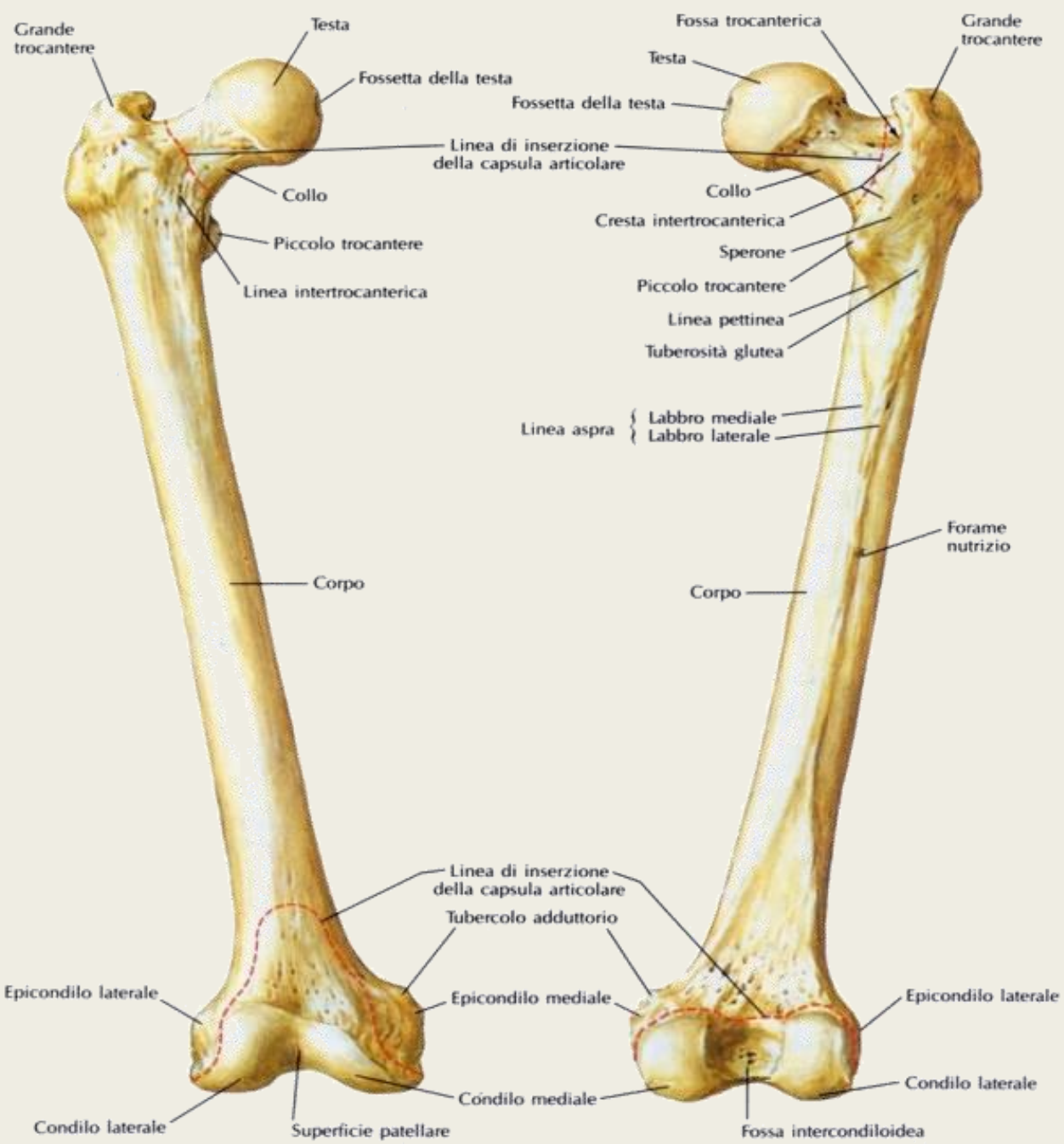
Bertoldi et al.

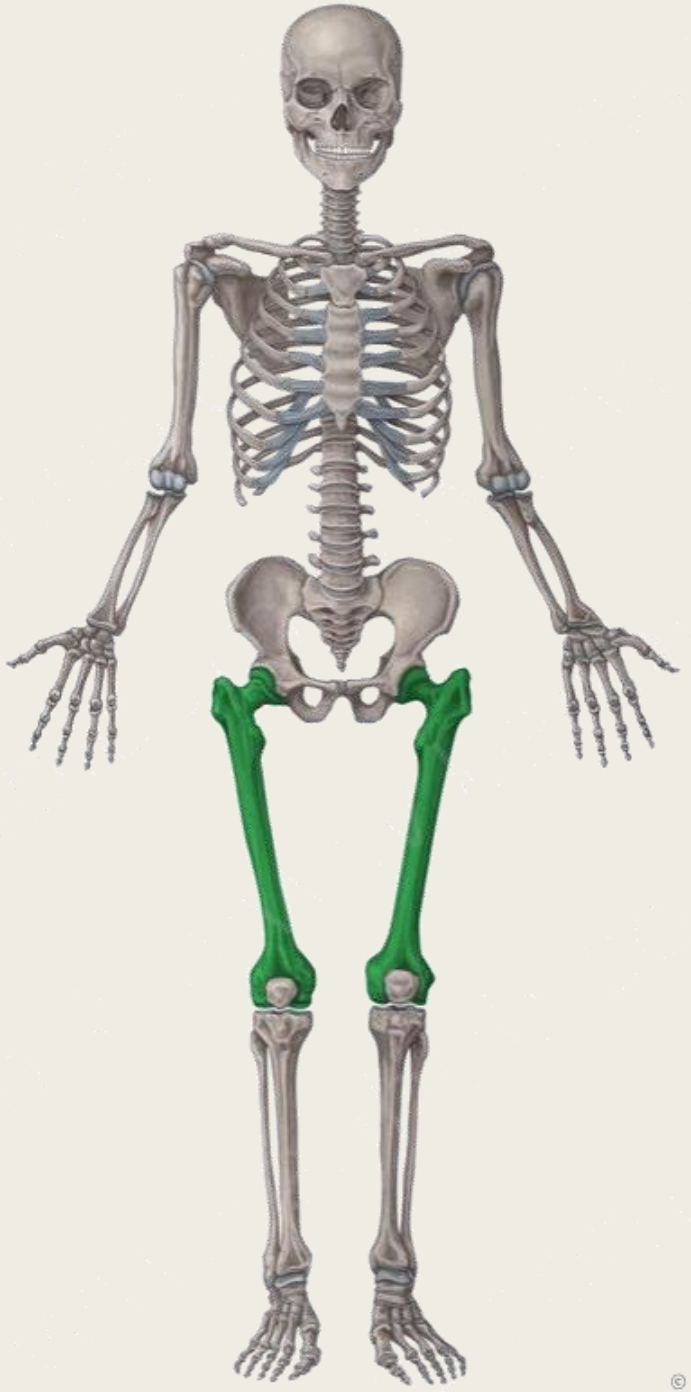
ARTI


1/2 cintura pelvica
Cresta iliaca
Anca
Vertebre lombari
Sacro
Coccige
Articolazione dell'anca
Osso dell'anca
Ossa della pelvi
Sinfisi pubica
Coscia
Femore
Patella
Ginocchio
Tibia
Gamba
Fibula
Caviglia
Tarso
Piede
Metatarso
Falangi

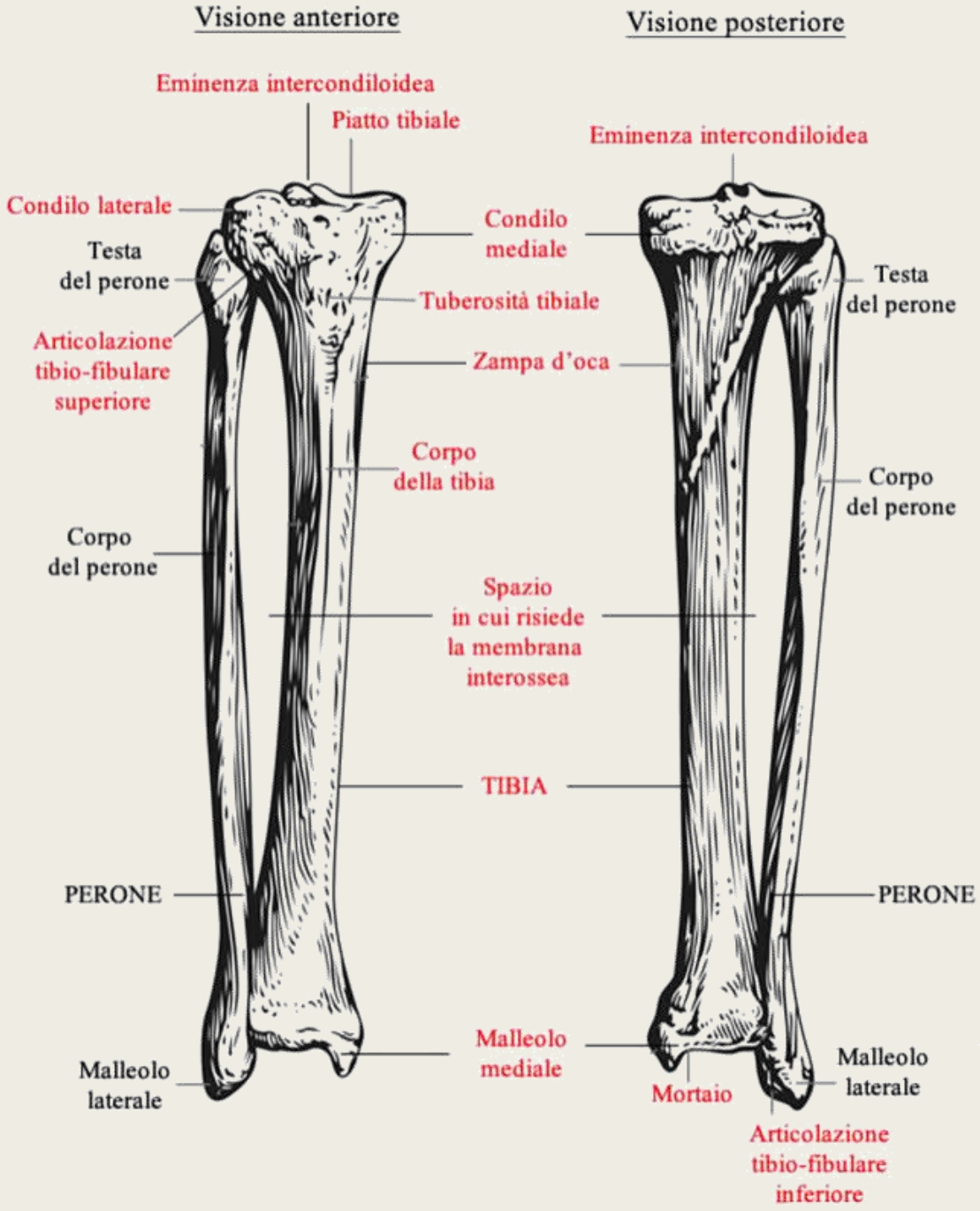

Femore destro
Femore sinistro
Fovea capitis
Testa
Grande trocantere
Collo
Linea intertrocanterica
Piccolo trocantere
Epicondilo laterale
Condilo laterale
Superficie rotulea
Epicondilo mediale
Condilo mediale
Eminenza intercondilare
Condilo mediale
Condilo laterale
Tuberosità
Testa
Testa
Cresta
Malleolo laterale
Malleolo mediale
Malleolo laterale
Fibula destra
Tibia destra
Tibia sinistra
Fibula sinistra

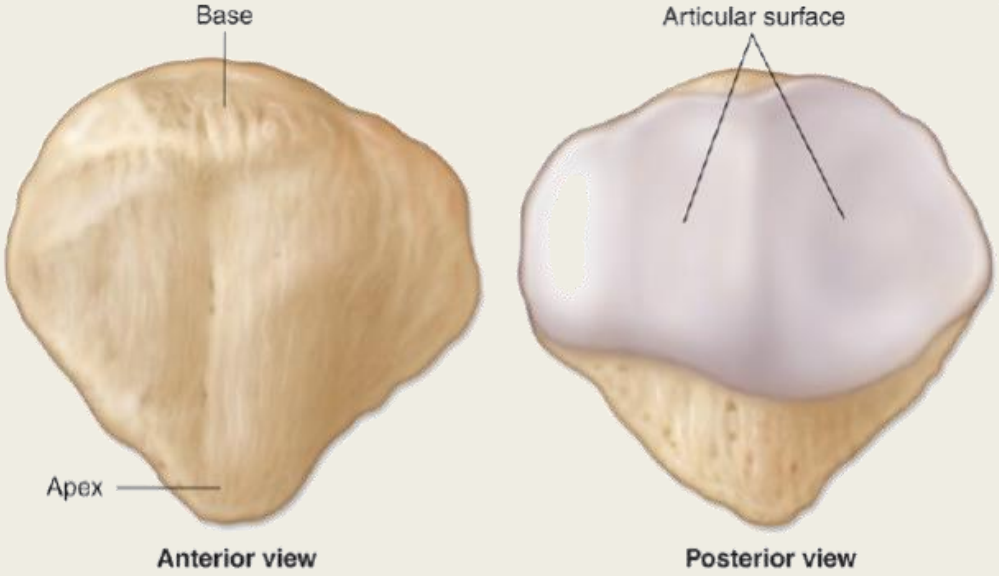
ARTI

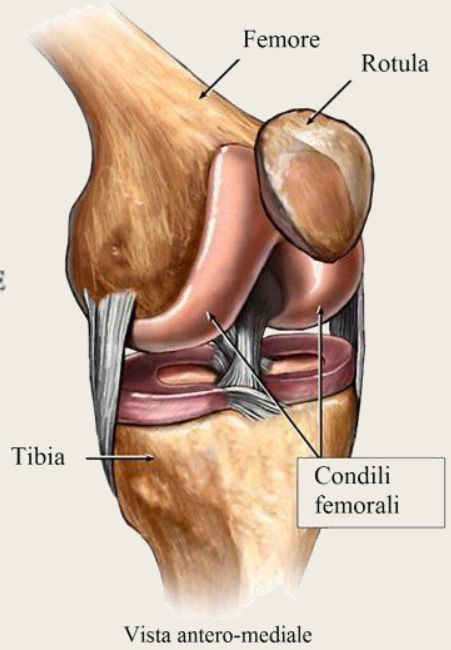

Grande trocantere
Testa
Fossetta della testa
Linea di inserzione della capsula articolare
Collo
Piccolo trocantere
Linea intertrocanterica
Corpo
Fossa trocanterica
Grande trocantere
Testa
Fossetta della testa
Collo
Cresta intertrocanterica
Sperone
Piccolo trocantere
Linea pettinea
Tuberosità glutea
Linea aspra
Labbro mediale
Labbro laterale
Forame nutrizio
Corpo
Linea di inserzione della capsula articolare
Tubercolo adduttorio
Epicondilo laterale
Epicondilo mediale
Condilo mediale
Condilo laterale
Superficie patellare
Epicondilo laterale
Condilo laterale
Fossa intercondiloidea

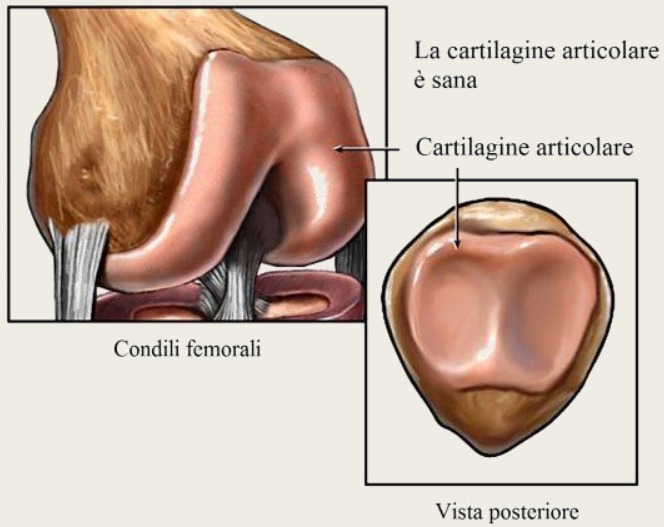


ARTI

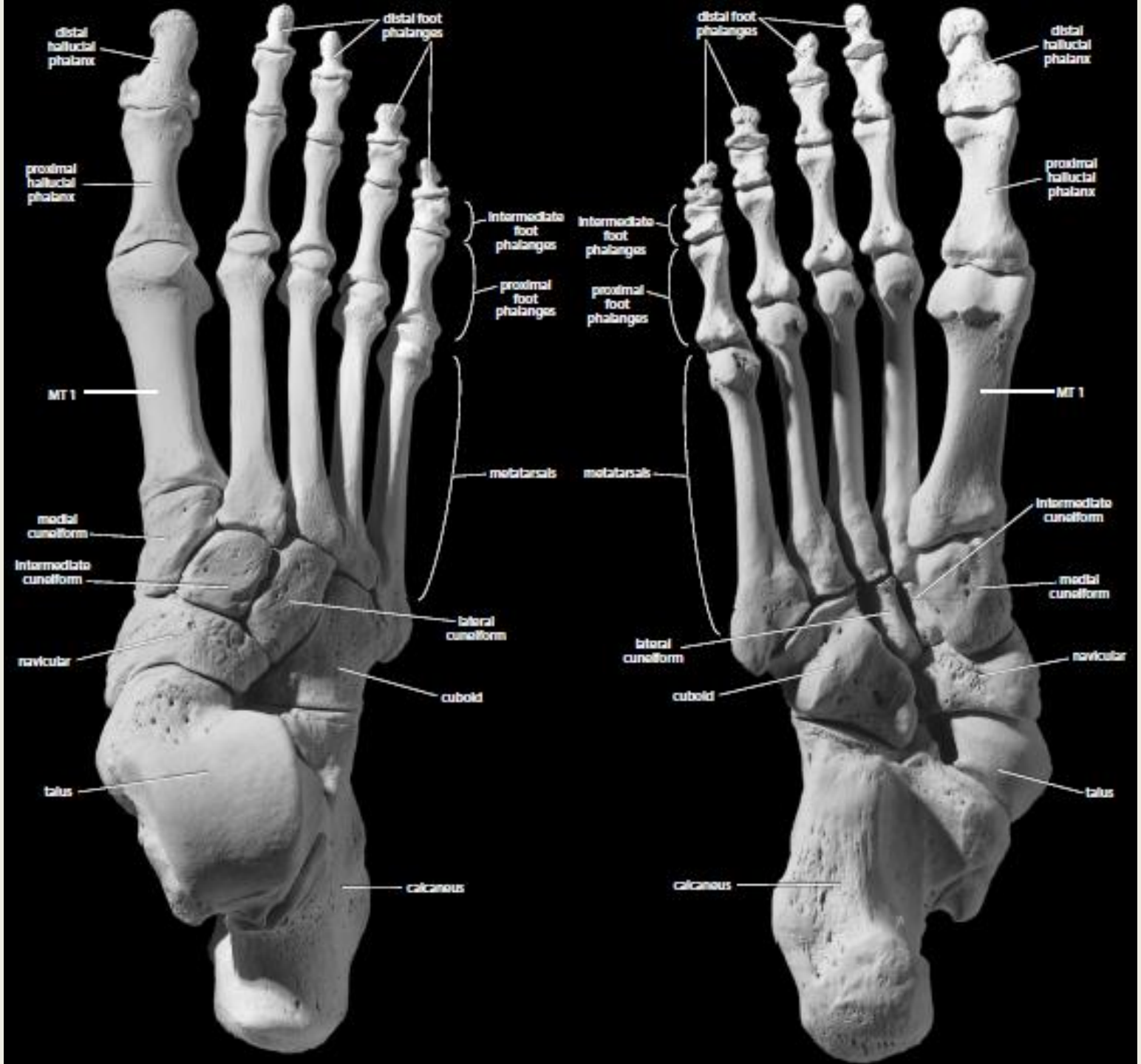

Visione anteriore
Visione posteriore
Eminenza intercondiloidea
Piatto tibiale
Condilo laterale
Testa del perone
Articolazione tibio-fibulare superiore
Condilo mediale
Tuberosità tibiale
Zampa d'oca
Corpo della tibia
Corpo del perone
Spazio in cui risiede la membrana interossea
TIBIA
PERONE
Malleolo laterale
Malleolo mediale
Eminenza intercondiloidea
Testa del perone
Corpo del perone
PERONE
Malleolo laterale
Mortaio
Articolazione tibio-fibulare inferiore

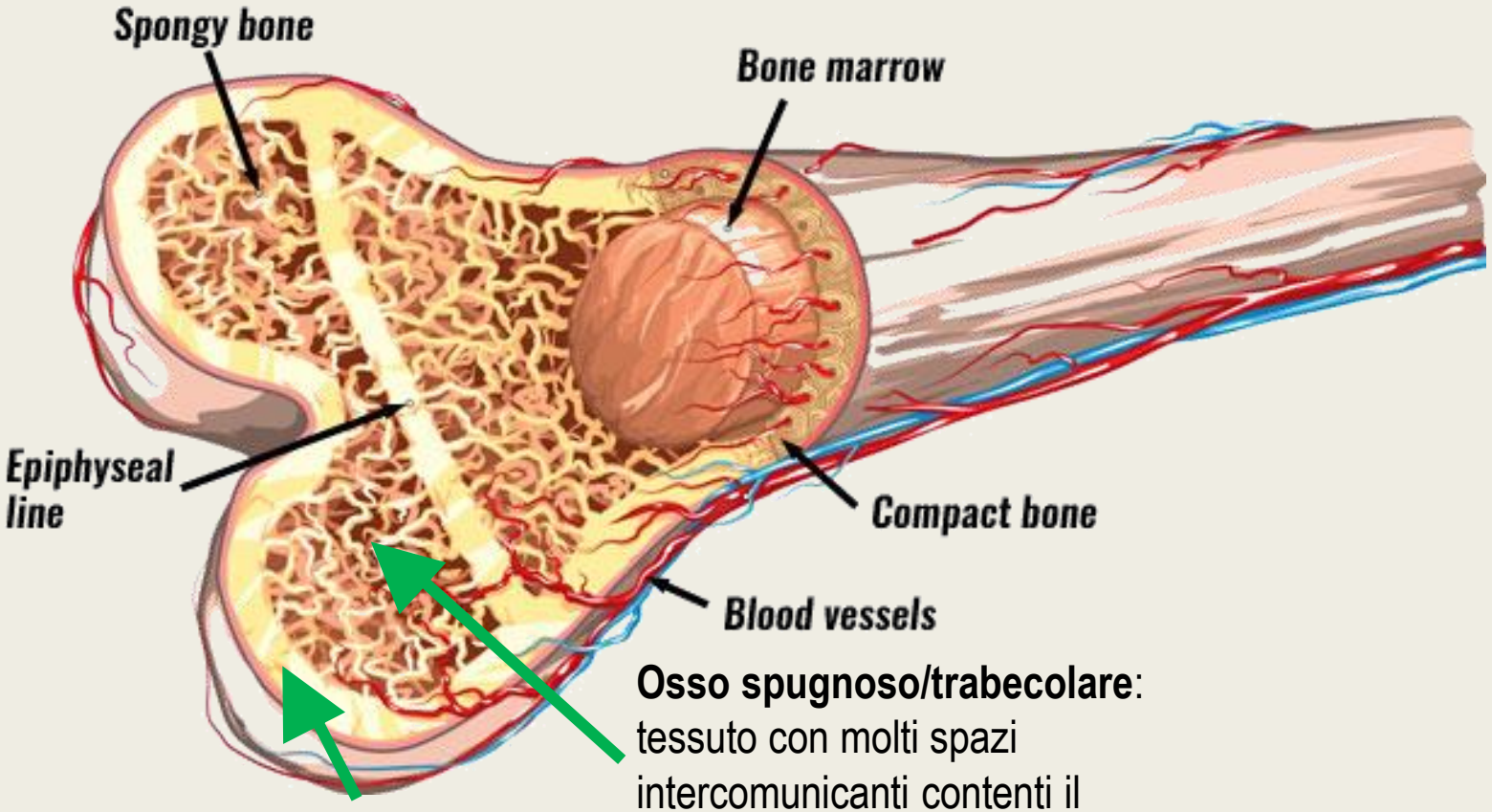

Base
Apex
Anterior view
Articular surface
Posterior view


Femore
Rotula
Tibia
Condili femorali
Vista antero-mediale


La cartilagine articolare è sana
Cartilagine articolare
Condili femorali
Vista posteriore

ARTI


distal hallucial phalanx
distal foot phalanges
proximal hallucial phalanx
intermediate foot phalanges
proximal foot phalanges
MT 1
metatarsals
medial cuneiform
intermediate cuneiform
lateral cuneiform
navicular
cuboid
talus
calcaneus
distal foot phalanges
distal hallucial phalanx
proximal hallucial phalanx
intermediate foot phalanges
proximal foot phalanges
MT 1
metatarsals
intermediate cuneiform
medial cuneiform
lateral cuneiform
navicular
cuboid
talus
calcaneus



Osso spugnoso/trabecolare: tessuto con molti spazi intercomunicanti contenti il midollo

Osso compatto/corticale: tessuto osseo denso e lamellare che forma le pareti

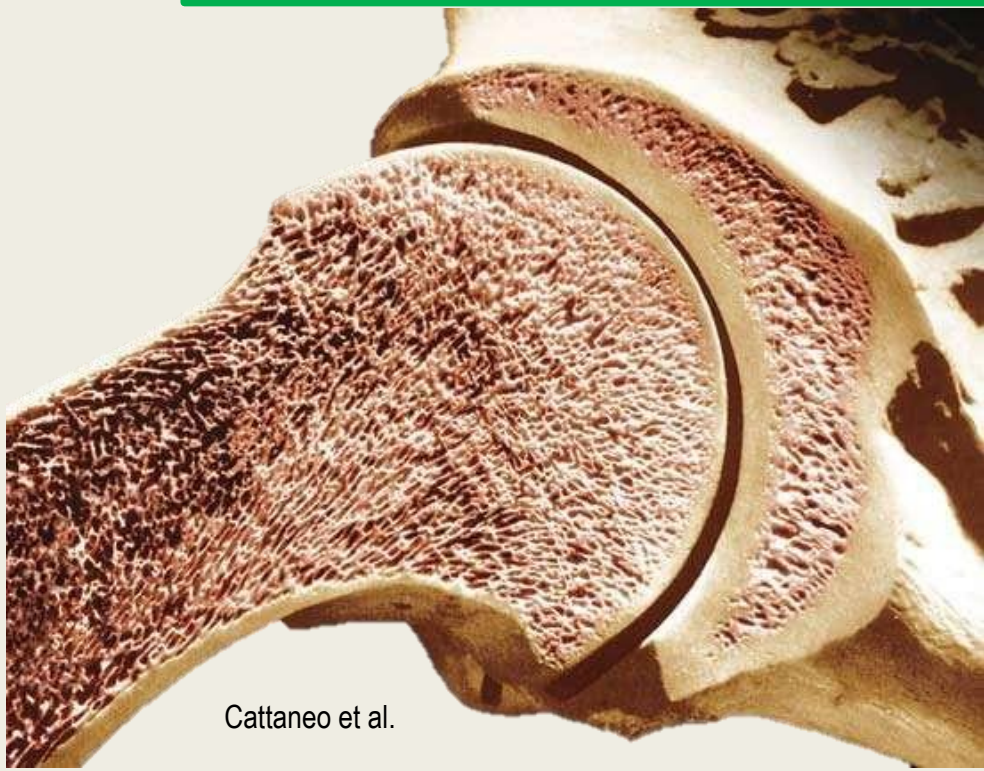
Composizione dell'osso

- componente mineralizzata

fosfato di calcio (86%) in forma di cristalli di idrossiapatite, carbonato di calcio (12%), fostato di magnesio (1,5%), fluoruro di magnesio (0,5%) e tracce di ossido di ferro.

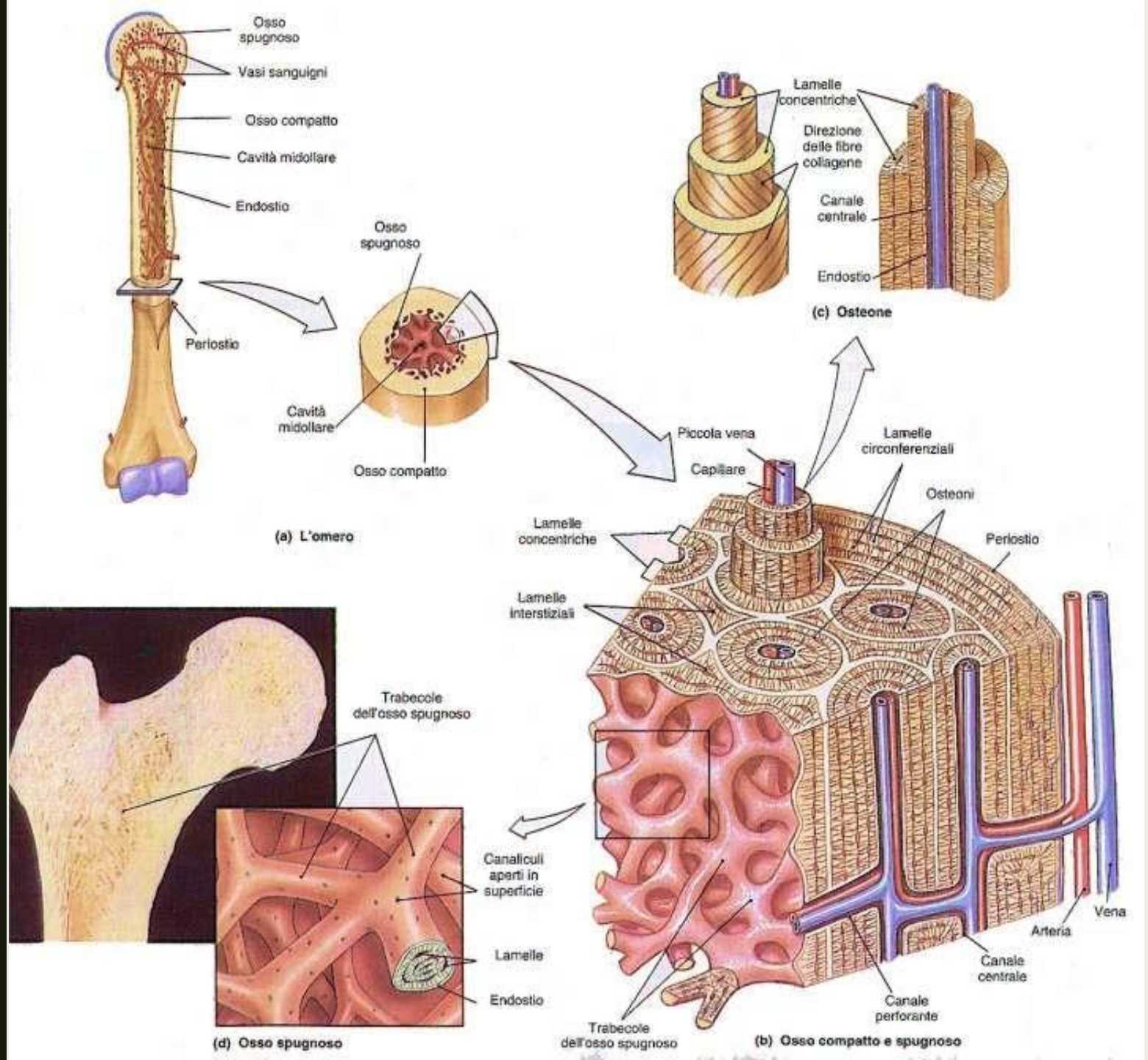
- componente organica

collagene (fibra di natura proteica che costituisce parte del tessuto connettivo negli animali)



Cattaneo et al.

Formazione e rimodellamento



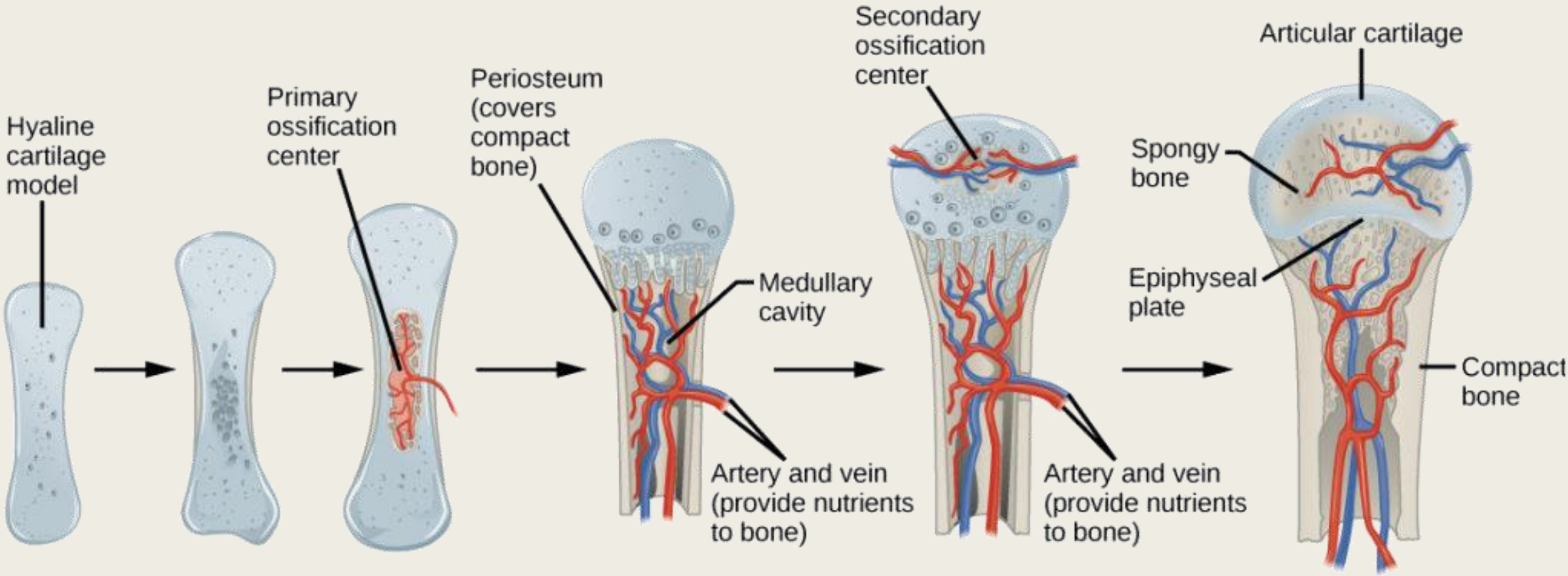
Tre tipi di cellule:

- **osteociti**: cellule dell'osso maturo (osteone).

- **osteoblasti**: responsabili del rinnovamento e della produzione di nuovo osso mediante l'osteogenesis (quando un osteoblasto viene circondato dai cristalli di idrossiapatite e dalle fibre di collagene si trasforma in osteocita)

- **osteoclasti**: facilitano il riassorbomento di tessuto osseo in eccedenze (osteolisi) e favoriscono l'osteogenesi.

Processi di ossificazione



Processi di ossificazione


BONES
SKELETAL MUSCLES