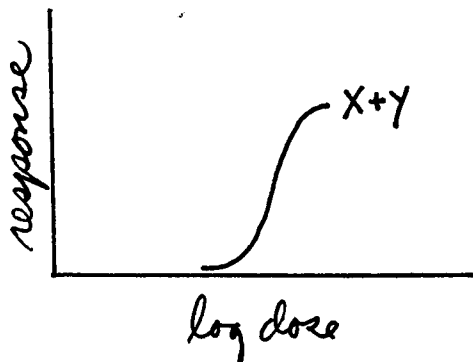
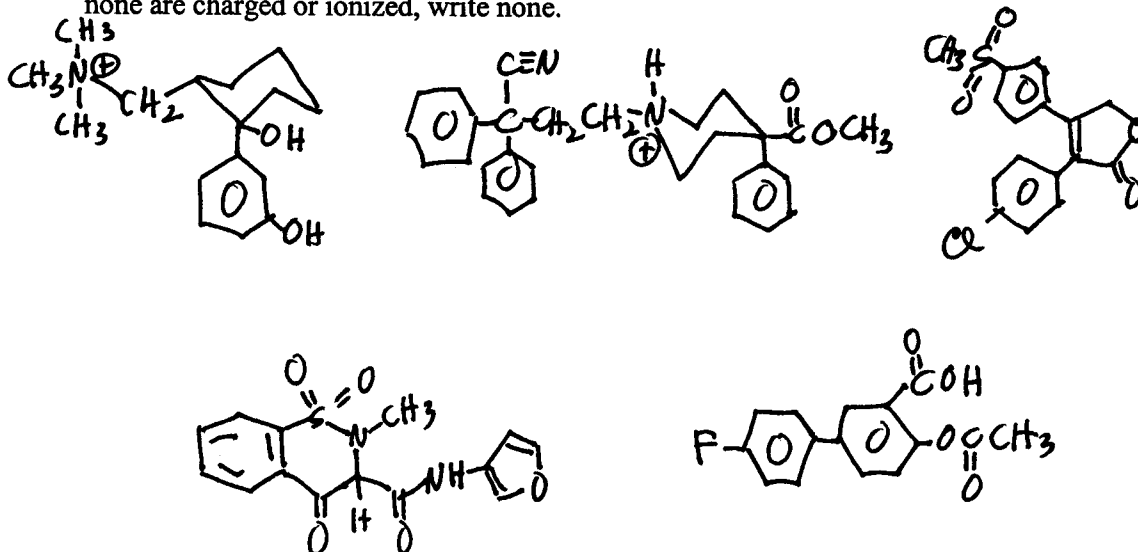


1(3). Draw the structure of oxycodone.

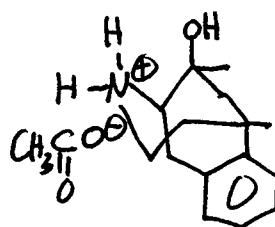
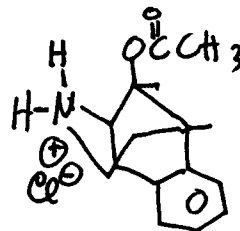
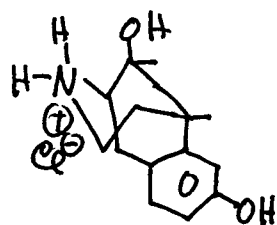
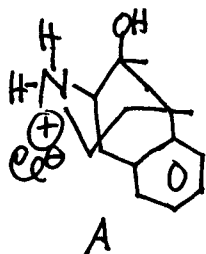
2(10). The following is a plot of the log-dose response curve for the agonist X acting in the presence of a non-competitive antagonist Y. Draw the log-dose response curve for full agonist Z that is more potent than X. Convert the data into 1/E versus 1/[D] plots for the action of X + Y and of Z. Make sure to label all parts of the graphs.



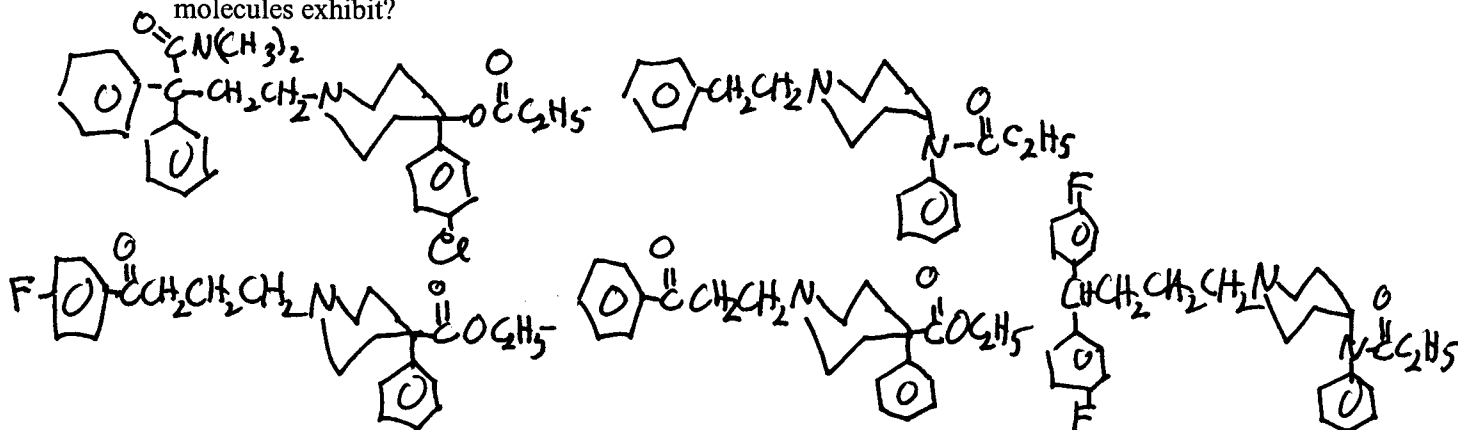
3(10). Circle the functional groups that are ionized or charged ( $\geq 0.1\%$ ) at physiological pH and give their approximate pKas. Put an X through the hydrogen in each functional group whose loss or retention causes the functional group to be charged or ionized. If none are charged or ionized, write none.



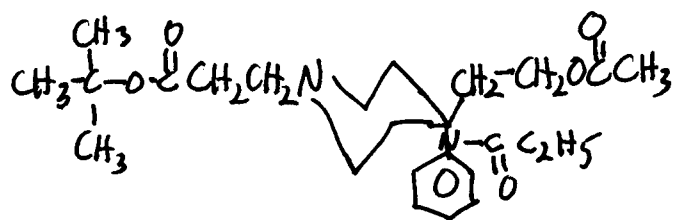
4(12). Which of the following derivatives of narcotic agonist A would you expect to exhibit increased potency compared to compound A if given by the i.v. route. Explain why or why not for each derivative.



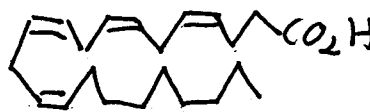
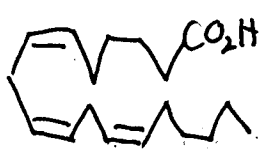
5(5). What general biological or pharmacological activity do each of the following molecules exhibit?



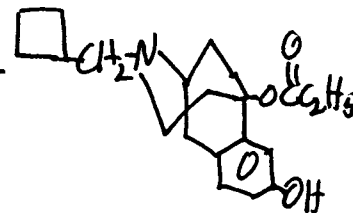
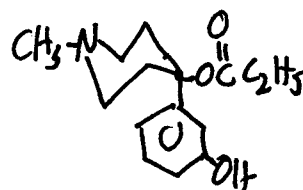
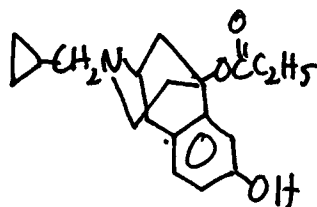
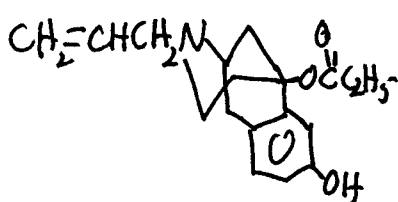
6(10). The following is a hypothetical soft narcotic analgetic. Which ester hydrolyzes first (1), which second (1), and why for each (4)? Why is the product of the first hydrolysis still active (2) and why is the product of the second hydrolysis inactive (2)?



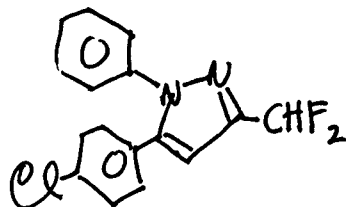
7(8). Name the following molecules chemically making sure to identify the number of carbons, double bonds and the positions of the double bonds (6). Which molecule could be converted to PGE<sub>3</sub> in the body (1)? Which molecule is an omega 3 fatty acid (1)?



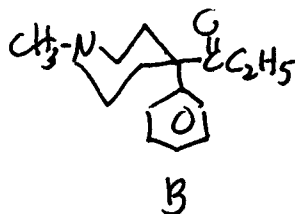
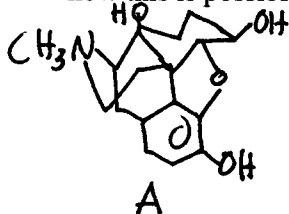
8(6). For the following series of hypothetical narcotic analgetics, which would be the most potent pure agonist (2)? Which is the most potent antagonist of the mixed agonist-antagonists (2)? Which is the most potent agonist of the mixed agonist-antagonists (2)?



9(6). The following molecule is a more potent inhibitor of COX-II than COX-I. Which structural feature would you add to make it bind more tightly to COX-II and why (3)? This molecule has a very long biological half-life (5 days). What change would you make to decrease its half-life and why is it effective in decreasing the half-life (3)?

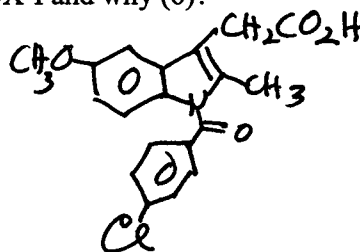
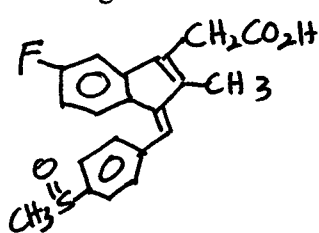
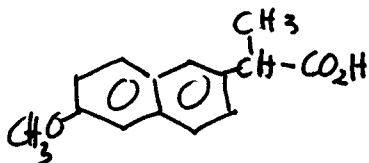


10(4). Compound A binds over 1000 times more tightly to the  $\mu$  receptor in brain homogenates than compound B, yet the oral dose of B is only 10 times that of A. Explain how this is possible.

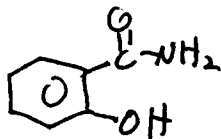


11(3). Draw the structure ibuprofen.

12(9). Name the following structures (3). What are the common features of these molecules that make them good inhibitors of COX-I and why (6)?



13(3). What is the mechanism whereby the following molecule functions as an anti-inflammatory.



**PHA 5438 Medicinal Chemistry 2**

**February 15, 2002**

**Name** \_\_\_\_\_

**SS#** \_\_\_\_\_

14(4). Distinguish between partial seizures and general seizures in epilepsy.

15(4). List two undesirable side effects associated with the use of phenytoin as an anticonvulsant.

16(4). What is the basis of the action of carbonic anhydrase inhibitors as anticonvulsants?

17(4). What is the potentially fatal side effect, associated with the formation of  $\Delta_4$ -Valproate from Valproic acid, called.?