

## **三 神经胶质细胞** neuroglial cell

**特点：** 1 数量多，1:10-50  
2 有突起，无树突和轴突

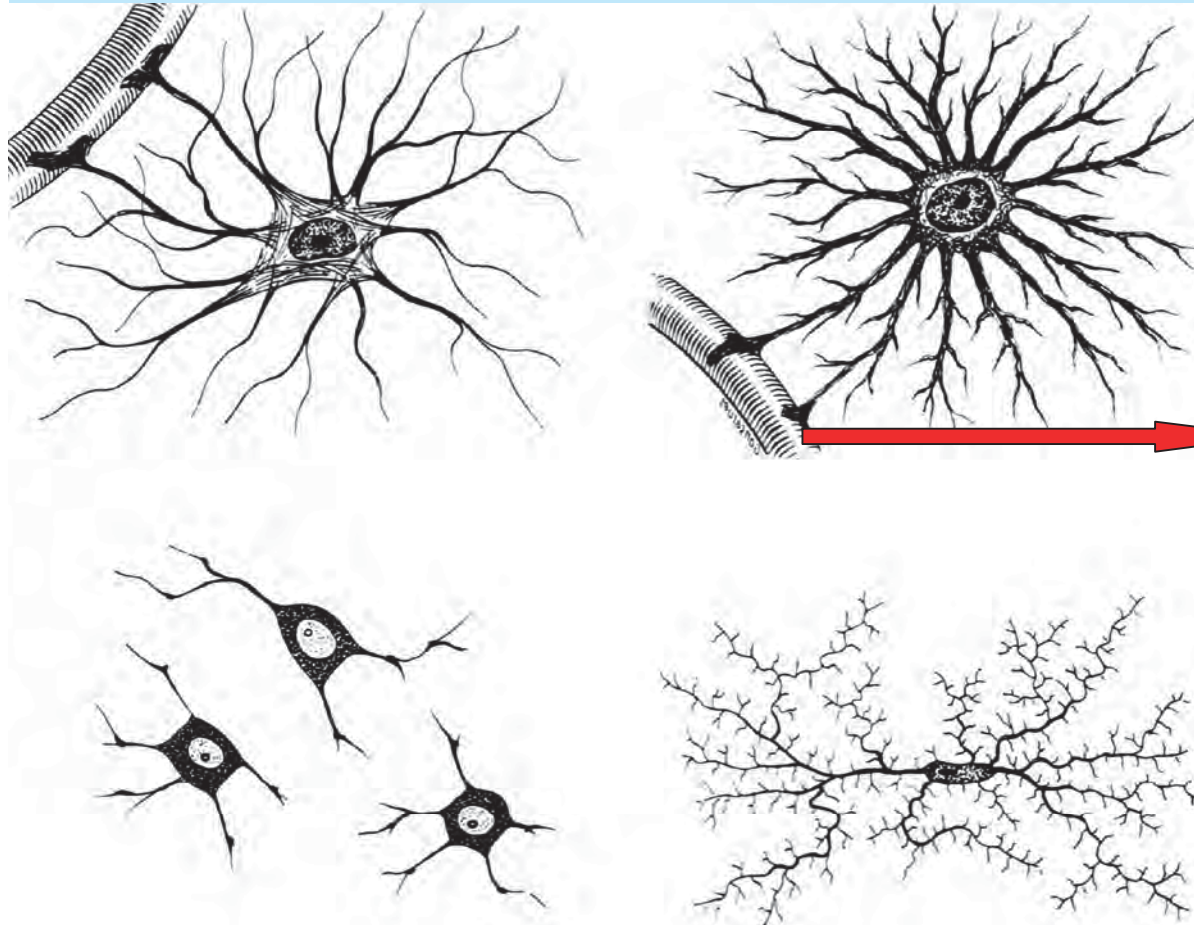
**功能：** 支持、保护、营养、分隔等

**类型：** 中枢神经系统的胶质细胞  
周围神经系统的胶质细胞

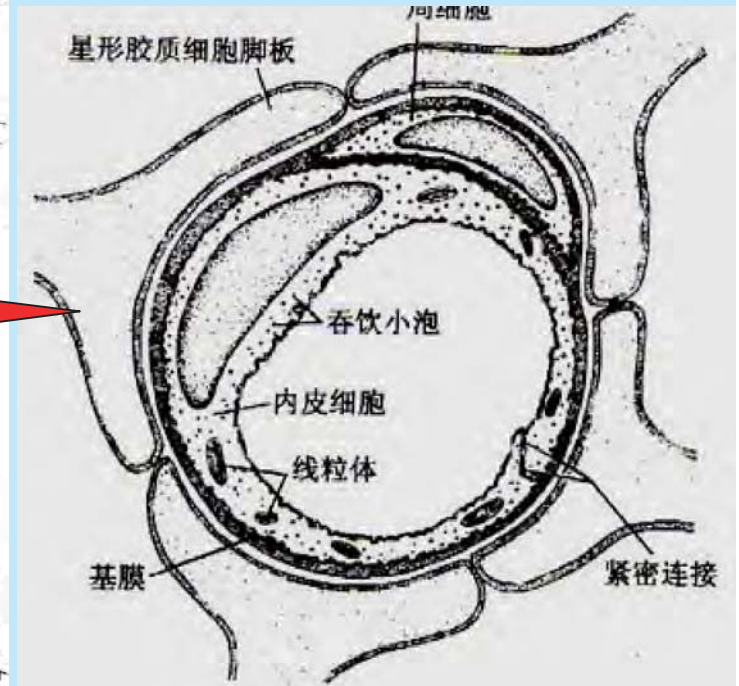
# (一) 中枢神经系统的胶质细胞

- 1、星形胶质细胞 astrocyte  
类型：纤维性星形胶质细胞  
原浆性星形胶质细胞  
功能：支持和分隔神经元  
参与血脑屏障构成——毛细血管内皮  
基膜  
神经胶质膜
- 2、少突胶质细胞oligodendrocyte：形成髓鞘
- 3、小胶质细胞microglia：吞噬
- 4、室管膜细胞ependymal cell：分泌脑脊液

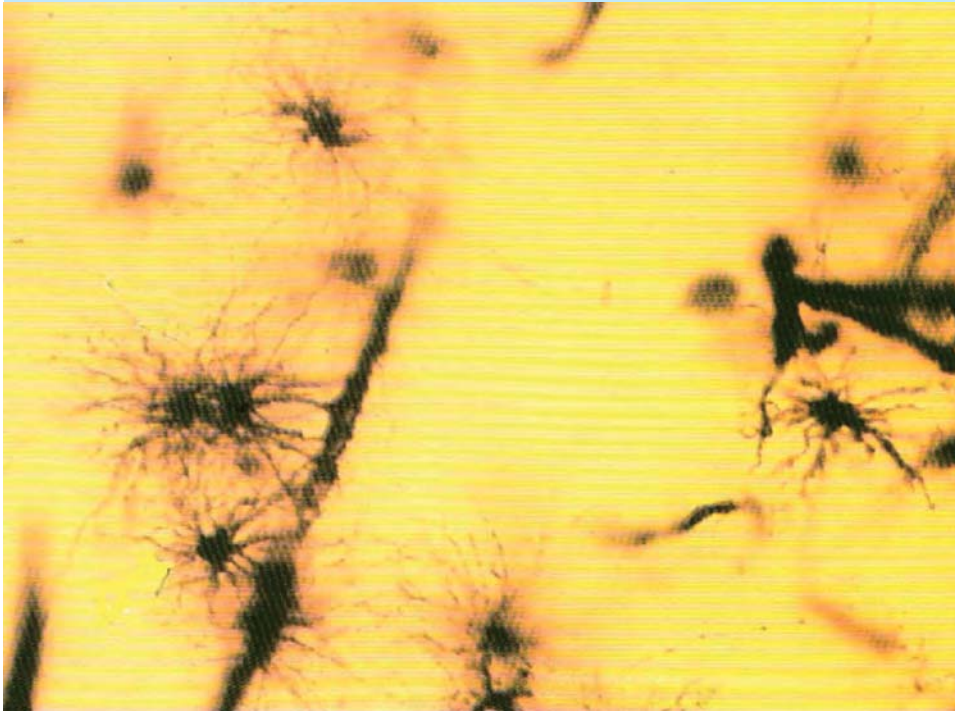
# neuroglial cell



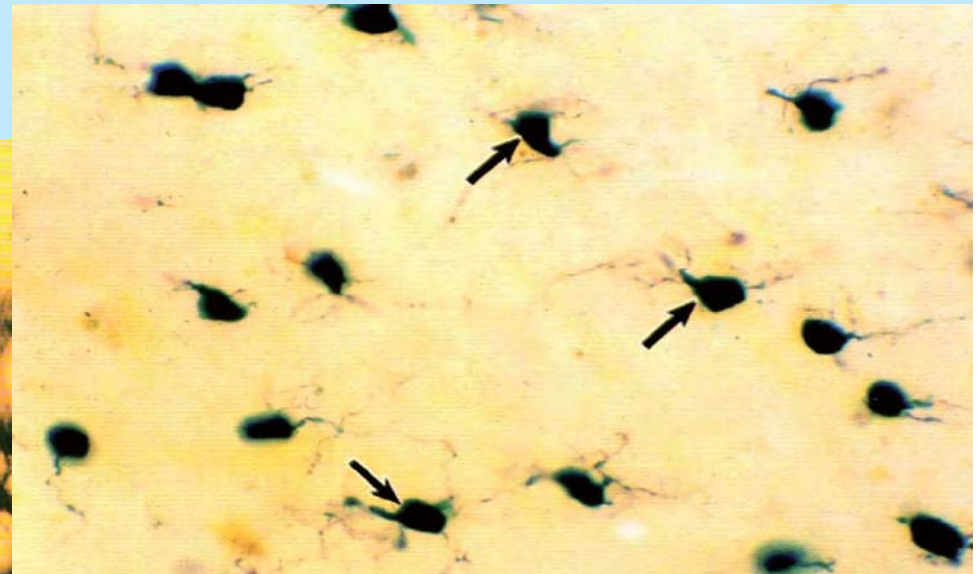
# blood brain barrier



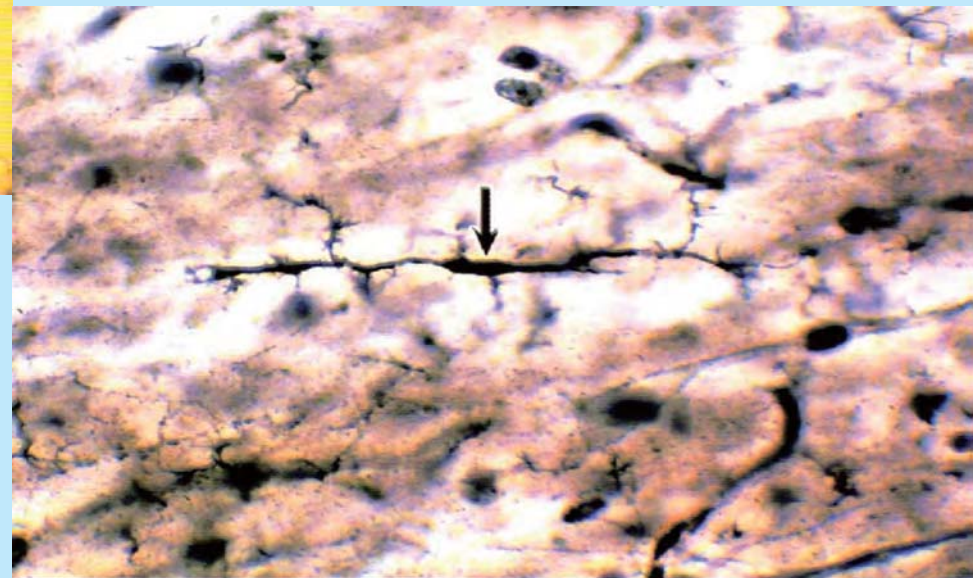
**astrocyte**



**oligodendrocyte**



**microglia**

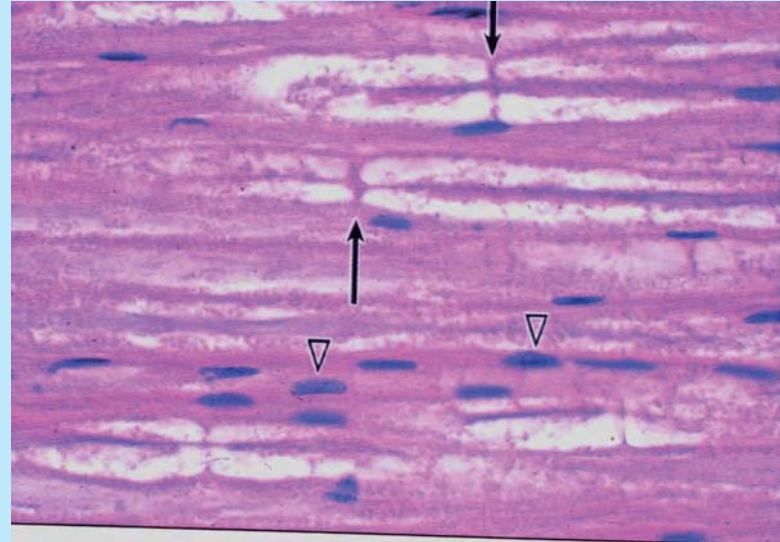


ependymal cell

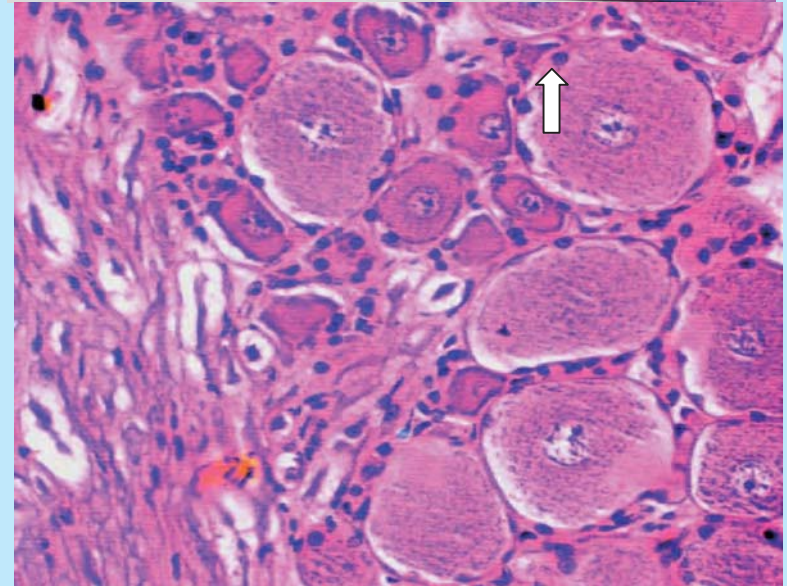


- **(二) 周围神经系统的胶质细胞**

- **1、施万细胞 Schwann cell**  
**形成髓鞘**



- **2、卫星细胞 satellite cell**  
**营养、支持神经元**



# neuroglial cell

- **central nervous svstem**



astrocyte

oligodendrocyte

microglia

ependymal cell

**peripheral nervous system**



Schwann cell

satellite cell

# 四 神经纤维和神经

nerve fiber and nerve

- **(一) 神经纤维**

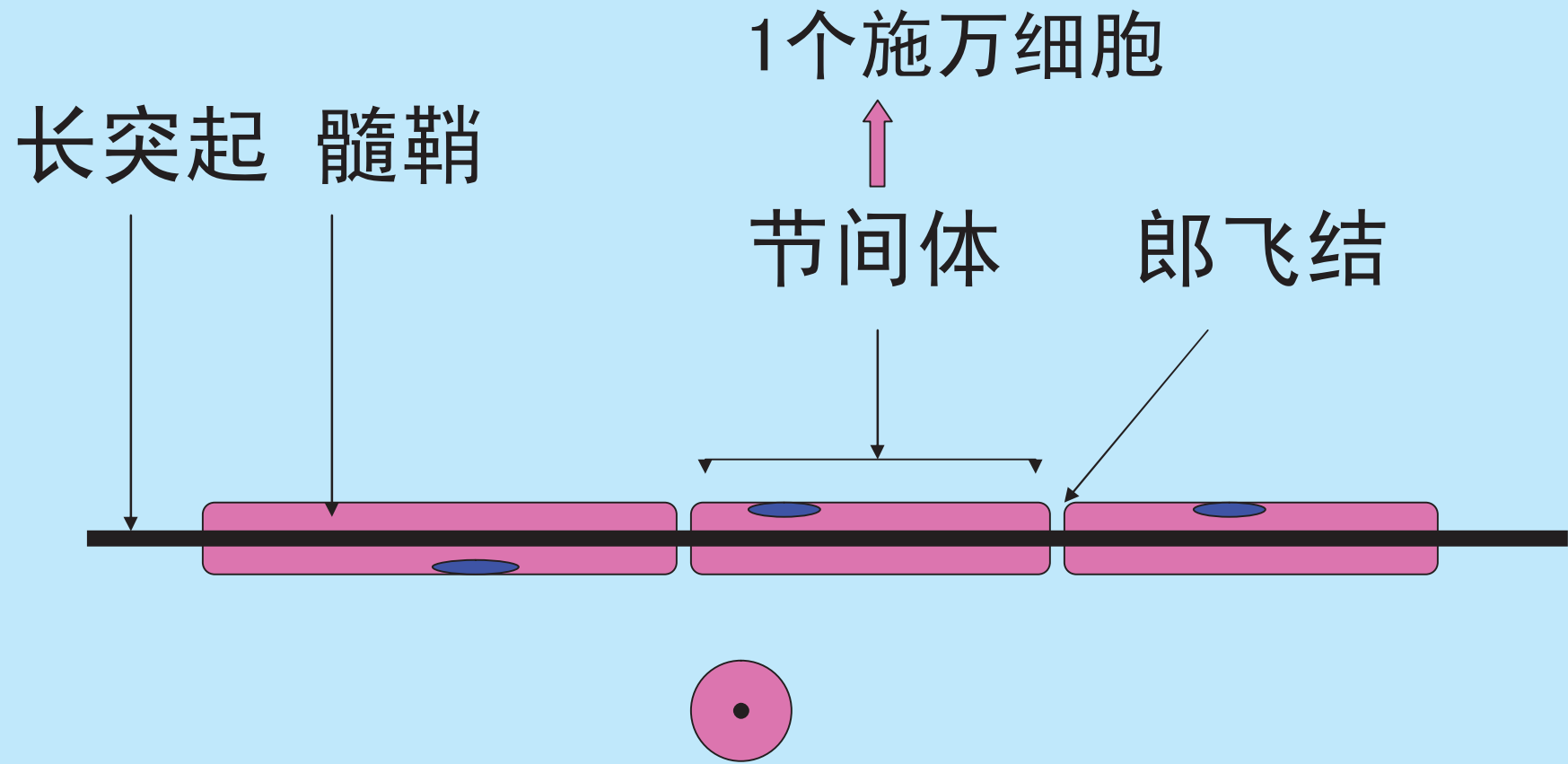
- **概念：**由神经元长突起和包在外面的神经胶质细胞组成。

(施万细胞或少突胶质细胞)

- **类型：**
  - 1 有髓神经纤维 myelinated nerve fiber
  - 2 无髓神经纤维 unmyelinated nerve fiber

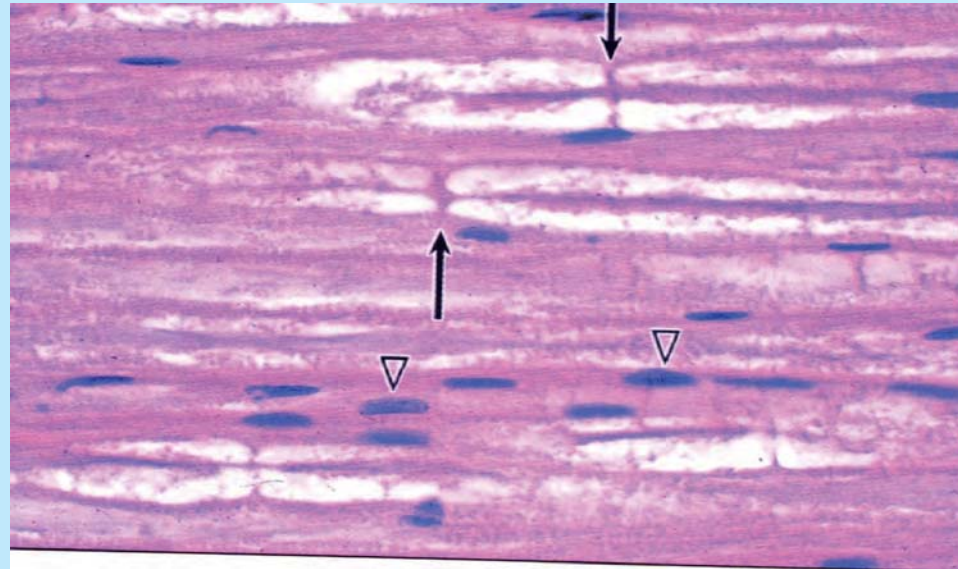


• 结构:

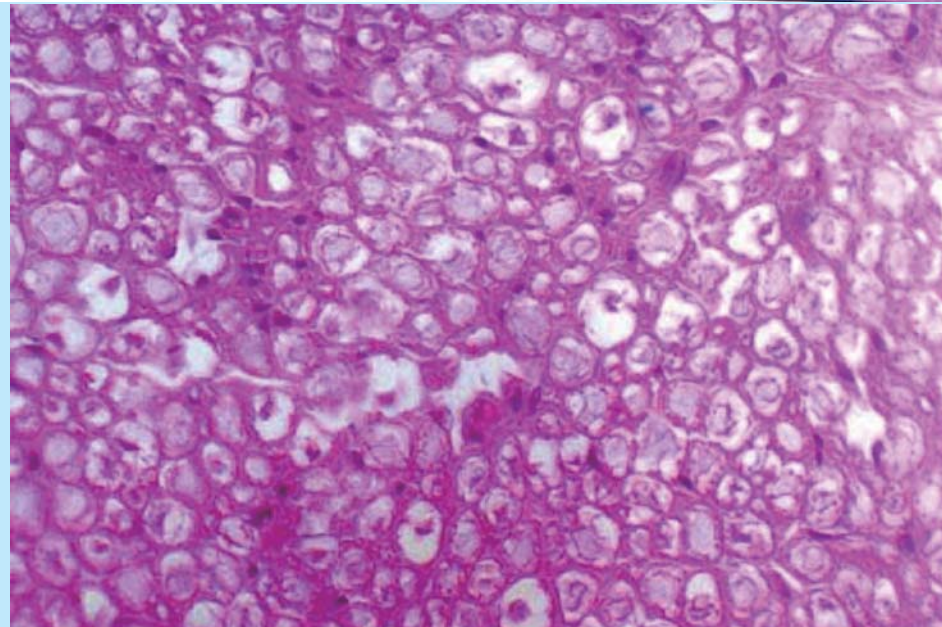


myelinated nerve fiber

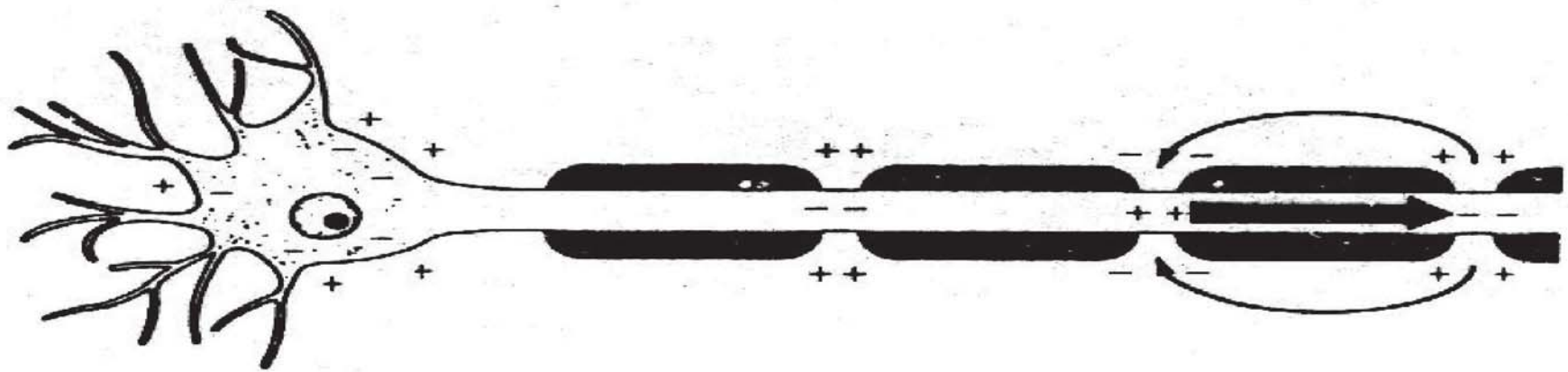
# LM: myelinated nerve fiber



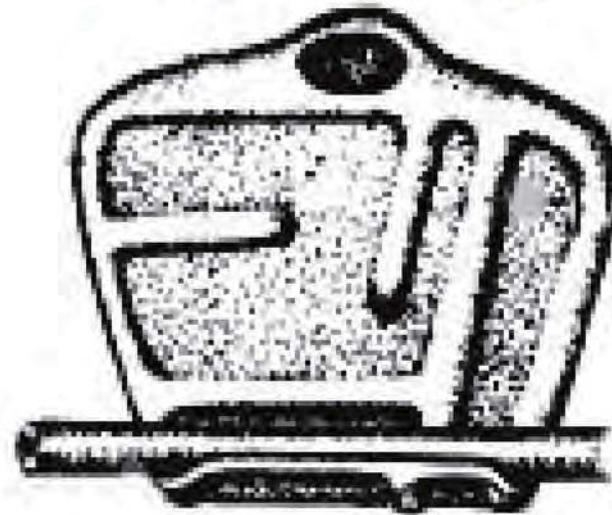
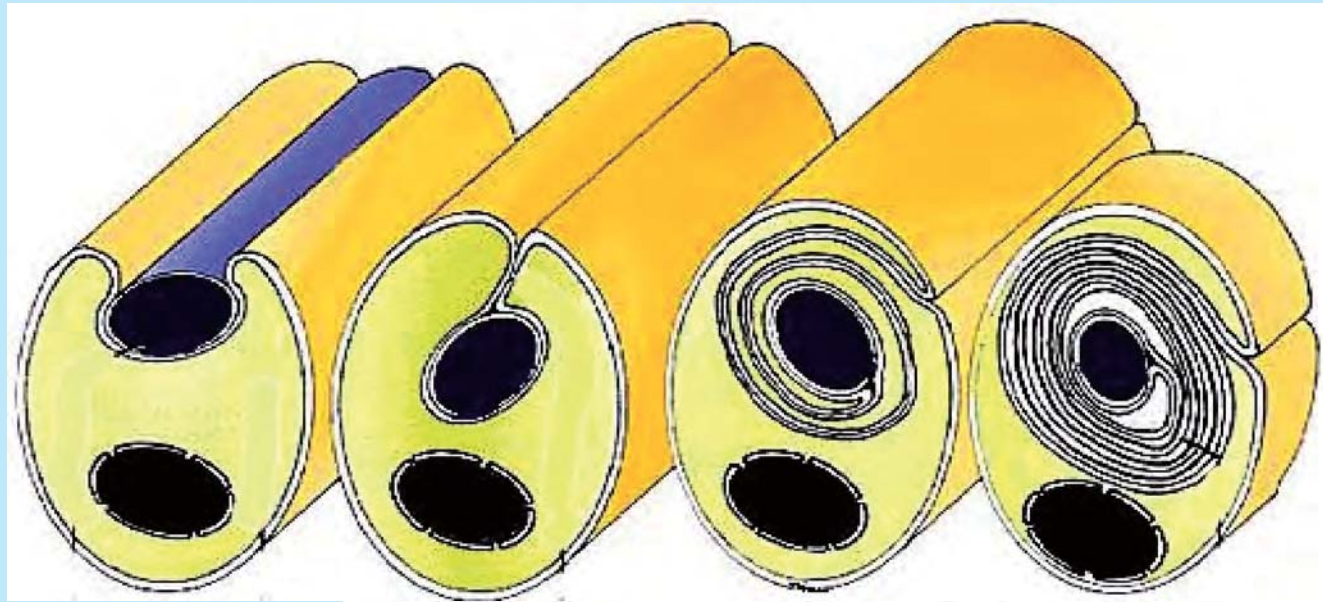
**node of Ranvier**



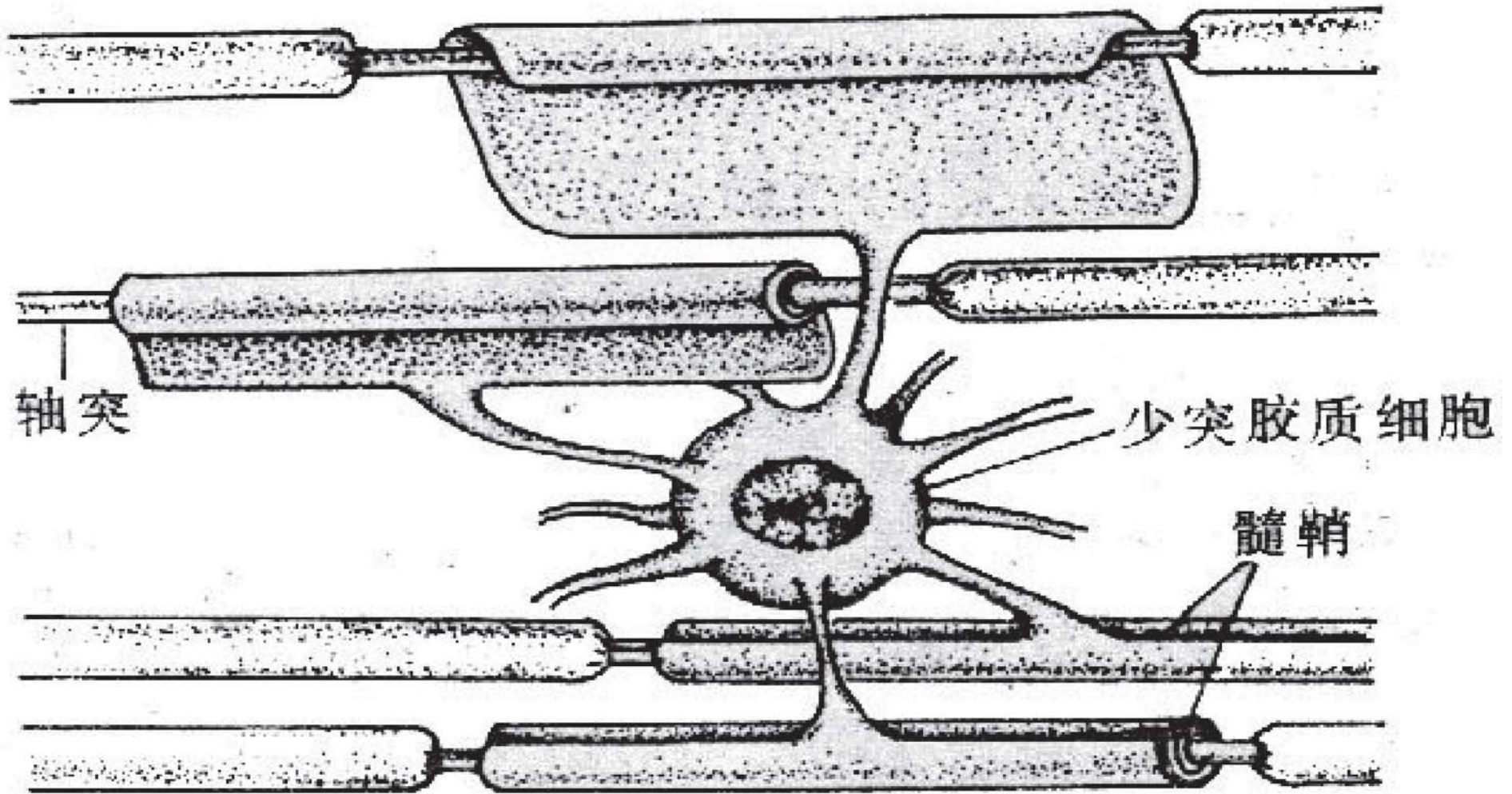
**意义：** 跳跃式传导神经冲动，快！  
节间体越长，传导速度越快



# 周围有髓神经纤维：施万细胞



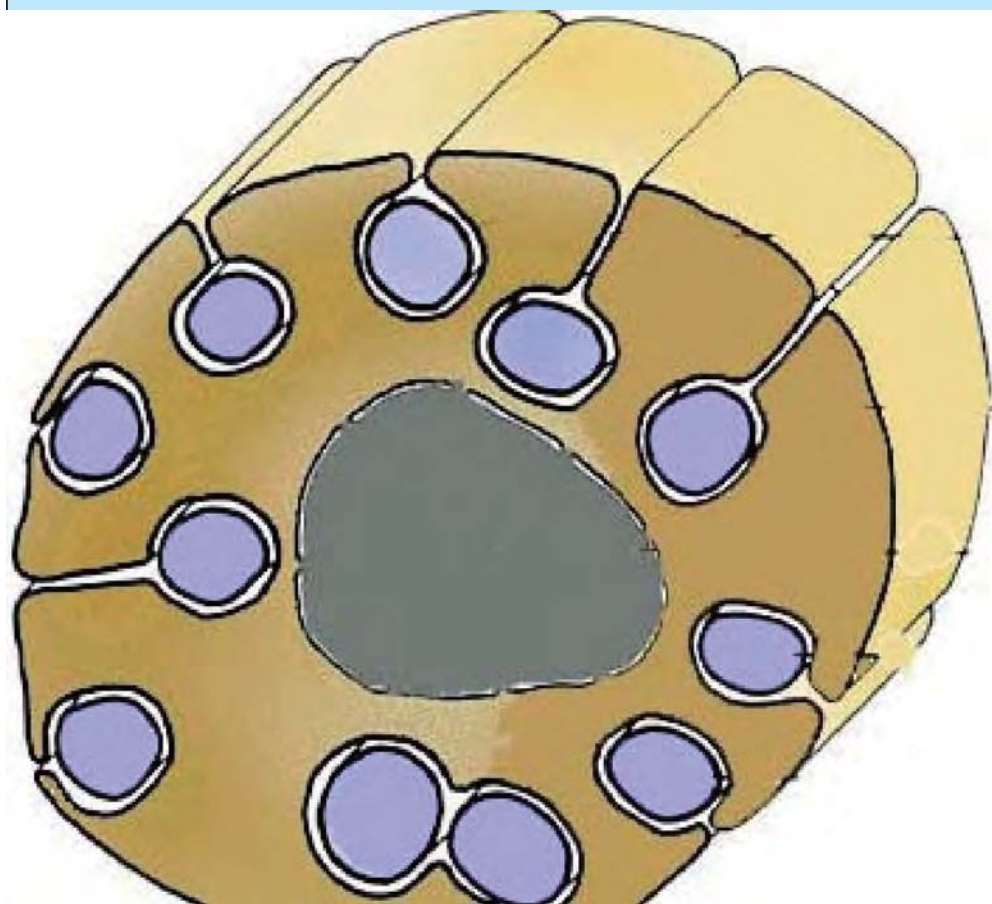
# 中枢有髓神经纤维：少突胶质细胞



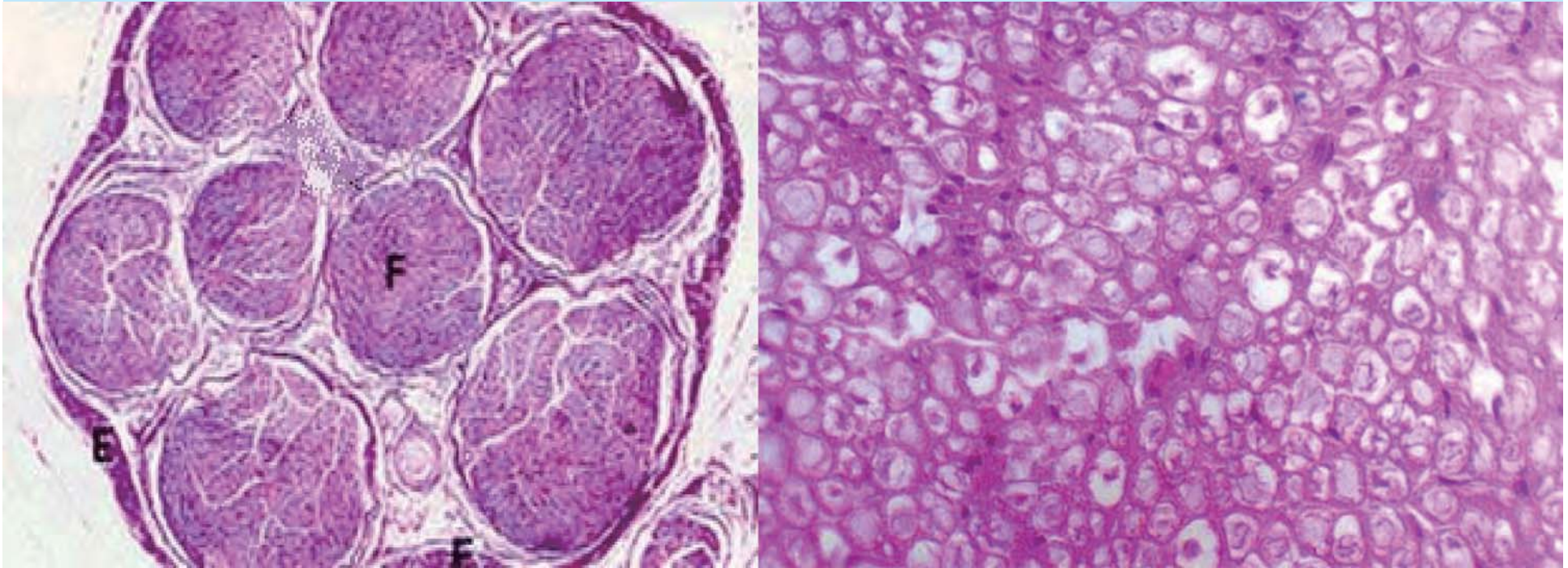
• 2、无髓神经纤维：

无髓鞘

无郎飞结

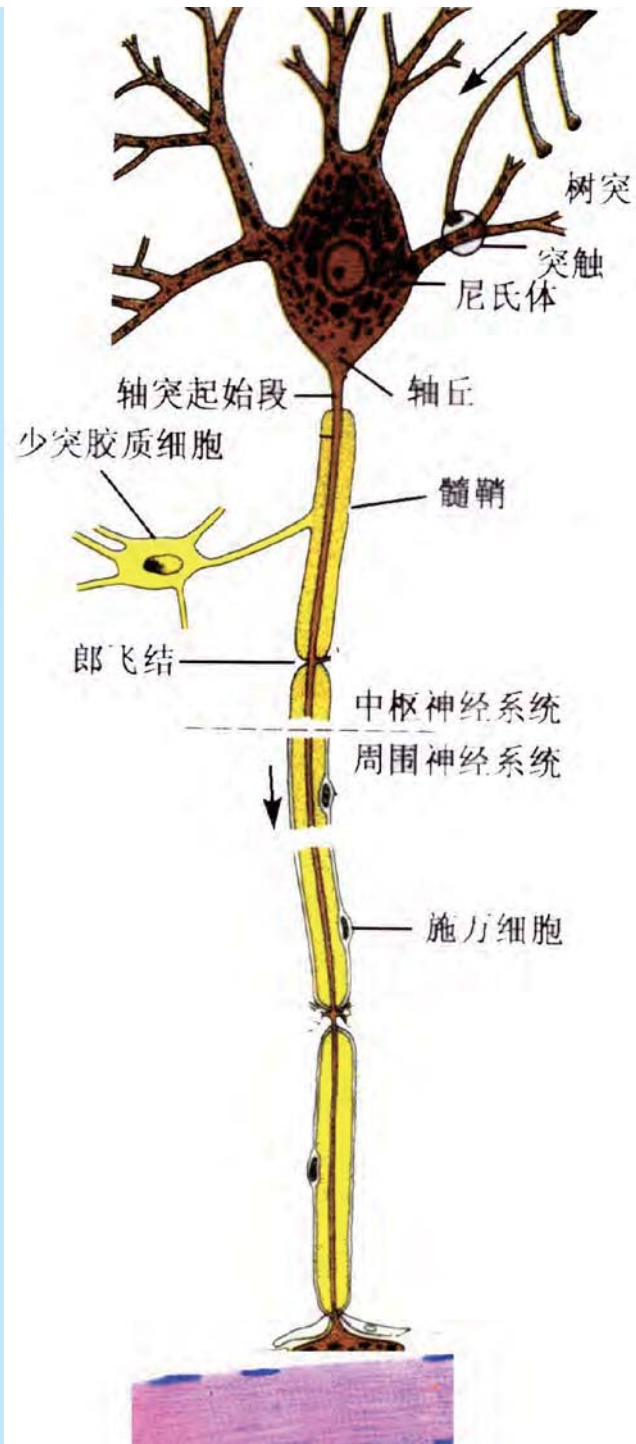


- **(二) 神经：** 神经外膜  
神经束膜  
神经内膜



# 如何区别？

- 神经元
- 神经
- 神经纤维
- 神经原纤维

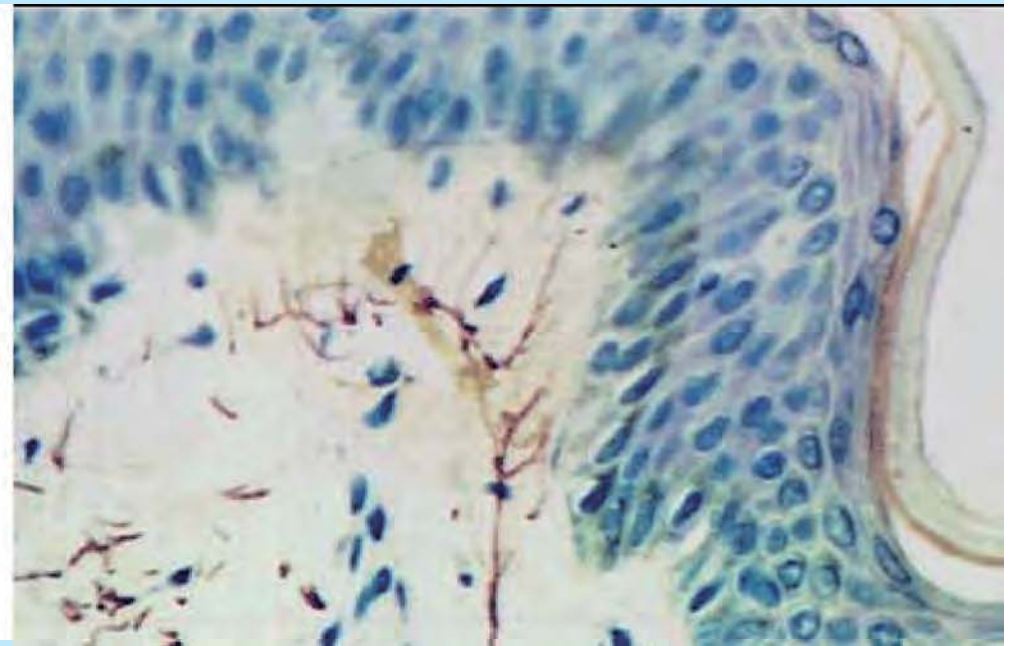
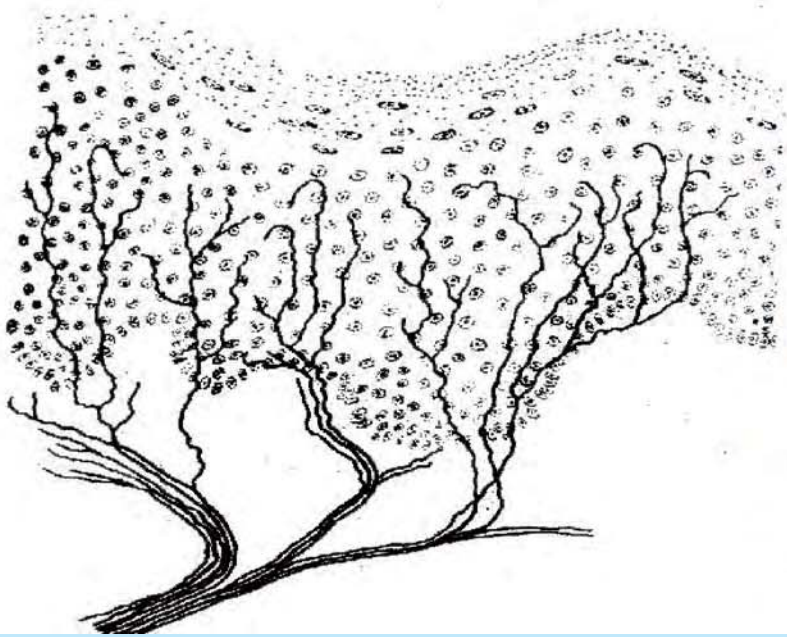




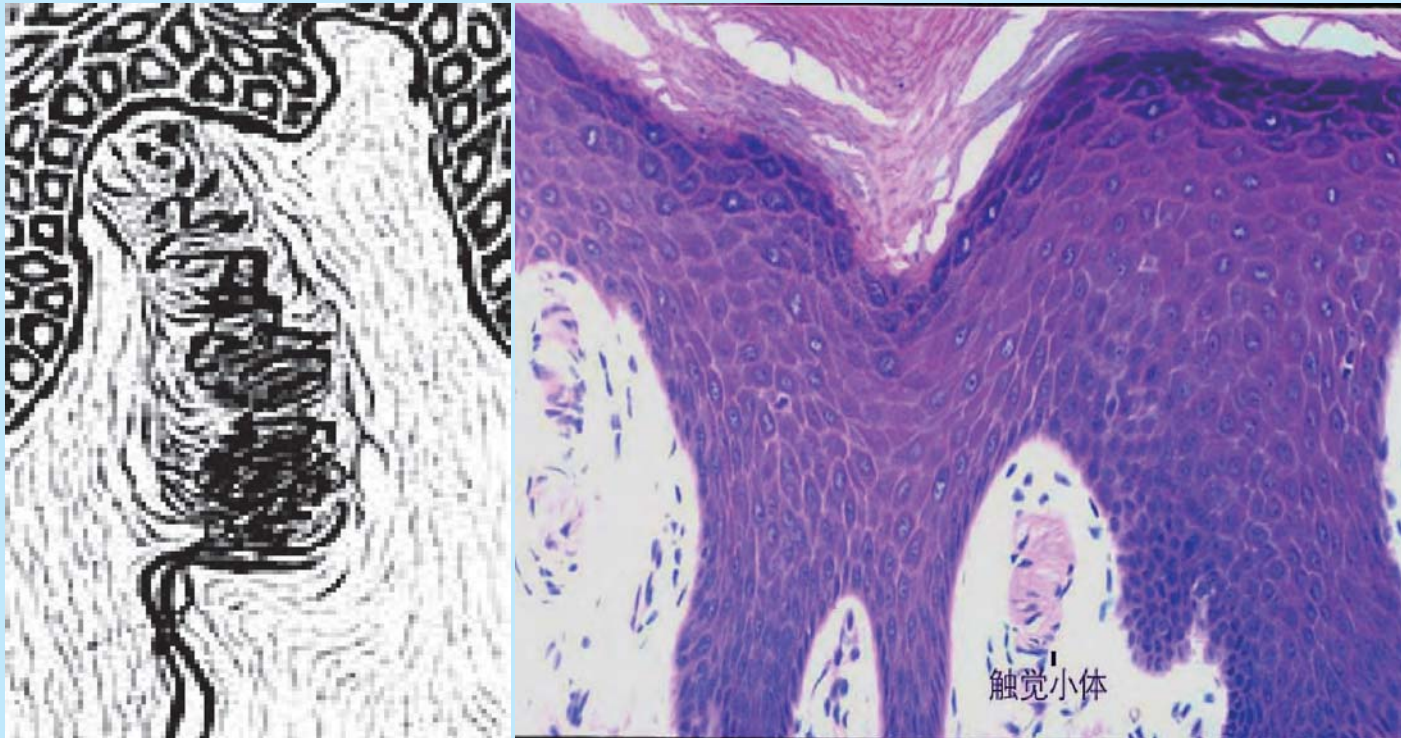
## 五 神经末梢 nerve ending

- 概念：周围神经纤维末端
- 类型：
  - 1 感觉神经末梢 sensory nerve ending
  - 2 运动神经末梢 motor nerve ending

- 1、感觉神经末梢 sensory nerve ending
- (1) 游离神经末梢 free nerve ending  
感受冷. 热. 疼觉



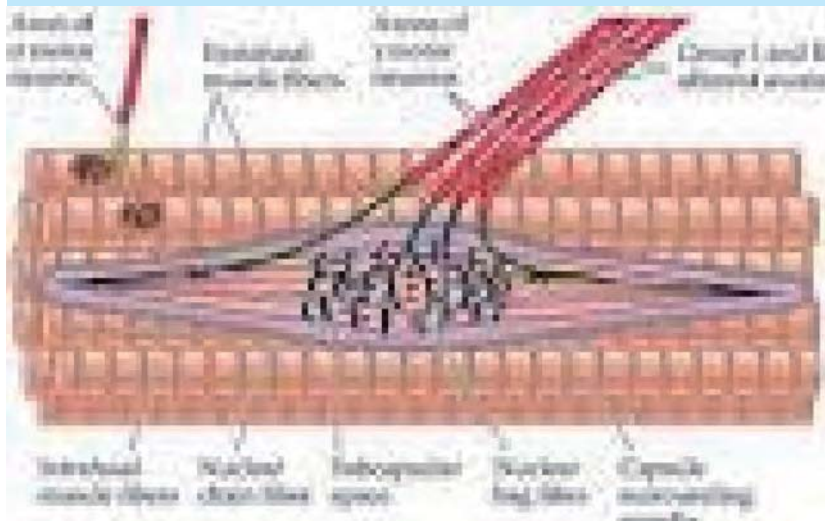
- (2) 触觉小体 tactile corpuscle  
感受触觉



- (3) 环层小体 lamellar corpuscle  
感受压觉、振动觉



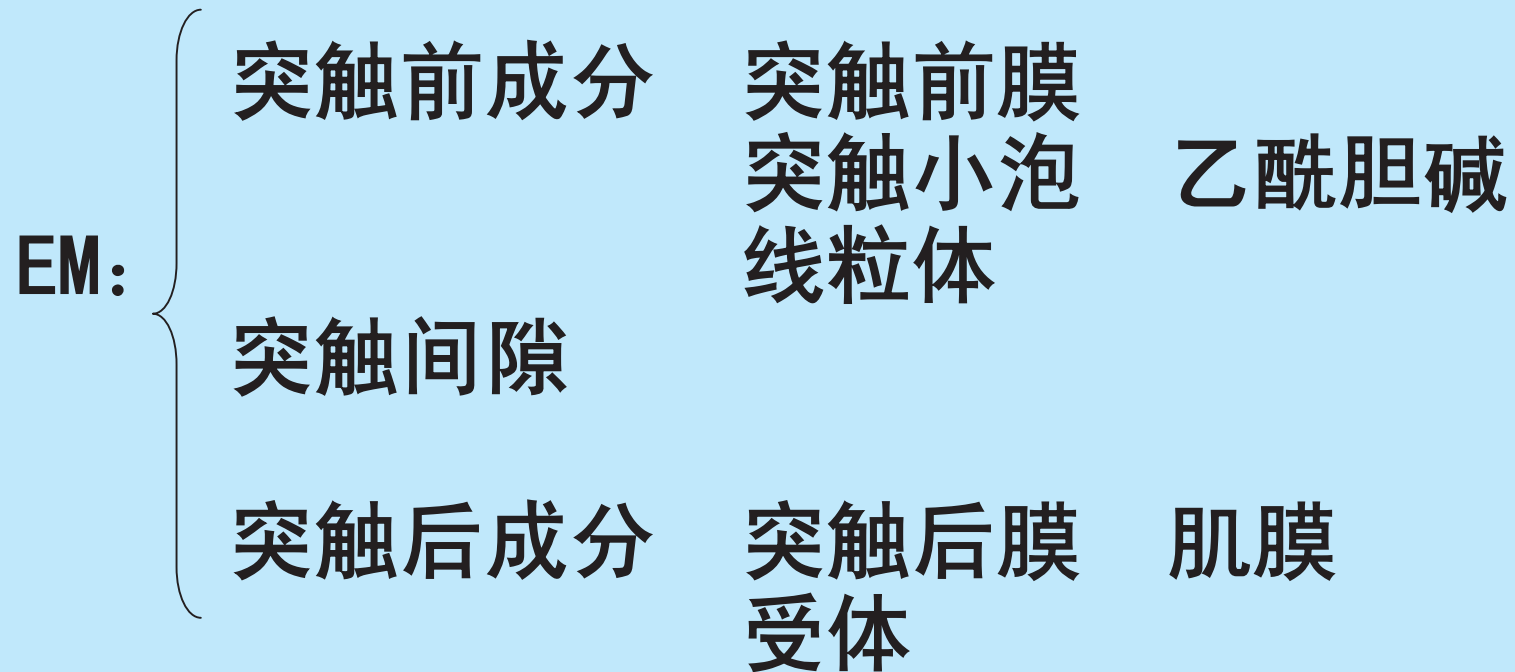
- (4) 肌梭 muscle spindle 本体感受器



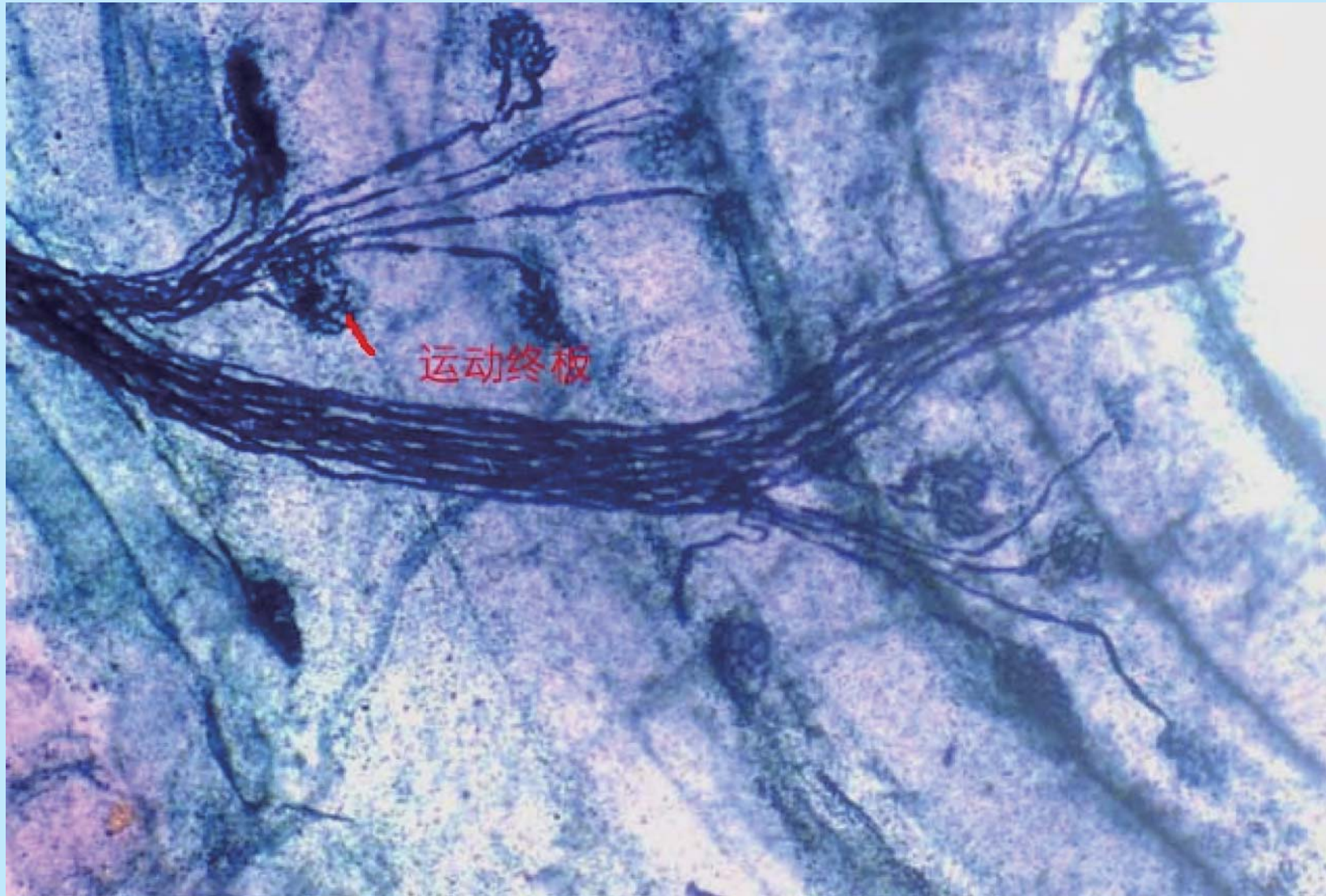
- 2、运动神经末梢 motor nerve ending

- (1) 躯体运动神经末梢  
(运动终板 motor end plate )

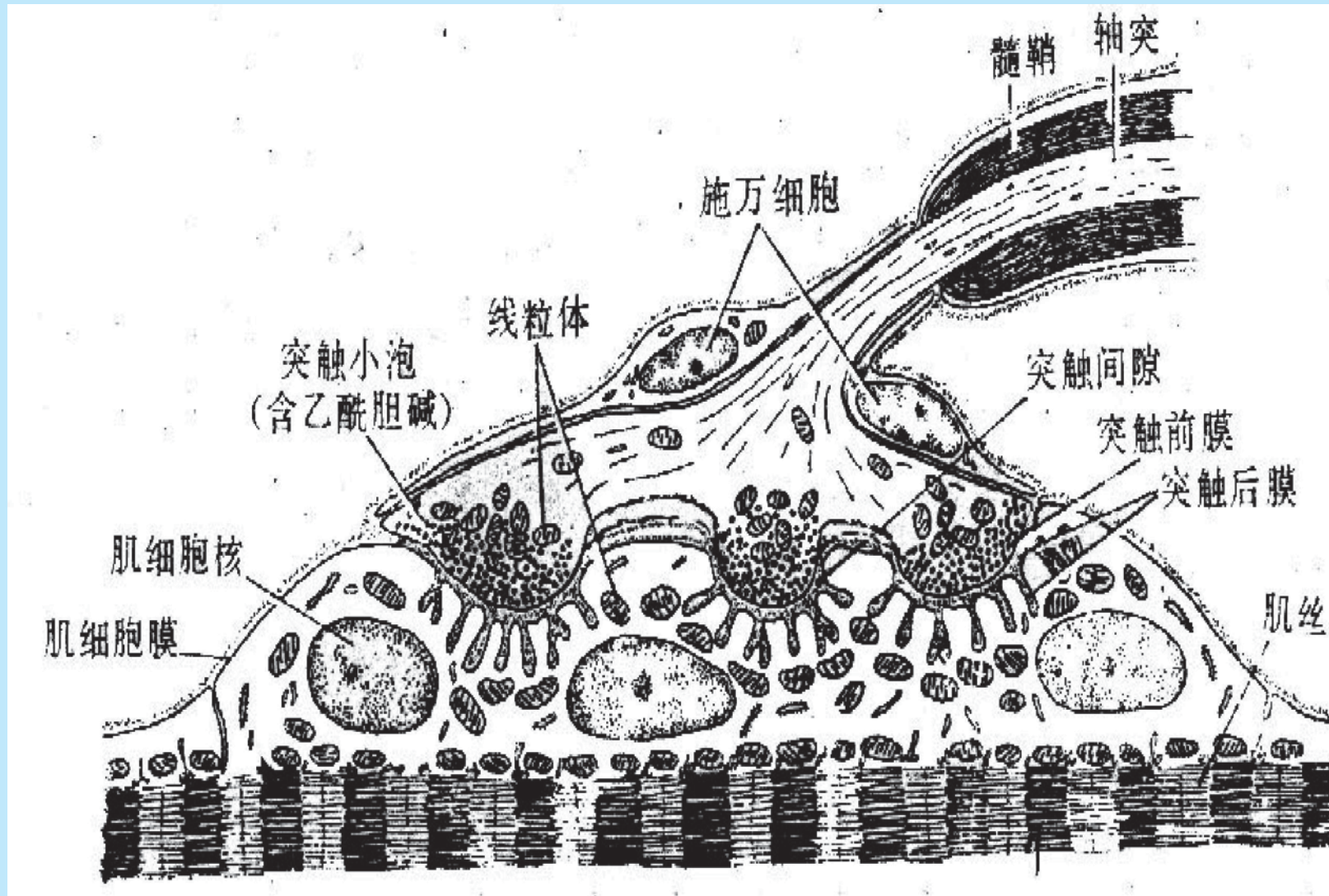
LM: 椭圆形板状隆起, 爪状



## LM: motor end plate

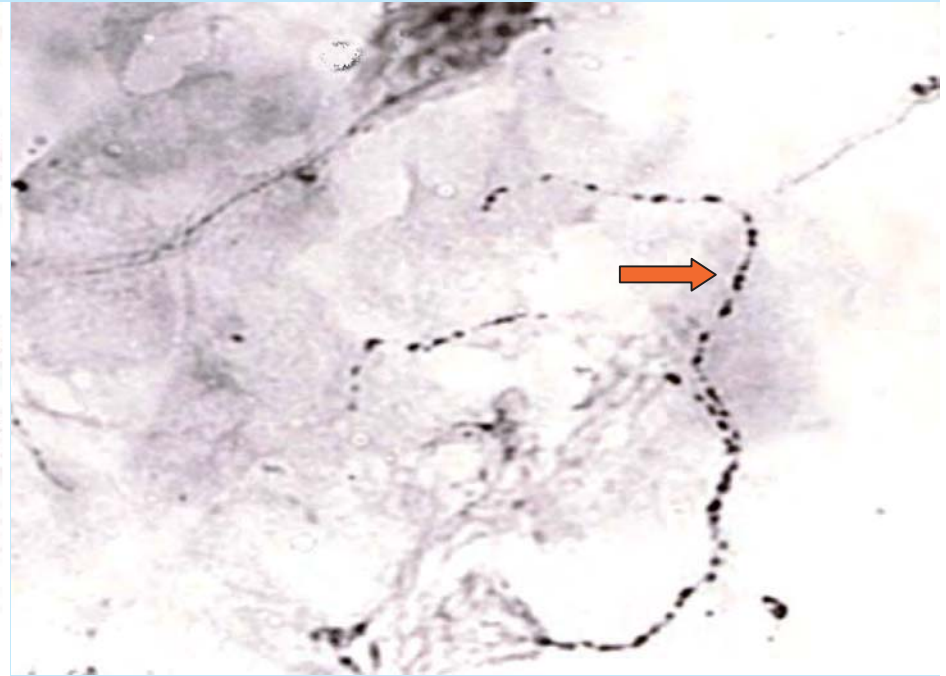
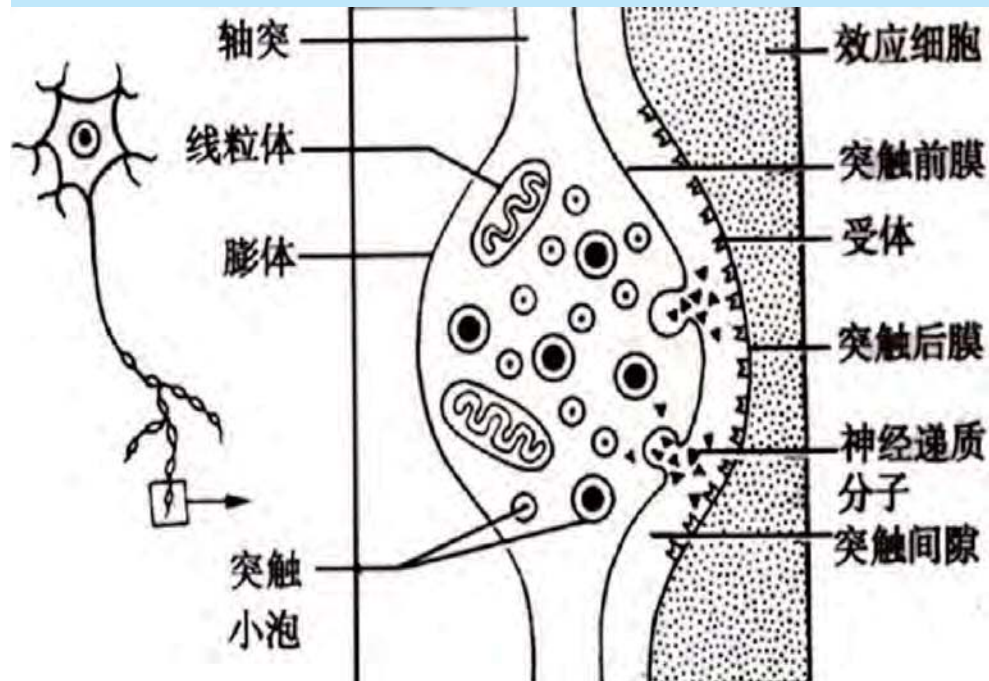


# EM : motor end plate





- (2) 内脏运动神经末梢  
visceral motor nerve ending



# nerve ending

- sensory nerve ending



- free nerve ending

- tactile corpuscle

- lamellar corpuscle

- muscle spindle

- motor nerve ending

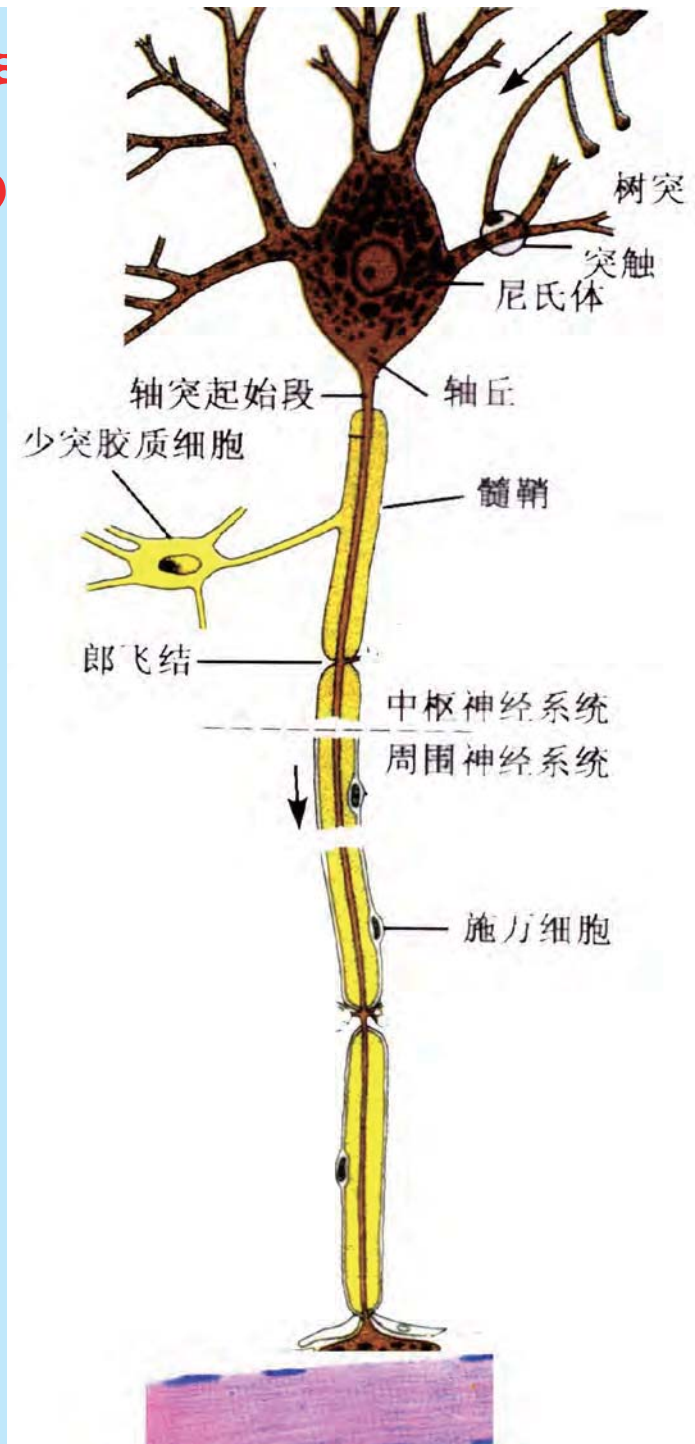


- motor end plate

- visceral motor nerve ending

思考：如何完整地理解神经相互间有何联系？

- 一 神经组织组成
- 二 神经元
- 三 突触
- 四 神经胶质细胞
- 五 神经纤维和神经
- 六 神经末梢



## • 重点

- 1 神经组织的组成
- 2 神经元胞体光镜、电镜结构和功能
- 3 突触的概念  
化学性突触光镜、电镜结构和功能
- 4 神经胶质细胞的类型和功能
- 5 神经纤维概念和光镜结构
- 6 感觉神经末梢类型及功能
- 7 名词：尼氏体/突触