"Regulation of D-glucose absorption in the kidney and small intestine"

According to textbooks, luminal D-glucose is reabsorbed by sodium-coupled secondary active transporters (SGLT-family) located in the apical brush border membrane of epithelial cells in the kidney and small intestine. D-glucose is then released into the bloodstream by facilitated diffusion via transporters of the GLUT-family located in the basal-lateral pole of the epithelial cell. However, recent results suggest that D-glucose absorption is a much more dynamic process. There is intensive trafficking of the transporters involved between the plasma membrane and intracellular sites. Furthermore, there is short-term redistribution of transporters in epithelial cells in response to a changing nutritional state of the individual. The mechanisms of D-glucose transporter trafficking as well as their potential role as therapeutic targets for the treatment of obesity and type 2 diabetes will be discussed in this presentation.