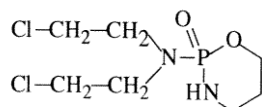


Cancer agents - Problem set #1

1. Define mutagenesis (2 pts). Define an oncogene (2 pts). Define a tumor suppressor gene (2 pts). Name an example of an oncogene (2 pts). Name an example a of tumor suppressor gene (2 pts).
2. Name the process that is responsible for forming all blood cells (2 pts). Which type of blood cells are the least abundant in blood (2 pts)? What type of blood cells have a life span of about 120 days (2 pts)?
3. Discuss drug resistance in the context of cancer chemotherapy by describing how it occurs (5 pts) and describe the effect it can have on a patient's chemotherapy (5 pts).
4. Reversal of "negative" regulation of the immune response is a promising area of recent drug development. True or False (2?) Circle one.
5. Cisplatin is very old anti-cancer agent with two notable toxicities. Name these toxicities (4 pts). What agents can be administered to reduce these toxicities (4 pts)? Explain why one of these toxicities can be a concern when cisplatin is administered with other drugs (4 pts).

6. Cyclophosphamide (Cytoxan) is an important cancer drug. Name the class of chemotherapy agents to which it belongs (2 pts). The drug must be bioactivated before it is effective. Explain why this is (4 pts) and use arrow(s) if it helps you explain. Show the initial reaction that leads to activation of the drug (4 pts) and again use arrow(s) if it helps you explain.



7. 5-FU is an important cancer drug. Name the class of chemotherapy agents to which it belongs (2pts). Name the enzyme it inhibits (2 pts). Below at left is the active form of 5-FU when it exists in its active form (5-F-dUMP). Using arrow(s) show how it becomes attached to the enzyme and to 5,10 MethyleneTHF which is the cofactor in the reaction (6 pts).

