

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

The strength of side chain hydrogen bonds in the plasma membrane KALINA HRISTOVA, SARVENAZ SARABIPOUR, Johns Hopkins University — There are no direct quantitative measurements of hydrogen bond strengths in membrane proteins residing in their native cellular environment. To address this knowledge gap, here we use fluorescence resonance energy transfer (FRET) to measure the impact of hydrogen bonds on the stability of a membrane protein dimer in vesicles derived from eukaryotic plasma membranes, and we compare these results to previous measurements of hydrogen bond strengths in model lipid bilayers. We demonstrate that FRET measurements of membrane protein interactions in plasma membrane vesicles have the requisite sensitivity to quantify the strength of hydrogen bonds. We find that the hydrogen bond-mediated stabilization in the plasma membrane is small, only -0.7 kcal/mole. It is the same as in model lipid bilayers, despite the different nature and dielectric properties of the two environments.

Kalina Hristova
Johns Hopkins University

Date submitted: 25 Oct 2012

Electronic form version 1.4