

# PHA 5127 Dose Optimization I

## Case Study IV

1. For the following situations, indicate whether the drug is: filtered, reabsorbed (if fully or if reabsorbed through transporters), or actively secreted (Assume GFR is 130mL/min, urine flow is 1.5mL/min)
  - a. Drug with  $f_u = 0.3$  and a  $Cl_{ren} = 39\text{mL/min}$
  - b. Drug with  $f_u = 0.6$  and a  $Cl_{ren} = 30\text{mL/min}$
  - c. Drug with  $f_u = 0.05$  and a  $Cl_{ren} = 15\text{mL/min}$
  - d. Drug with  $f_u = 0.2$  and a  $Cl_{ren} = 0.3\text{mL/min}$
  - e. Drug with  $f_u = 0.8$  and a  $Cl_{ren} = 0.3\text{mL/min}$
2. A 25 year old, 5'6", 80kg male patient with a serum creatinine concentration of 1.8mg/dL was given a drug treatment. Knowing this drug is mainly eliminated by glomerula filtration and has 60% plasma protein binding. Please estimate the Clearance of this drug (with Cockcroft-Gault equation)

3. TRUE (T) or FALSE (F)

For a high extraction drug, liver blood flow is important to both hepatic clearance and oral bioavailability.

T F

For low extraction drug,  $f_u$  (fraction of unbound drug in plasma) is important to both hepatic clearance and oral bioavailability.

T F

Basic drugs that are polar in their unionized form, the extent of re-absorption depends on the degree of its ionization.

T F

Secretion is indicated when renal clearance is larger than  $GFR \cdot f_u$ .

T F

It is possible for renal clearance to be close to the kidney blood flow.

T F

Assuming no plasma protein binding, the renal clearance equals the urine flow when full re-absorption occurs.

T F