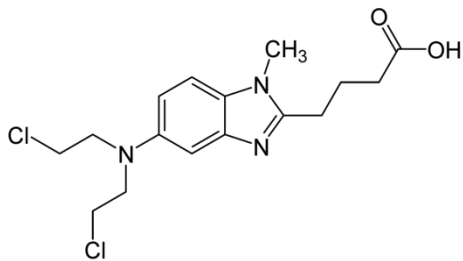


Problem set #2

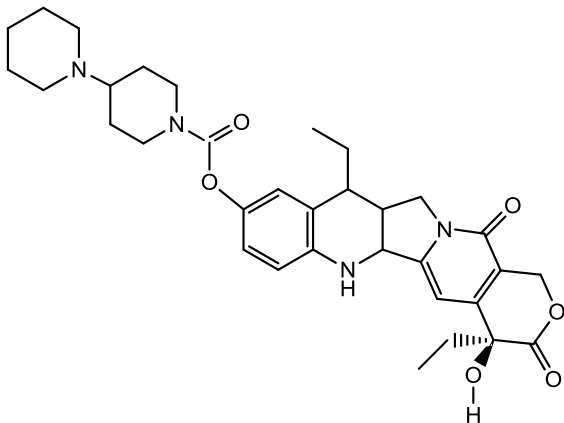
1. Below is the structure of an anticancer drug called bendamustine (Treanda). What is true about this molecule?

- A. It is achiral (it does not contain a chiral center).
- B. It could be metabolized by P450.
- C. It could be hydrolyzed by a hydrolytic enzyme (esterase or amidase).
- D. A and B.
- E. A, B and C.



2. Below is the structure of an anticancer drug called irinotecan (Camptosar). What is true about this molecule?

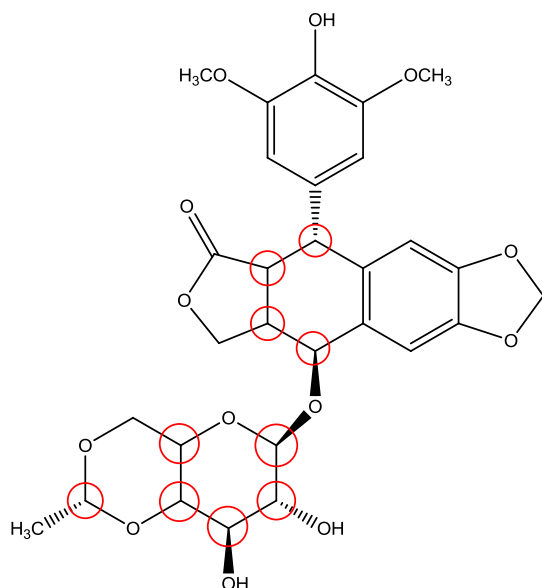
- A. It is achiral (it does not contain a chiral center).
- B. It could be metabolized by P450.
- C. It could be hydrolyzed by a hydrolytic enzyme (esterase or amidase).
- D. A and B.
- E. B and C.



3. Below is the structure of an anticancer agent called etoposide.

A. Circle all the chiral centers in the molecule.

B. How many stereoisomers exist for this molecule? 2^{10}



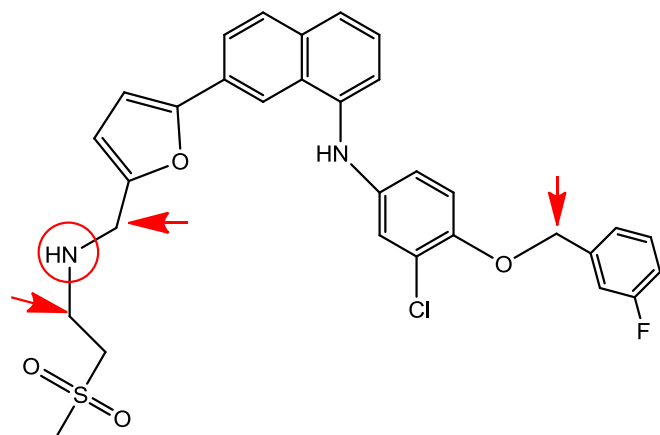
4. Below is the structure of the anticancer drug lapatinib (Tykerb).

A. Will this molecule exist largely in the charged form at pH 7? Yes

B. If so, circle that atom that would be charged.

C. Can this molecule be dealkylated by P450? Yes

D. If so, draw an arrow to the carbon that would be attacked by P450.



5. Which are true for log P and log D?

A. Increases in log P and log D tend to increase oral drug absorption up to a point.

B. Log P and log D are increased by polar groups such as $-OH$ and $-NH_2$.

C. Log P is determined using octanol/water, while log D is determined using octanol/buffer.

D. A and B.

E. A and C.