Cranial Nerves and Soft Tissues of the Skull
Start with BRAIN STUFF...
<table>
<thead>
<tr>
<th>Brain (6-week embryo)</th>
<th>Brain Regions at Birth</th>
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<tbody>
<tr>
<td></td>
<td>Cerebrum</td>
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<td></td>
<td>Diencephalon</td>
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<td>Midbrain</td>
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<td></td>
<td>Cerebellum and Pons</td>
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<td>Medulla oblongata</td>
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</table>

**FOREBRAIN**

**MIDBRAIN**

**HINDBRAIN**
Forebrain:


Diencephalon – Homeostasis, behavioral drives in hypothalamus; sensory relay and modification in thalamus; melatonin secretion in pineal gland.

Midbrain (Mesencephalon)
Control of eye movement.

Hindbrain

Cerebellum and Pons – control of movement, proprioreceptive input; relays visual and auditory reflexes in pons.

Medulla Oblongata – Involuntary functions: blood pressure, sleep, breathing, vomiting.
See in Part 3 of your Laboratory Protocols....
Development

• Special Sense organs = nose, eyes and ears, begin as small outcrops of ectoderm called placodes
Development

Placode 1 = nose

Placode 2 = eye

Placode 3 = ear
Development

• In the nose, the ectoderm become nerve cells that send their fibres through the cribriform plate of the ethmoid, back to the brain

• This is Cranial Nerve I = the Olfactory Nerve
Development

- The second placode becomes the lens of the eye.
- It sinks below the surface of the skin, and an outgrowth of the brain wraps around it.
- The outgrowth is the retina, and the stalk connecting it is Cranial Nerve II = The Optic Nerve
Eye starts out as photosensitive lobe of brain underlying surface of skin.

Lobe eventually becomes two-layered cup = retina.

Connected to brain by “stalk” that is the OPITC NERVE (cranial nerve II).

Lens from ectodermal placode.

Marginal cells of retina become specialized as MUSCLE CELLS that regulate opening of pupil:

- Sphincter pupillae (parasympathetically regulated)
- Dilator pupillae (sympathetically regulated)
Developing Retina

Developing Lens
Development

• The Inner ear starts out as a lens, but turns into a fluid filled sac

• Receptor organs of hearing and balance.

• Cranial Nerve VIII = Auditory or Vestibulocochlear Nerve
Cranial Nerve VIII
Vestibulocochlear Nerve
(Evolutionary branch of VII)
Early Development of the Ear

The ear consists of three different parts: the external ear, middle ear, and internal ear. The internal ear forms from otic placodes (thickened ectoderm) that develop on both sides of the hindbrain during the 4th week of development (A and B). These placodes invaginate to form otic vesicles (C–G).
Ventral Root Cranial Nerves

Somite Associated
Development

- Head somites can be divided into 2 sets. Pre-otic and post-otic
Development

• The sklerotomes of the post otic somites form the floor of the brain case
Development

....and their myotomes develop into muscles of the tongue
Development

The myotomes of the pre-otic somites form the muscles that move the eyeballs.
Development

Each is supplied by a different cranial nerve:
Development

Cranial Nerve III = Occulomotor Nerve
Development

Cranial Nerve IV =
Trochlear Nerve
Development

Cranial Nerve VI = Abducens Nerve
EYEBALL MOVING MUSCLES:

Rectus Muscles
- Superior rectus - III
- Inferior rectus - III
- Lateral rectus - VI
- Medial rectus - III

Oblique muscles
- Superior oblique - IV
- Inferior oblique - III

Lavator palpebrae superioris - III
Dorsal Root Cranial Nerves

Gill Pouch Associated
Development

Gill Arch Derivatives
Development

Mandibular arch
Cranial Nerve V: The Trigeminal Nerve (3 branches)

V1 Ophthalmic,

V2 Maxillary,

V3 Mandibular
Development

Hyoid arch
Cranial Nerve VII:
Facial nerve
Development

Next arch
Cranial nerve IX:
Glossopharyngeal Nerve
Development

Remaining arches
Cranial nerve X: The Vagus Nerve
The Cranial Nerves

Summary of Cranial Nerves
Is there a “#0” nerve?

The *Nervus Terminalis* (Nerve Zero) has been suggested as a primitive vertebrate structure serving the vomeronasal organ.
Special Sensory Nerves
Cranial Nerve I

The Olfactory Nerve
Sensory
Smell
Cribiform plate of ethmoid
Cranial Nerve II

The Optic Nerve
Sensory
Vision
Optic foramen
Ventral Root
Cranial Nerves
Cranial Nerve III

The Occulomotor Nerve

Mainly motor

Eye Movement

Superior orbital fissure
Cranial Nerve III

The Occulomotor Nerve

Mainly motor

Eye Movement

Superior orbital fissure
Detail on Occulomotor (III) Function:

• Motor to all extra-ocular muscles except lateral rectus and superior oblique.

• Parasympathetic innervation to sphincter pupillae and ciliaris muscles (synapse in ciliary ganglion).

• Sympathetic innervation to sphincter pupillae and ciliaris muscles. Fibers originate in upper thoracic levels, synapse in cervical ganglia, get to orbit via associated arteries.
Cranial Nerve IV

The Trochlear Nerve

Mainly motor

Superior oblique

Superior orbital fissure
Superior oblique
Cranial Nerve VI

The Abducens Nerve

Mainly motor

Lateral rectus

Superior orbital fissure
Cranial Nerve VI

Lateral rectus
Sphenoid/ anterior view of orbital surface and foramina with associated cranial nerves indicated.

- III
- IV
- VI
- Ophth. a.
- Nerve of pterygoid canal ALSO CALLED VIDIAN NERVE (VII parasympathetics + sympathetics)
- V1
- V2
- V3
Pathways of the Oculomotor Nerve (CN III)

**Sensory**

- Superior Orbital Fissure
  - Skin around eyes and forehead

**Somatic Motor**

- Superior rectus
- Inferior rectus
- Medial rectus
- Inferior oblique
- Superior oblique
- Lateral rectus

**Parasympathetic**

- Carotid canal
- Ciliary ganglion
- Superior Cervical Ganglion of Sympathetic Chain

**Sympathetic**

- Superior rectus dilator
- Smooth muscle of blood vessels
- Smooth muscle of eyelid
- Sweat glands

**Sympathetic Targets:**

- Pupillary dilator
- (Accommodation Reflex)

**Nose**
XII
Cranial Nerve XII

The Hypoglossal Nerve
Mainly Motor
Tongue

Hypoglossal Canal
Dorsal Root

Cranial Nerves
Cranial Nerve V

The Trigeminal Nerve

Both

$V_1 = \text{ophthalmic}$

$V_2 = \text{maxillary}$

$V_3 = \text{mandibular}$
Cranial Nerve $V_1$

- Ophthalmic division
- Sensory
- Superior orbital fissure
Cranial Nerve V₁

Ophthalmic division

Sensory

Superior orbital fissure
Detail on Ophthalmic (V-1) Function:

• Almost wholly sensory: eyeball, lacrimal gland, conjunctiva, part of nasal mucosa, from brow ridge superiorly.

• Carrys a bit of sympathetic fibers for dilator pupillae. From upper thoracic levels, synapsing in in upper cervical ganglion. Reaches via branches of internal carotid artery.
Cranial Nerve V₂

Maxillary division
Sensory
Foramen rotundum
Cranial Nerve V₂

Maxillary division

Sensory

Foramen rotundum
Cranial Nerve V₃

Mandibular division

Both

Foramen ovale
Cranial Nerve V₃

Mandibular division

Both

Foramen ovale

Sensory Component
Detail on Mandibular (V-3) Function:

• Sensory to lower jaw region, including teeth.

• Motor nerve to muscles of the mandibular arch: masseter, temporalis, anterior and posterior pterygoids, mylohyoid, tensor tympani, anterior digastric, and tensor veli palatini.

• The auriculotemporal branch contains secretomotor fibers to the parotid gland via the parotid branches.
Cranial Nerve V
Cranial Nerve VII

The Facial Nerve

Both

Motor and sensory
Cranial Nerve VII

The Facial Nerve

Both motor and sensory
Muscles of facial expression

Parasympathetic:
Lacrimal ducts, taste, salivary glands
The Facial Nerve

\[ \text{VII}_a \quad \text{Temporal} \\
\text{VII}_b \quad \text{Zygomatic} \\
\text{VII}_c \quad \text{Buccal} \\
\text{VII}_d \quad \text{Mandibular} \\
\text{VII}_e \quad \text{Cervical} \]
Cranial Nerve VII

Enter skull via internal auditory meatus
Cranial Nerve VII

Exit skull via stylomastoid foramen
Detail on Facial (VII) Function:

• Motor to muscles of the hyoid arch: posterior digastric, mm. of facial expression.

• Sends parasympathetic fibers via greater petrosal branch and pterygopalatine ganglion to lacrimal gland (secretomotor fibers).

• It may also supply parasympathetic innervation to palatine, pharyngeal, and nasal glands.
An Evolutionary Branch of VII
Cranial Nerve VIII

Vestibulocochlear Nerve

Sensory

Hearing

Internal Auditory Meatus
Cranial Nerve IX

The Glossopharyngeal Nerve

Both Pharynx, posterior tongue

Jugular foramen
Cranial Nerve IX
The Glossopharyngeal Nerve
Both Pharynx, posterior tongue
Jugular foramen
Detail on Glossopharyngeal (IX) Function:

• Motor to stylopharyngeus muscle.

• Parasympathetic secretomotor fibers to parotid gland.

• Sensory to pharynx, tonsils, and posterior 1/3 of tongue.

• Taste fibers for posterior 1/3 of tongue.
Pathways of the Glossopharyngeal Nerve (CN IX)

- Sensory
- Branchial Motor
- Parasympathetic
- Taste

Jugular foramen

Petrus part of temporal bone

Cranial cavity

Eardrum

V3

Foramen ovale

Otic ganglion

Sensory

Parasympathetic

Branchial Motor

Taste

Carotid body (CO2)

Carotid sinus (pressure)

Stylopharyngeus muscle (Arch 3)

Posterior 1/3 of Tongue

Posterior 1/3 of Tongue

Parotid gland

Auriculotemporal nerve (skin near ear)

Mandible
Cranial Nerve X

The Vagus Nerve
Both

Throat to end of midgut

Jugular foramen
Cranial Nerve X

The Vagus Nerve
Both

Throat to end of midgut

Jugular foramen
Pathways of the Vagus Nerve (CN X)

- Sensory
- Parasympathetic
- Branchial Motor
- Taste

Jugular foramen

Posterior pharynx

Superior laryngeal nerve

Thyroid cartilage
(Laryngeal cartilage)

Cricoid cartilage

Epiglottis (?)

Pharyngeal Constrictor Muscles

Laryngeal Muscles

Thyroid cartilage

Hyoid bone

Thorax & Abdomen

Recurrent laryngeal nerve

Esophagus
An Evolutionary Branch of X
Cranial Nerve XI
The Accessory Nerve
Mainly Motor
larynx, pharynx, trapezius and sternocleidomastoid
Foramen Magnum
Review of Branchial Arches

• Mandibular Arch (#1)
  – Trigeminal nerve (CN V); Muscles of mastication; Chewing

• Hyoid Arch (#2)
  – Facial nerve (CN VII); Muscles of facial expression

• First “Regular Visceral Arch (#3)
  – Glossopharyngeal nerve (CN IX); Tongue & anterior pharynx; Swallowing

• Remaining Arches (#s 4 & 6)
  – Vagus nerve (CN X); Posterior pharynx & larynx; Swallowing & talking
Overview of Autonomic Targets

Parasympathetic
Sympathetic

Preganglionic Neurons
Postganglionic Neurons

Superior Cervical Ganglion of Sympathetic Chain

Lacrimal Gland
Intra-ocular Muscles
Nasal Cavity
Oral Cavity
Sublingual Glands
Submandibular Glands
Parotid Gland
Pharynx
Larynx
Esophagus
Viscera

III
VII
IX
X
<table>
<thead>
<tr>
<th>Cranial Nerve</th>
<th>Exit</th>
<th>Path</th>
<th>Sensory/Motor</th>
<th>Target</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I OLFACTORY</td>
<td>Cribiform plate ethmoid</td>
<td>Into nasal cavity</td>
<td>SPECIAL SENSORY</td>
<td>NASAL EPITHELIUM</td>
<td>X</td>
</tr>
<tr>
<td>II OPTIC</td>
<td>Optic canal of Sphenoid</td>
<td>Into orbit</td>
<td>SPECIAL SENSORY tract of brain</td>
<td>Retina</td>
<td>X</td>
</tr>
<tr>
<td>III OCCULOMOTOR</td>
<td>Superior orbital fissure of Sphenoid</td>
<td>Into superior orbit</td>
<td>MOTOR</td>
<td>EYE MUSCLES except below</td>
<td>via SHORT CILIARY NN. (synapse in CILIARY GANGLION) [actions opposed by LONG CILIARY NN. (sympathetic)]</td>
</tr>
<tr>
<td>IV TROCHLEAR</td>
<td>Superior orbital fissure of Sphenoid</td>
<td>Into superior orbit</td>
<td>MOTOR</td>
<td>SUPERIOR OBLIQUE M.</td>
<td>X</td>
</tr>
<tr>
<td>VII ABDUCENS</td>
<td>Superior orbital fissure of Sphenoid</td>
<td>Into superior orbit</td>
<td>MOTOR</td>
<td>LATERAL RECTUS M.</td>
<td>X</td>
</tr>
<tr>
<td>XII HYPOGLOSSAL</td>
<td>Hypoglossal canal</td>
<td>Into tongue</td>
<td>MOTOR</td>
<td>INTRINSIC TONGUE MM.</td>
<td>X</td>
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<tr>
<td>Trigeminal Nerve</td>
<td>Exit from Braincase</td>
<td>Path Through Skull</td>
<td>Sensory or Motor</td>
<td>Targets</td>
<td>Autonomic</td>
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<tr>
<td><strong>V1 Ophthalmic</strong></td>
<td>Superior orbital fissure of SPHENOID</td>
<td>Into superior orbit</td>
<td>SENSORY</td>
<td>Supraorbital, supratrochlear nn. to forehead&lt;br&gt;Lacrimal nerve to lateral eyelids and conjunctiva&lt;br&gt;Nasociliary nerve&lt;br&gt;-sensory branches through ciliary ganglion to eyeball&lt;br&gt;-posterior ethmoidal nerve&lt;br&gt;anterior ethmoidal nerve (and external nasal nerve for nose tip)&lt;br&gt;-Infraorbital nerve to medial conjunctiva and medial eyelids</td>
<td>(Short ciliary nerves – sympathetic from carotid plexus to dilate pupil of eye, if not in short ciliaries)&lt;br&gt;(Lacrimal nn. carry terminal autonomic to lacrimal gland)</td>
</tr>
<tr>
<td><strong>V2 Maxillary</strong></td>
<td>Foramen rotundum of SPHENOID</td>
<td>Into pterygopalatine fossa; distributes to nasal epithelium and into infraorbital groove, canal and out onto face via foramen</td>
<td>SENSORY</td>
<td>Infraorbital n. – face above mouth&lt;br&gt;Nasopalatine n. - mucosa&lt;br&gt;Greater/lesser palatine nn. — roof of mouth&lt;br&gt;Zygomaticotemporal n. skin of temple and overlying cheekbone; carries VII parasympathetics&lt;br&gt;Superior alveolar nn. – upper teeth of temple and overlying cheekbone; carries VII parasympathetics&lt;br&gt;Superior alveolar nn. — upper</td>
<td>(VII parasympathetics from chorda tympani travel via Lingual Cranial nerve n.)</td>
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<td><strong>V3 Mandibular</strong></td>
<td>Foramen ovale of SPHENOID</td>
<td>into infratemporal fossa</td>
<td>BOTH</td>
<td>Sensory:&lt;br&gt;-Inferior alveolar n. LOWER JAW + teeth,&lt;br&gt;-Buccal n. MOUTH INTERIOR&lt;br&gt;-Lingual n. touch ant. 2/3 tongue&lt;br&gt;Motor:&lt;br&gt;-mm. of mastication &amp; tensor veli palatine m.&lt;br&gt;-n. to mylohyoid: ant belly of digastrics and mylohyoid m.</td>
<td>(VII parasympathetics from chorda tympani travel via Lingual Cranial nerve n.)</td>
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<tr>
<td>Cranial nerve</td>
<td>Exits braincase</td>
<td>Path through skull</td>
<td>Sensory or Motor</td>
<td>Targets</td>
<td>Autonomics</td>
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<tr>
<td>VII + VIII FACIAL VESTIBULO-COCCHLEAR</td>
<td>Internal acoustic meatus of PETROUS TEMPORAL</td>
<td>Through FACIAL CANAL Exits: 1. Stylomastoid foramen to face mm. 2. Greater petrosal groove (GPN) on ant. petrous temporal in middle cranial fossa, traversing lateral foramen lacerum 3. Petrotympanic fissure (chorda tympani)</td>
<td>VII BOTH VIII SENSORY</td>
<td>Sensory: (“DRG”= geniculate ganglion for VII) to interior of ear canal &amp; taste to ant. 2/3 tongue  - VII for hearing cochlea and balance semicircular canals (“DRG”=vestibular &amp; cochlear (spiral) ganglia)  - VIII for hearing cochlea and balance semicircular canals (“DRG”=vestibular &amp; cochlear (spiral) ganglia)</td>
<td>Parasympathetics from nervus intermedius to: 1. Submandibular/sublingual glands via chorda tympani (syn. in SUBMANDIBULAR GANGLION) 2. Lacrimal gland (greater petrosal n to nerve of pterygoid canal to syn. in PTERGOPALATINE GANGLION) to infraorbital n(V2) to zygomaticofacial n (V2) to lacrimal n. (v1) ** note deep petrosal sympathetics merge w/greater petrosal @ pterygoid canal</td>
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<tr>
<td>IX GLOSSOPHARYNGEAL</td>
<td>BETWEEN PETROUS TEMPORAL AND BASIOCCIPTIAL Neural portion of jugular foramen + tympanic canaliculus (for lesser petrosal n.)</td>
<td>Into pharynx (into infratemporal fossa for lesser pet. n.)</td>
<td>BOTH</td>
<td>Sensory to: (“DRG”= sup/inf. Glossopharyngeal ganglia)  - carotid body (O2)  - taste/touch post 1/3 tongue  - ext. ear &amp; inner tympanic mem. + middle ear mucosa, aud. tube - pharynx  - Motor to: - stylopharyngeus</td>
<td>Lesser petrosal nerve: Tympanic canaliculus to tympanic plexus on middle ear promontory to groove lateral to greater petrosal groove. Out through foramen ovale; synapse in Otic ganglion). Travel with V3 auriculotemporal n. to Parotid gland.</td>
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<tr>
<td>X VAGUS</td>
<td>BETWEEN PETROUS TEMPORAL AND BASIOCCIPTIAL Neural portion of jugular foramen</td>
<td>BOTH</td>
<td>Sensory to: (“DRG”= sup/inf. vagal ganglia)  - ex. Ear canal, ext. tympanic mem. (can cause vomiting)  - larynx, pharynx, viscera trachea, stretch receptors in aortic arch walls, chemoreceptors in aortic bodies  - taste post. medial tongue  - Motor to: - mm. of pharynx and larynx - palatoglossus m.</td>
<td>Viscera up to left colic flexure; glands of pharynx and larynx</td>
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<td>XI ACCESSORY</td>
<td>Jug. For.</td>
<td>MOTOR</td>
<td>trapezius and sternocleidomastoid mm.</td>
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<td>I</td>
<td>Olfactory</td>
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<td>Trigeminal</td>
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<td>VI</td>
<td>Abducens</td>
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<td>VII</td>
<td>Facial</td>
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<td>VIII</td>
<td>Vestibulochochlar</td>
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<td>IX</td>
<td>Glossopharyngeal</td>
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<td>X</td>
<td>Vagus</td>
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<td>XI</td>
<td>Accessory</td>
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<td>XII</td>
<td>Hypoglossal</td>
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Motor, sensory, or both
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<td>III</td>
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<td>Mainly motor</td>
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<td>VI</td>
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<td>Mainly motor</td>
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<td>XII</td>
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<td>Mainly motor</td>
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Meninges (All from Neural Crest)

Outermost: *Dura mater*

Middle: *Arachnoid mater*

Deepest: *Pia mater*

Cerebrospinal fluid between Arachnoid and Pia mater
Meninges: *Dura mater*
Dural Reflections

Falx cerebri

Tentorium cerebelli
Vasculature: Venus Sinuses
Vasculature: Venus Sinuses
Vasculature: Venus Sinuses
VENOUS DRAINAGE OF THE SKULL:

SUPERIOR SAGITTAL SINUS to RIGHT/LEFT TRANSVERSE SINUS

INFERIOR SAGITTAL SINUS TO STRAIGHT SINUS

R/L TRANSVERSE SINUSES TO R/L SIGMOID SINUSES

R/L SIGMOID SINUSES TO SUPERIOR BULB OF R/L JUGULAR VEIN

ALSO TO JUGULAR: R/L MARGINAL SINUSES, R/L CAVERNOUS SINUSES, OCCIPITAL SINUS, R/L
Vasculature: Arterial Supply
ARTERIES LEADING TO CIRCULOSUS ARTERIOSUS CEREBRI

• Right Carotid Artery
• Left Carotid Artery
• Basilar Artery (formed from right and left Vertebral Arteries)

• Also, know branches off of it!
Vasculature: Arterial Supply

- anterior cerebral a.
- anterior communicating a.
- hypophyseal fossa
- ophthalmic a. (to orbit)
- middle cerebral a.
- diaphragma sellae
- foramen ovale
- posterior communicating a.
- internal carotid (in cavernous sinus)
- posterior cerebral a.
- tentorium cerebelli
- cerebellar arteries
- vertebral a.
- foramen magnum
Other Muscle and Nerve Stuff...
Jaw Moving Musculature:

- Temporalis
- Masseter
- zygomatic arch (cut)
- anterior belly of Digastric
- Mylohyoid
- (2) joint cavities
- disk
- condyle
- Lateral Pterygoid
- Medial Pterygoid
- coronoid process removed
Jaw Opening Musculature: Diagastric Muscle

Anterior belly – innervated by Mandibular (V₃) nerve

Posterior belly – innervated by Facial (VII) nerve
Major Muscles of the Mandibular Arch (innervated by V3):

- Temporalis
- Masseter
- Medial Head of Pterygoid
- Lateral Head of Pterygoid
- Mylohyoid
- Anterior Belly of Digastric
- Tensor Tympani
“True” Muscles of mastication

All V3 innervation

1. Temporalis m.
2. Masseter m.
3. Medial pterygoid
4. Lateral pterygoid
   upper head: to articular disc
   lower head: to neck of mandibular condyle

“Accessory” Muscles of mastication

Vital for normal chewing, but not mandibular adductors/protractors

- Buccinator VII
- Digastric V3 & VII
- Tongue XII
Temporal fossa/floor

Floor:

- parietal
- frontal
- sq. temporal
- SF
Temporal fossa/structures related to roof
Temporal fossa roof/
temporal fascia
Three layers:

Superficial, middle and deep with slightly different fiber orientations; important in recruitment for chewing.
temporalis

buccinator

Posterior belly of digastric

Stylomandibular ligament
Lateral pterygoid:
  upper head
  lower head

Line of action of lateral pterygoids is from anterior to posterior in horizontal plane. They PROTRACT or pull the mandible forward.

INFRATEMPORAL FOSSA

borders:
  Lateral: ramus of mandible
  Medial: lateral pterygoid plate
  Roof: greater wing of sphenoid, adj. maxilla & palatine bones
  Inferior: continuous with deep cervical fascia
Injections to numb the lower teeth also numb chin and lower lip but not uppers.

Mandibular foramen for inferior alveolar branch of V3, vv.

Mylohyoid groove for V3 branch to mylohyoid

Mylohyoid line for m. attachment
Tensor veli palatini

Medial pterygoid

Lateral pterygoid
- upper head to articular disc
- lower head to neck of mandibular condyle

Sphenoid/Muscular origins

"Pterygoid" means "talon-like"
MRI series 1 of 6 – coronal section, anterior to posterior

Temporalis m.

Masseter m.
Lateral pterygoid

Upper head: to articular disc

Lower head: to neck of mandibular condyle
Medial pterygoid
Stylohyoid, styloglossus, tongue muscles in general.
Superficial Facial Muscles (all innervated by VII)
Some muscles of mastication (Innervated by V₃)

Deeper Facial Muscles (All innervated by VII)
Major Muscles of the Hyoid Arch (innervated by VII):

- Posterior Belly of Digastric
- Facial Muscles (!!)
- Stapedius
- Stylohyoid
Facial Muscles You Have to Remember:

- Obicularis Oris
- Obicularis Occuli
- Frontalis
- Buccinator
- Platysma
- Zyogmaticus Major
- Depressor Anguli Oris
Extrinsic and Intrinsic Tongue Muscles