

**PHA 5127**  
**Case Study 4**  
**Fall 2007**

1. For the following situations, indicate whether the drug is filtered, reabsorbed or actively secreted (Assume GFR is  $130 \text{ mL min}^{-1}$ , urine flow is  $1.5 \text{ ml min}^{-1}$ )

• A drug with  $f_u = 0.02$  and a  $Cl_{REN} = 20 \text{ mL min}^{-1}$  is \_\_\_\_\_

• A drug with  $f_u = 0.40$  and a  $Cl_{REN} = 52 \text{ mL min}^{-1}$  is \_\_\_\_\_

• A drug with  $f_u = 0.30$  and a  $Cl_{REN} = 0.45 \text{ mL min}^{-1}$  is \_\_\_\_\_

2. Calculate the  $k_e$  of a 56 year old, 79 kg male patient with a serum creatinine of 1.6 mg/dL who requires an aminoglycoside treatment. [Use  $k_e = 0.00293 (\text{CrCL}) + 0.014 \text{ hr}^{-1}$ ].

3. Mark whether the following statements for a **high extraction drug** are True or False

**T F**      The oral bioavailability (F) will be close to 1.

**T F**      Clearance will increase significantly after induction of the relevant enzyme.

**T F**      The hepatocyte membranes do not represent a barrier.

4. Mark whether the following statements are True or False

**T F**      a. Since creatinine is endogenous and predominantly eliminated by kidney, its clearance is a good estimation of renal active secretion.

**T F**      b. Creatine clearance can only be used to estimate the renal clearance of drugs that are similar to creatine, which does not show plasma albumin binding.

**T F**      c. "Linear pharmacokinetics" means that the plasma drug concentration versus time plots will result in a straight line.