

7.22/ 7.72 Self Quiz Answers
Mon Sep 26, 2005

1. Class challenge 1: UV irradiation prevents microtubule polymerization. What is the target of UV?

The GTP “cap” on the growing end of the microtubule that is essential for polymerization is removed by UV.

2. Class challenge 2: In general terms, what are “antisense” techniques?

Techniques that exploit nucleic acid base pairing to inhibit translation or splicing, to destabilize RNAs, or sometimes to inhibit transcription. Antisense nucleic acid is oligonucleotides (usually modified to increase stability) or RNAs.

3. Class challenge 3: Formation of the brain (anterior) seems to involve many inhibitors. Any ideas why this might be so? Consider that the forebrain may have evolved after the hindbrain.

Still under discussion!

4. Distinguish the concepts of “determination” and “differentiation”

Determination is the decision making process that a cell undergoes on the pathway to its final fate. Differentiation is the final functional fate.

There are many steps in determination, and even the final fate may be difficult to identify.

5. The typical four part signaling pathway includes:
ligand, receptor, connectors, targets

For the Wnt pathway, which component corresponds to which part:
Frizzled, b-catenin, Wnt, siamois?

Receptor, connector, ligand, target

For the TGFb pathway, which corresponds to which part:
Smads, activin, nodal?

Connector, ligand, ligand