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### Title

Lipid dynamics in native rat renal brush border membranes as measured by scanning fluorescence correlation spectroscopy

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**Lipid dynamics in native rat renal brush border membranes as measured by scanning fluorescence correlation spectroscopy.**

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**Abstract**

Lipid rafts are small liquid ordered membrane domains that are thought to play a significant role in the function of cellular membranes. Previous studies have suggested the presence of lipid rafts in the brush border membranes of mammalian renal proximal tubule cells. The presence of these structures has been implicated in renal phosphate wasting disorders. We have grown giant unilamellar vesicles (GUVs) from native rat proximal tubule brush border membrane fragments. In addition we have performed Optiprep detergent free density gradient fractionation of these membranes into raft-like and nonraft-like fractions.

Glycosphingolipid (GM1) is a classic marker of lipid rafts and is concentrated preferentially into the raft-like Optiprep fractions. Scanning fluorescence correlation spectroscopy measurements on rat BBM GUVs stained with a dye labeled cholera toxin B (ctxB) subunit (binds to GM1) shows that GM1 exists in large slowly moving aggregates containing multiple ctxB labels. In addition, the concentration of these aggregates is sensitive to changes in dietary phosphate.