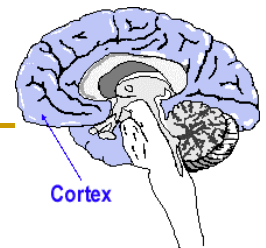

神经科学基础绪论

第四军医大学基础部
人体解剖与组织胚胎学教研室



一、神经科学的发展简史和研究内容

神经科学

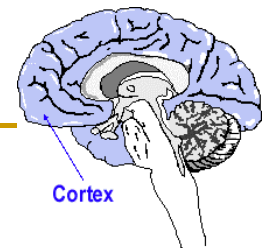
Neuroscience

神经生物学

Neurobiology

脑科学

Brain Science



神经生物学

分子神经生物学

细胞神经生物学

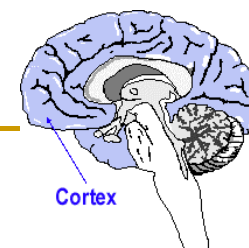
发育神经生物学

系统神经生物学

认知神经生物学

计算神经生物学

感觉系统神经生物学



临床神经科学

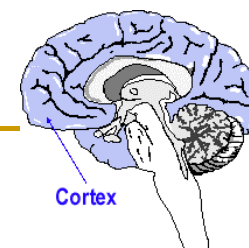
神经病理学

神经病学

神经外科学

精神病学

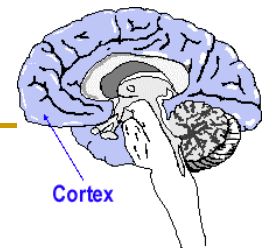
心身医学



认识脑 **Understanding the brain**

保护脑 **Protecting the brain**

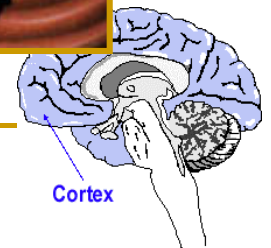
创造脑 **Creating the brain**



认识脑

(Understanding the brain)

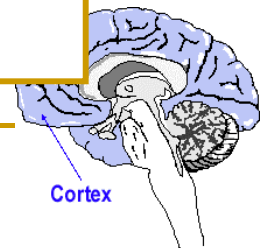
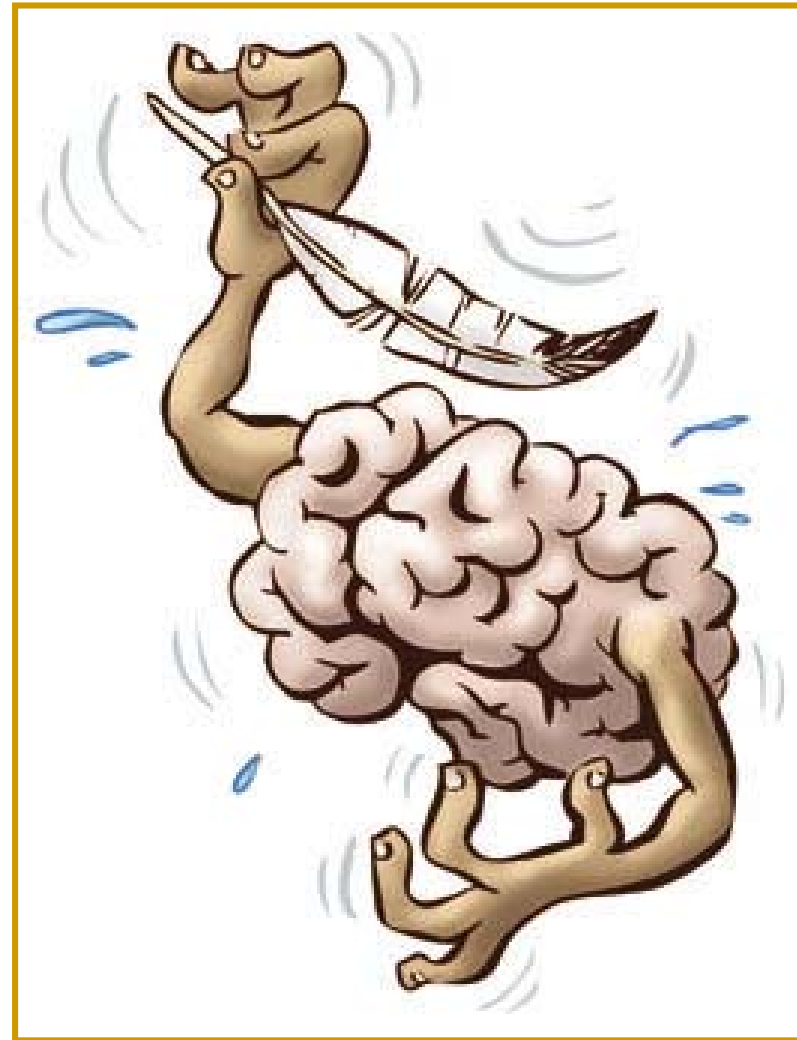
认识脑就是要揭示脑功能的本质。



保护脑

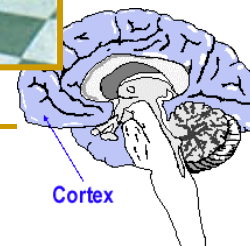
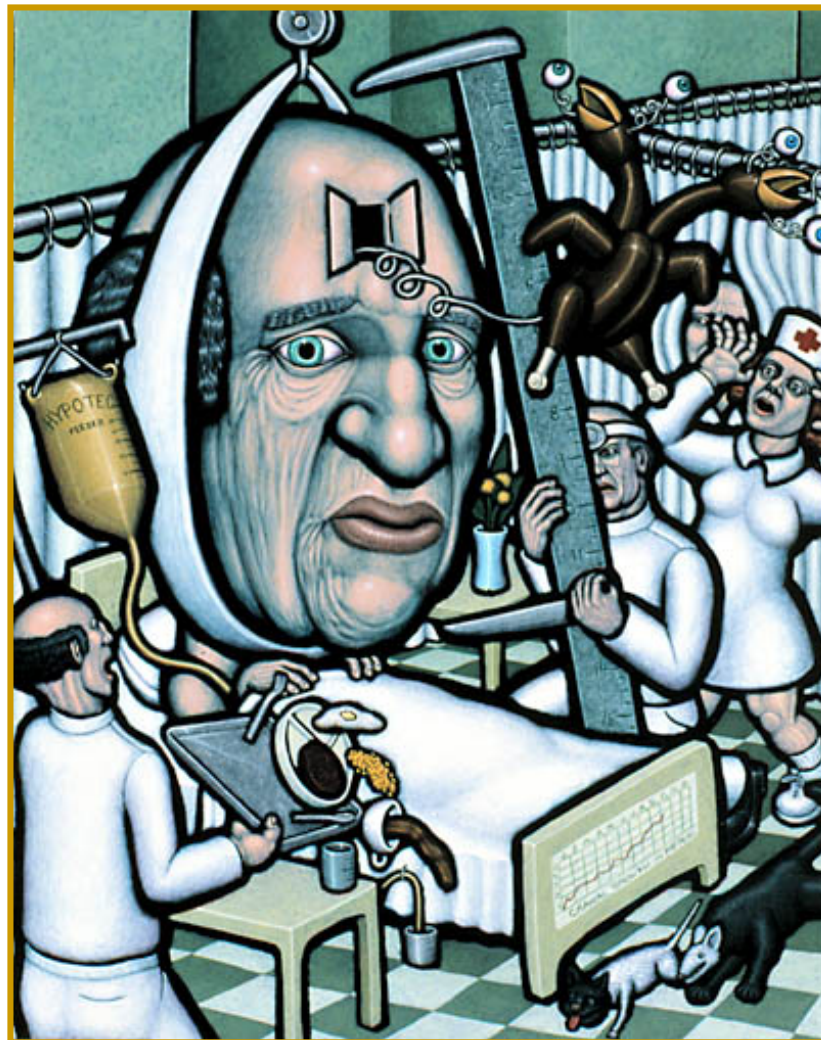
(Protecting the brain)

保护脑就是要
预防和治疗脑疾病。



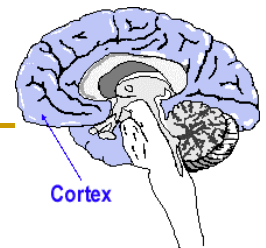
创造脑 (Creating the brain)

创造脑就是要发挥人脑的潜在能力，开发具备人脑特点的高度智能化的计算机。



神经系统的基本组成（一）

1. 神经系统的组成；
2. 脊髓的外形、构造及脊髓灰质的分层；
3. 脑干的组成、外形和内部结构特点；
4. 内脏神经系统的组成。



二、神经系统的组成

*中枢神经系统:

脑

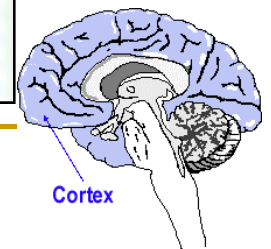
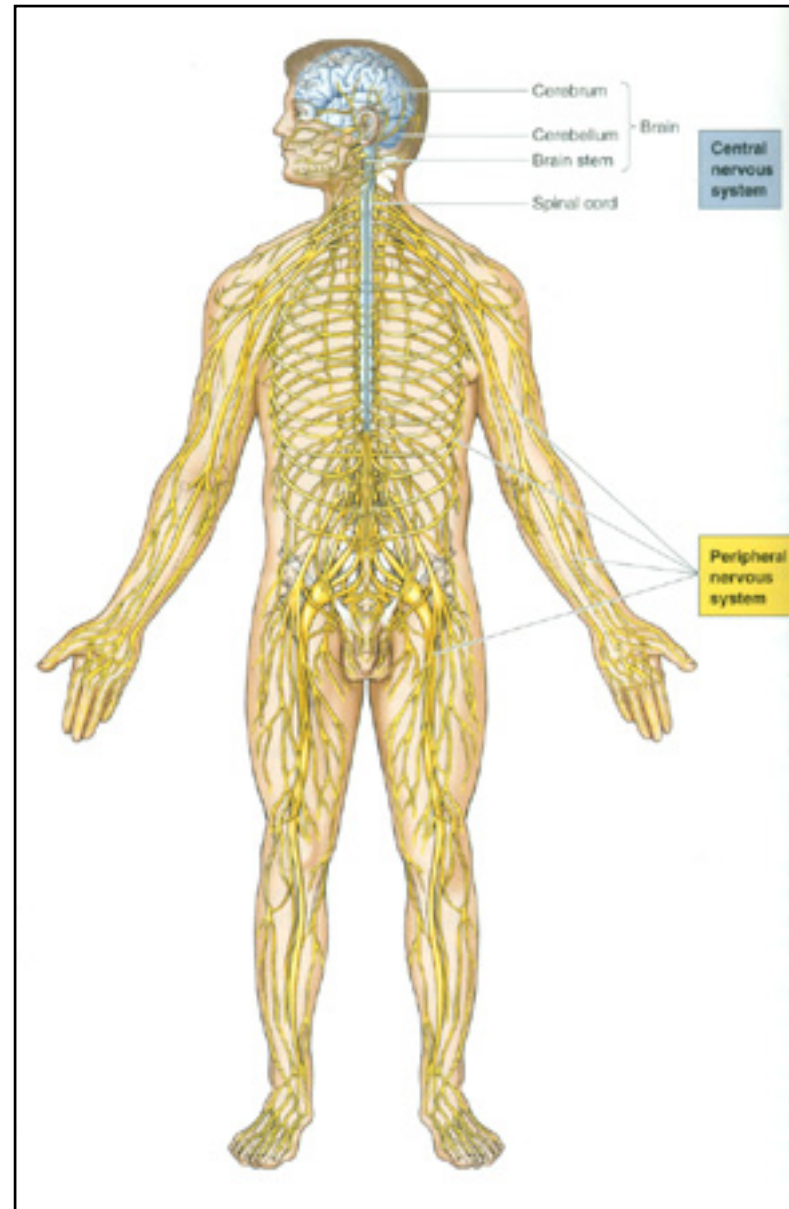
脊髓

* 周围神经系统:

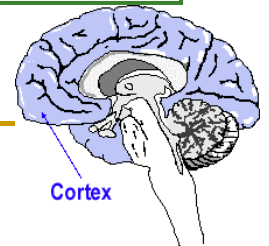
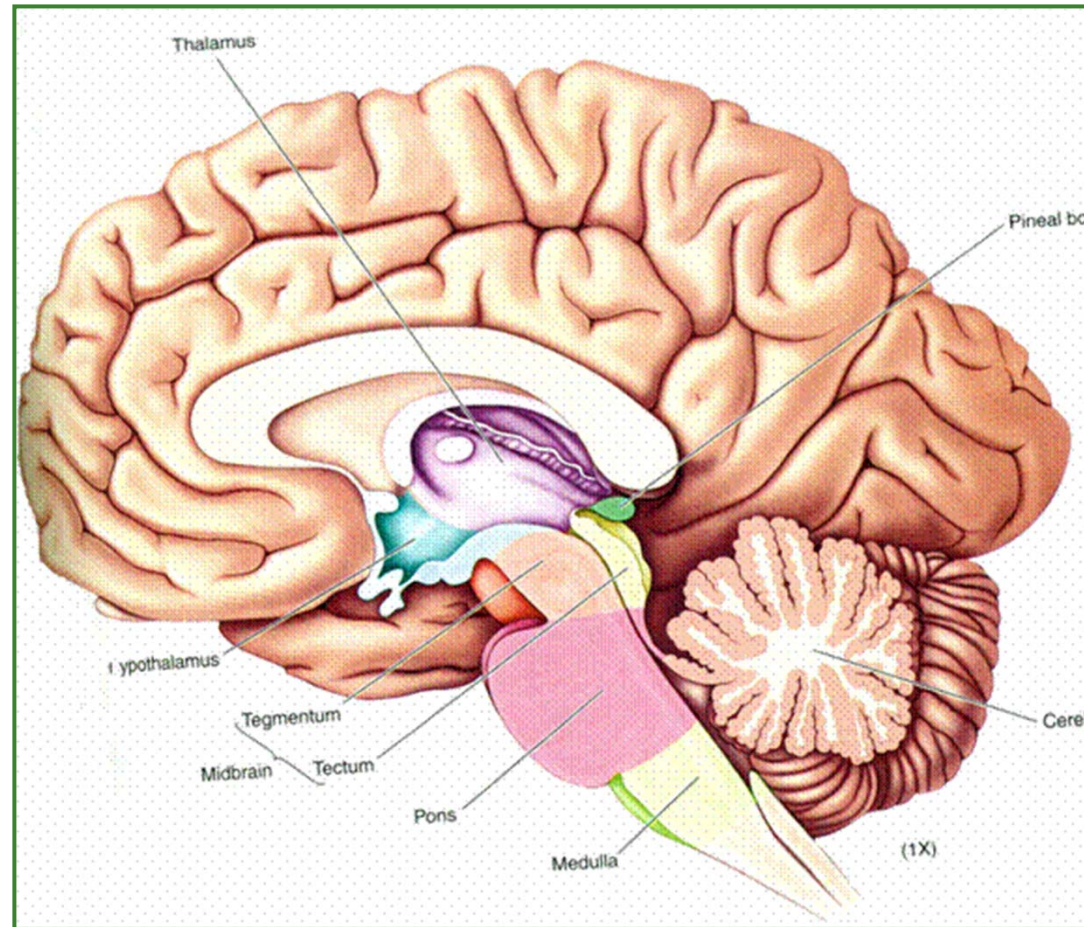
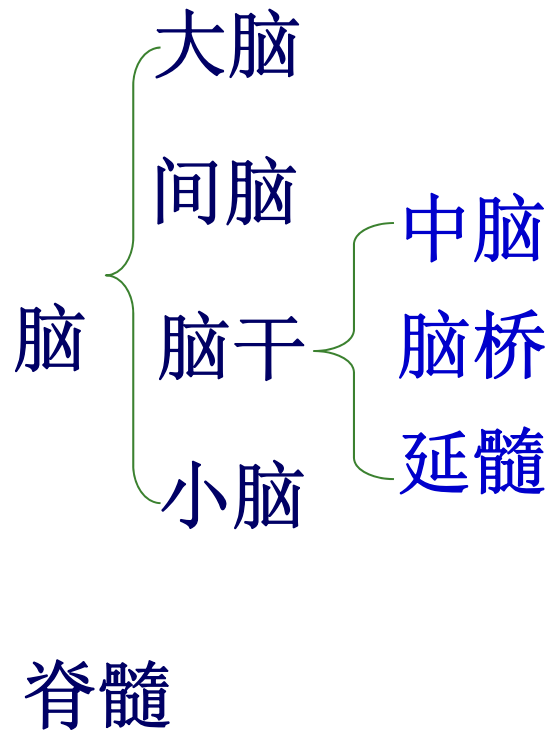
脑神经

脊神经

内脏神经



1. 中枢神经系统



2. 周围神经系统

*脑脊神经:

12对颅神经

31对脊神经

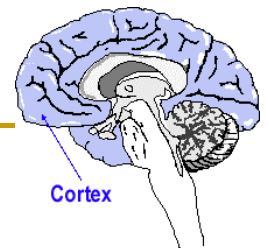
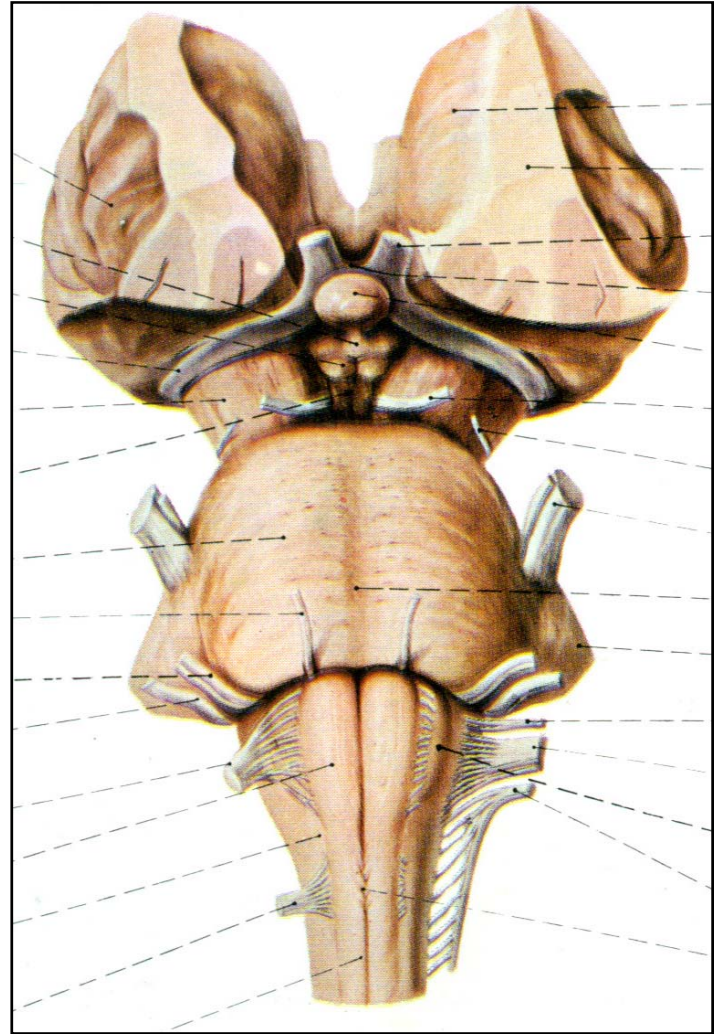
*内脏神经:

感觉神经

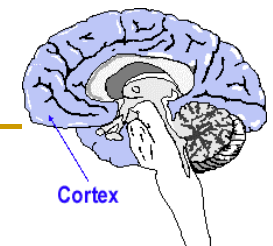
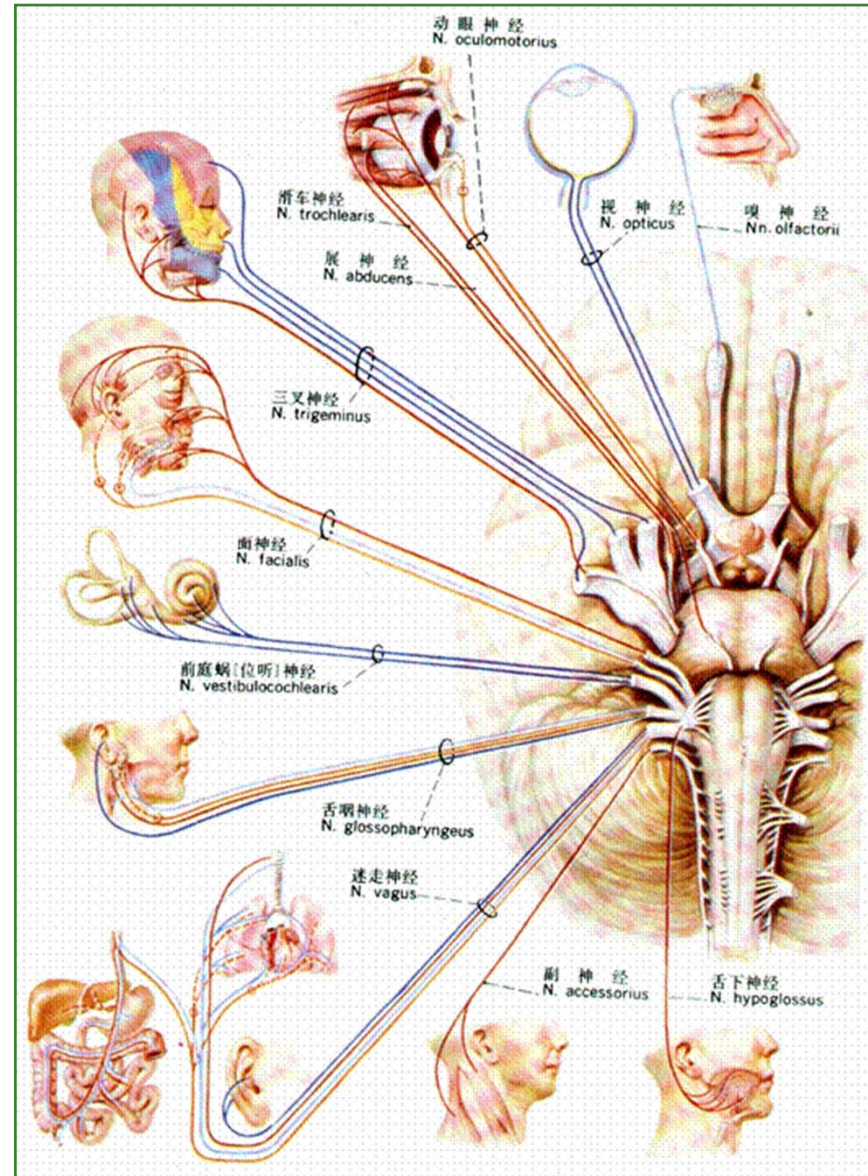
运动神经

交感神经

副交感神经



12对脑神经



31对脊神经

C₁₋₈

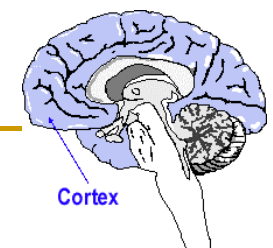
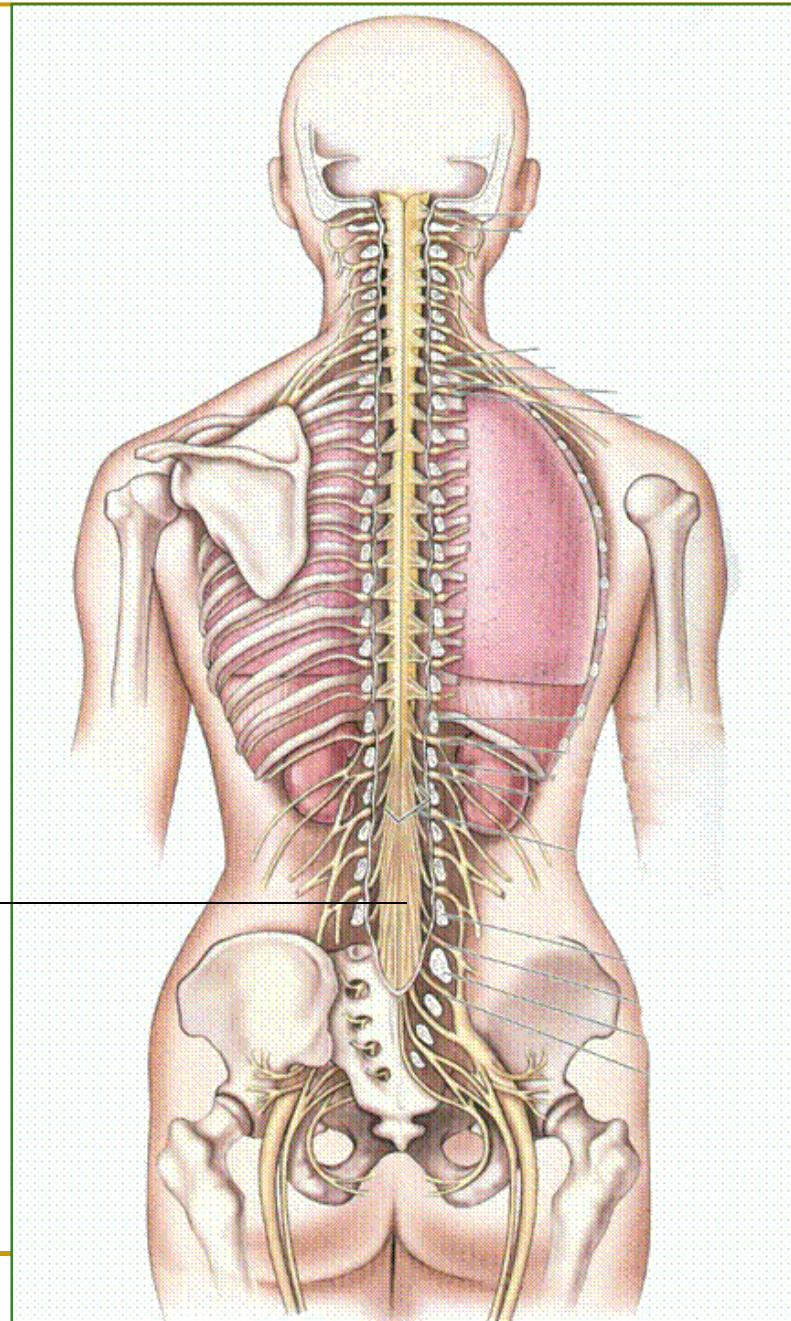
Th₁₋₁₂

L₁₋₅

S₁₋₅

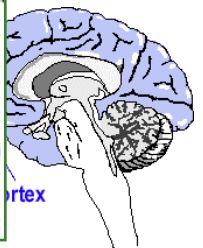
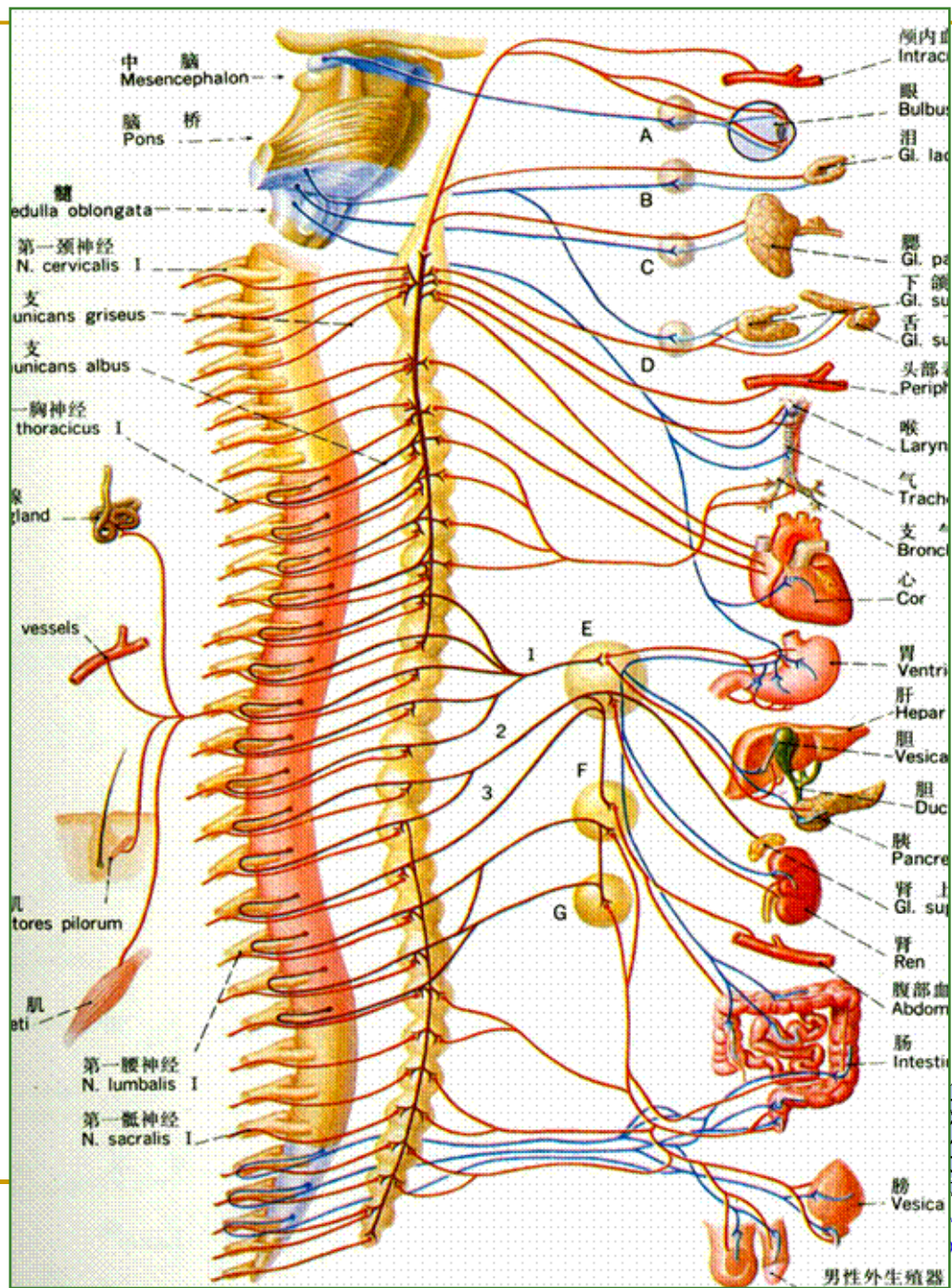
Co₁

马尾

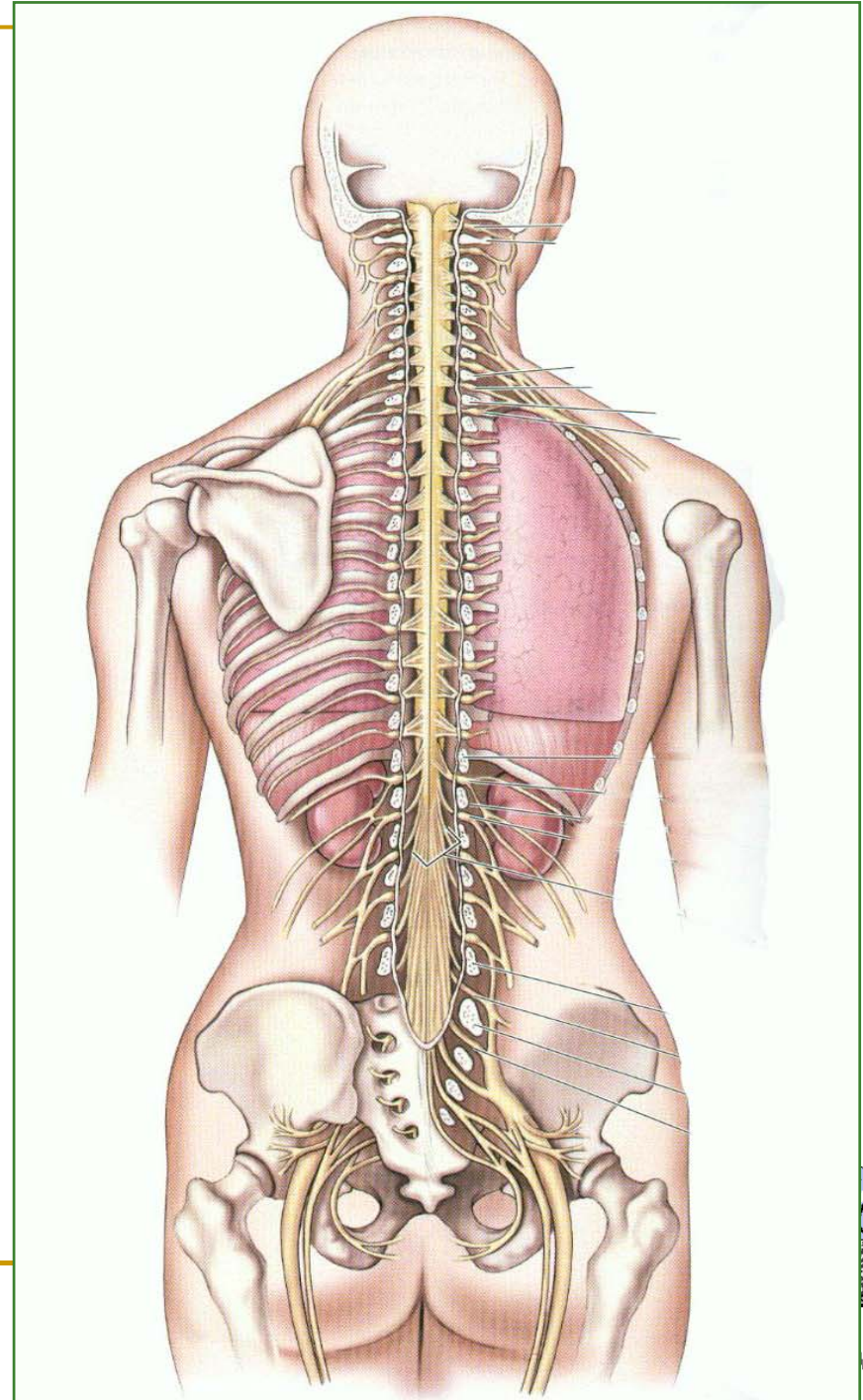


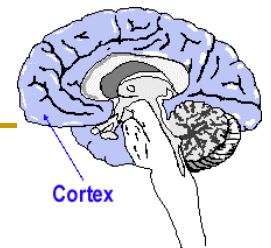
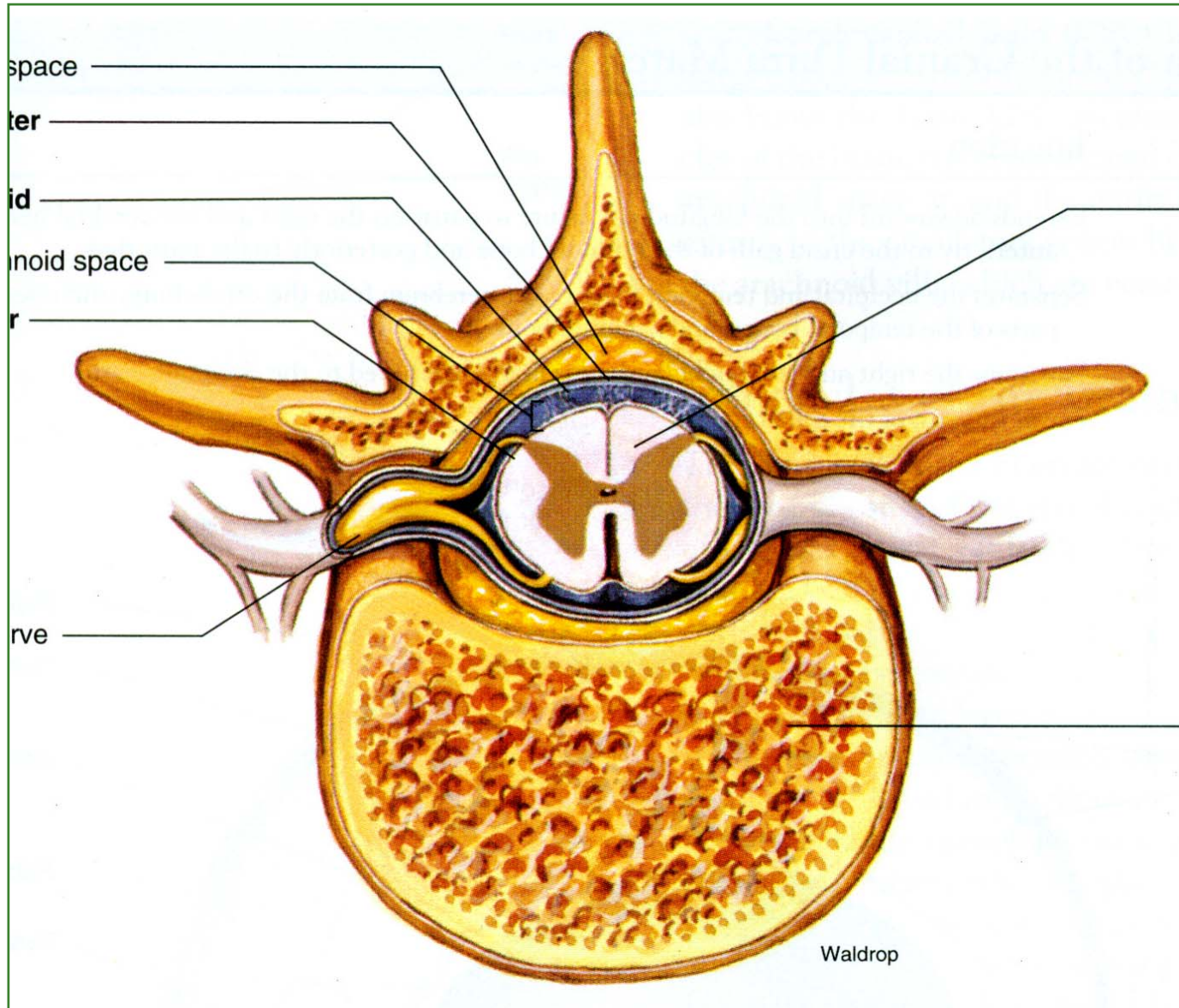
交感神经 副交感神经

?



三、脊髓 (Spinal cord)





胚胎早期:

脊髓与椎管等长

胚胎4月后:

脊柱的生长速度快于脊髓

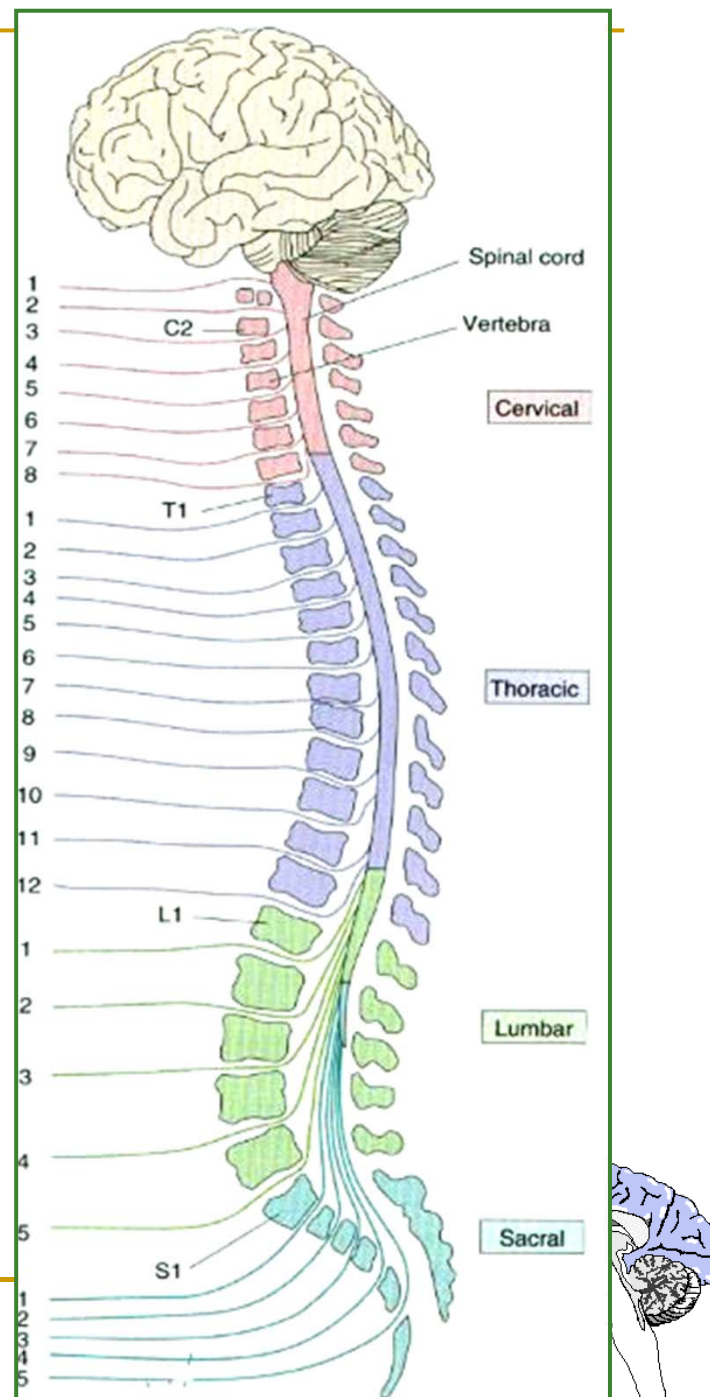
降生时:

脊髓下端平齐第**3**腰椎

成人时: 平齐第**1**腰椎下缘

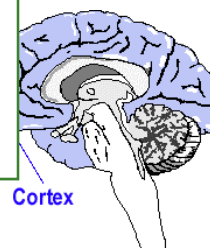
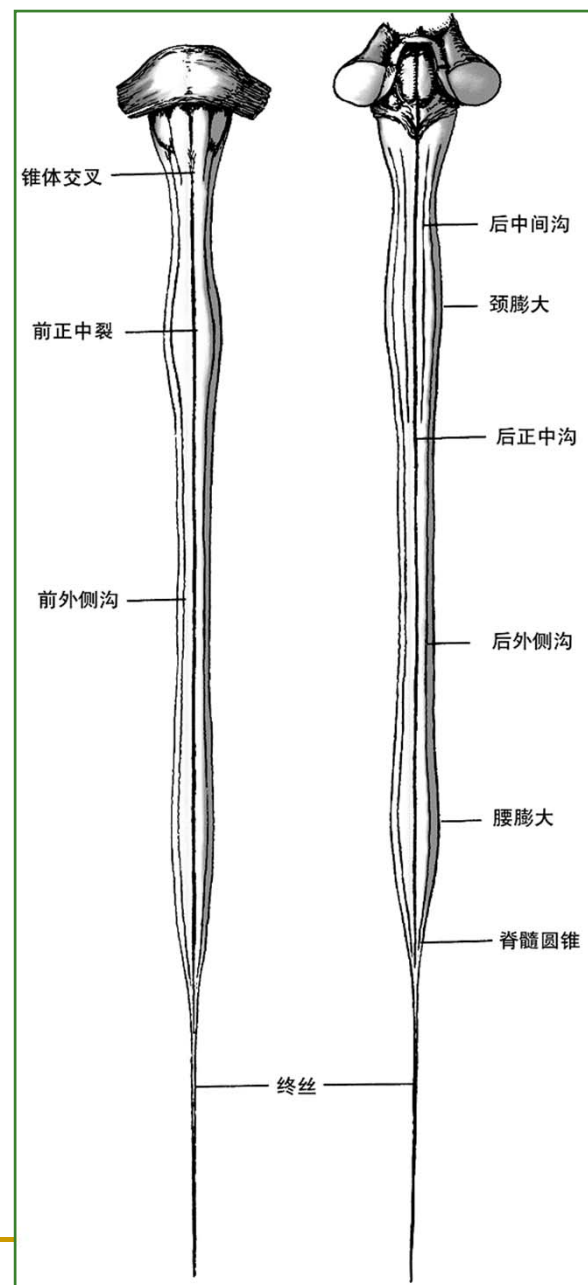
临床意义:

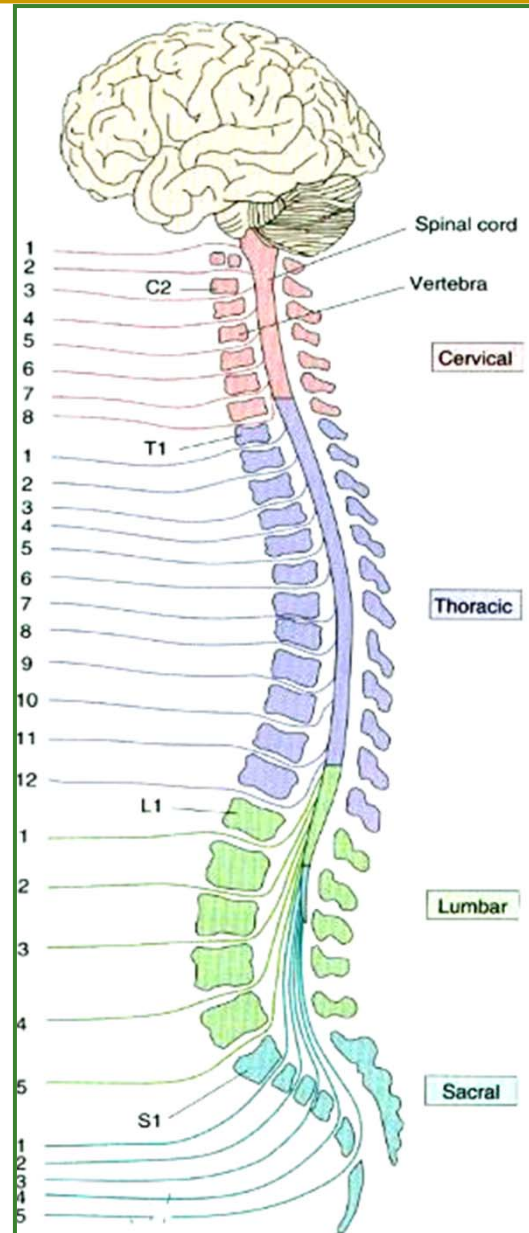
腰椎穿刺时, 在第**3**腰椎以下进行, 以免伤及脊髓.



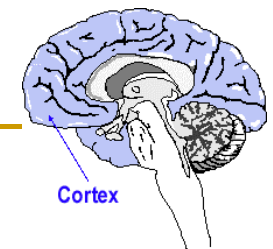
脊髓外形的特点

- ♣ 圆柱状
- ♣ 颈膨大和腰骶膨大
- ♣ 脊髓圆锥
- ♣ 弯曲





脊髓的弯曲

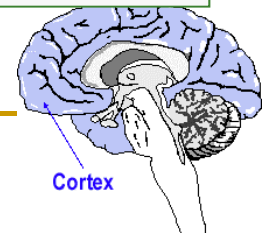
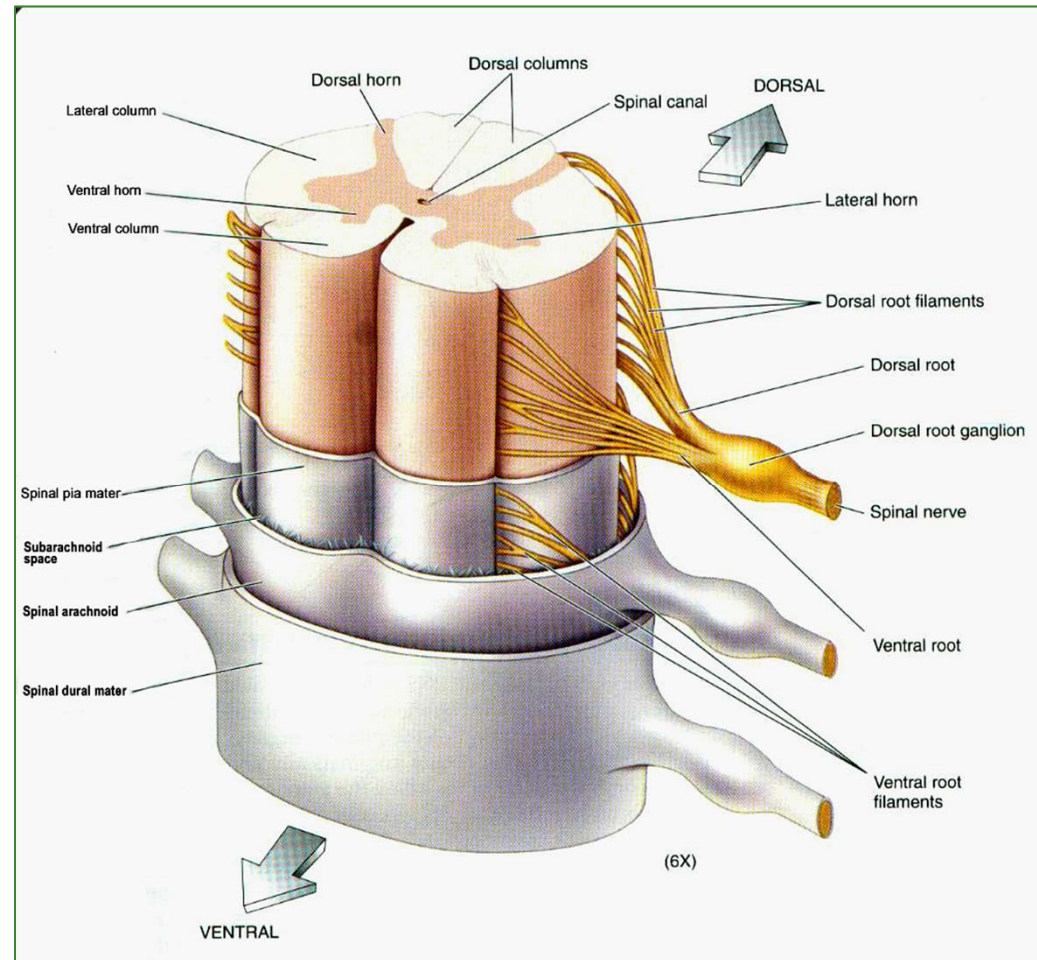


♣ 表面有浅的 沟、裂

* 前正中裂

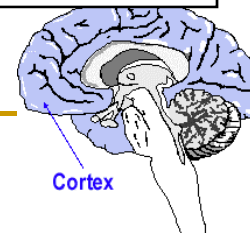
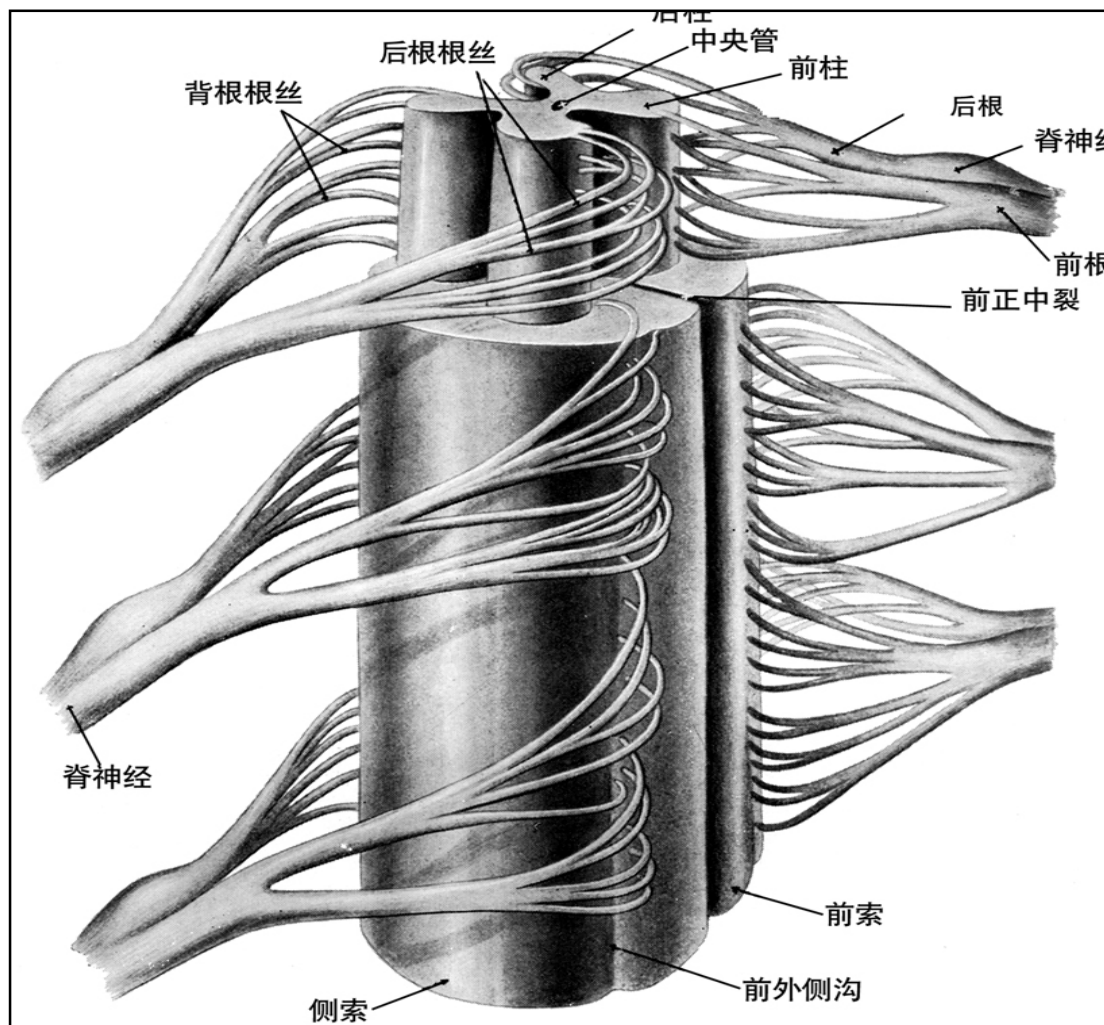
* 后正中沟

* 前外侧沟和后外侧沟；脊神经前根和后根的根丝分别经这些沟出入脊髓。



♣ 节段性:

每一对脊神经前、后根的根丝附于脊髓的范围为脊髓的一个节段。



各节段
灰质和
白质的
比例



C₅



T₈



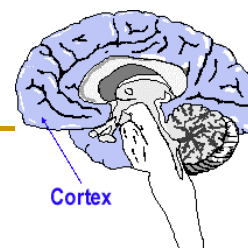
L₃



S₃

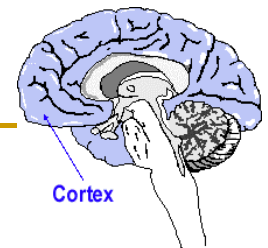
灰质的比例增大

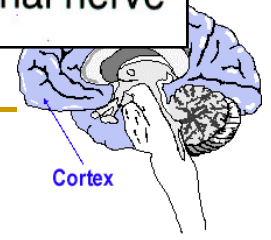
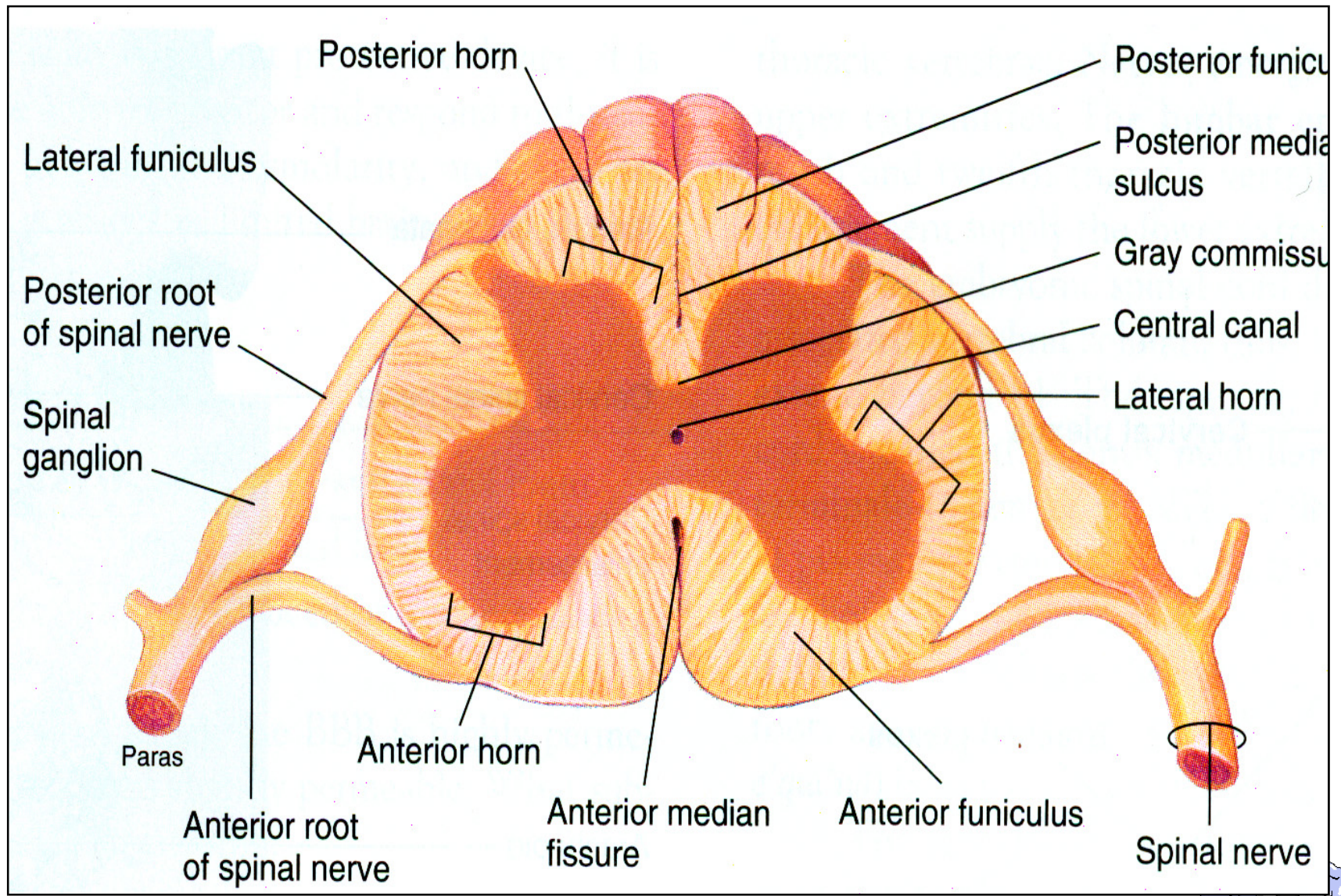
白质的比例增大

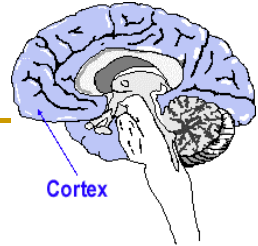
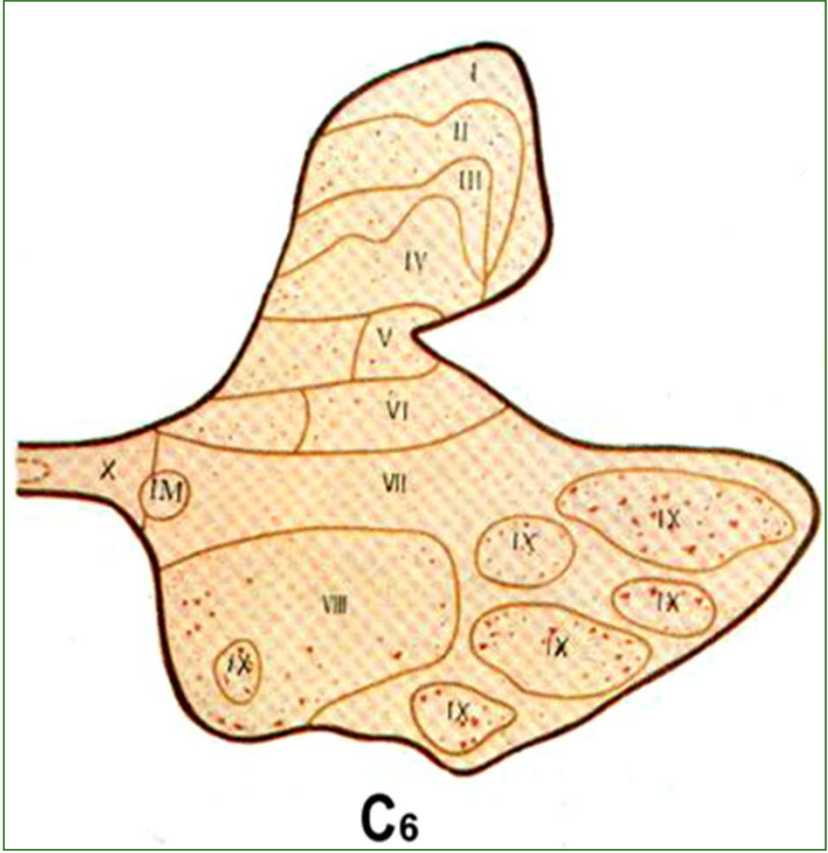
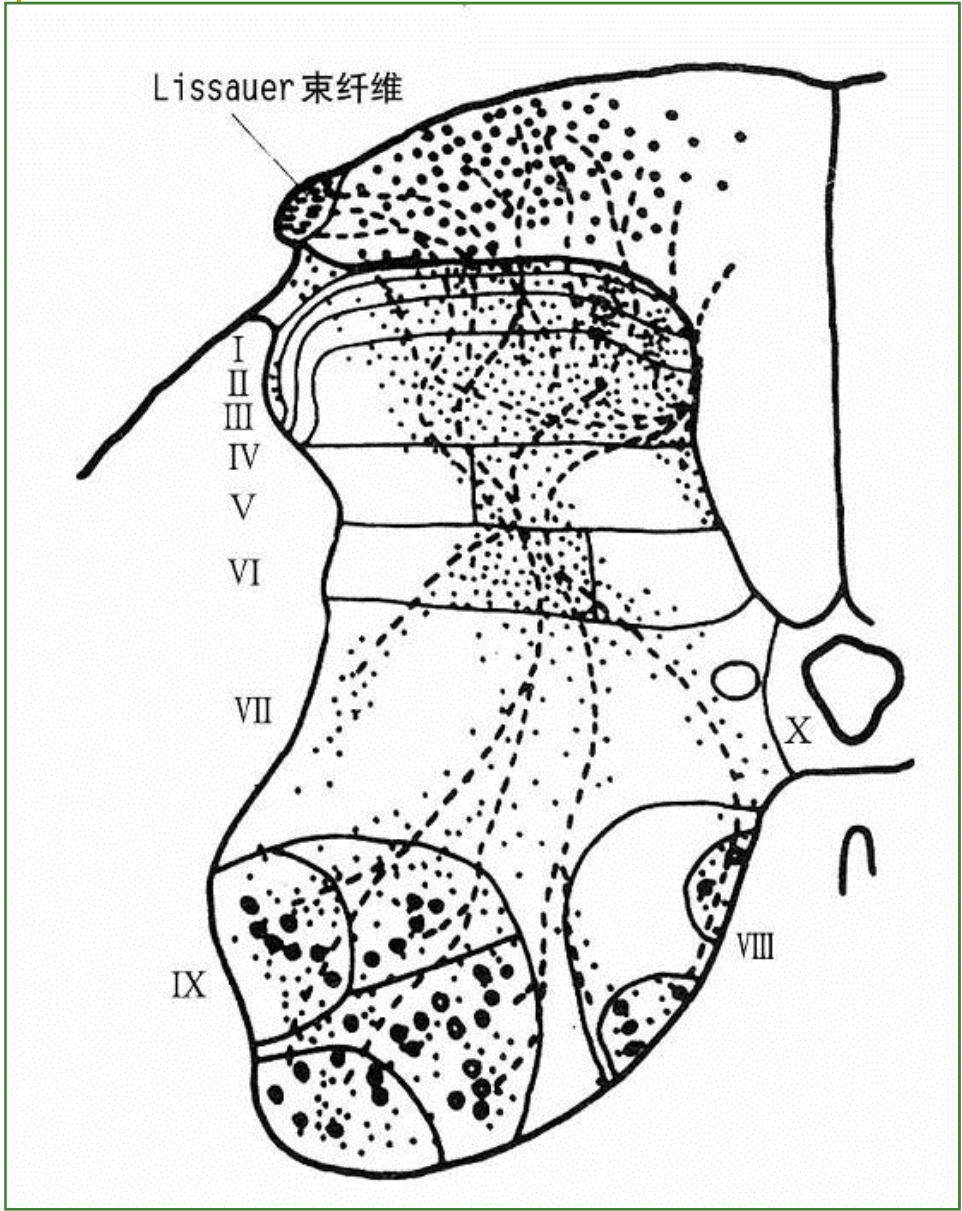


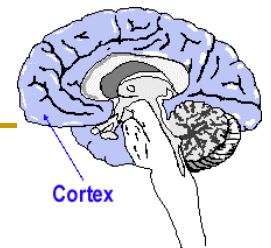
脊髓内部结构的特点

1. 连续的灰质柱，白质索
2. 明确的区域划分：背角、腹角、侧角等
3. 灰质**Rexed**分层
4. 上、下行传导路

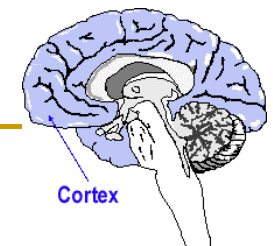
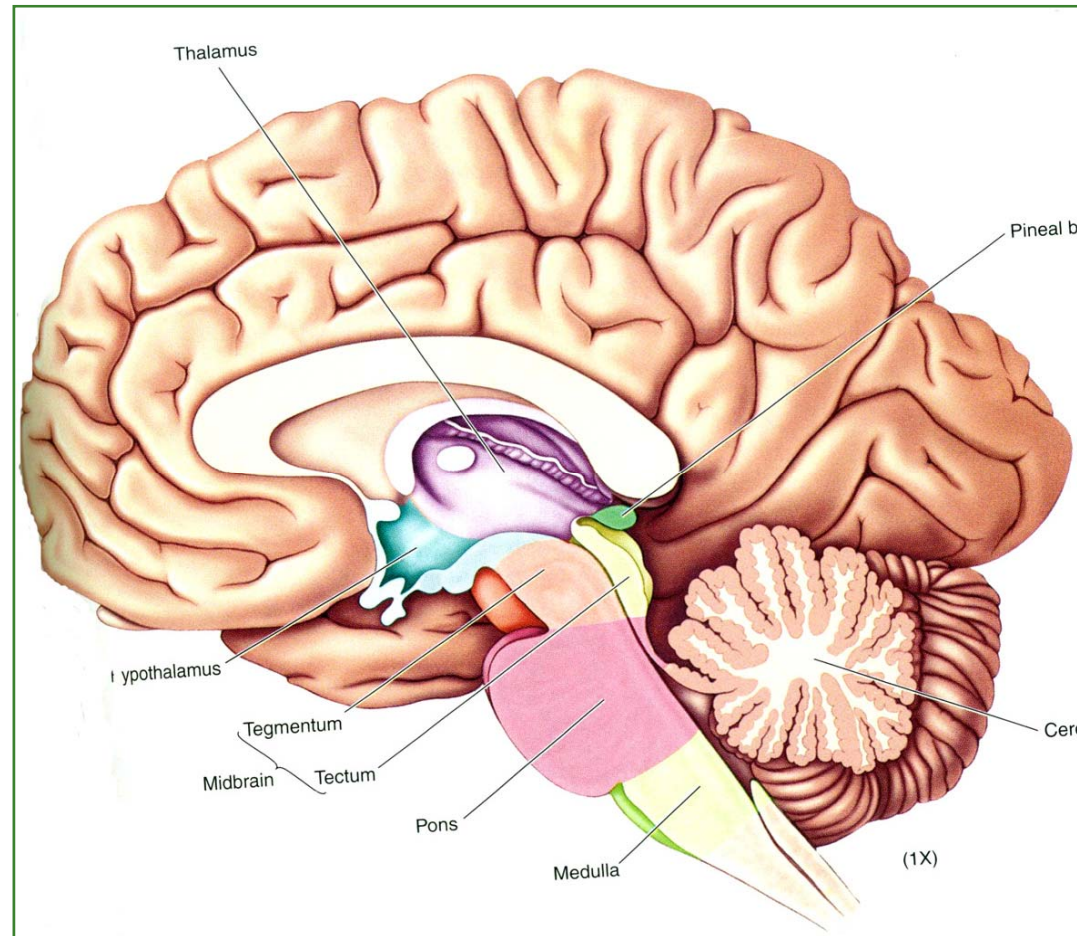




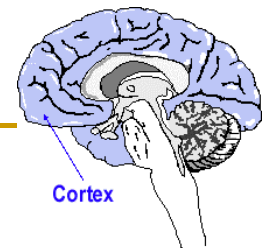




四、脑干 (Brainstem)



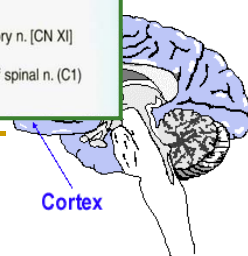
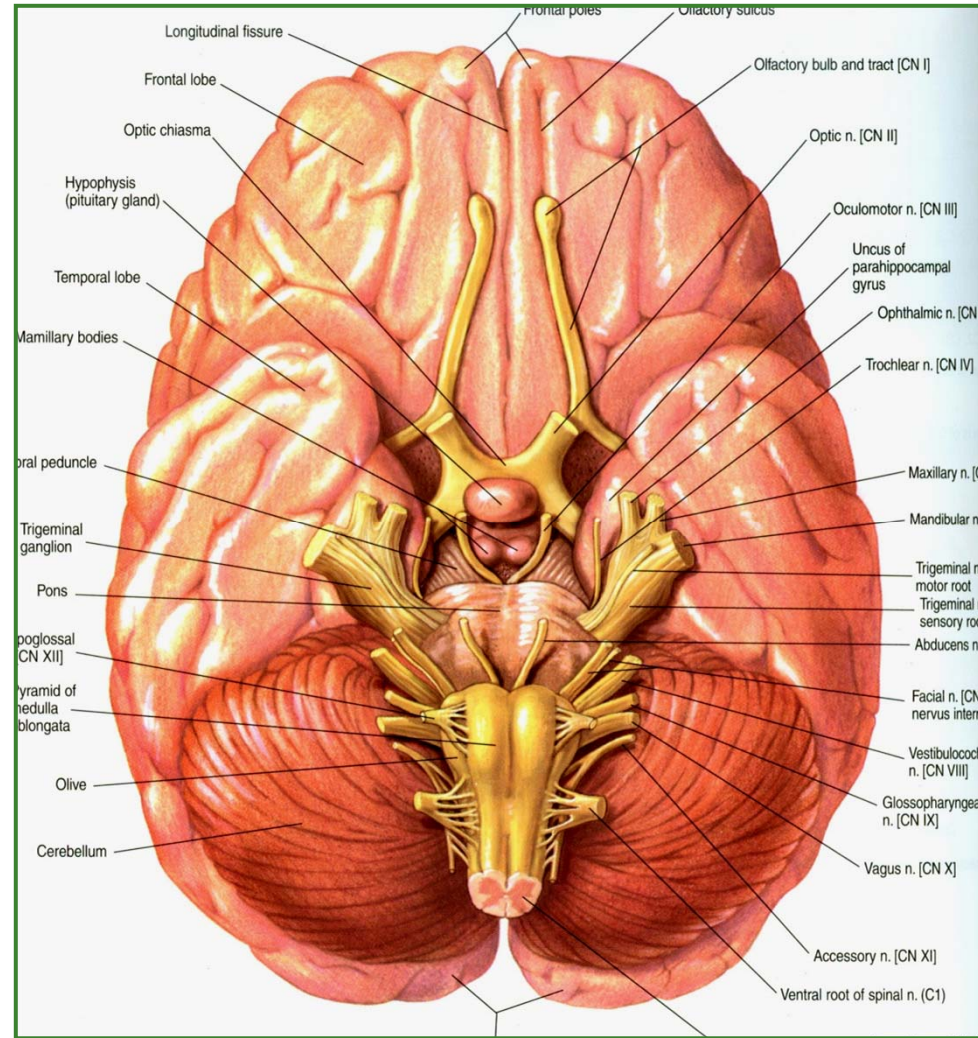
- * 脑干尾端在枕骨大孔处续于脊髓，向吻侧与间脑相连，是大脑与小脑和脊髓之间联系的干道。
- * 脑干内含许多重要的生命中枢，如心血管运动中枢、呼吸中枢等。



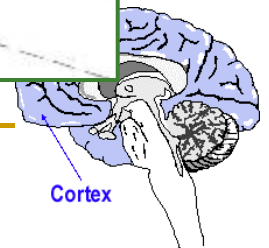
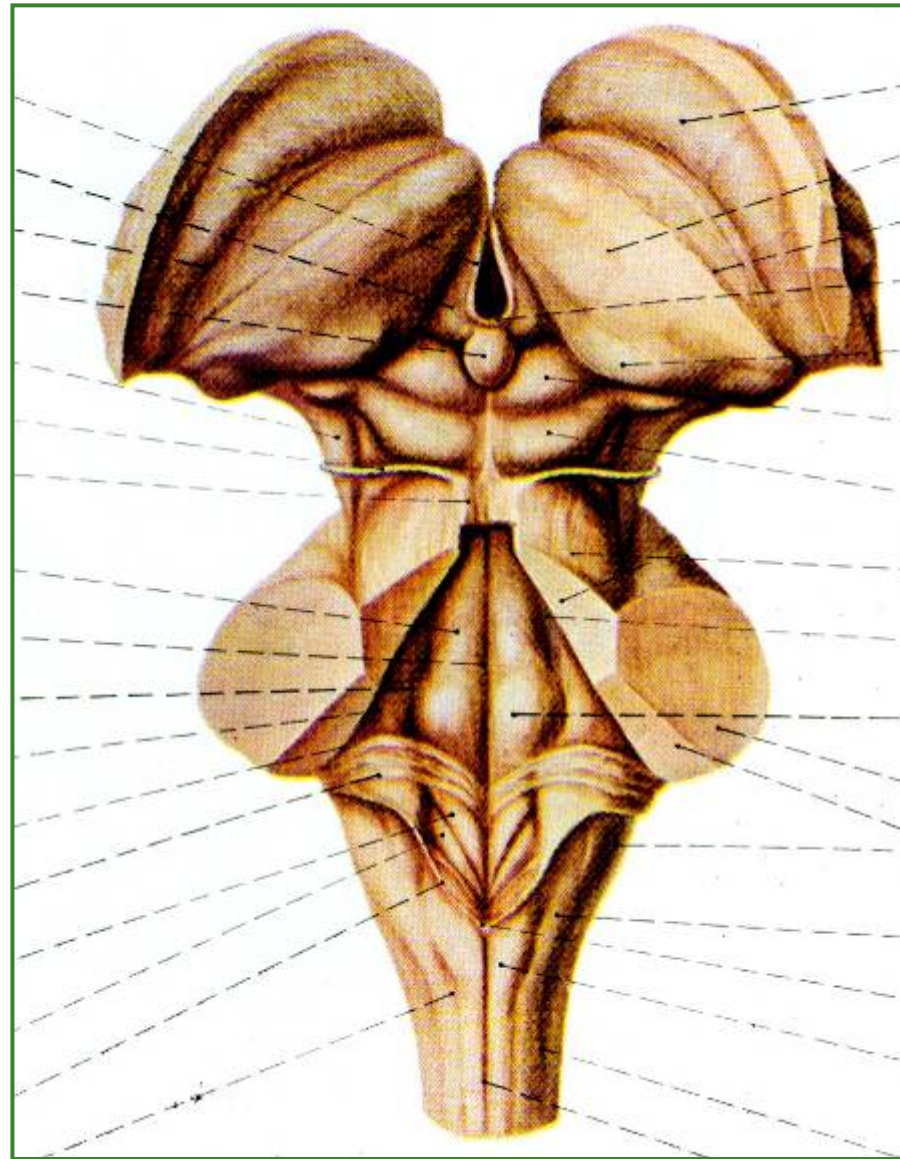
1. 延髓 (medulla oblongata)

♣ 脑与脊髓之间的过渡部分，俯卧在斜坡上

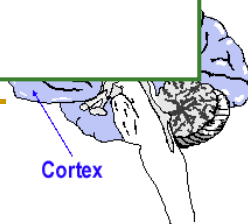
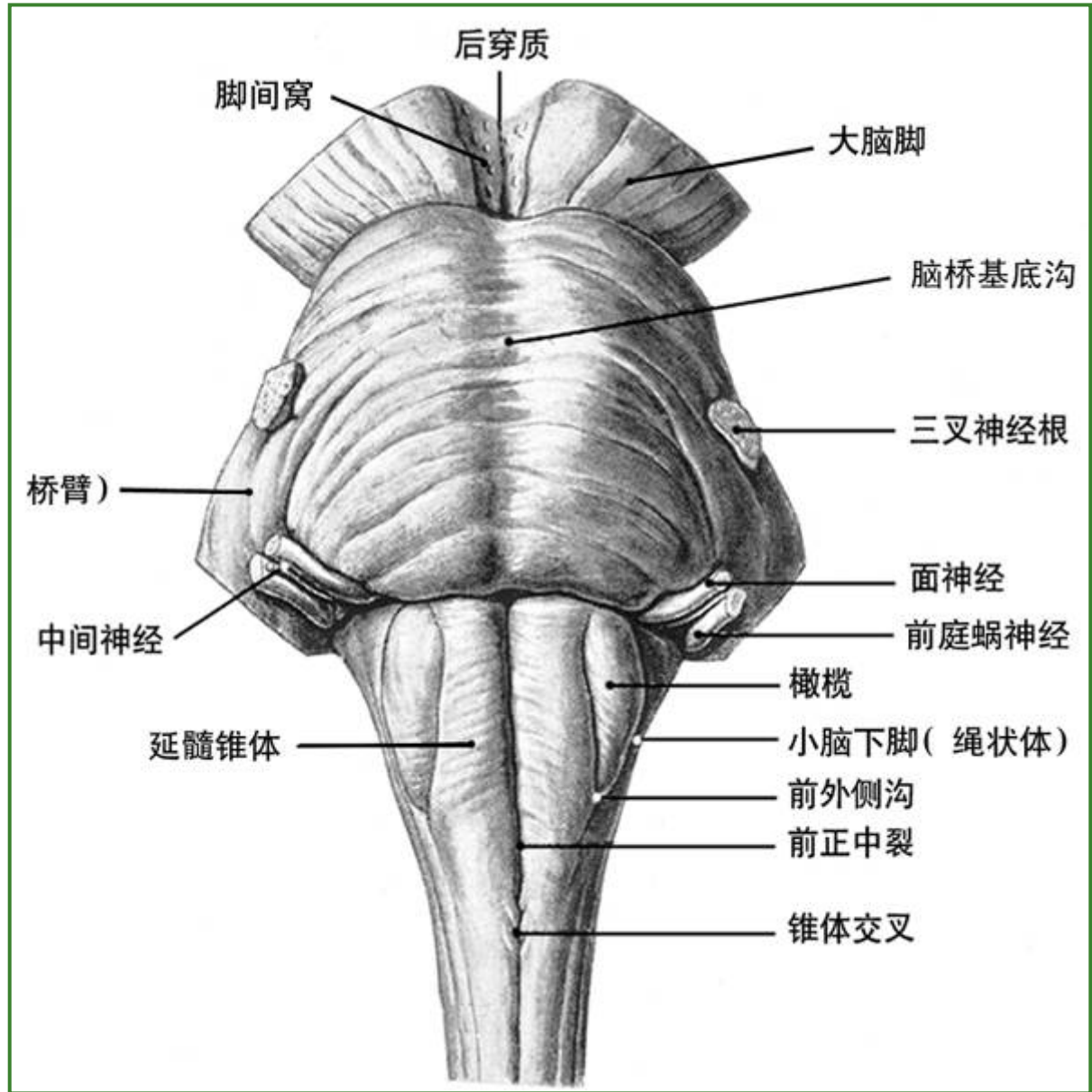
♣ 腹侧面吻侧以延髓脑桥沟与脑桥分界

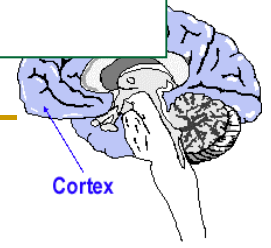
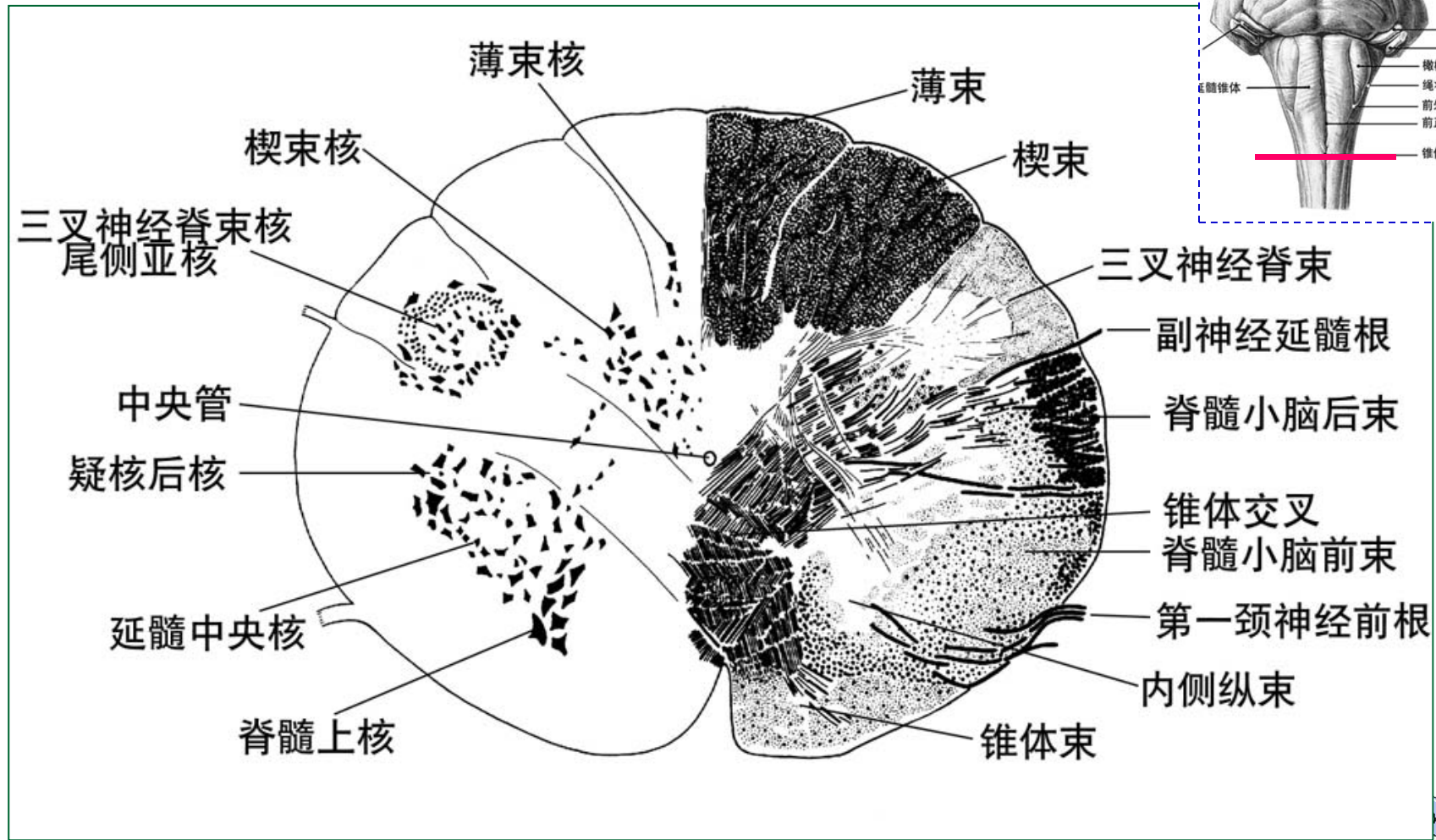
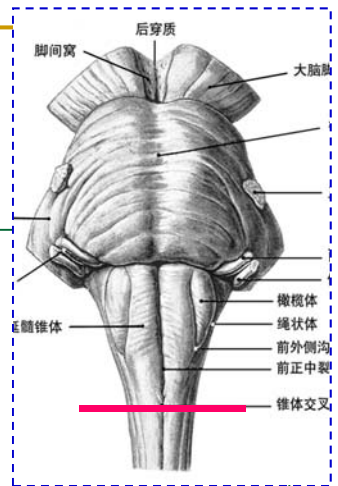


❀ 背侧面上半部
参加第四脑室
底（菱形窝）
的构成，以髓
纹与脑桥分界

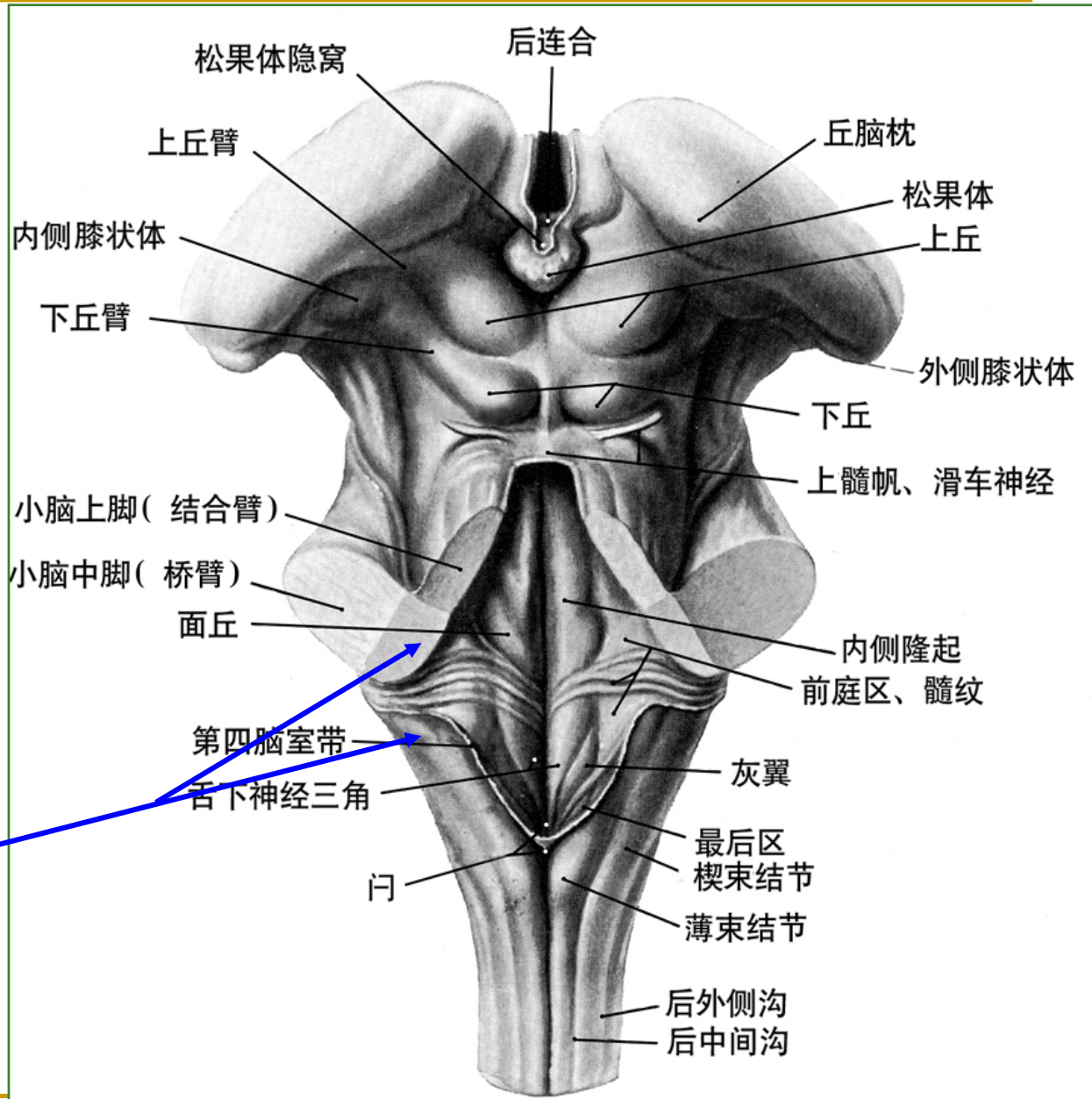


- ♣ 前正中裂
 - ♣ 锥体
 - ♣ 锥体交叉
 - ♣ 橄榄
- (下橄榄核)

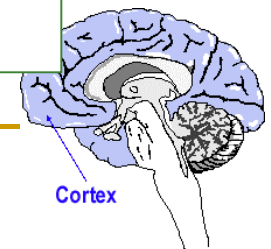
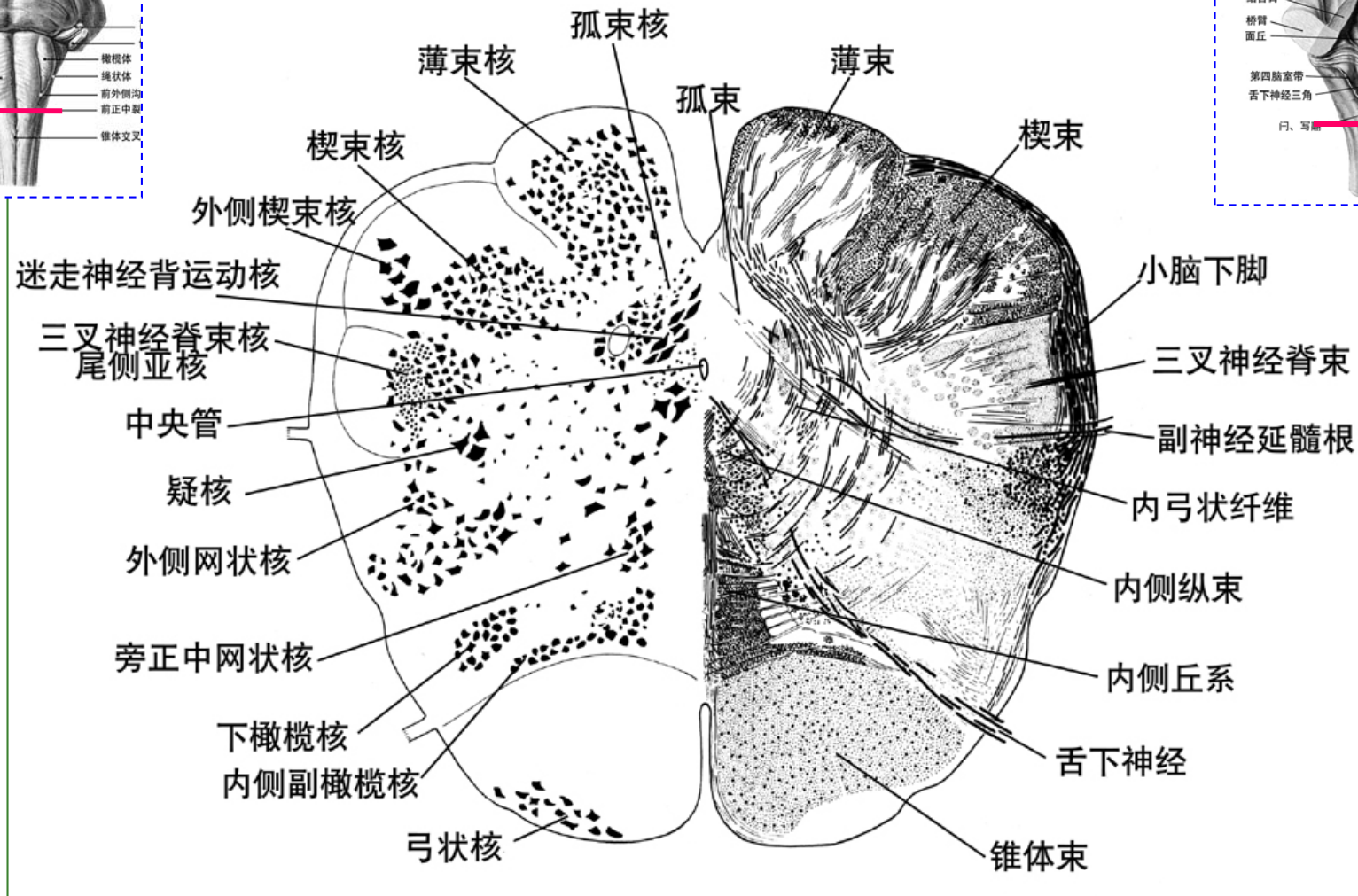
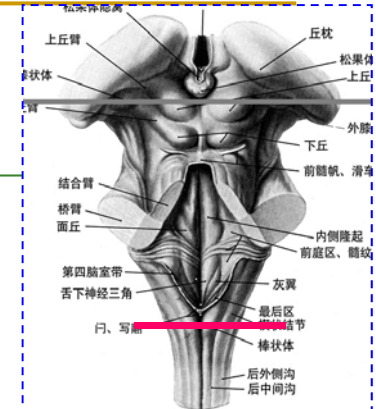
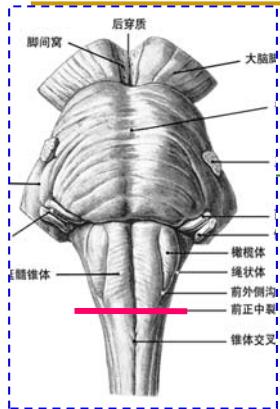


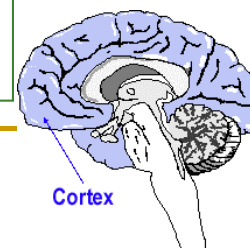
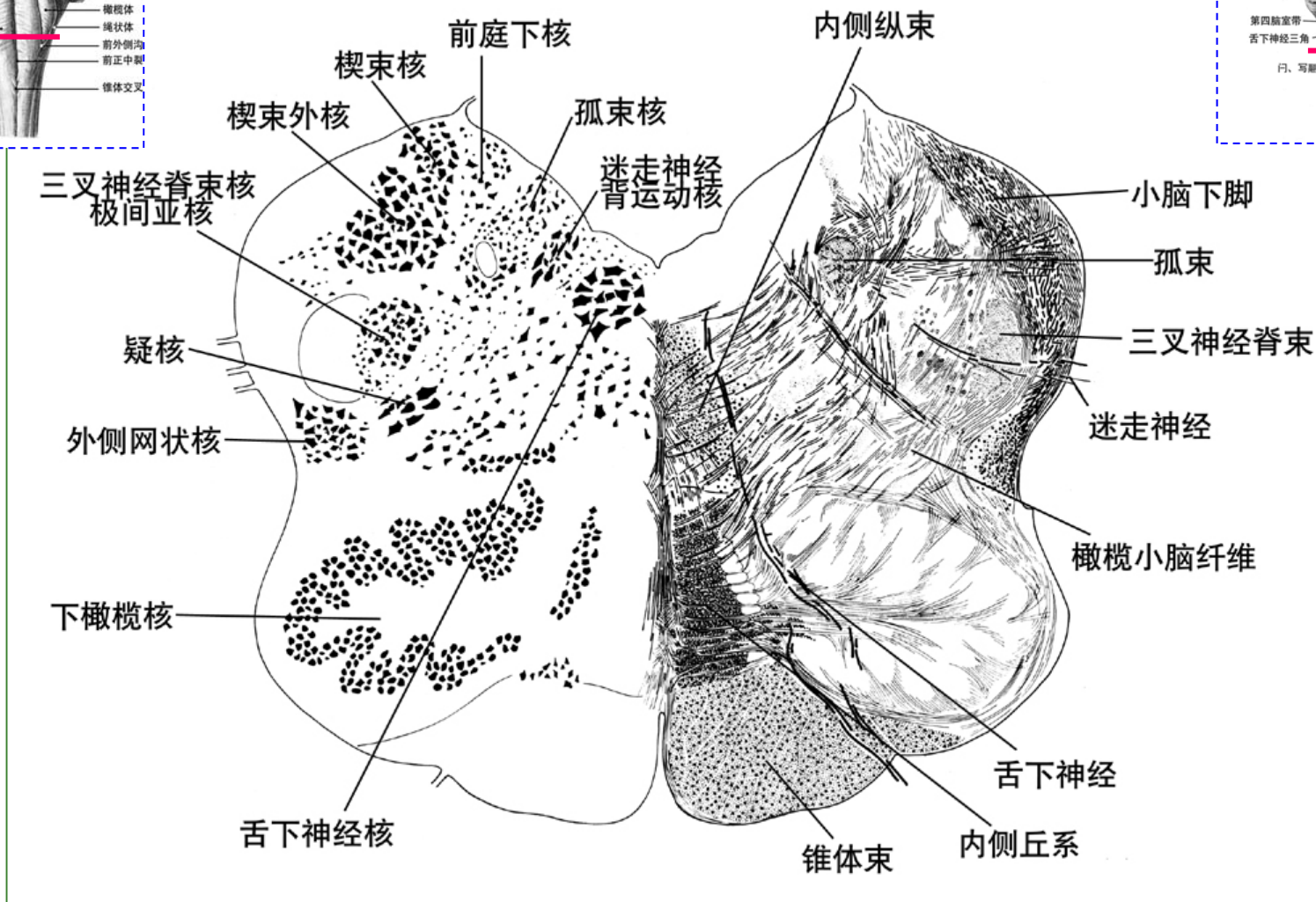
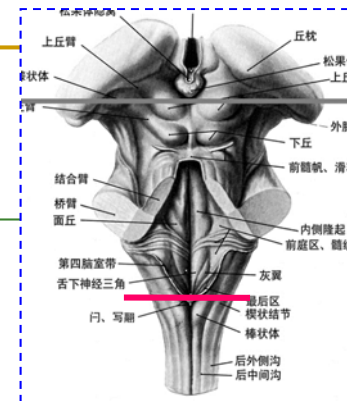
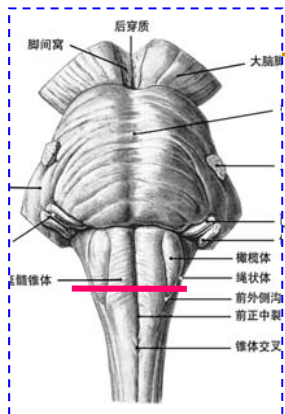


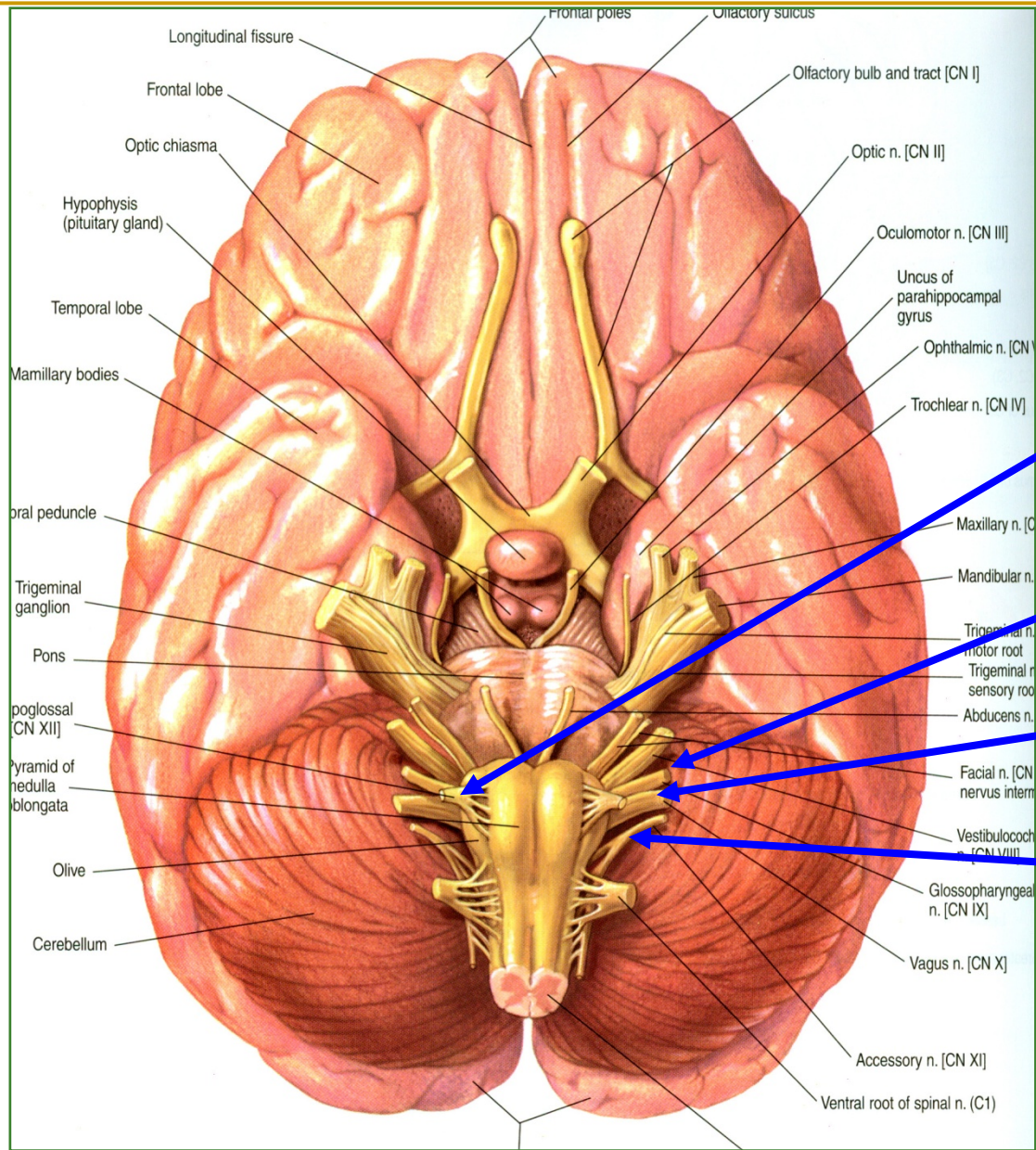
- ♣ 𠂇
- ♣ 菱形窝
- 后中间沟
- ♣ 薄束、楔束
- ♣ 薄束结节
(薄束核)
- 楔束结节
(楔束核)
- ♣ 小脑下脚
(绳状体)



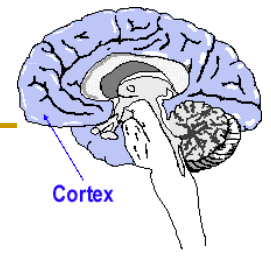
Cortex





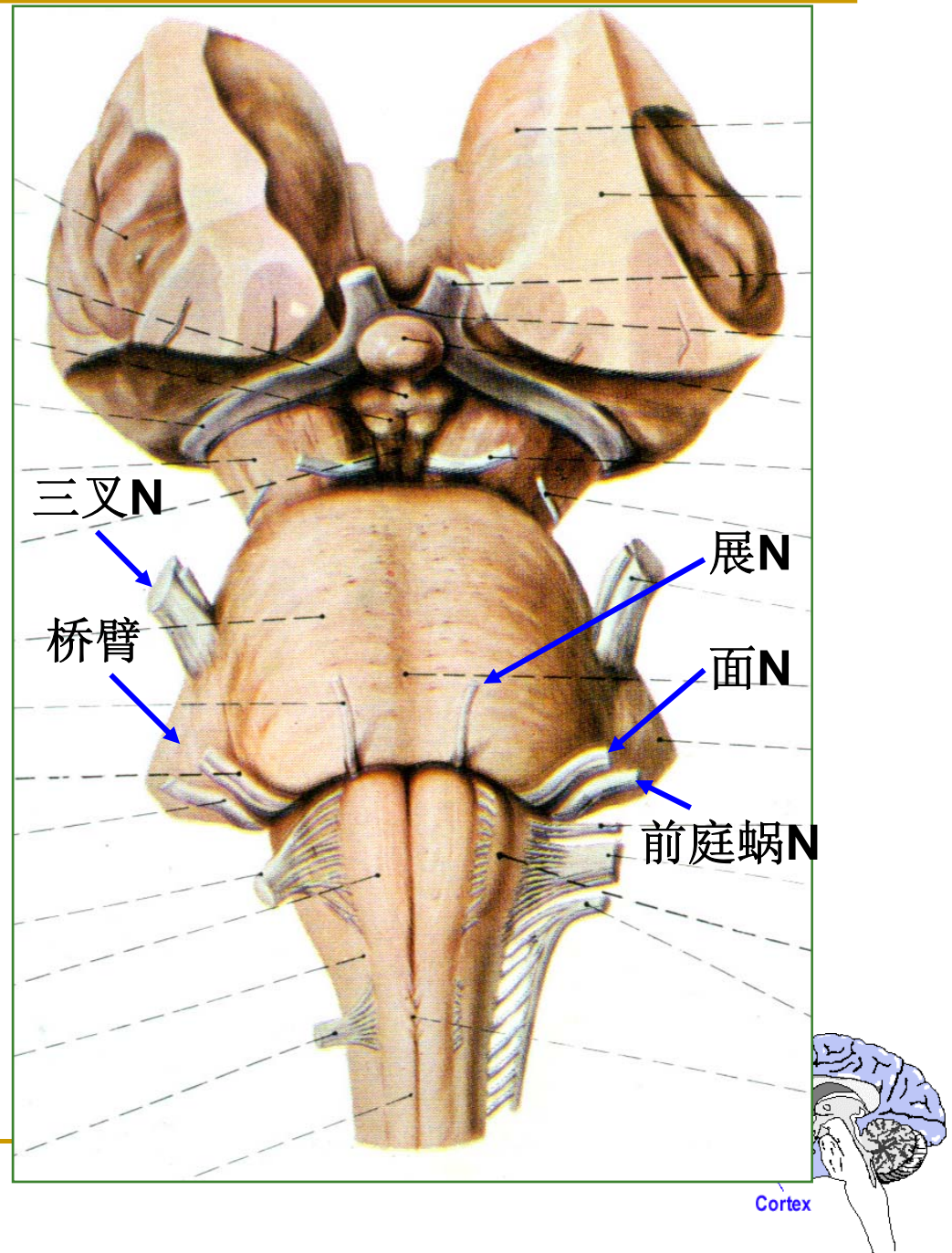


舌下神经根
 舌咽神经根
 迷走神经根
 副神经根

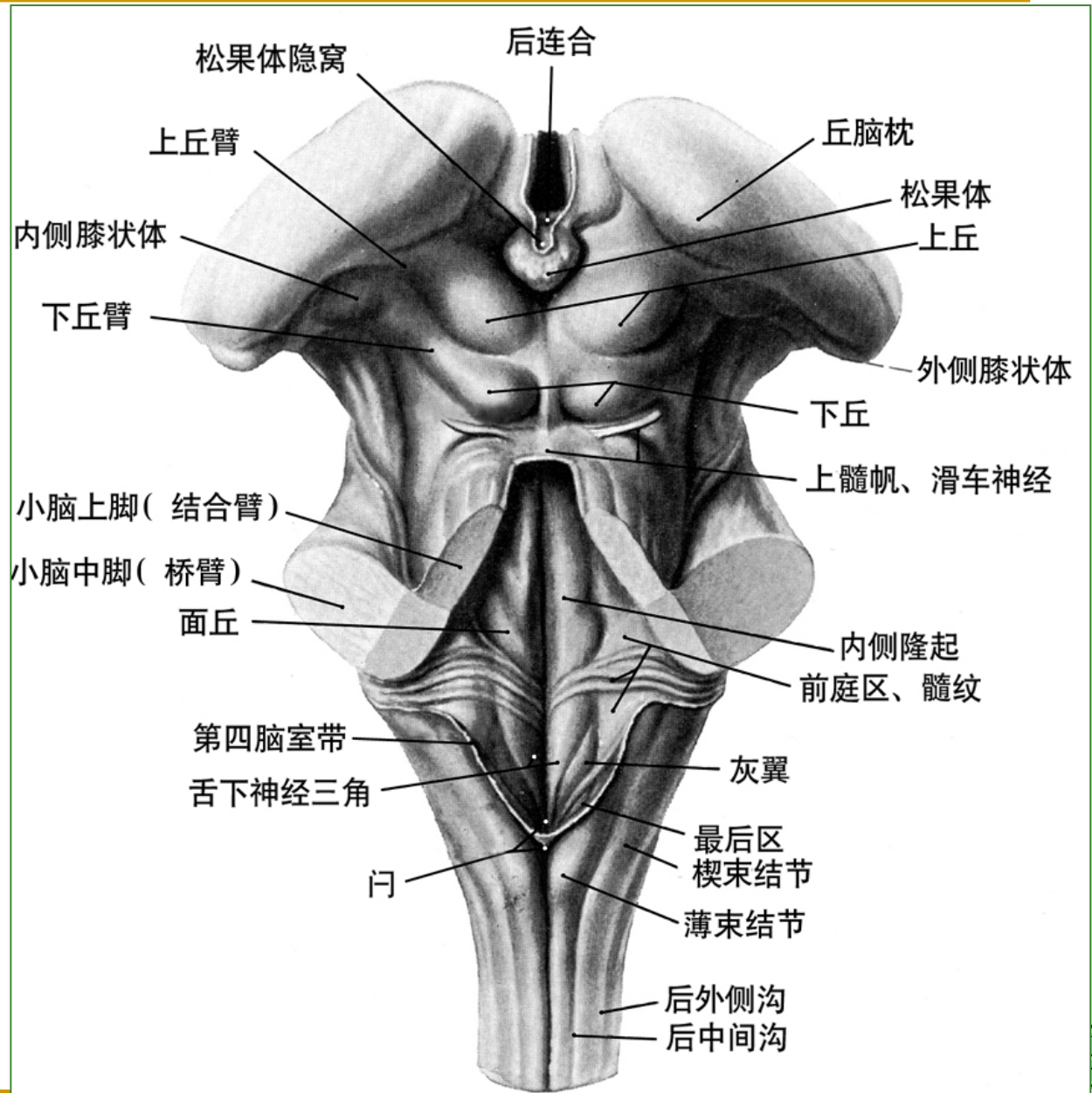


2. 脑桥 (pons)

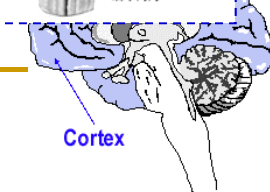
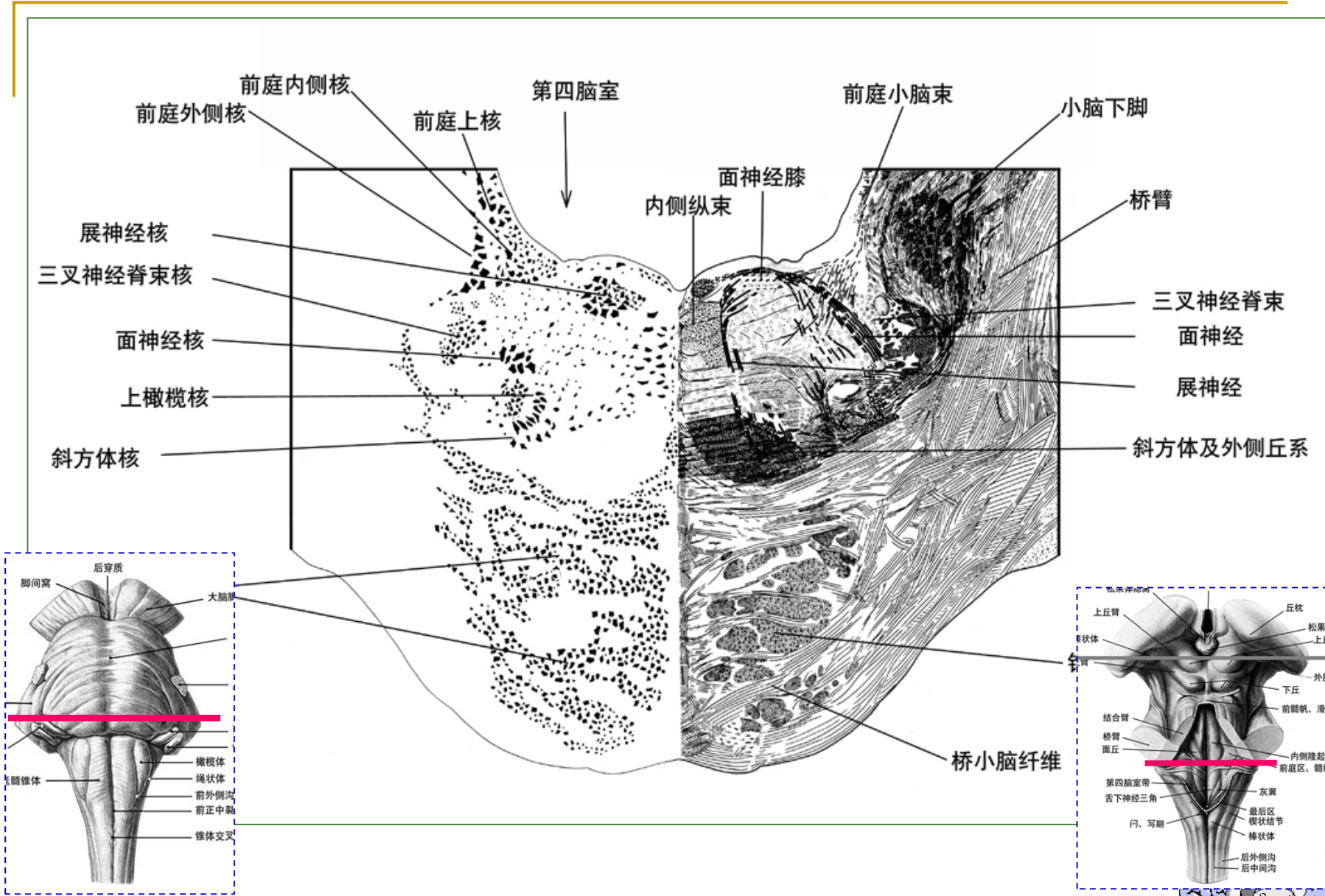
- ♣ 较延髓膨大
- ♣ 腹侧面为基底部，向外移行为小脑中脚 (桥臂)；三叉N
- ♣ 延髓脑桥沟 (展N、面N、前庭蜗N)

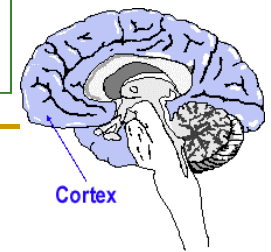
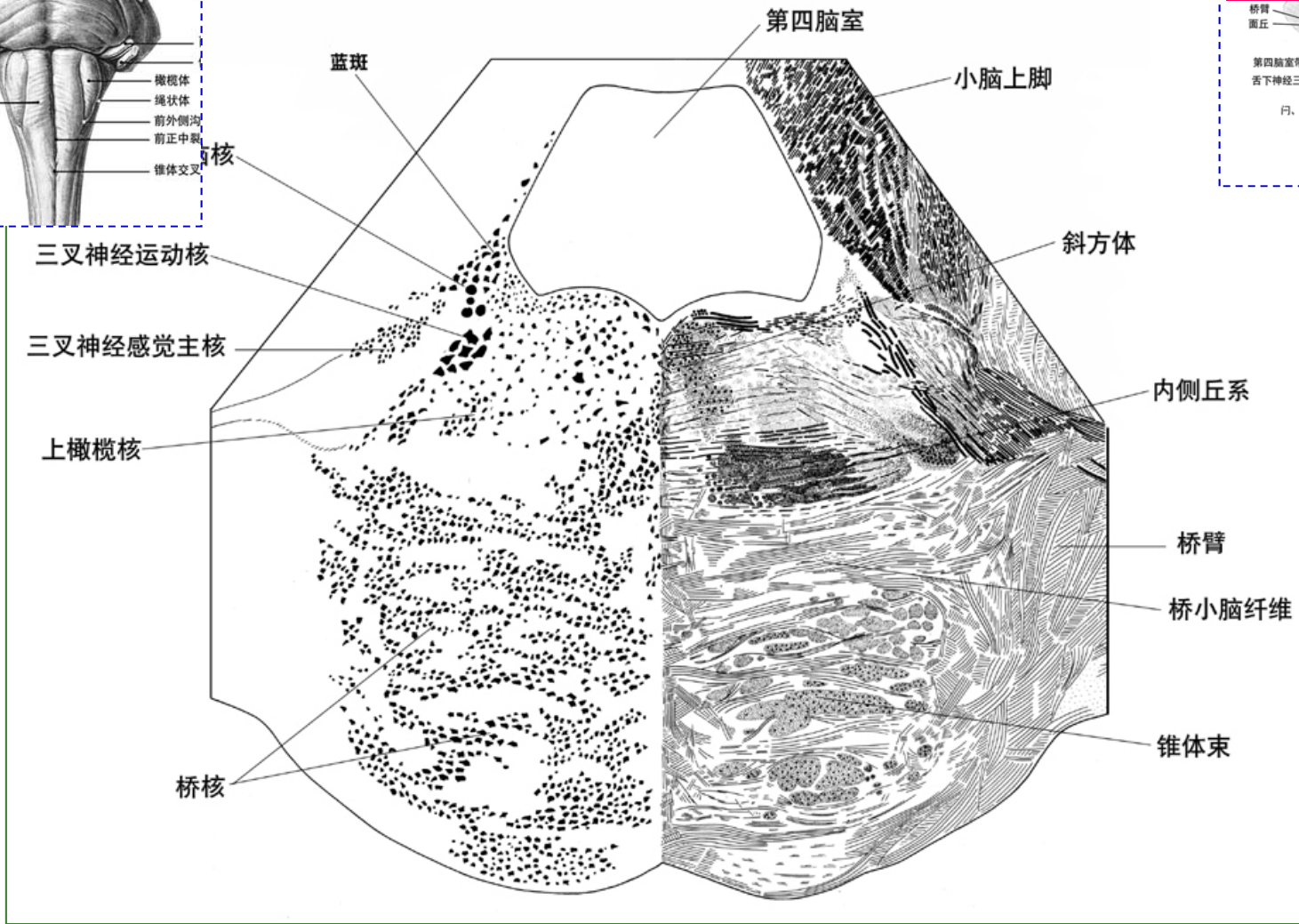
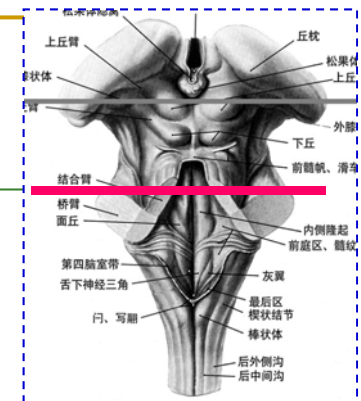
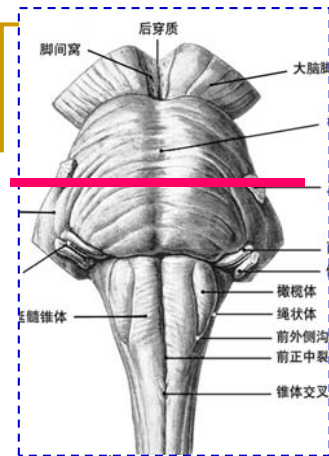


❁ 脑桥的背面形成菱形窝的上半部，与延髓上半部的背面共同构成第四脑室底



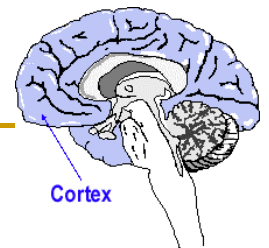
Cortex

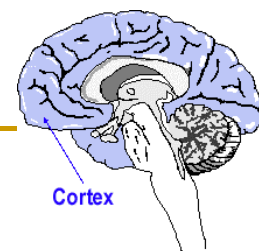
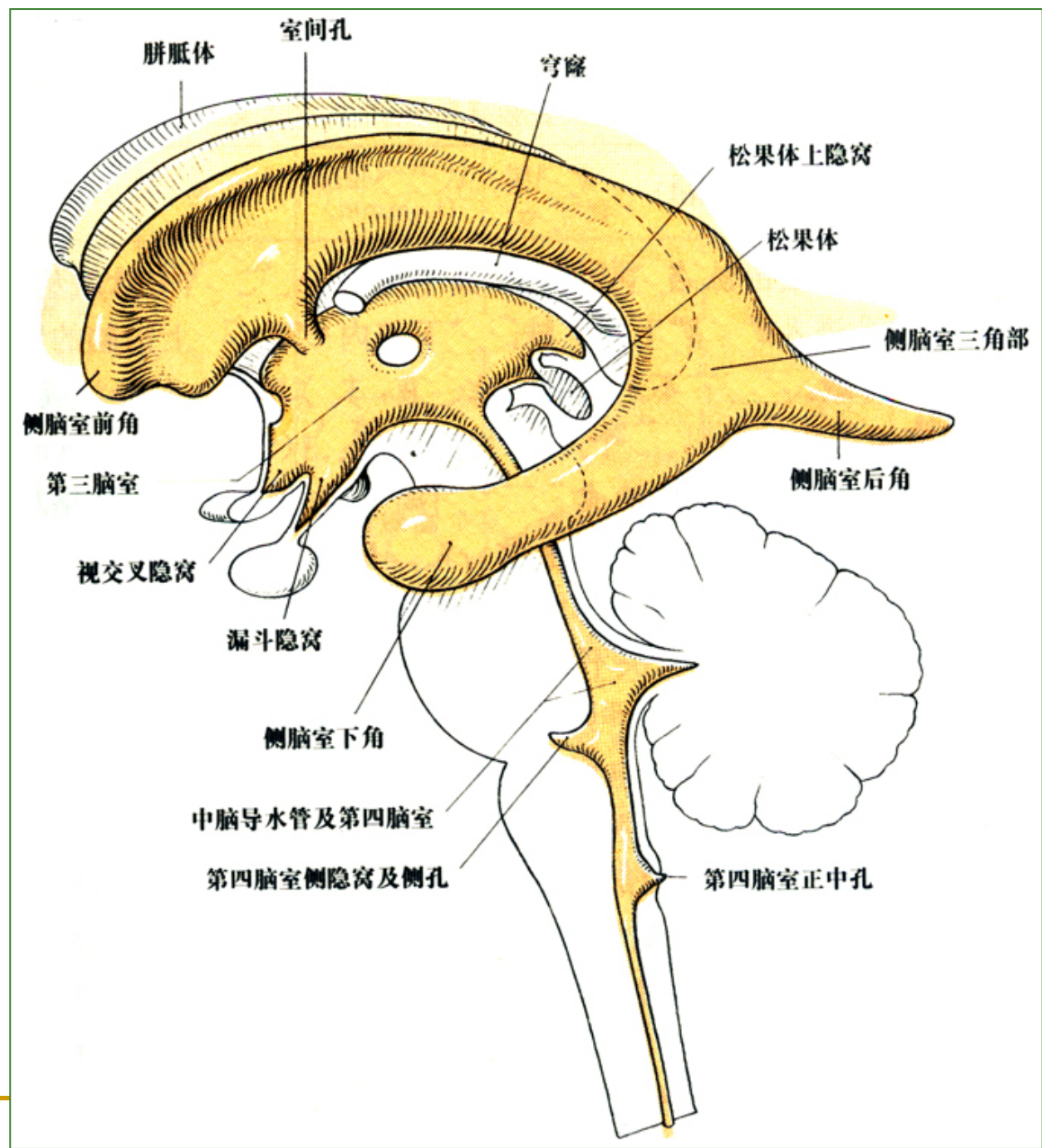


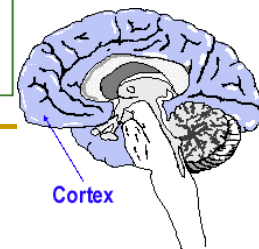
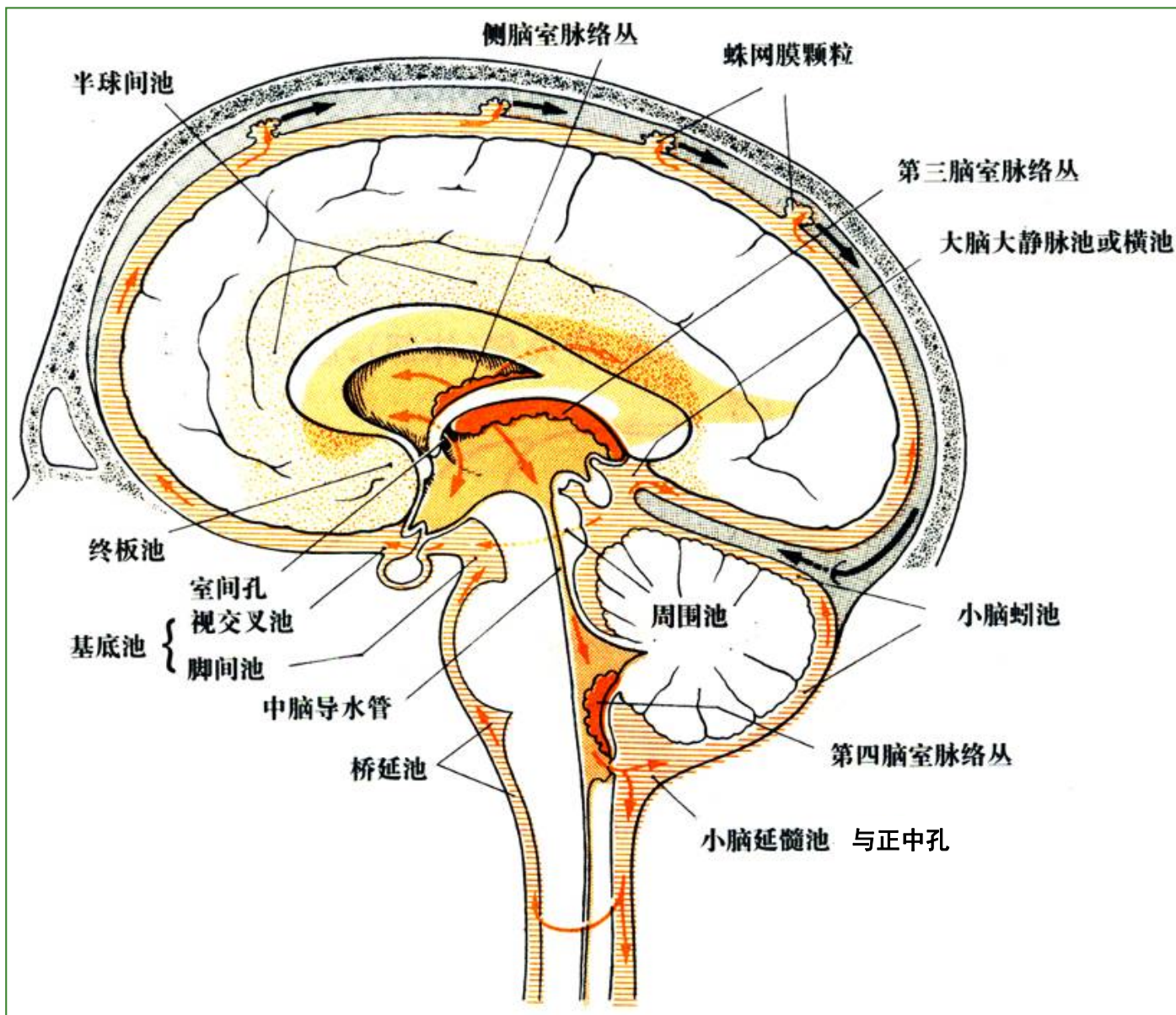


3. 第四脑室(fourth ventricle)

是位于延髓、脑桥与小脑之间的中央管扩大而形成的空腔，向上通中脑导水管，向下与脊髓中央管相续，有脑脊液在其中循环。

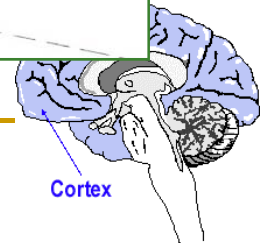
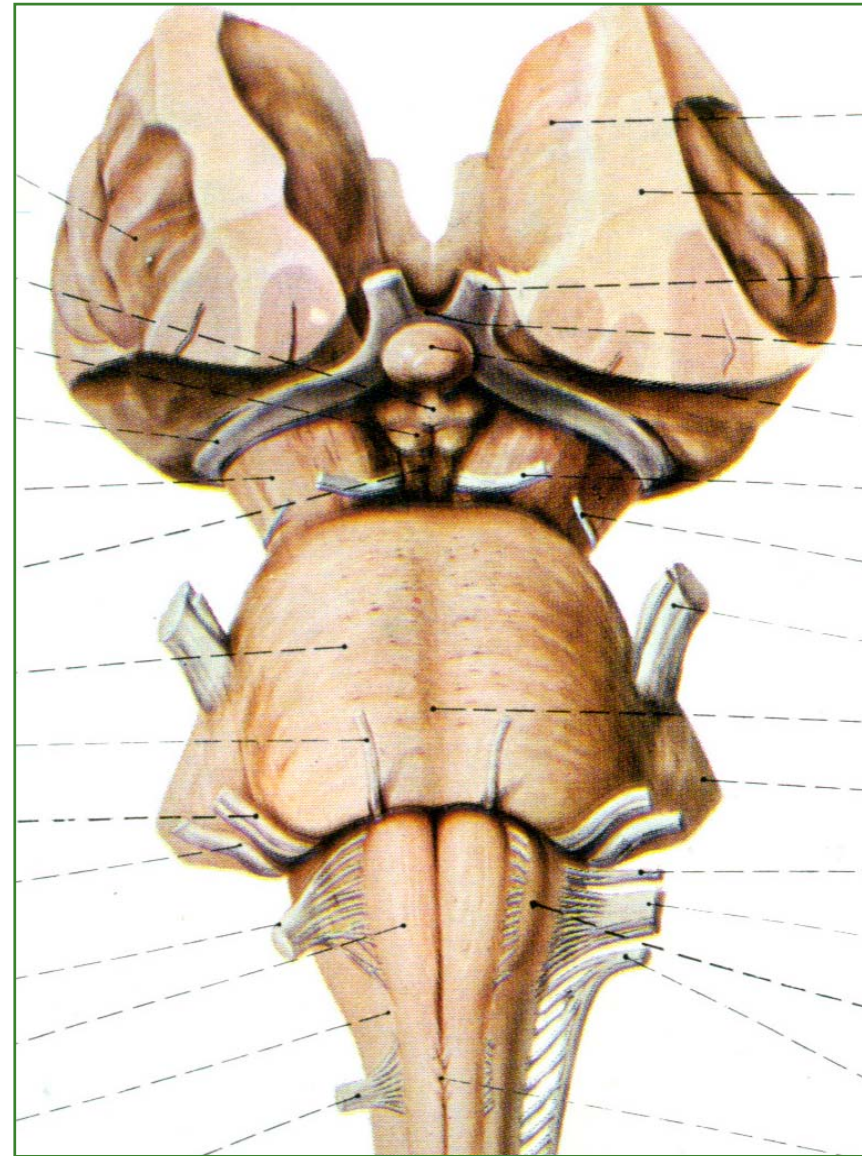






4. 中脑(midbrain)

- ♣ 上界：视束；
下界：脑桥上缘
- ♣ 腹侧面各形成一个粗大的柱状隆起——**大脑脚**，由大脑皮质发出的下行纤维束构成
- ♣ 脚间窝、动眼N、后穿质



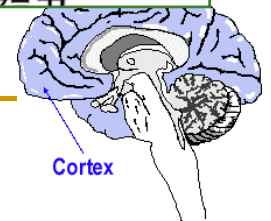
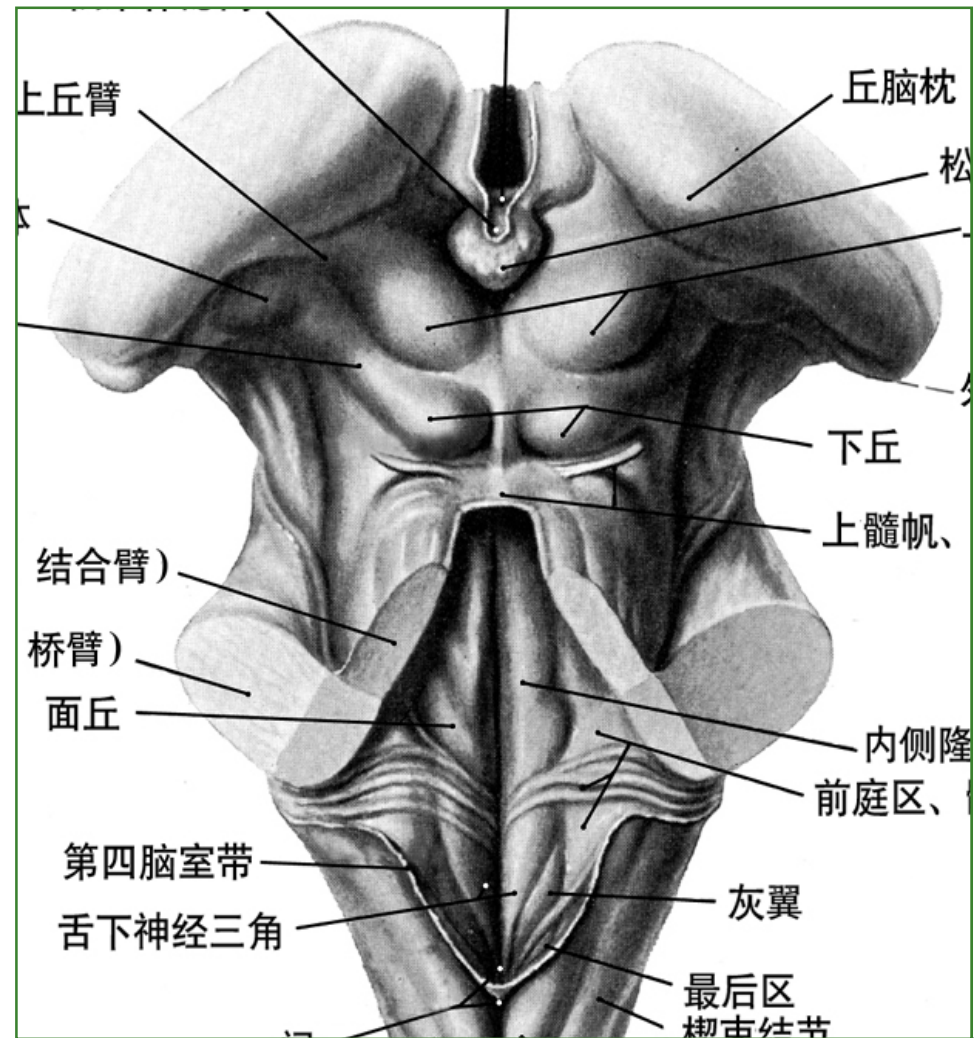
❁ 四叠体(上丘和下丘)

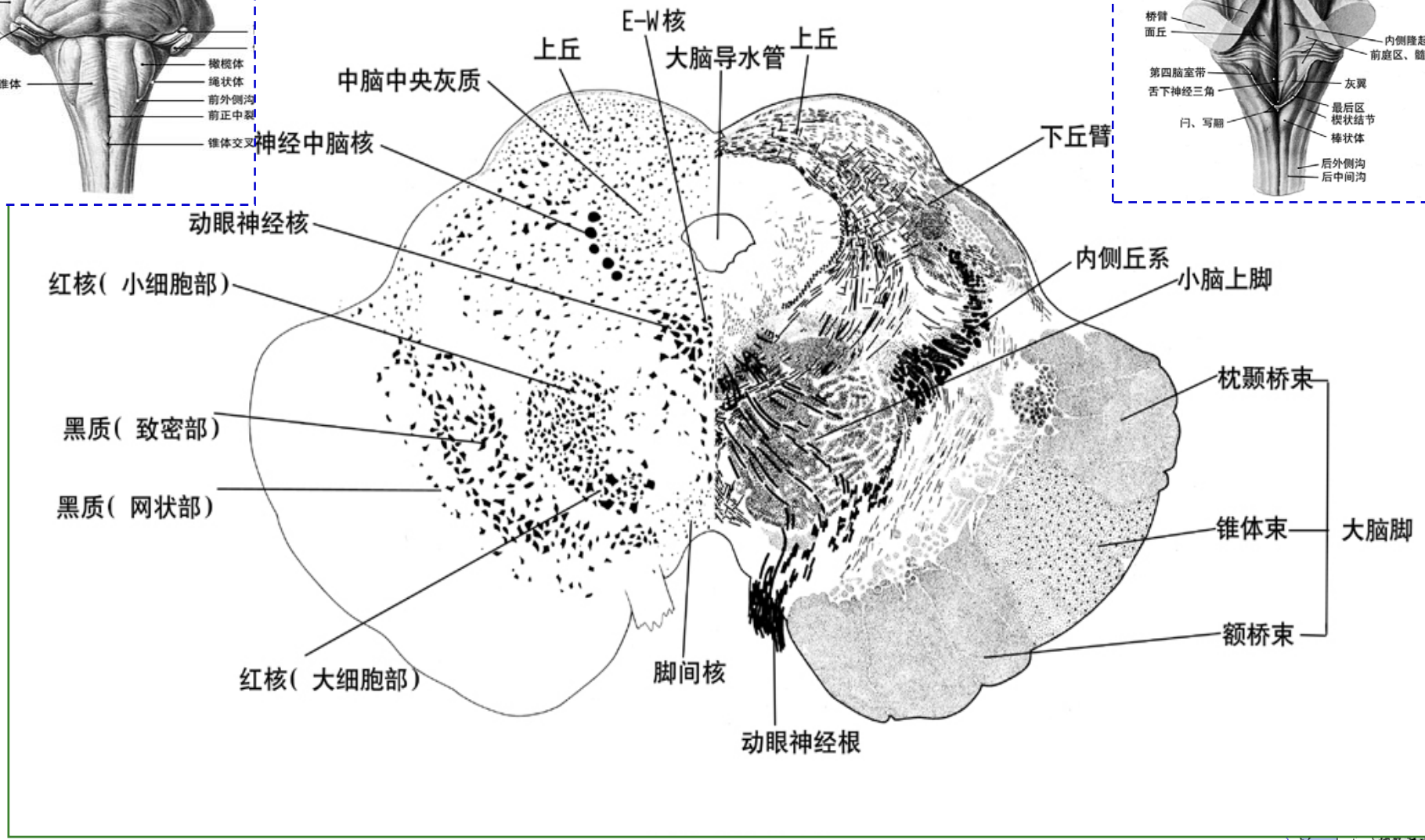
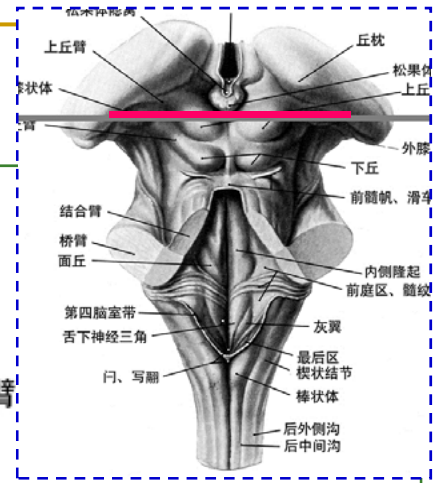
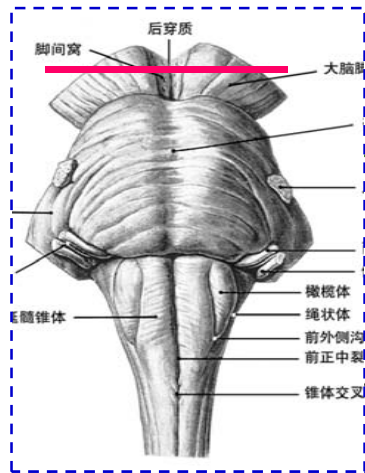
❁ 小脑上脚(结合臂)

❁ 上髓帆、滑车N

❁ 中脑导水管(上续第三脑室，下接第四脑室)

❁ 中脑导水管周围灰质

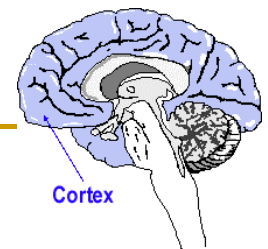




Cortex

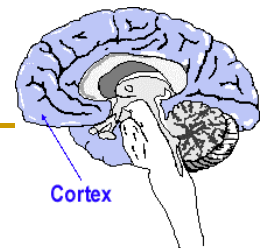
脑干外形的特点

1. 包括延髓、脑桥和中脑三部分
2. 第四脑室底——菱形窝
3. 与小脑相连的三对小脑脚
4. 与III-XII对脑神经相连
5. 底部被纤维束占据

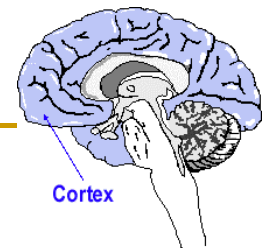


脑干内部结构及其与脊髓的比较

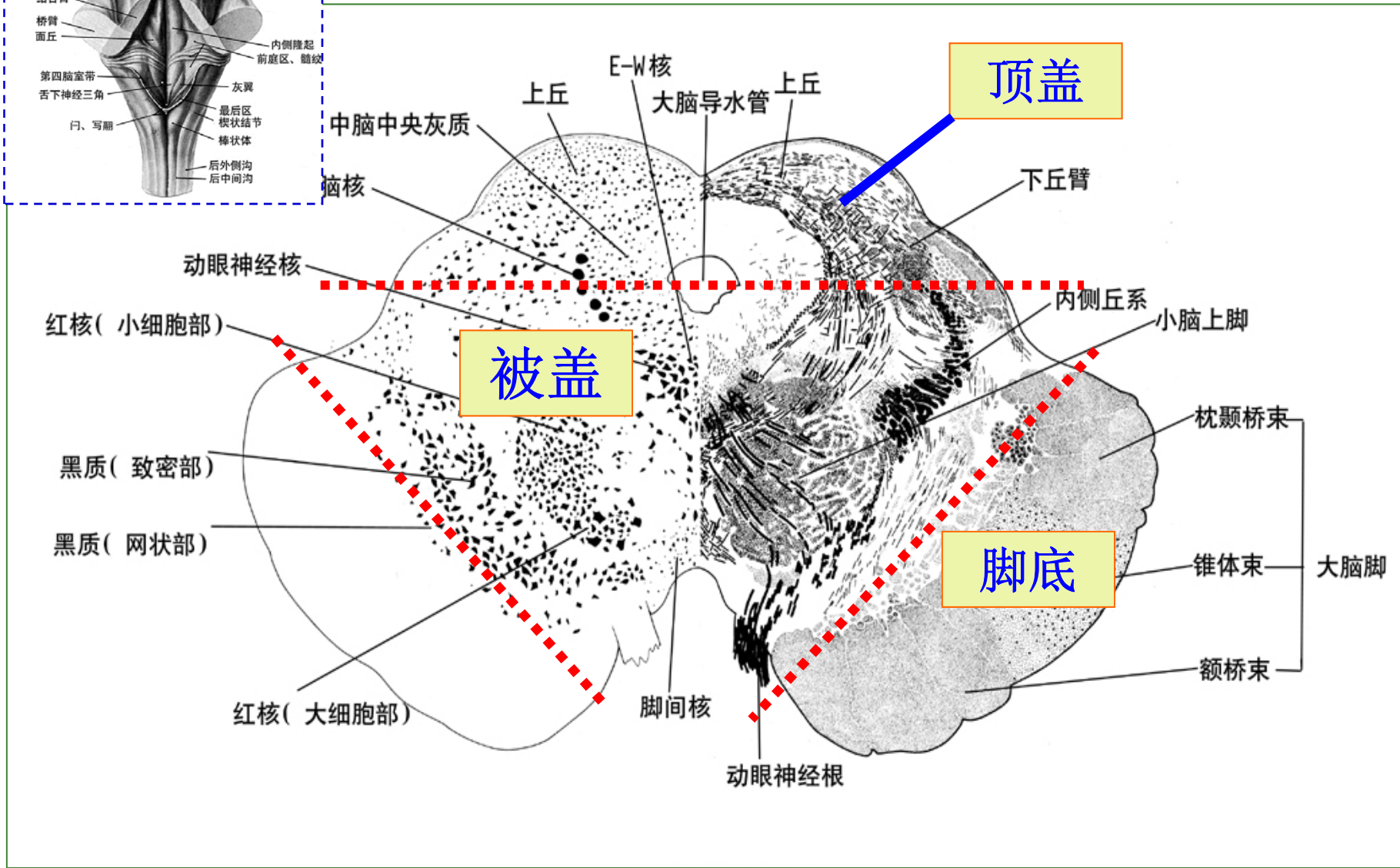
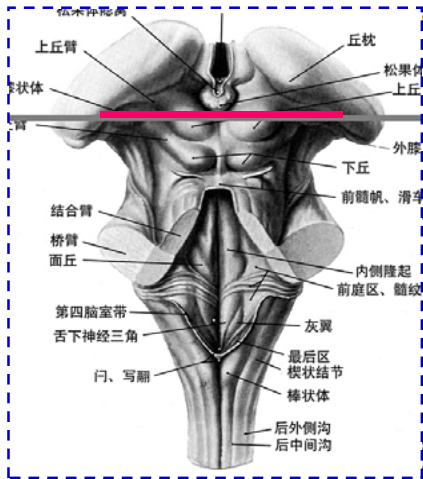
1. 外形
2. 性质 —— 低级中枢
3. 机能 —— 沟通中枢与周围器官的联系
4. 节段性 —— 连续和不连续
5. 长、短白质纤维束：下行、上行、新束路
6. 核团：脑神经核团、网状结构核、非脑神经性的核(红核、黑质、脑桥核、下橄榄核等)
7. 脑干网状结构 (**reticular formation**)
8. 顶盖**tectum**、被盖**tegmentum**、底部
9. 特殊内脏感觉和运动、特殊躯体感觉

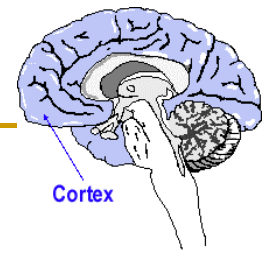
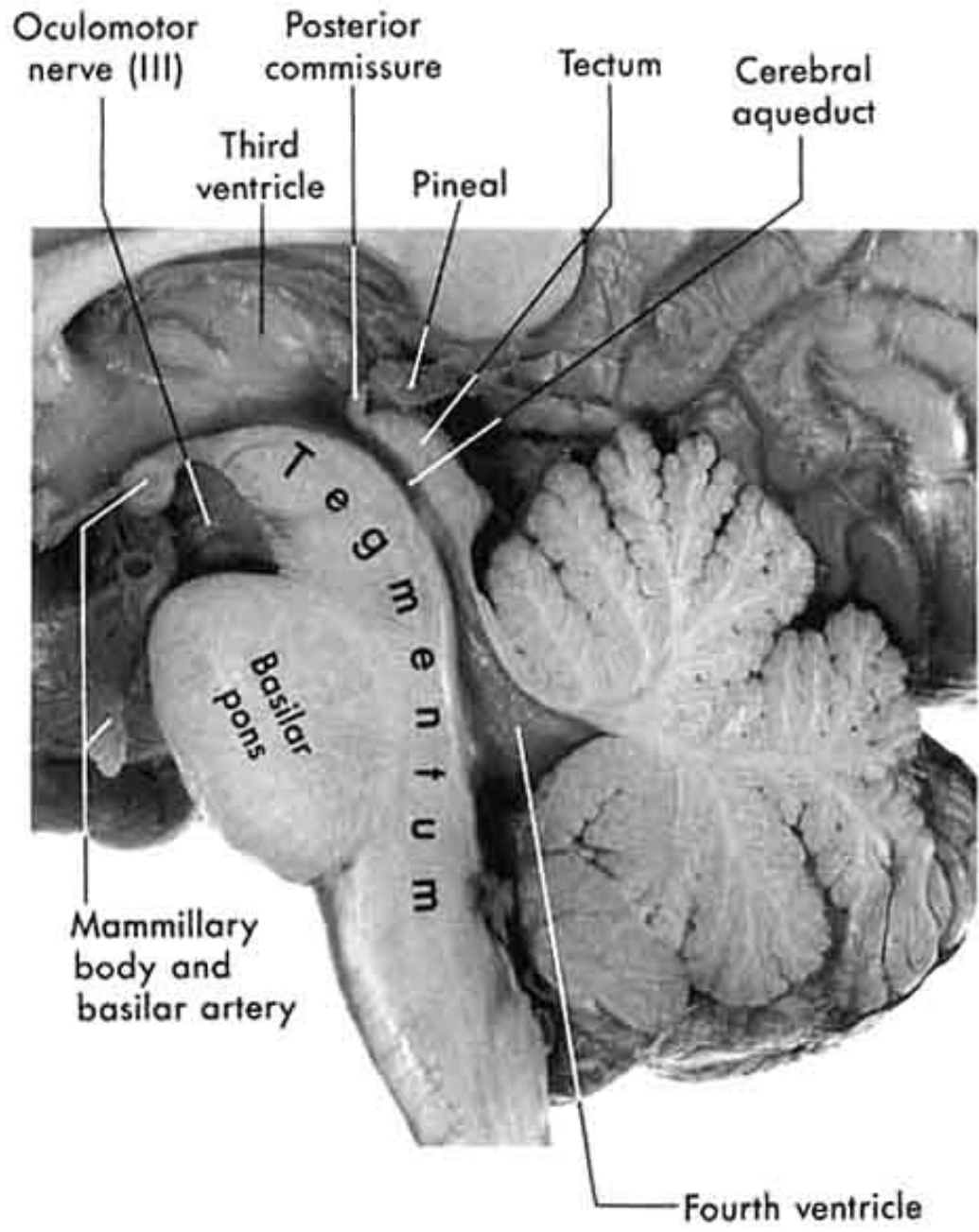


- ❖ 在横断面上观察时，腹侧部分是以锥体束为主体的白质，为**底部**（中脑为大脑脚，脑桥为基底部，延髓为锥体）
- ❖ 底部的背侧与第四脑室底或中脑水管之间的部分为**被盖**，是脑神经核和其它一些核团以及网状结构等的存在部位
- ❖ 中脑导水管背侧的部分为**顶盖**



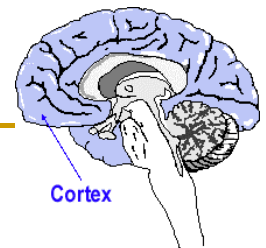
上丘平面

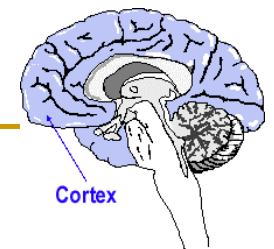


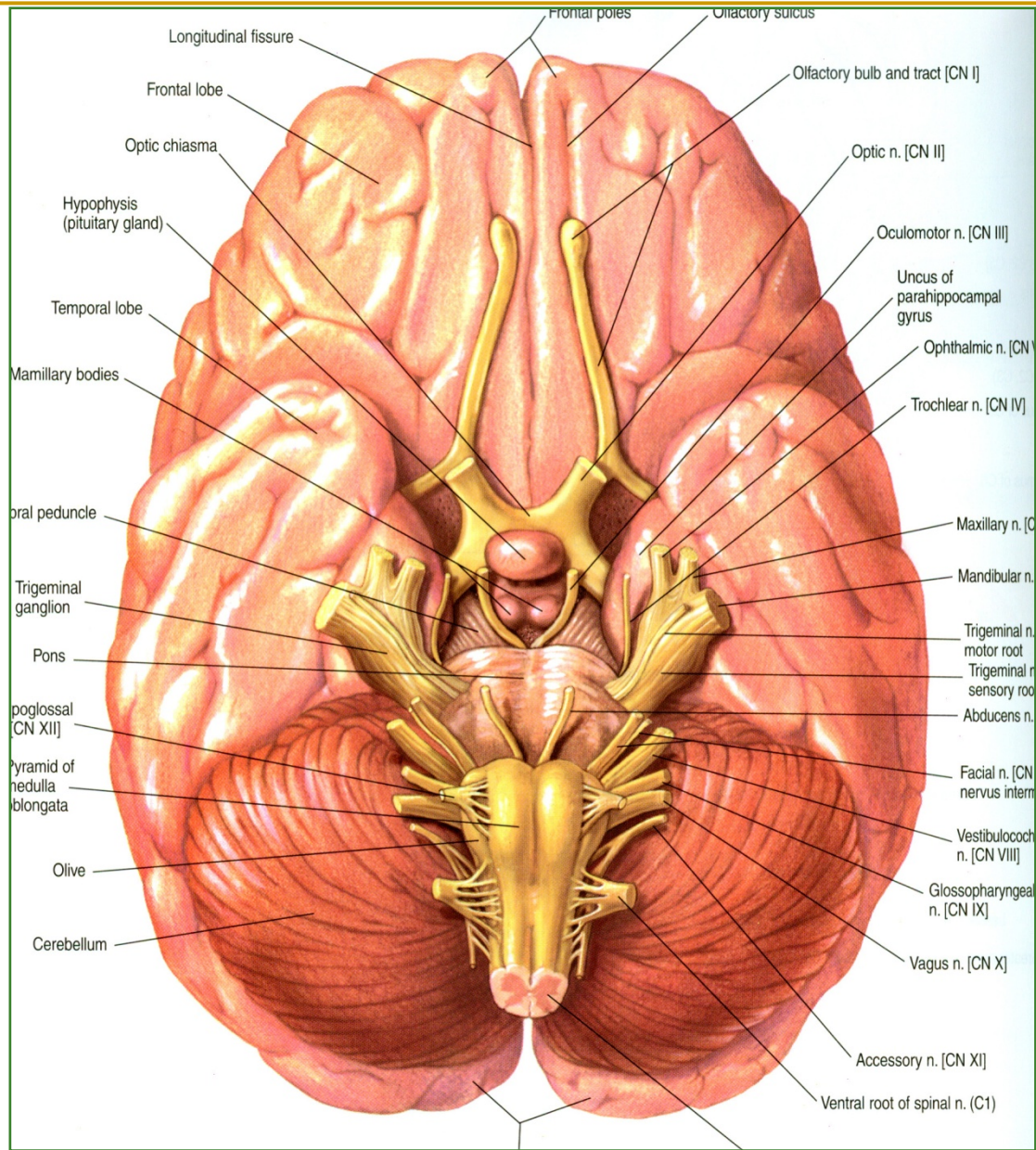


思考题

1. 神经系统是由哪些部分组成的？
2. 神经核与神经节、神经与纤维束、皮质与白质有哪些区别？
3. 从结构上来看，脊髓和脑干有什么区别？
4. 第四脑室的境界和表面结构。







脑神经根

