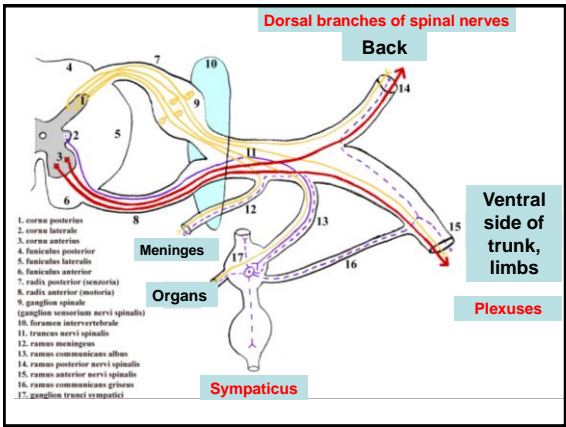


Peripheral nervous system

- 1) Spinal nerves – dorsal roots, plexuses
- 2) Cranial nerves – I-XII
- 3) Autonomic nervous system



Dorsal branches of spinal nerves

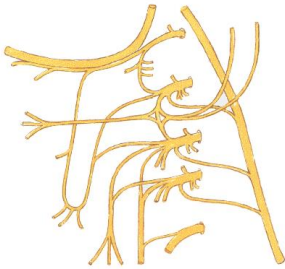
- Segmental organization
- Medial and lateral branch
- Sensoric and motor

N. suboccipitalis – C1
N. occipitalis major – C2
N. occipitalis tertius – C3
Nn. clunium

Intercostal nerves

Segmental organisation
Posterior and anterior branch
Lateral cutaneous branches
Anterior cutaneous branches

PLEXUS CERVICALIS



rami ventrales nervorum spinalium C₁ – C₄ (eventually C₅)

three loops (ansae)

Branches:

sensory

motor

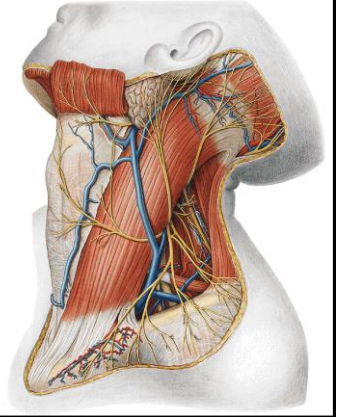
Sensory branches:

N. occipitalis minor

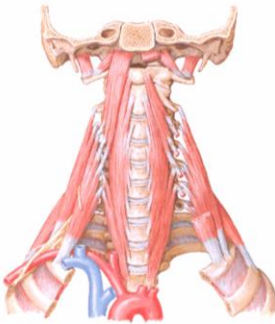
N. transversus coli

Nn. Supraclaviculares

N. auricularis magnus



PLEXUS CERVICALIS – MOTOR BRANCHES



Rami musculares

mm. praevertebrales

mm. intervertebrales

mm. scaleni

ONLY PARTLY:

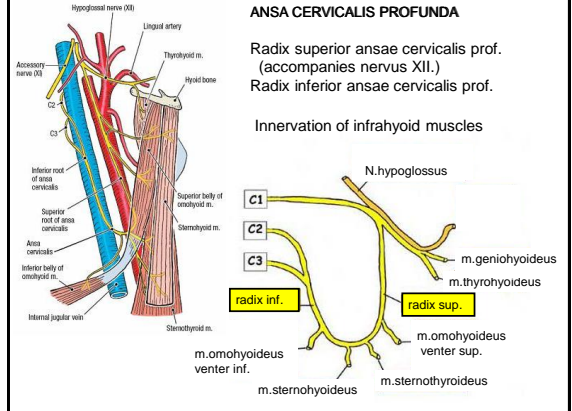
m. sternocleidomastoideus

m. trapezius

ANSA CERVICALIS PROFUNDA

Radix superior ansae cervicalis prof. (accompanies nervus XII.)
Radix inferior ansae cervicalis prof.

Innervation of infrahyoid muscles

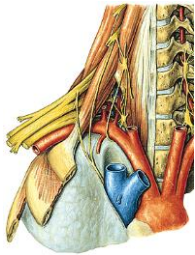
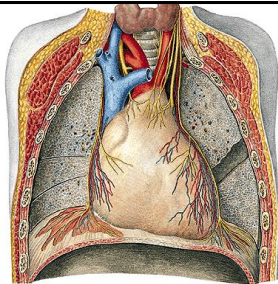


NERVUS PHRENICUS

rr. phrenici (motor.)

rr. pericardiaci (sen.)

rr. phrenicoabdominales (sen.)



PLEXUS BRACHIALIS

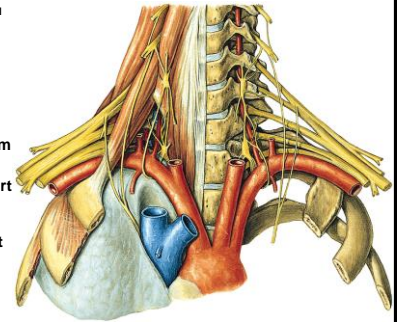
rami ventrales nervorum spinalium C₅ – Th₁

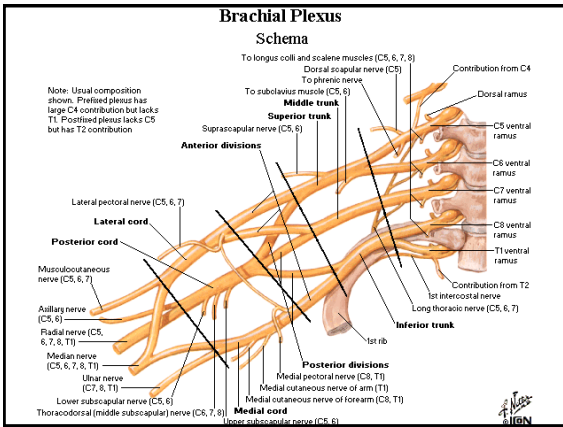
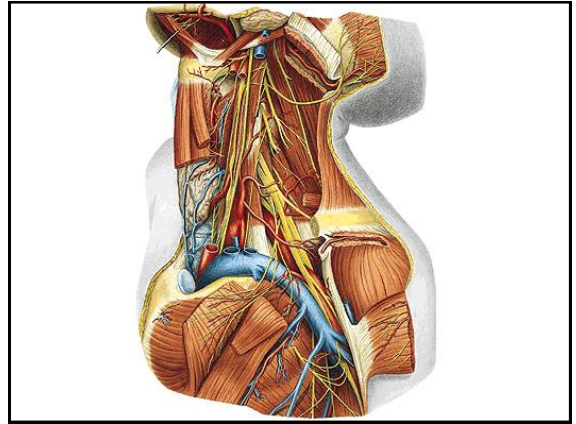
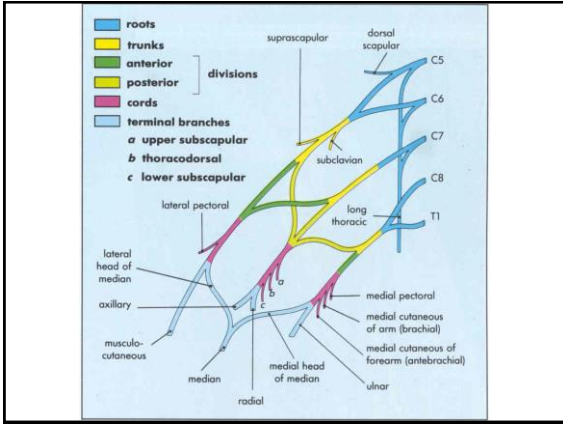
innervation of upper extremity, heterochronic muscles of thorax and back

Fissura scalenorum

supraclavicular part

infraclavicular part





Medial cord:

- Nervus ulnaris
- Nervus cutaneus brachii medialis
- Nervus cutaneus antebrachii medialis
- Radix medialis nervi mediani

Lateral cord:

- Nervus musculocutaneus
- Radix lateralis nervi mediani

Posterior cord:

- Nervus radialis
- Nervus axillaris

Nervus medianus

Radix medialis et lateralis

Sulcus bicipitalis medialis

Canalis pronatorius

Forearm:

Muscles of anterior group (exceptions)

Nervus ulnaris

Medial cord

Sulcus bicipitalis medialis

Sulcus nervi ulnaris

Forearm:

Musculus flexoris carpi ulnaris

Medial part of musculus flexor digitorum profundus

Innervation of the palmar side of hand

Nervus medianus:
Muscles of thenar (exceptions)

Nervus ulnaris:
Muscles of hypothenar

Musculi interossei

Musculi lumbricales 3-4

Musculus adductor pollicis

Caput profundum musculi flexoris pollicis brevis

Sensory innervation

Nervus radialis

Arm:

Muscles of posterior group

Skin (posterior and lateral side)

Forearm:

Superficial and deep branch

Muscles of lateral and posterior group

Skin (posterior side)

Innervation of the dorsal side of hand

Nervus musculocutaneus

Arm:

Muscles of anterior group – penetrates coracobrachialis

Forearm:

Skin (lateral side) – Nervus cutaneus antebrachii lateralis

Nervus axillaris

Posterior cord

Penetrates foramen humerotricipitale

Innervates teres minor and deltoideus

Skin of deltoid region

PLEXUS LUMBALIS

rami ventrales nervorum spinalium L₁ – L₄

innervation of abdominal wall and partially lower extremity

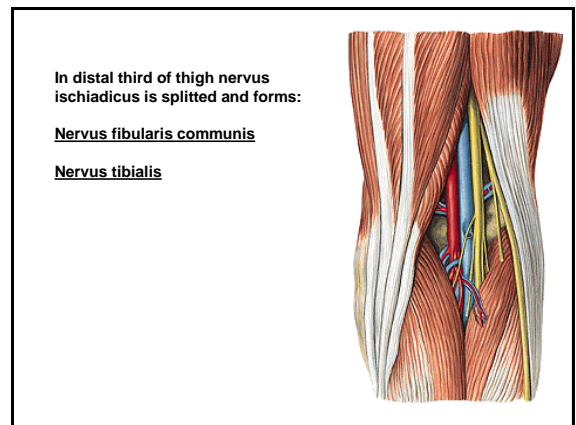
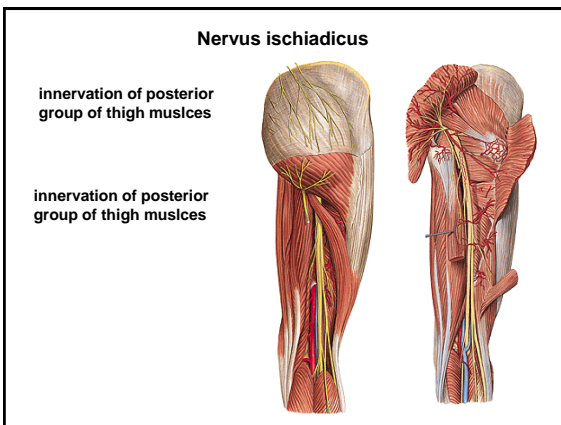
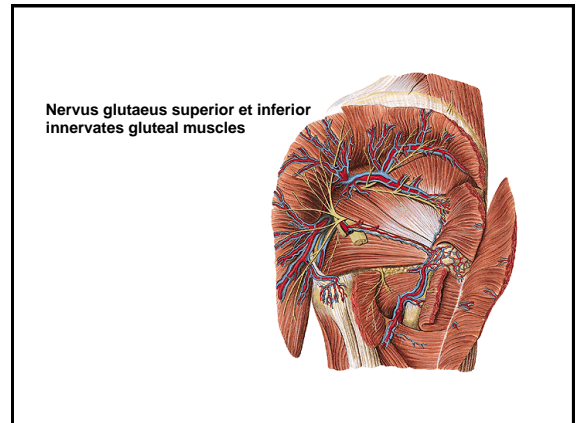
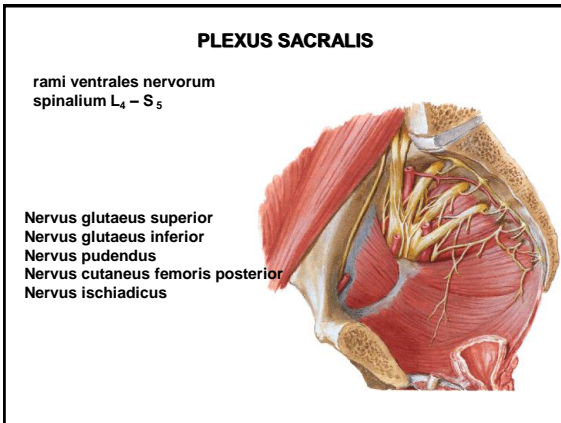
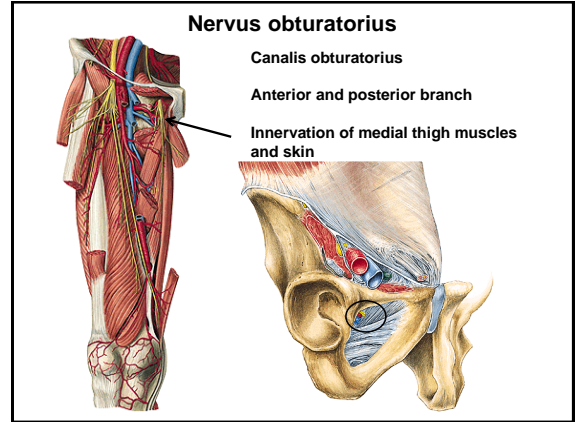
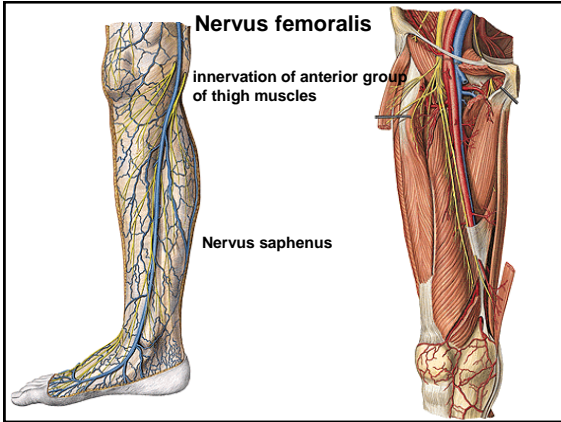
Nervus iliohypogastricus

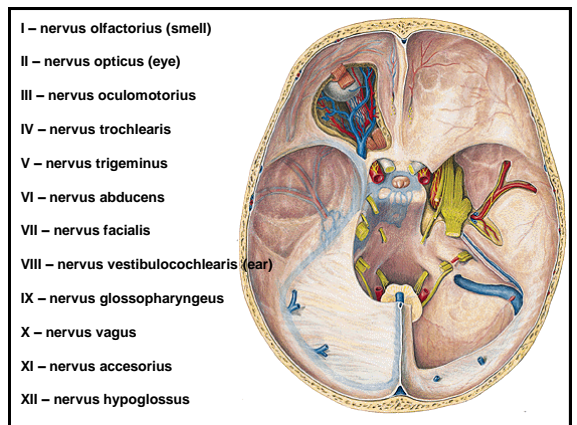
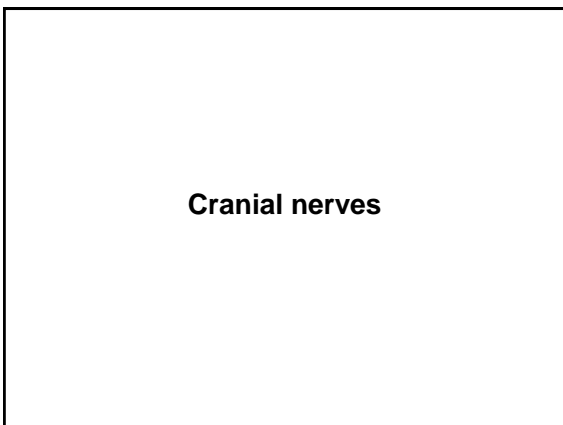
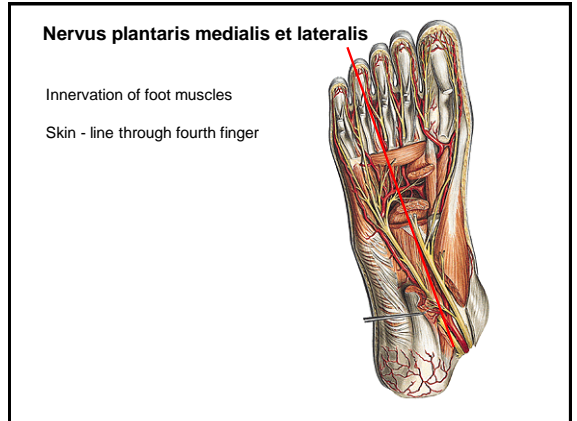
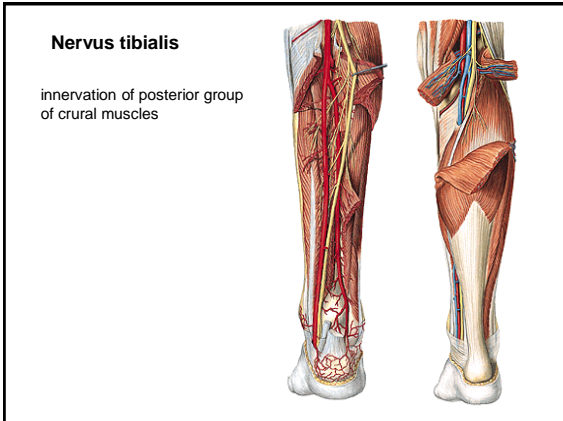
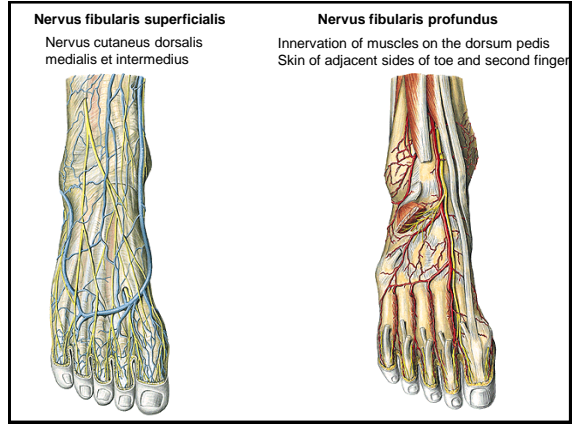
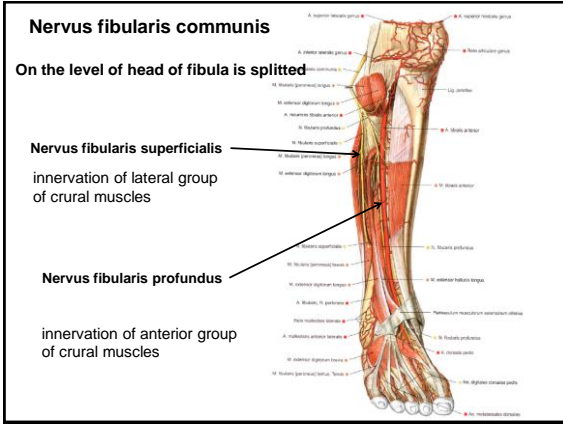
Nervus ilioinguinalis

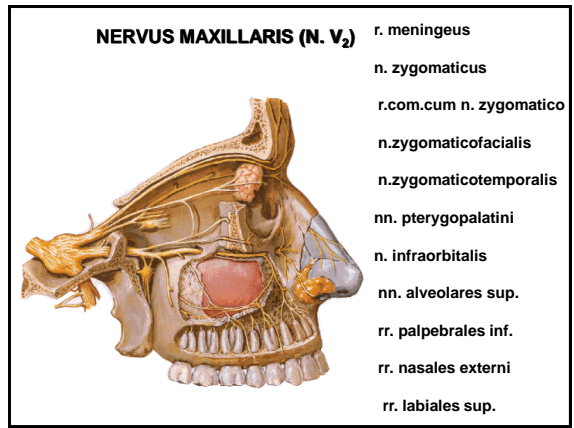
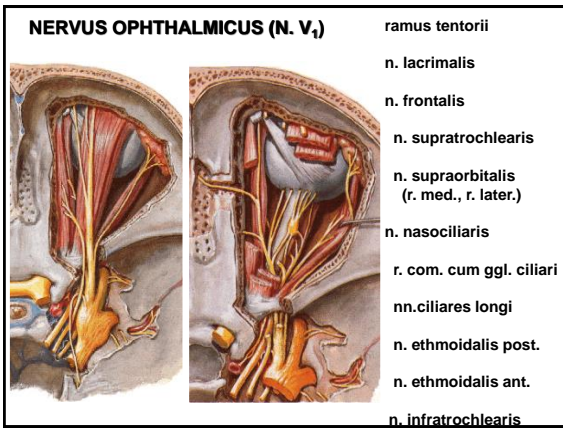
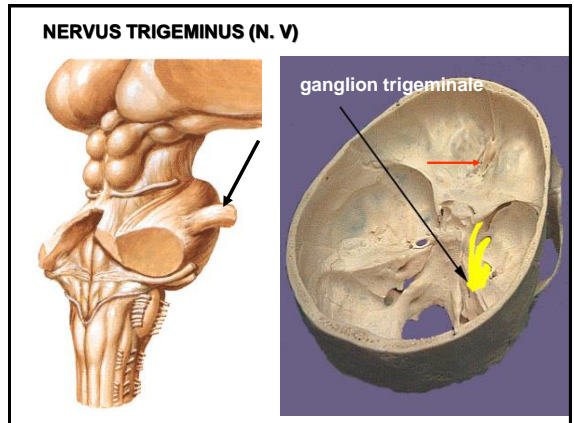
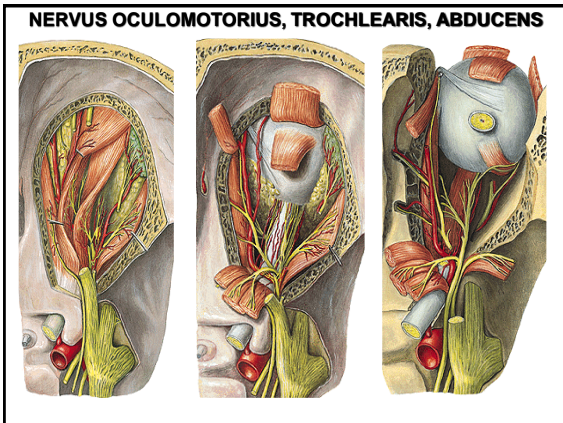
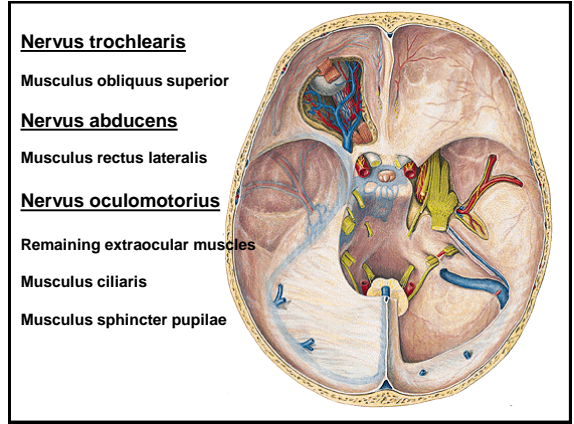
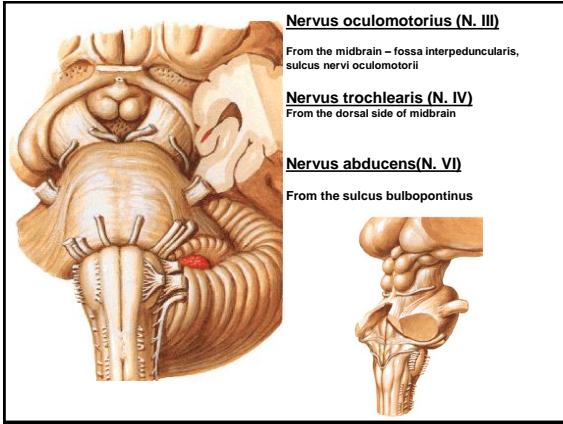
Nervus genitofemoralis

Nervus obturatorius

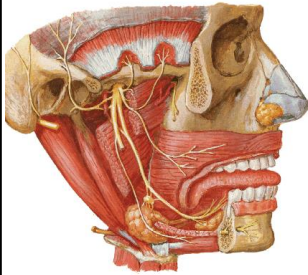
Nervus femoralis





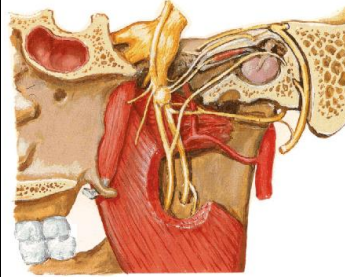


NERVUS MANDIBULARIS (N. V₃)

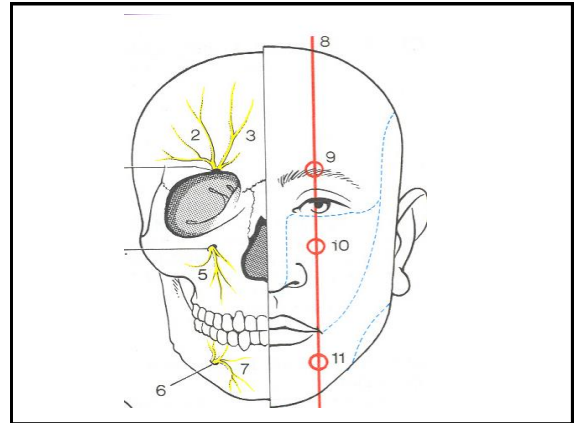
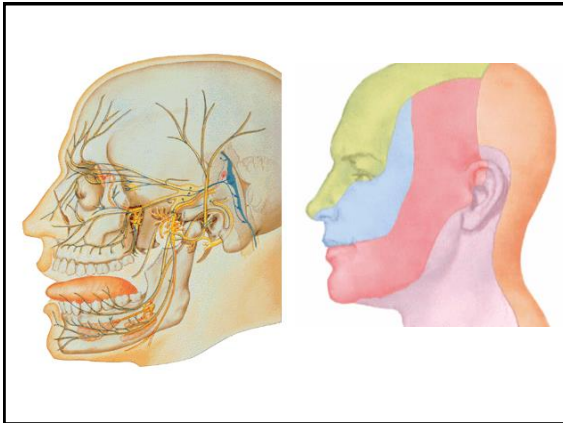


- r. meningeus
- Muscular branches:**
 - n. massetericus
 - nn. temporales prof.
 - n. pterygoidei
 - n. tensoris tympani
 - n. tensoris veli palatini
- n. buccalis
- n. auriculotemporalis
- n. lingualis
- n. alveolaris inferior

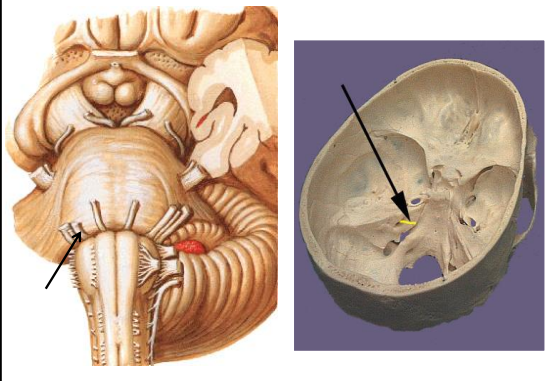
NERVUS LINGUALIS



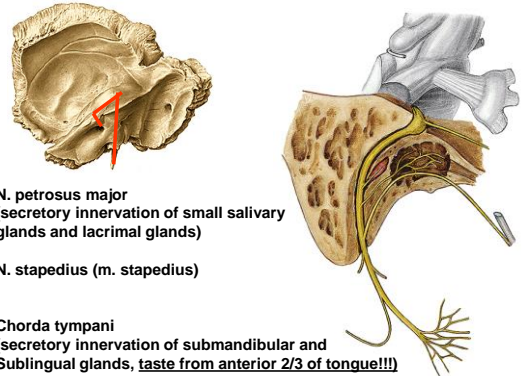
Takes chorda tympani (n. VII)



NERVUS FACIALIS (N. VII)



NERVUS FACIALIS in the canalis nervi facialis

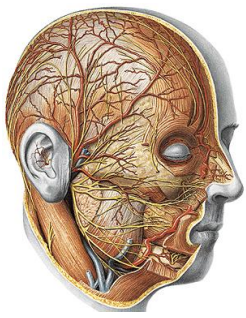



N. petrosus major
(secretory innervation of small salivary glands and lacrimal glands)

N. stapedius (m. stapedius)

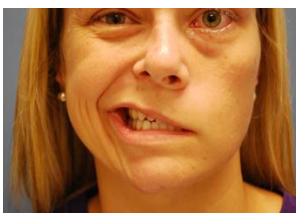
Chorda tympani
(secretory innervation of submandibular and Sublingual glands, **taste from anterior 2/3 of tongue!!!**)

NERVUS VII. - plexus parotideus

Innervation of muscles of facial expression !!!

Facial nerve paralysis



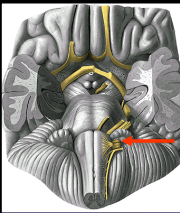
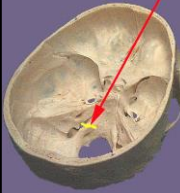

Droopy eyelid, dry eye or excessive tears

Twitching or weakness

Dropping corner of mouth, dry mouth

Nervus glossopharyngeus (n. IX.)

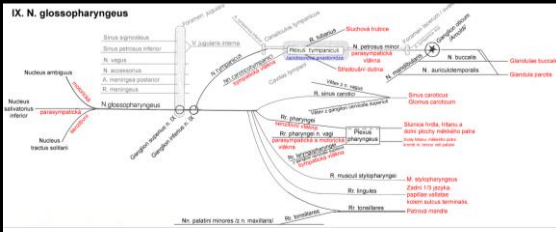
Sulcus lateralis posterior – medulla oblongata penetrates foramen jugulare ganglion superius et inferius

Medulla oblongata, Sulcus retro-olivaris
N. glossopharyngeus (IX)
Foramen jugulare
Ganglion superius
R. communicans cum ramo auriculari nervi vagi
Ganglion inferius
R. musculi stylopharyngei
A. sinus carotici
A. carotis interna, Sinus caroticus
Glomus caroticum
A. carotis communis

N. mandibularis
Ganglion oticum
N. petrosus minor
Plexus tympanicus
N. tympanicus
Rr. linguales
Rr. tonsillares
Rr. pharyngeales

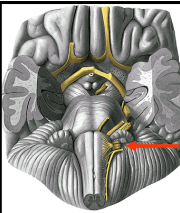
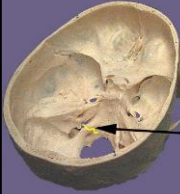
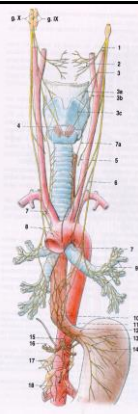
IX. N. glossopharyngeus



n.tympanicus – secretory innervation of parotid gland
r.sinus carotici - baroreflex
rr. pharyngei – innervation of pharyngeal muscles and muscles of soft palate
r.stylopharyngeus
rr.tonsillares – sensoric innervation
rr.linguales – taste from posterior 1/3 of tongue

Nervus vagus (n. X)

sulcus lateralis posterior penetrates foramen jugulare ganglion superius et inferius
descends in caudal direction and follows arteria carotis interna (then arteria carotis communis) and vena jugularis interna, attached to the esophagus and follow him to the thoric and abdominal cavity.

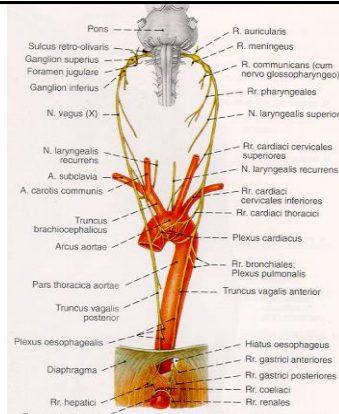




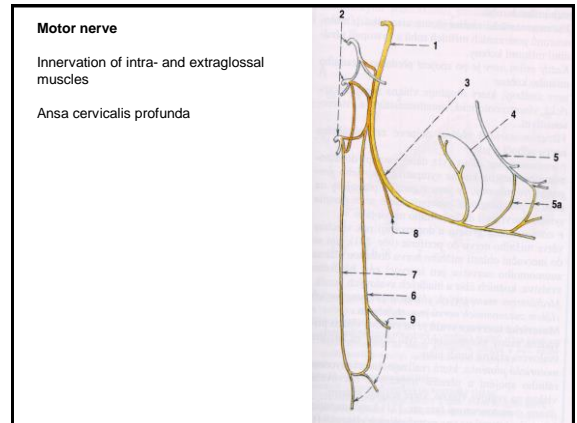
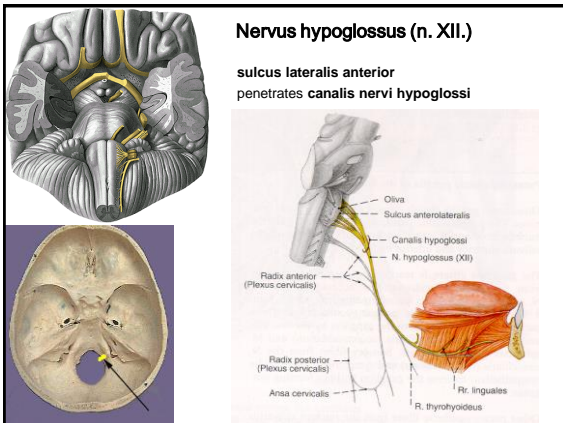
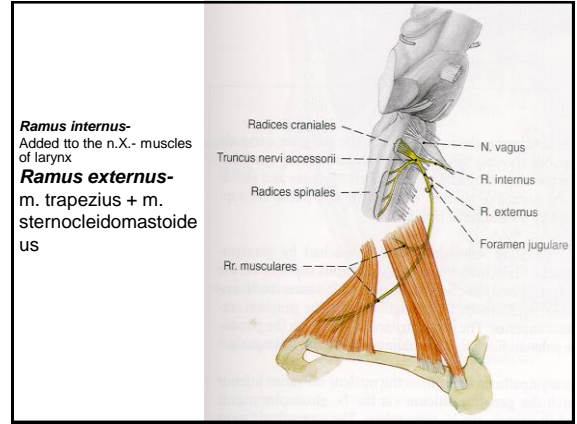
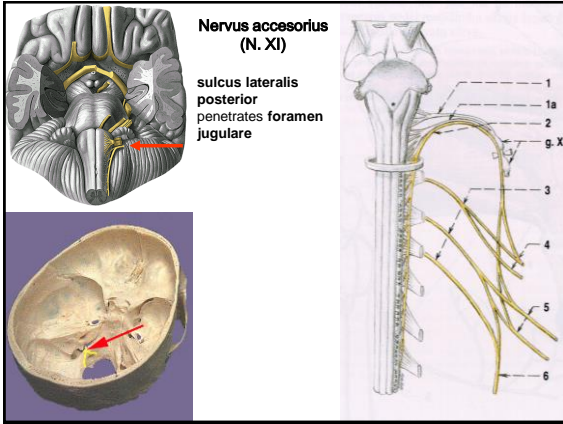
Head:
Pharynx
Taste from the glottis
Meninges
Auricle

Neck:
Muscles and mucous membrane of larynx
Trachea
Esophagus
Heart

Thorax:
Bronchioli
Esophagus

Abdominal cavity:
Stomach
Liver
Kidney
Intestins (left colic flecture)
Genital glands





AUTONOMIC NERVOUS SYSTEM

FUNCTION:
 phylogenetically the oldest part of NS, control smooth muscles, glands, heart

FUNCTIONAL DIVISIONS:
 Parasympathicus – anabolic reactions (store the energy)
 Sympathicus – catabolic function (release the energy)
 Enteric system

MORPHOLOGICAL DIVISIONS:
 Central
 Peripheral

CENTRAL PART OF AUTONOMIC NERVOUS SYSTEM

HYPOTHALAMUS

Ncll. hypothalamici ant. control parasympaticus

Ncll. hypothalamici medii Control the sympaticus

PARASYMPATICUS (cranio-sacral system)

Ncl. parasympaticus n. III
(ggl. ciliare)

Ncl. parasympaticus n. VII
(ggl. pterygopalatinum, ggl. submandibulare)

Ncl. parasympaticus n. IX
(ggl. oticum)

Ncl. parasympaticus n. X
(organs of neck, thorax, abdominal – until flexura coli sinistra!!!, genital glands)

Sacral segments of spinal cord (S2-4). ncl. intermediolateralis
(organs of pelvis except of genital glands)

SYMPATICUS - system (cervico)-thoraco-lumbar

tr. sympaticus

TRUNCUS SYMPATICUS

ganglia trunci sympatici (paravertebral)

- cervicalia 3 (sup., med., inf.)
- thoracica 10-11
- lumbalia 4-5
- sacralia 4-5
- ganglion impar
- rami interganglionares

GANGLION TRUNCI SYMPATICI – eferent fibres

To the organs:

- rr. viscerales (postganglionic fibres)**
- nn. splanchnici (praeganglionic fibres, praevertebral and intramural plexus)**

rr.comm. grisei (to the n. spinalis - skin)

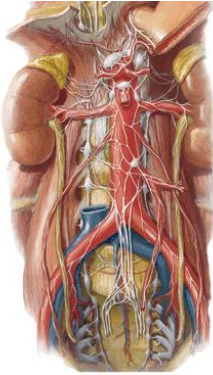
rr. vasculares (net around the arteries)

PRAEVERTEBRAL PLEXUSES – THORACIC CAVITY

Plexus cardiacus spf., prof. **Plexus aorticus thoracicus**

Plexus pulmonalis **Plexus oesophageus**

PRAEVERTEBRAL PLEXUSES – ABDOMINAL CAVITY



Plexus aorticus abdominalis

- Plexus coeliacus**
(ggl coeliacum dx. sin.)
- plexus gastrici
- plexus lienalis
- plexus hepaticus
- plexus duodenalis
- plexus pancreaticus

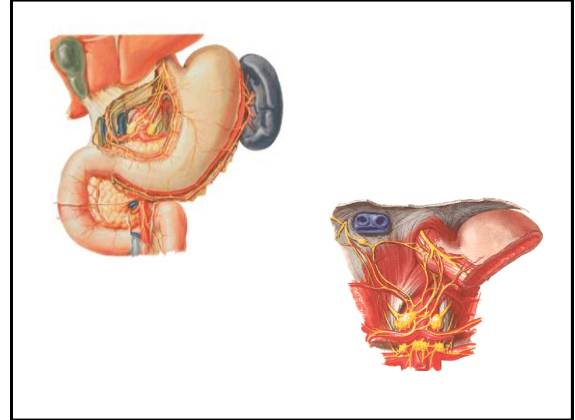
Plexus mesentericus superior

Plexus mesentericus inferior

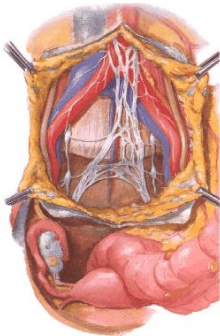
Plexus renalis et suprarenalis
(plexus uretericus)

Plexus testicularis (ovaricus)

Plexus iliaci (plexus femoralis)



PRAEVERTEBRAL PLEXUSES – PELVIS

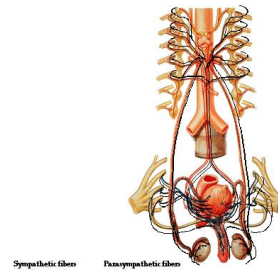


Plexus hypogastricus superior
(n. praesacralis)

Plexus hypogastricus dx. a sin.

Plexus hypogastricus inf.

Innervation of Male Reproductive Organs
Schema



Sympathetic fibers
Parasympathetic

Parasympathetic fibers
Sympathetic

A. Netter