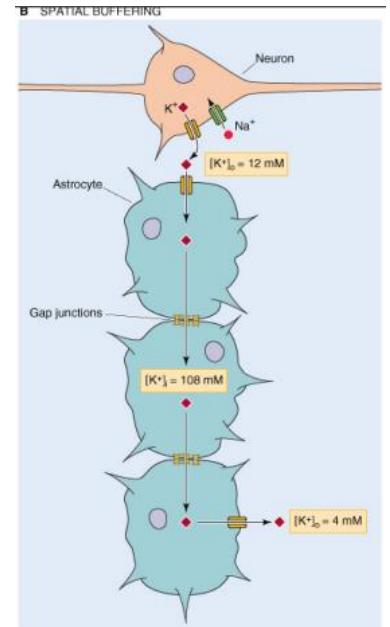
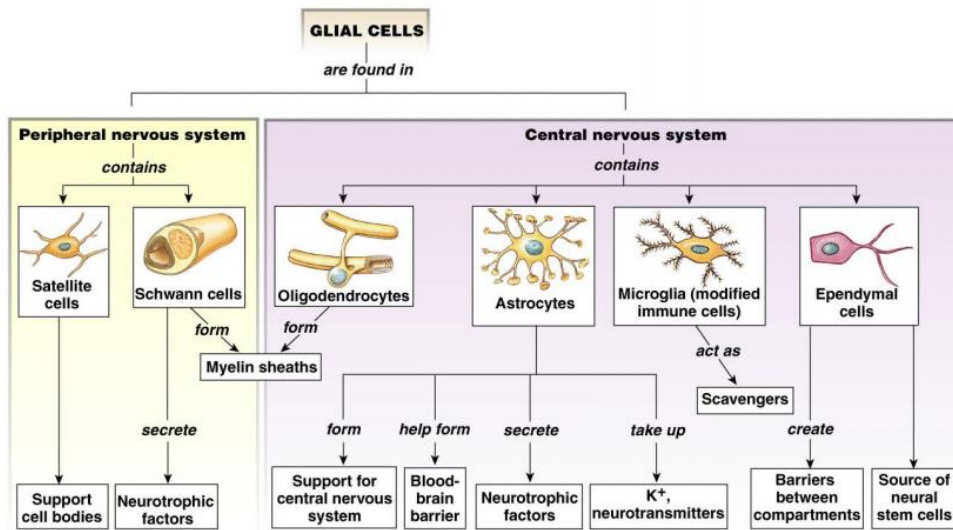


NEUR30002 Course Summary Notes

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Lectures 1-9



Astrocytes

- Location
 - **CNS only**
 - Restricted to small areas where processes patrol
 - Neurons are squished in between
- Roles
 - Secrete neurotrophic factors (support growth, survival and differentiation of both developing and mature neurons)
 - Take up K^+ and neurotransmitters
 - End action potentials, and prepare synaptic cleft for the next one
 - Must be rapid – as small changes have large effects on the synaptic cleft concentration
 - K^+ crosses between astrocytes linked by gap junctions (6 connexins form connexon on each cell)
 - Gap junctions discriminate only by size – enables full ion flow preventing charge build-up
 - Responsiveness/signalling
 - Via neurotransmitters
 - **DO NOT conduct action potentials**
 - Depolarisation of cell initiates Ca^{2+} entry, releasing **gliotransmitters** which jump between cells **via gap junctions**
 - Also occurs through vesicular release
 - Allows signalling across larger gaps (with **ATP used as transmitter**)
 - Binds via GPCRs on other astrocytes
 - Generally act as a bridge between many elements in the CNS
 - Neurons
 - Blood vessels
 - Neighbouring domains
- Blood-brain barrier
 - Processes (“arms” of astrocytes) associate with endothelial cells of blood vessels
 - Prevents brain cells absorbing everything out of blood vessels – only what is required is transported across
 - Eg: high level of blood glutamate after meal – prevented from crossing blood-brain barrier and overstimulating neurons

Action Potentials

Resting Membrane Potential (RMP)