

**PHA 5127 Dose Optimization I, Fall 2012, Homework IV**  
**Total Points: 10**

If you any questions regarding this homework assignment, do not hesitate to contact Benjamin Weber ([benjaminweber@ufl.edu](mailto:benjaminweber@ufl.edu)). Please provide all answers with their appropriate units. 0.25 points will be deducted for each missing or inappropriate unit. Remember to show how you found your answer. Answers lacking adequate justification may not receive full credit.

Problem 1 (4 points)

TRUE (T) or FALSE (F)

For a low extraction drug, the oral bioavailability is approximately 100%

T     F

For a high extraction drug, the oral bioavailability increases with decreasing plasma protein binding

T     F

The oral bioavailability is always higher than 20%.

T     F

If, for a given drug,  $Q_H \ll f_u * CL_{int}$ , the drug is considered to be a high extraction drug

T     F

Enzyme induction affects the hepatic clearance of low extraction drug

T     F

For a high extraction drug, the hepatic clearance increases with an increase in renal blood flow

T     F

For a low extraction drug, the hepatic clearance decreases with an increase in liver blood flow

T     F

The oral bioavailability of low extraction drugs is not significantly affected by enzyme induction

T     F

Problem 2 (6 points)

Assume an intrinsic clearance of I) 80000 L/h and II) 0.08 L/h and a liver blood flow of 80 L/h.

- a) Calculate the hepatic clearance and oral bioavailability for both situations assuming a plasma protein binding of 50%.
- b) Calculate the hepatic clearance and oral bioavailability for both situations assuming a plasma protein binding of 99%.