9.14 class #22: Retinotectal system 2: Chemoaffinity; modes of axon growth.

Readings:


Additional recommended readings:


Cline, H., "Can there be growth without growth cones?" *Seminars in the Neurosciences*, 1996, 8: 89-95.


Questions:

1. What is the membrane carpet preparation, and what is it used for?

2. What is the basic finding with this preparation, concerning retinal axons growing on tectal membranes?

3. How might the growth cone respond to a concentration gradient of a guidance molecule?

4. Contrast the two modes of axonal growth as described by Jhaveri et al.

5. Describe some specific inhibitory effects known to play a role in axonal growth. (Oligodendrocyte membrane protein effects; axo-axonal interactive effects; contact with midline radial glia.)

6. Describe the phenomenon of collateral sprouting in the developing visual system.
7. Competitive interactions between different populations of developing axons: What is the evidence for these, and what kinds of specificity are the result?

8. Is Eph A1 a receptor or a ligand? Make sure you understand the meaning of these terms.

9. What is the consequence of knocking out the Ephrin A5 ligand in mice?

10. What is responsible for dorsal-ventral patterning [the representation of the superior-inferior retinal axis] in the tectum?

11. What ephrins and Eph receptors are responsible for the naso-temporal retinal axis representation in the tectum [superior colliculus]?
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