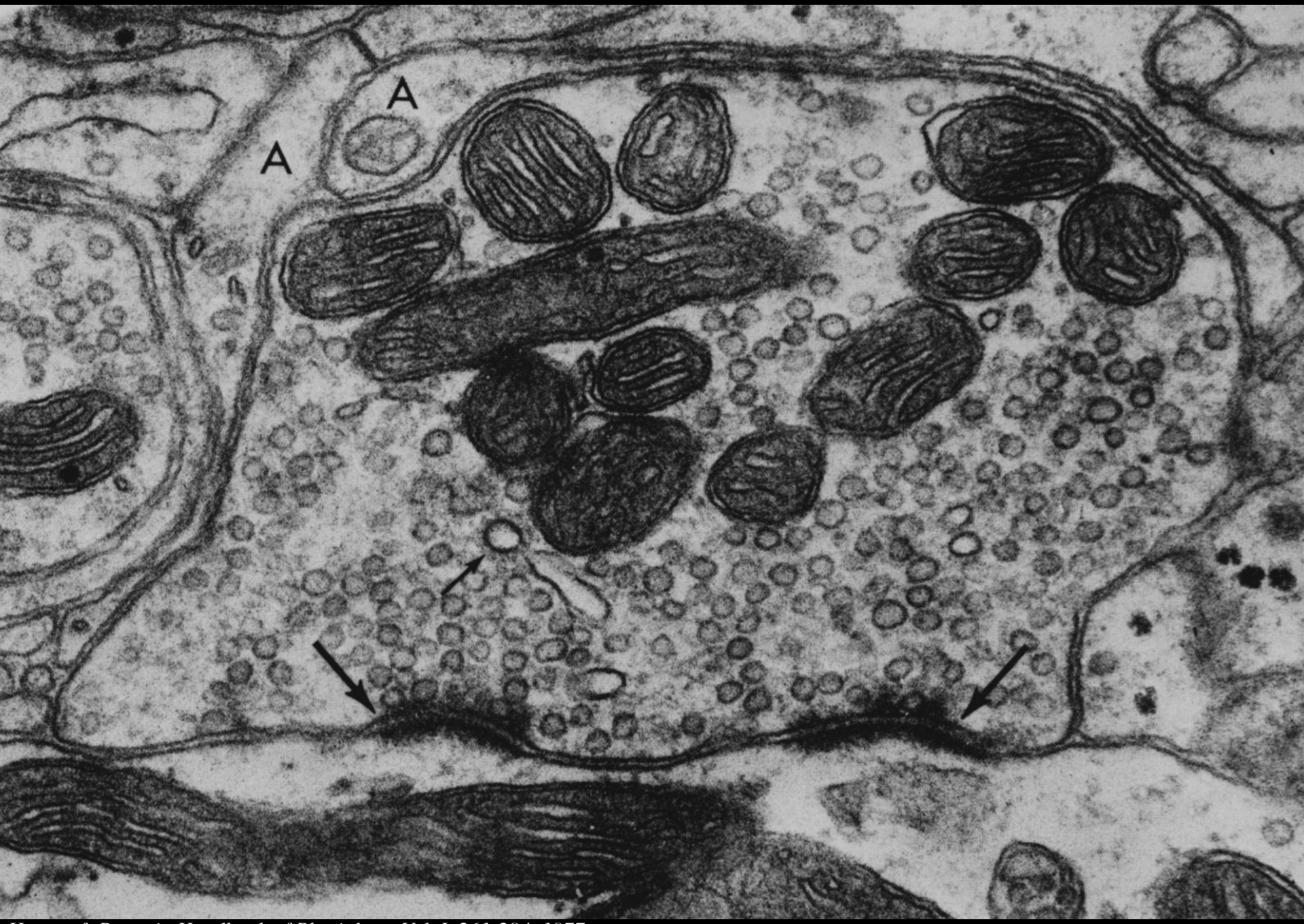
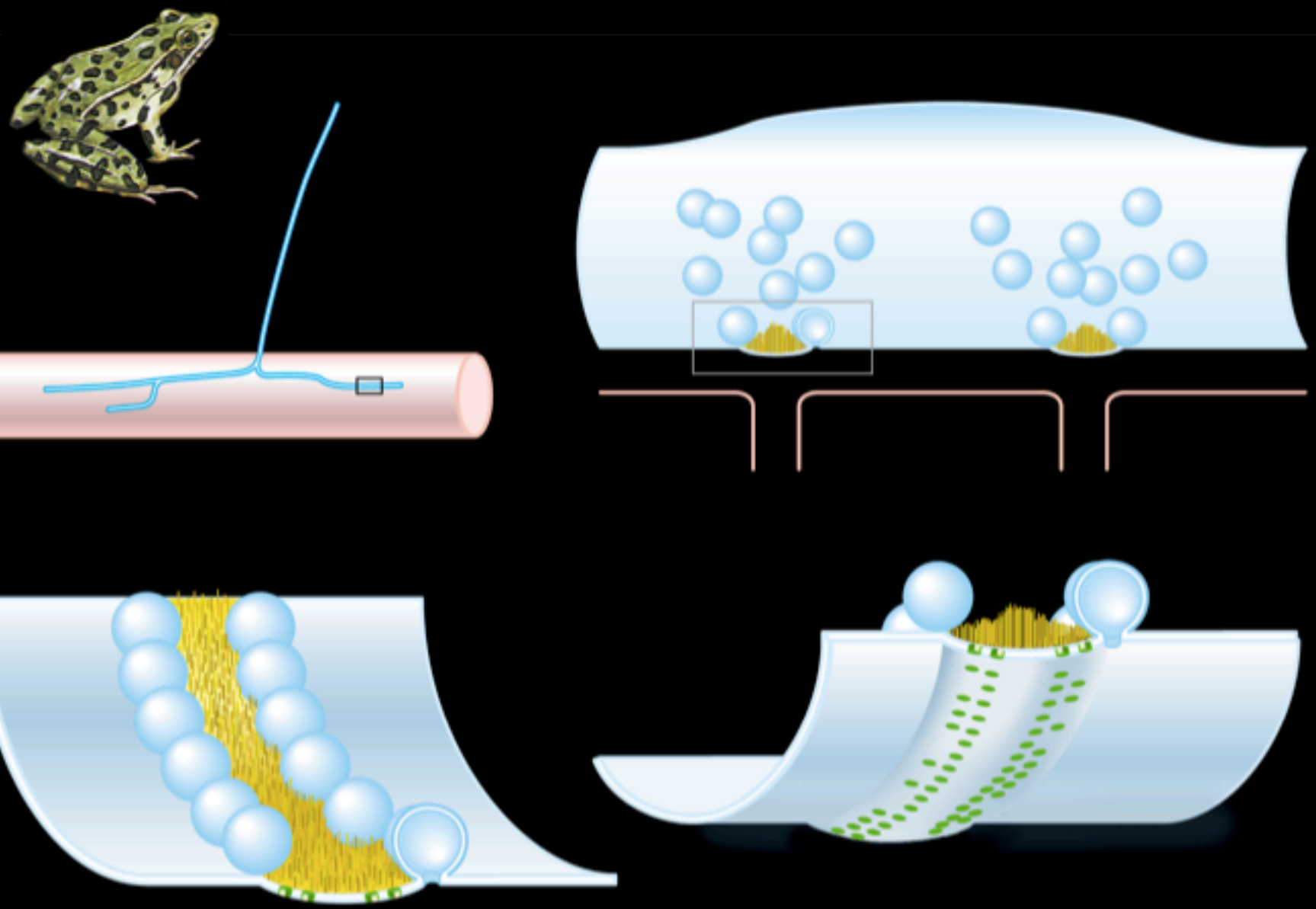
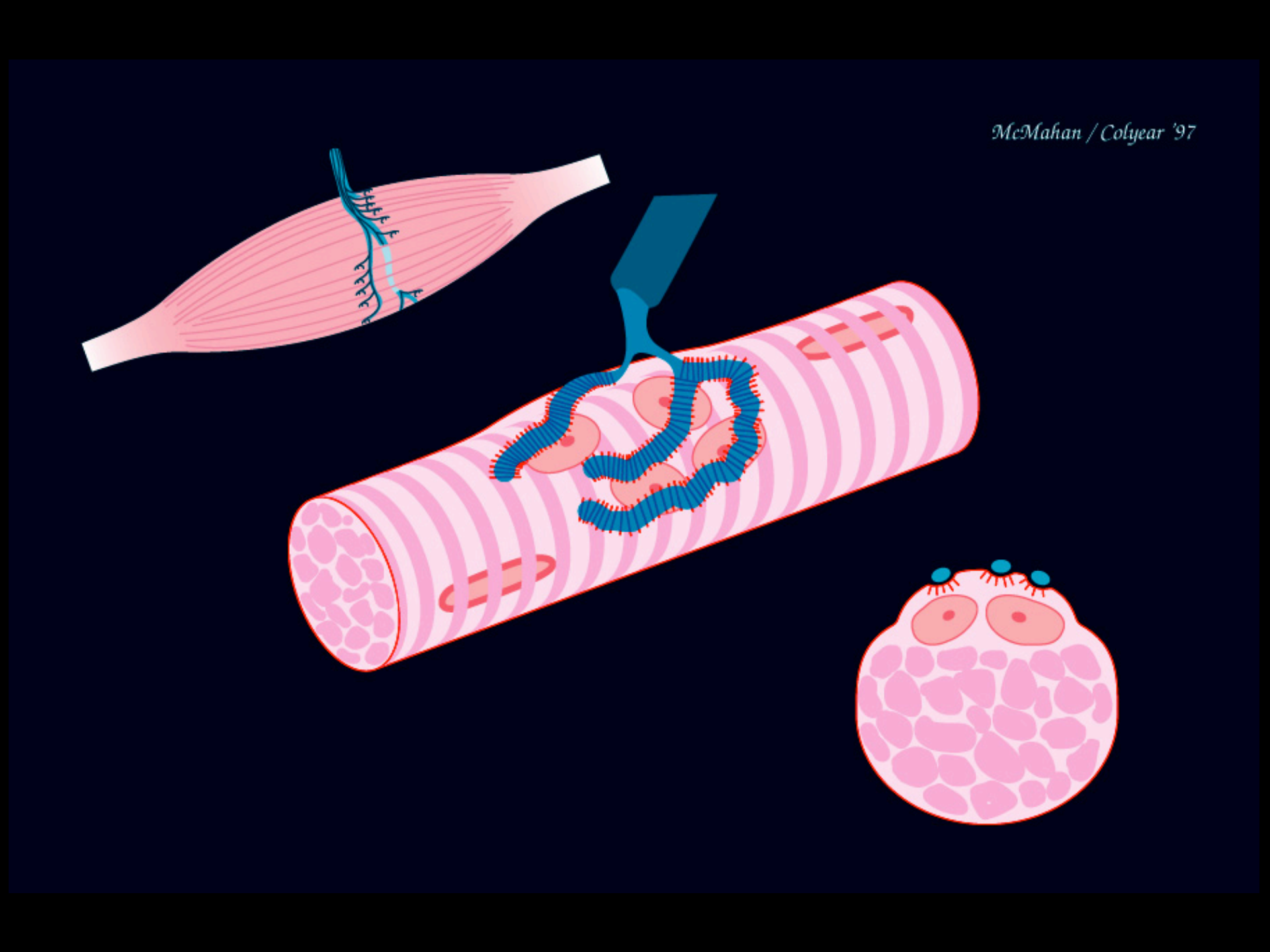


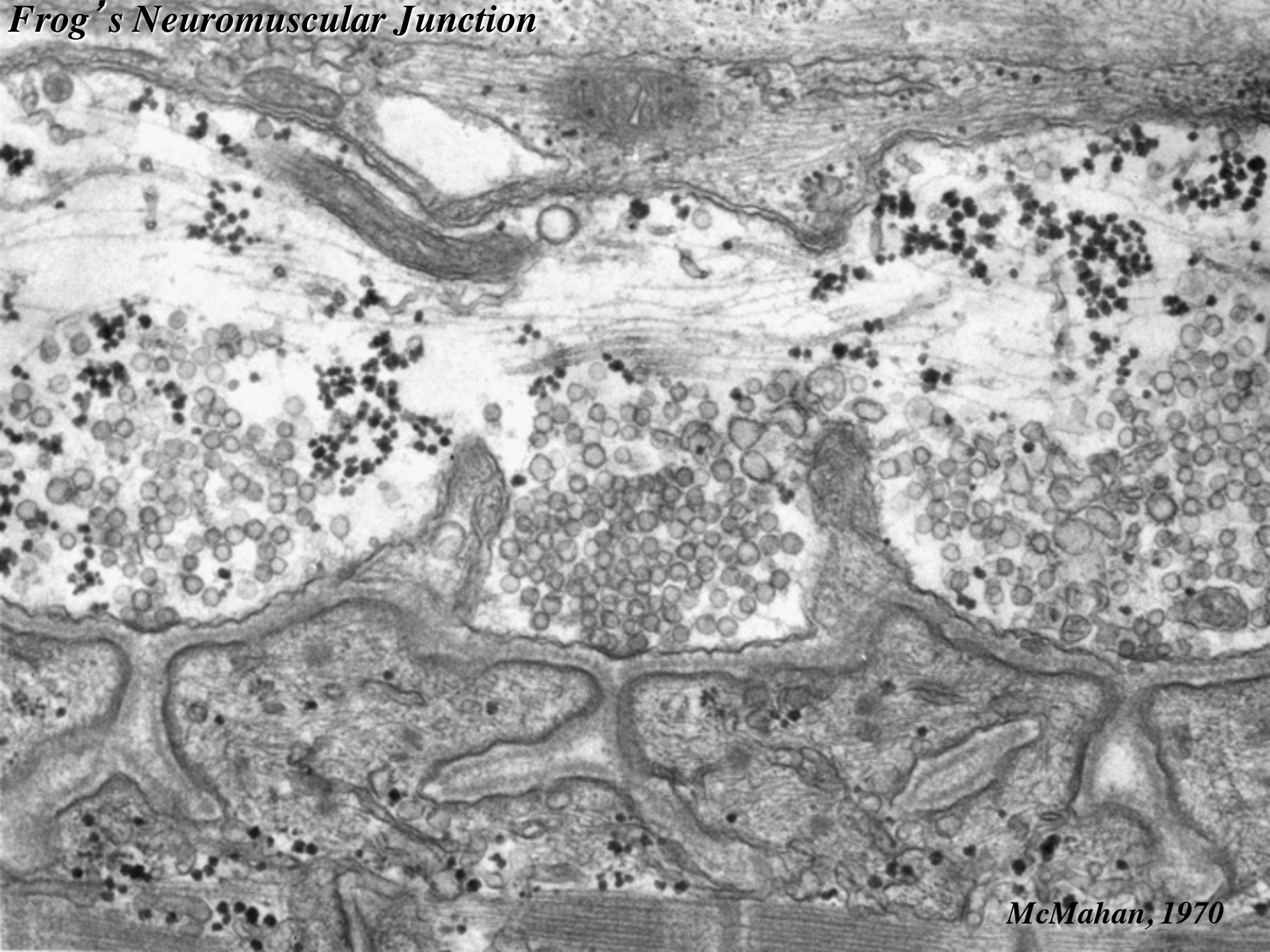
Heuser & Reese in Handbook of Physiology, Vol. I, 261-294, 1977.



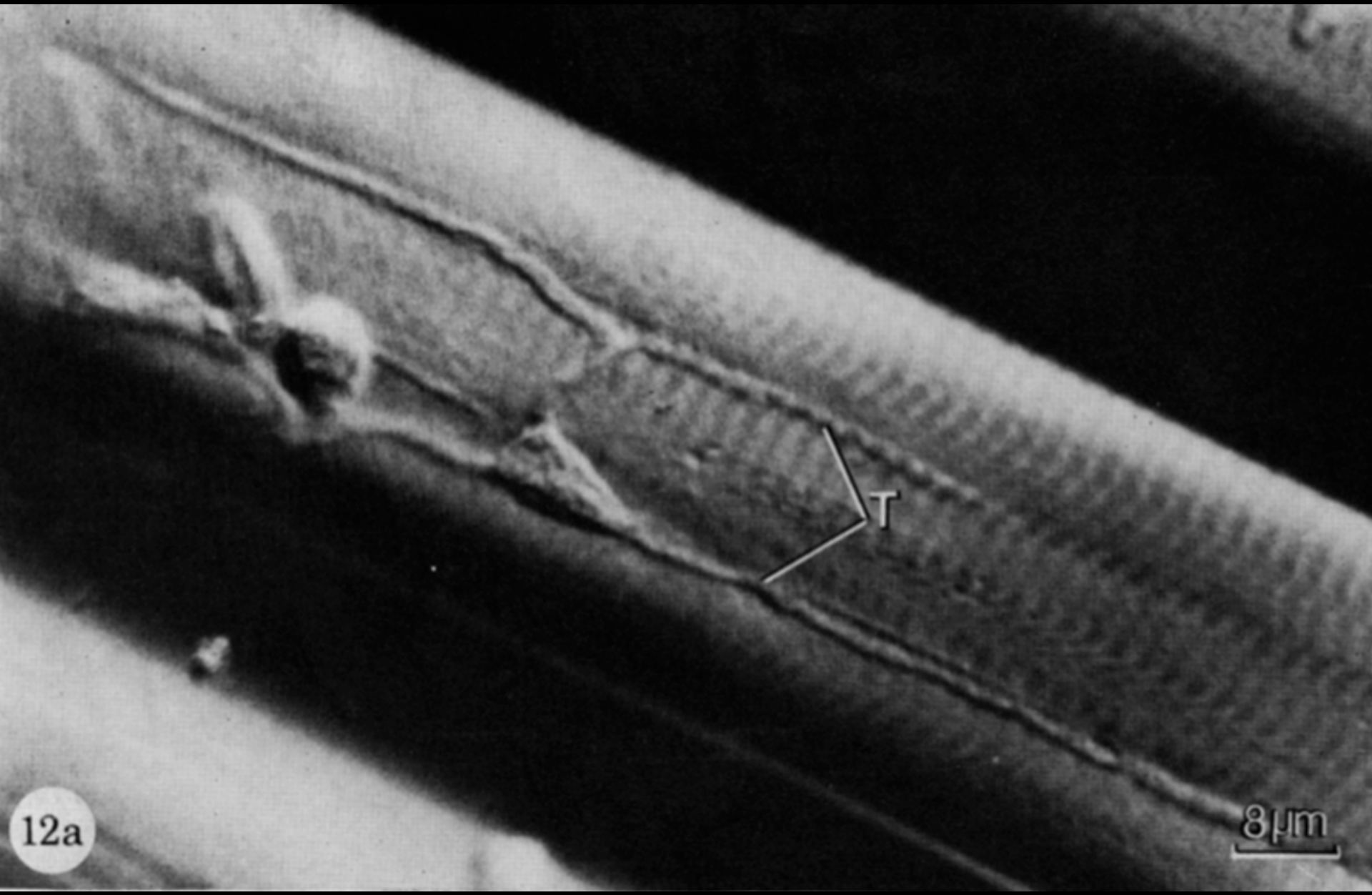
Colyear / McMahan 1999


McMahan / Colyear '97

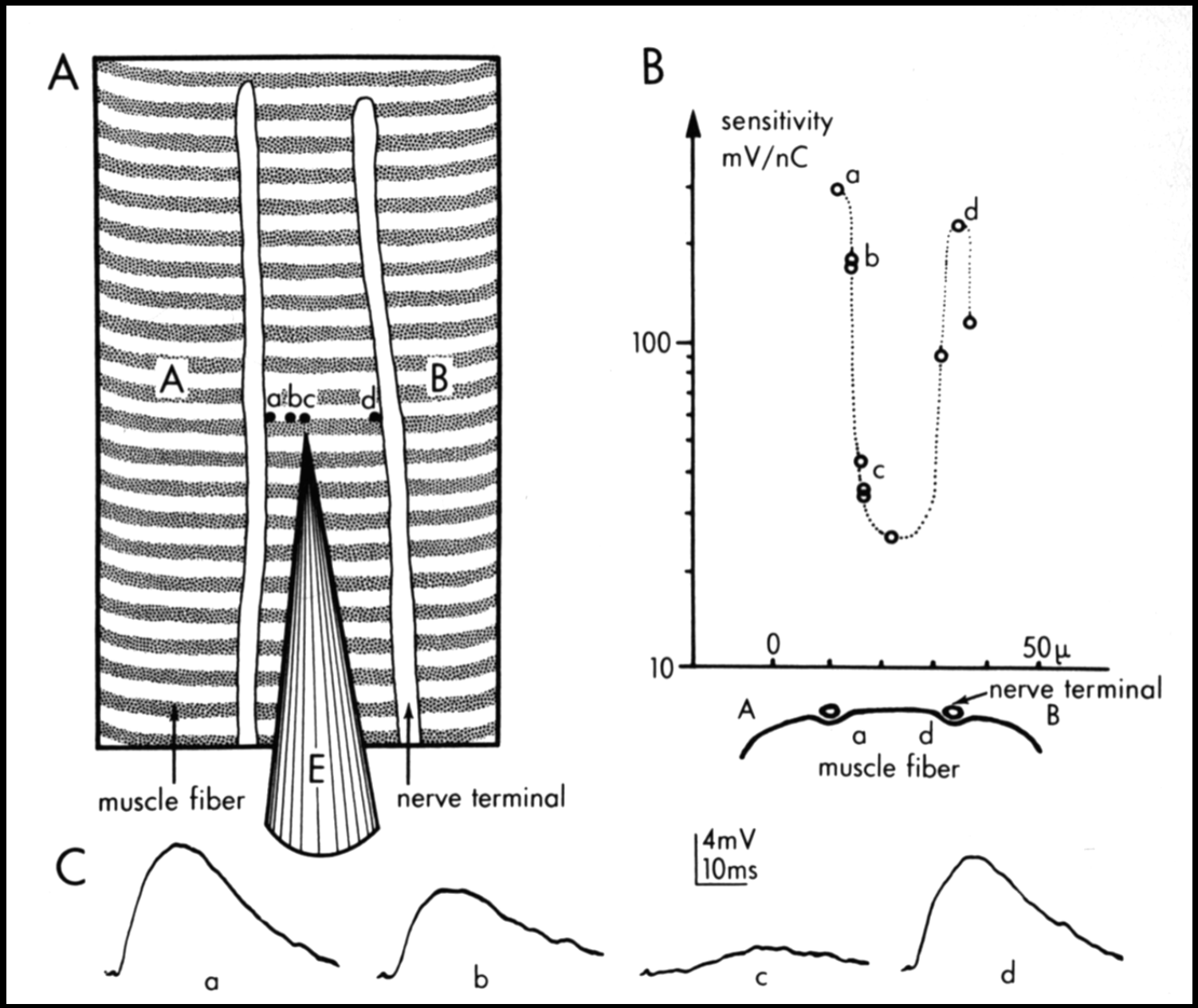
Frog's Neuromuscular Junction



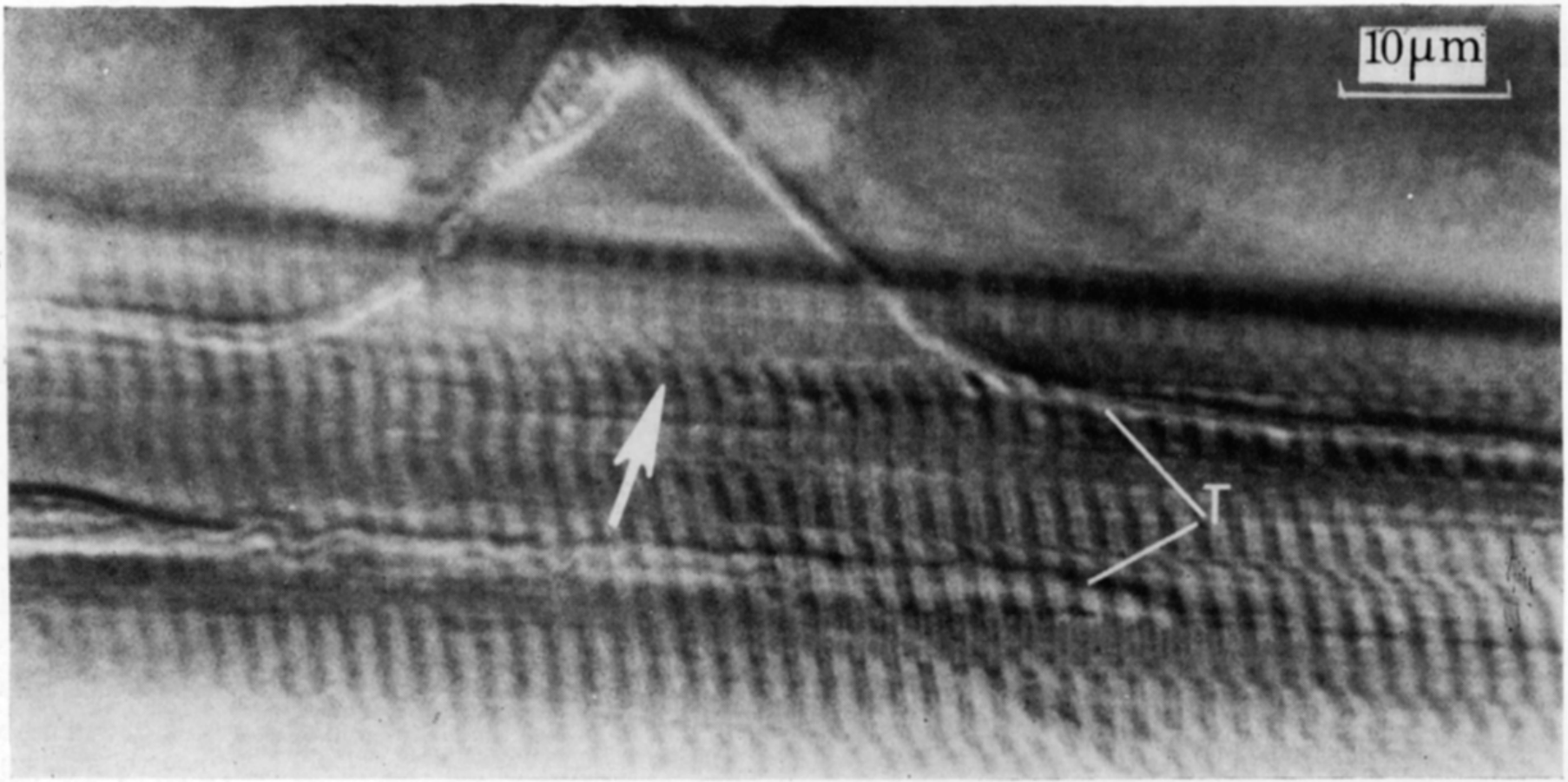
McMahan, 1970

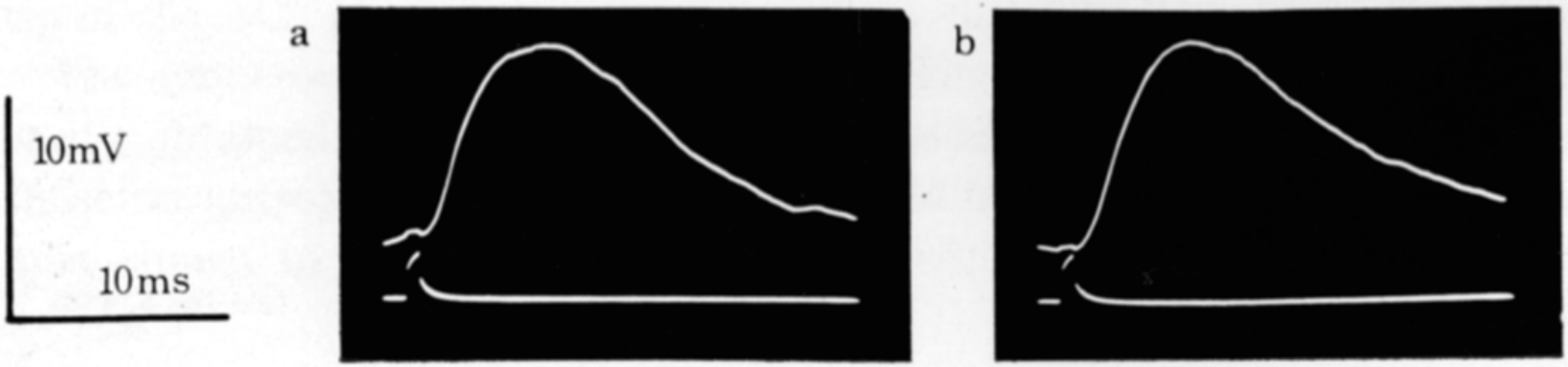


McMahan, Spitzer & Peper, 1972 Proc. Roy. Soc. Lond. B 181:421-430



Peper & McMahan, 1972 Proc. Roy. Soc. Lond. B 181:431-440.





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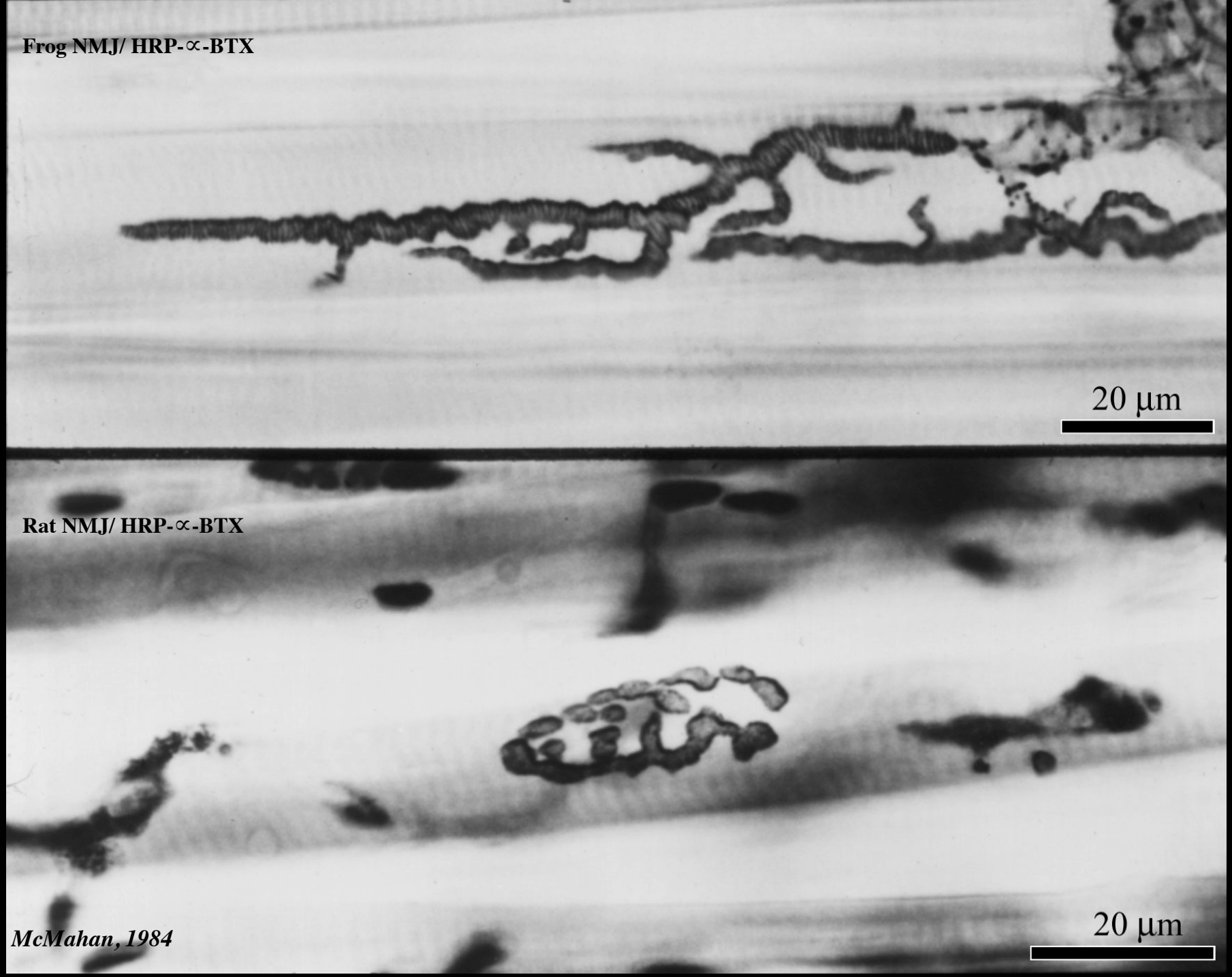
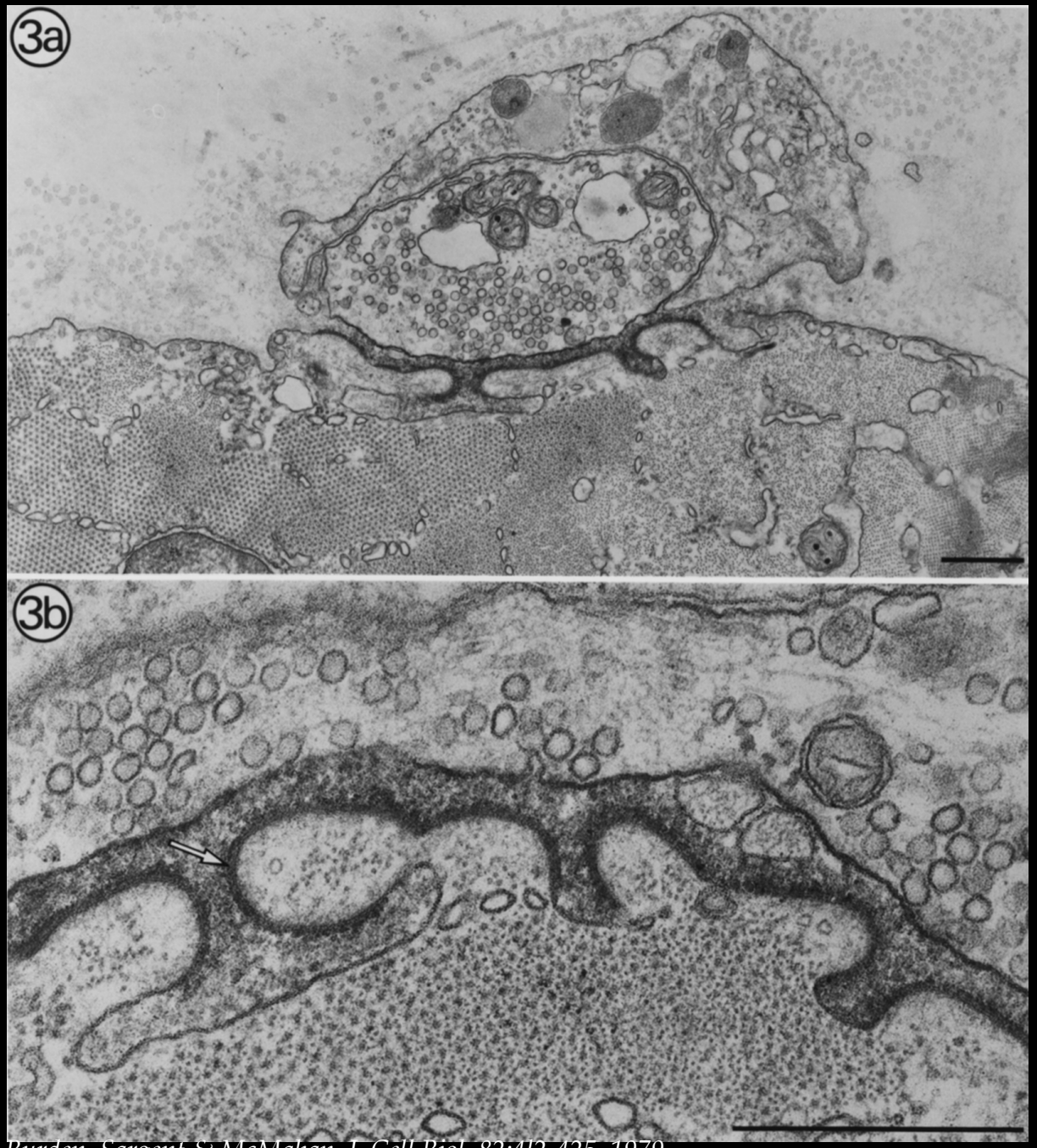

Frog NMJ/ HRP-∝-BTX
20 µm
Rat NMJ/ HRP-∝-BTX
20 µm
McMahan, 1984



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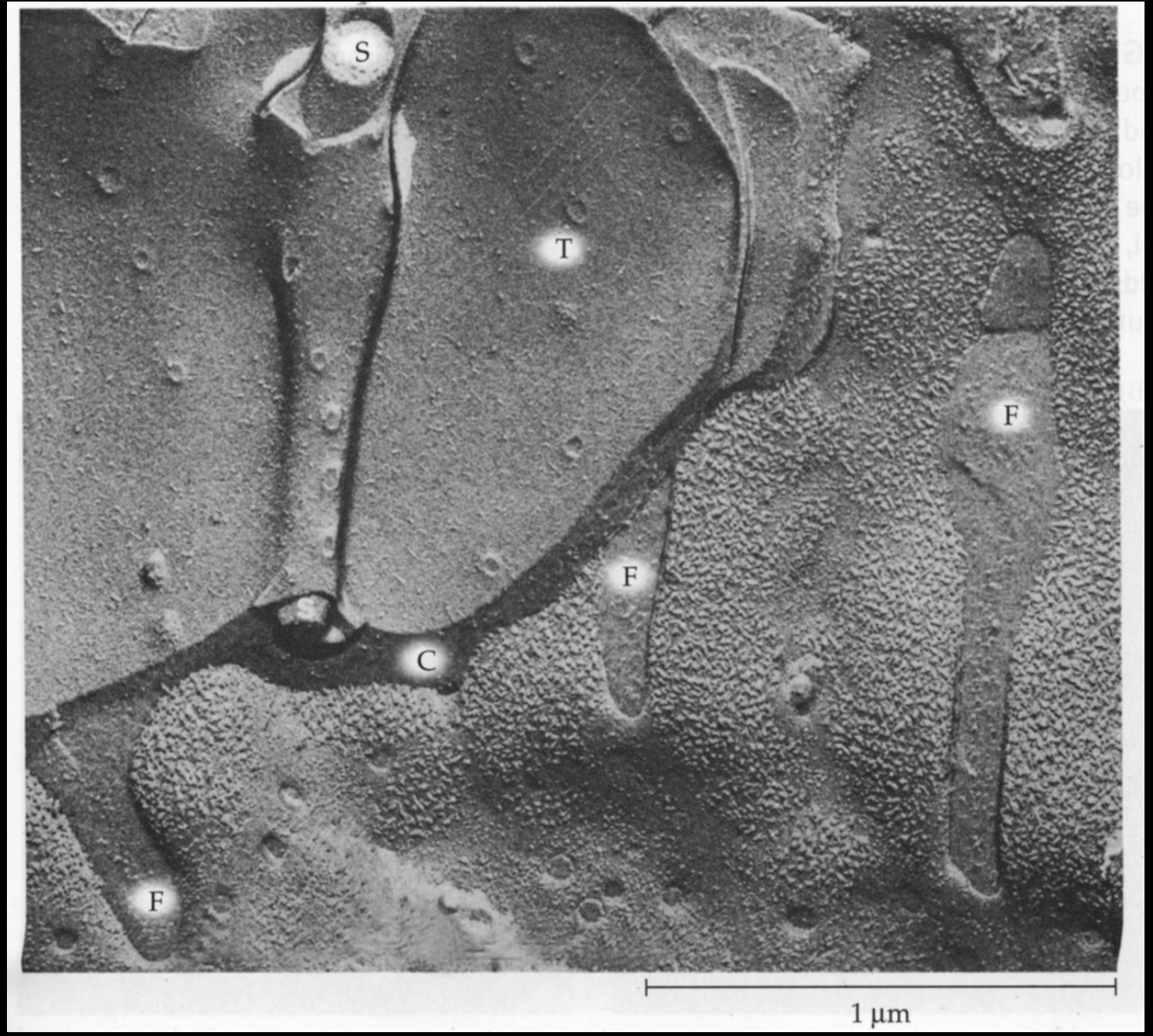

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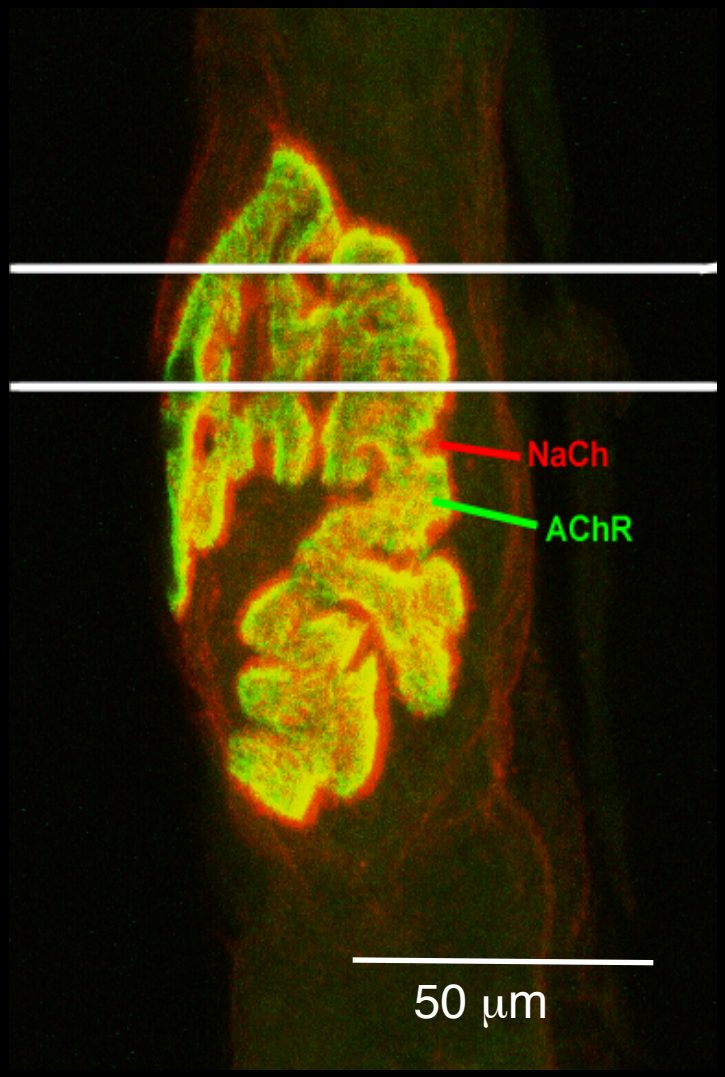
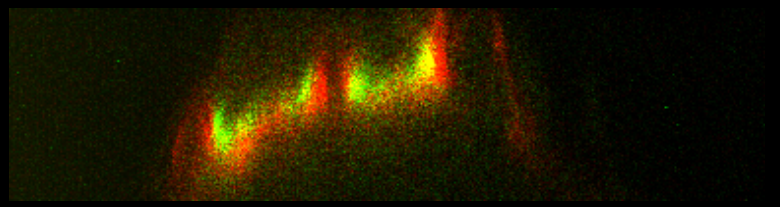
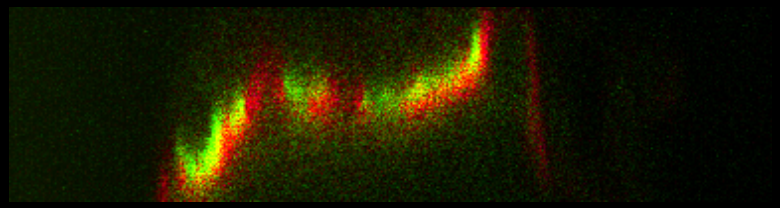
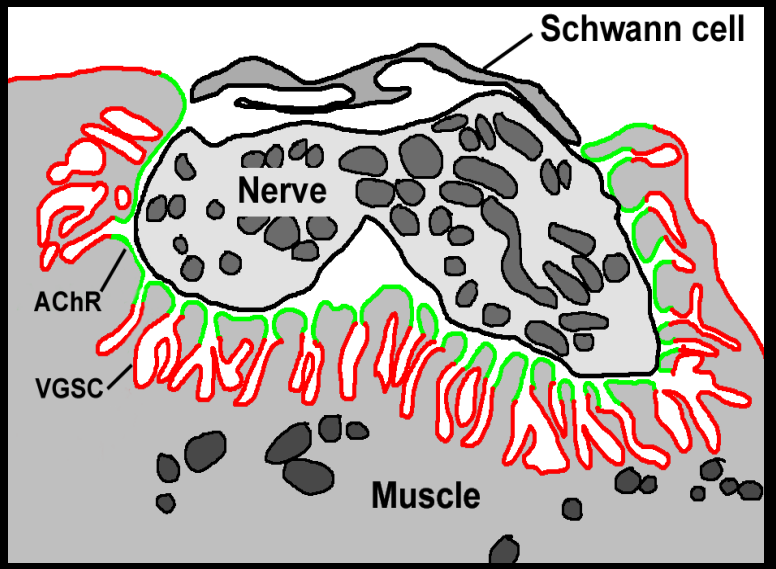
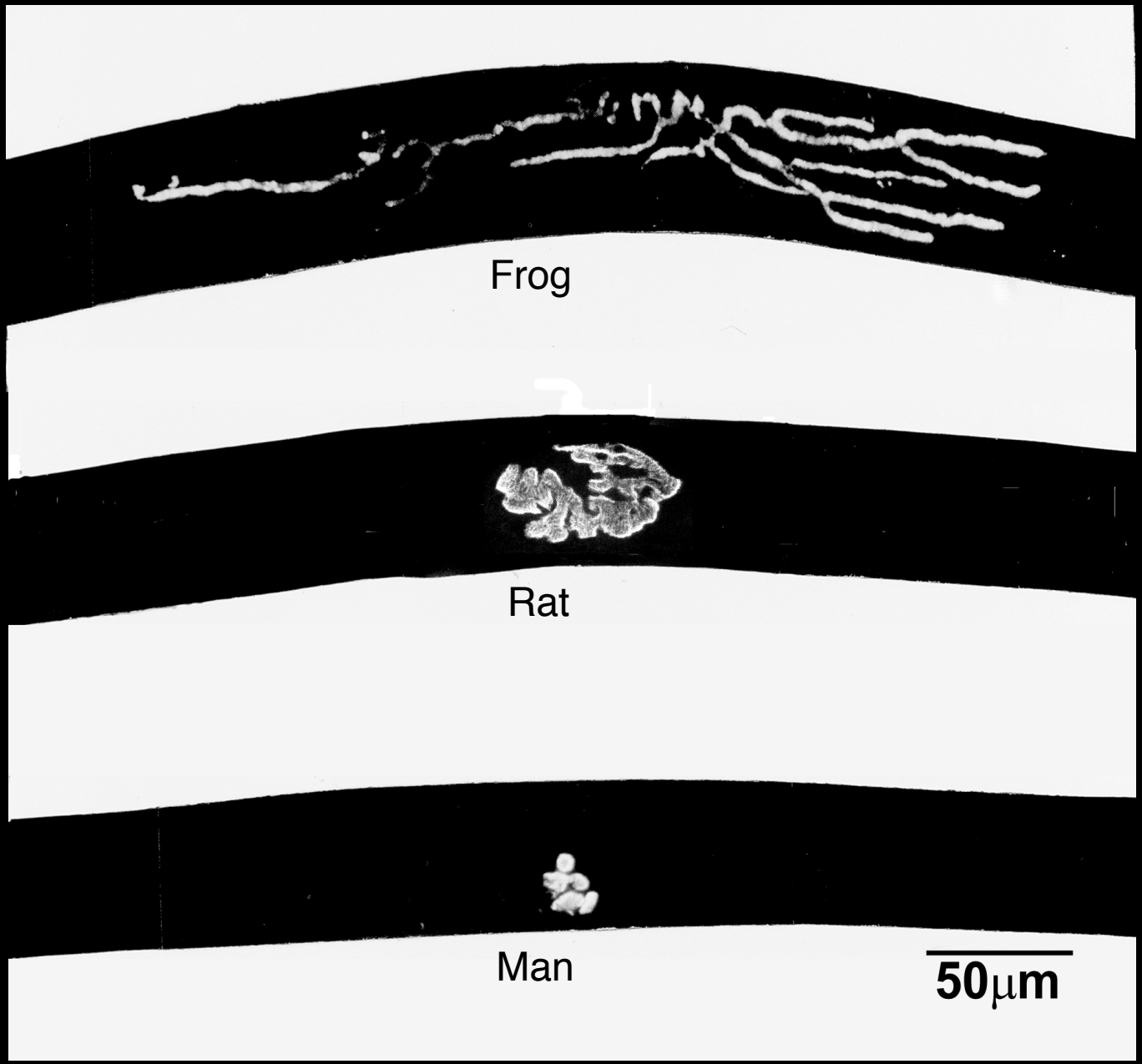




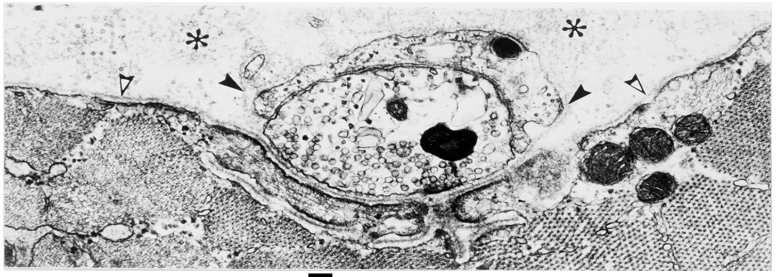




C.R. Slater, 2002



C.R. Slater, 2002



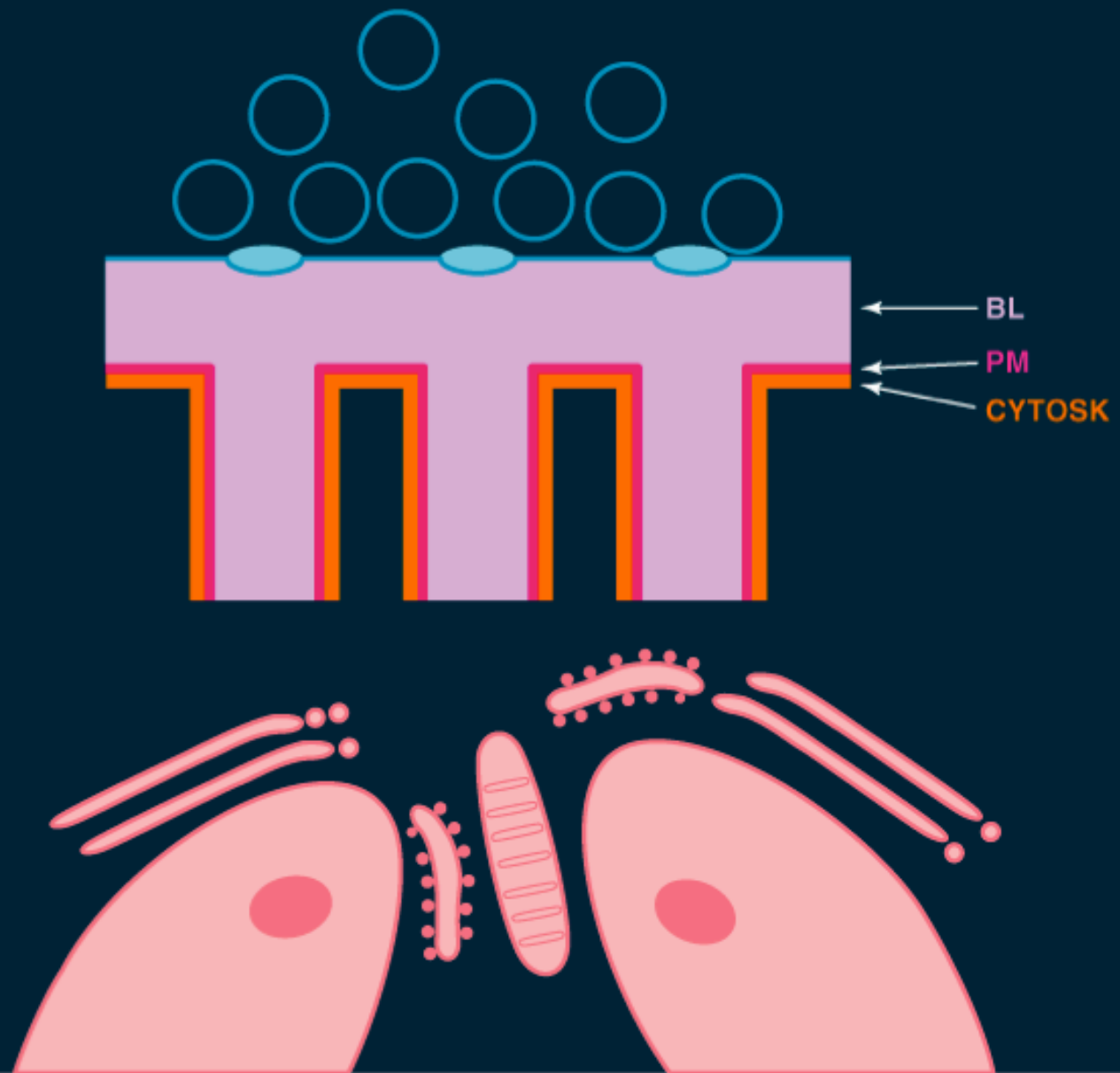
Frog

Rat

Man

C.R. Slater, 2002

Axon-induced Postsynaptic Apparatus



Basal Lamina
- acetycholinesterase
- agrin
- collagens
- heparin sulphate proteoglycan
- laminin A
- neuregulin
- s-laminin

Postsynaptic Membrane
- acetylcholine receptor ε
- neuregulin A
- erb B receptors 2, 3 & 4
- integrin
- MuSK
- N-CAM
- sodium channels

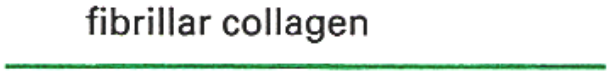
Cytoskeleton
- rapsyn
- vinculin
- talin
- paxillin
- filamin
- α-actinin
- tropomyosin 2
- 58k protein
- 87k protein
- utrophin
- acetylated tubulin
- ankyrin
- lamin B
- actin
- β-spectrin

McMahan / Colyear '98

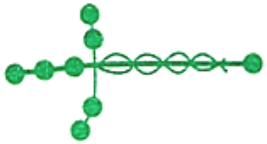
fibronectin

hyaluronan

fibrillar collagen

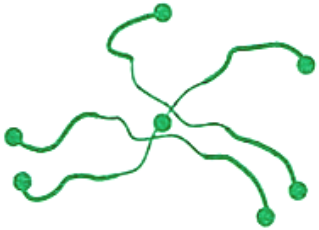


decorin

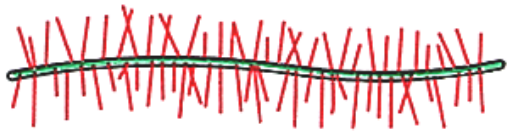


laminin

perlecan



tenascin



aggrecan

type IV collagen

100 nm

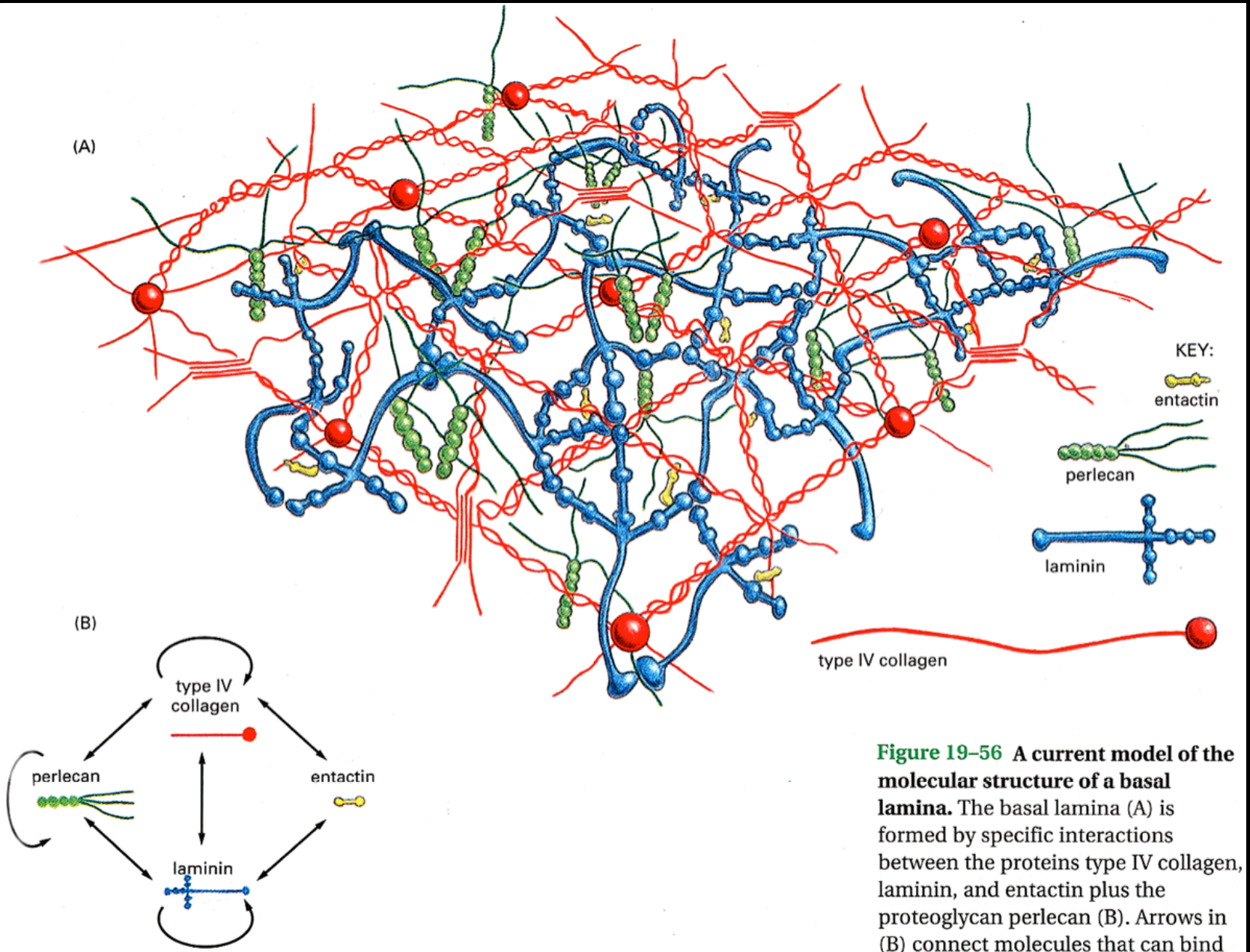


Figure 19–56 A current model of the molecular structure of a basal lamina. The basal lamina (A) is formed by specific interactions between the proteins type IV collagen, laminin, and entactin plus the proteoglycan perlecan (B). Arrows in (B) connect molecules that can bind directly to each other. (Based on P.D. Yurchenco and J.C. Schittny, *FASEB J.* 4:1577–1590, 1990.)

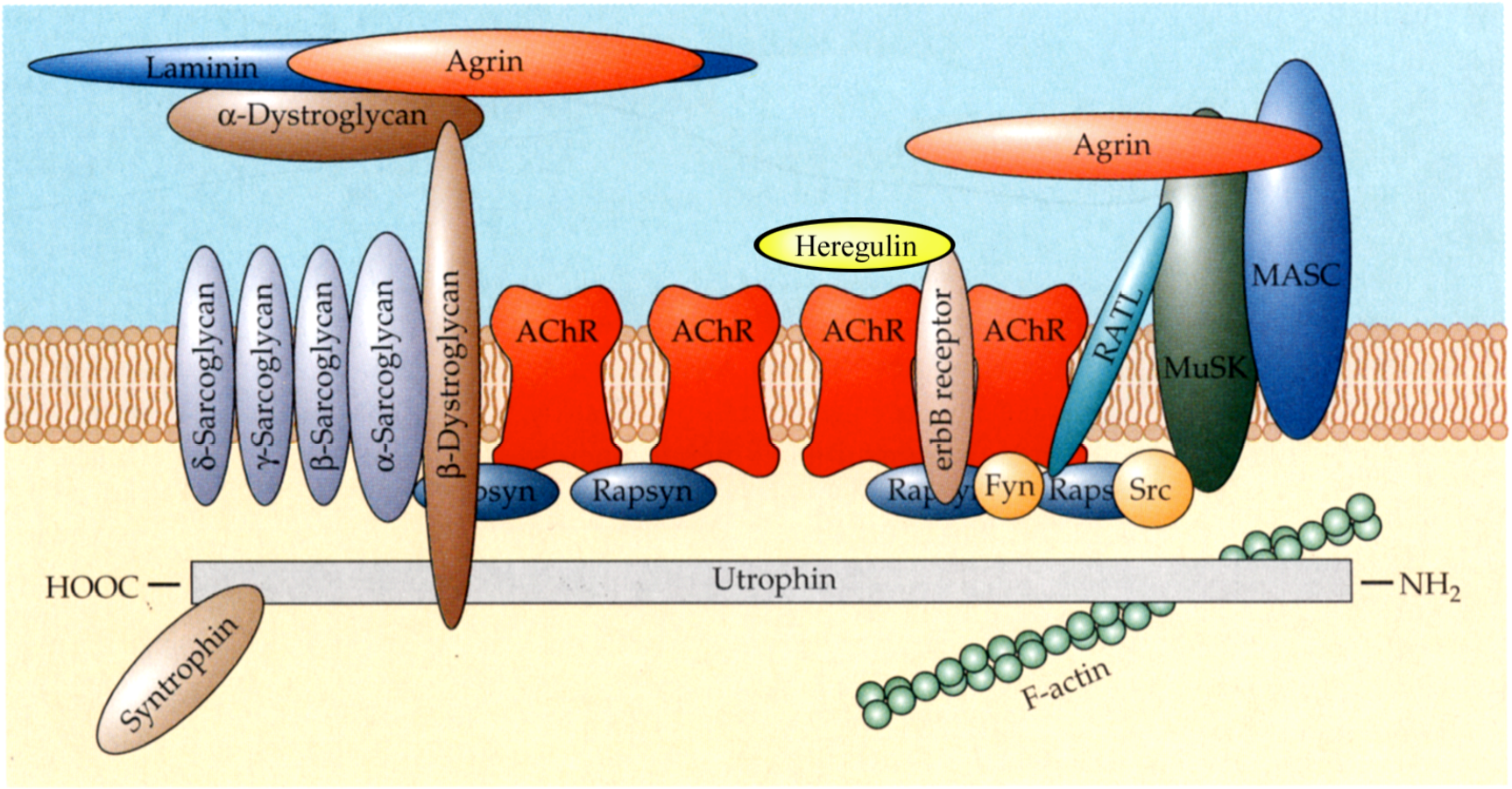
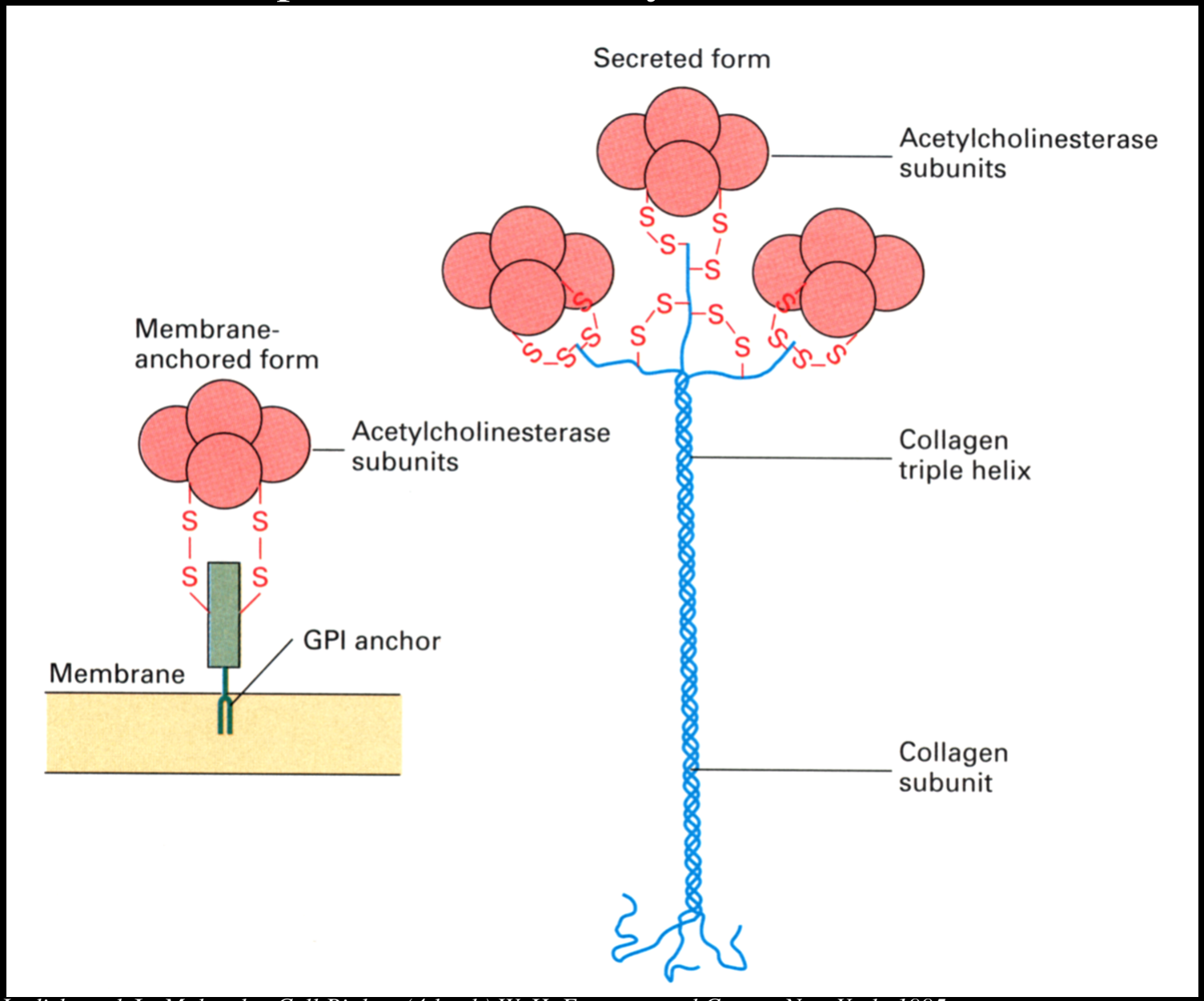


FIGURE 13.20 Postsynaptic Components of AChR-Rich Regions at the vertebrate skeletal neuromuscular junction. The dystrophin glycoprotein complex (utrophin, α- and β-dystroglycan, and the sarcoglycans) links together the actin cytoskeleton, the membrane, and the extracellular matrix. Agrin binds to laminin and α-dystroglycan and signals through the receptor tyrosine kinase MuSK to trigger formation of the postsynaptic apparatus during development (Chapter 23). Rapsyn plays a key role in linking MuSK and AChRs to the cytoskeleton. RATL and MASC are as yet unidentified components that mediate interaction of MuSK with rapsyn and agrin, respectively.

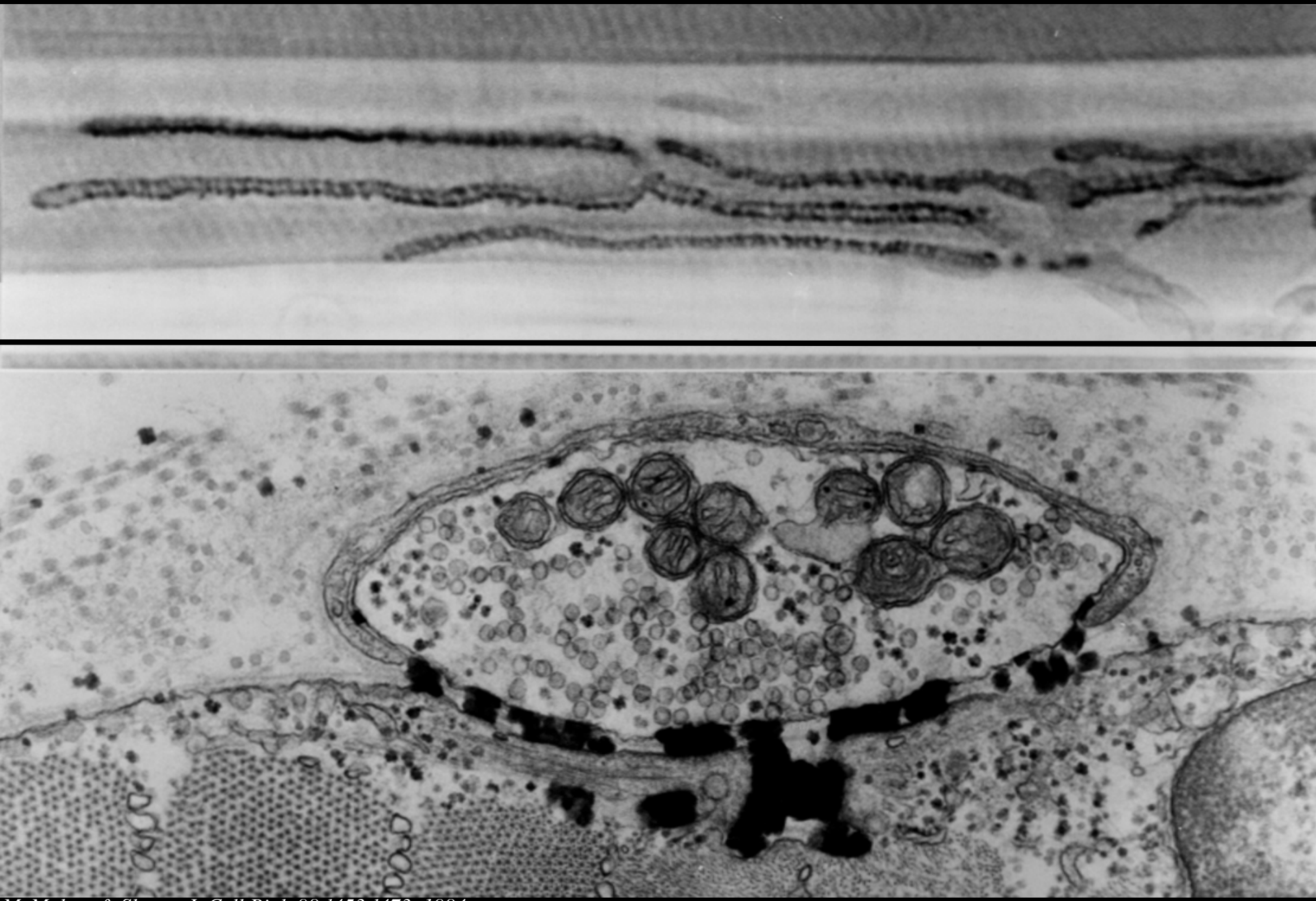
Nicholls, Martin, Wallace & Fuchs, 2001, Neuron to Brain (4th ed.) Sinauer Associates, Inc., Sunderland.

Principal Forms of Acetylcholinesterase



Lodish et al. In *Molecular Cell Biology(4th ed.) W. H. Freeman and Comp., New York, 1995*.

Frog NMJ: AChE stain



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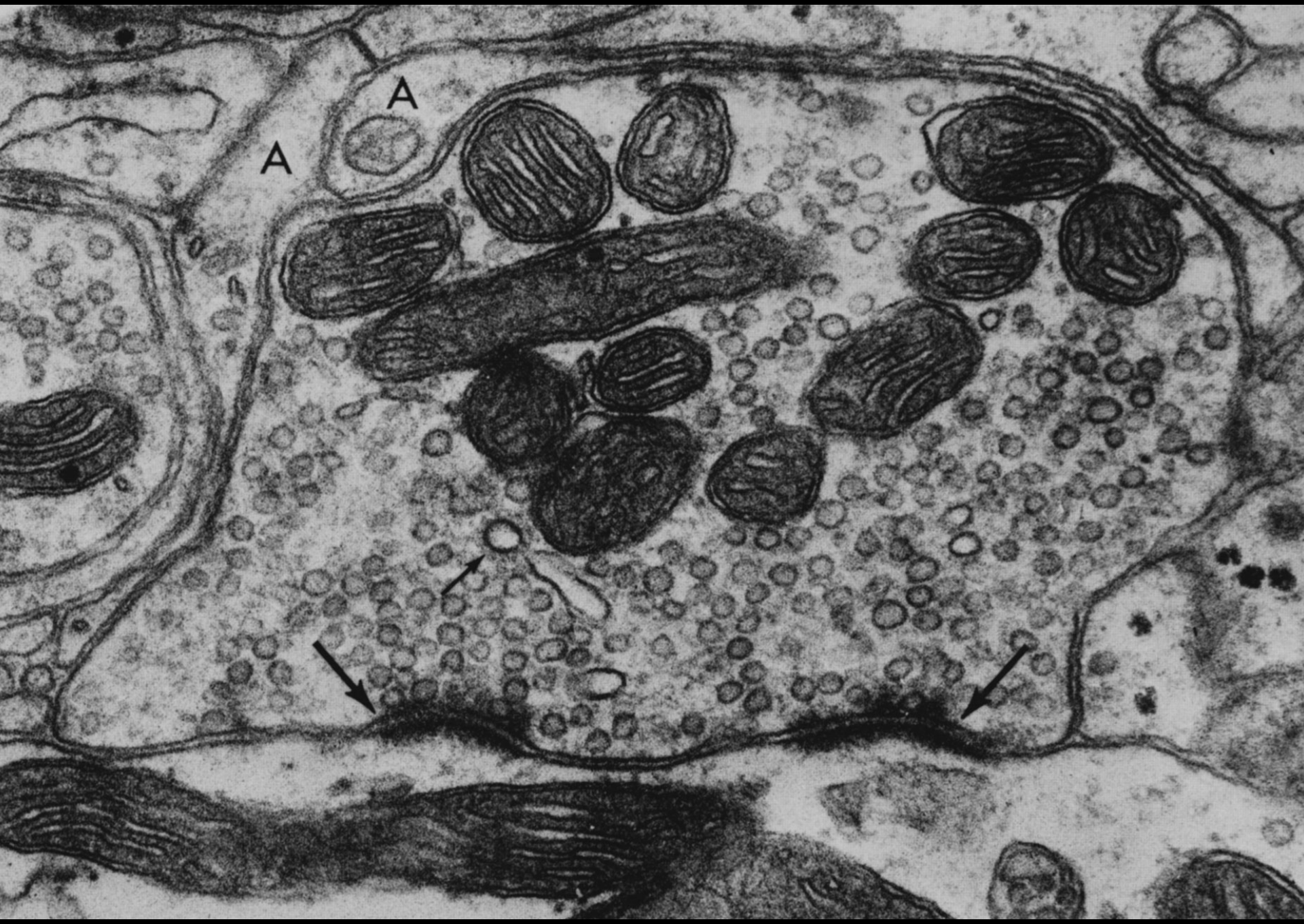
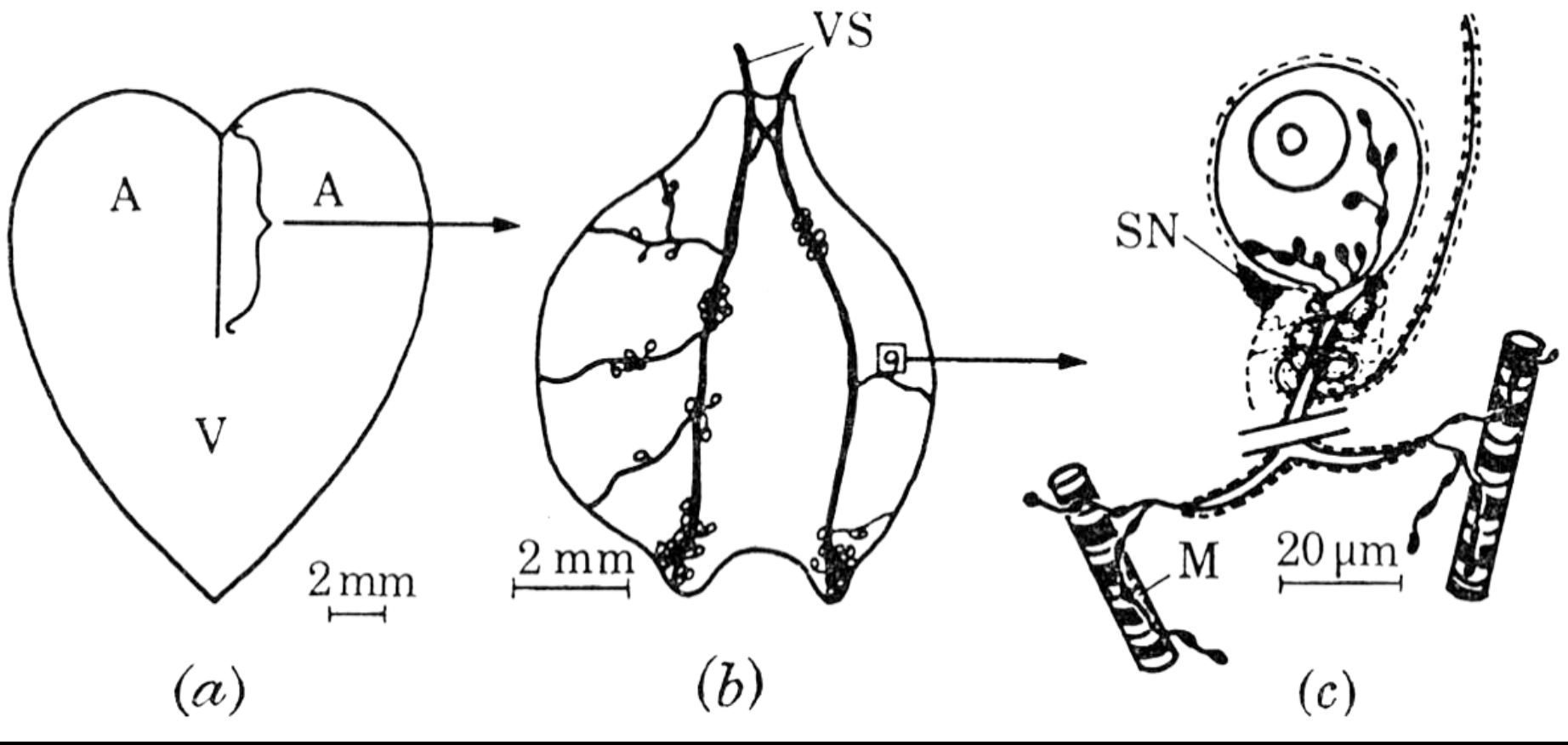
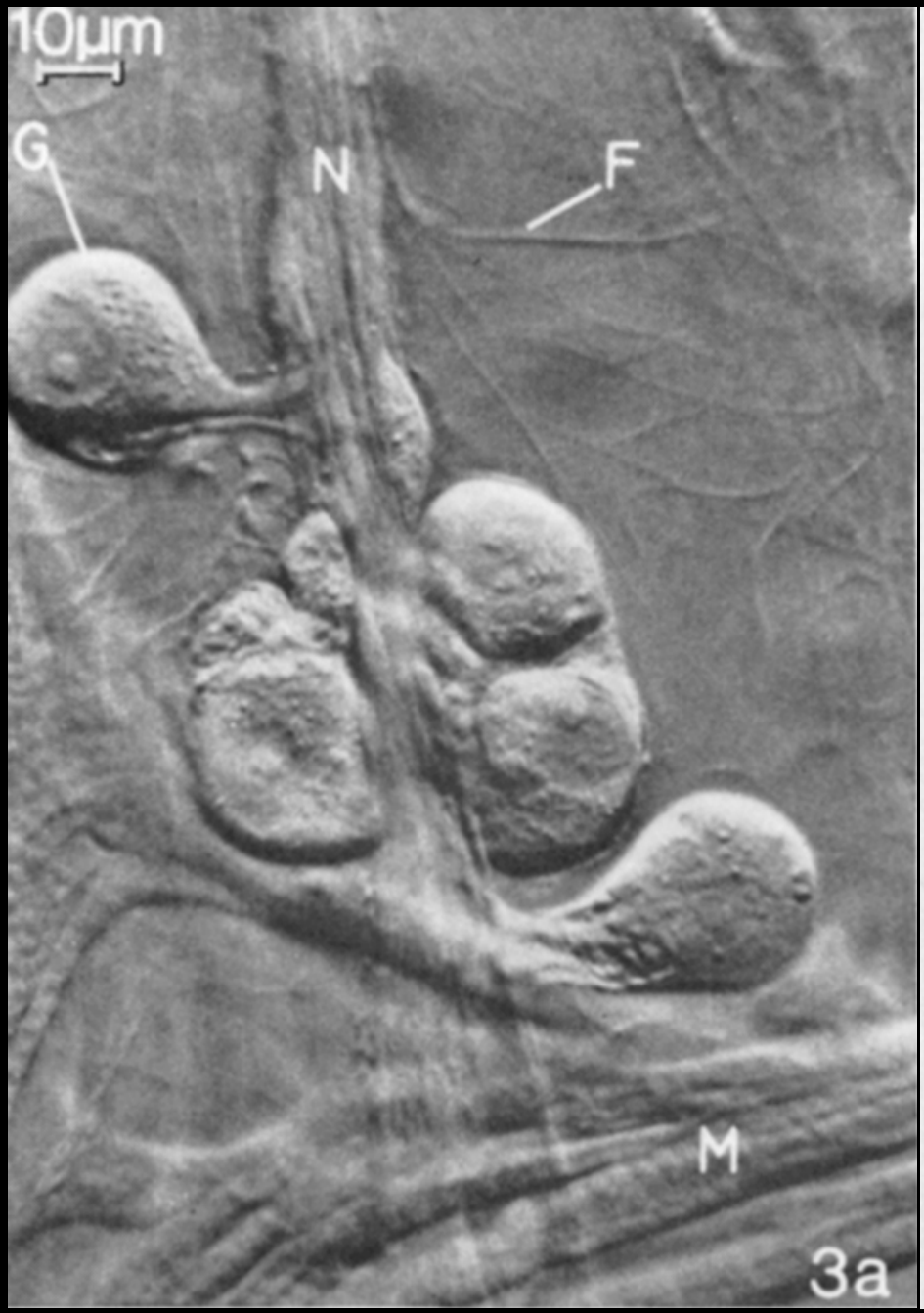
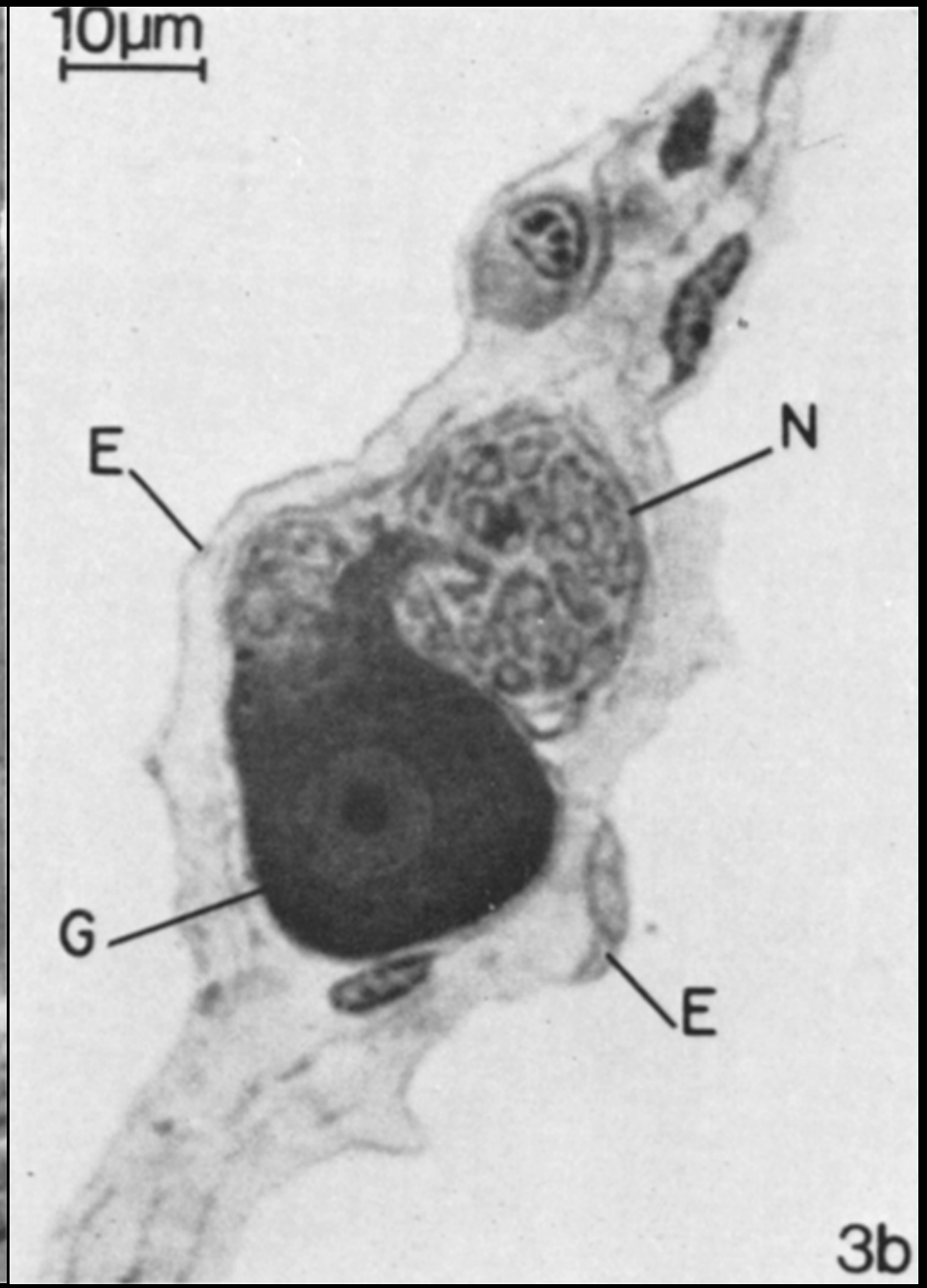


Heuser & Reese in Handbook of Physiology, Vol. I, 261-294, 1977



McMahan, U.J. & Kuffler, S.W. 1971 Proc. Roy. Soc. Lond. B. l77:485-508, 197l.





McMahan, U.J. & Kuffler, S.W. Proc. Roy. Soc. Lond. B. 177:485

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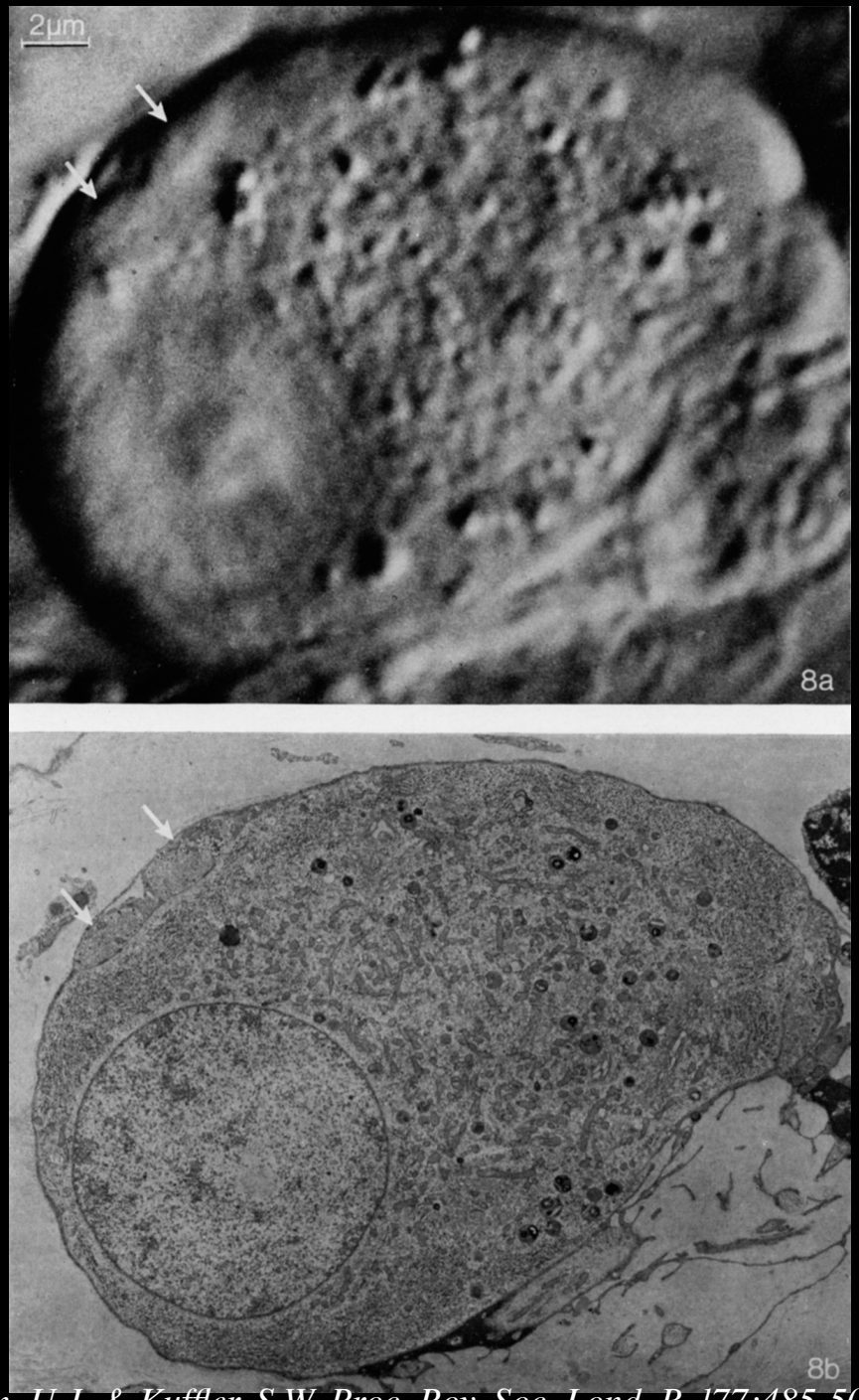

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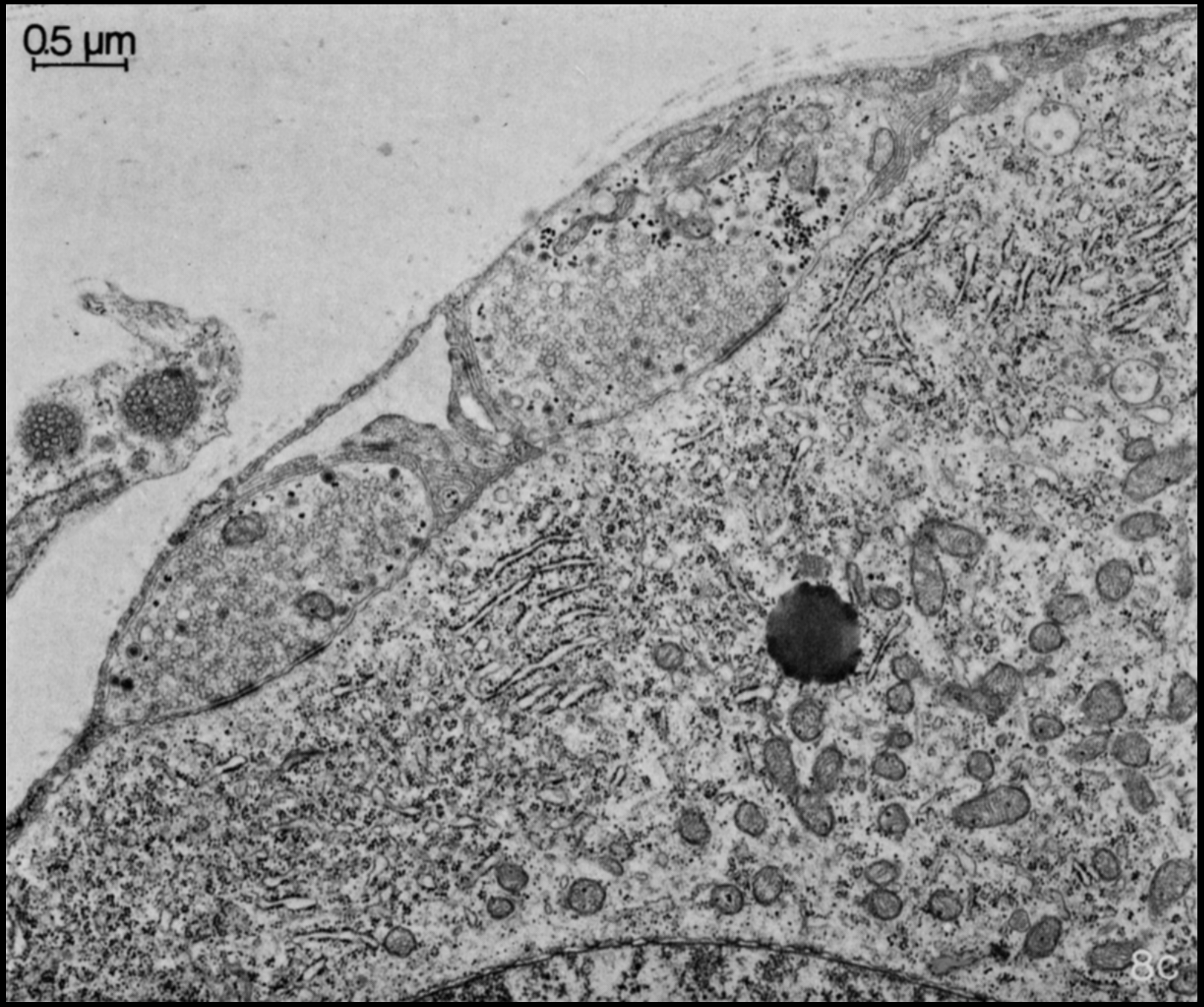

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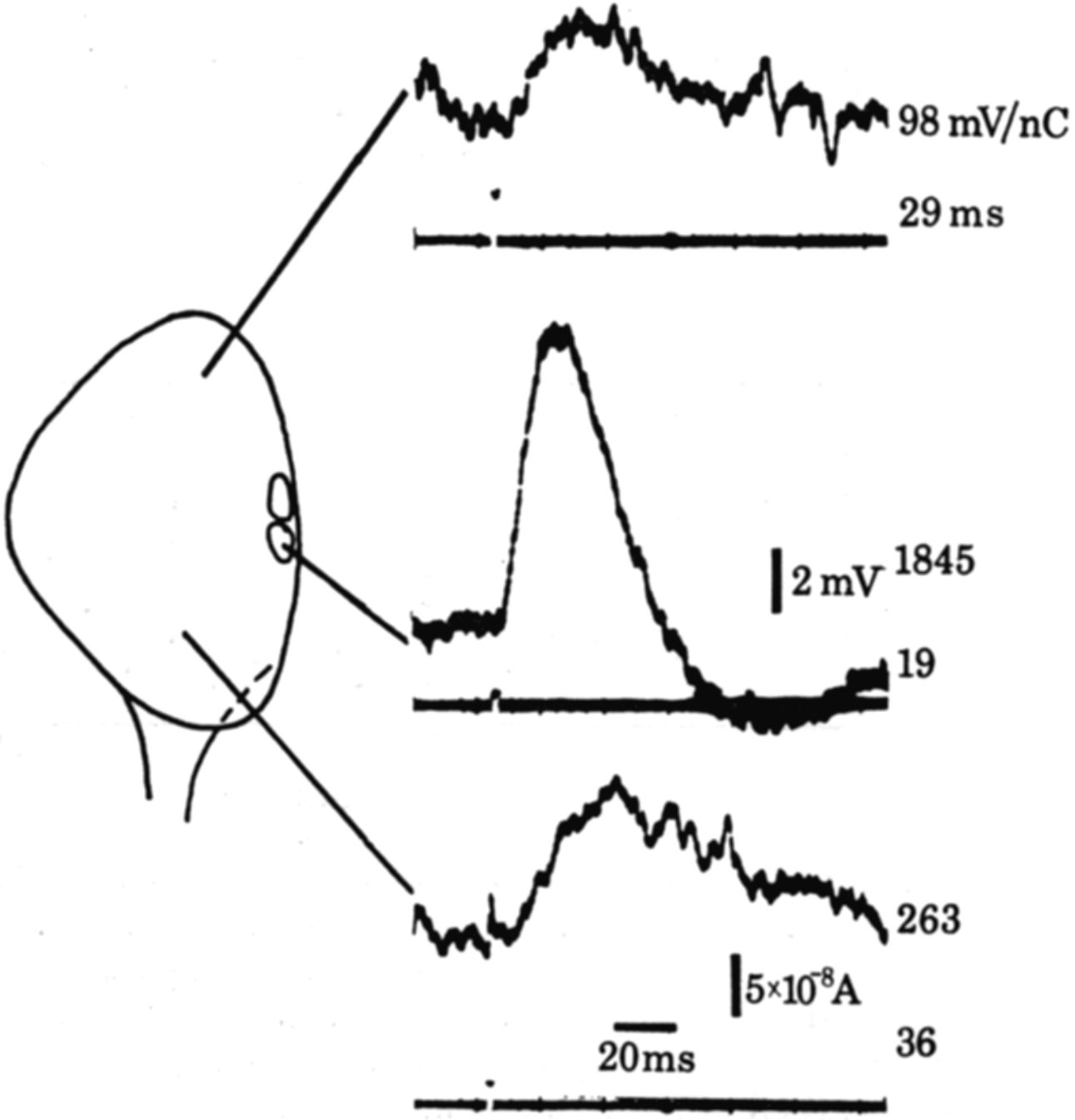
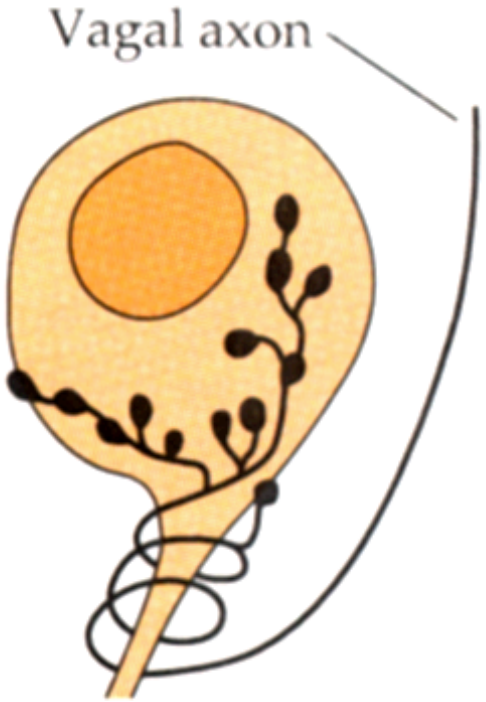
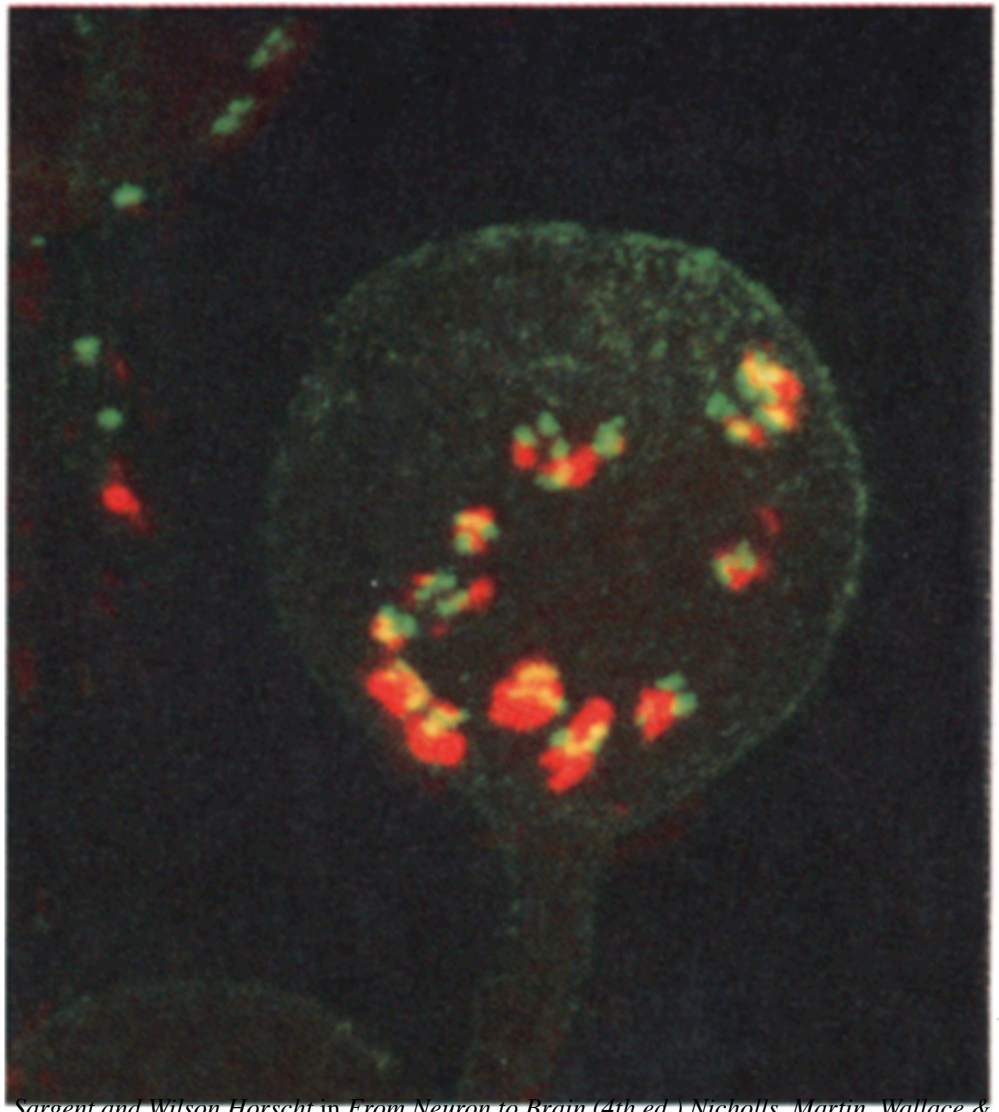


Kuffler, Harris and Dennis. Proc. Roy. Soc. Lond. B.

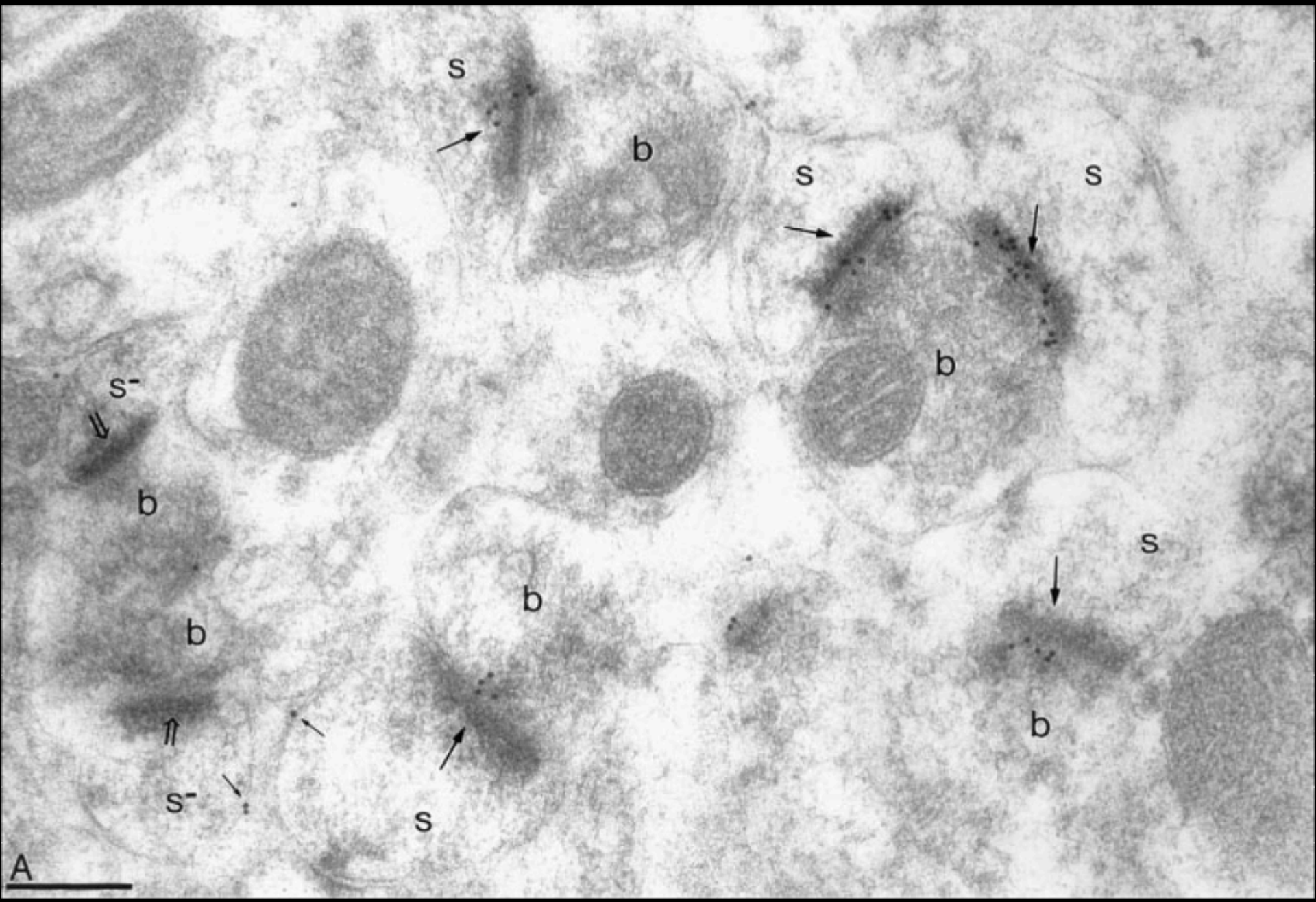
(A)



(B) Normal



Sargent and Wilson Horscht in *From Neuron to Brain (4th ed.) Nicholls, Martin, Wallace & Fuchs(2001), Sinauer Associates, Inc., Sunderland.*



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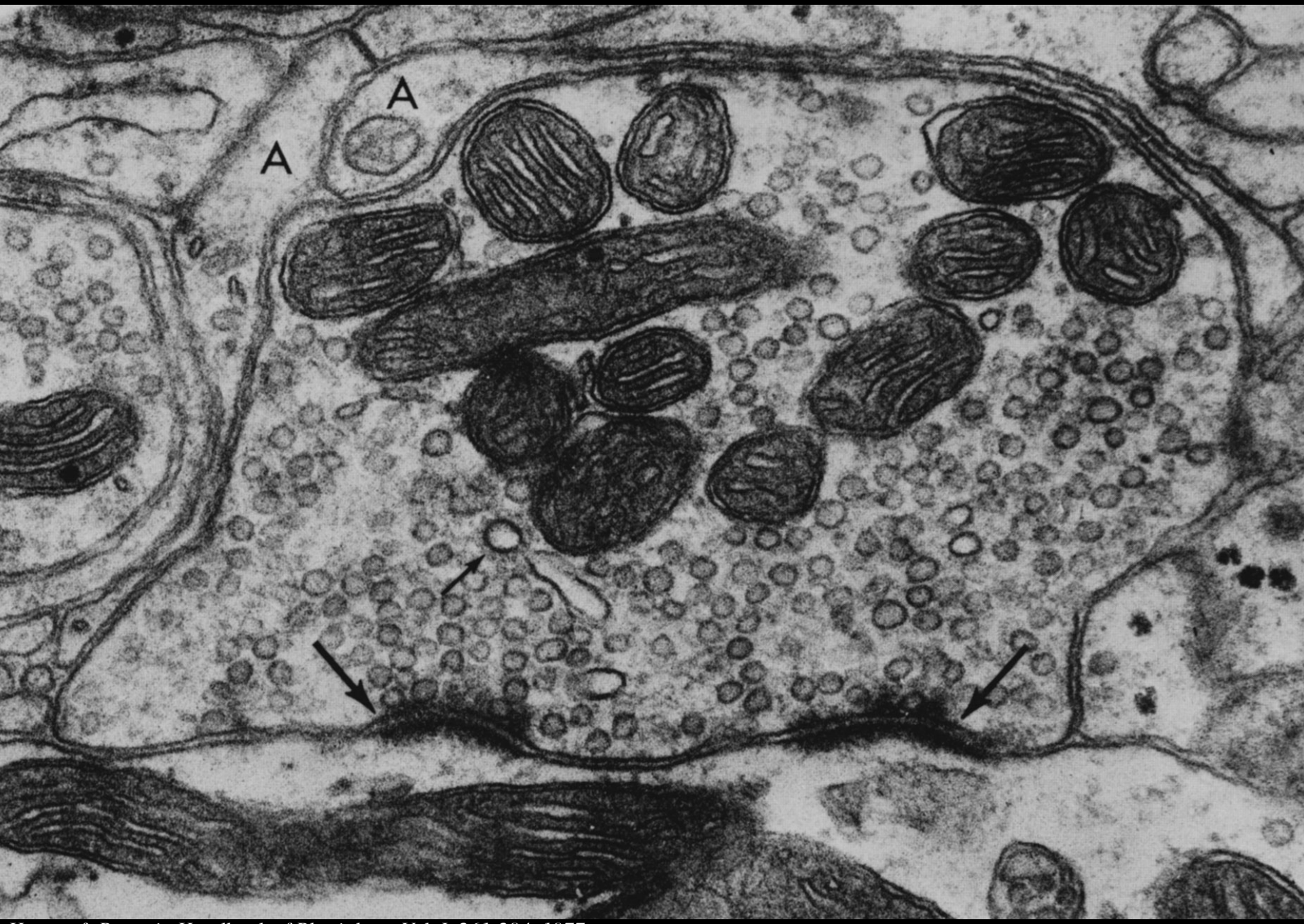


Heuser & Reese in Handbook of Physiology, Vol. I, 261-294, 1977.

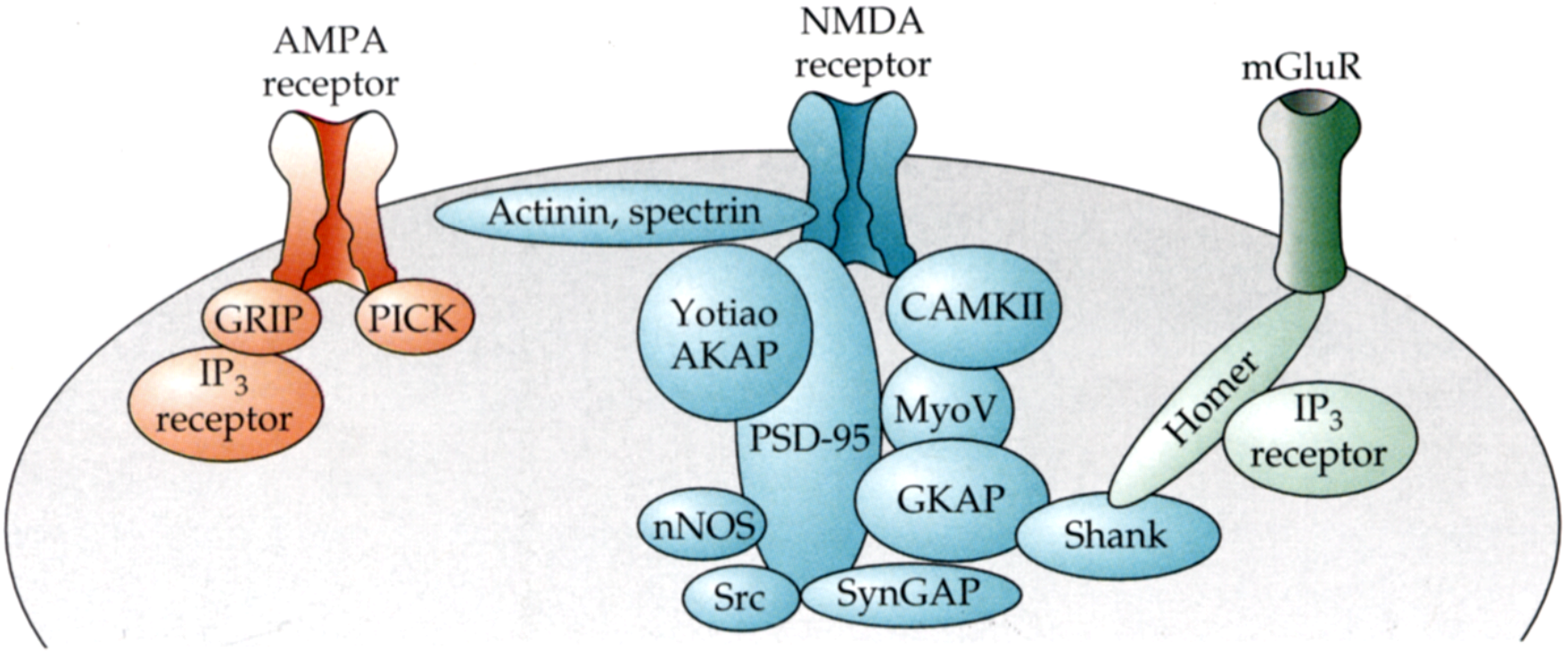
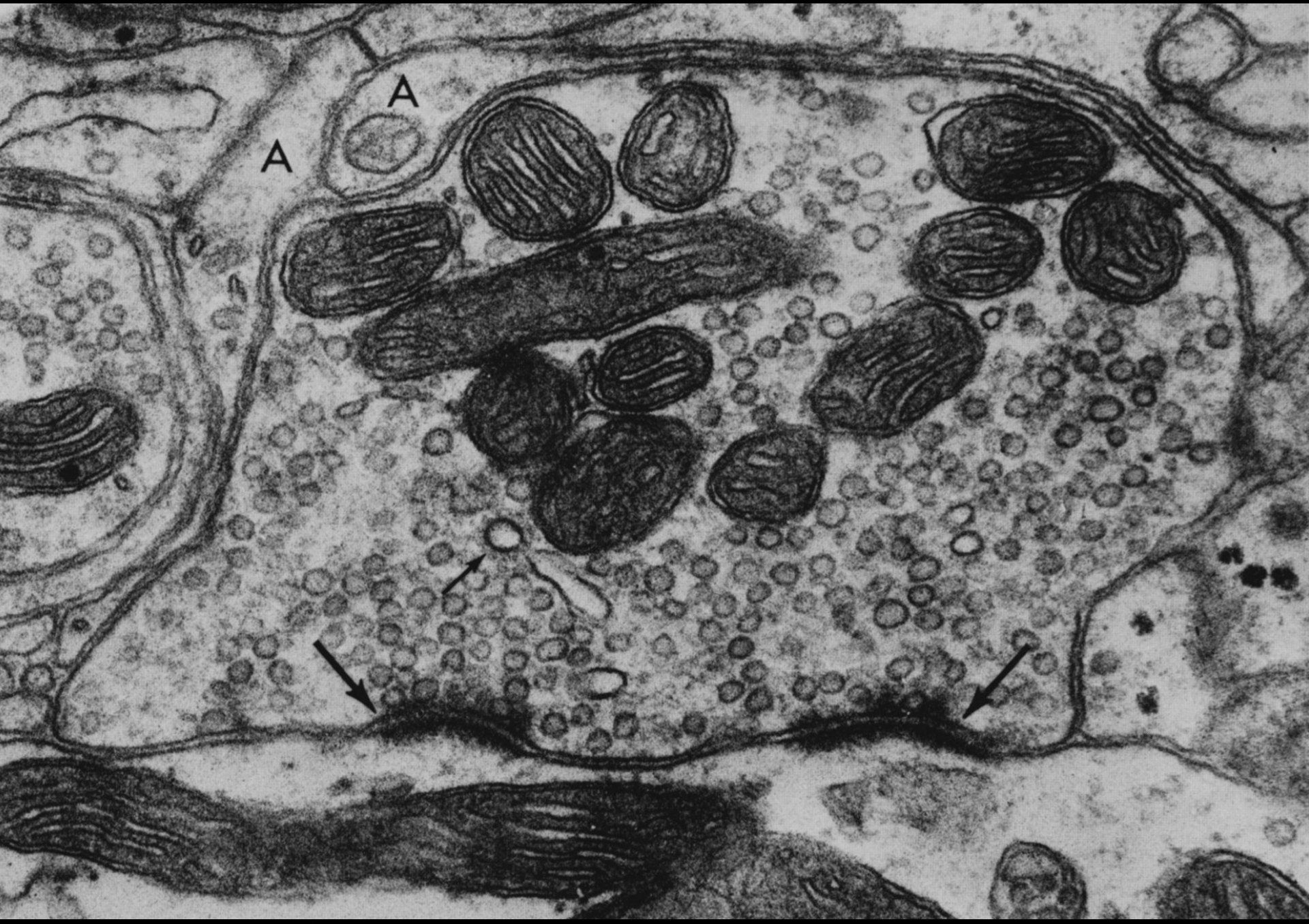


FIGURE 13.21 Glutamate Receptors Are Linked to a Postsynaptic Scaffold that includes proteins involved in intracellular signaling cascades. Members of the GRIP protein family link AMPA receptors to the IP_3 receptor. PSD-95 and its homologues connect NMDA receptors to Yotiao, nNOS, Src, SynGAP, and GKAP. CaMKII binds to NMDA receptors and to MyoV. The Homer protein family links metabotropic glutamate receptors to Shank and thereby to the NMDA receptor complex. (After Sheng and Lee, 2000.)

Nicholls, Martin, Wallace & Fuchs, 2001, From Neuron to Brain (4th ed.) Sinauer Associates, Inc., Sunderland.



Heuser & Reese in Handbook of Physiology, Vol. I, 261-294, 1977

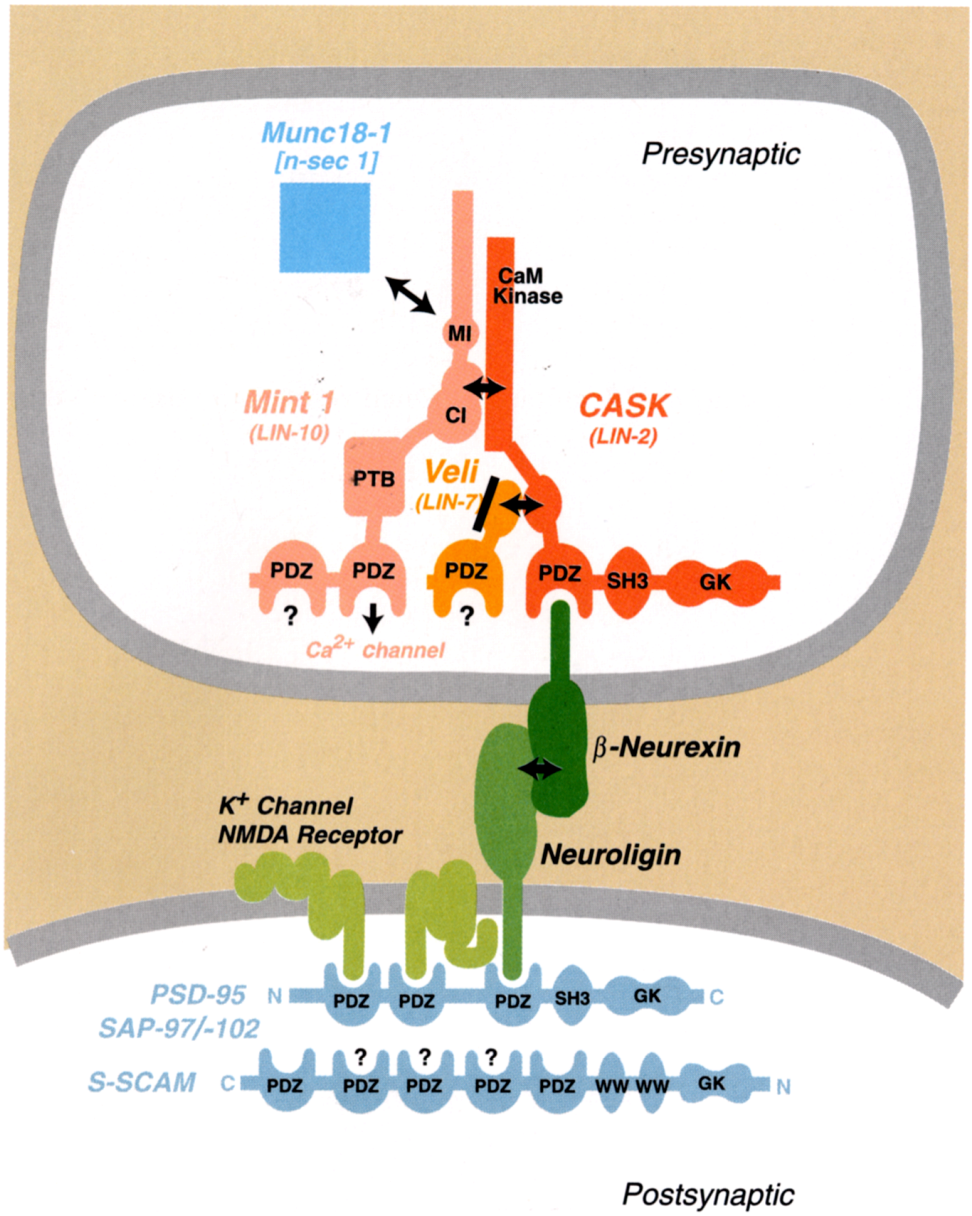


Figure 6.6. Model of the intercellular junctions formed by the β-neurexin–neuroligin interaction and coated by PSD-95 and S-SCAM on the postsynaptic side and by CASK, mint 1, and velis on the presynaptic side. The localization of this junction to synapses is a model based on the presence of CASK, neuroligin 1, and PSD-95 at this structure. Modified from Butz et al. (1998).

Südhof, T.C. (2001) The Synaptic Cleft and Synaptic Cell Adhesion in *Synapses ed. by Cowan, Südhof & Stevens. The Johns Hopkins University Press/ Baltimore*