

Abstract Submitted
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PTEN interaction with tethered bilayer lipid membranes containing PI(4,5)P₂ R. MOLDOVAN, S. SHENOY, P. SHEKHAR, A. KALINOWSKI, Carnegie Mellon University, A. GERICKE, Kent State University, F. HEINRICH, M. LOESCHE, Carnegie Mellon University — Synthetic lipid membrane models are frequently used for the study of biophysical processes at cell membranes. We use a robust membrane model, the tethered bilayer lipid membrane (tBLM), based on a (C14)₂-(PEO)₆-thiol anchor, WC14 [1]. Such membranes can be prepared to contain single phospholipids or complex lipid mixtures [2], including functional lipids involved in cell signaling, such as the highly charged phosphatidylinositol phosphates (PIPs). To study the interaction between the tumor suppressor PTEN (phosphatase and tensin homologue deleted on chromosome 10) and model membranes we have incorporated phosphatidylinositol-4,5-bisphosphate (PI(4,5)P₂) in tBLMs and use fluorescence correlation spectroscopy (FCS), neutron reflectometry (NR) and surface plasmon resonance (SPR) for their characterization. NR shows that tBLMs formed with PI(4,5)P₂ are complete. FCS of labeled PI(4,5)P₂ shows that diffusion occurs at the time scale characteristic of membrane-incorporated lipid. Finally, SPR shows specific binding of PTEN to the model membrane thus confirming the incorporation of PI(4,5)P₂ into the tBLM. [1] McGillivray et al, *Biointerphases* 2, 21-33 (2007) [2] Heinrich et al, *Langmuir*, submitted

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