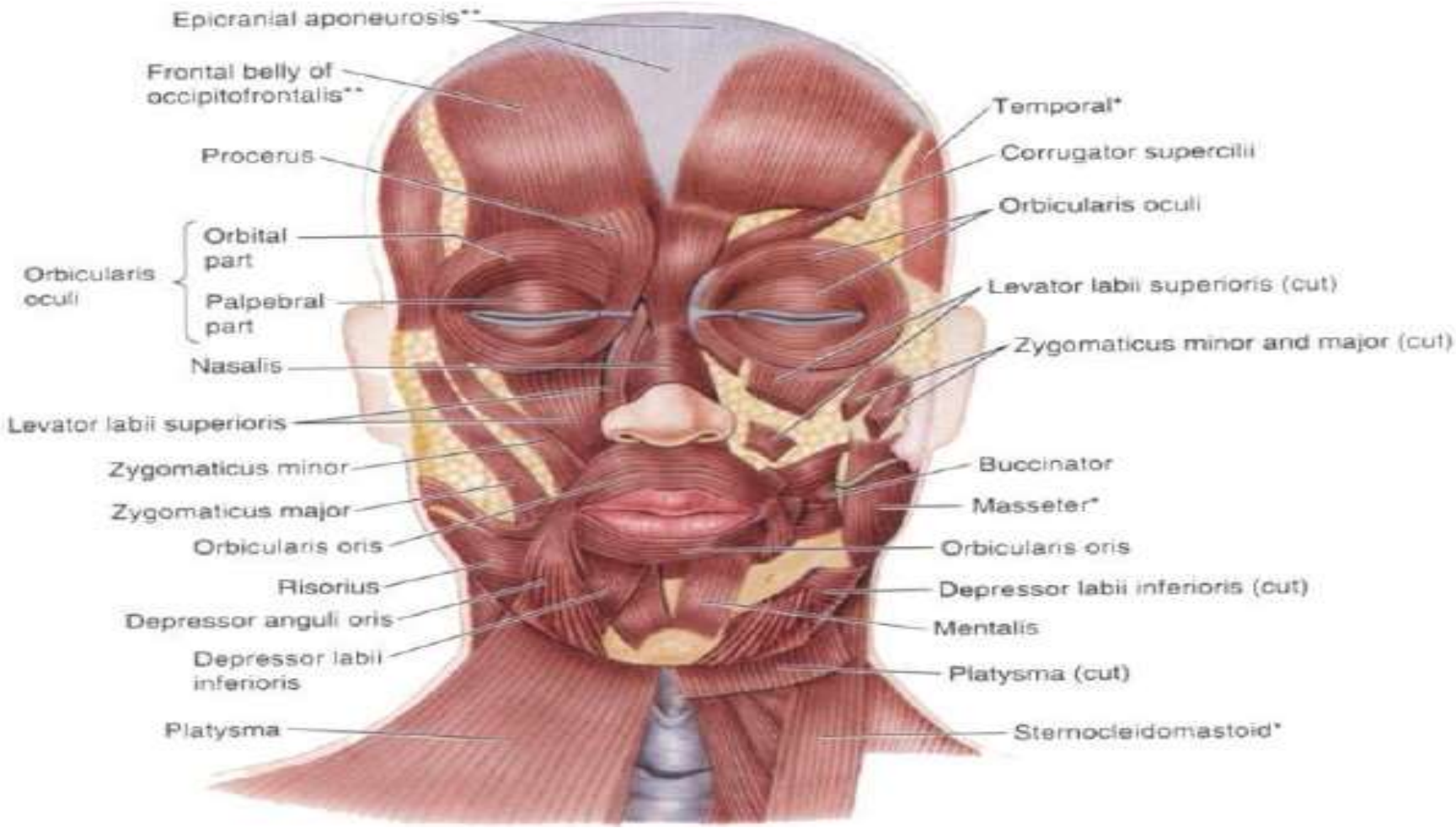
Muscles of the Head,

Danil Hammoudi.MD

Muscles of the Face

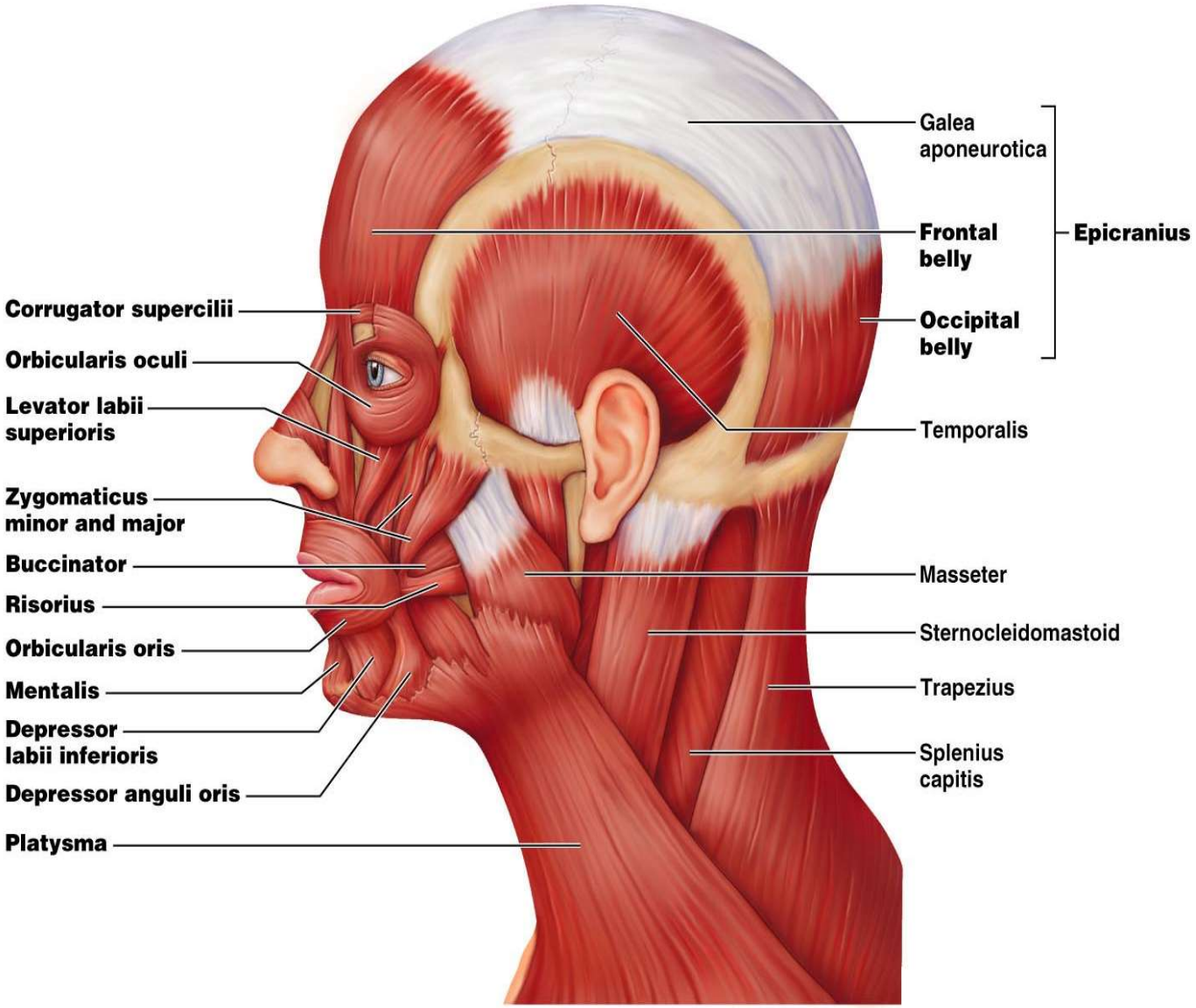


MUSCLE NAME		ORIGIN	INSERTION	ACTION	NERVE SUPPLY/ NOTES
Muscles of the Head and Neck:					
Occipito-frontalis	**Frontalis**	Galea aponeurotica	Skin of eyebrows	raises eyebrows; wrinkles skin of forehead	Facial
	Occipitalis	Occipital & temporal	galea aponeurotica	fixes aponeurosis and pulls scalp posteriorly	Facial
Orbicularis oculi		Frontal & maxillary bones	Eyelids	Closes eye; blinking, squinting; draws eyebrows inferiorly	Facial
Orbicularis oris		Maxilla & mandible	Muscle and skin of mouth	Closes lips; purses and protrudes lips (as in kissing)	Facial
Buccinator		Maxilla and mandible	Orbicularis oris	Draws corner of mouth laterally; compresses cheek (whistling, sucking); holds food between teeth	Facial
Masseter		Zygomatic arch and maxilla	Body and ramus of mandible	Prime mover of mandible elevation	Trigeminal (Mandibular Branch)
Temporalis		Temporal fossa	Coronoid process of mandible	Elevates, retracts and moves mandible side-to-side	Trigeminal (Mandibular Branch)
Sternocleidomastoid		Sternum & clavicle	Mastoid process	Each turns head toward opposite side or tilts head laterally; together, flex head on chest	Accessory, Cervical Spinal Nerves (2-4)
Platysma		Fascia of chest	Lower margin of mandible and skin of mouth	Depresses mandible (agonist); pulls lip down and back; tenses skin of neck	Facial

Zygomaticus Major	Facial Expression, mouth	Facial N. (VII), Buccal Branch		Skin and superficial fascia at angle of mouth	Pull the angle of the mouth outward	

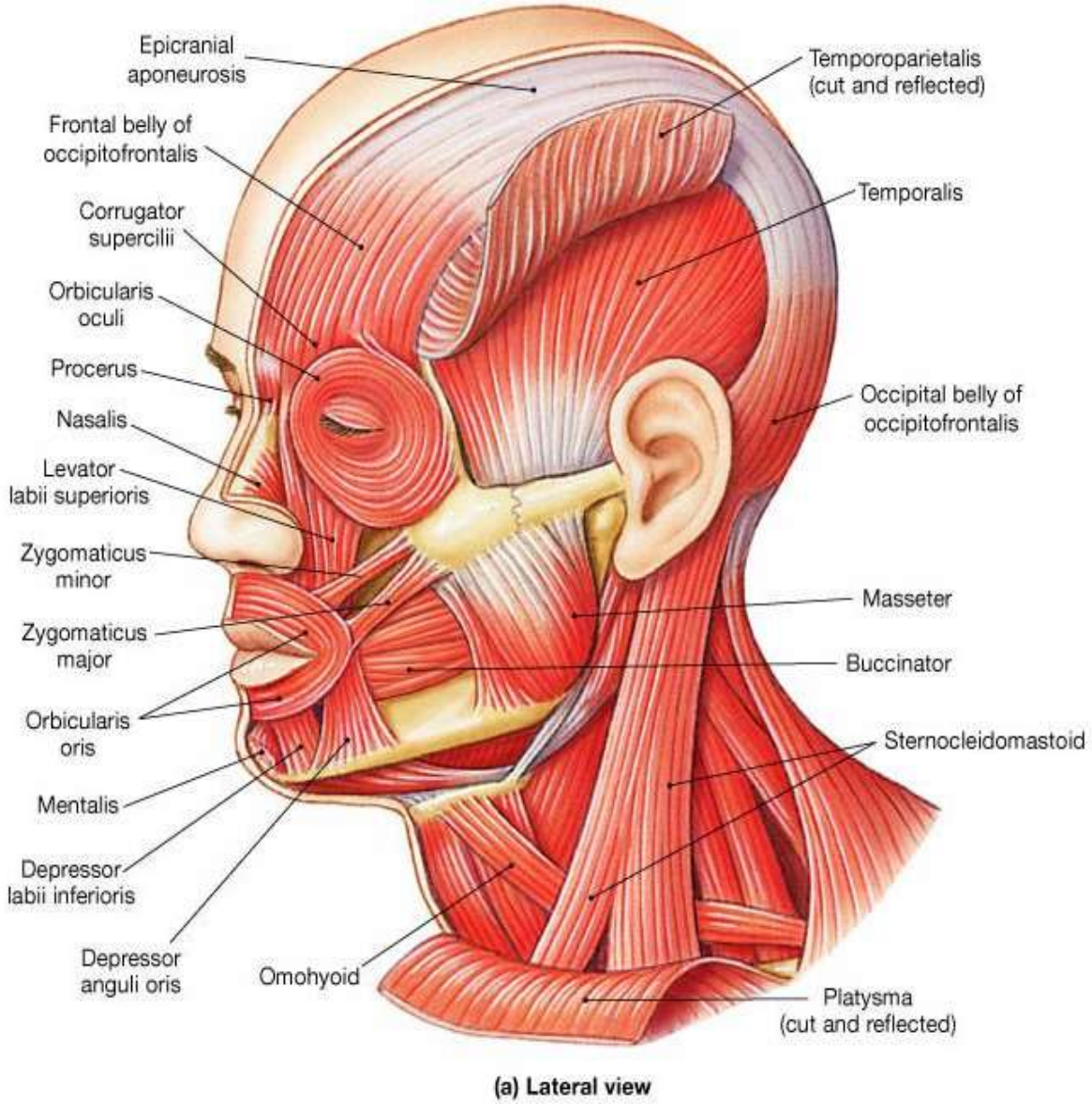
EYES MUSCLES				
Inferior Oblique	Eye, oculomotor	Oculomotor N. (III), inferior division	Pulls the eyeball UP (NOT down!) on a MEDIALLY ROTATED eye. And, it ABDUCTS the eyeball.	
Inferior Rectus	Eye, oculomotor	Oculomotor N. (III), inferior division	Rotates the eyeball downward	
Lateral Rectus	Eye, oculomotor	Abducens N. (VI)	Abducts the eyeball	
Medial Rectus	Eye, oculomotor	Oculomotor N. (III), Inferior Division	Adducts the eyeball	
Superior Oblique	Eye, oculomotor	Trochlear N. (IV)	Pulls the eyeball DOWN (NOT up!) on a MEDIALLY ROTATED eye. And, it ABDUCTS the eyeball.	Its tendon goes through a TROCHLEA, on the superoMEDIAL margin of the frontal bone. Then the tendon attaches to the underside of the eyeball, thus explaining its action.
Superior Rectus	Eye, oculomotor	Oculomotor N. (III), Superior Division	Rotates the eyeball upward	

Muscles of the Scalp, Face, and Neck



Muscles of the Scalp

- **<u>Epicranius (occipitofrontalis)</u>** – bipartite muscle consisting of the:
  - **Frontalis**
  - **Occipitalis**
  - **Galea aponeurotica – cranial aponeurosis connecting above muscles**
- These two muscles have alternate actions of pulling the scalp forward and backward



(a) Lateral view

Epicranius.= Occipitofrontalis

- The Epicranius covers the forehead, the top of the skull, and the back of the skull.
- It has two bellies, joined in the middle by a large aponeurosis[galea aponeurotica (epicranialaponeurosis)] .
- **Its primary action is to raise the eyebrows.**

- **Orbicularis oculi.**
  - The primary action is to close the eye.
- **Orbicularis oris.**
  - **The primary action of this muscle is to close or "purse" the lips.**
  - **This muscle is used when whistling or kissing**.

- **Masseter* .**
  - The primary action of this muscle is to elevate the mandible.
  - **This muscle originates on the zygomatic arch and maxilla, and it inserts on the angle and ramus of the mandible**

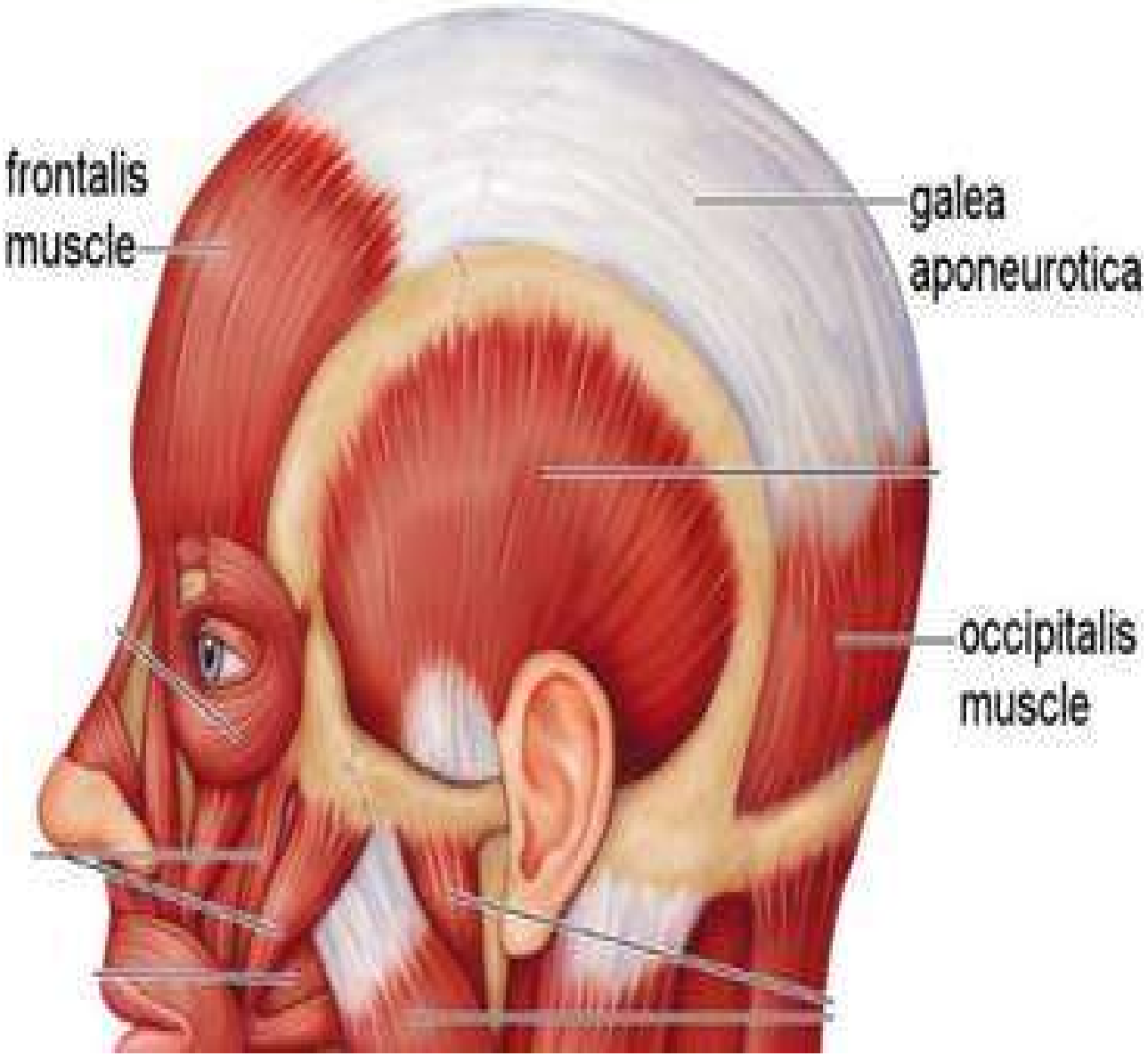
Temporalis *.It should be easy to remember the name of this muscle, as it covers the temporal bone.

Its primary action is to elevate the mandible.

- closing the mouth (accomplished by the masseter and temporalismuscles)
- closing the lips (accomplished by the orbiculariso ris).
- The temporalis originates on the temporal bone
- inserts on the coronoidp rocess of the mandible.

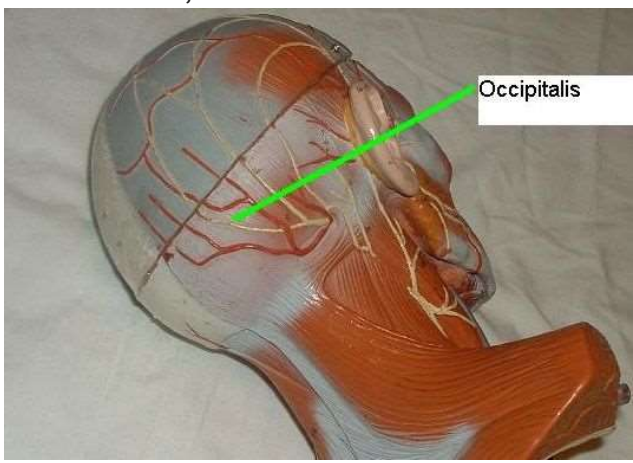
Platysma.

The primary action of the platysmai s to depress the mandible.

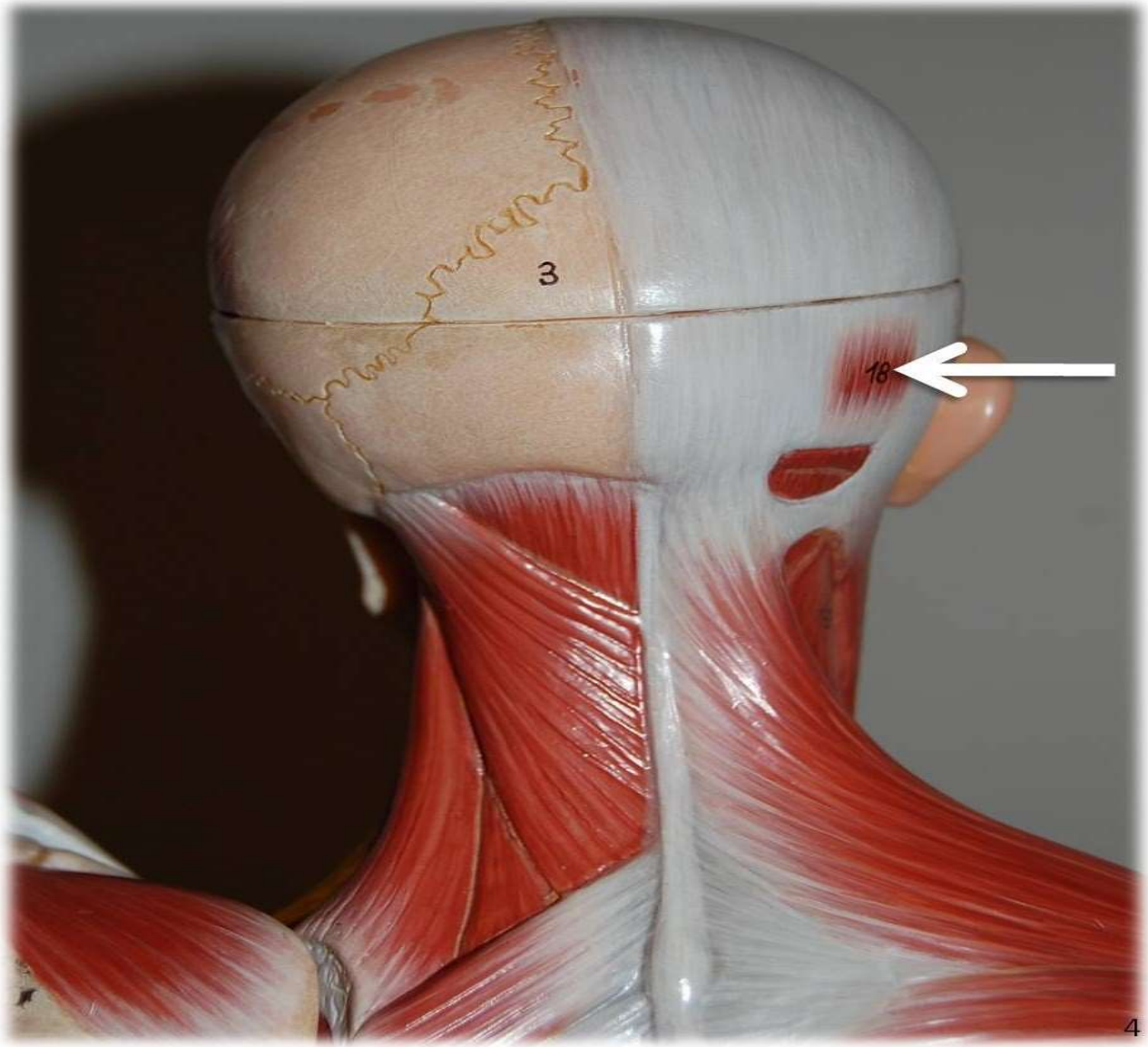


strong tendinous layer that is located below the subcutaneous tissue and covers the calvaria. It is a tough, fibrous epicranial aponeurosis. Held by dense connective tissue, the arteries of the scalp anastomose freely. Allow movevement of the scalp.

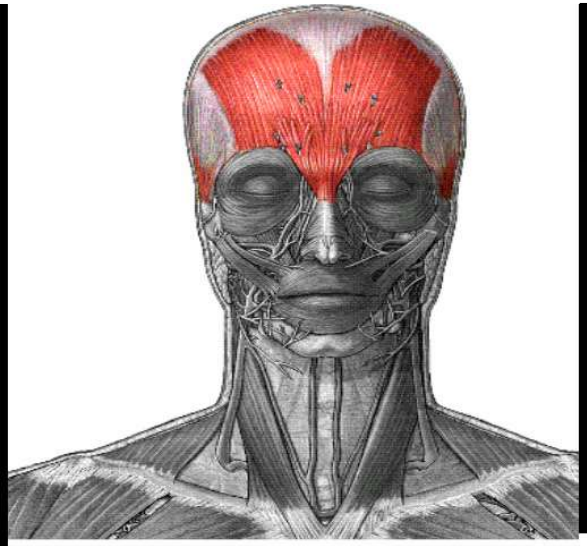
arises from the lateral two-thirds of the superior nuchal lines and from the mastoid part of the temporal bone, inserts into the galea aponeurotica, and acts to move the scalp.



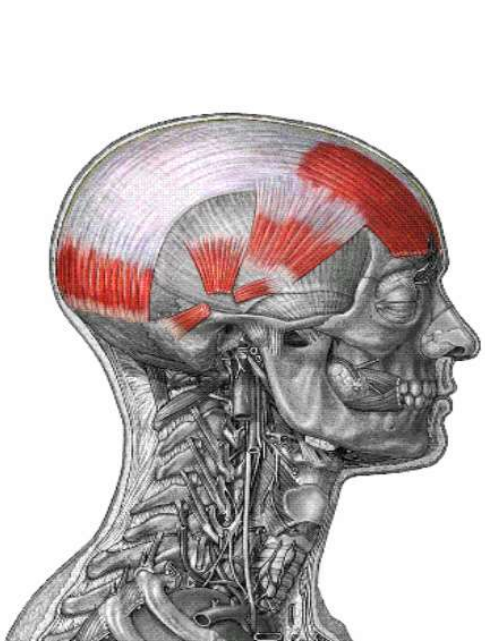
Occipitalis

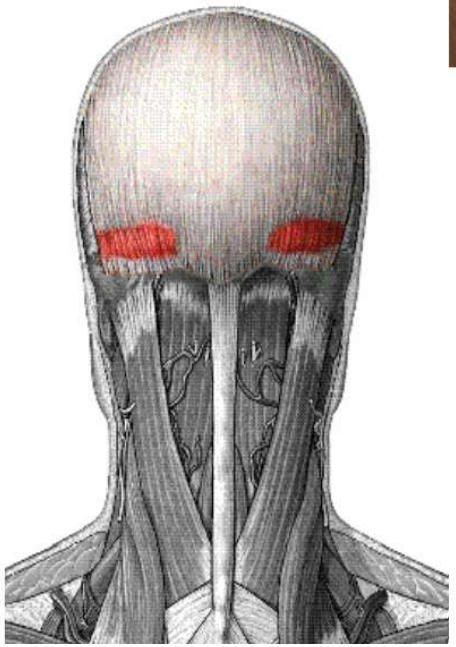


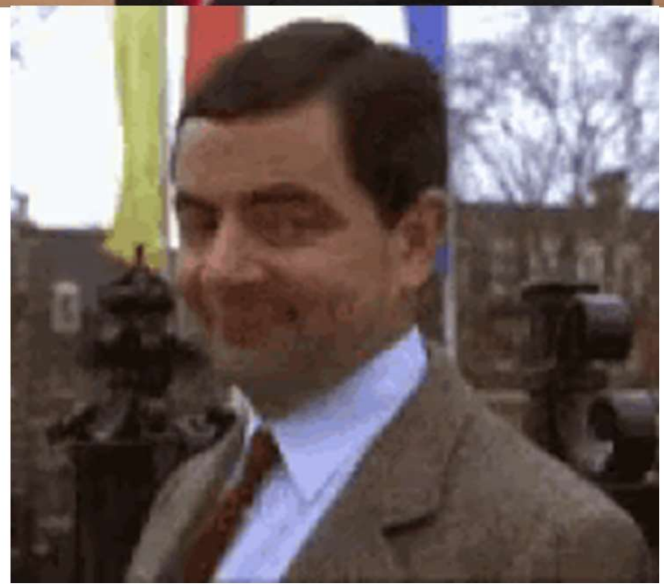
Draws back scalp, wrinkles forehead



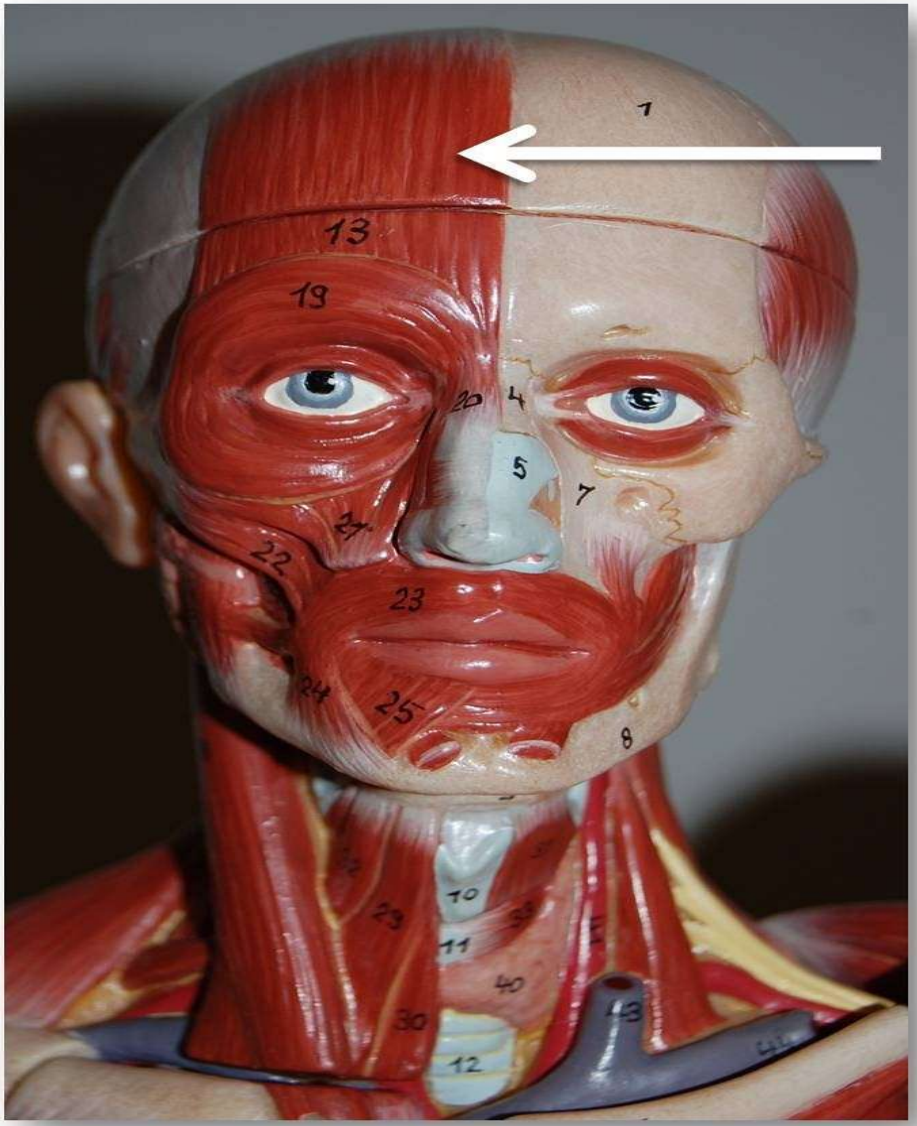
Epicranius.





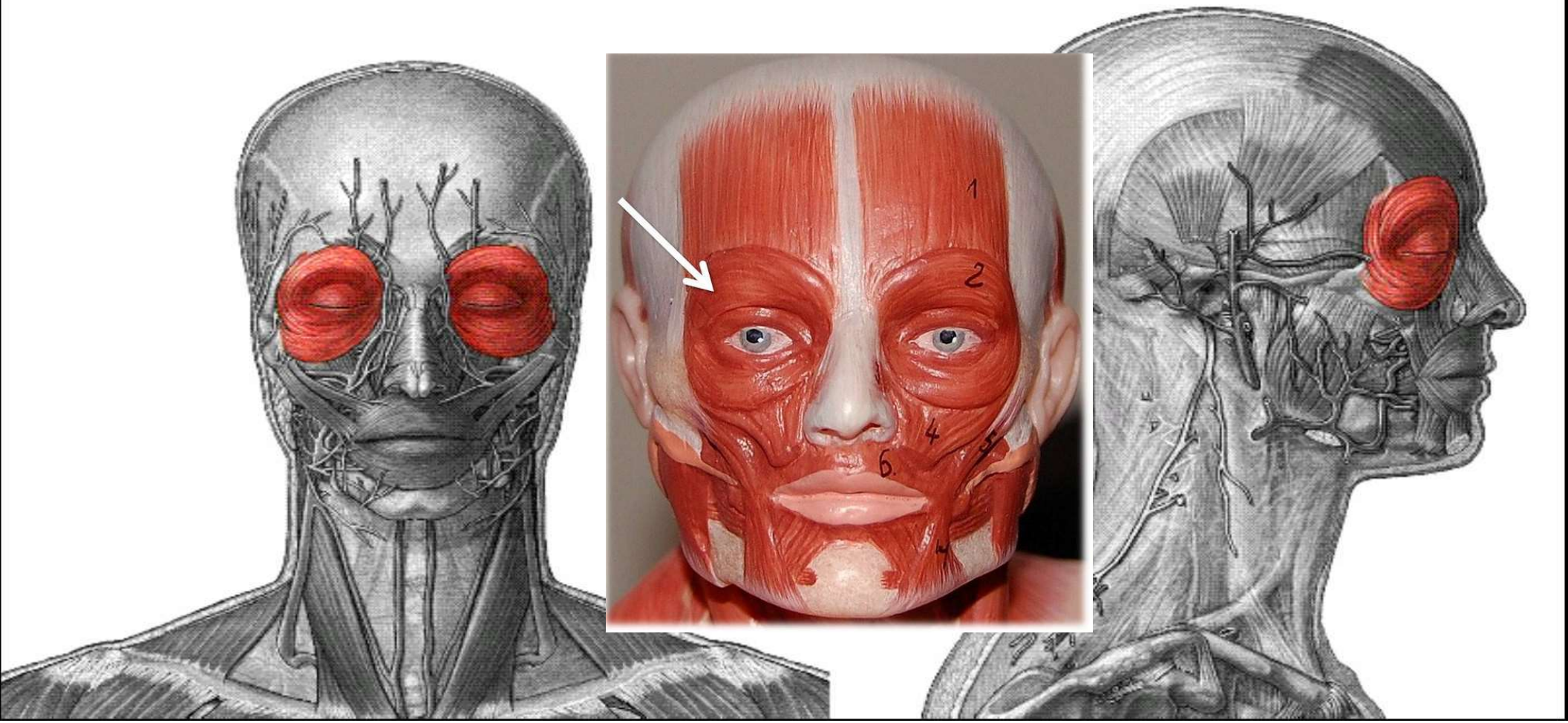


Frontalis



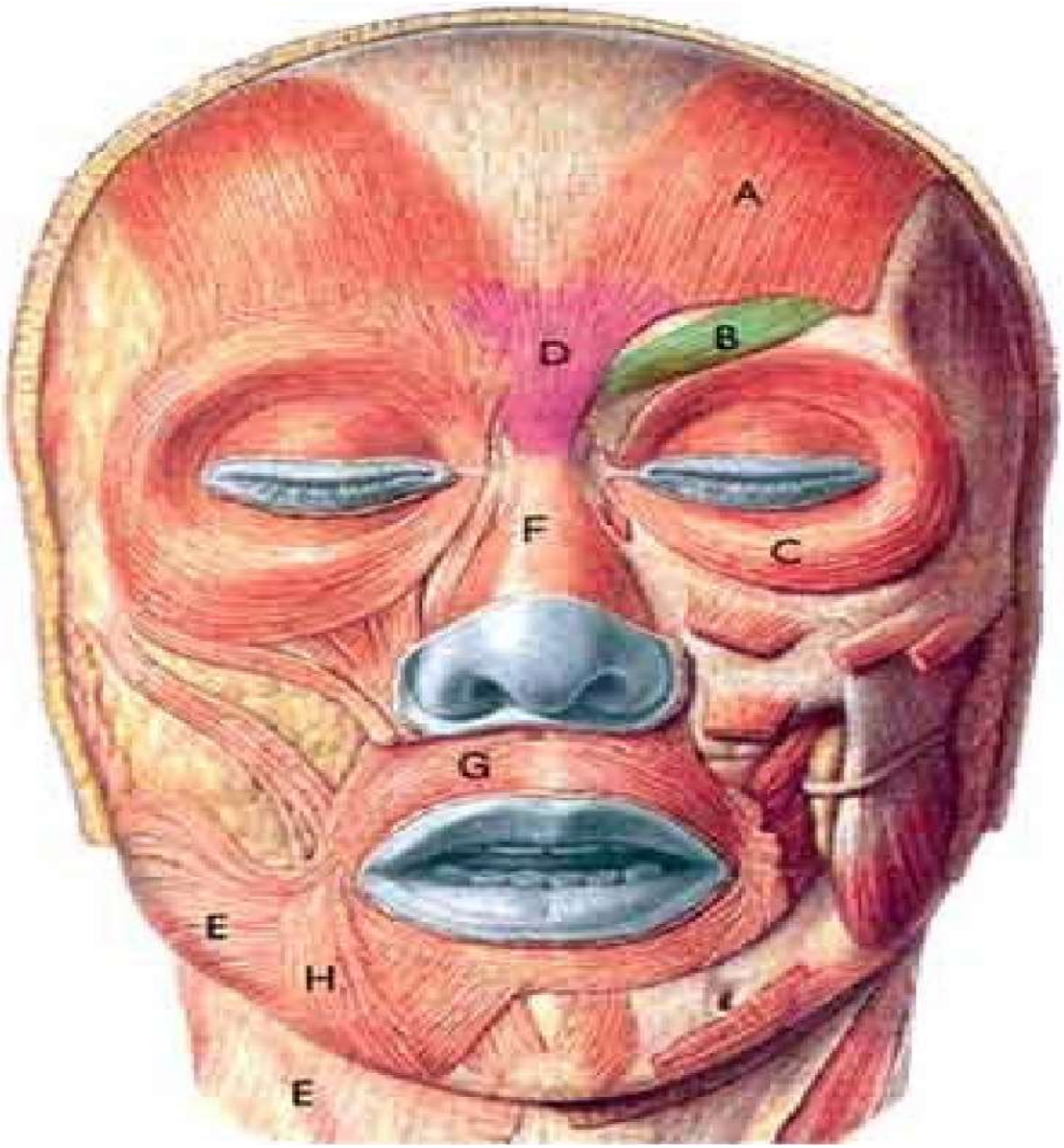
Draws back scalp, wrinkles forehead, raises eyebrows

Orbicularis oculi.



Orbicularis oculi

Closes eyelids; used in blinking, winking, and squinting



The primary muscles of facial expression treated with botulinum toxin administration include:

(A) Frontalis
(B) Corrugator and Depressor supercilli complex
(C) Orbicularis oculi
(D) Procerus
(E) Platysma
(F) Nasalis
(G) Orbicularis oris
(H) Depressor anguli oris

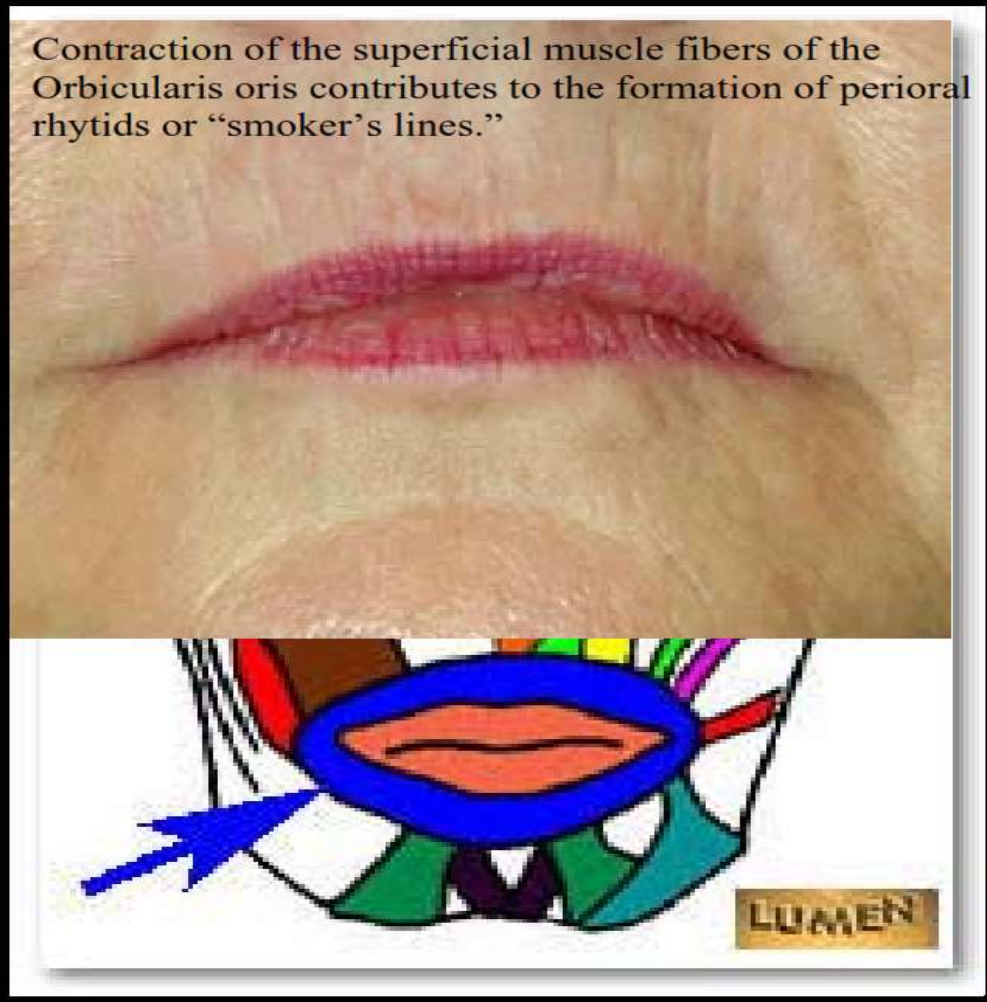
ORBICULARIS ORIS

ORIGIN
Near midline on anterior surface of maxilla and mandible and modiolus at angle of mouth

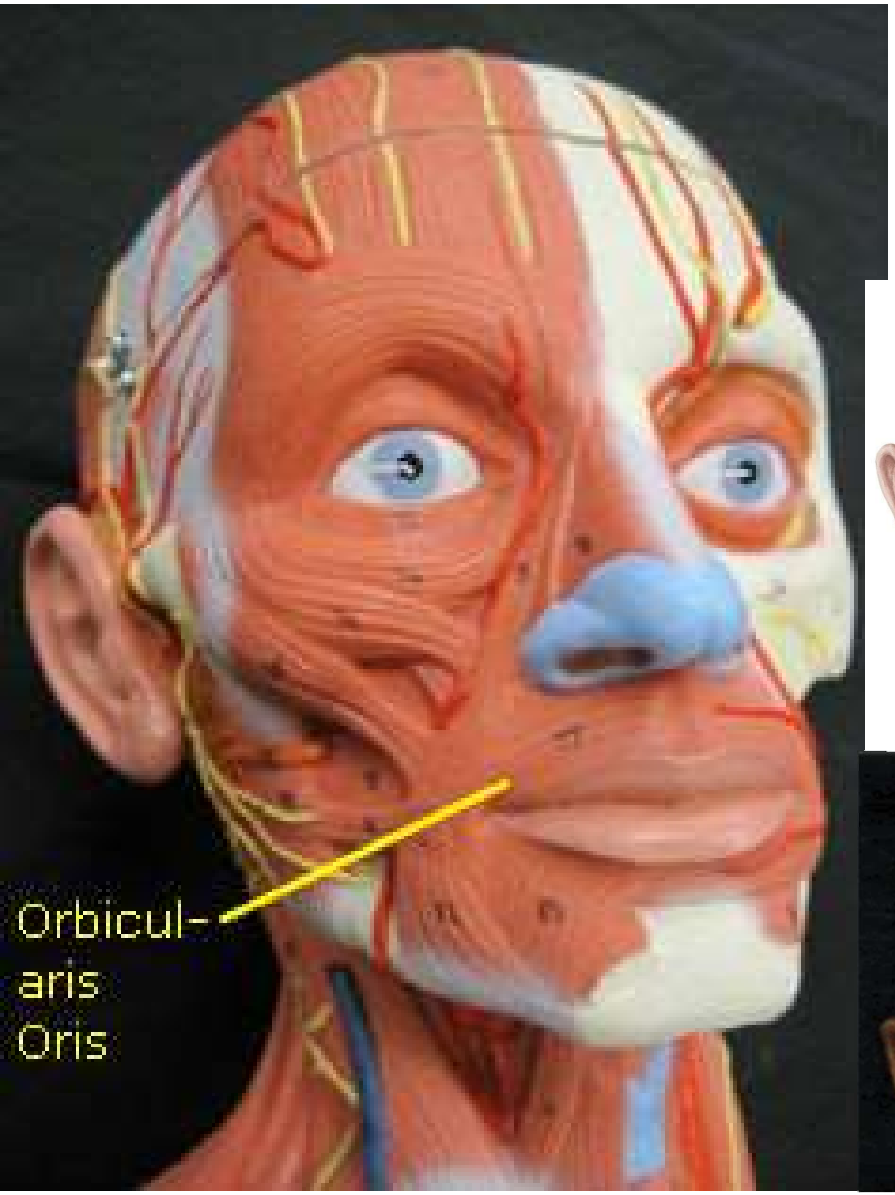
INSERTION
Mucous membrane of margin of lips and raphe with buccinator at modiolus

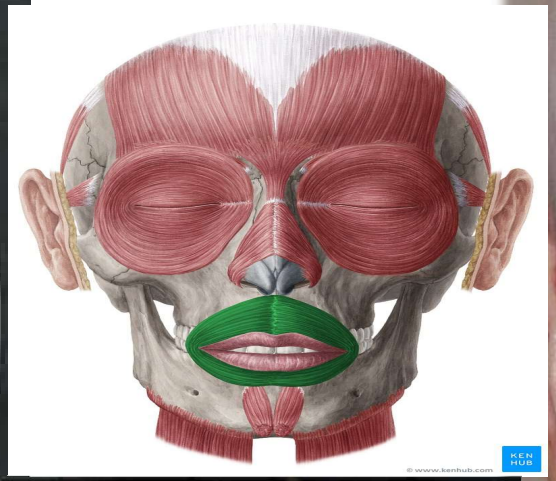
ACTION
Narrows orifice of mouth, purses lips and puckers lip edges

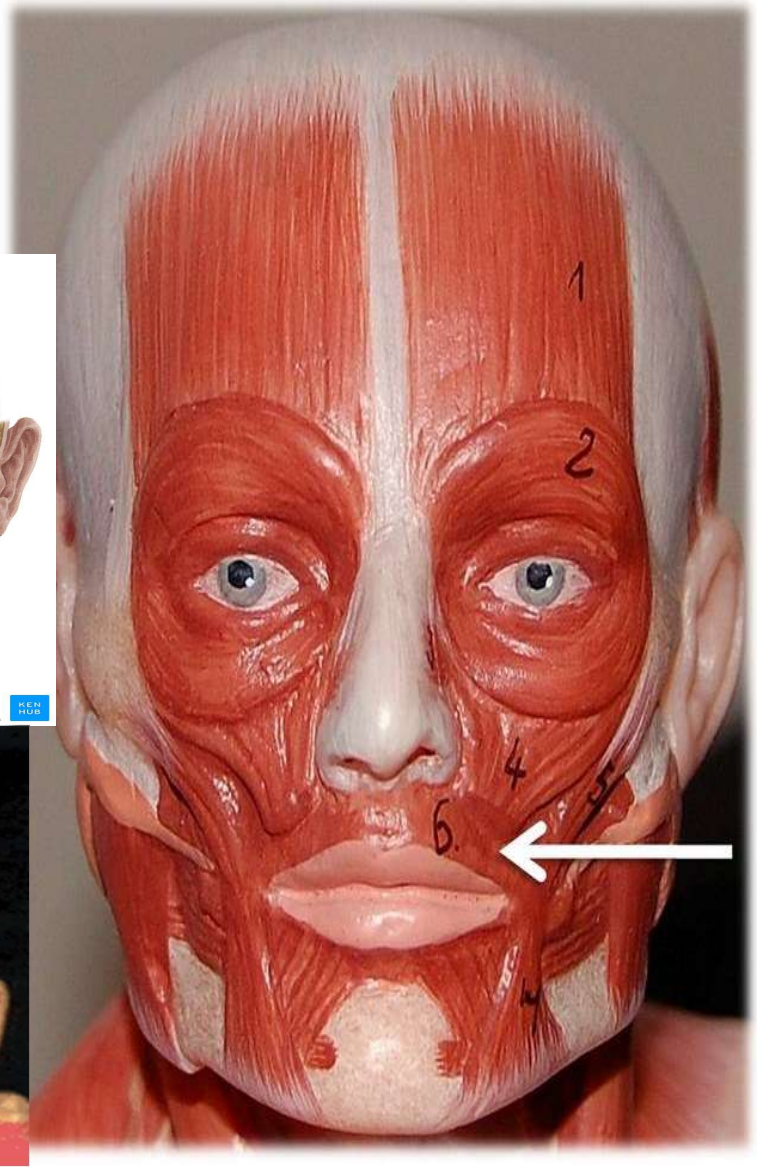
NERVE
Accessory parts are incisivus labii superioris and inferioris



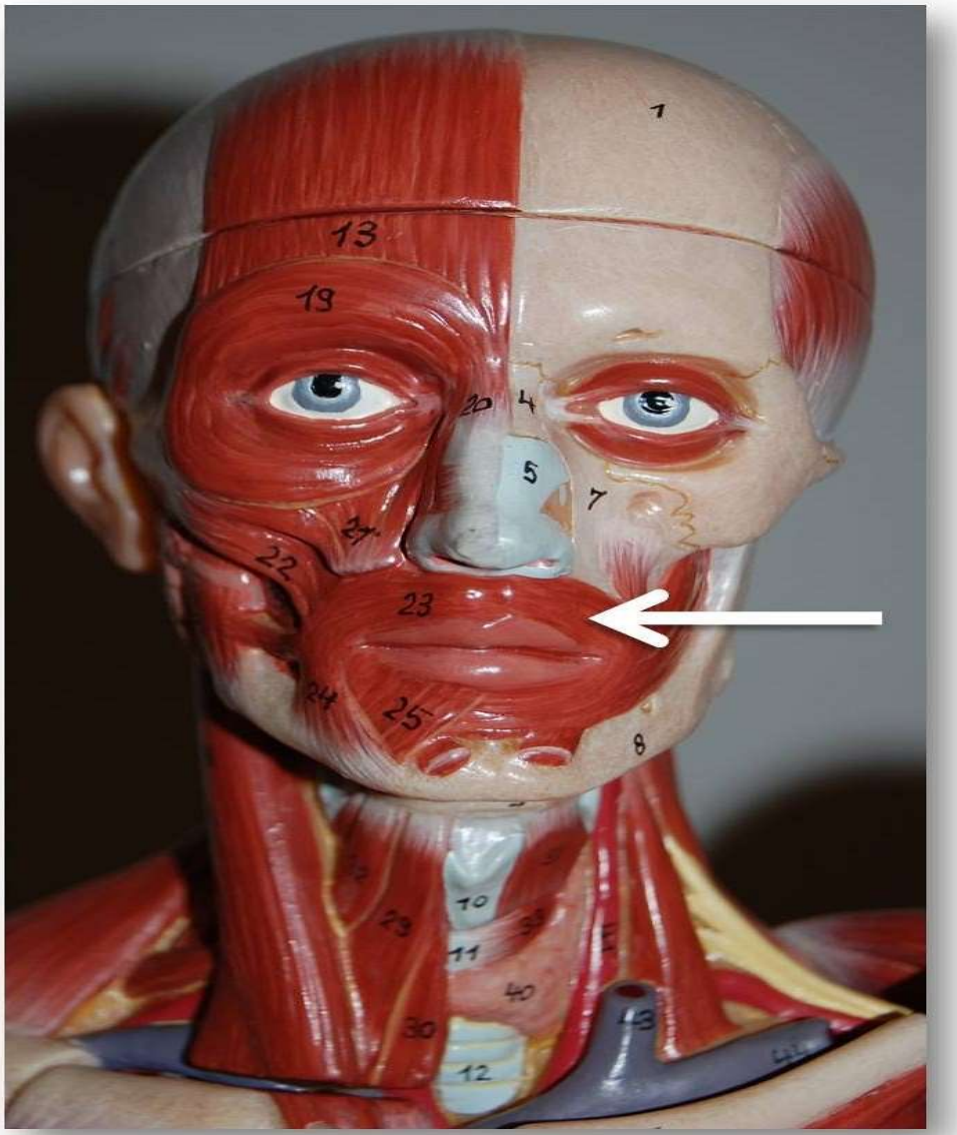
Orbicularis oris







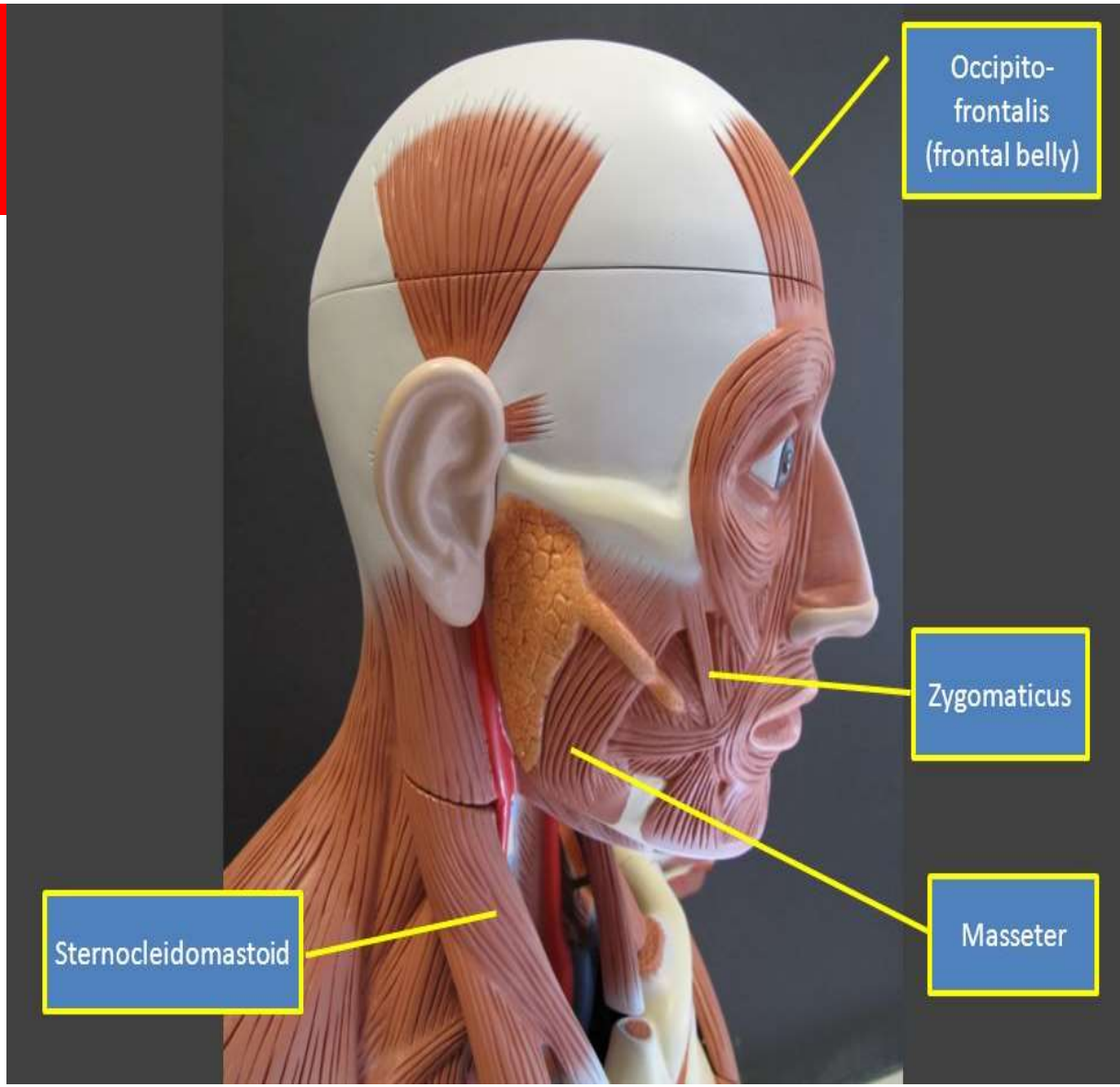
Orbicularis oris

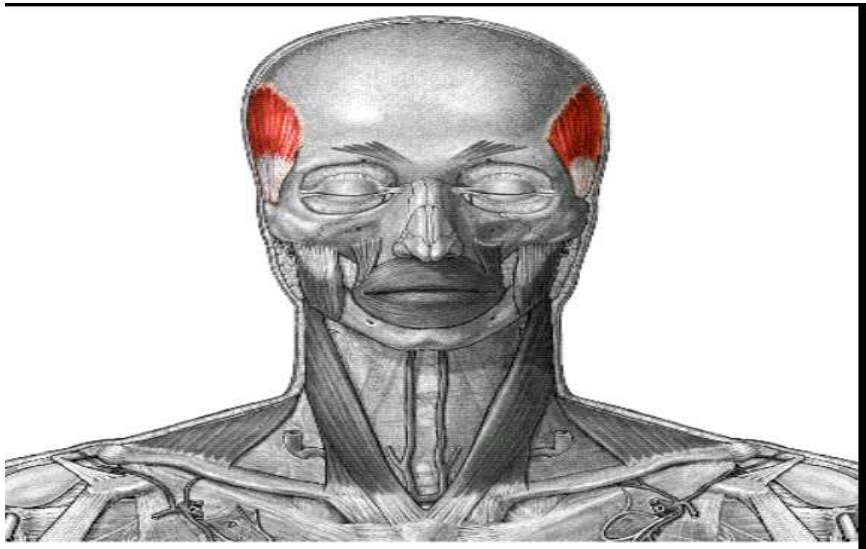


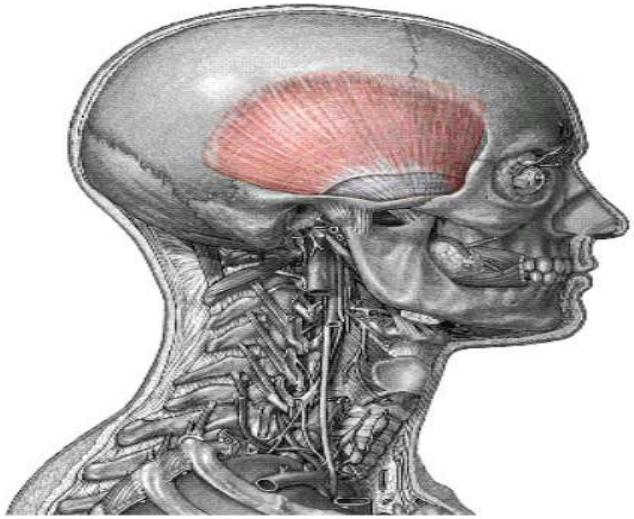
Closes and protrudes lips; the "kissing muscle“; used in whistling and forming many letters during speech

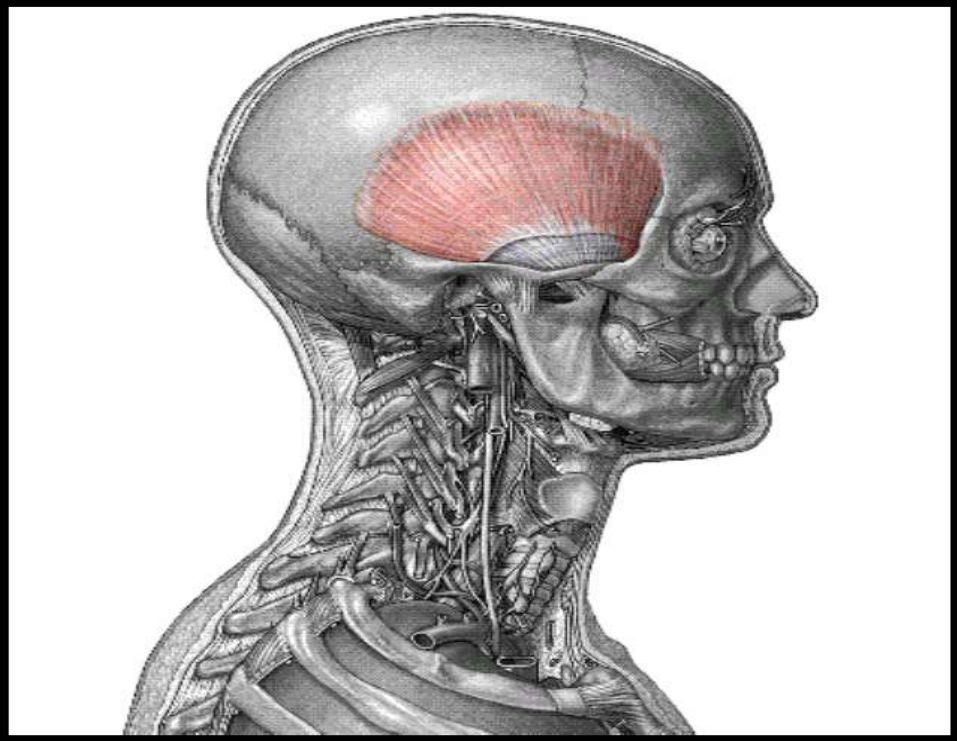
Muscles of Mastication

- There are four pairs of muscles involved in mastication
  - Prime movers – temporalis and masseter
  - Grinding movements – pterygoids and buccinators
- All are innervated by cranial nerve V (trigeminal nerve)

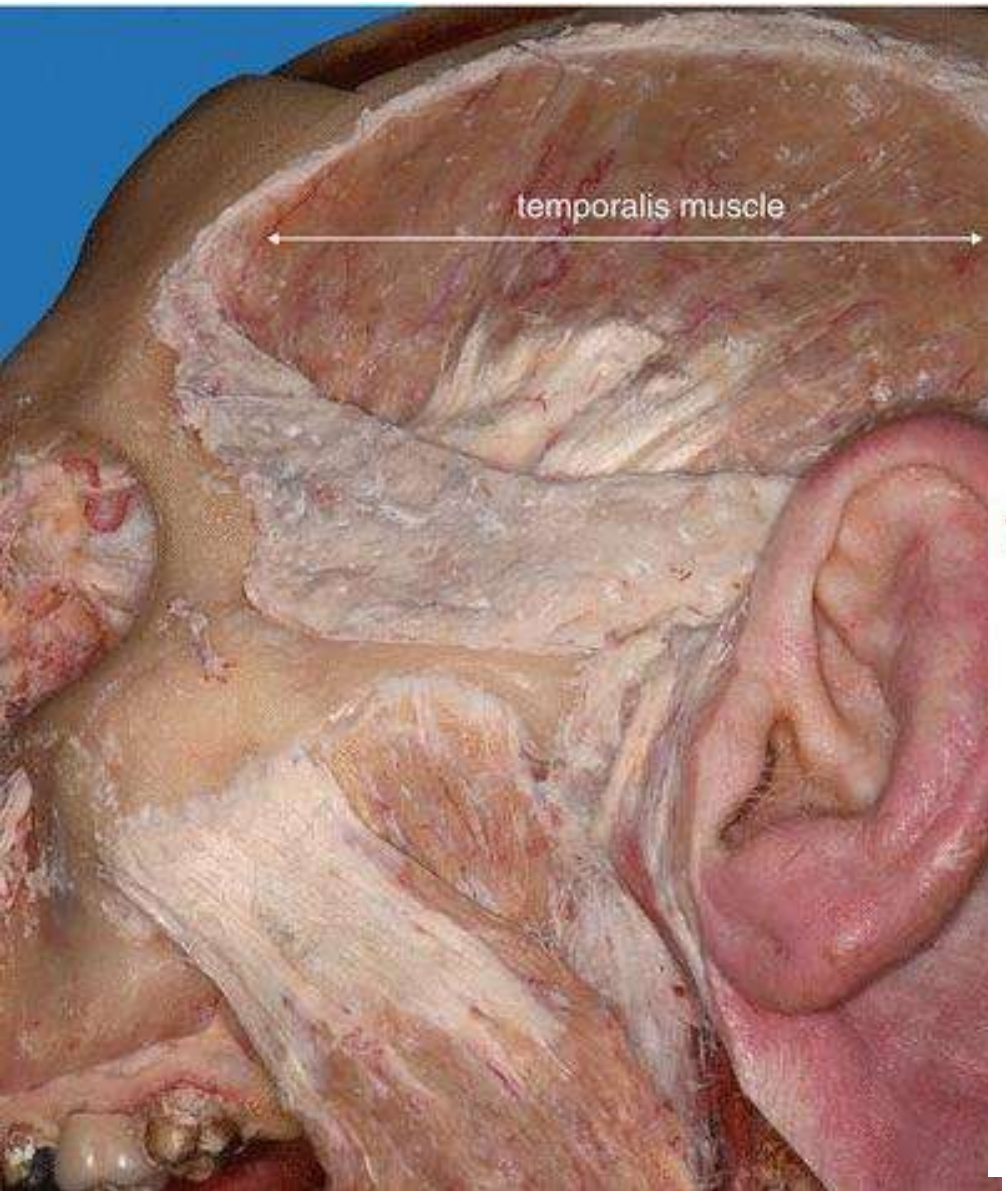


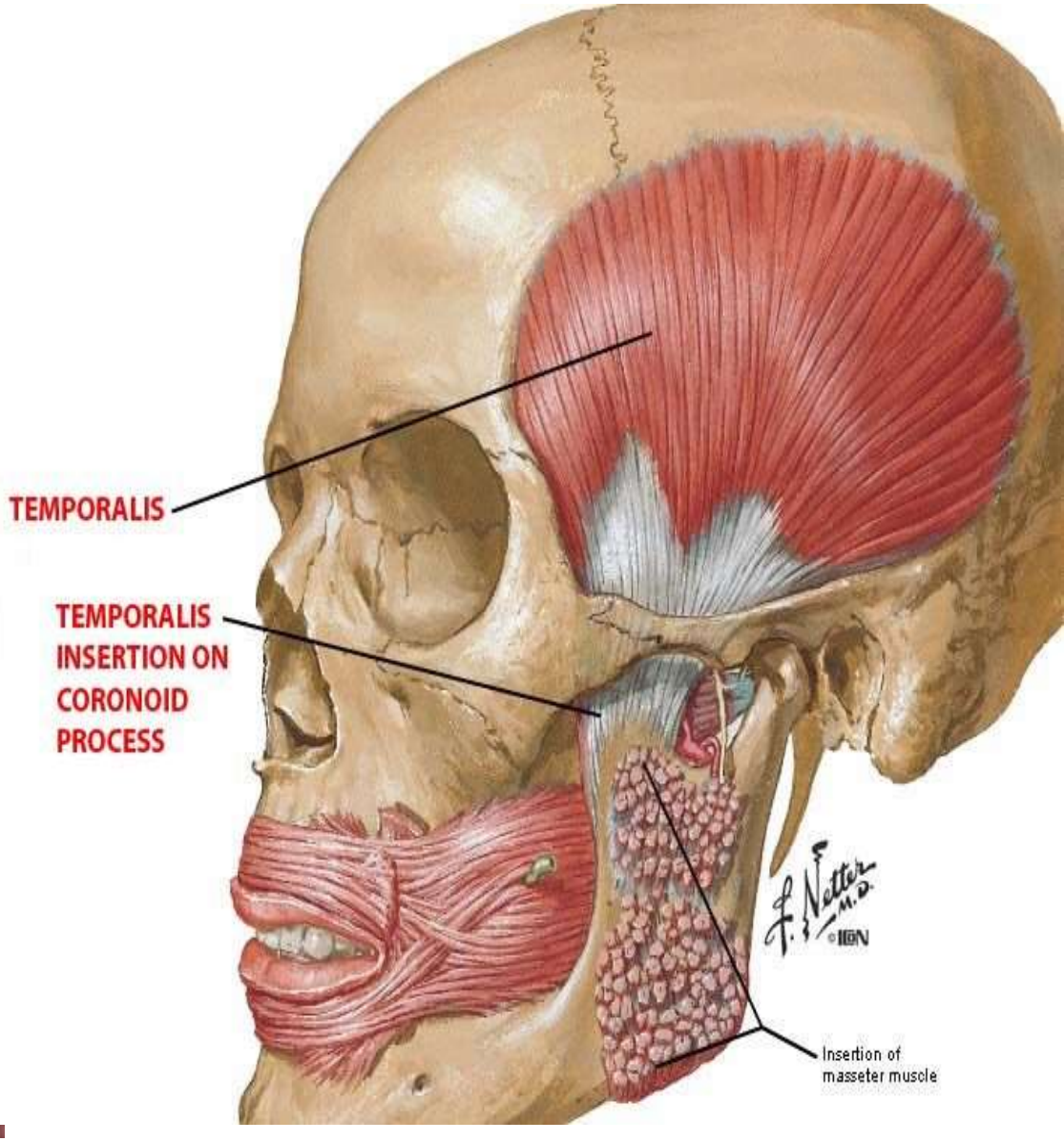




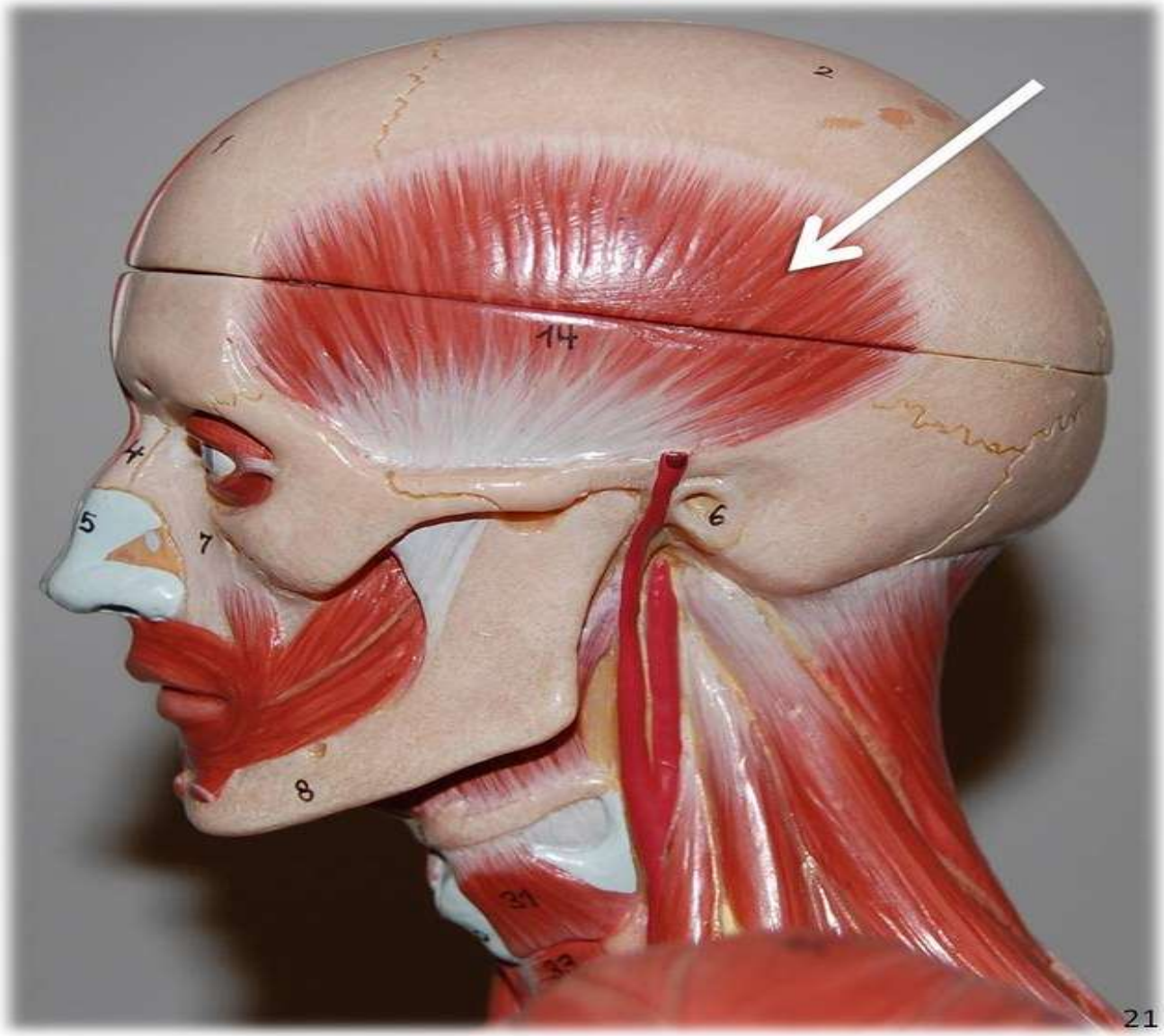


Temporalis*.

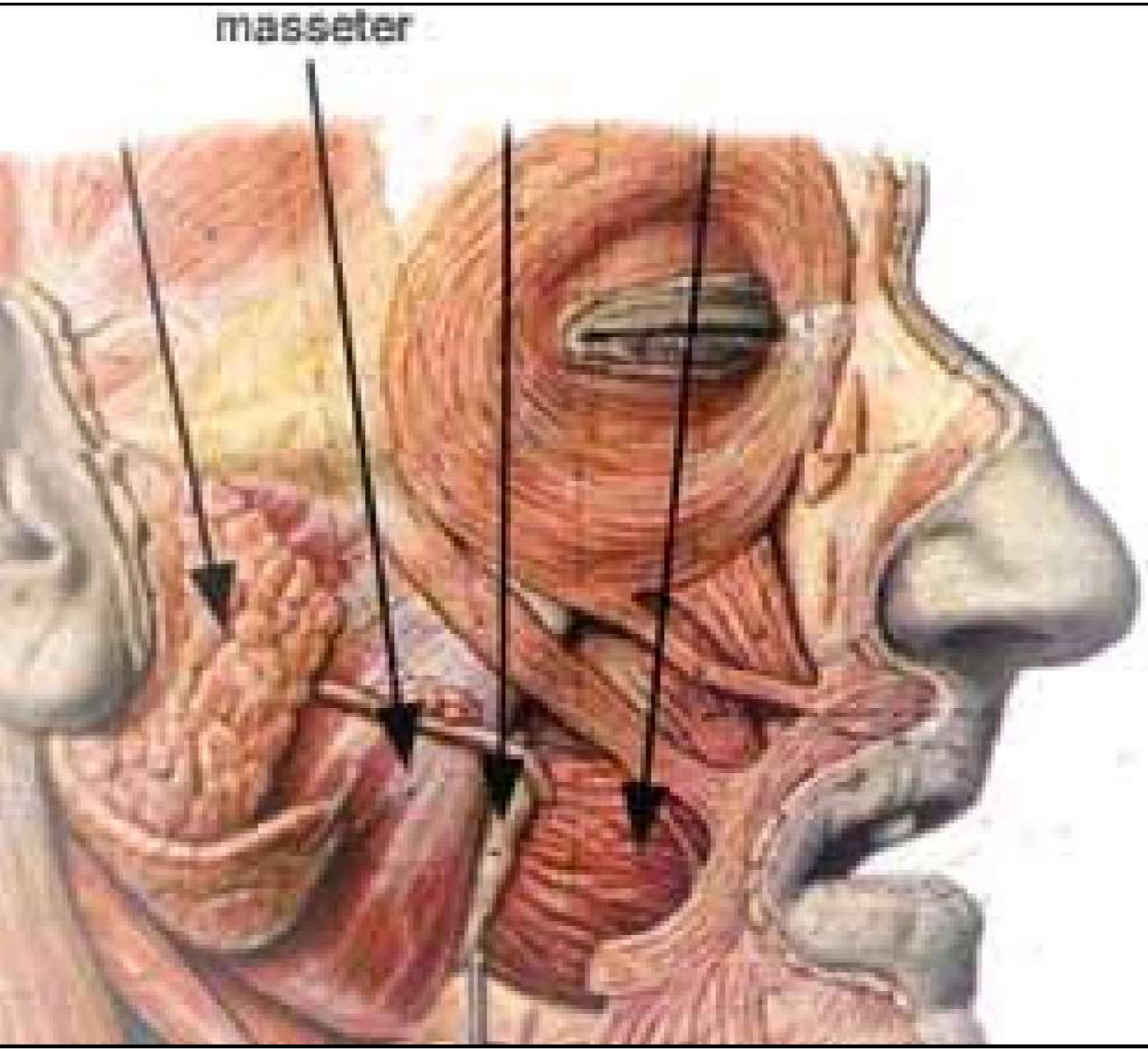

temporalis muscle


TEMPORALIS
TEMPORALIS INSERTION ON CORONOID PROCESS
Insertion of masseter muscle
F. Netter M.D.
©IBN

Temporalis



Elevates, retracts, and assists in side-to-side movement of mandible

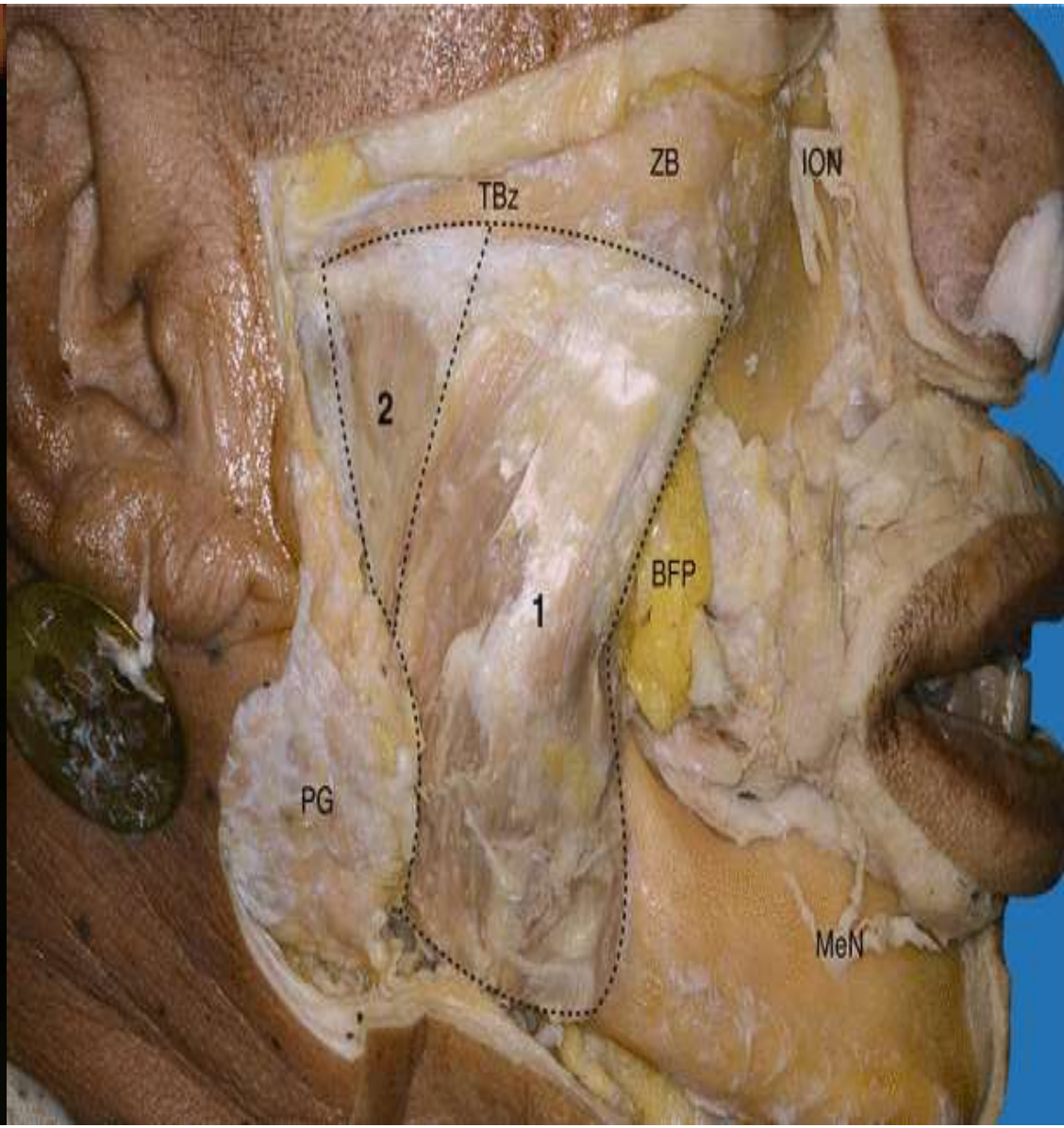


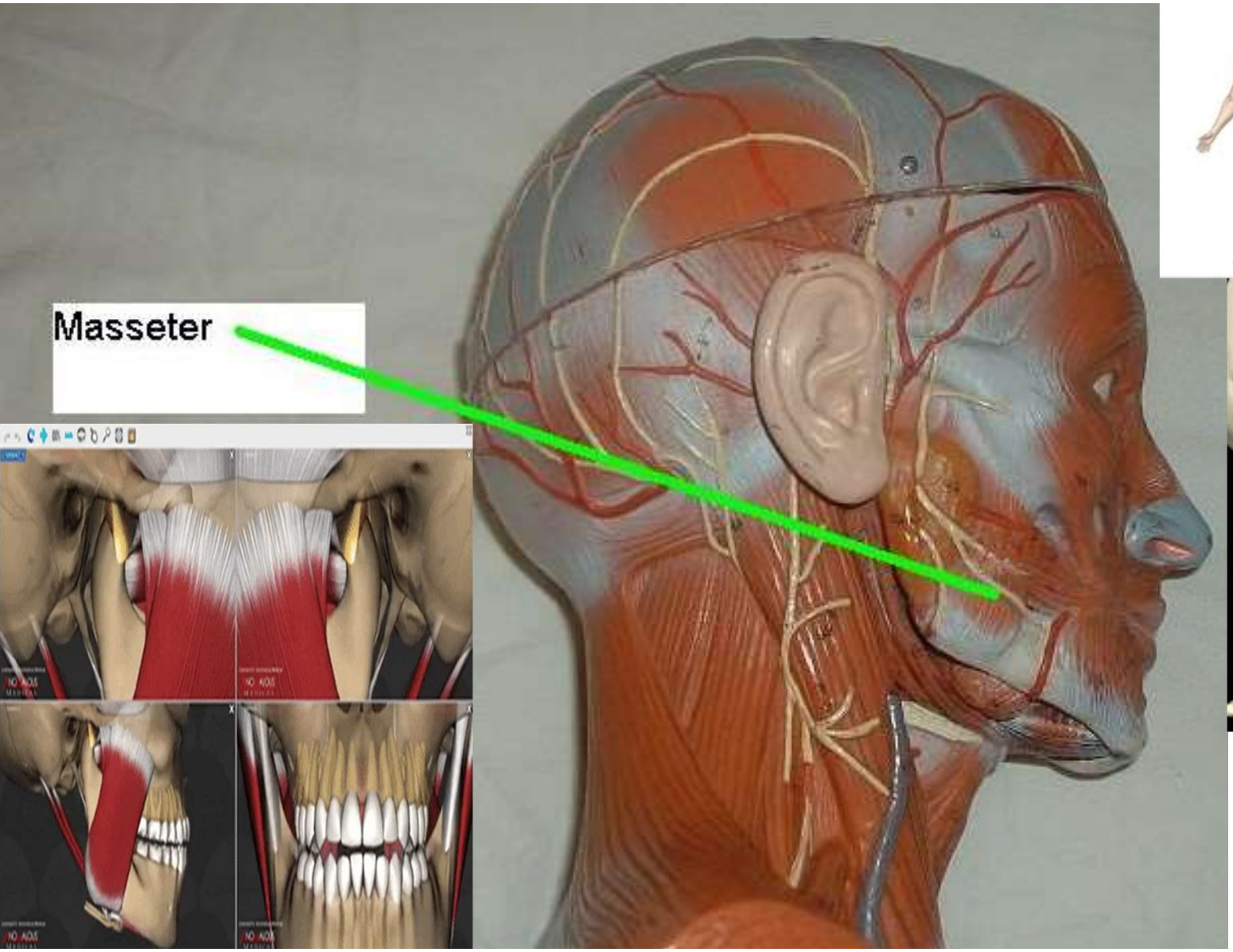
MASSETER

ORIGIN:
zygomatic arch

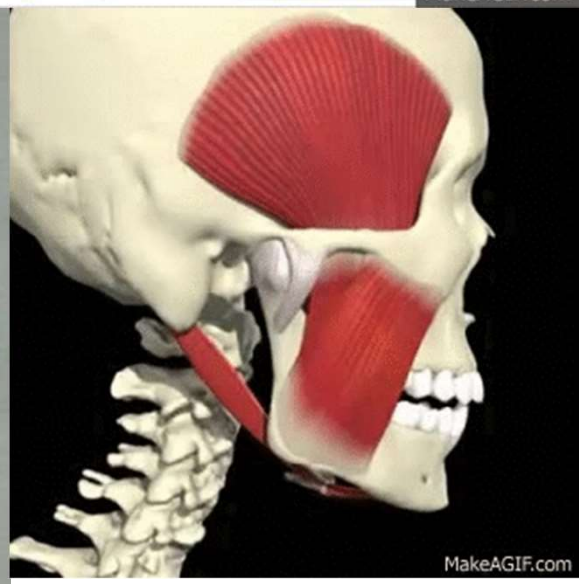
INSERTION:
lateral aspect of mandibular ramus and angle

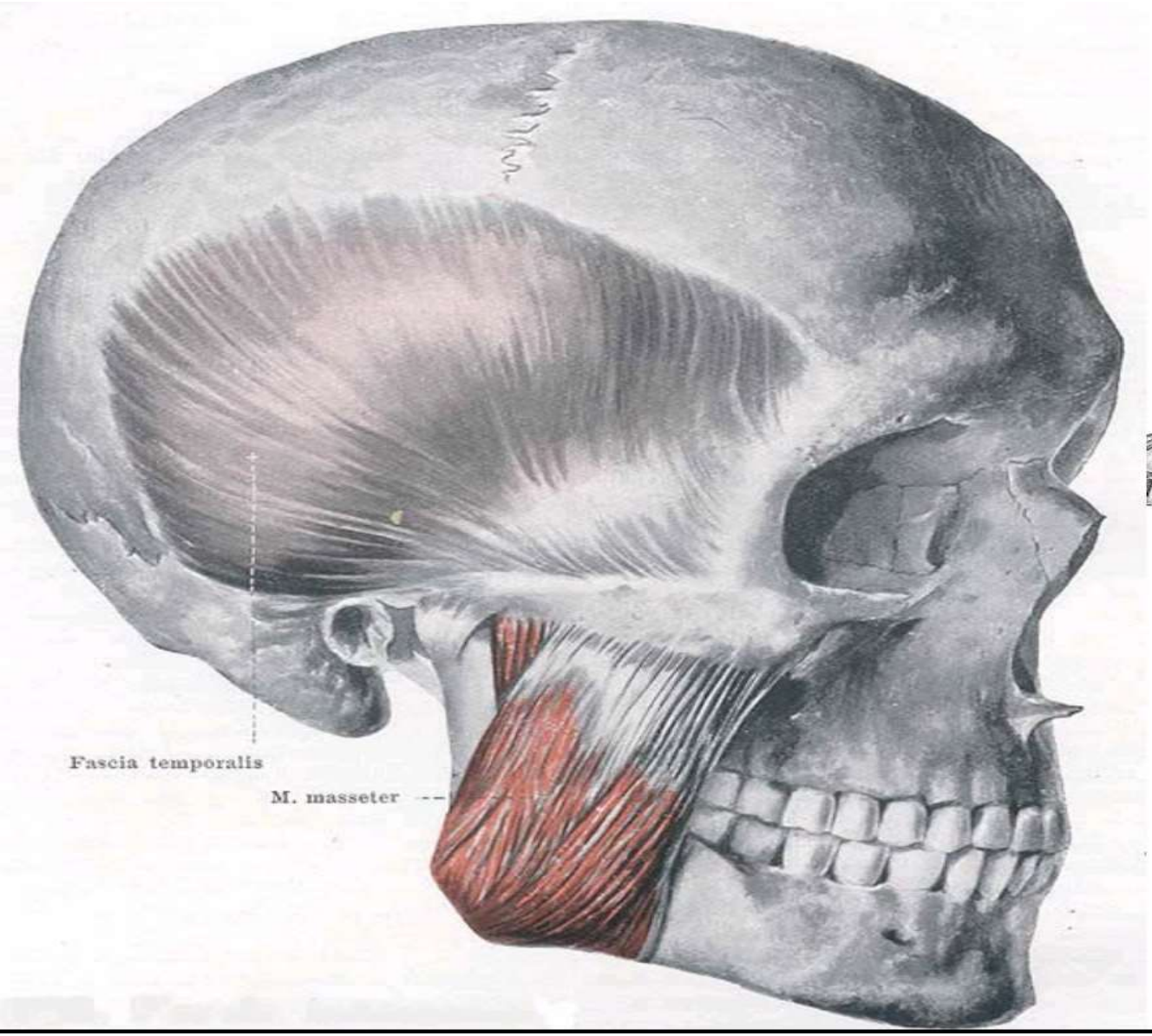
ACTION:
elevates mandible for biting and chewing; causes some lateral excursion of mandible

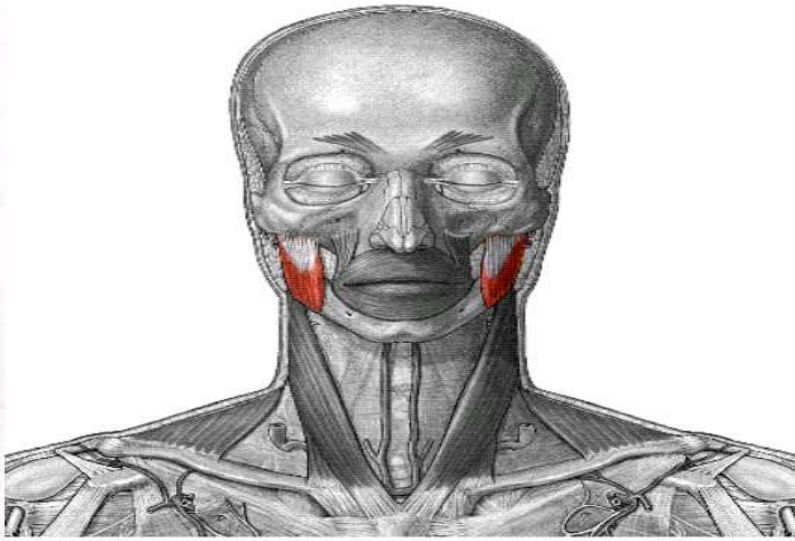

ZB
ION
TBz
2
1
BFP
PG
MeN

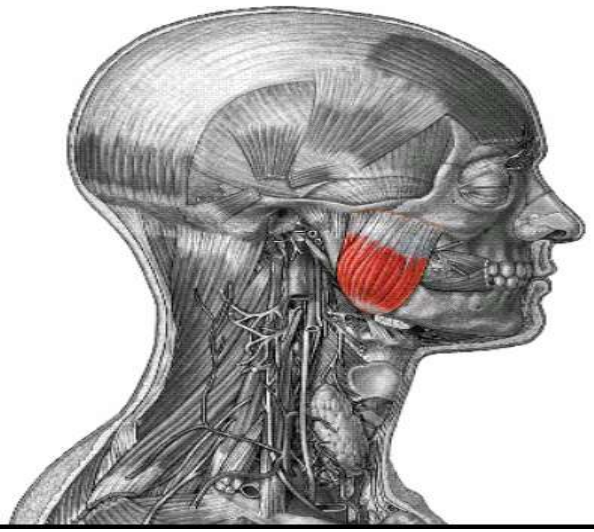

Masseter

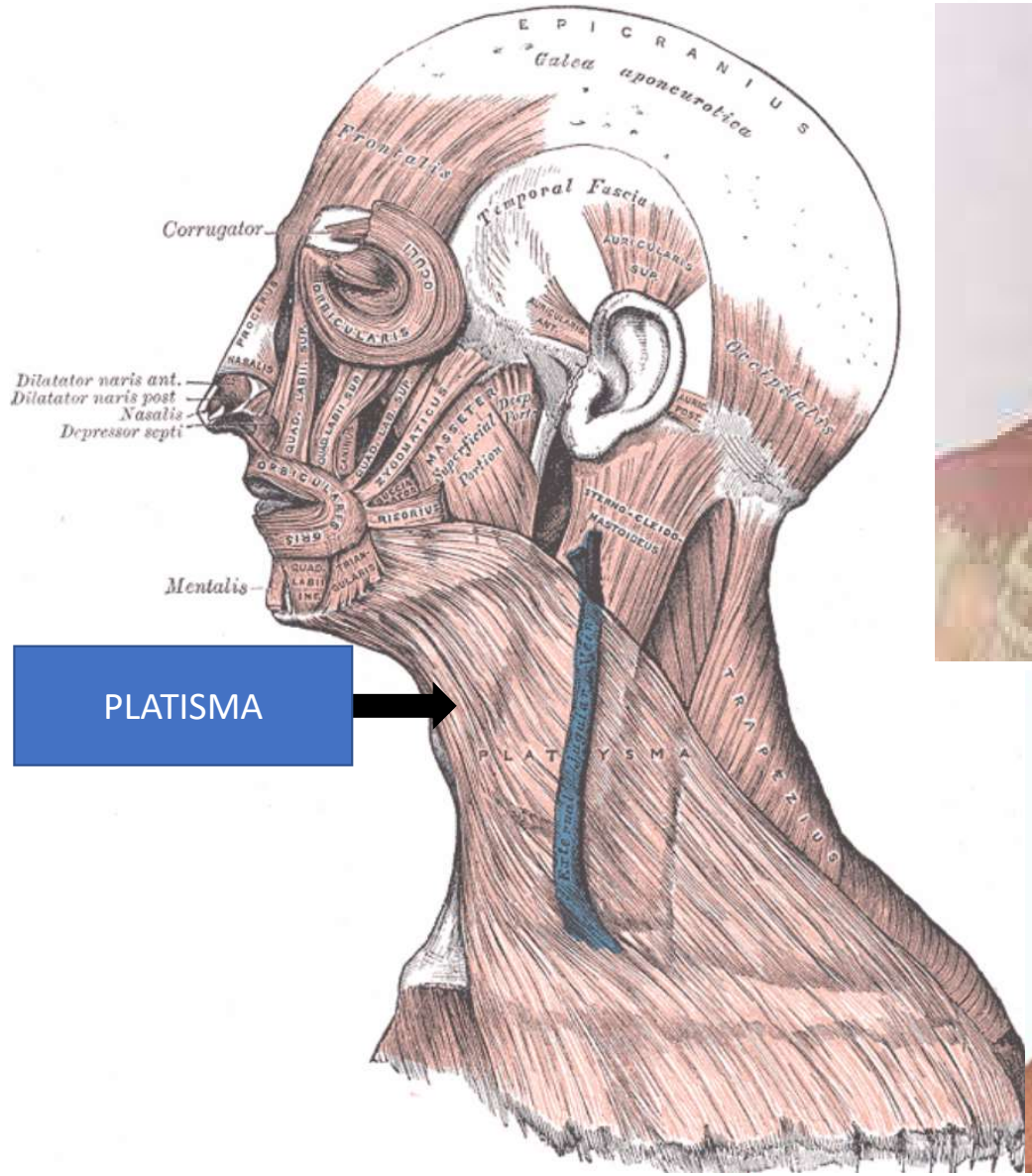

MakeAGIF.com


MakeAGIF.com

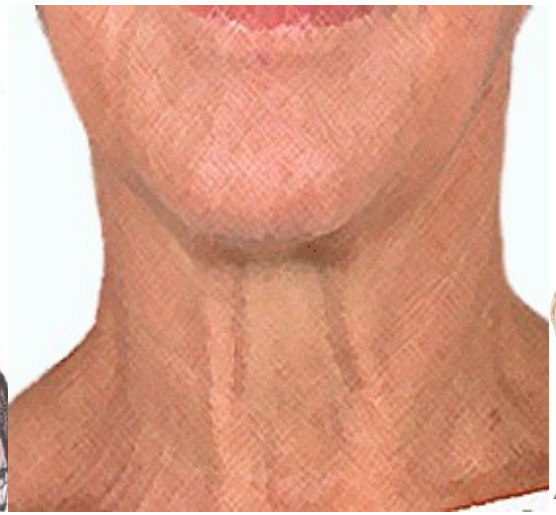

Fascia temporalis
M. masseter



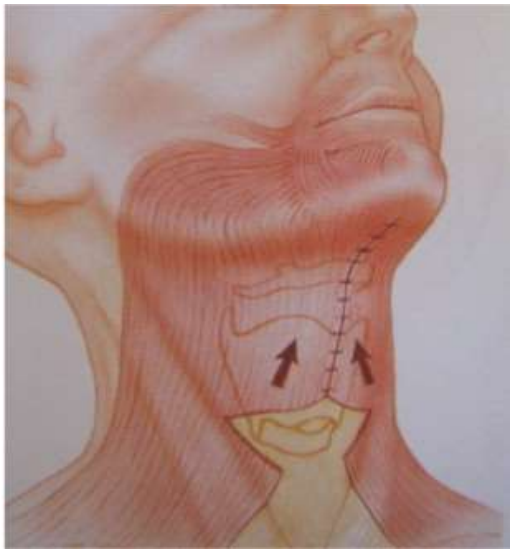



EPICRANIUS
Galea aponeurotica
Frontalis
Temporal Fascia
Corrugator
ORBICULARIS
PROCERUS
NASALIS
AURICULARIS SUP.
Occipitalis
Dilatator naris ant.
Dilatator naris post
Nasalis
Depressor septi
ZYGOMATICUS
MASSETER
Superficial Portion
Deep Portion
BUCCINATOR
RISORIUS
STERNO-CLEIDO MASTOIDEUS
Mentalis
TRIANGULARIS
TRAPEZIUS
PLATYSMA

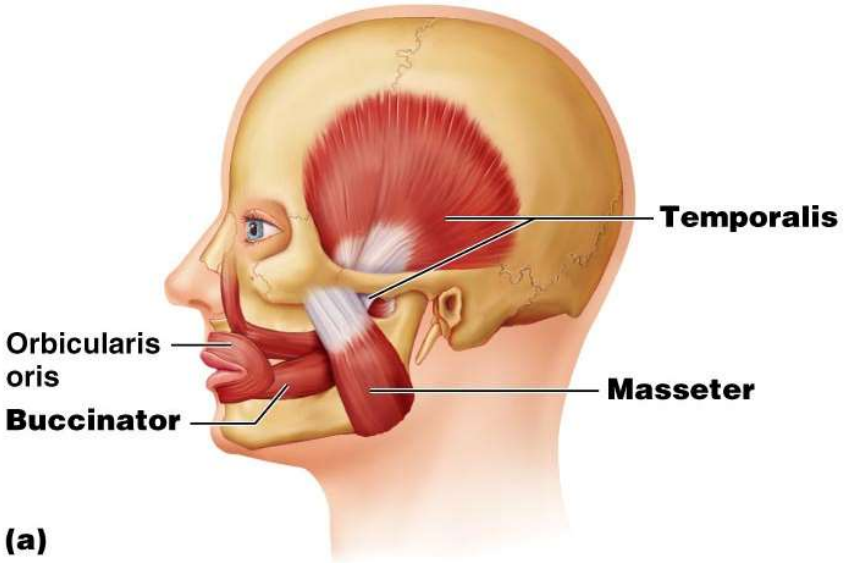
PLATISMA



PLATYSMA



Muscles of Mastication



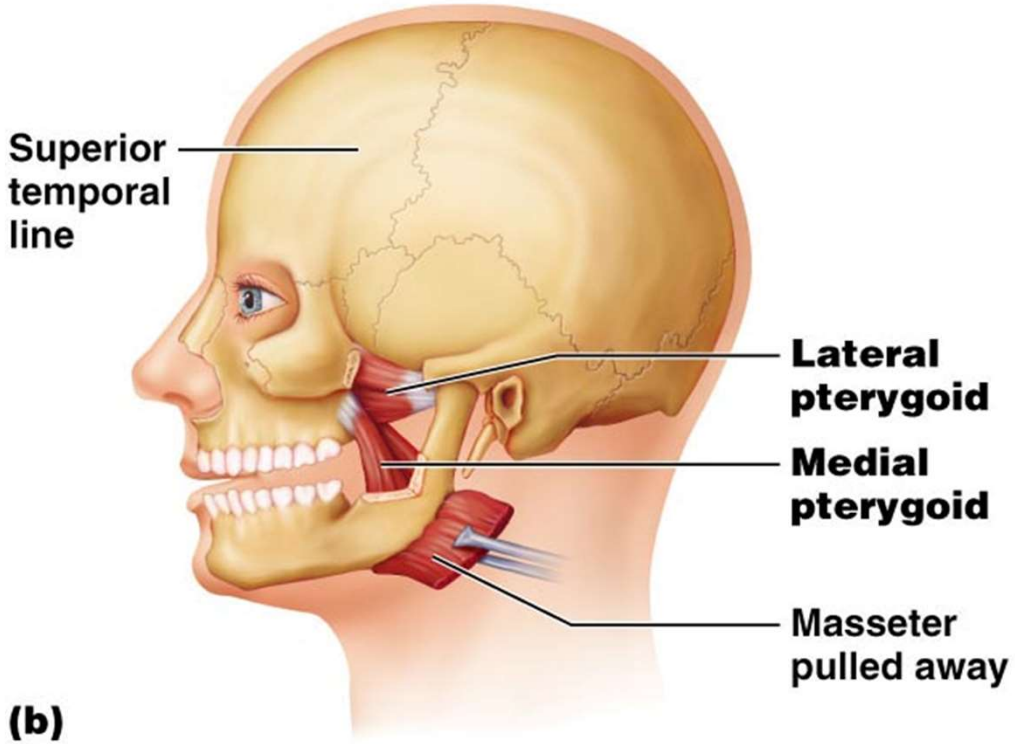
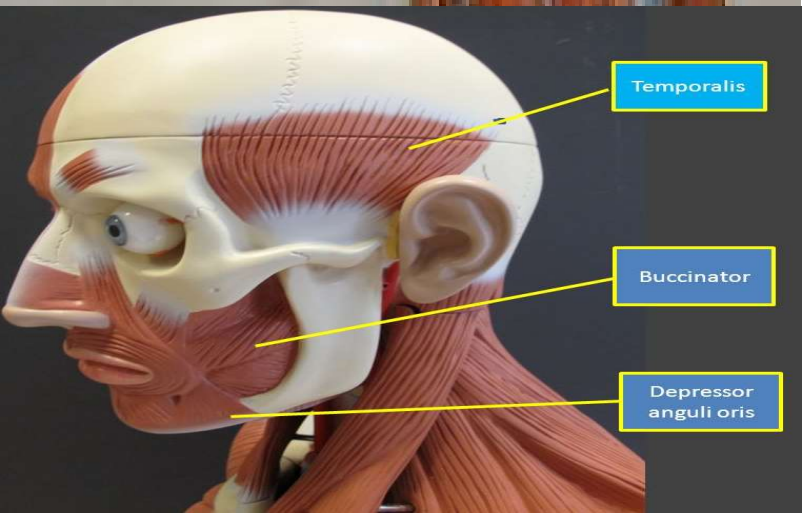
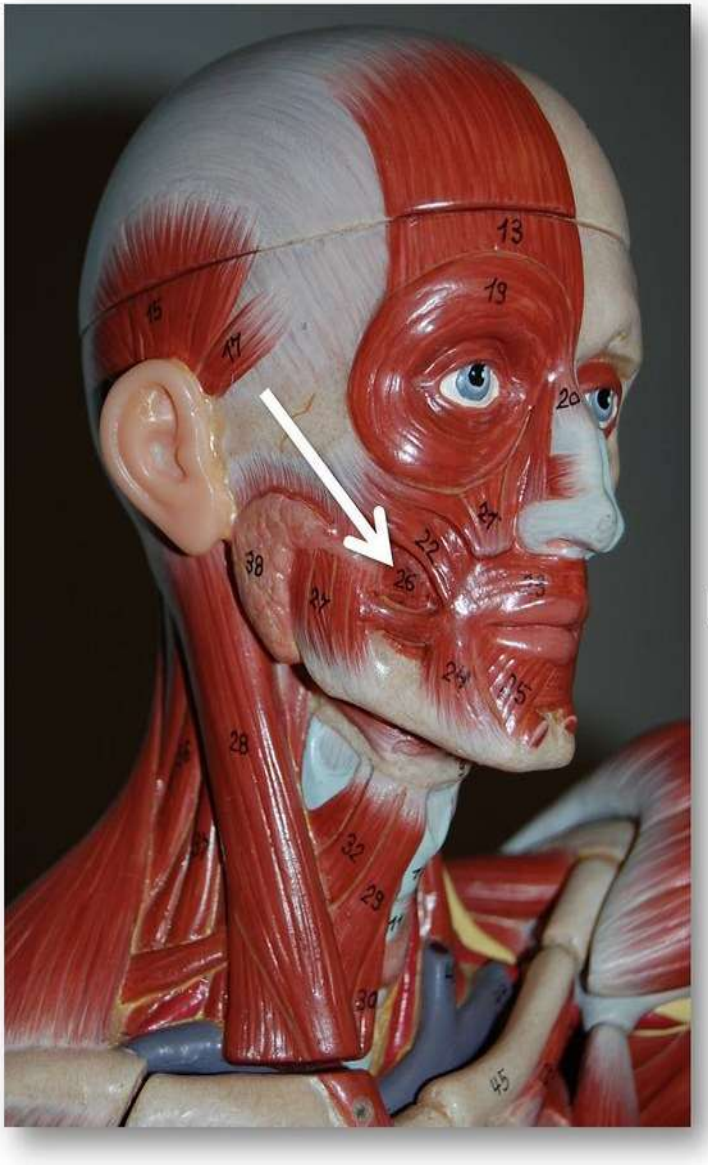


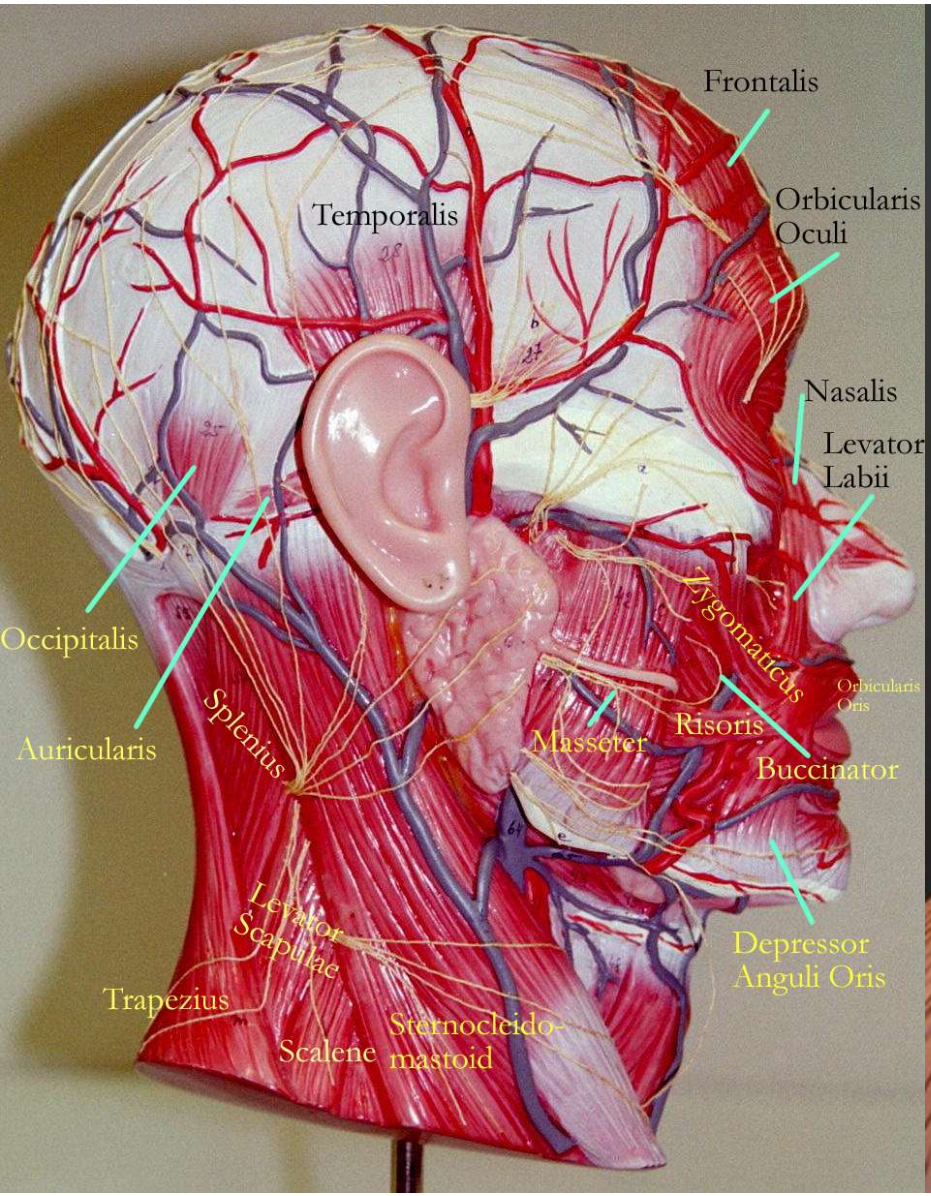
Figure 10.7a

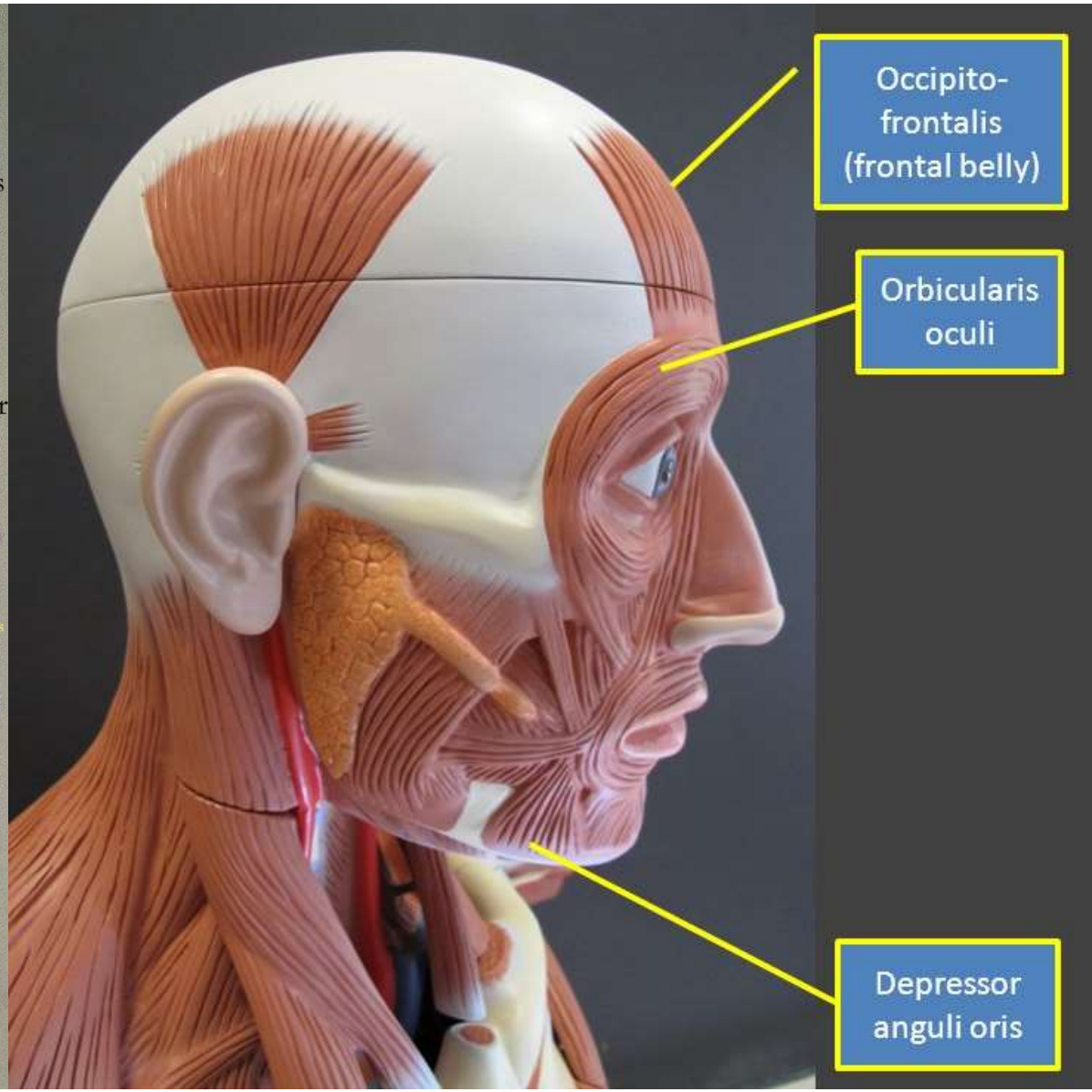


Buccinator



Draws angles of mouth laterally; compresses cheek; used to create sucking action

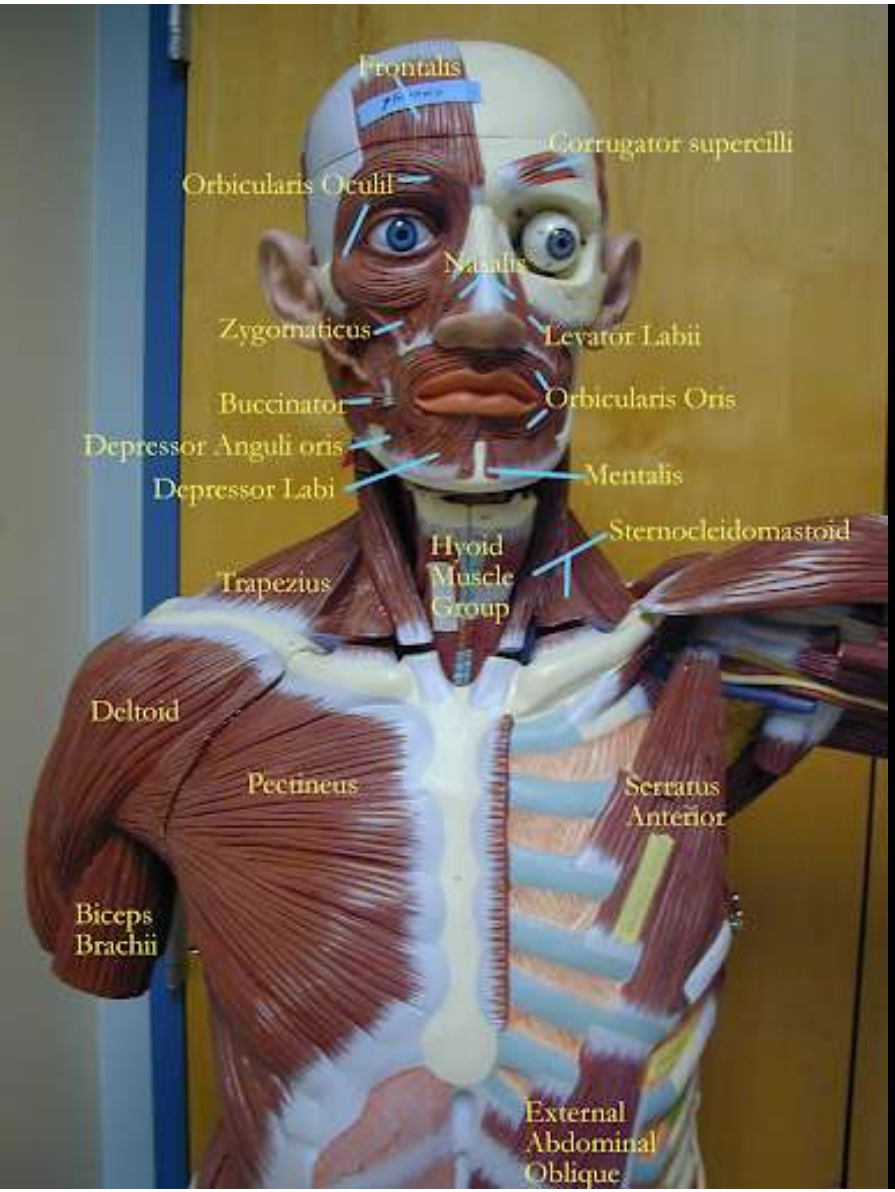

Frontalis
Temporalis
Orbicularis Oculi
Nasalis
Levator Labii
Occipitalis
Zygomaticus
Orbicularis Oris
Auricularis
Splenius
Risoris
Masseter
Buccinator
Levator Scapulae
Depressor Anguli Oris
Trapezius
Sternocleido-mastoid
Scalene


Occipito-frontalis (frontal belly)
Orbicularis oculi
Depressor anguli oris

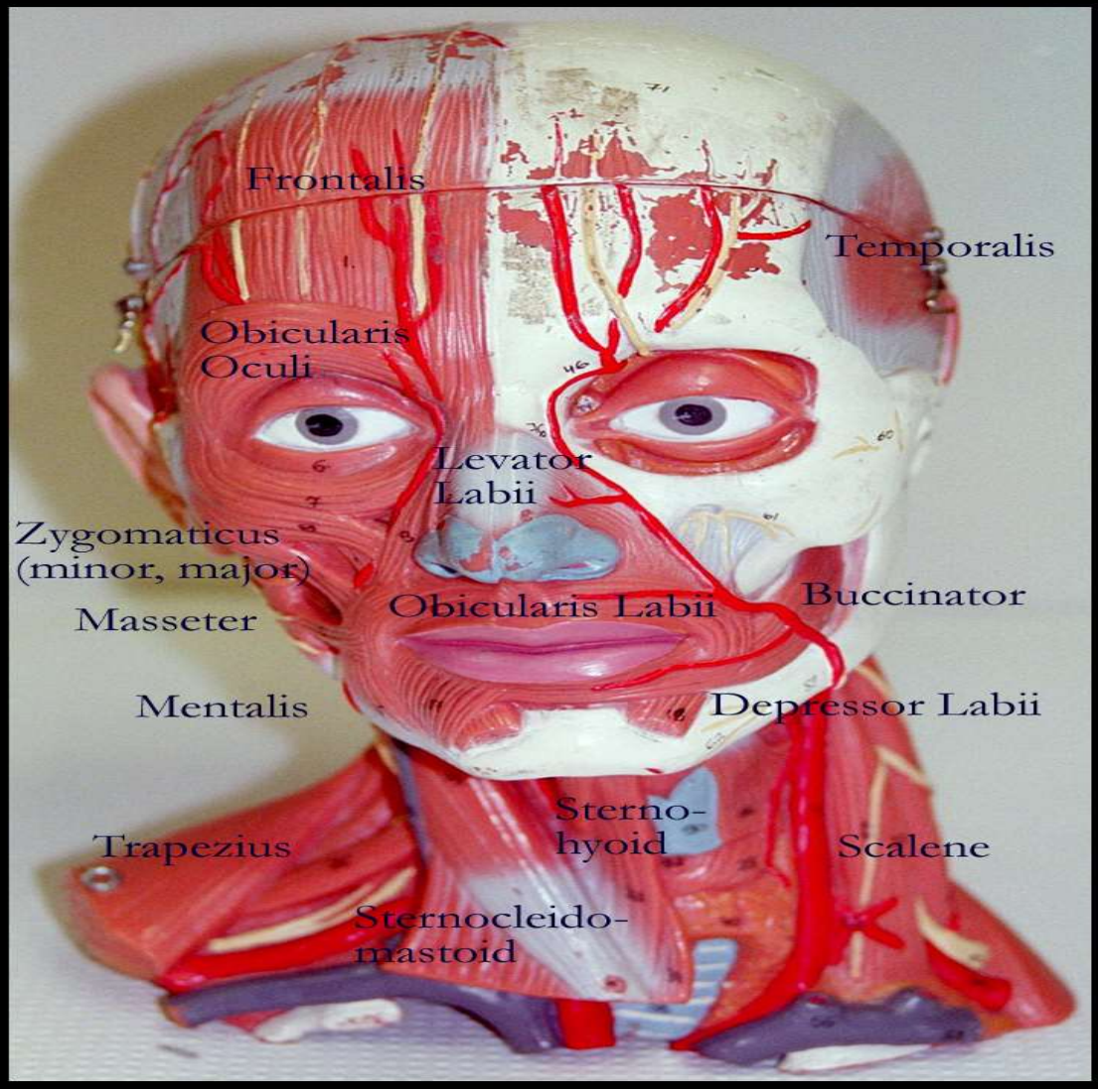
- 11 muscles are involved in lifting the eyebrows, flaring the nostrils, opening and closing the eyes and mouth, and smiling

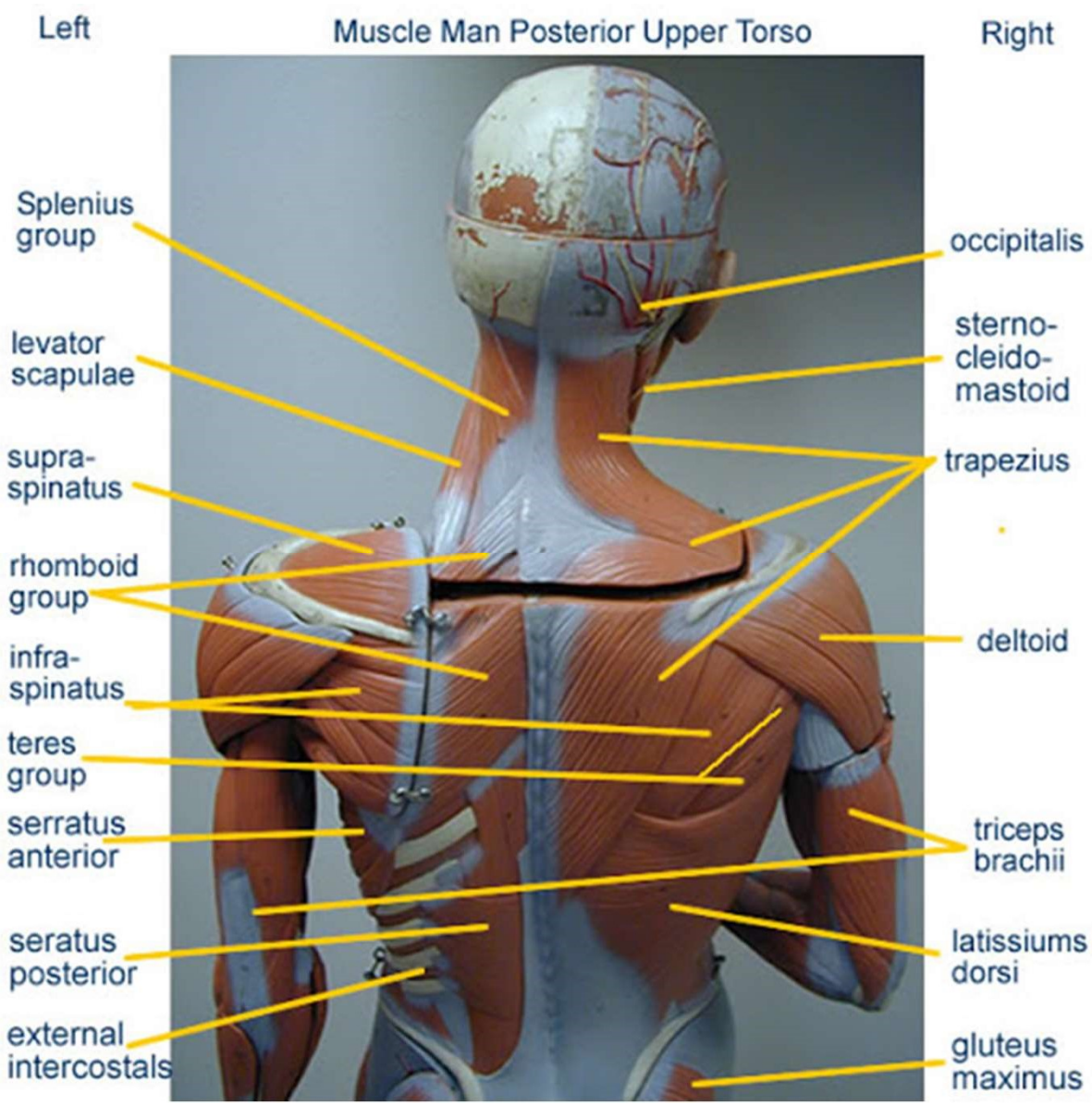
- All are innervated by cranial nerve VII (facial nerve)

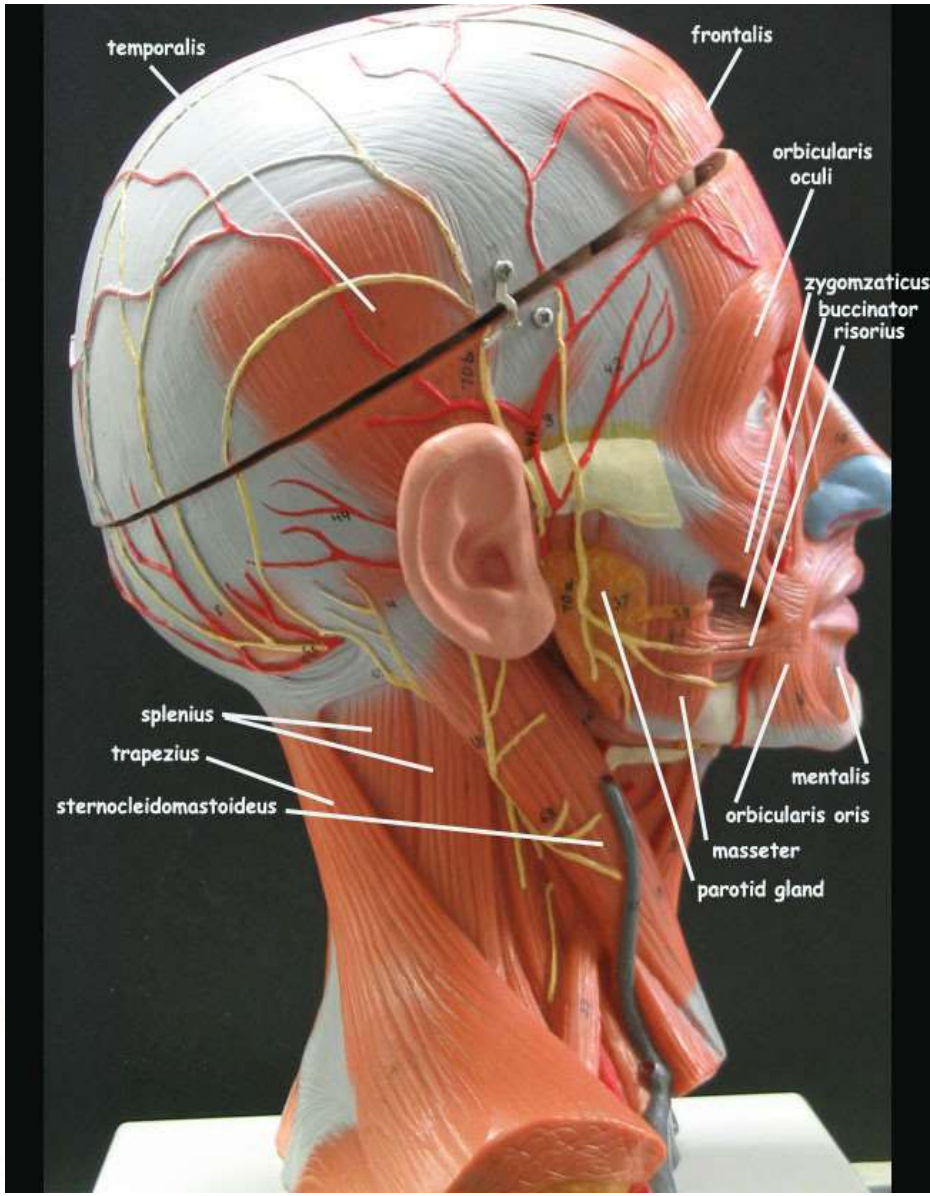
- Usually insert in skin (rather than bone), and adjacent muscles often fuse

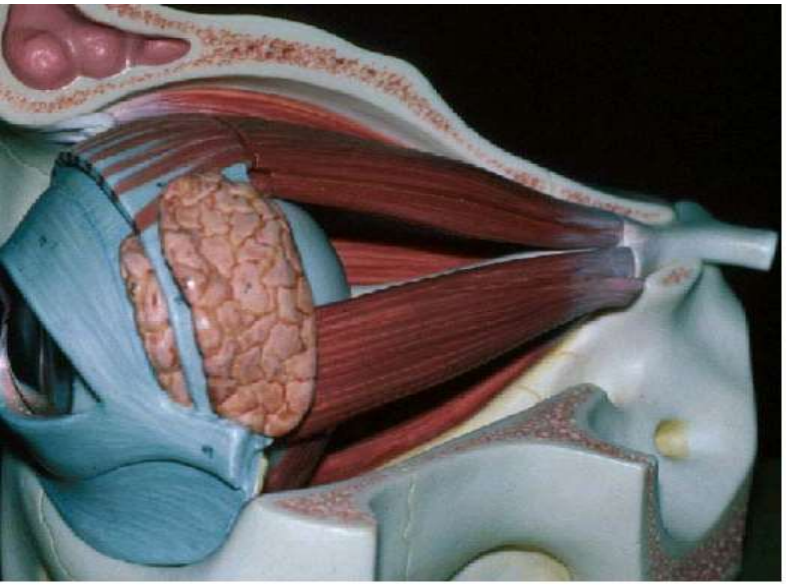


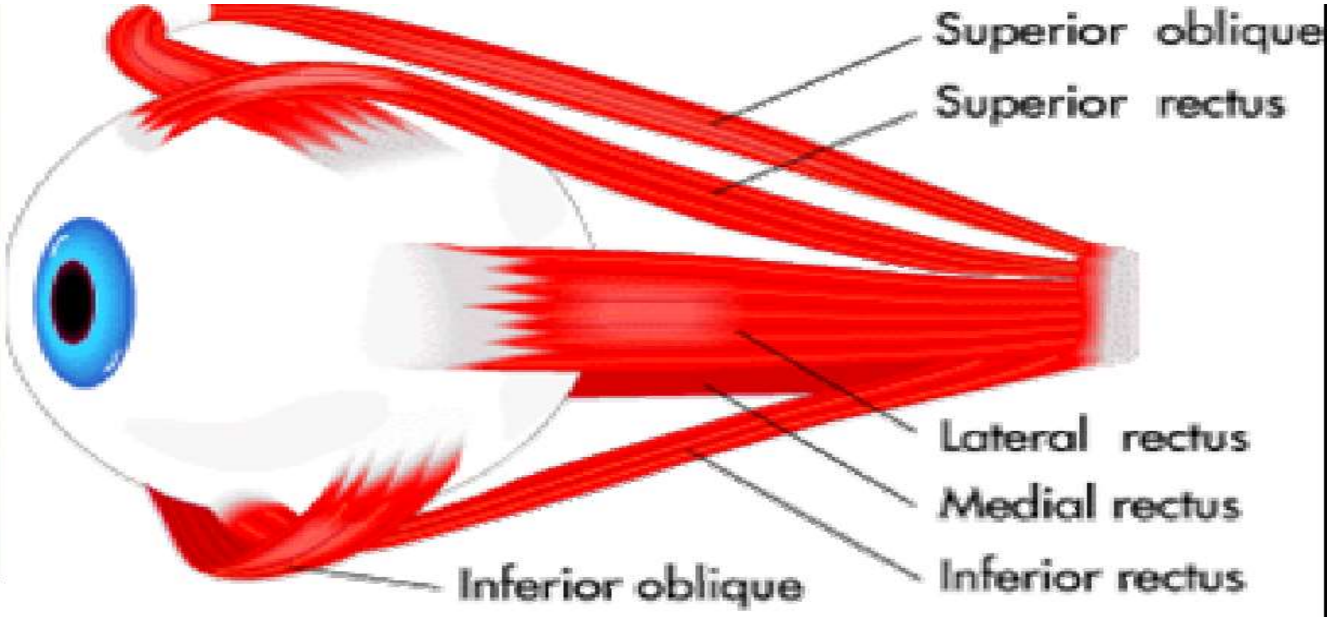
Head and Neck Muscles



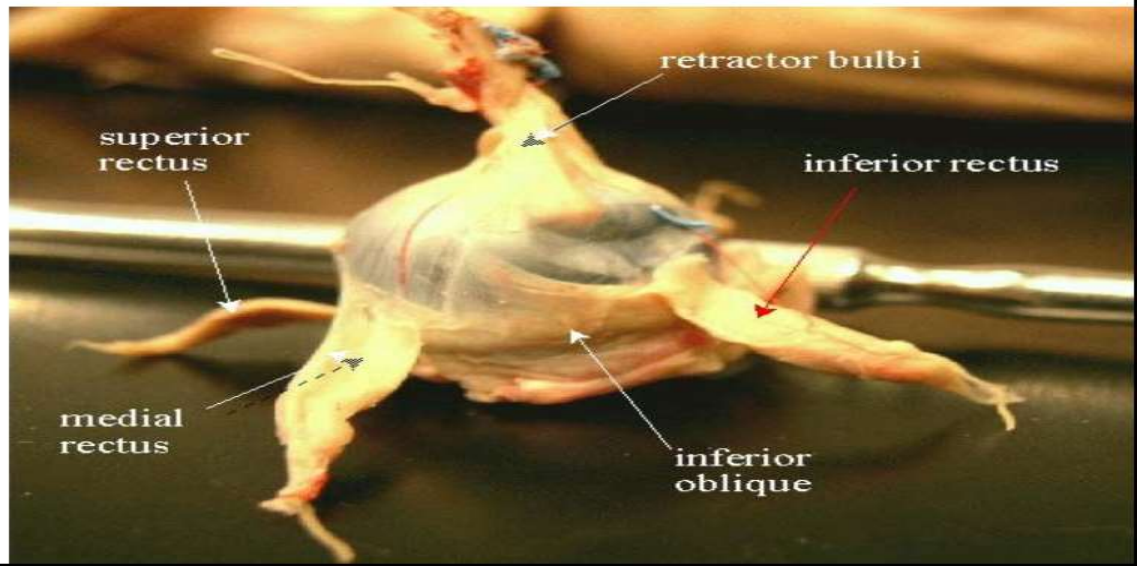

Left
Muscle Man Posterior Upper Torso
Right
Splenius group
levator scapulae
supra-spinatus
rhomboid group
infra-spinatus
teres group
serratus anterior
seratus posterior
external intercostals
occipitalis
sterno-cleido-mastoid
trapezius
deltoid
triceps brachii
latissiums dorsi
gluteus maximus

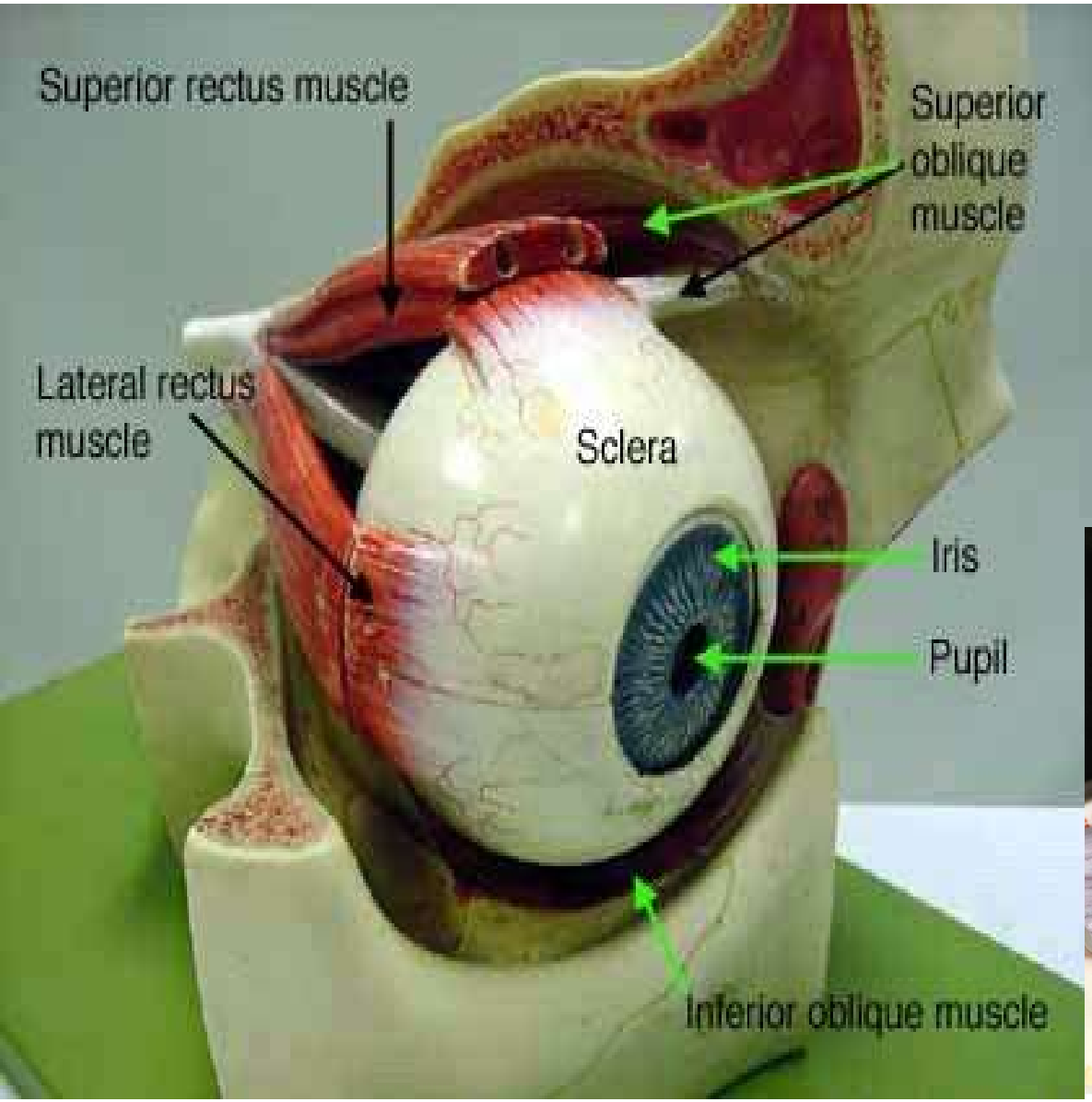

temporalis
frontalis
orbicularis oculi
zygomzaticus
buccinator
risorius
splenius
trapezius
sternocleidomastoideus
mentalis
orbicularis oris
masseter
parotid gland

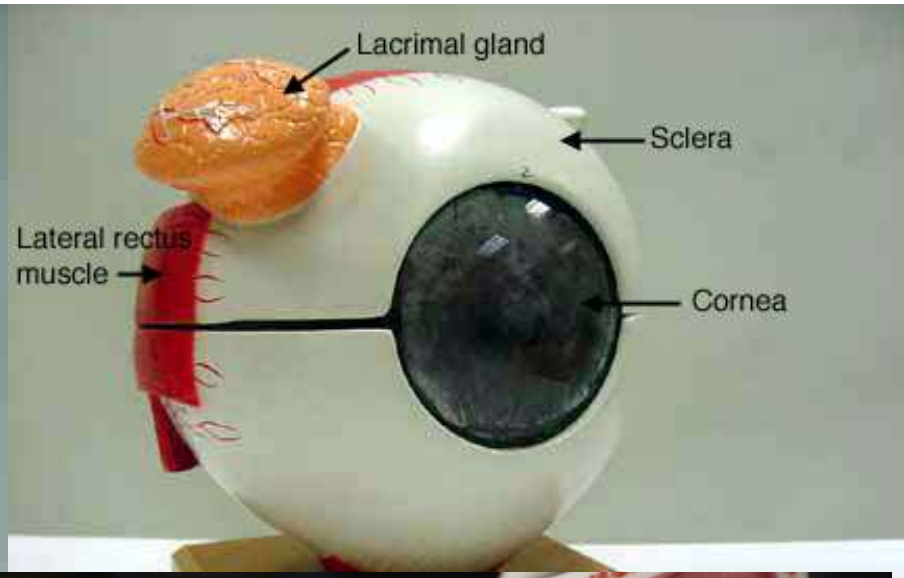


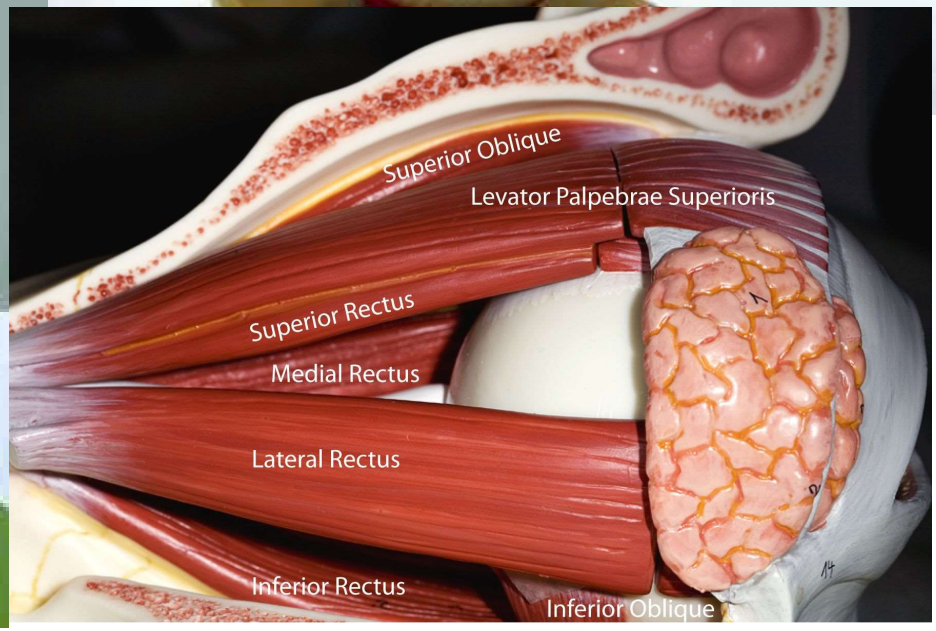


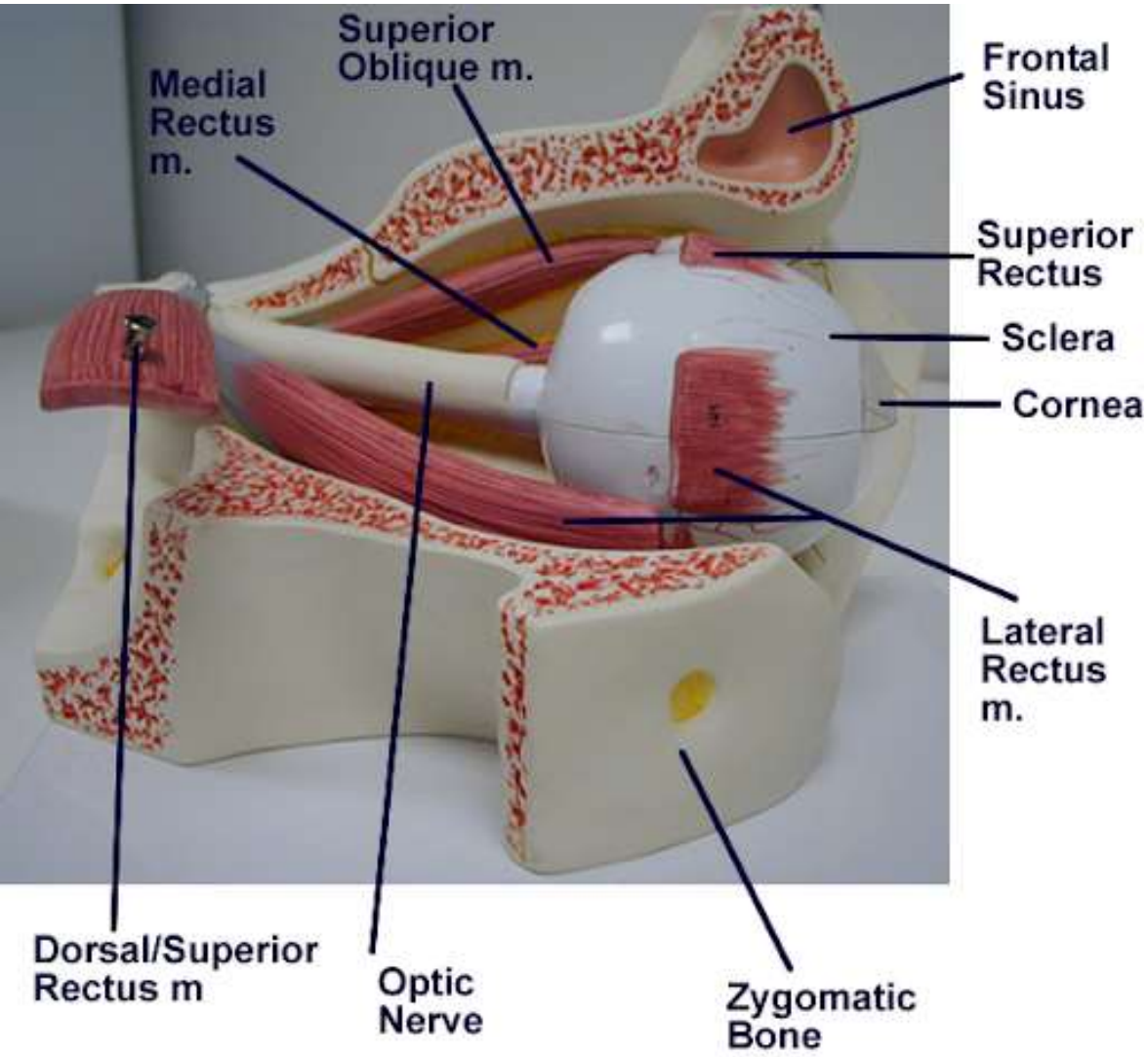
Muscle	Primary Function
Medial rectus	moves eye towards nose
Lateral rectus	moves eye away from nose
Superior rectus	raises eye
Inferior rectus	lowers eye
Superior oblique	rotates eye
Inferior oblique	rotates eye

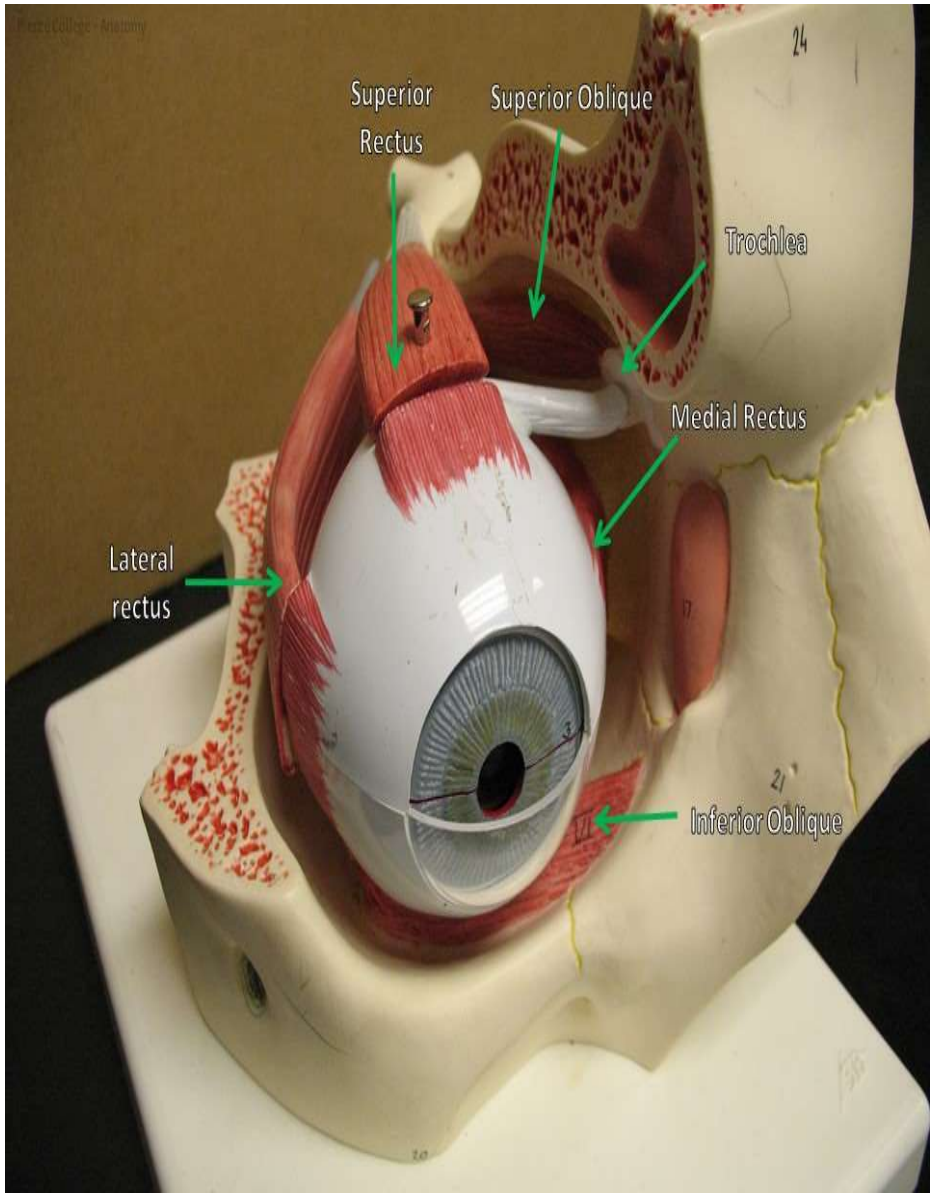


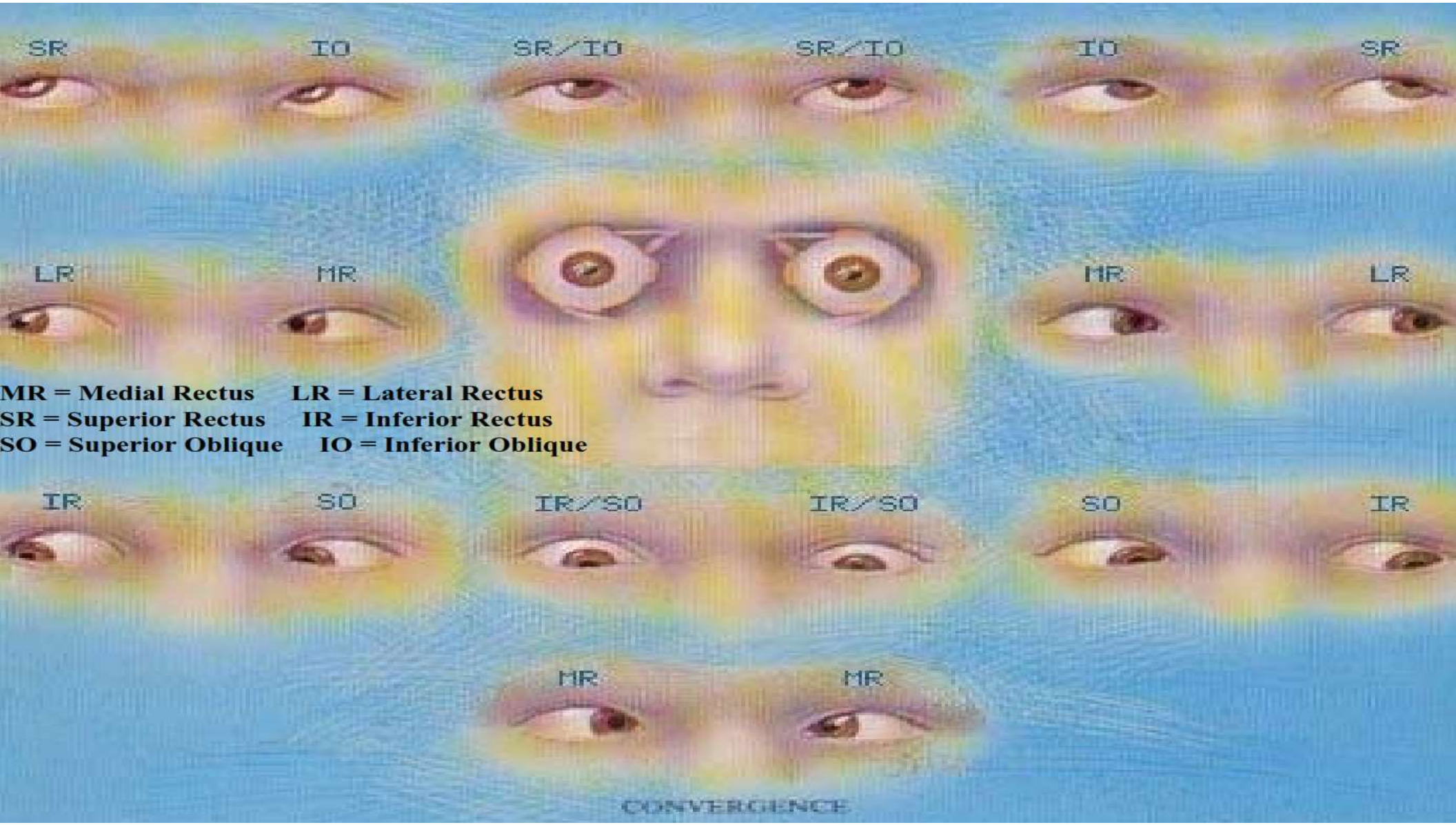

Superior rectus muscle
Superior oblique muscle
Lateral rectus muscle
Sclera
Iris
Pupil
Inferior oblique muscle


Lacrimal gland
Sclera
Lateral rectus muscle
Cornea


Superior Oblique
Levator Palpebrae Superioris
Superior Rectus
Medial Rectus
Lateral Rectus
Inferior Rectus
Inferior Oblique


Superior Oblique m.
Medial Rectus m.
Frontal Sinus
Superior Rectus
Sclera
Cornea
Lateral Rectus m.
Dorsal/Superior Rectus m
Optic Nerve
Zygomatic Bone


Superior Rectus
Superior Oblique
Trochlea
Medial Rectus
Lateral rectus
Inferior Oblique


SR
IO
SR/IO
SR/IO
IO
SR
LR
MR
MR
LR
MR = Medial Rectus
LR = Lateral Rectus
SR = Superior Rectus
IR = Inferior Rectus
SO = Superior Oblique
IO = Inferior Oblique
IR
SO
IR/SO
IR/SO
SO
IR
MR
MR
CONVERGENCE

Each extraocularm uscle is innervated by a specific cranial nerve(C.N.):

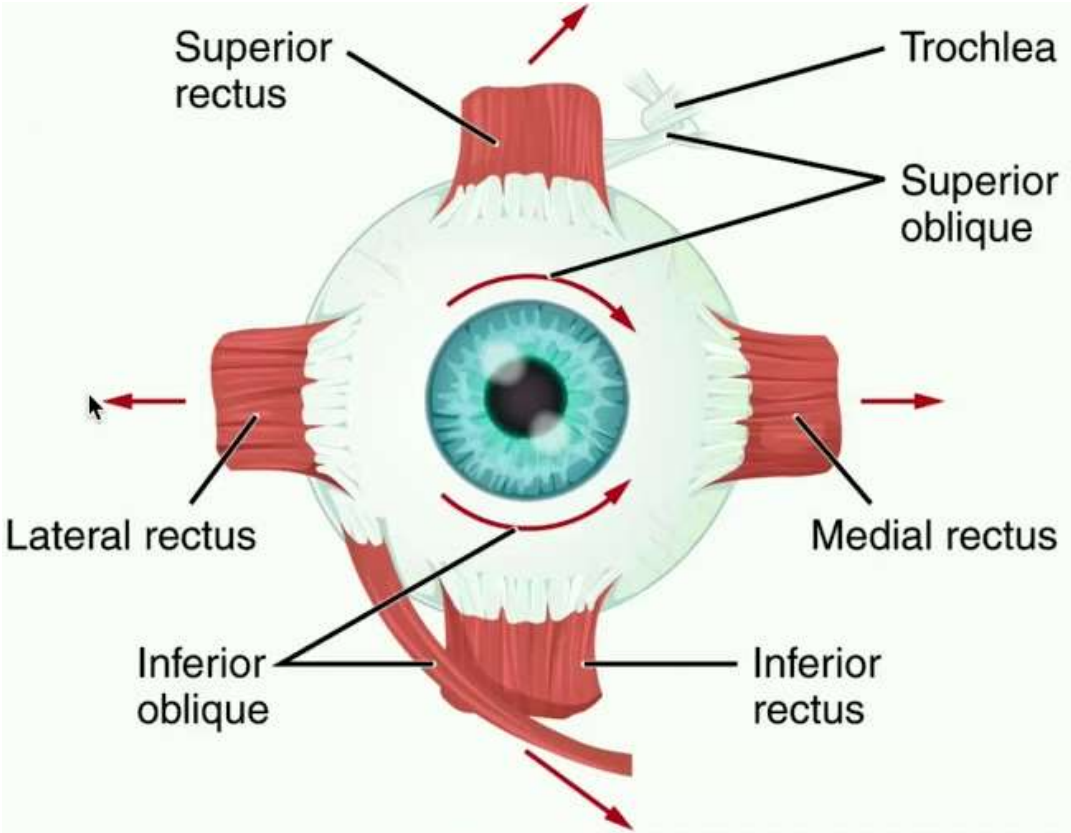
- **medial rectus(MR)—cranial nerve III (Oculomotor)**
- **lateral rectus(LR)—cranial nerve VI (Abducens)**
- **superior rectus(SR)—cranial nerve III (Oculomotor)**
- **inferior rectus(IR)—cranial nerve III (Oculomotor)**
- **superior obli que (SO)—cranial nerve IV (Trochlear)**
- **inferior oblique (IO)—cranial nerve III (Oculomotor)**

The following can be used to remember the cranial nerve innervations of the six extraocular muscles:

$$LR_6(SO_4)_3$$

.

That is, the lateral rectus(LR) is innervated by C.N. 6, the superior oblique (SO) is innervated by C.N. 4, and the four remaining muscles (MR, SR, IR, and IO) are innervated by C.N. 3

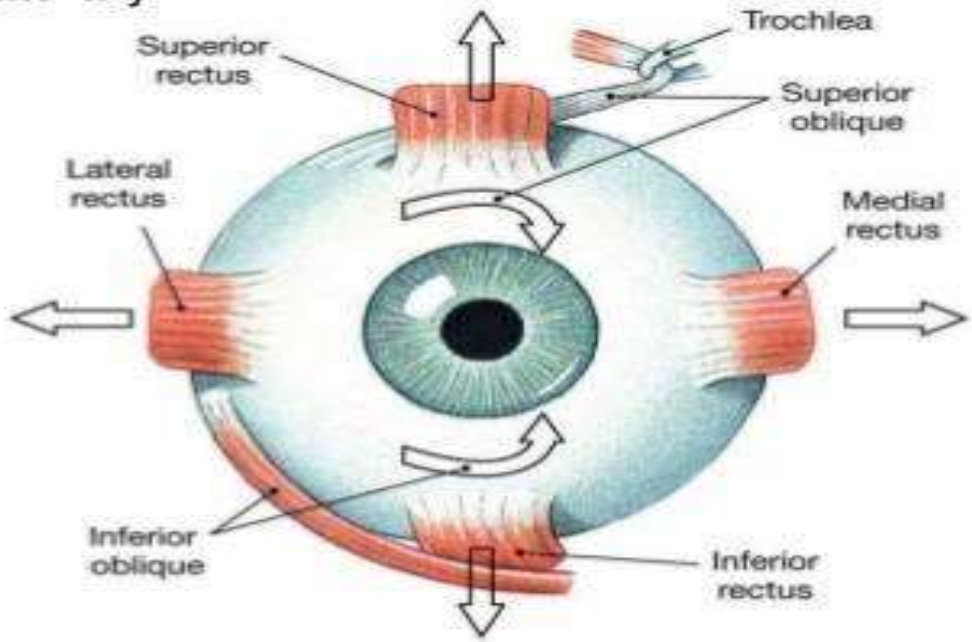


Muscle	Action	Controlling cranial nerve
Lateral rectus	Moves eye laterally	VI (abducens)
Medial rectus	Moves eye medially	III (oculomotor)
Superior rectus	Elevates eye and turns it medially	III (oculomotor)
Inferior rectus	Depresses eye and turns it medially	III (oculomotor)
Inferior oblique	Elevates eye and turns it laterally	III (oculomotor)
Superior oblique	Depresses eye and turns it laterally	IV (trochlear)

Extrinsic Eye Muscles – Innervation & Movement

The six (6) extrinsic eye muscles, innervation, and movement of the eye:

1. **Inferior Oblique**
   - (CNIII) elevates and turns eye laterally
2. **Inferior Rectus**
   - (CNIII) pulls eye inferiorly
3. **Superior Rectus**
   - (CNIII) pulls eye superiorly
4. **Medial Rectus**
   - (CNIII) pulls eye medially
5. **Lateral Rectus**
   - (CNVI) pulls eye laterally
6. **Superior Oblique**
   - (CNIV) depresses and turns eye laterally



(c) Anterior view, right eye

Cranial Nerve	Origin	Destination	Function
II. Optic	Retinal ganglion cells	Lateral geniculate body	Sensory: sight
III. Oculomotor, inferior division	Midbrain	Medial rectus muscle Inferior rectus muscle Inferior oblique muscle Ciliary ganglion	Motor: adduction Depression, adduction, extorsion Elevation, abduction, extorsion Parasympathetic: motor to iris sphincter and ciliary muscle for miosis and accommodation
III: Oculomotor, superior division	Midbrain	Superior rectus muscle Superior palpebral levator muscle	Elevation, adduction, intorsion Motor: elevation of eyelid
IV: Trochlear	Midbrain	Superior oblique muscle	Motor: depression, abduction, intorsion
VI: Abducens	Pons	Lateral rectus muscle	Motor: abduction
VII: Facial	Pons	Frontalis, procerus, corrugator, and orbicularis muscles Sphenopalatine ganglion	Motor: facial expressions, closure of eyelids Parasympathetic: secretomotor to lacrimal gland for lacrimation

Credit and references of some pictures

Credits

Photographs and labels by **Rob Swatski, 2009-2010**

Visit my website for more Anatomy study resources!

Biogeekiwiki http://robswatskibiology.wetpaint.com

flickr™ http://www.flickr.com/photos/rswatski

Please send your comments and feedback to: rjswatsk@hacc.edu