

Supplementary Material

Christin Y Sander et al. "Effects of flow changes on radiotracer binding: Simultaneous measurement of neuroreceptor binding and cerebral blood flow modulation"

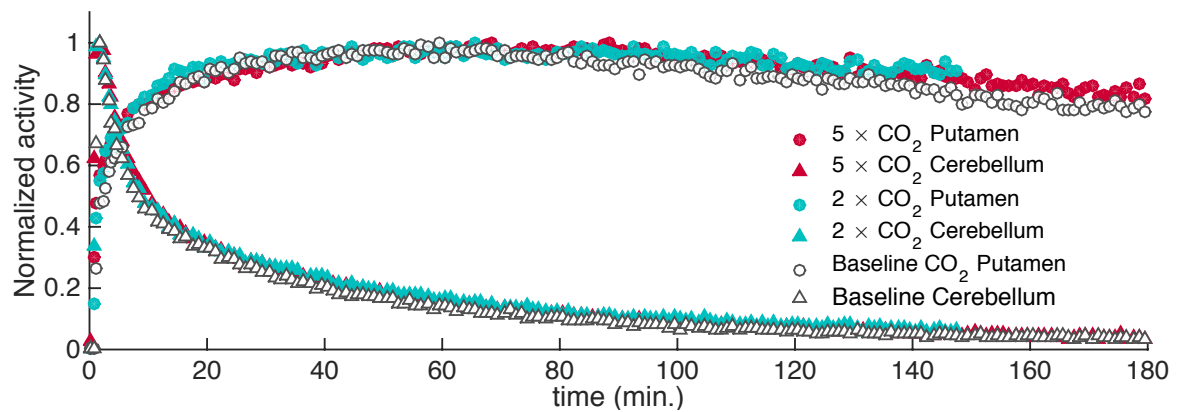


Figure S1. Plot of [¹⁸F]fallypride TACs from the experimental conditions with hypercapnia (5×CO₂ and 2×CO₂) and without (baseline). All curves are normalized to their maximum value for comparison purposes. Small differences in uptake or washout do not seem to be correlated to the periods of increased cerebral blood flow.

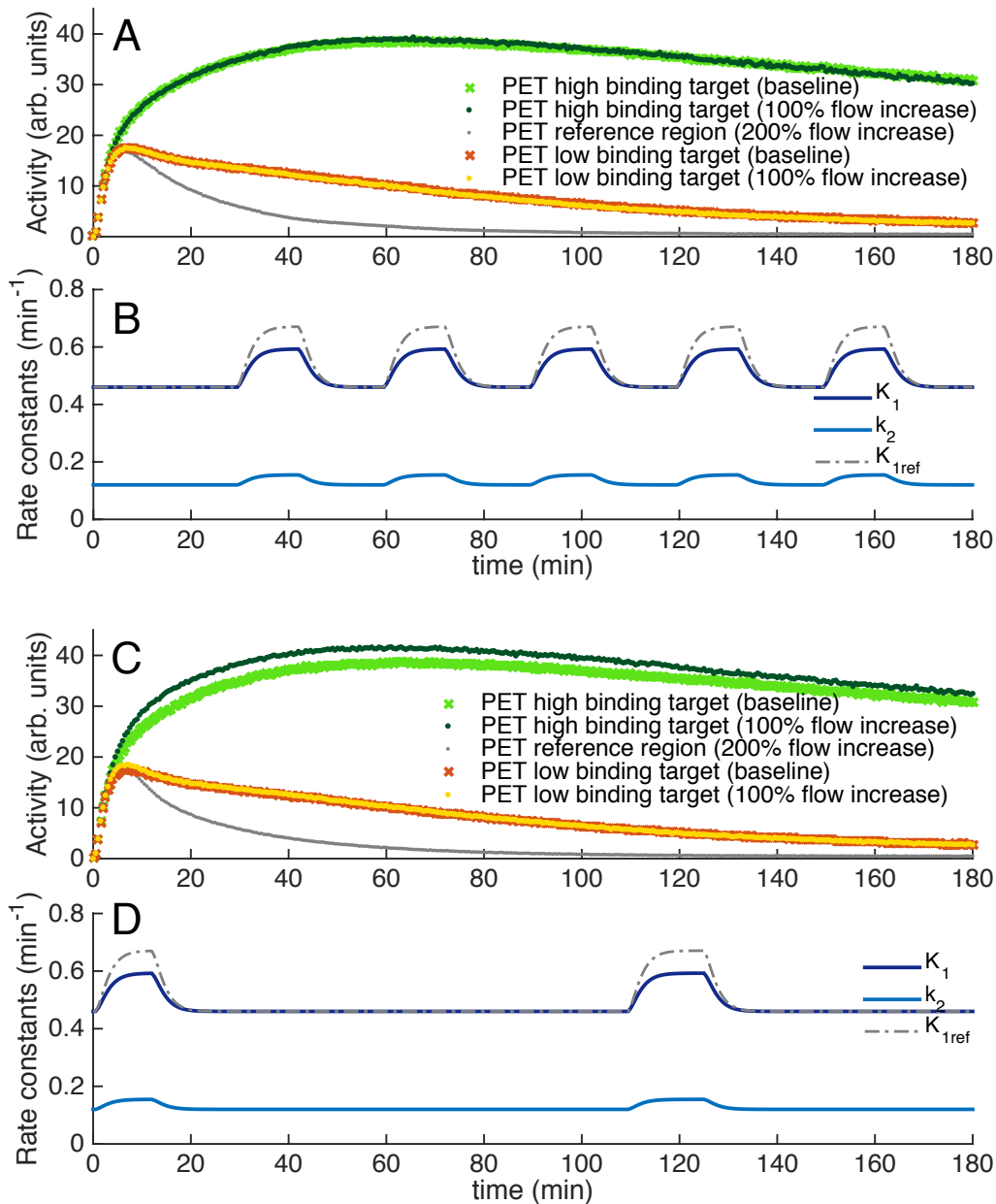


Figure S2. Simulations of a reference tissue model with kinetic parameters for $[^{18}\text{F}]$ fallypride. (A) The effect of flow increases equivalent to the $5\times\text{CO}_2$ session were simulated. TACs for a high and low specific binding regions and a reference region show very small deviations compared to a baseline curve. (B) Timecourse of simulated rate constants in cyclic "on" periods, with K_1 , k_2 representing a 100% increase and $K_{1\text{ref}}$ representing a 200% increase in CBF. (C) Simulated TACs for the effect of flow increases equivalent to the $2\times\text{CO}_2$ session. The high specific binding region shows an increased uptake but quantification of the signals resulted in $<1.2\%$ change in BP_{ND} . (D) Timecourse of simulated rate constants with equivalent CBF increases as in (B).

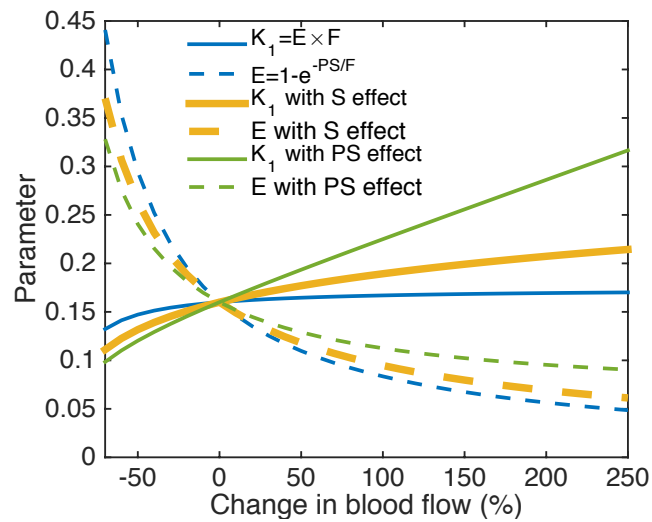


Figure S3. Effect of simulated blood flow changes on the plasma to tissue rate constant K_1 and extraction fraction E . Three different assumptions are made in this simulation: (i) Blue: Only changes in flow F drive K_1 and E . (ii) Yellow: Surface S increases with flow because blood volume also increases. (iii) Green: Permeability P increases by 20% of the flow increase.