9.14
Class #12: Growth factors and cell survival II

Readings:

Purves & Lichtman, "chapter 6", (pp. 131-153).
Henderson, C.E.,"Role of neurotrophic factors in neuronal development", *Current Opinion in Neurobiology* ,1996, 6: 64-70.
Greensmith, L. and Vrbova, G., "Motoneurone survival: a functional approach", *Trends in Neuroscience*, (1996), 19: 450-455.
Johnson, J.E. ," Neurotrophic factors" [assigned for previous class].

Questions:

[Purves]

1. What is "phylogenetic cell death" and "morphogenetic death"? (p. 131)

2. Describe an effect of a hormone on neuronal cell death. (143, Box C: thyroxin examples)

3. Contrast: CNS effects of limb-bud extirpation *vs.* grafting of a supernumerary limb in the embryo. (144f)

4. Contrast two major possible purposes in naturally occurring neuronal death. (144-149, especially p. 148)

5. What could explain the effect of curare treatment on spinal cord cell death? (149-151)

6. Give an example of innervation-dependent neuronal death/survival.

[Greensmith and Vrobova]

7. Describe the effect of age at the time of motor nerve injury on the survival of motor neurons. (Box 1)

8. What is the Greensmith and Vrbova critique of the findings of Mitsumoto et al on the arrest of motor neuron disease in Wobbler mice by CNTF plus BDNF administration? (452)

9. How might the limited efffects of neurotrophins on motor neuron survival be explained? (453)

10. What is meant by the transformation of the motor neuron from a growing to a transmitting cell? What are the cellular correlates? (454)

11. What evidence indicates that excitotoxicity may explain the vulnerability of developing motor neurons to target loss? (455)

[Henderson]

12. How might neurotrophins be involved in activity dependent development? (68)

13. What is GDNF and its effect on DA neurons? (67)