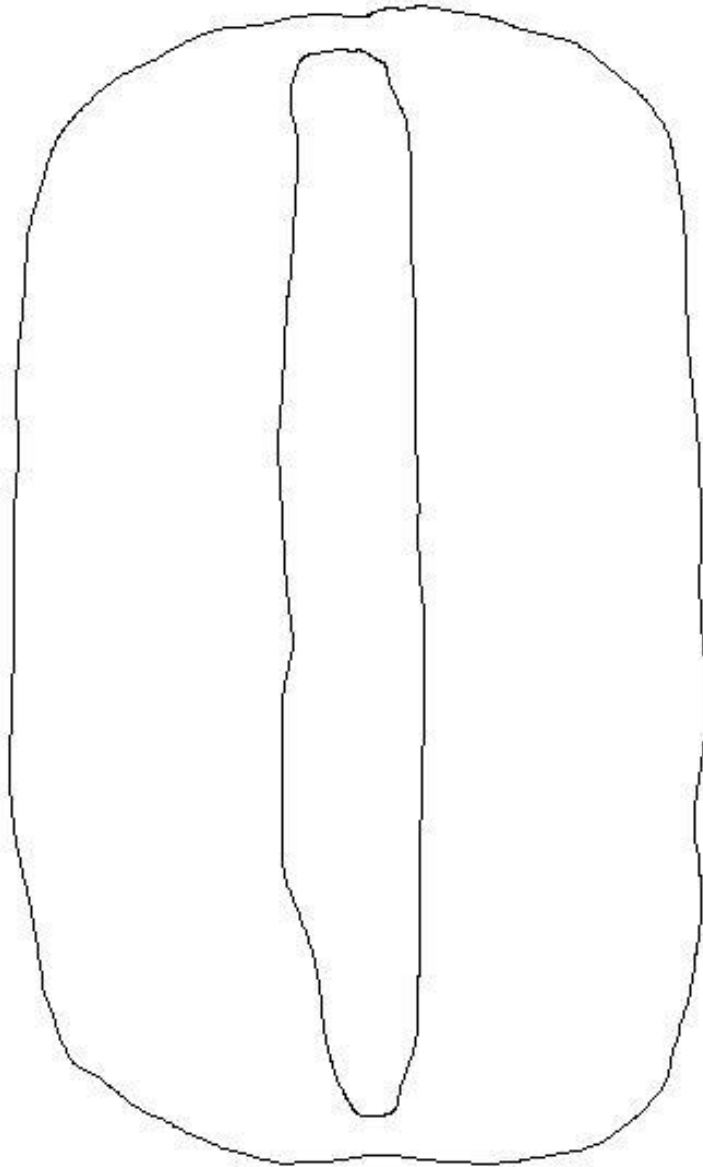
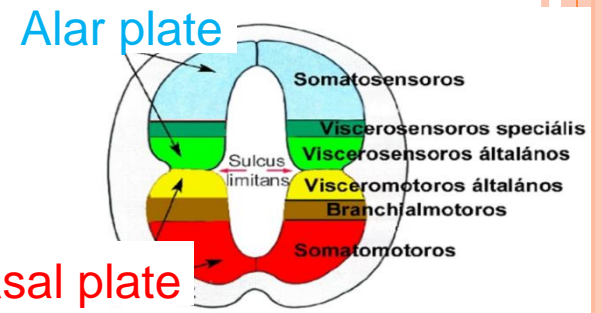


**Differentiation of the brain vesicles.  
Gross anatomy of the diencephalon,  
the 3rd ventricle.**

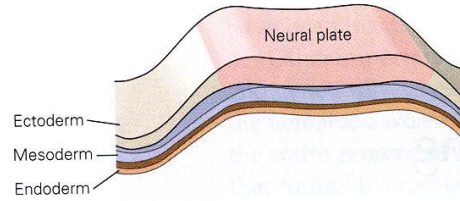
**János Hanics M.D. Ph.D.**



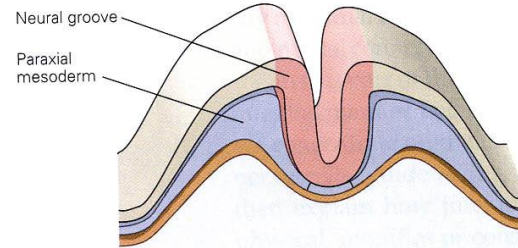
# Neurulation



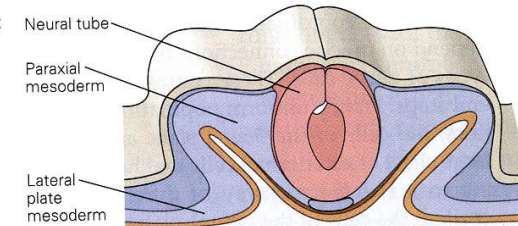
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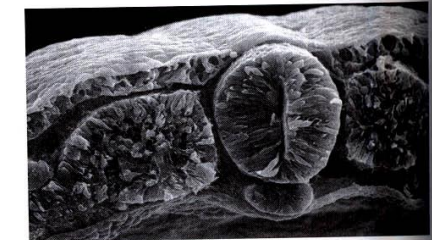
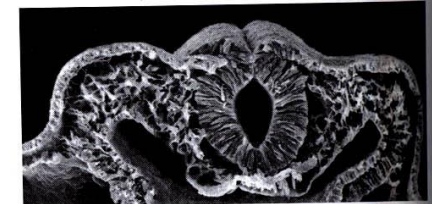
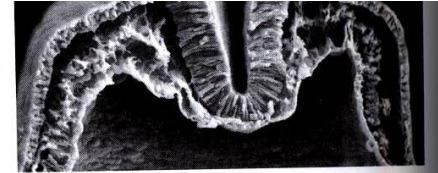
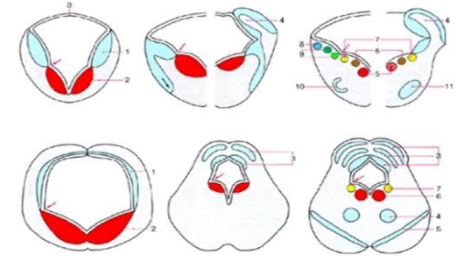
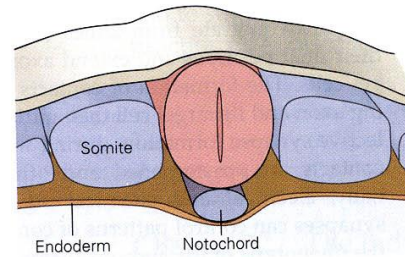
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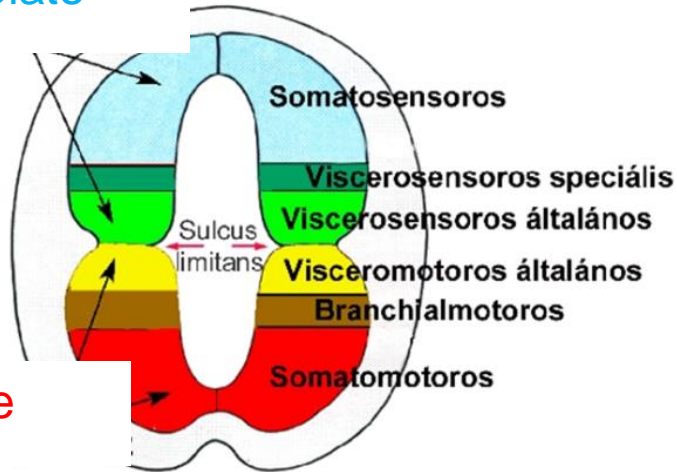
C



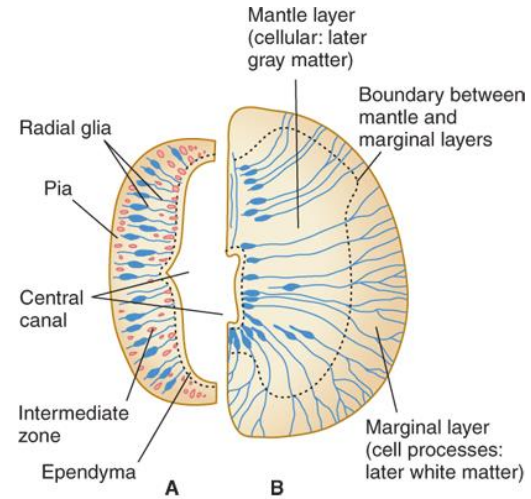
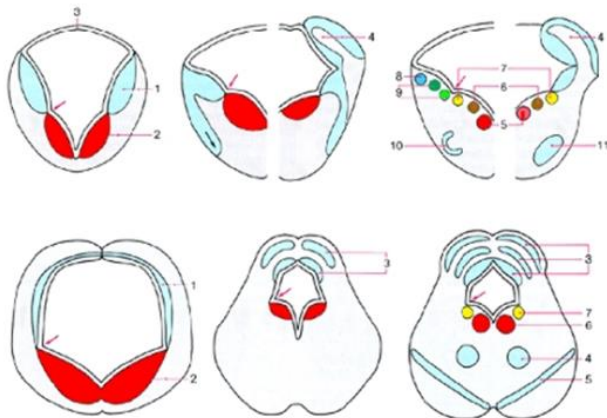
D



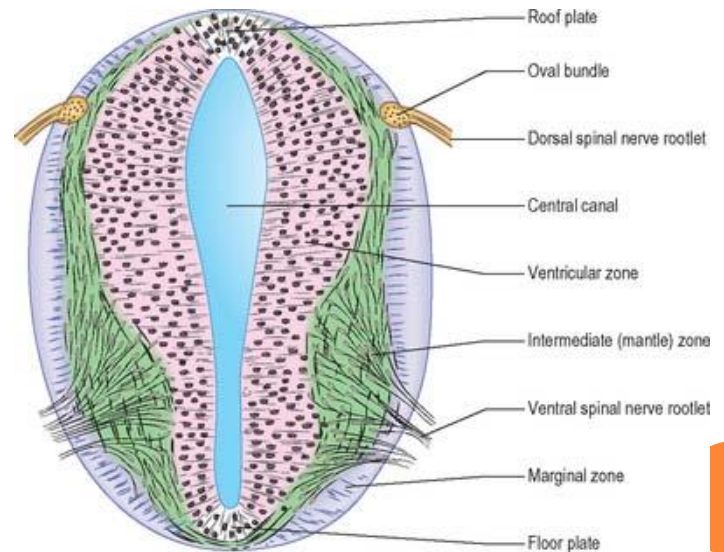
# Alar plate



# Basal plate

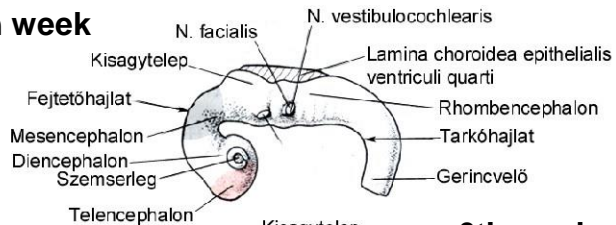


Source: Stephen G. Waxman  
 Clinical Neuroanatomy, Twenty-Eighth Edition  
 www.accessmedicine.com  
 Copyright © McGraw-Hill Education. All rights reserved.

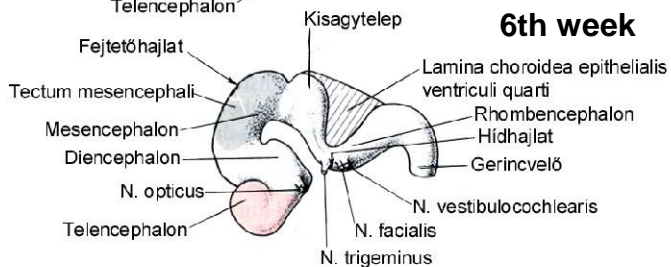




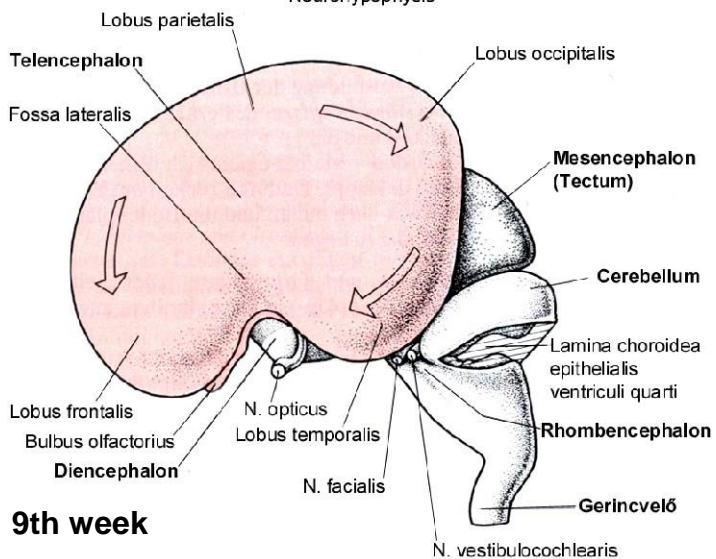
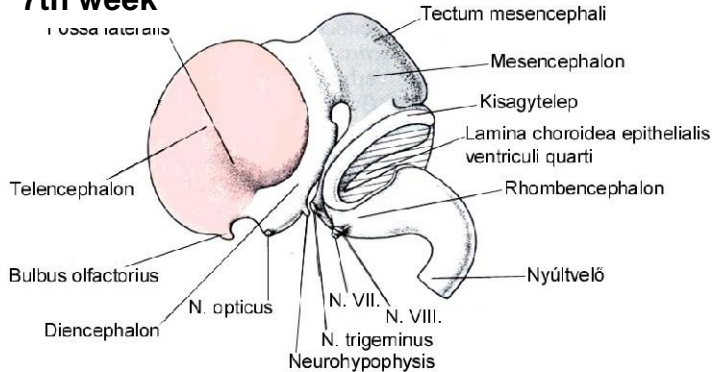
**5th week**



**6th week**

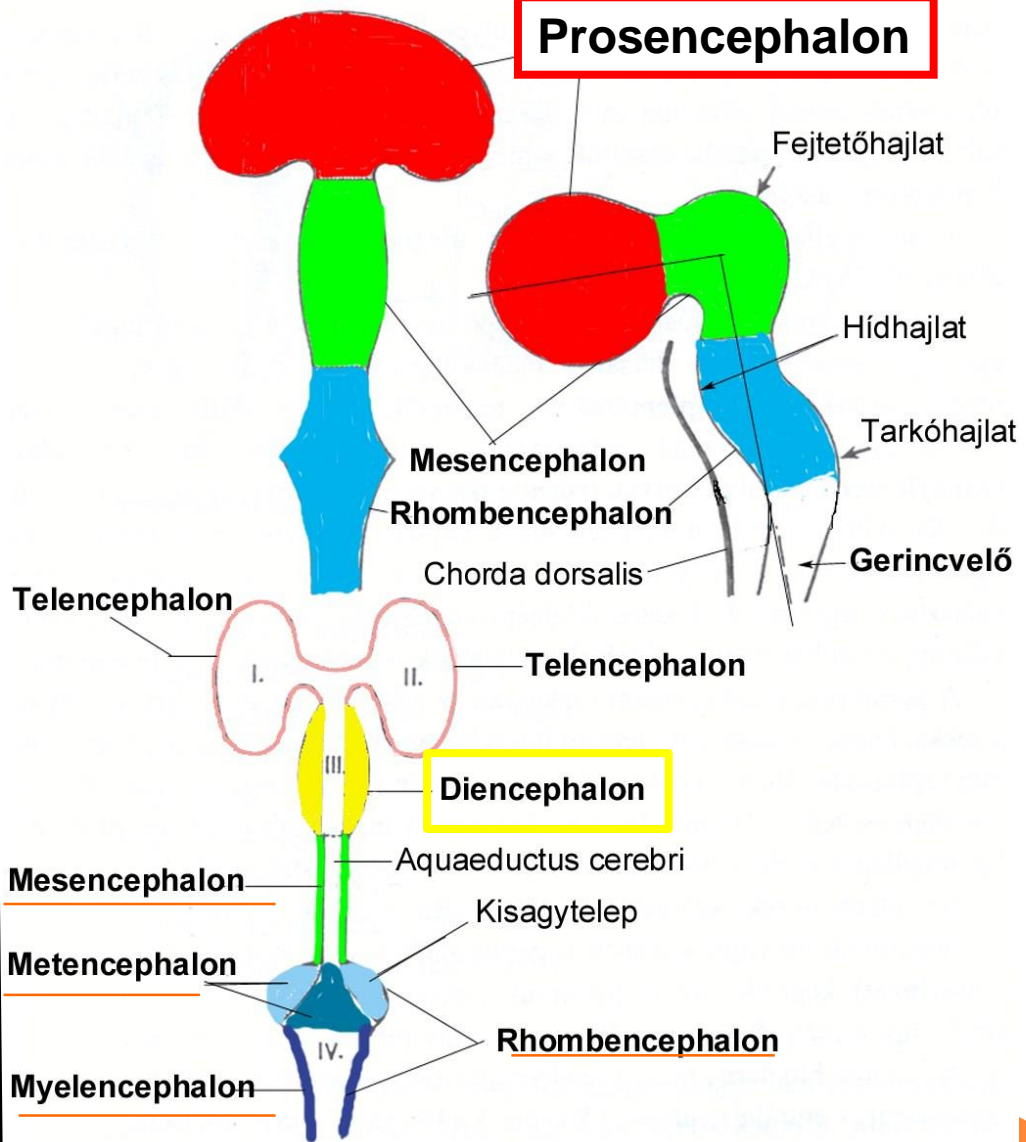


**7th week**

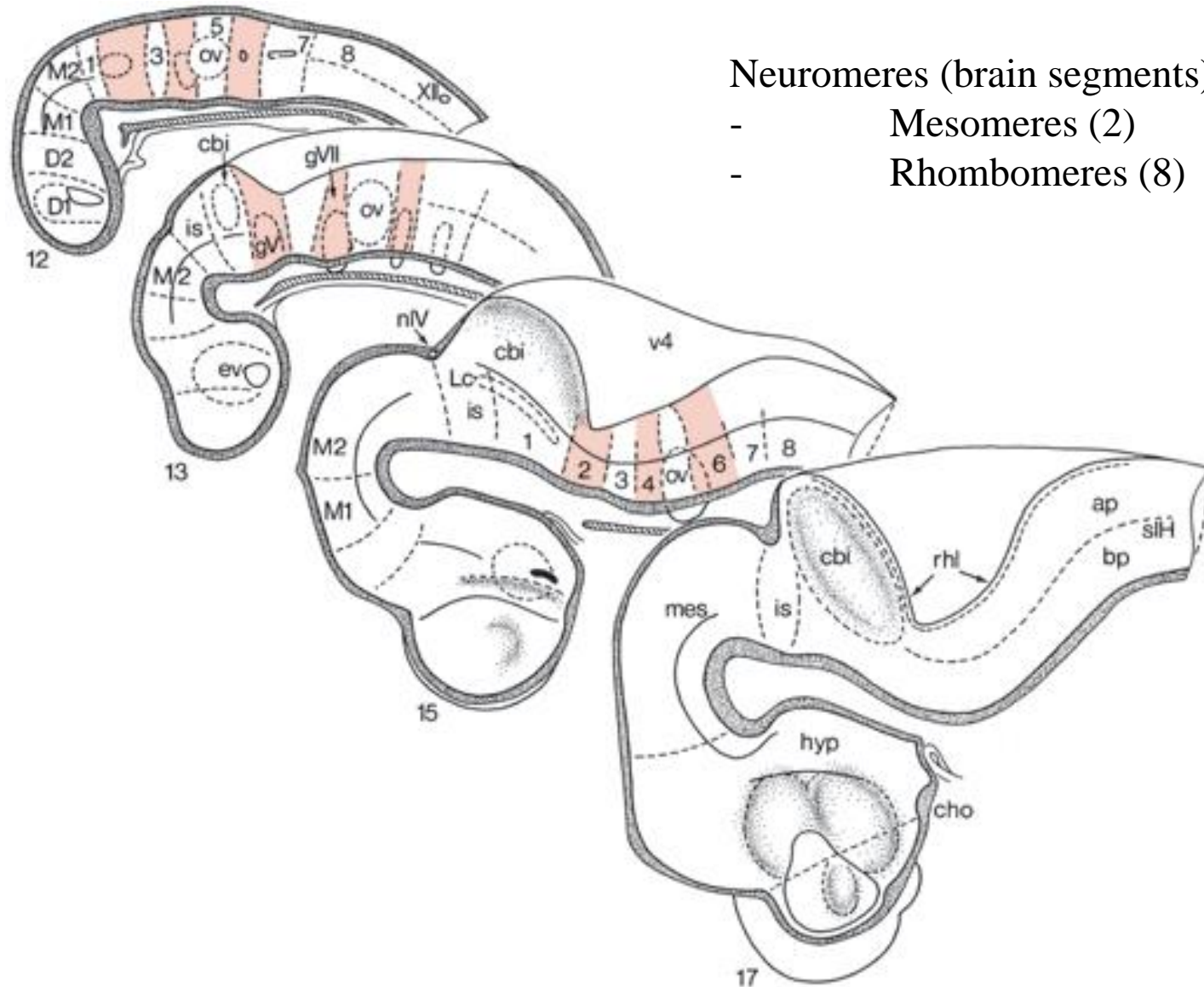


**9th week**

**Prosencephalon**



# Development of the brain (segmental division)





3 weeks



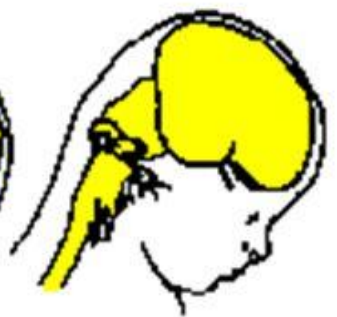
4 weeks



5 weeks



7 weeks



11 weeks



4 months



6 months

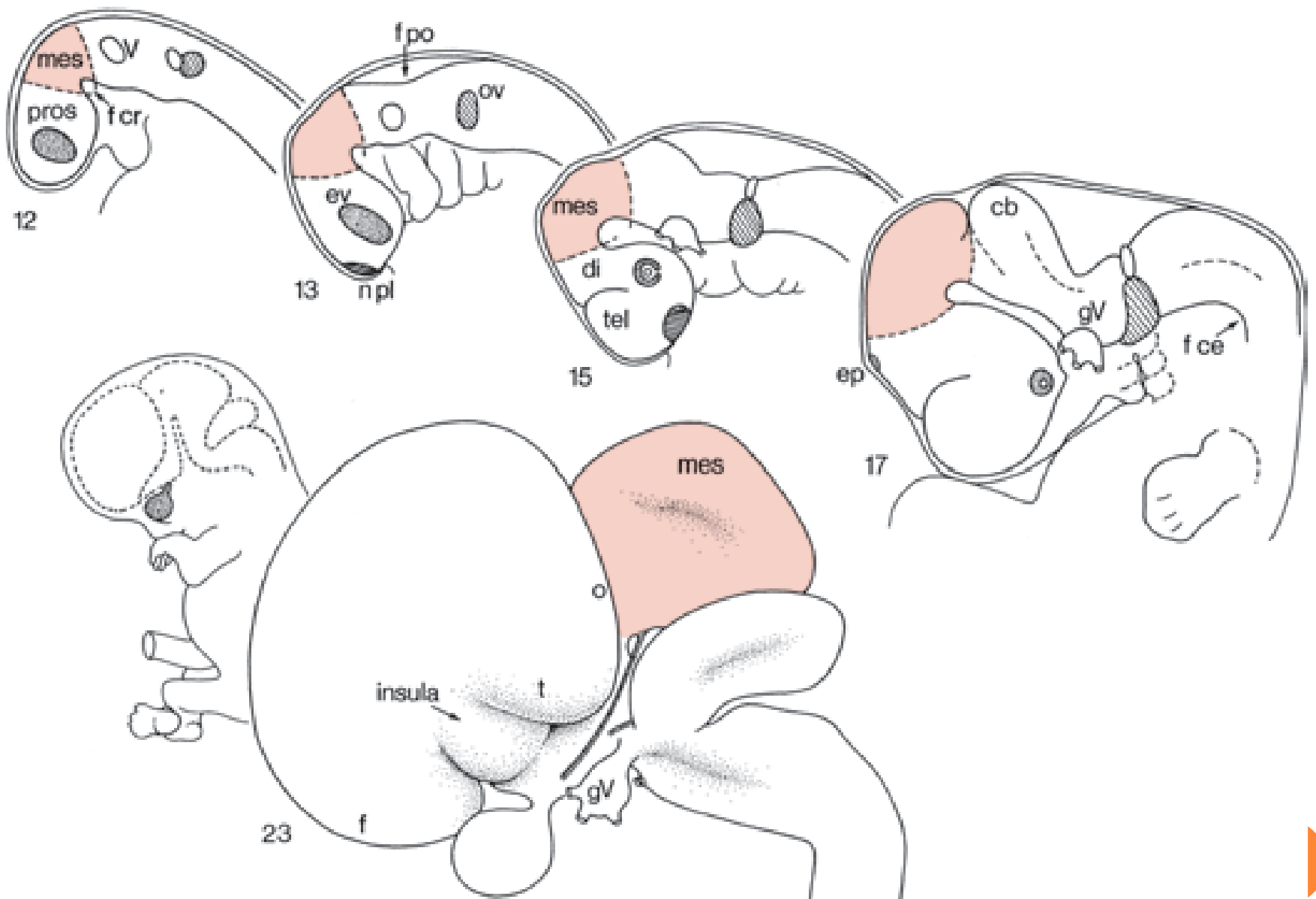


8 months



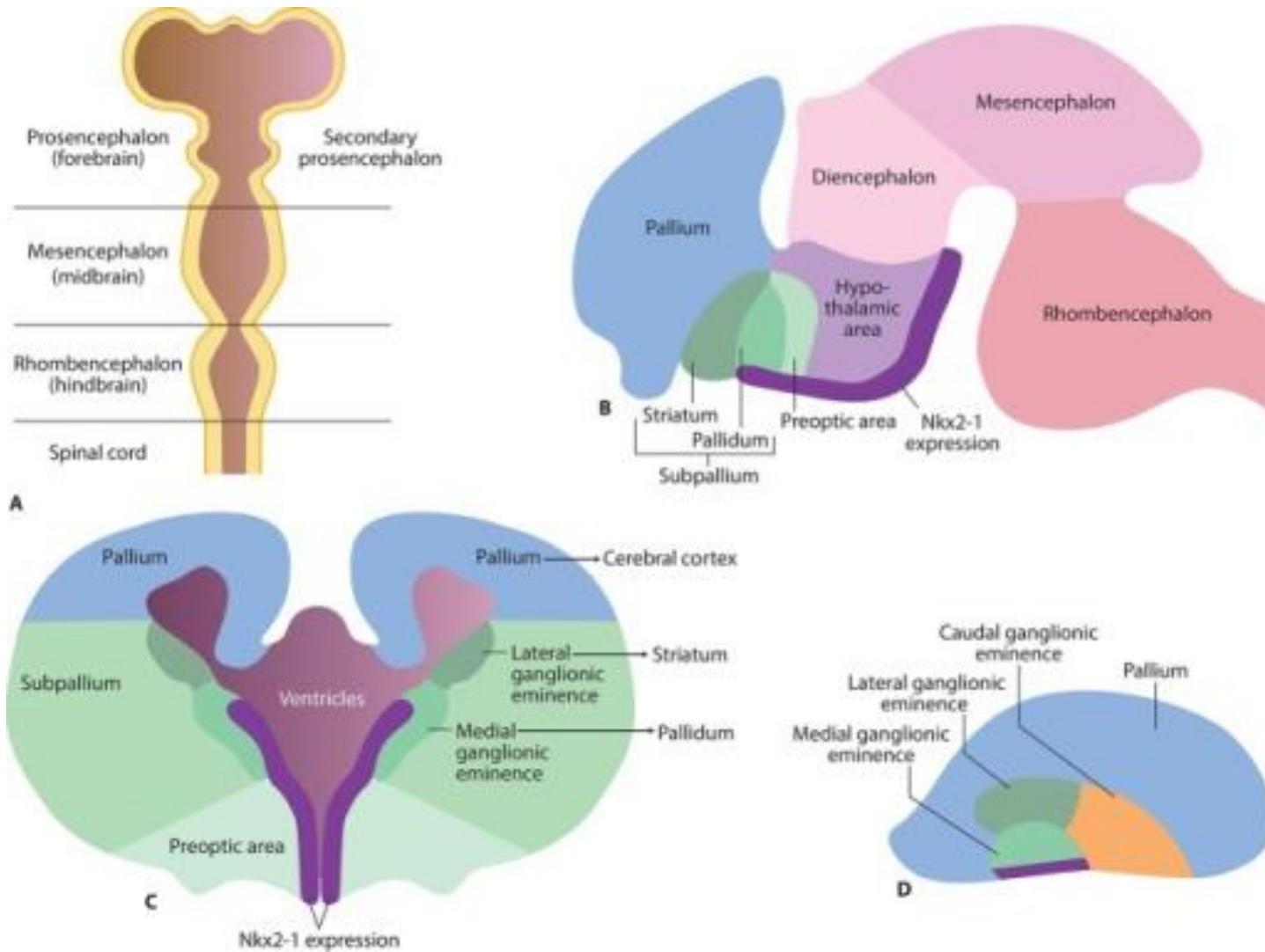
Newborn







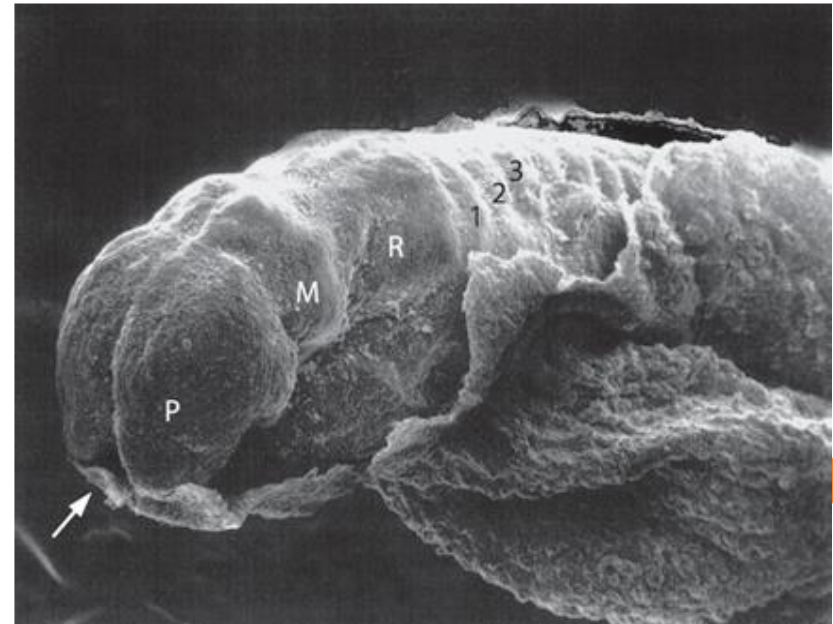
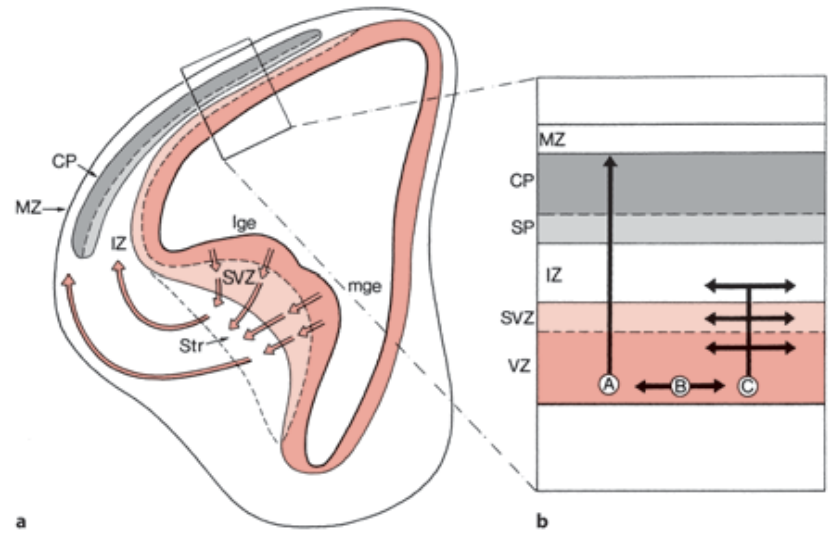
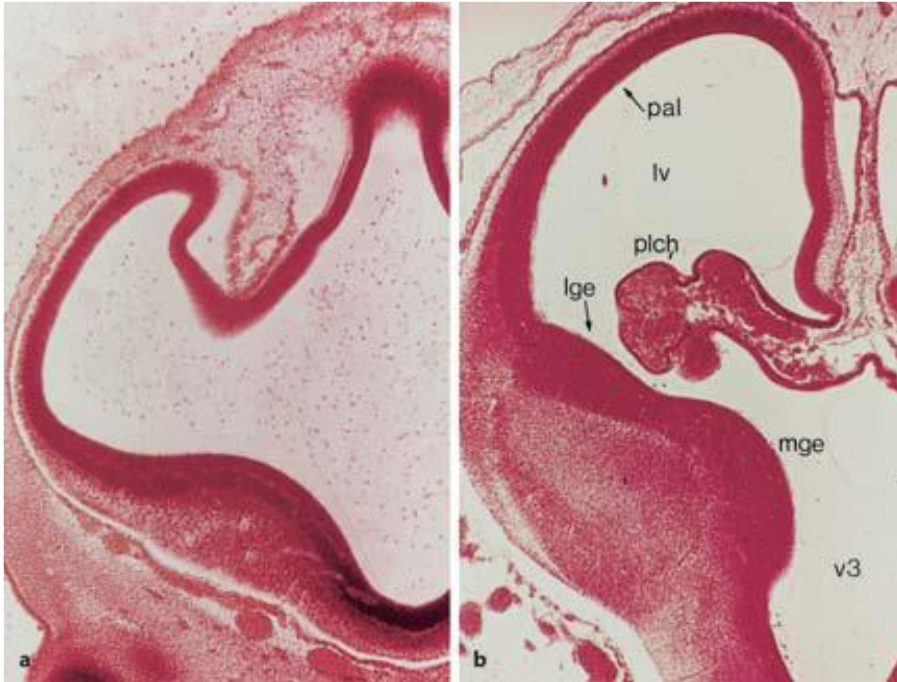
# Development of the forebrain

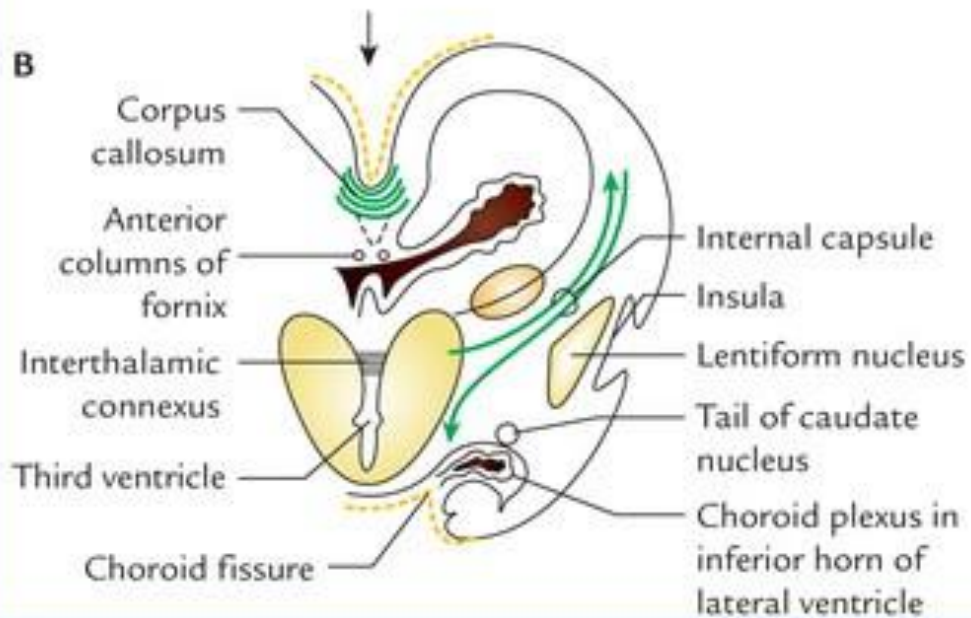
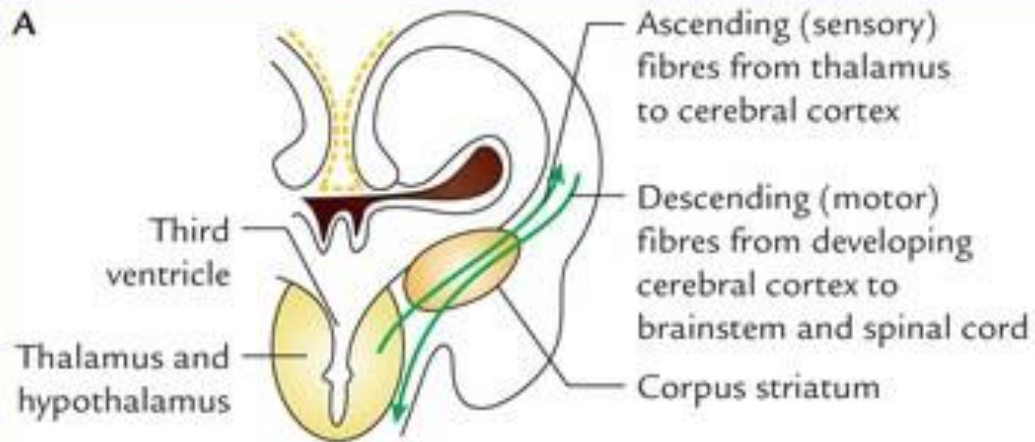


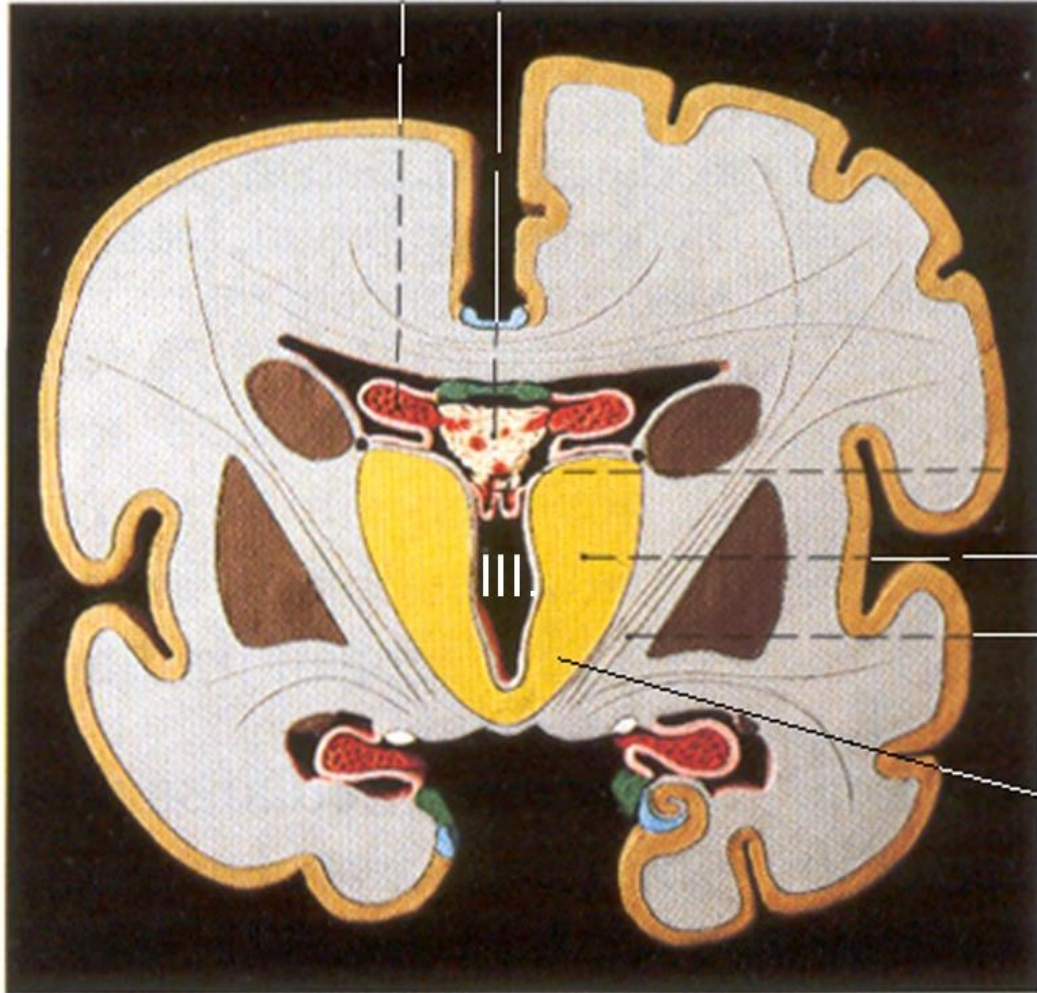
Pallium, subpallium, medial and lateral ganglionic eminence











Plexus choroideus  
ventriculi tertii

Thalamus

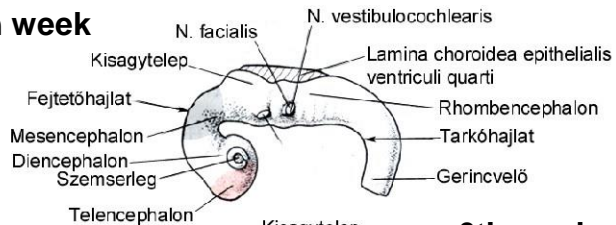
Capsula interna

Hypothalamus

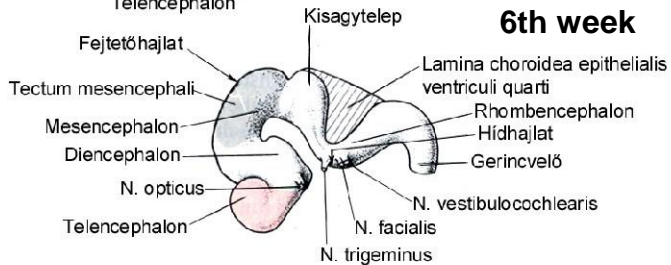




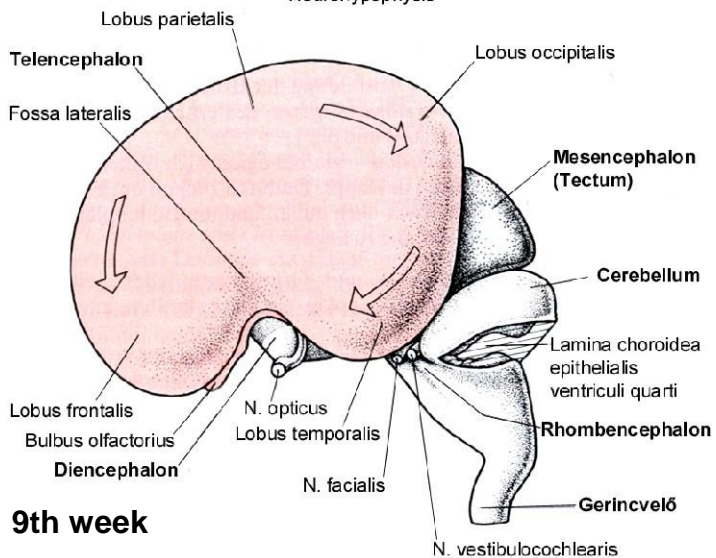
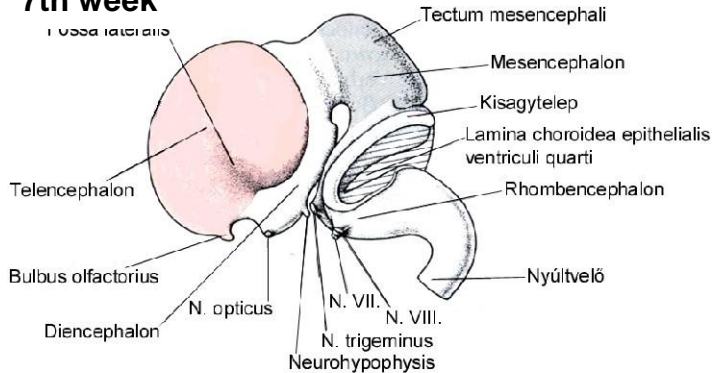
**5th week**



**6th week**

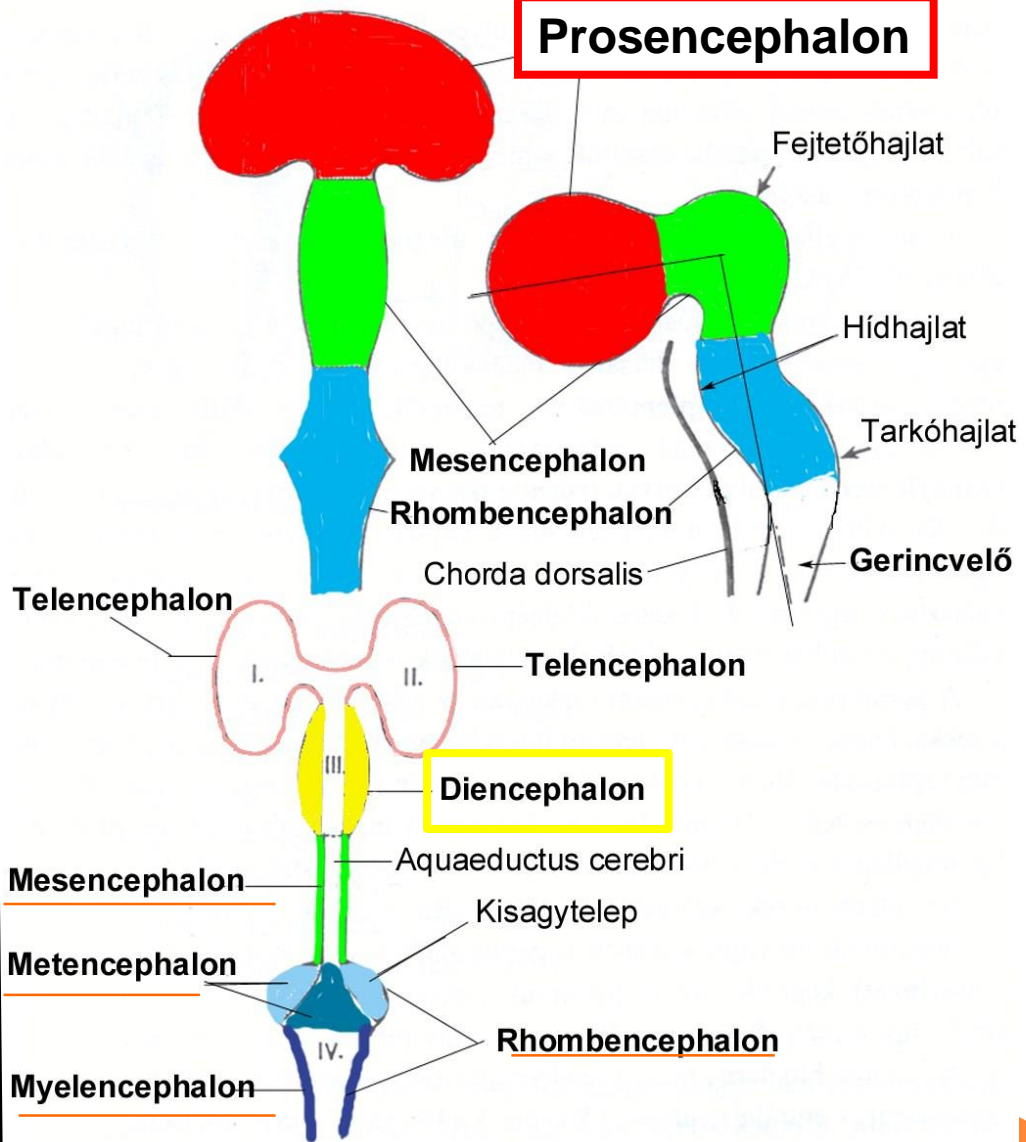


**7th week**



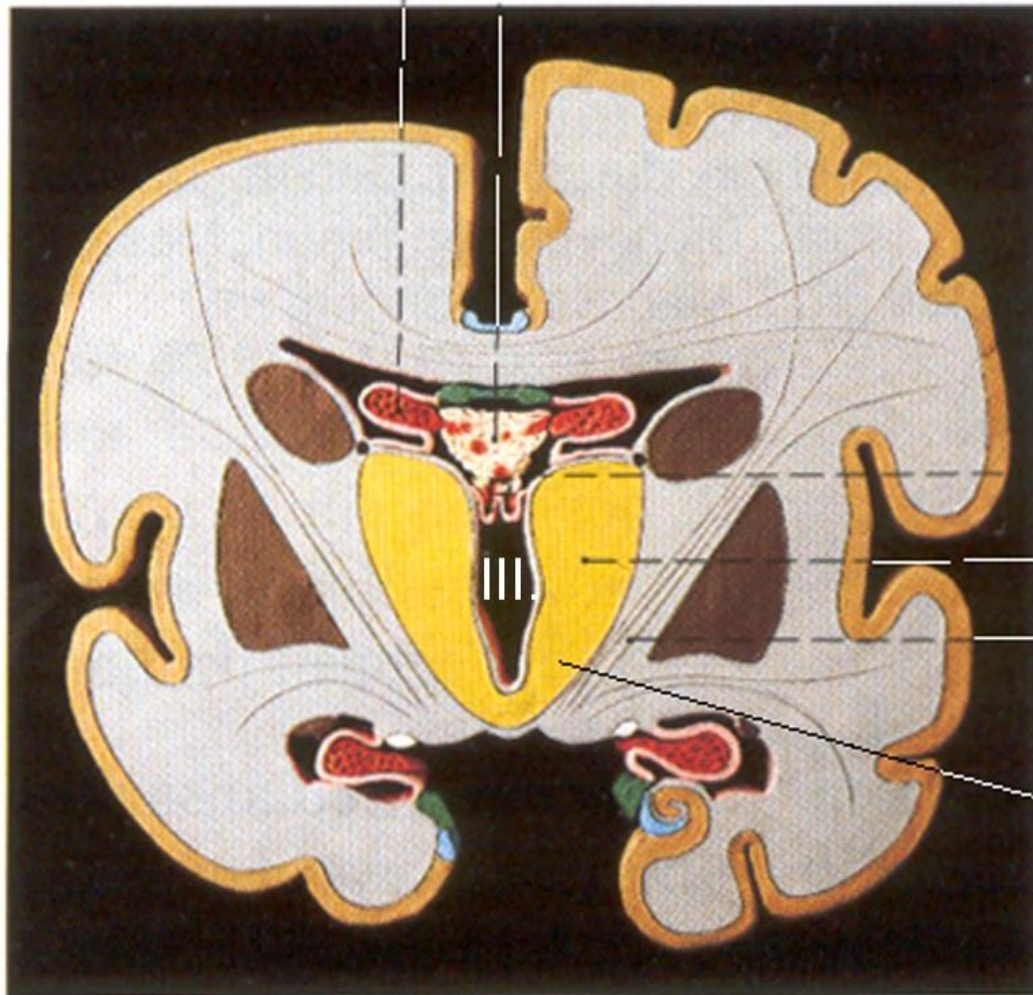
**9th week**

**Prosencephalon**





# Position of the diencephalon within the forebrain



Plexus choroideus  
ventriculi tertii

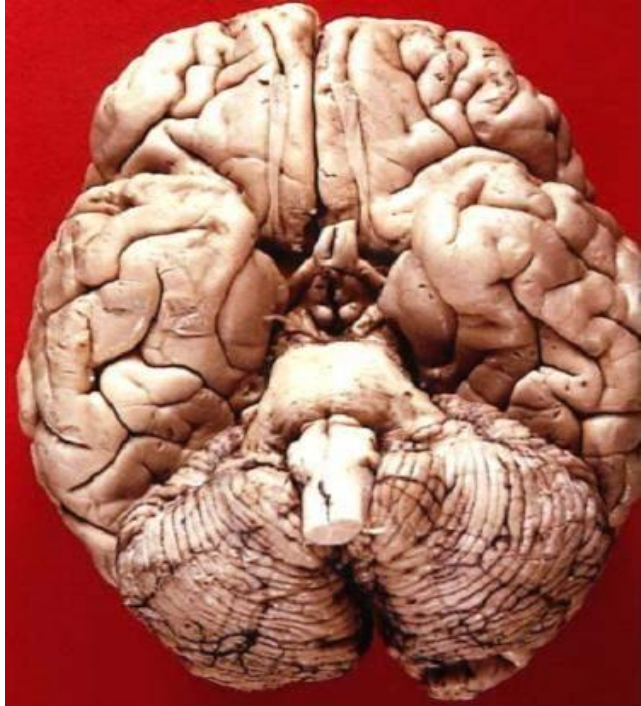
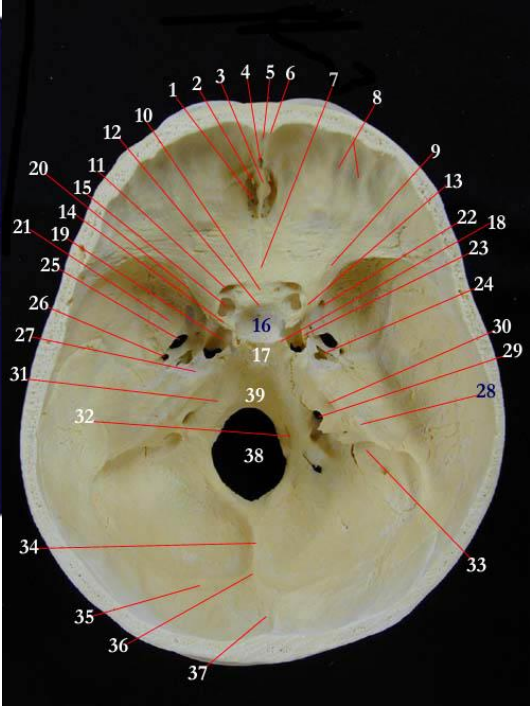
Thalamus

Capsula interna

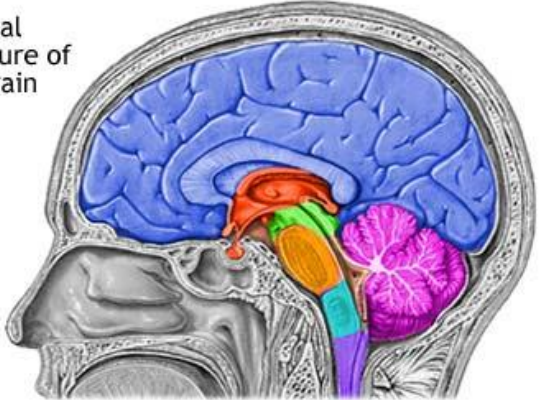
Hypothalamus



# Position of the diencephalon within the forebrain



Internal structure of the brain



- Spinal cord
- Cerebellum
- Diencephalon
- Pons
- Medulla Oblongata
- Midbrain
- Cerebral hemisphere



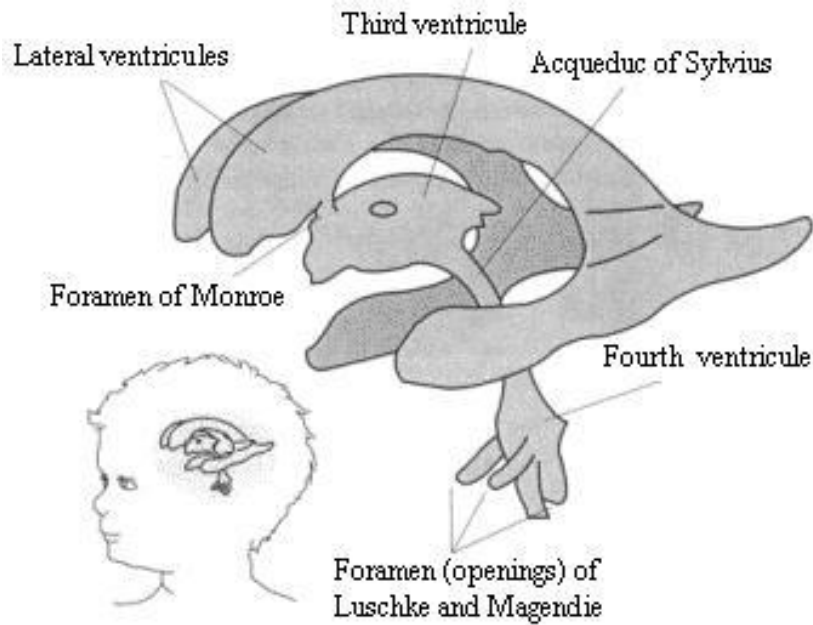
# Parts of the diencephalon

- Thalamus
- Hypothalamus
- Metathalamus
- Epithalamus
- Subthalamus
  
- **Cavity is the 3rd ventricle** (the anterior part developmentally is part of the telencephalon impar)

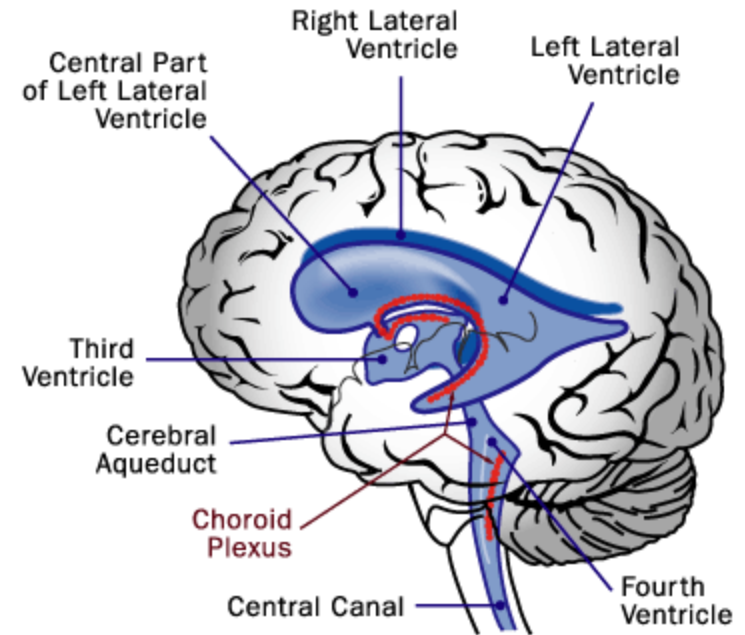




# 3rd ventricle



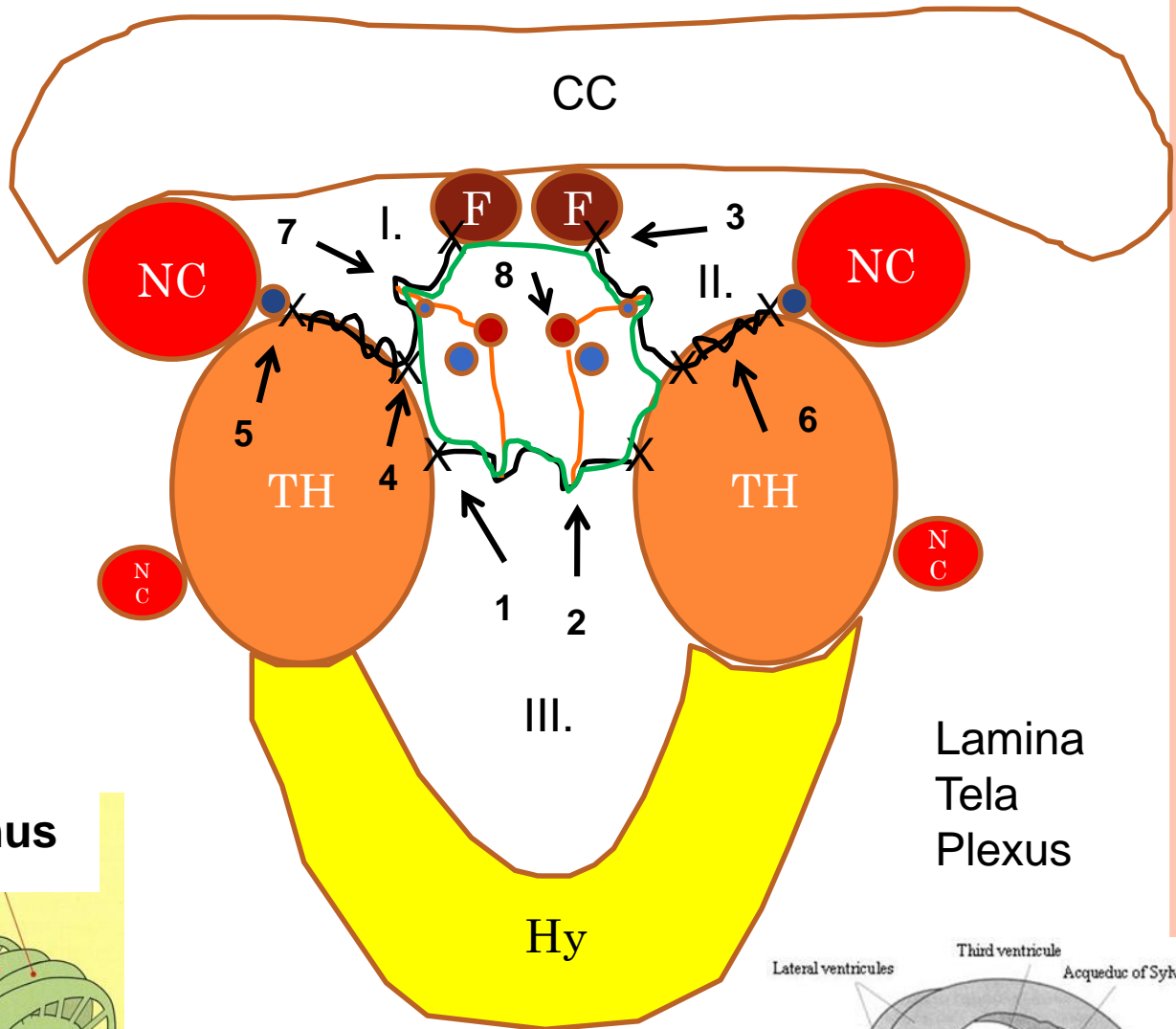
## The Ventricular System of the Human Brain



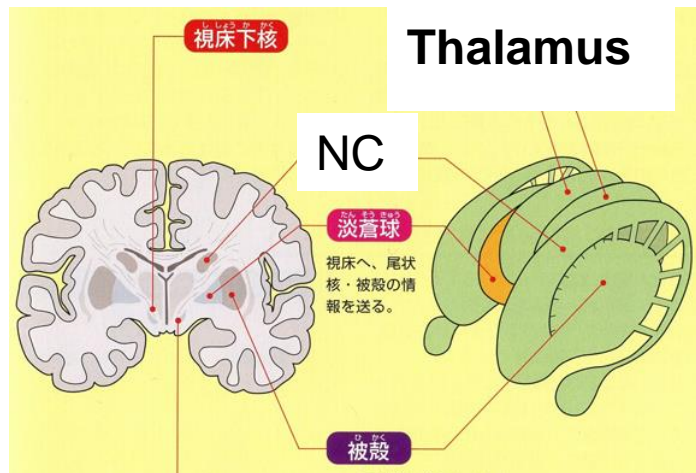
©2001 HowStuffWorks



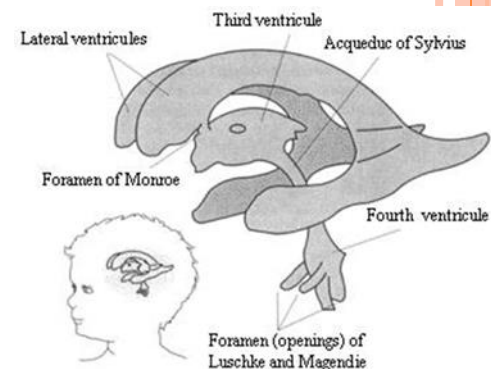




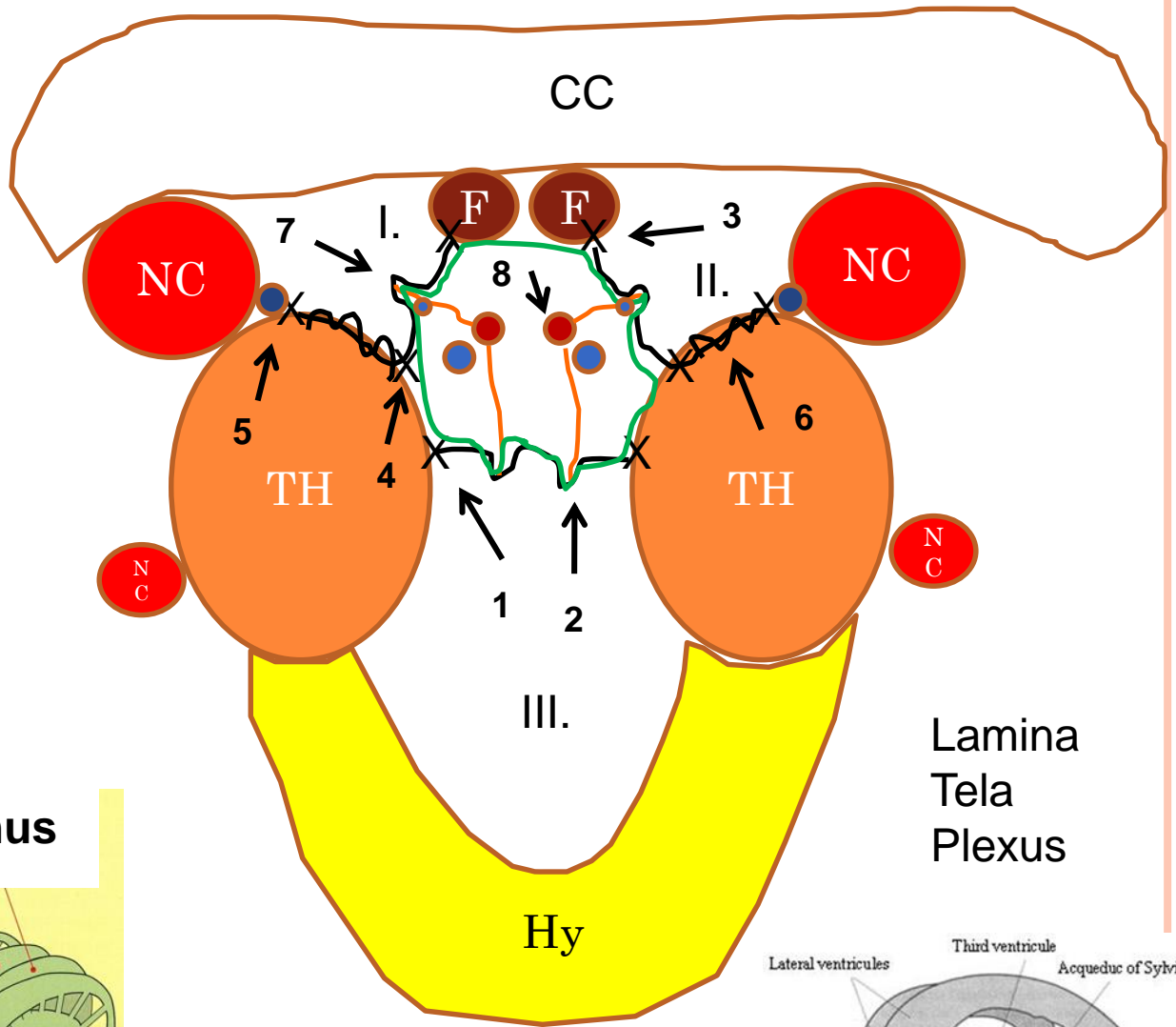
1. Stria medullaris thalami (taenia thalami)
2. Plex. Chor. Vent. Tert.
3. Taenia fornicis
4. Taenia choroidea
5. Stria terminalis, v. thalamostriata
6. Lamina affixa
7. Plex. Chor. Vent. lat., v. choroidea
8. a. choroidea post., v. cerebri int.



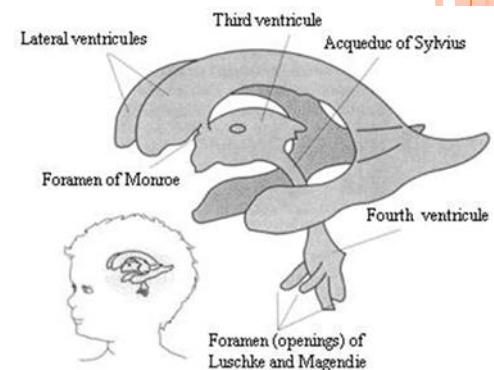
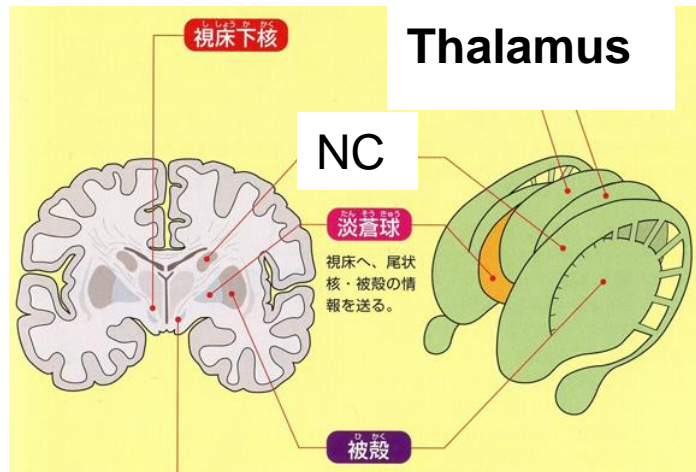
Lateral wall of the 3rd ventricle:  
 Thalamus  
 Sulcus hypothalamicus  
 Hypothalamus

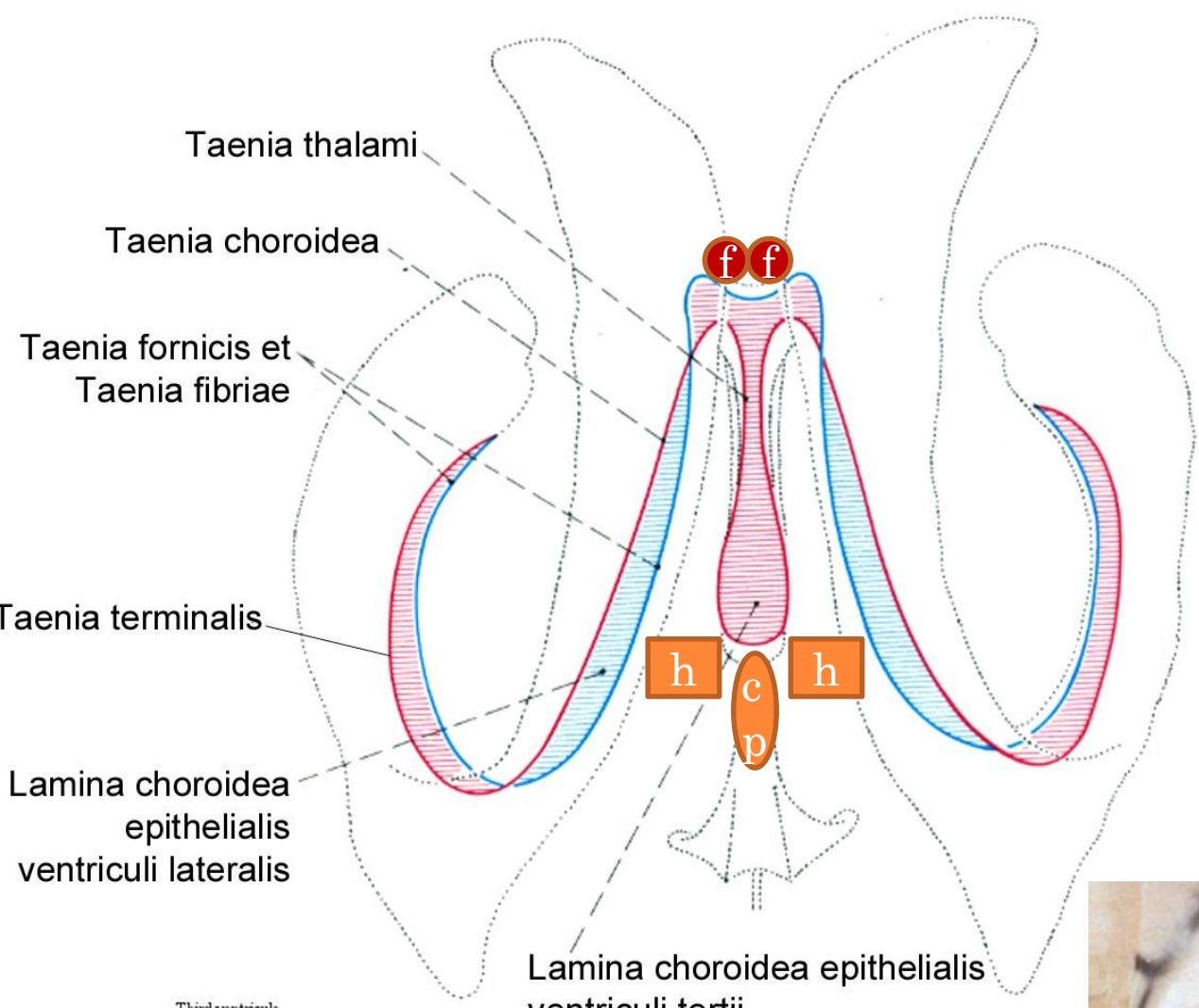


Lamina  
 Tela  
 Plexus

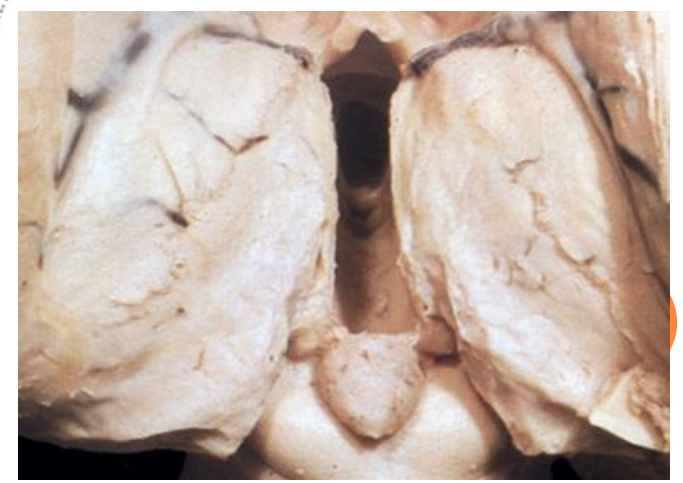
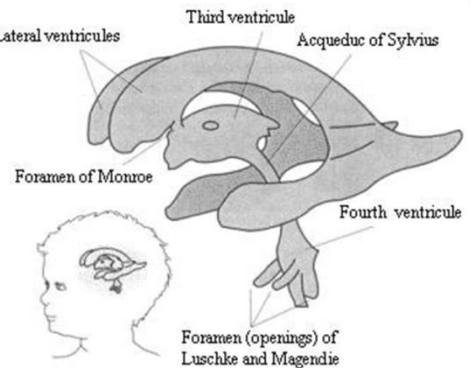


1. Stria medullaris thalami  
(taenia thalami)
2. Plex. Chor. Vent. Tert.
3. Taenia fornicis
4. Taenia choroidea
5. Stria terminalis, v. thalamostriata
6. Lamina affixa
7. Plex. Chor. Vent. lat., v. choroidea
8. a. choroidea post., v. cerebri int.



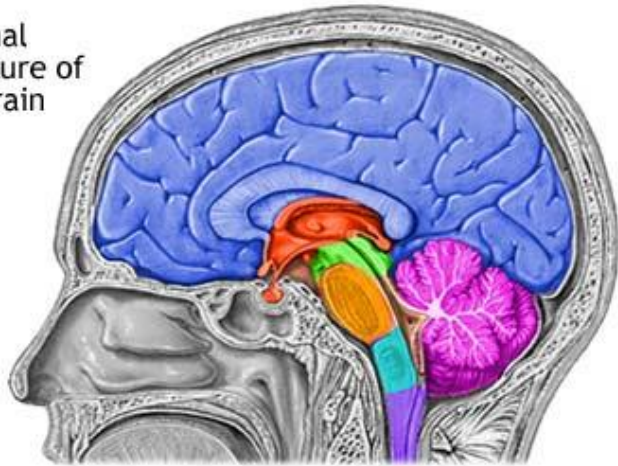


Roof of the 3rd ventricle:  
**Lamina choroidea epithelialis ventriculi tertii**  
 (attached on the stria medullares thalami, on habenulae, and on habenular commissure)



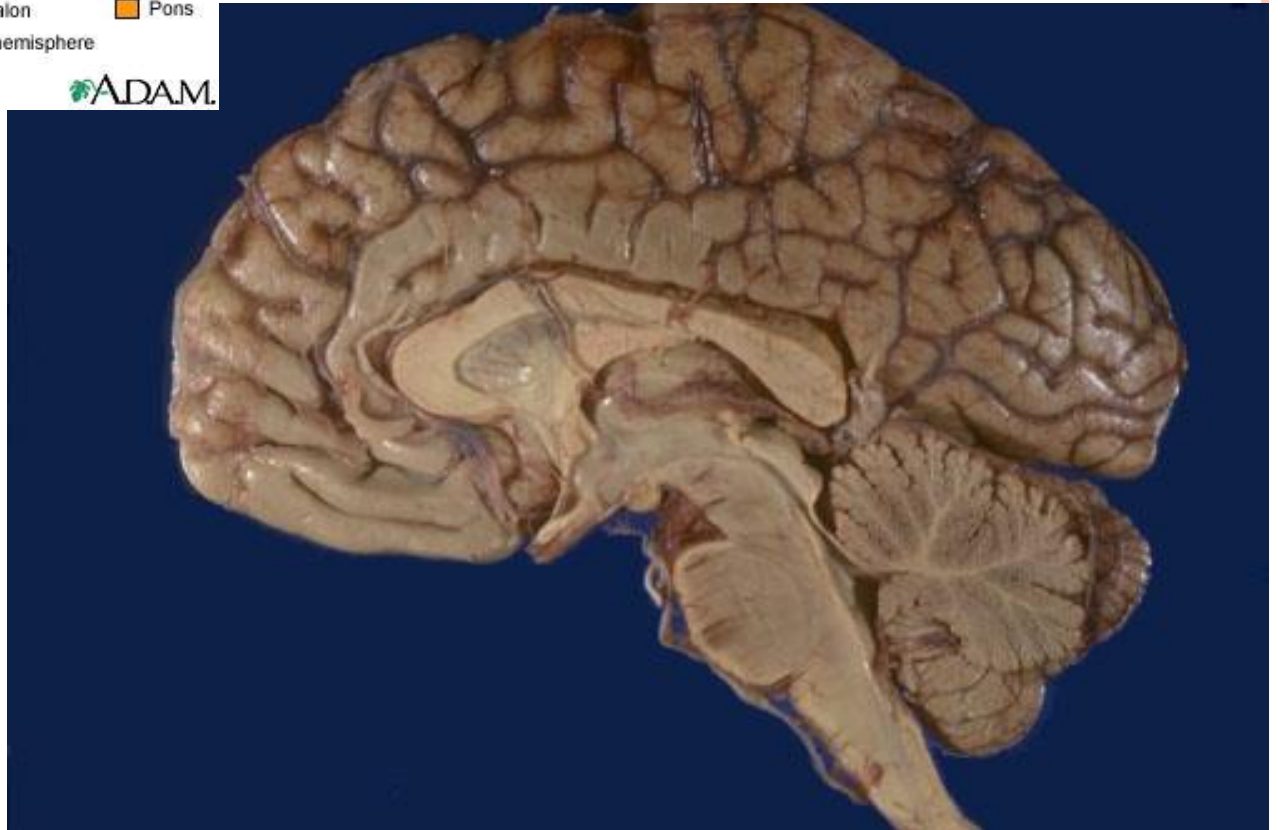


# Internal structure of the brain



- Spinal cord
- Cerebellum
- Diencephalon
- Pons
- Medulla Oblongata
- Midbrain
- Cerebral hemisphere

ADAM.



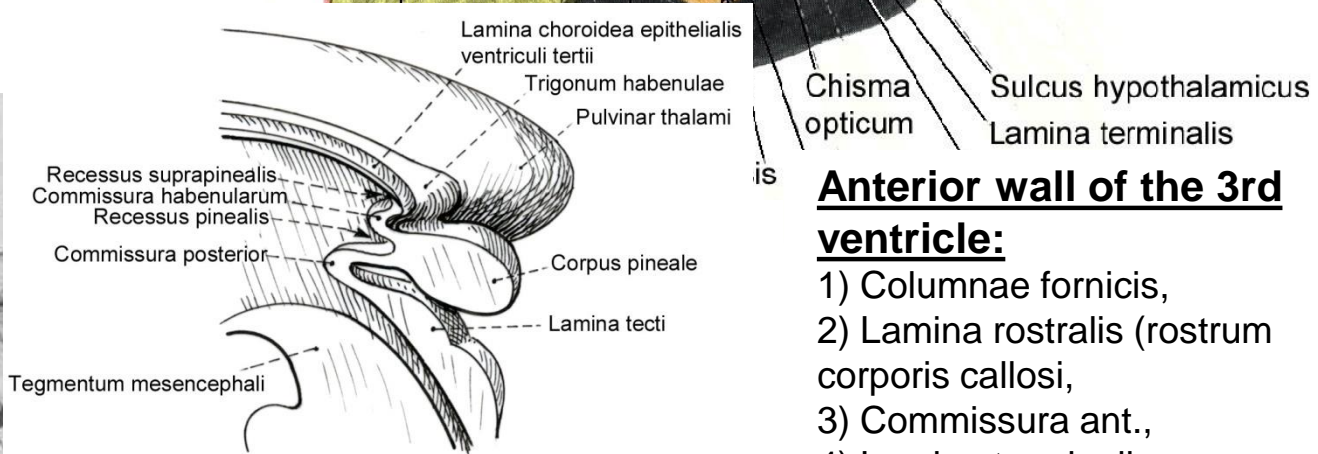
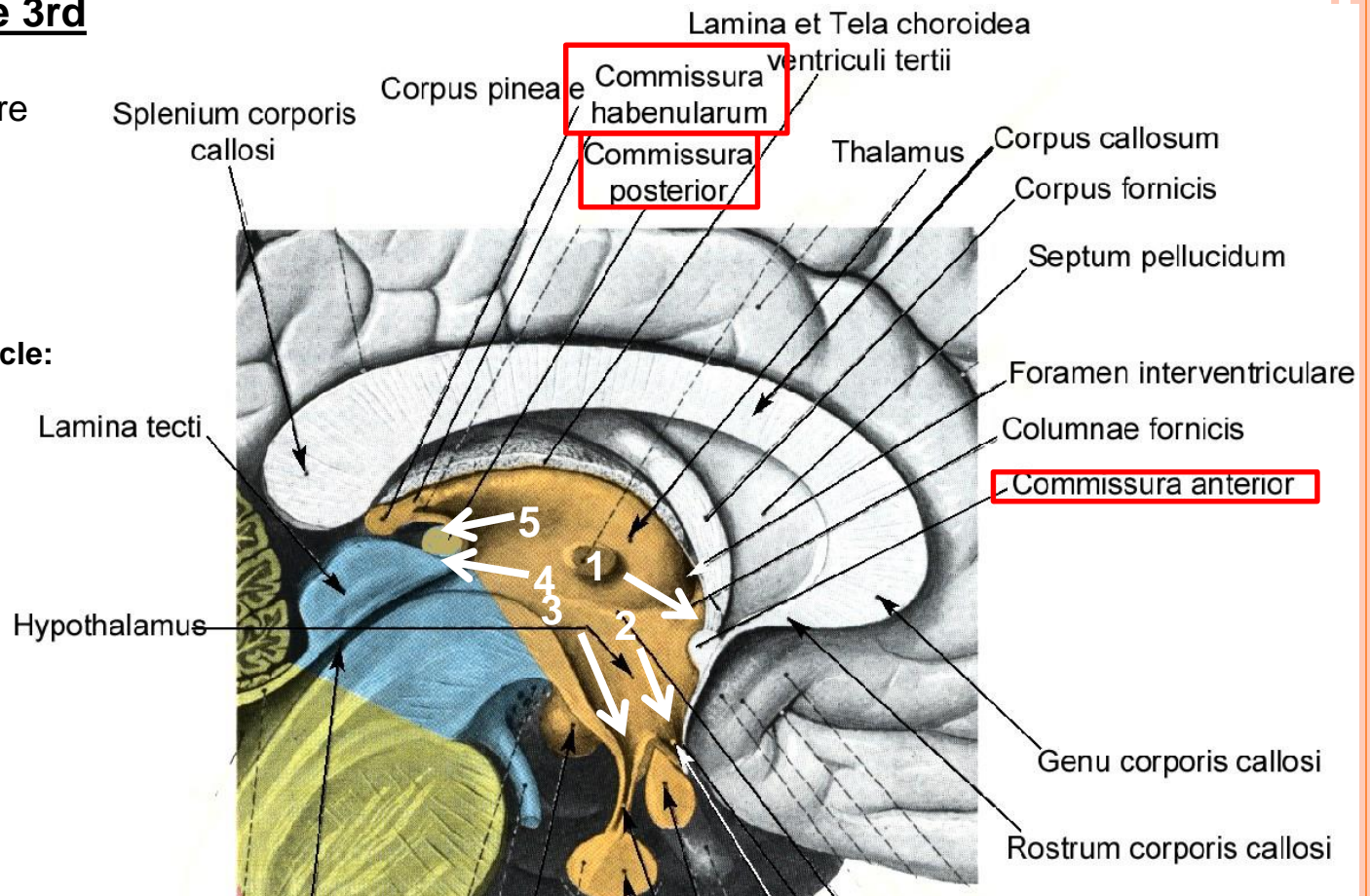


# Posterior wall of the 3rd ventricle:

- 1) Habenular commissure
- 2) Post. commissure

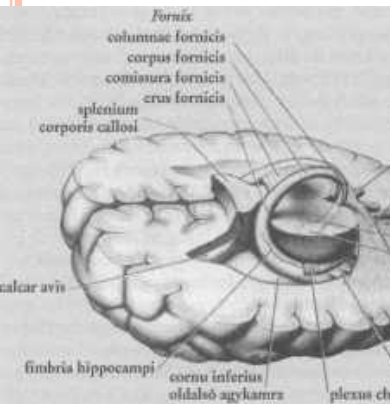
## Recesses of the 3rd ventricle:

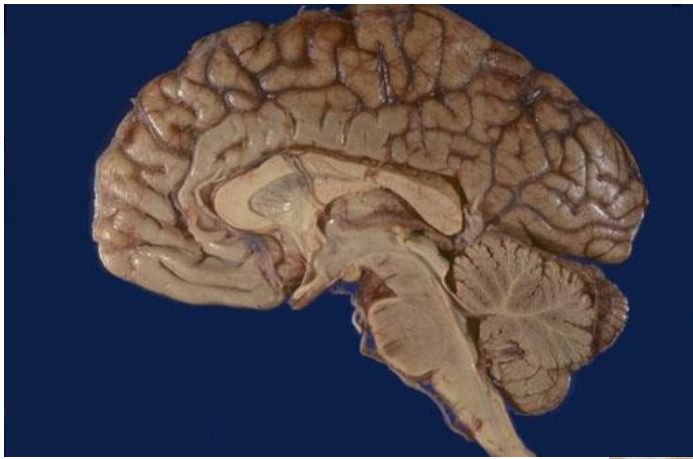
- 1) Triangular recess
- 2) Optic recess
- 3) Infundibular recess
- 4) Pineal recess
- 5) Suprapineal recess



# Anterior wall of the 3rd ventricle:

- 1) Columnae fornicis,
- 2) Lamina rostralis (rostrum corporis callosi),
- 3) Commissura ant.,
- 4) Lamina terminalis



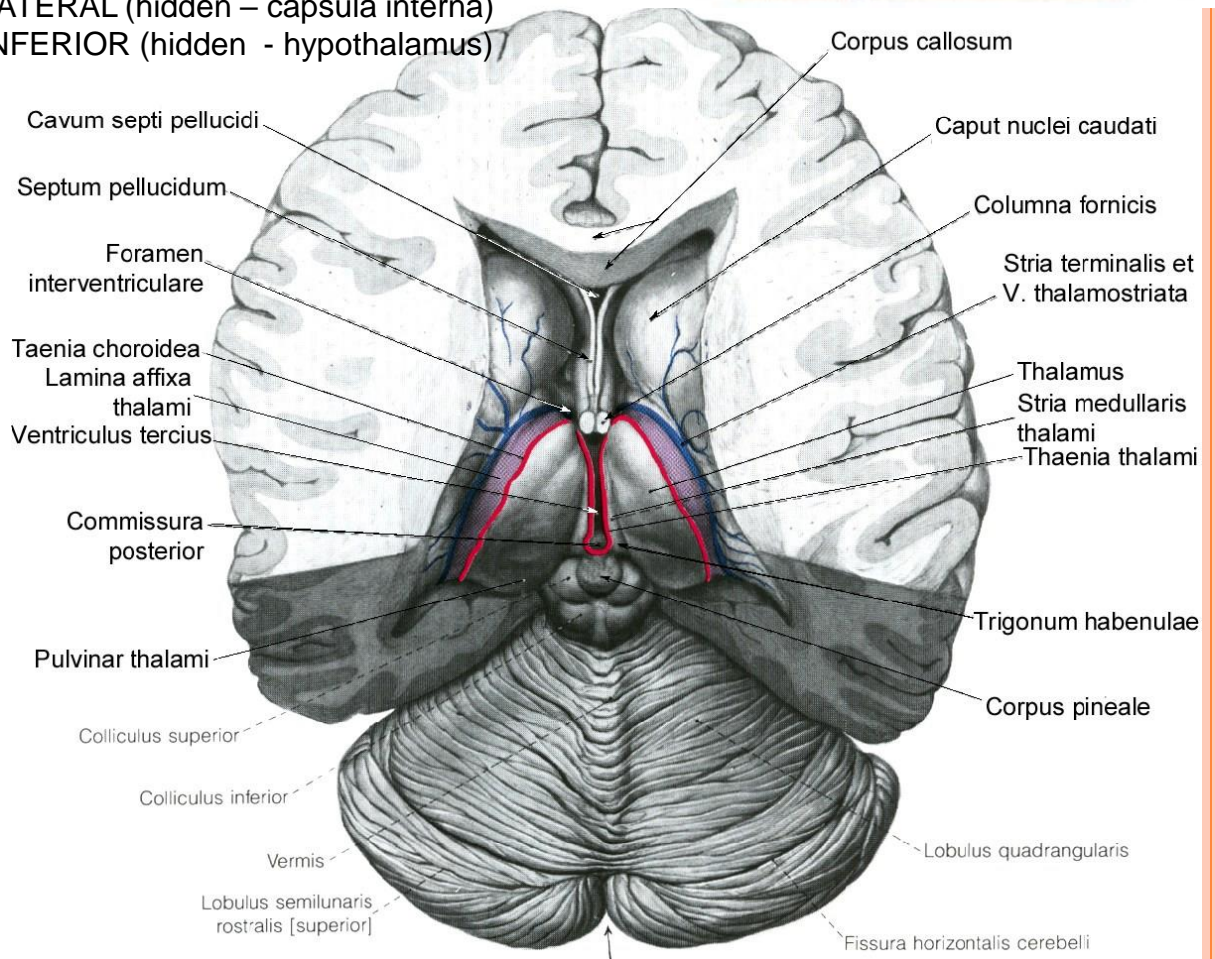
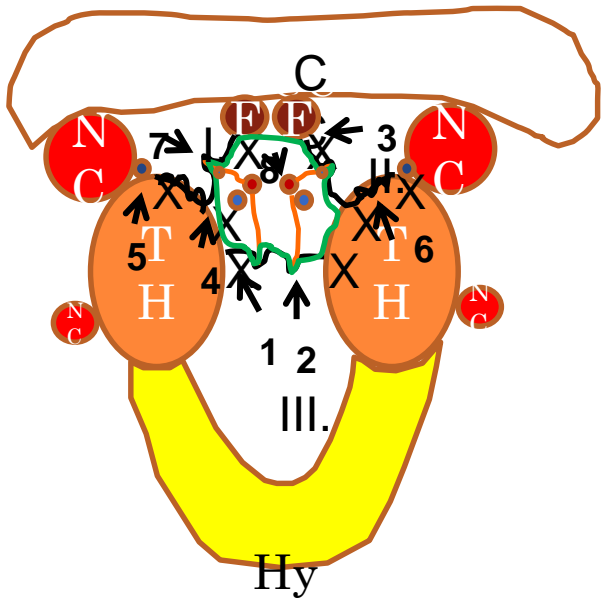
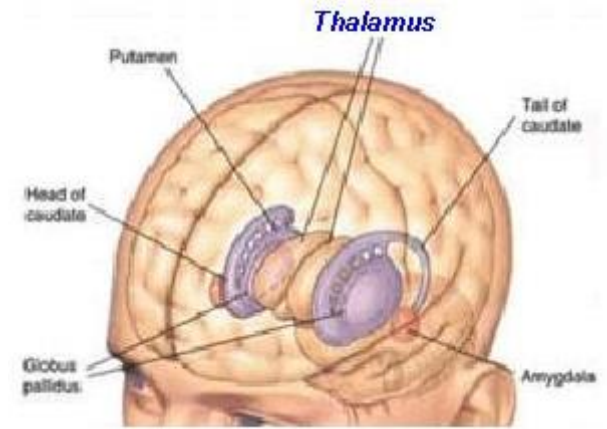
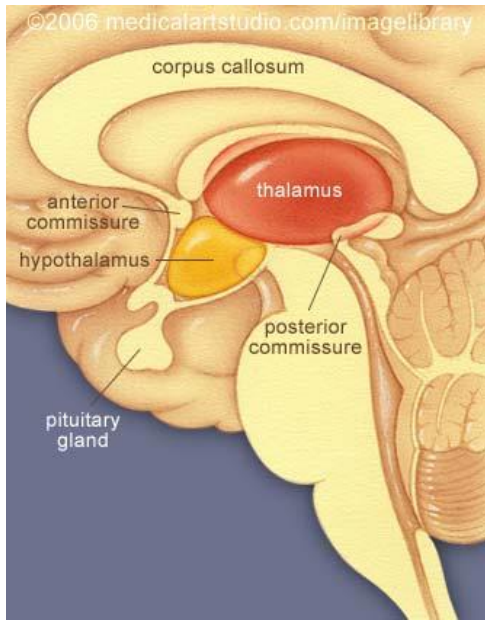




# □ Thalamus

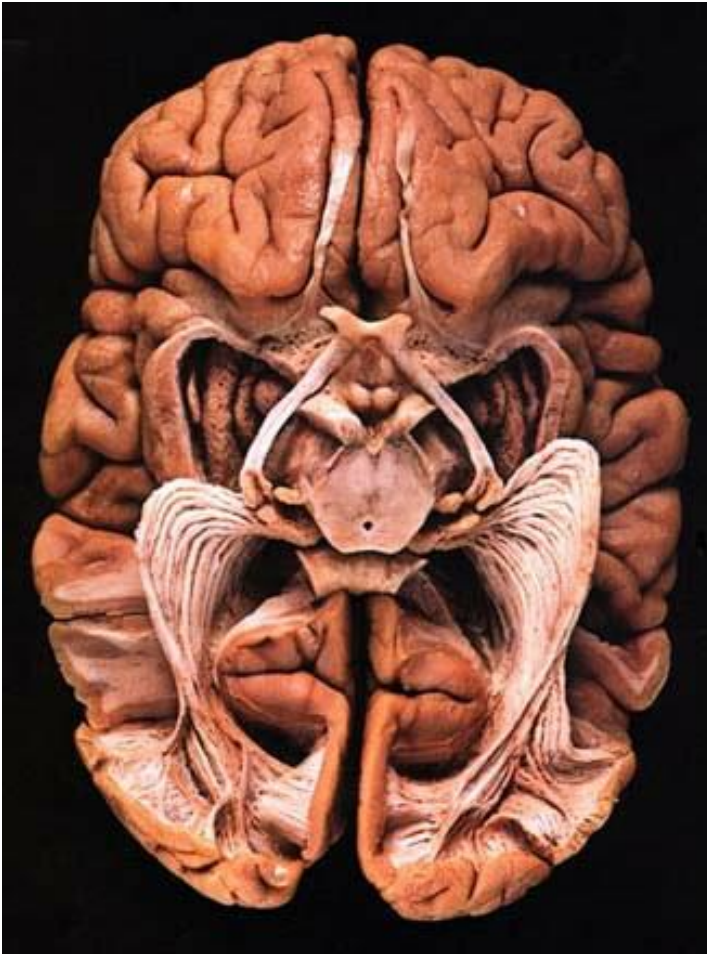
It has anterior (CN + fornix coverage)  
posterior pole (pulvinar), and four  
surface

- 1) MEDIAL (between hypothalamic sulcus and the str. Med. thalami)
- 2) SUPERIOR (choroid taenia dividing it) - stria terminalis, thalamostriate vein
- 3) LATERAL (hidden – capsula interna)
- 4) INFERIOR (hidden - hypothalamus)

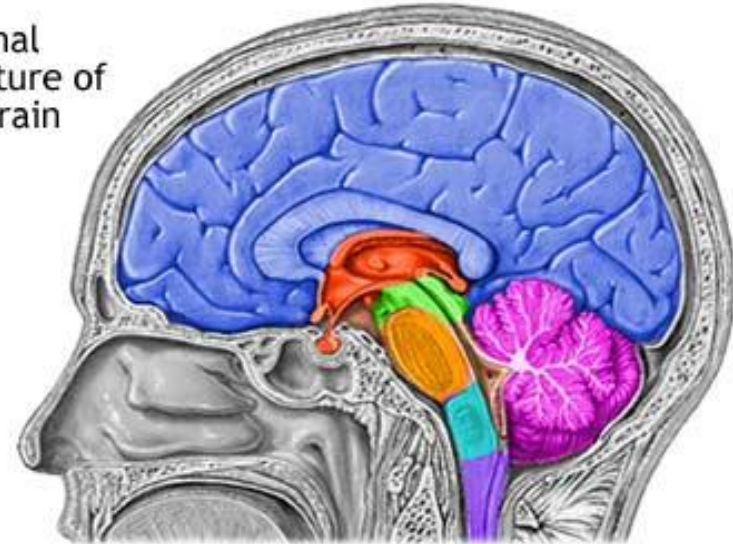




## □ Hypothalamus



Internal structure of the brain



■ Spinal cord      ■ Cerebellum      ■ Diencephalon      ■ Pons  
■ Medulla Oblongata      ■ Midbrain      ■ Cerebral hemisphere

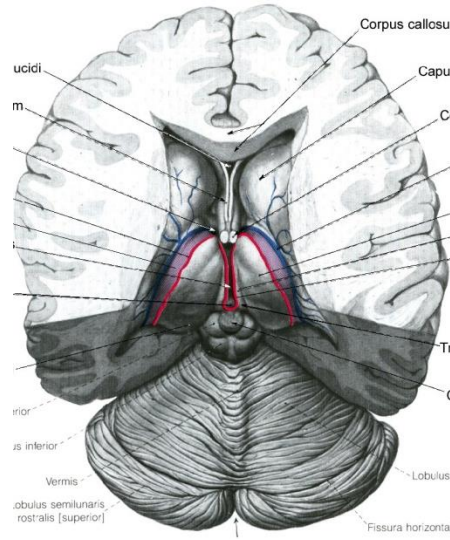
ADAM.

Part of the diencephalon below the thalamus (hypothalamic sulcus). From preoptic area to the tegmental level of the midbrain.



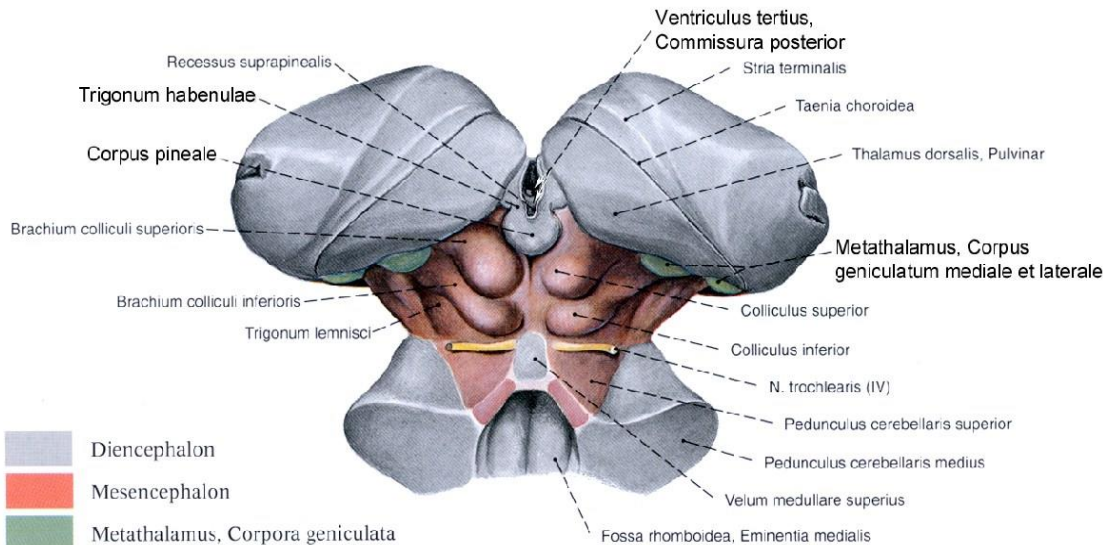
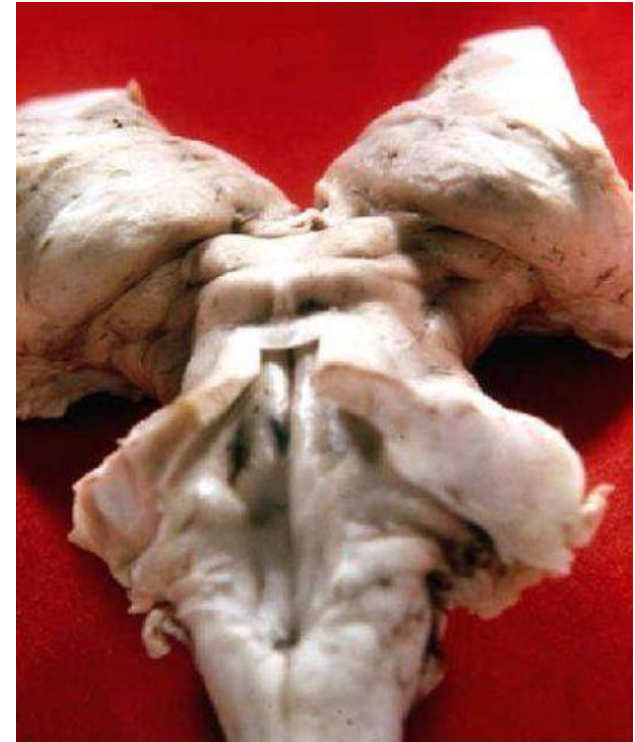
## Epithalamus

Striae medullaris thalami,  
Habenulae,  
Commissura habenularum,  
Trigonum habenulae,  
Nuclei habenulae,  
Commissura post.,  
Corpus pineale (epiphysis)



## Metathalamus

Corpus geniculatum med.  
Corpus geniculatum lat.



- Diencephalon
- Mesencephalon
- Metathalamus, Corpora geniculata



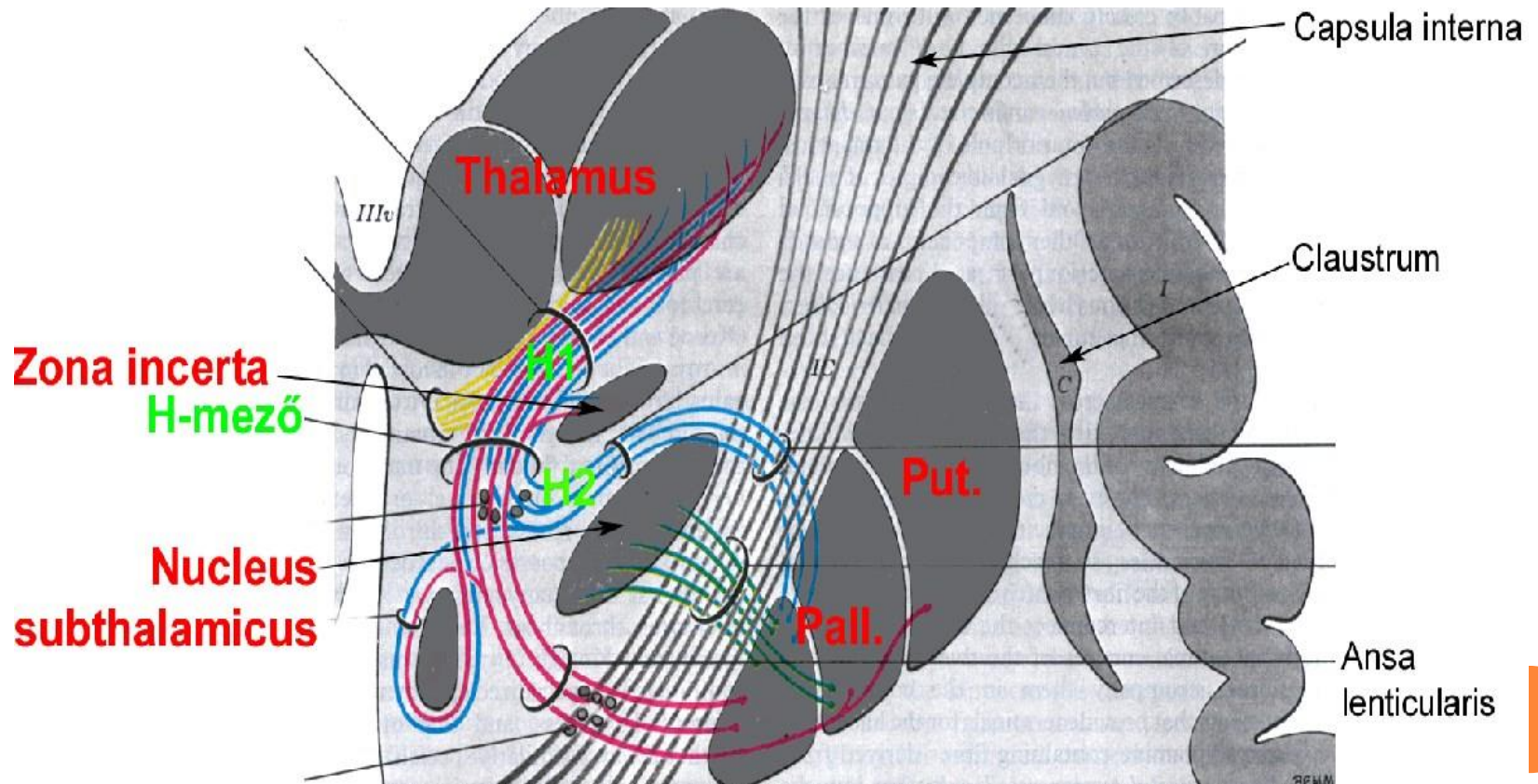


## □ Subthalamus

Nucleus subthalamicus (Luysi)

Zona incerta

Forel's H, H1, H2 fields





# Blood supply of the diencephalon

## Arteries:

### Anterior part:

- anterior cerebral aa.
- medial cerebral aa. (thalamostriate aa.)

### Posterior part:

- posterior cerebral aa.
- rr. communicans posterior

## Veins:

- Internal cerebral vv.
- Basal vv.



**Thank You for your  
attention!!!**

