

Abstract Submitted
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Kinetics of Transferrin and Transferrin-Receptor during Iron Transport through Blood Brain Barrier¹ AMINUL KHAN, JIN LIU, PRASHANTA DUTTA, Washington State University — Transferrin and its receptors play an important role during the uptake and transcytosis of iron by blood brain barrier (BBB) endothelial cells to maintain iron homeostasis in BBB endothelium and brain. In the blood side of BBB, ferric iron binds with the apo-transferrin to form holo-transferrin which enters the endothelial cell via transferrin receptor mediated endocytosis. Depending on the initial concentration of iron inside the cell endocytosed holo-transferrin can either be acidified in the endosome or exocytosed through the basolateral membrane. Acidification of holo-transferrin in the endosome releases ferrous irons which may either be stored and used by the cell or transported into brain side. Exocytosis of the holo-transferrin through basolateral membrane leads to transport of iron bound to transferrin into brain side. In this work, kinetics of internalization, recycling and exocytosis of transferrin and its receptors are modeled by laws of mass action during iron transport in BBB endothelial cell. Kinetic parameters for the model are determined by least square analysis. Our results suggest that the cell's initial iron content determines the extent of the two possible iron transport pathways, which will be presented in this talk

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Prashanta Dutta
Washington State University

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