

MUSCLES OF THE HEAD AND NECK

Myology

Types of Muscles

Skeletal striated muscle

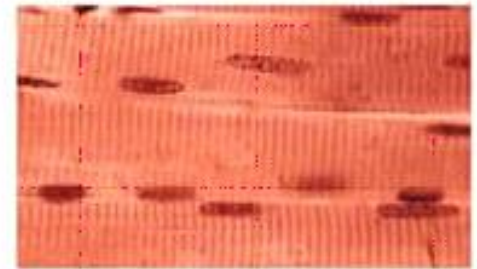
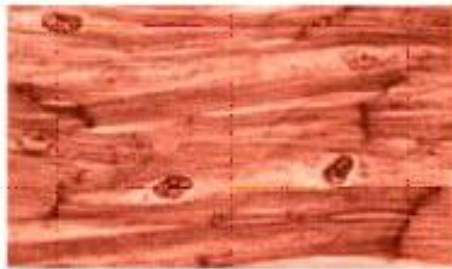
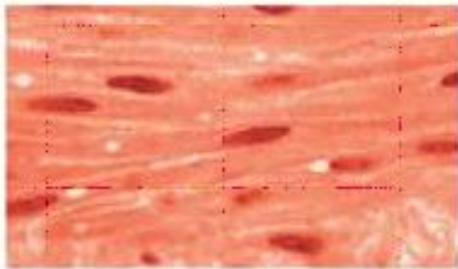
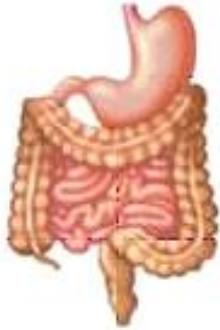
- voluntary somatic muscle
- make up the skeletal muscles

Cardiac striated muscle

- involuntary visceral muscle
- forms most of the walls of the heart and adjacent parts of the great vessels

Smooth muscle (unstriated)

- involuntary visceral muscle
- forms part of the walls of most vessels and hollow organs



Smooth muscle

- has narrow, tapered rod-shaped cells
- has nonstriated, uninucleated fibers
- occurs in walls of internal organs and blood vessels
- is involuntary

Cardiac muscle

- has striated, tubular, branched, uninucleated fibers
- occurs in walls of heart
- is involuntary

Skeletal muscle

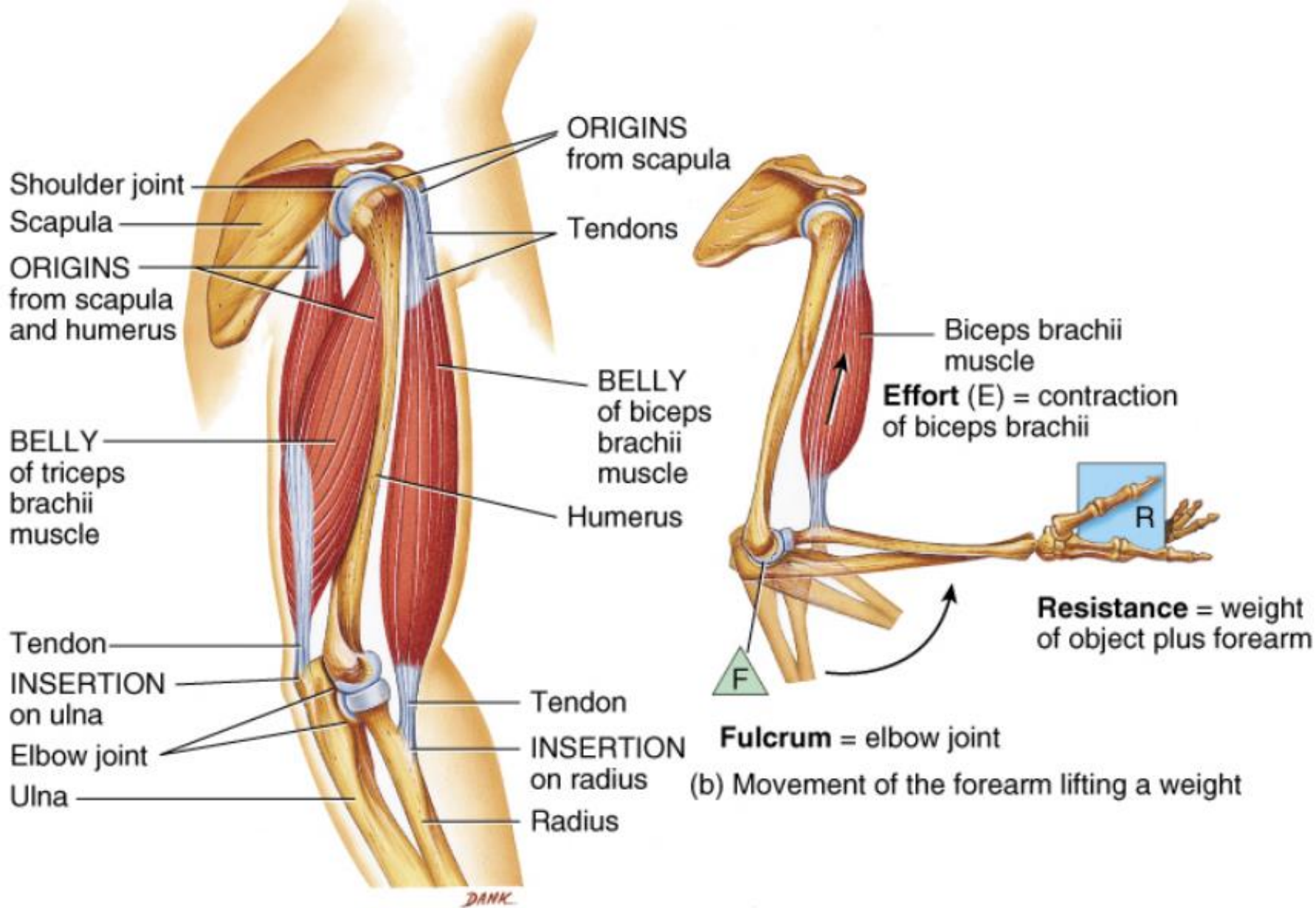
- has striated, tubular, multinucleated fibers
- is usually attached to skeleton
- is voluntary

Muscle attachment sites

- **Tendon** - attachment site to bones
- **Origin** - relatively fixed during muscular contraction (generally a more proximal location)
- **Insertion** - moveable during the contraction
- **Belly** - fleshy portion of the muscle in between attachment sites

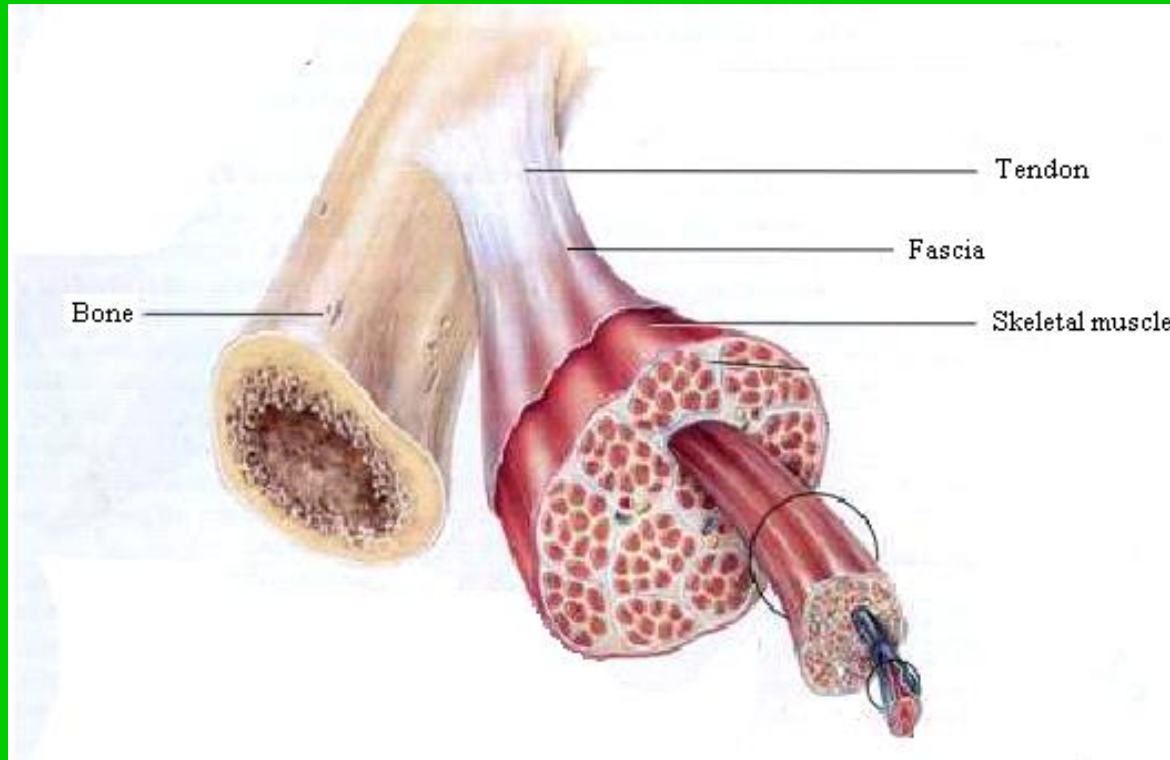
Connective tissues

- **Ligament** - fibrous tissue that connects bones to other bones
- **Aponeurosis** - layer of flat broad tendon
- **Tendon** - tough band of fibrous connective tissue that usually connects the muscle to bone



Fascia

- layer of fibrous tissue that surrounds muscles, groups of muscles, blood vessels and nerves, binding those structures together
- allow the muscles to slide upon each other during movement



Arrangement of Fascicles

Parallel Fascicles parallel to longitudinal axis of muscle; terminate at either end in flat tendons.



Example: Stylohyoid muscle (see [Figure 11.7](#))

Fusiform Fascicles nearly parallel to longitudinal axis of muscle; terminate in flat tendons; muscle tapers toward tendons, where diameter is less than at belly.



Example: Digastric muscle (see [Figure 11.7](#))

Circular Fascicles in concentric circular arrangements form sphincter muscles that enclose an orifice (opening).



Example: Orbicularis oculi muscle (see [Figure 11.3](#))

Triangular Fascicles spread over broad area converge at thick central tendon; give muscle a triangular appearance.



Example: Pectoralis major muscle (see [Figure 11.2a](#))

Pennate Short fascicles in relation to total muscle length; tendon extends nearly entire length of muscle.

Unipennate Fascicles are arranged on only one side of tendon.



Example: Extensor digitorum longus muscle (see [Figure 11.20a,b](#))

Bipennate Fascicles are arranged on both sides of centrally positioned tendons.



Example: Rectus femoris muscle (see [Figure 11.19a](#))

Multipennate Fascicles attach obliquely from many directions to several tendons.

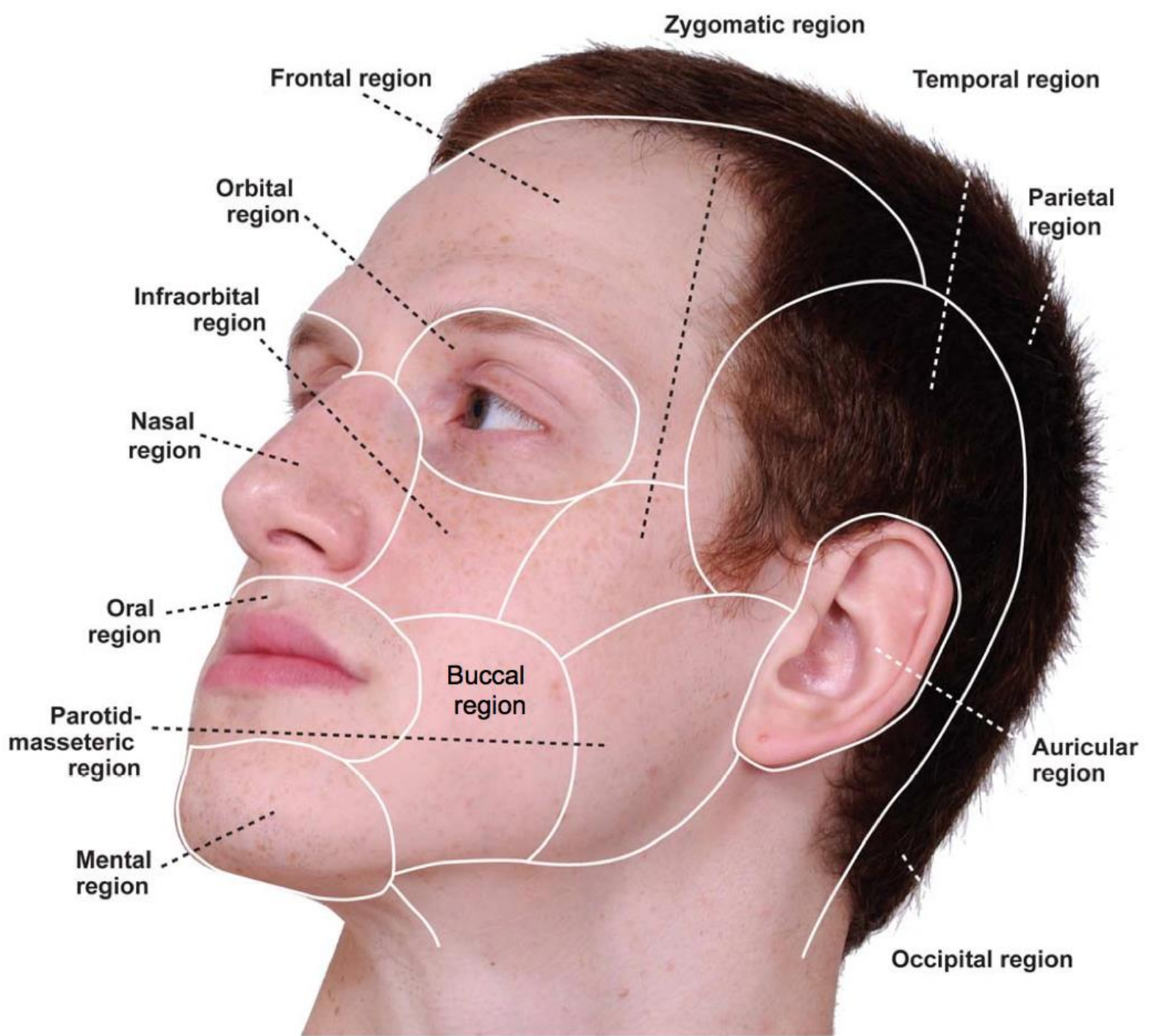


Example: Deltoid muscle (see [Figure 11.9a](#))

Coordination among muscles

- body movements are often the result of multiple muscles working groups
- **Agonist or prime mover**
doing the contracting and creating the movement
- **Antagonist**
is relaxing and letting the movement take place
- **Synergist**
support the agonist in creating movement
- **Fixator**
allows the agonist to work, stabilizing the origin

Muscles of the Head





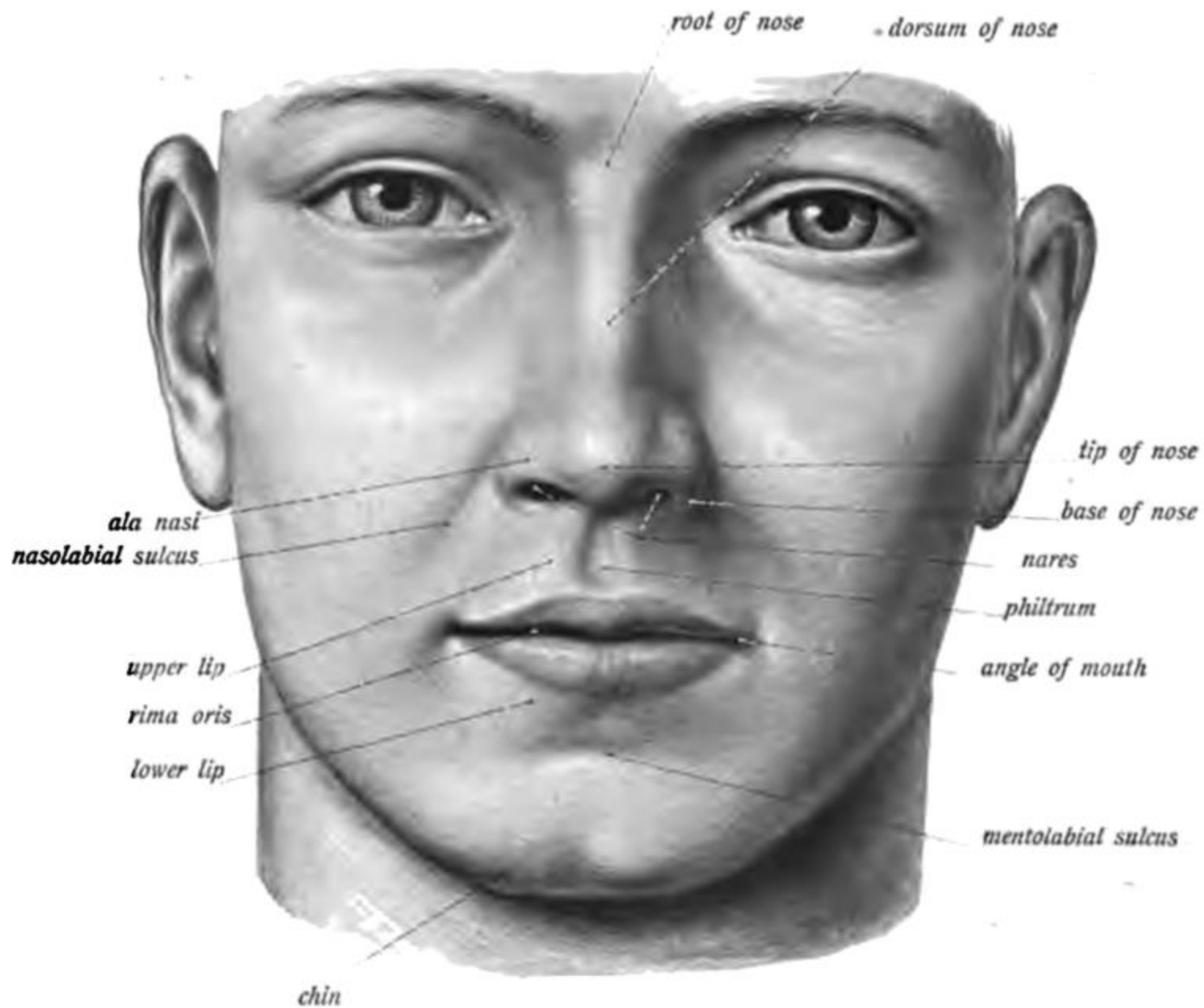
**Philtral
Ridges**

This diagram illustrates the facial features of a human face, specifically focusing on the folds and ridges around the mouth and nose. The image is a detailed stippled drawing of a man's face, showing the eyes, nose, and mouth. Four labels with leader lines point to specific anatomical features: Philtral Ridges (the vertical lines on the upper lip), Nasolabial fold (the fold between the nose and the upper lip), Buccolabial fold (the fold between the cheek and the upper lip), and Mentolabial fold (the fold between the lower lip and the chin).

**Nasolabial
fold**

**Buccolabial
fold**

**Mentolabial
fold**



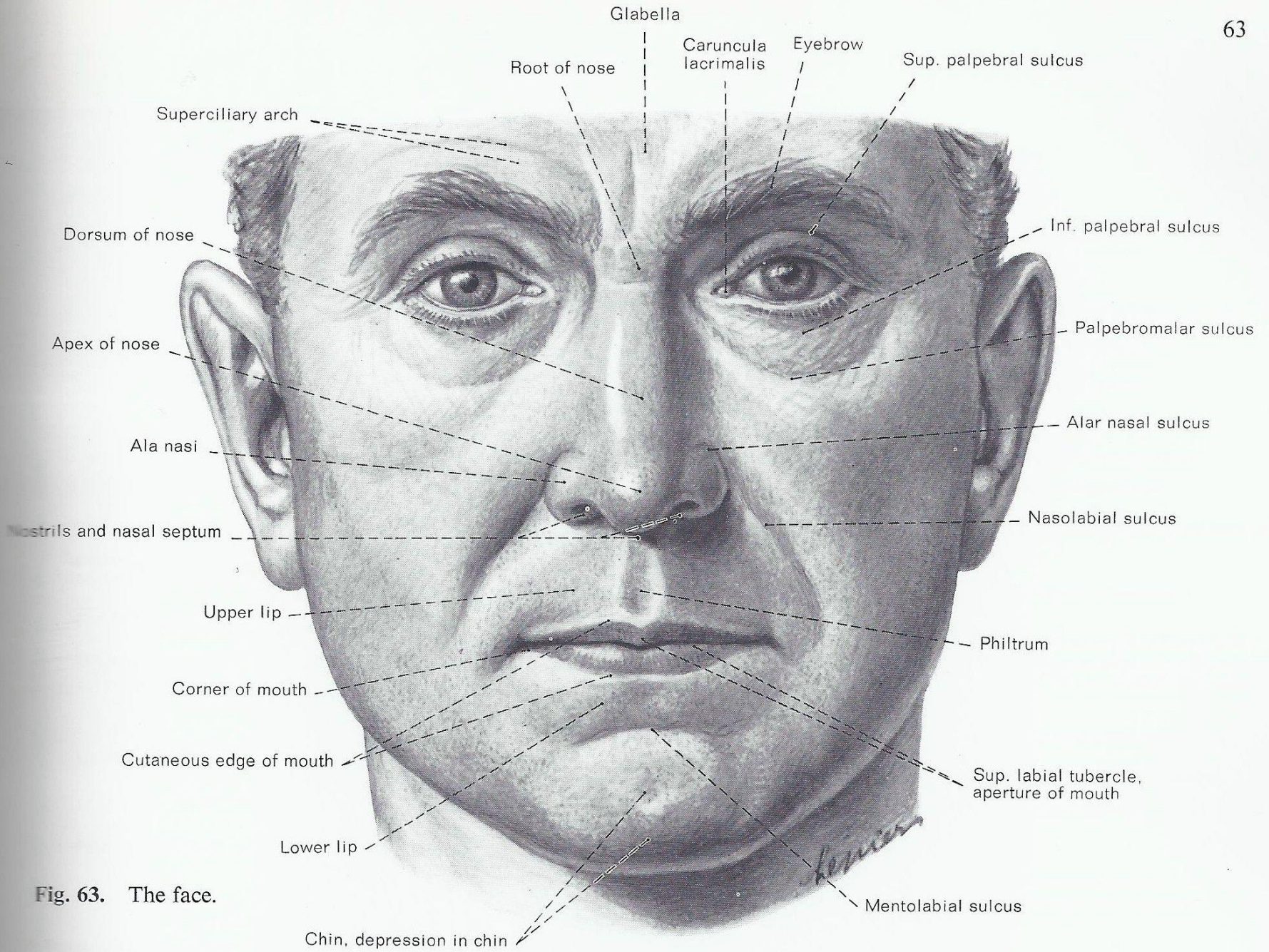
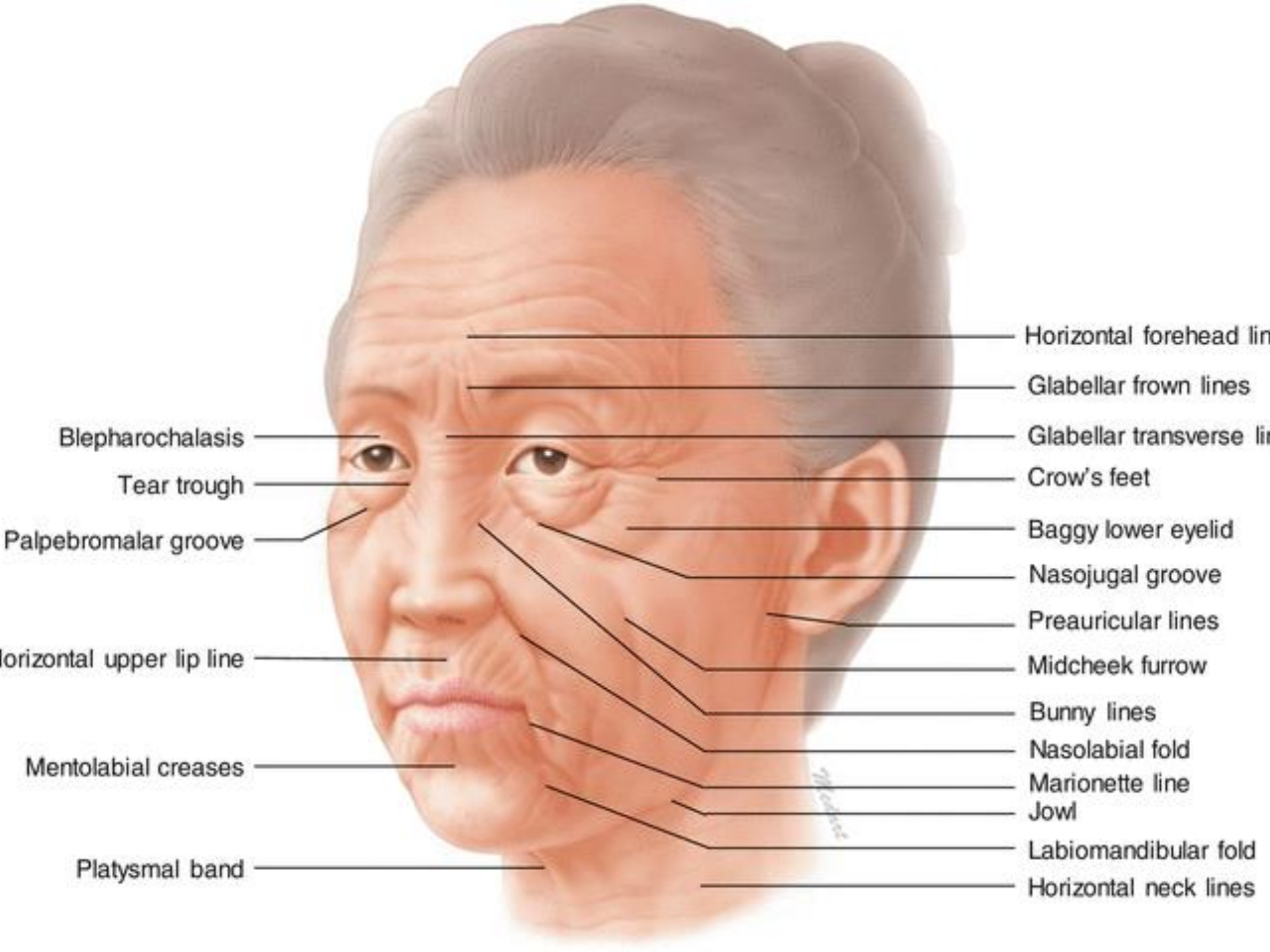


Fig. 63. The face.



Horizontal forehead lines

Glabellar frown lines

Glabellar transverse lines

Crow's feet

Baggy lower eyelid

Nasojugal groove

Preauricular lines

Midcheek furrow

Bunny lines

Nasolabial fold

Marionette line

Jowl

Labiomandibular fold

Horizontal neck lines

Blepharochalasis

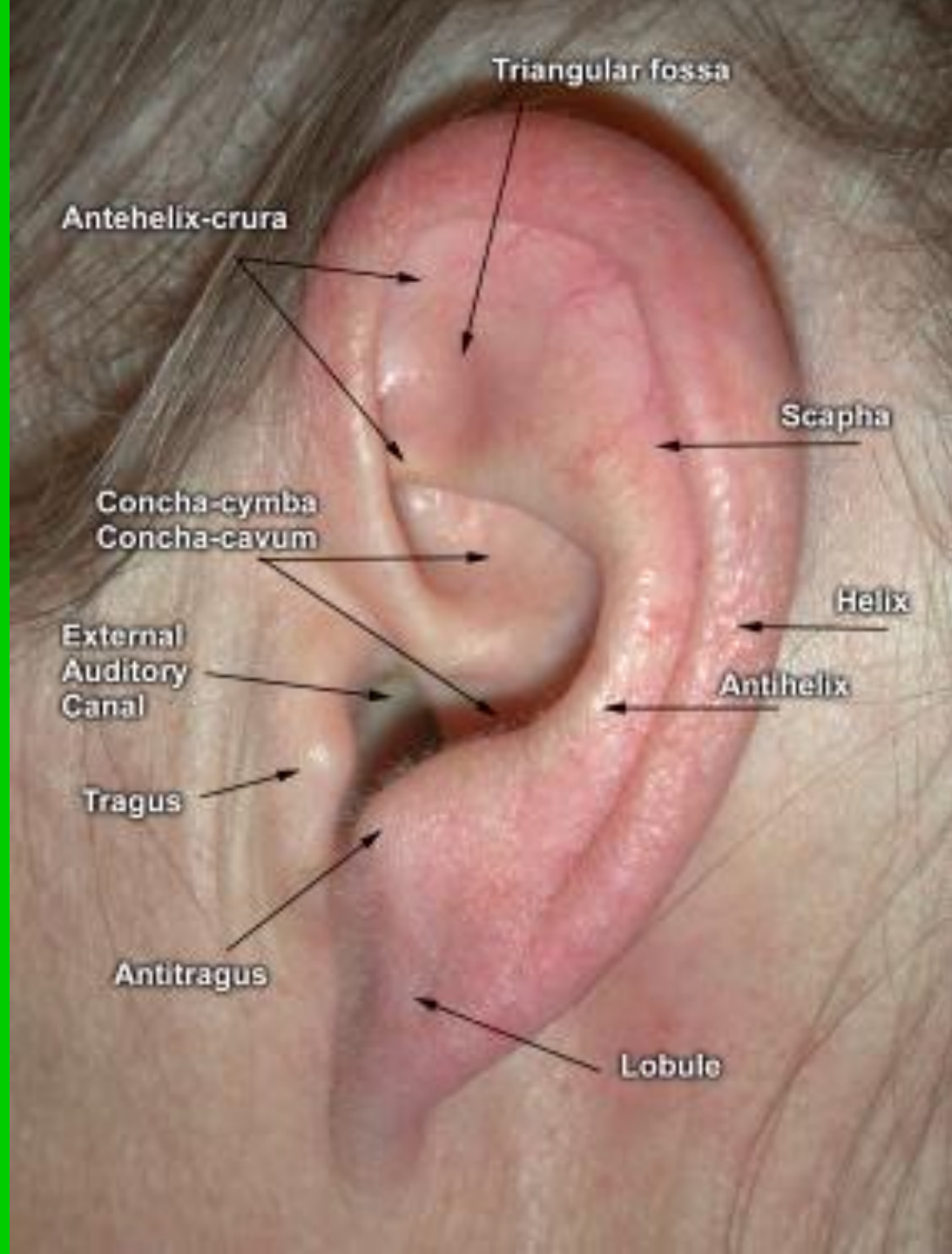
Tear trough

Palpebromalar groove

Horizontal upper lip line

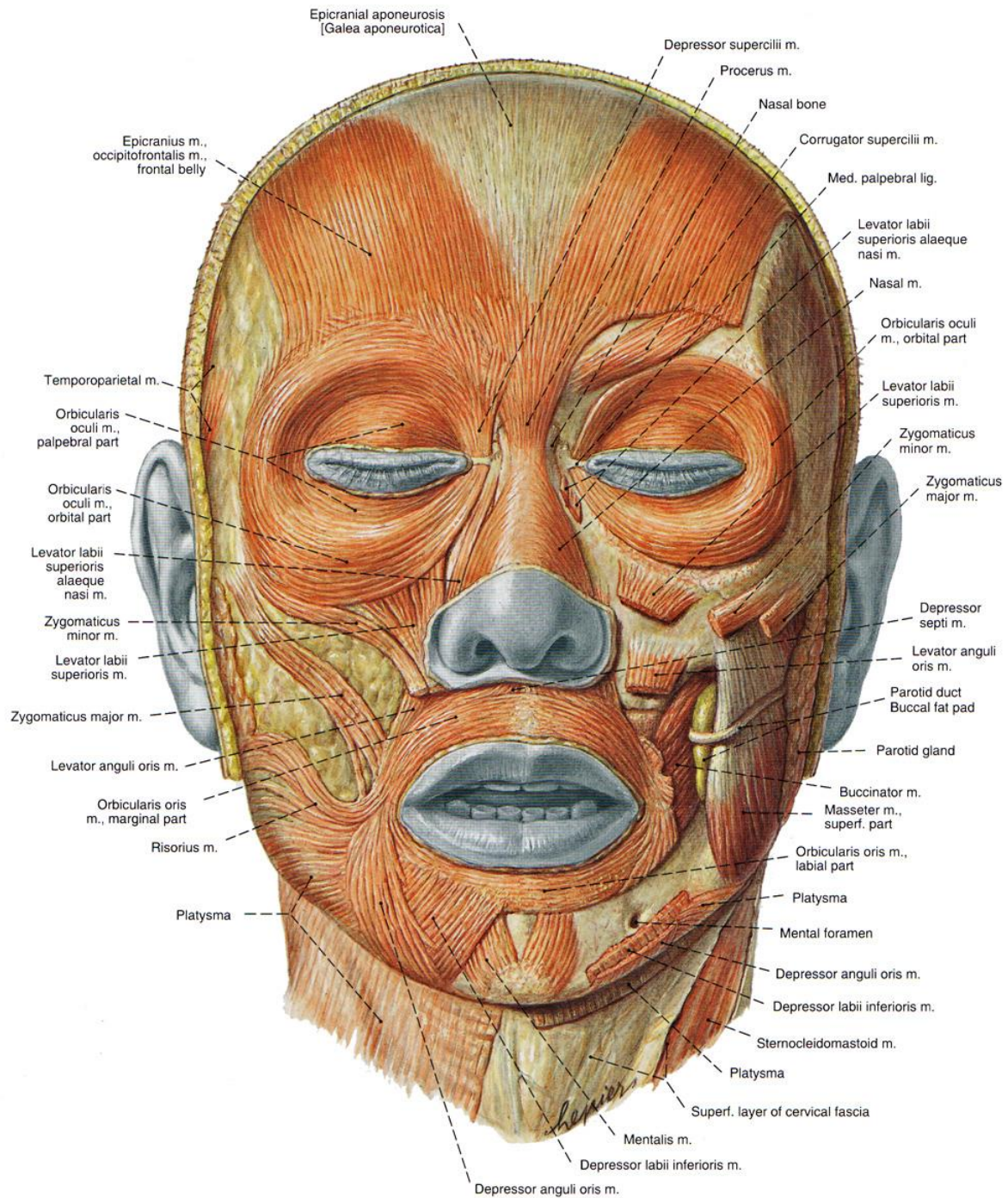
Mentolabial creases

Platysmal band



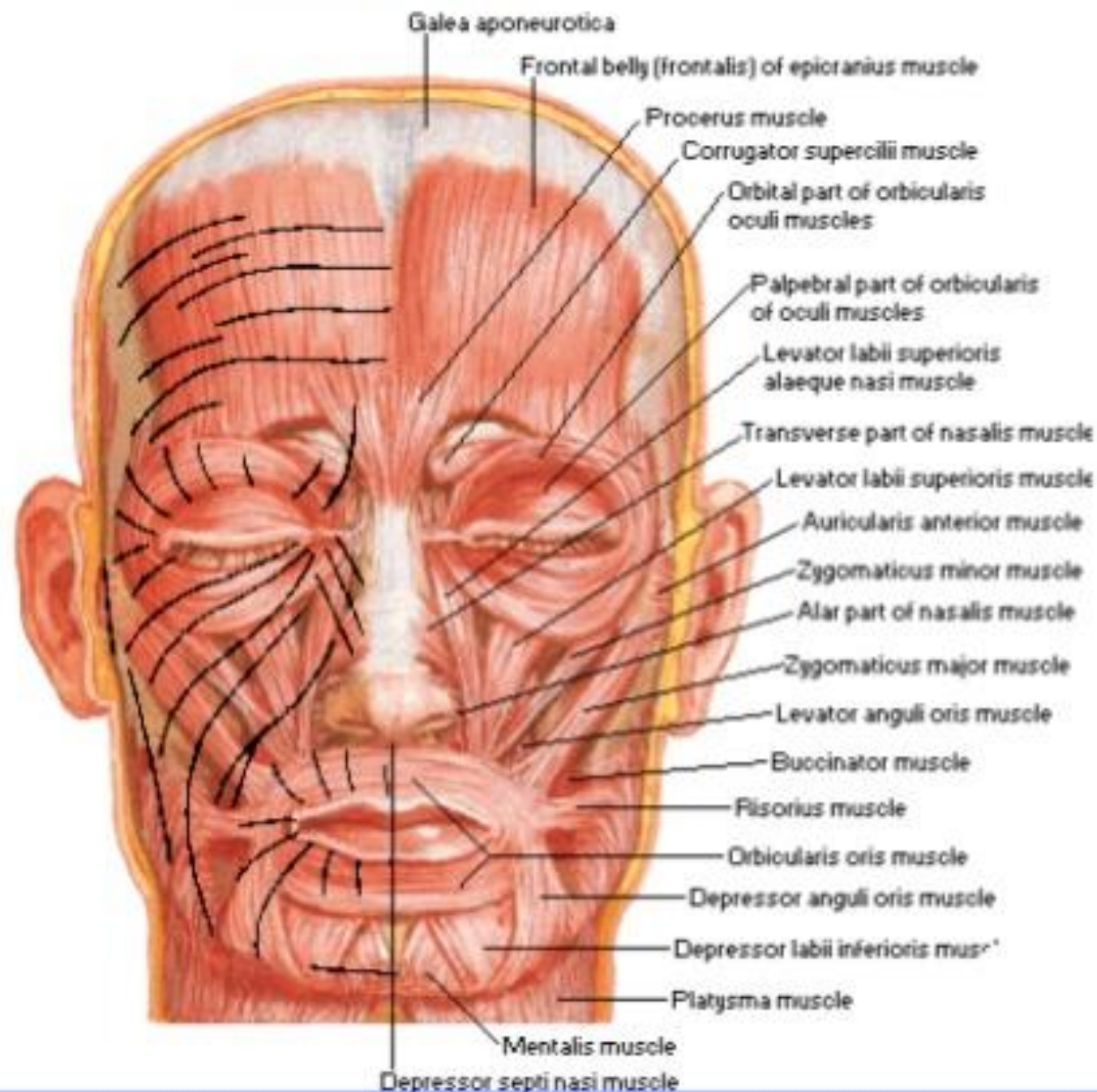
Vermillion border

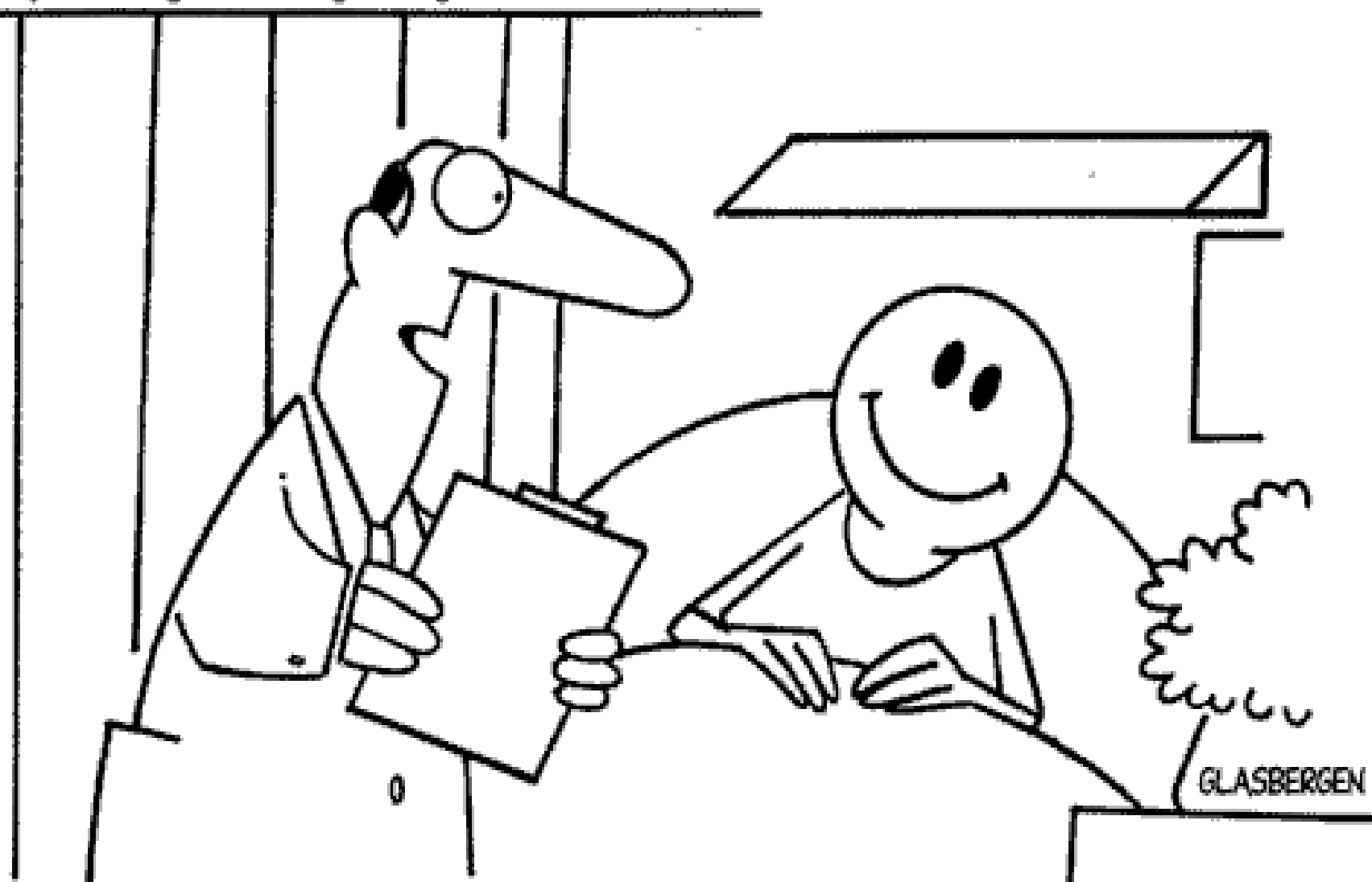
- Transitional epithelium
- Between the mucous mambrane of the lips and the skin
- In edentulous face there is diminution of amount of vermillion of the upper lip and relative fullness of the lower one.



Muscles of Facial Expression

Anterior View





“Your plastic surgery was a great success, Mrs. Jones. The lines and wrinkles are completely gone!”



Identification plays a major role in any crime investigation.

The pattern of wrinkles on the lips has individual characteristics like fingerprints.

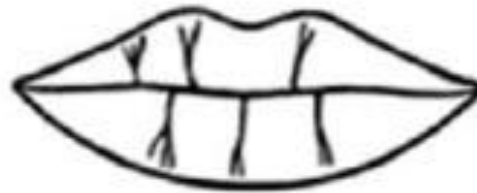
Cheiloscopy is a forensic investigation technique that deals with identification of humans based on lips traces



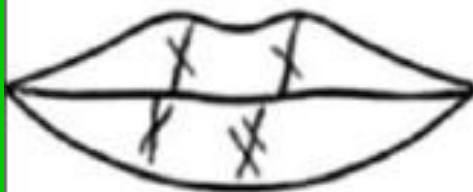
TYPE I



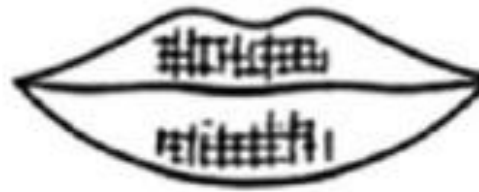
TYPE I'



TYPE II



TYPE III



TYPE IV



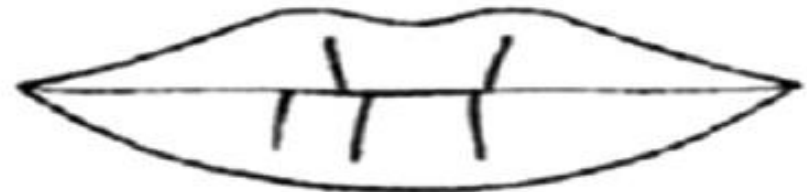
TYPE V

1. Straight line
2. Curved line
3. Angled line
4. Sine-shaped line

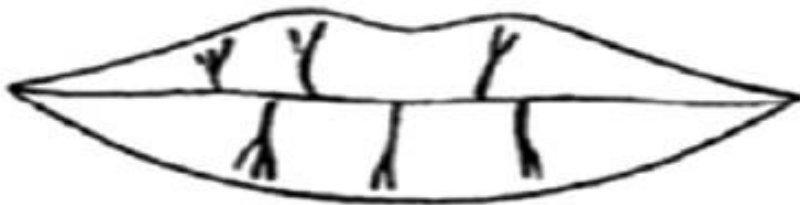
1. Type I: A clear-cut groove running vertically across the lip.
2. Type I': Partial-length groove of Type I.
3. Type II: A Branched groove.
4. Type III: An intersected groove.
5. Type IV: A Reticular pattern
6. Type V: Other patterns.



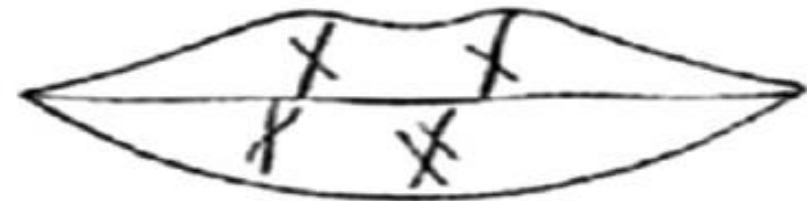
Type I: Complete straight grooves.



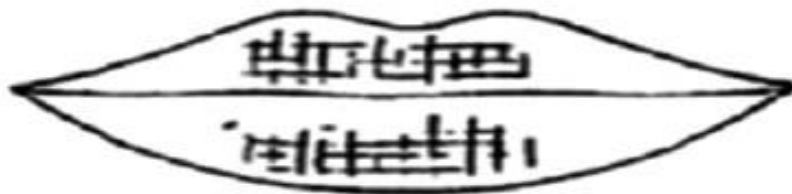
Type I': Partial straight grooves.



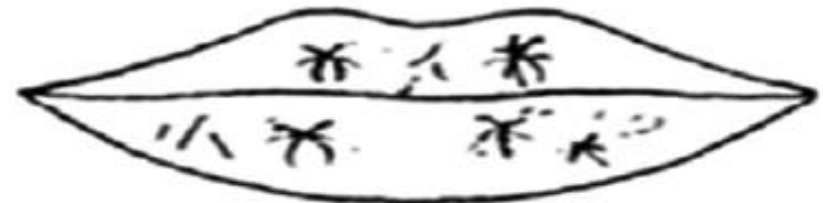
Type II: Branched grooves.



Type III: Intersected grooves.



Type IV: Reticular grooves.



Type V: Undifferentiated grooves.

Muscles of the face

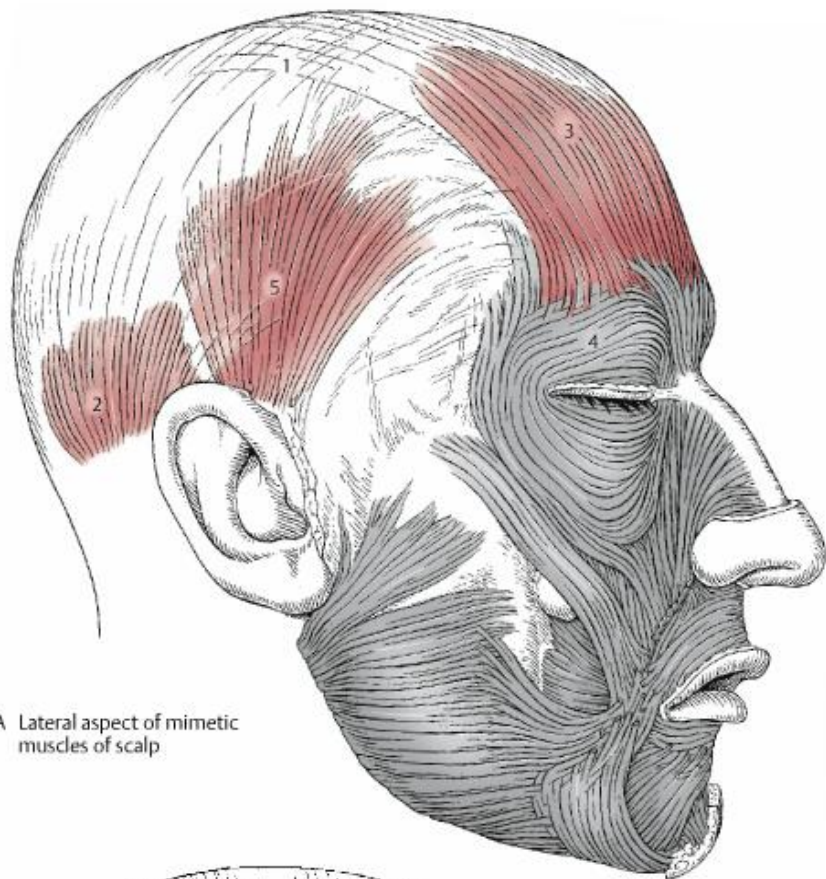
Muscles of eye	Origin	Insertion	Action	Innervation
M. orbicularis oculi pars palpebralis and orbitalis	circularly around the orbit, is attached to ligamentum palpebrale mediale		closing the eyelid	N.facialis
M. orbicularis oculi pars lacrimalis	crista lacrimalis posterior	margins of the eye-lids	enlarges saccus lacrimalis	
M. corrugator supercilii	sutura nasofrontalis	middle and lateral part of the eyebrows	vertical furrowing over radix nasi	
M. procerus	radix nasi	glabella	transversal skin folds above radix nasi	

Muscles of the mouth	Origin	Insertion	Action	Innervation
M. orbicularis oris	juga alveolaria of incisors, inferior part of apertura piriformis	labial skin	mouth closing, labial constriction, labial puckering	N.facialis
M. levator labii superioris	inferior edge of aditus orbitae	labium superius	elevation of upper lip	
M. levator labii superioris alaeque nasi	angulus medialis orbitae et dorsum nasi	sulcus nasolabialis	elevation of upper lip and enlargement of nostril	
M. levator anguli oris	fossa canina	angulus oris	elevates angulus oris	
M. zygomaticus minor	os zygomaticum	sulcus nasolabialis	pulls angulus oris laterocranially	
M. zygomaticus major	os zygomaticum	sulcus nasolabialis	pulls oral angle laterocranially	

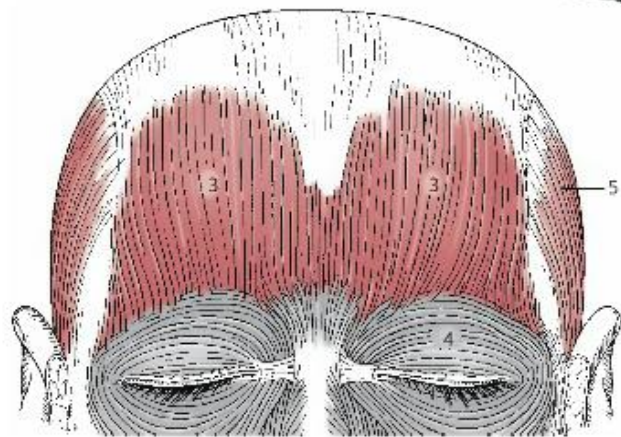
Muscles of the mouth	Origin	Insertion	Action	Innervation
M. risorius	fascia masseterica	angulus oris	traction of oral angle laterocranially	N.facialis
M. buccinator	processus alveolaris of the posterior teeth et raphe buccopharyngeum	angulus oris	compresses cheeks against molar teeth; sucking and blowing	
M. depressor anguli oris	basis mandibulae	angulus oris	traction of angulus oris caudally	
M. depressor labii inferioris	basis mandibulae	labium inferius	traction of lower lip caudally	
M. mentalis	juga alveolaria of lower incisors	skin of the chin	pulls chin skin cranially, protrudes lower lip	

Muscles of epicranium	Origin	Insertion	Action	Innervation
M. occipitofrontalis venter occipitalis	linea nuchae suprema	galea aponeurotica	traction of the head skin dorsally, and erases forehead wrinkles	N.facialis
M. occipitofrontalis venter frontalis	margo anterior of galea aponeurotica	skin of forehead and eyebrow	contraction causes transversal forehead wrinkles, and elevation of palpebra superior	
M. temporoparietalis	galea aponeurotica	auricular cartilage	pulls auricula cranially	

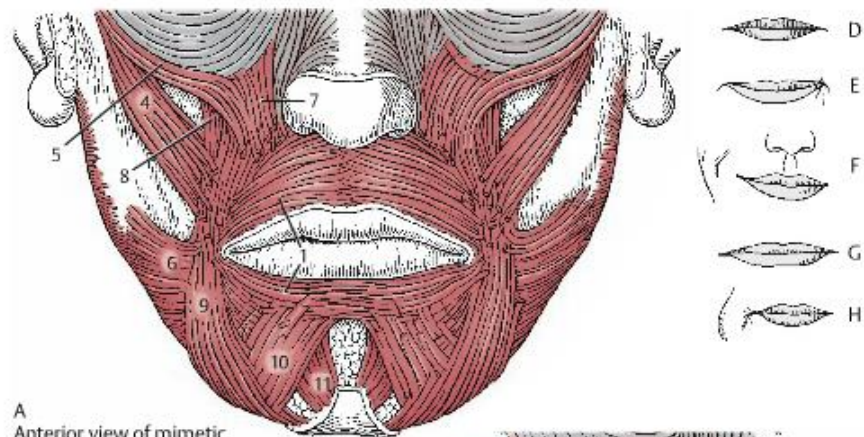
Nasal muscle	Origin	Insertion	Action	Innervation
M. nasalis	juga alveolaria of the upper anterior teeth	ala nasi	narrowing of nostril	N.facialis



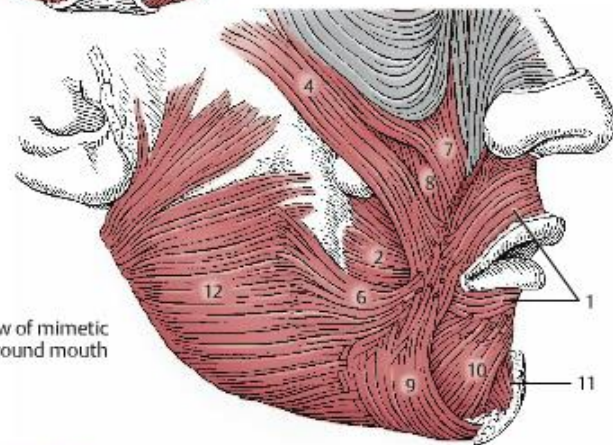
A Lateral aspect of mimetic muscles of scalp



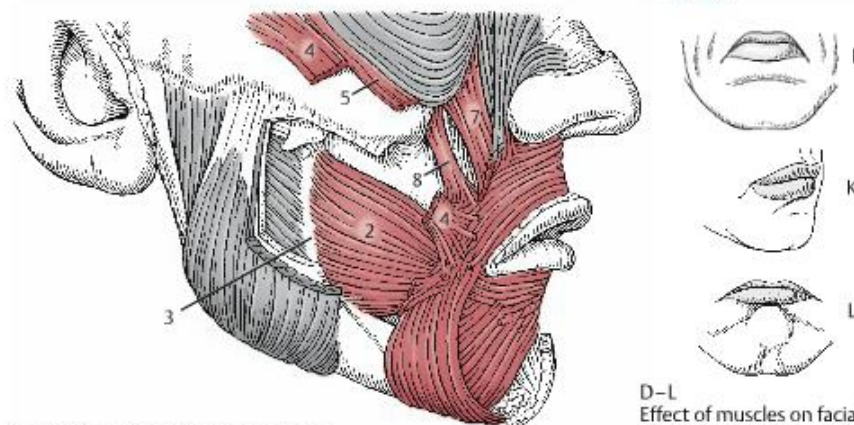
B Anterior aspect of mimetic muscles of forehead



A Anterior view of mimetic muscles around mouth



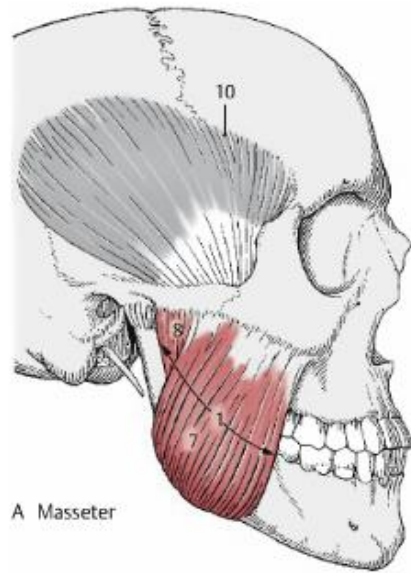
B Lateral view of mimetic muscles around mouth



C Detailed lateral view of buccinator

D-L Effect of muscles on facial expression (from Rouillé)

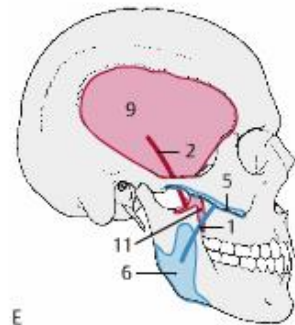
Masticatory muscles	Origin	Insertion	Action	Innervation
M. temporalis	planum temporale (as far as linea temporalis inf.) and internal surface of temporal fascia	processus coronoideus mandibulae	elevation and retrusion	N.trigeminus
M. masseter pars superficialis	corpus ossis zygomatici et arcus zygomaticus (anterior $\frac{2}{3}$)	tuberositas masseterica	elevation and protrusion	
M. masseter pars profunda	arcus zygomaticus (posterior $\frac{1}{3}$)	external surface of ramus mandibulae	retrusion	
M. pterygoideus medialis pars medialis	fossa pterygoidea	tuberositas pterygoidea	elevation	
M. pterygoideus medialis pars lateralis	tuber maxillae	tuberositas pterygoidea		
M. pterygoideus lateralis pars superior	facies infratemporalis alae majoris ossis sphenoidalis	discus articularis et fovea pterygoidea	protrusion and depression	
M. pterygoideus lateralis pars inferior	lateralis processus pterygoidei	discus articularis et fovea pterygoidea		



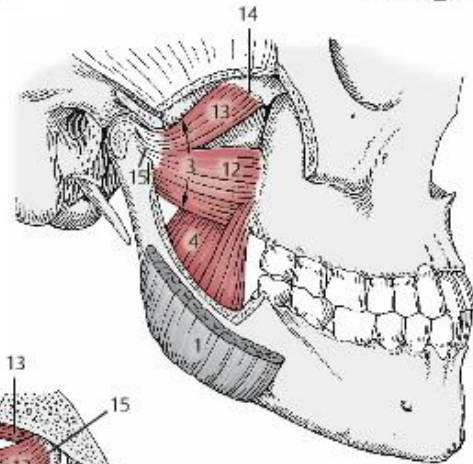
A Masseter



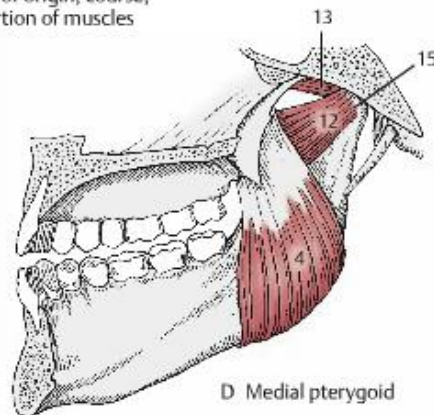
B Temporalis



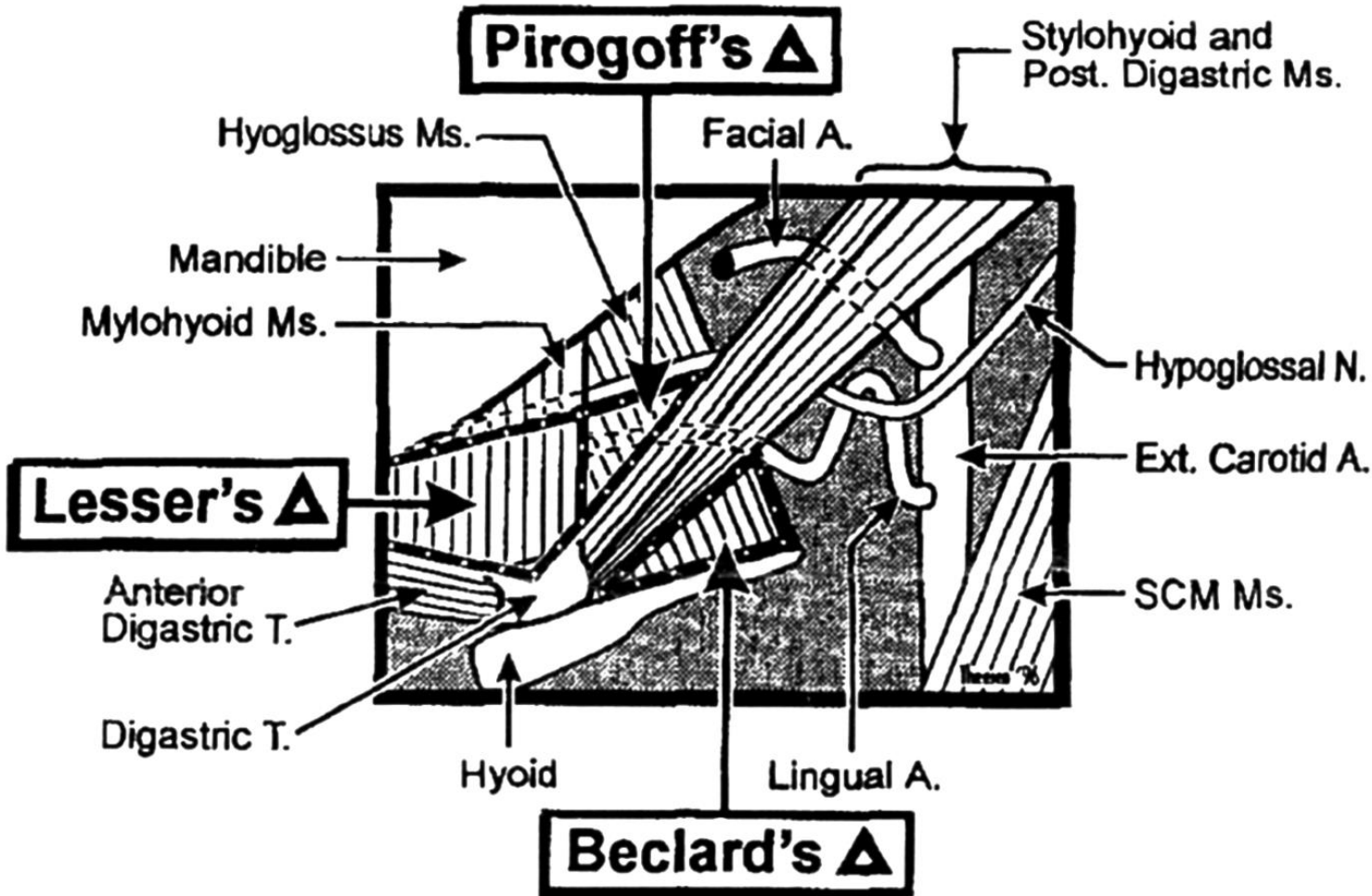
E
Diagram of origin, course,
and insertion of muscles



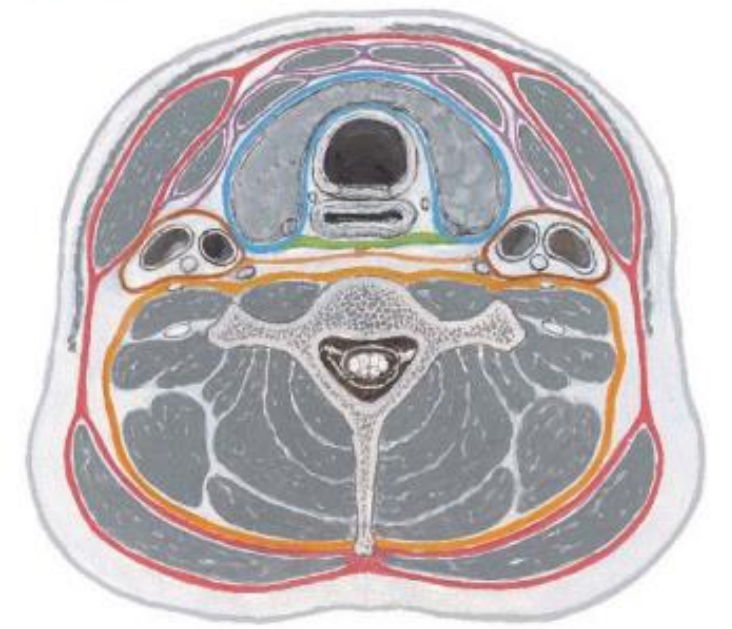
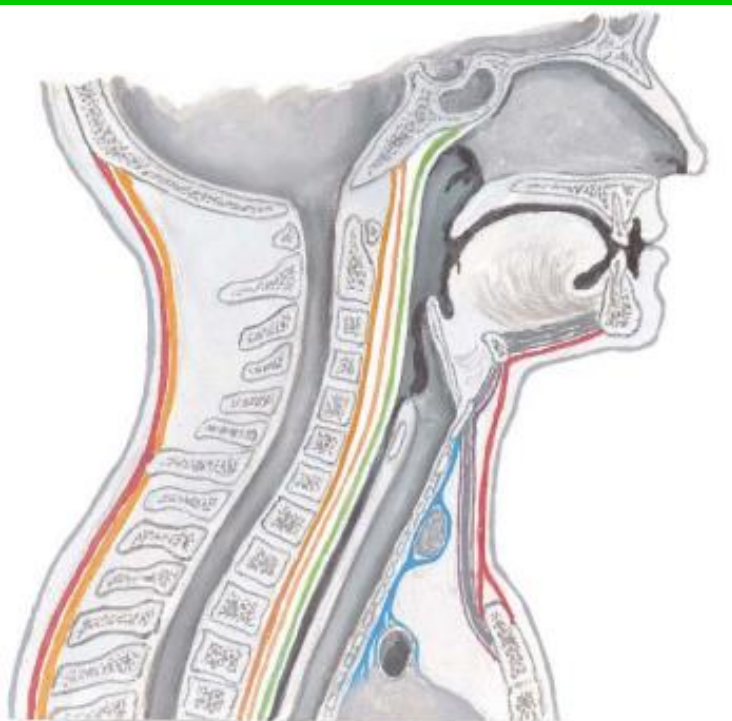
C Lateral and medial pterygoid



D Medial pterygoid



Cervical Fascias



- **Superficial fascia**
immediately deep to the skin
- **Deep cervical fascia**
deep investing fascia
visceral (pretracheal) fascia
prevertebral fascia
alar fascia

Deep investing fascia

- wraps around the entire circumference of the neck
- splits to pass around SCM and trapezius
- **Superior attachment**
inf. border of mandible, inf. border of the body of hyoid bone, angle of mandible, inf. border of zygomatic arch, mastoid process, styloid process and attachments of SCM and trapezius to the skull
- **Inferior attachment**
manubrium sterni, clavicles and spine of the scapula

Visceral/pretracheal fascia

- deep to the deep investing fascia
- forms a sheath around the visceral unit of the neck
- **Superior attachment**
hyoid bone and base of the skull
- **Inferior attachment**
superior mediastinum → pericardium of the heart

Prevertebral fascia

- surrounds the cervical vertebral unit
- **Superior attachment**
base of the skull
- **Inferior attachment**
blends with the investing fascia of the musculature of the back and with the anterior longitudinal ligament of the thoracic vertebrae

Alar fascia

- formed by a division of the anterior component of the prevertebral fascia
- binds to the transverse processes laterally