

Cogs 107b – Systems Neuroscience

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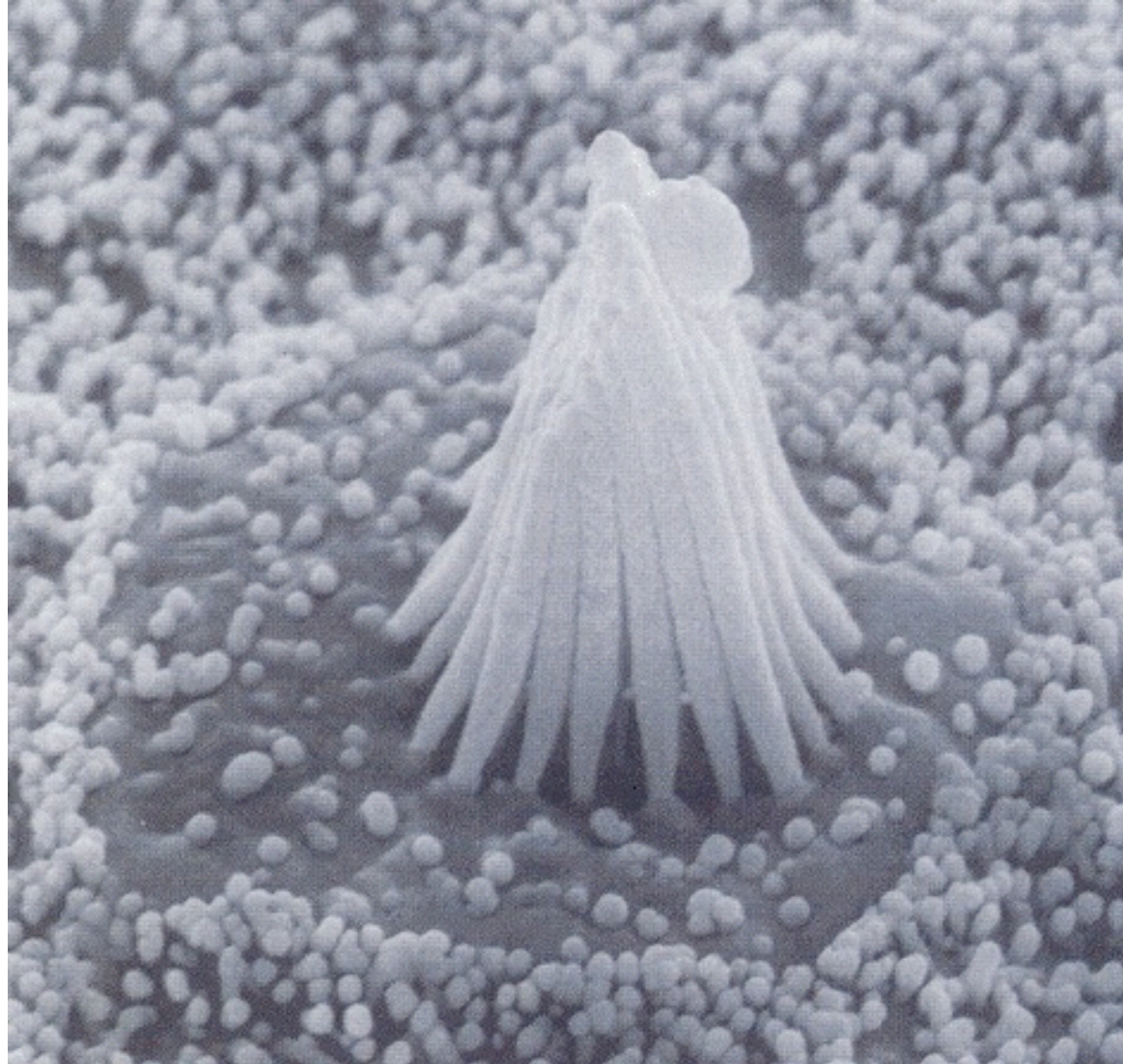
the vestibular system



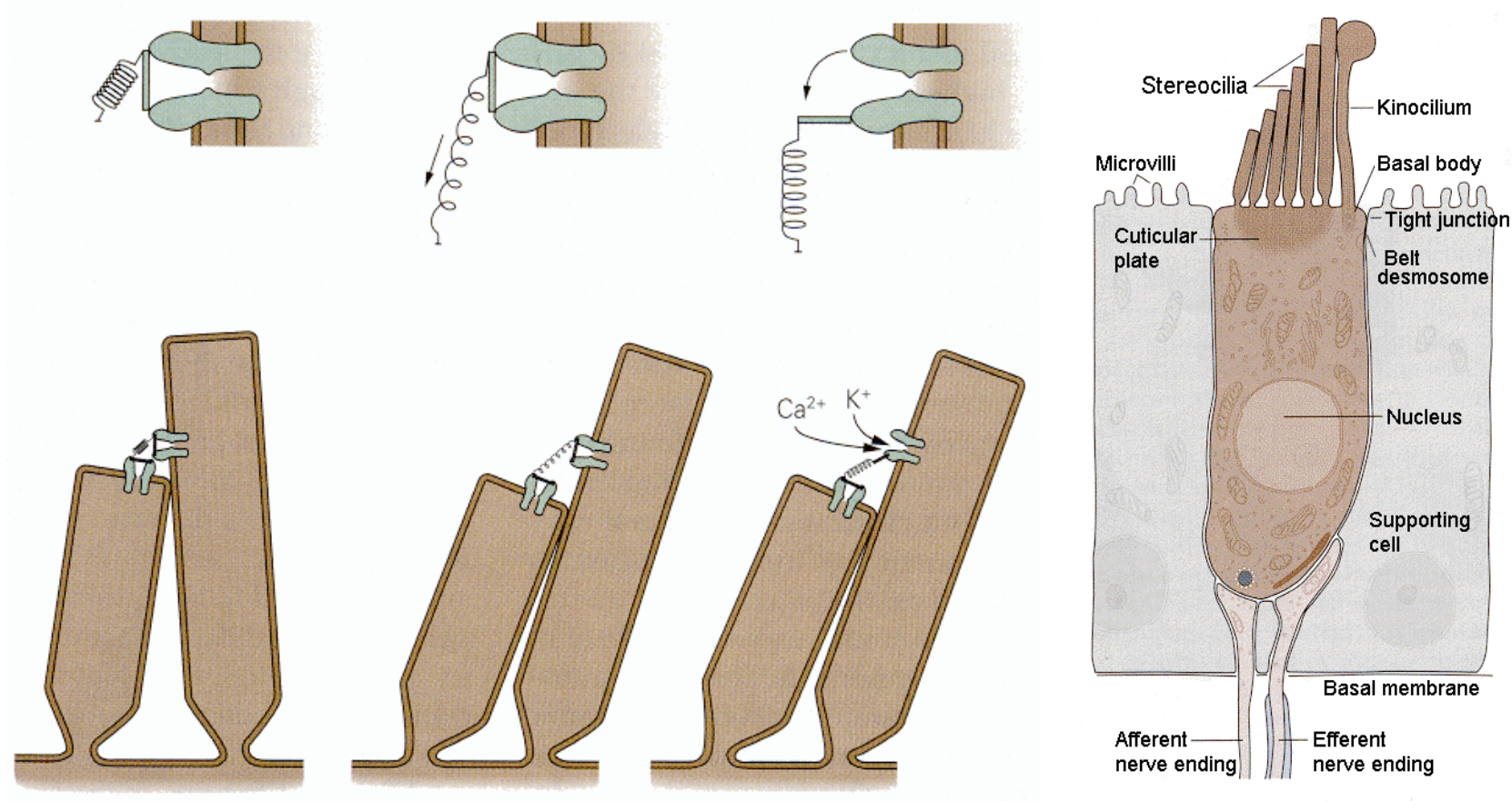
functions of the vestibular system:

- postural reflexes**
- gaze adjustment**
- assessment of self motion**
- a reason not to drink too heavily?**

**the 'hair cell' receptor – transduction of both head motion (vestibular system)
and sound waves (auditory system) into neural signals**

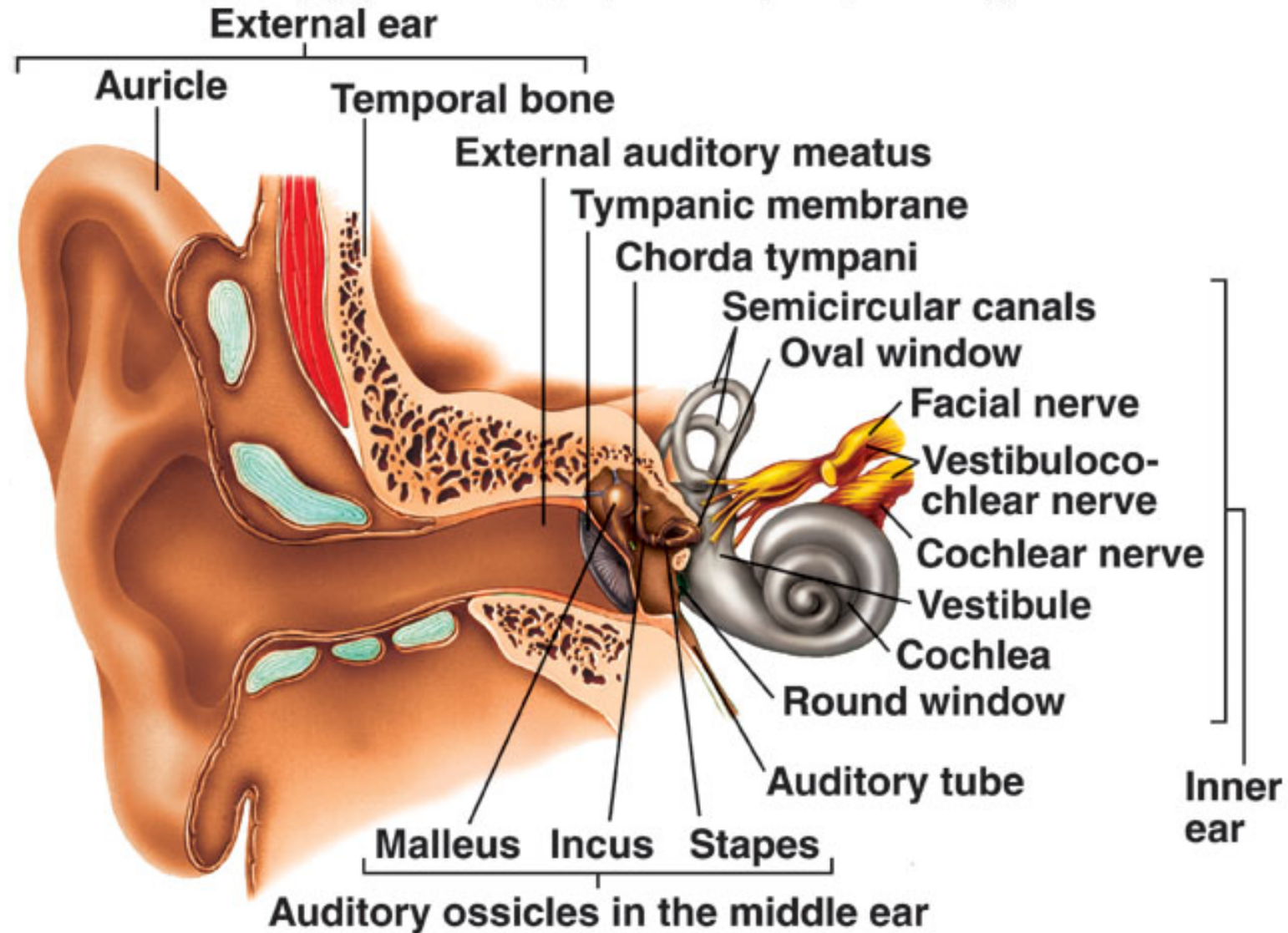


the 'hair cell' receptor – transduction of both head motion and sound

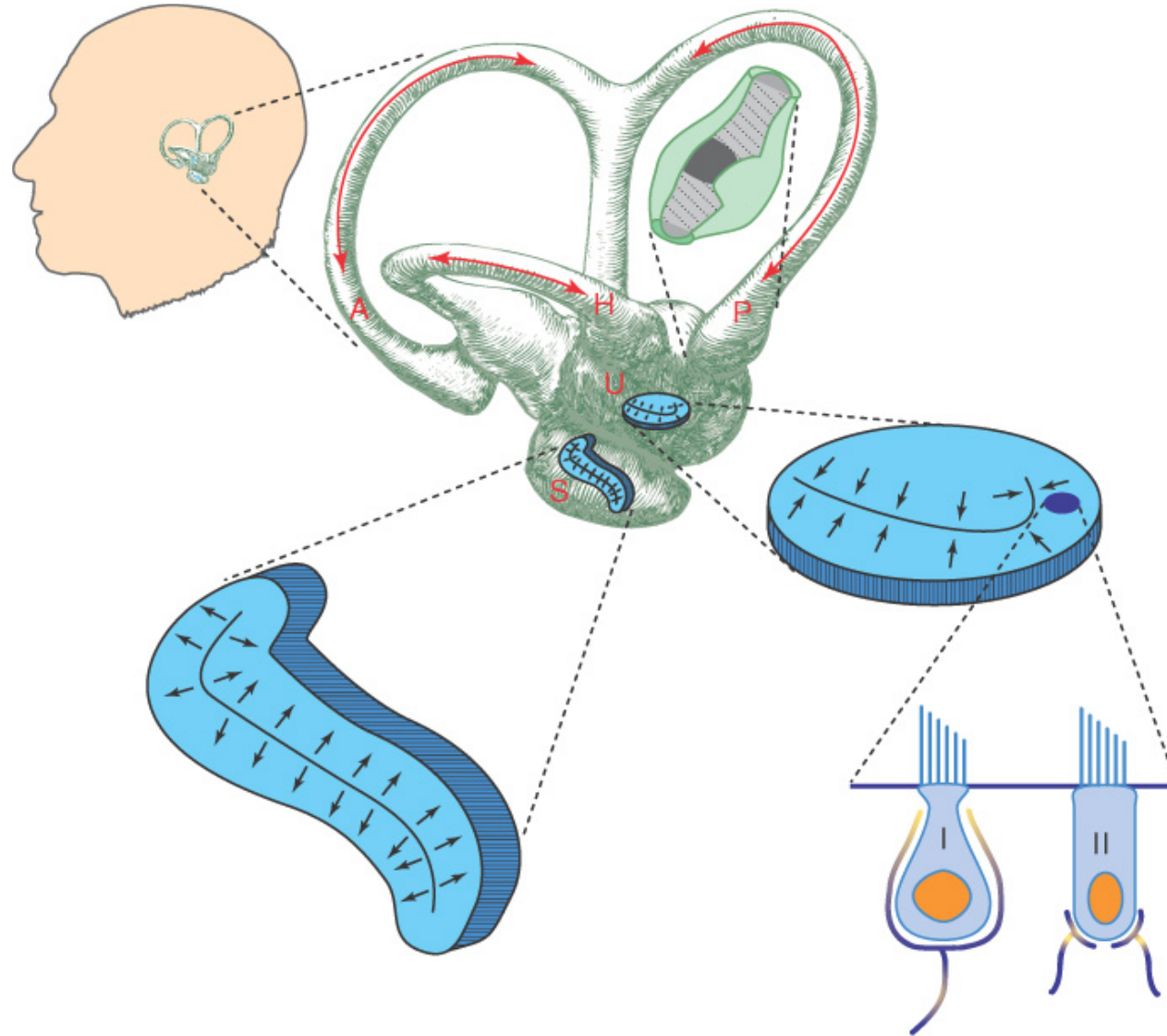


the inner ear

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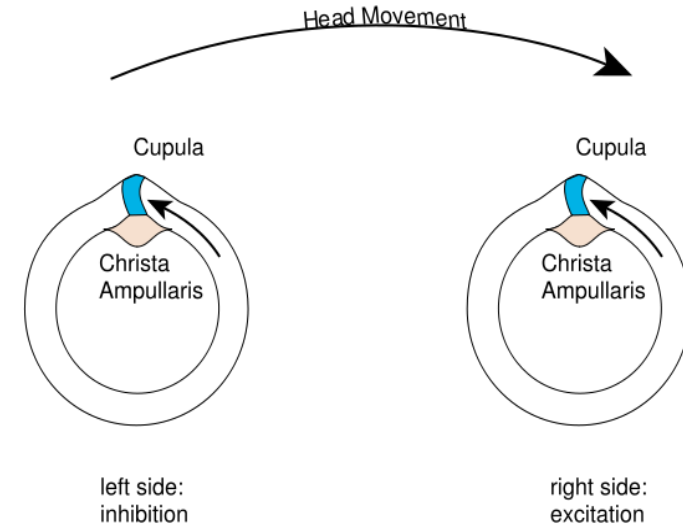
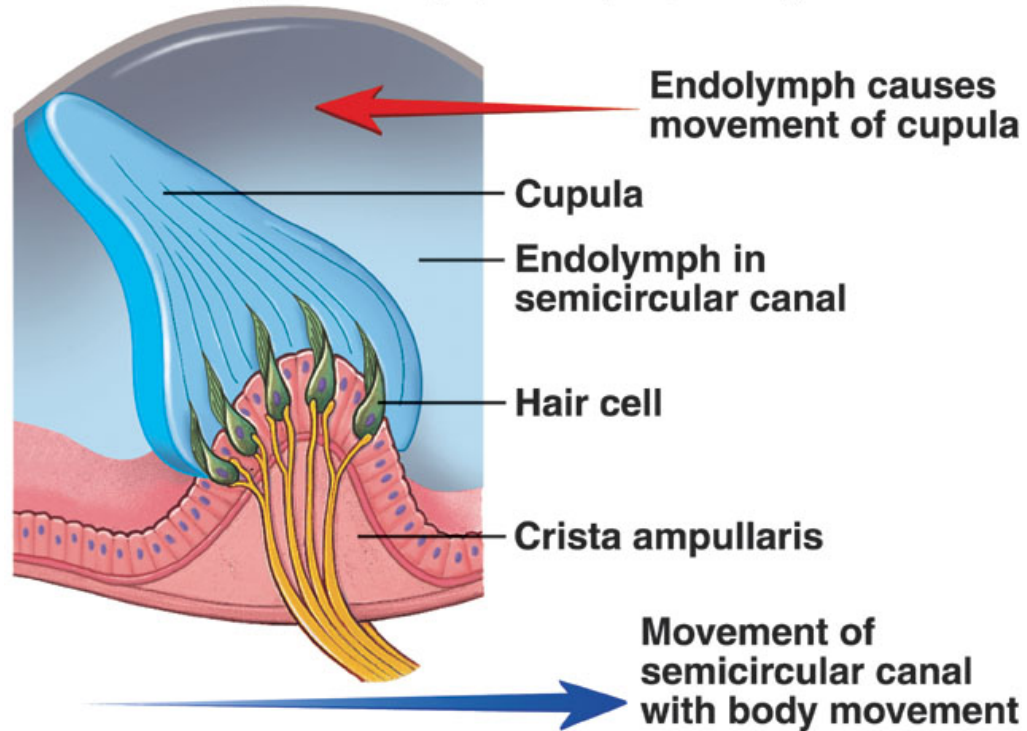


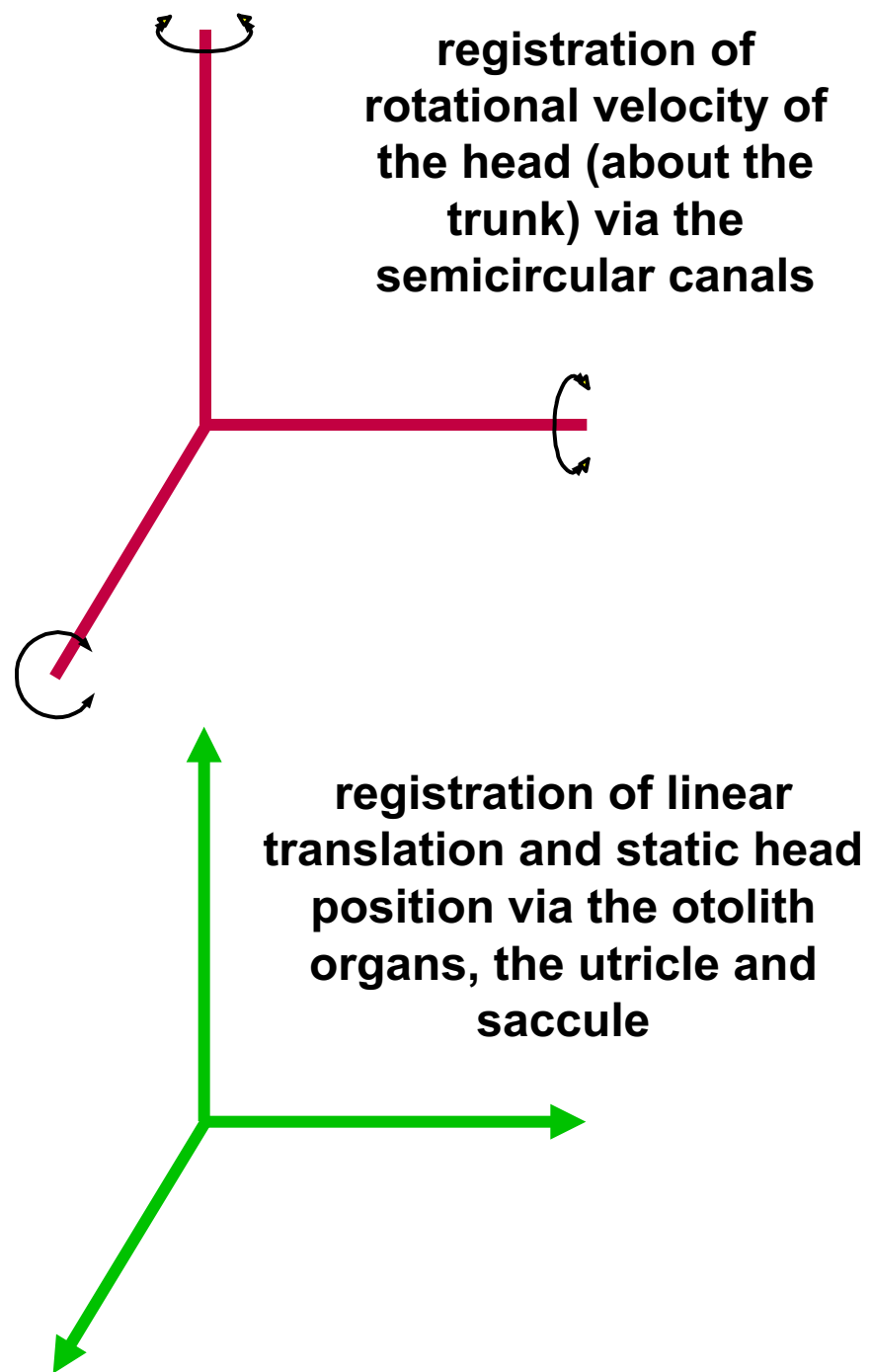
orthogonal orientation of the semicircular canals and otolith organs



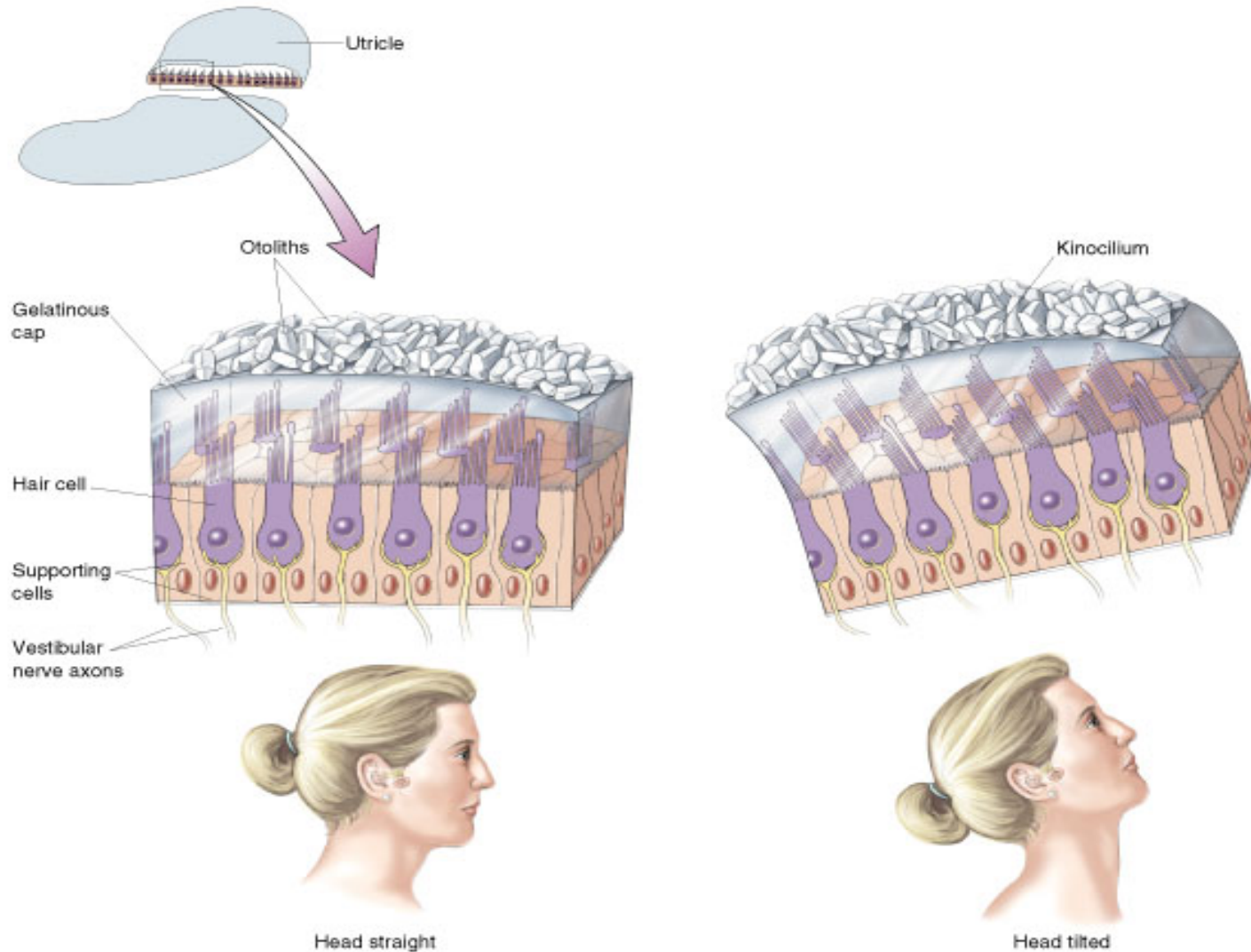
semicircular canals: hair cell registration of rotational velocity, orthogonality, and the L/R push-pull system

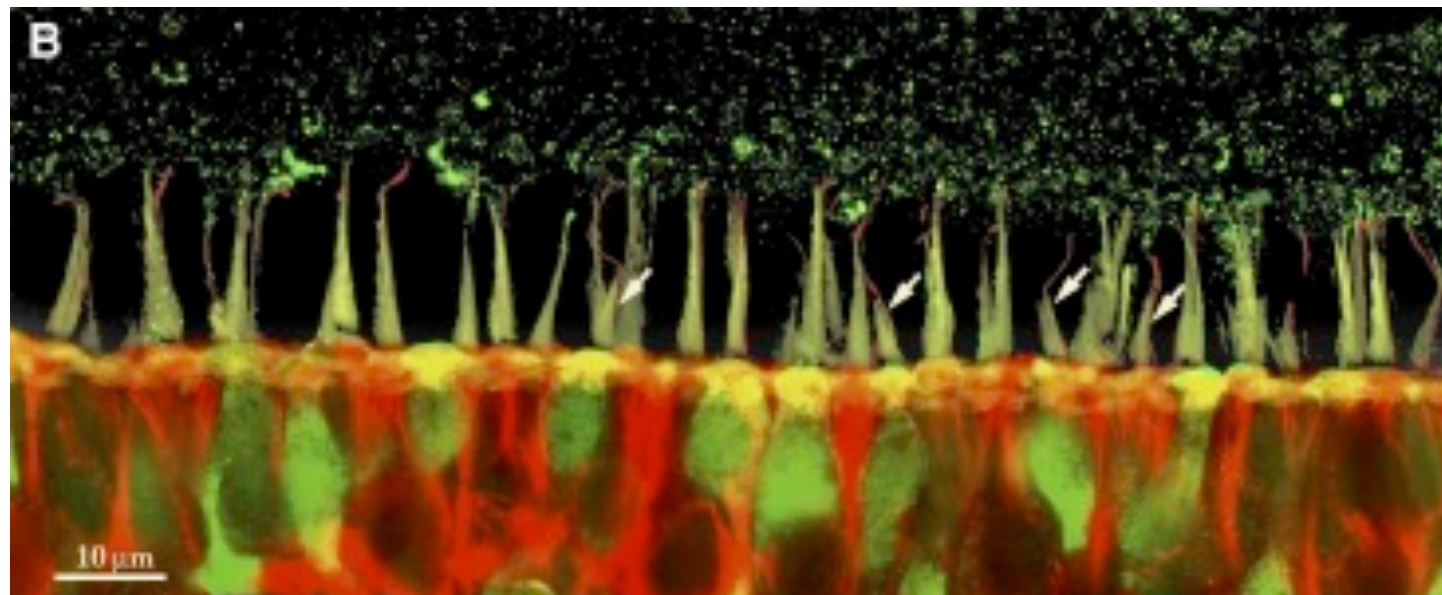
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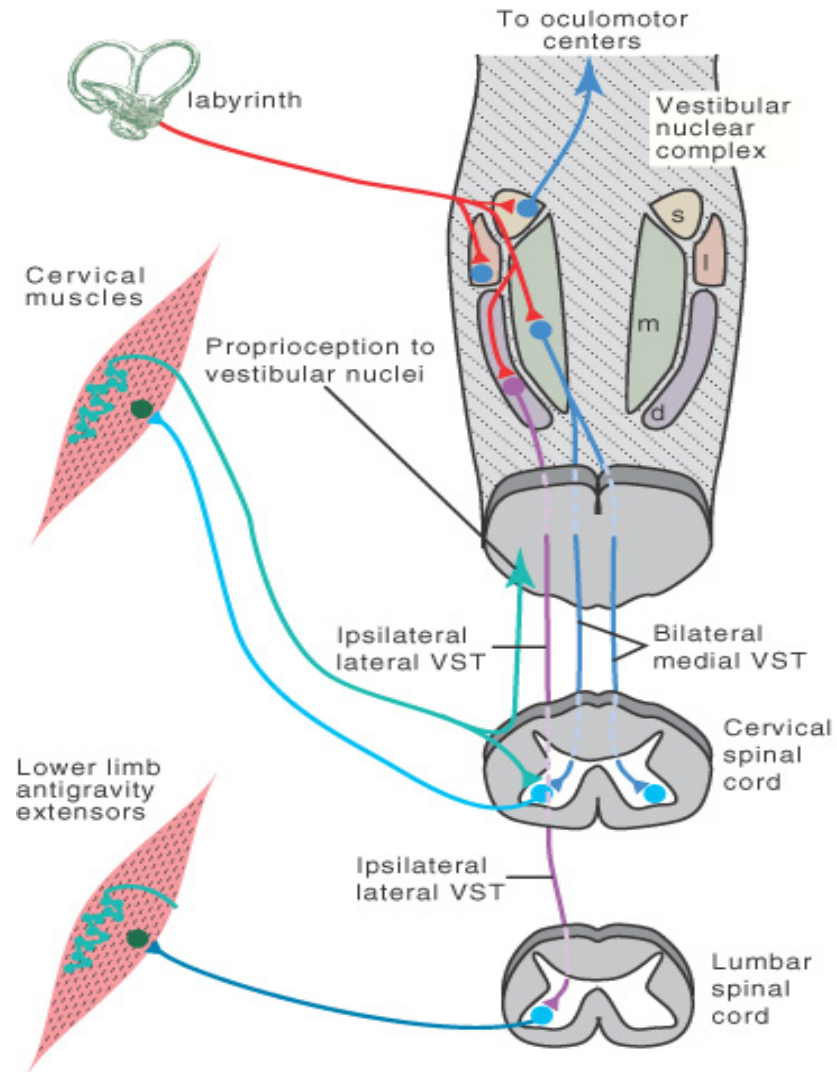


utricle and saccule: registration of static head position (relative to ground / gravity), orthogonality, and the hair cell population code

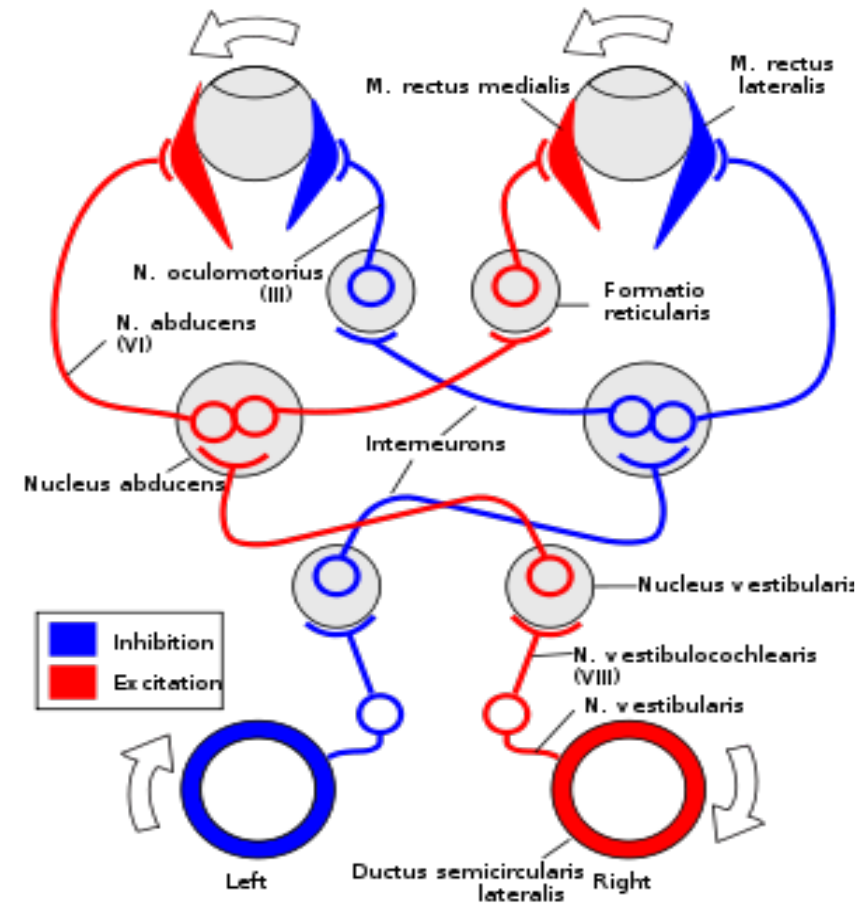
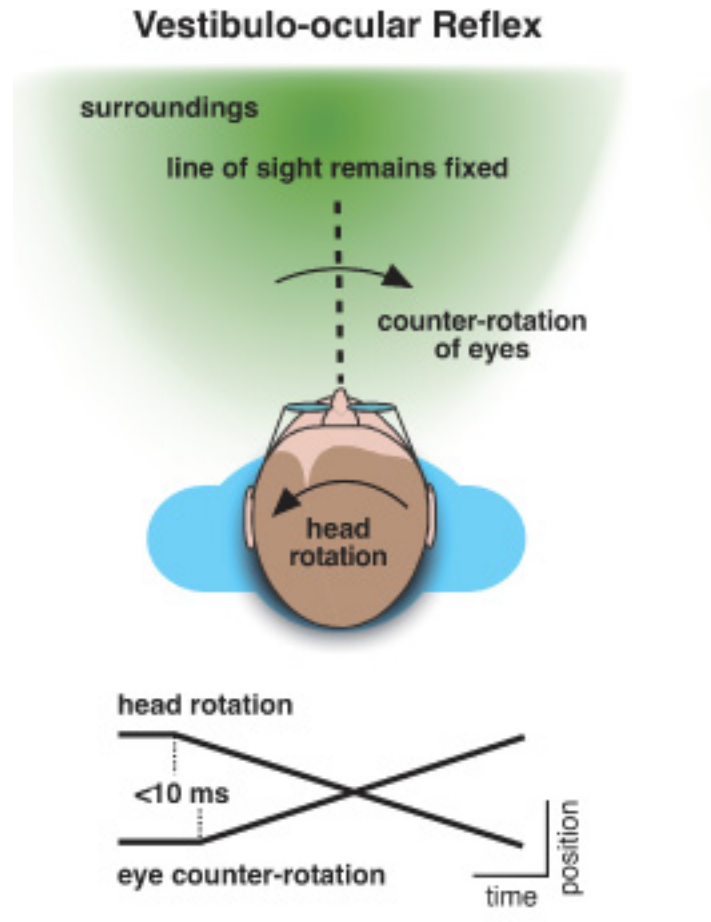




vestibular afferents: pathway to the brain and spinal cord



integrating vestibular signals I – the vestibulo-ocular reflex – adjusting and maintaining gaze during head movements



integrating vestibular signals – the ubiquitous ‘head-direction’ neuron

