Transient Potential Gradients and Impedance Measures of Tethered Bilayer Lipid Membranes: Pore-Forming Peptide Insertion and the Effect of Electroporation

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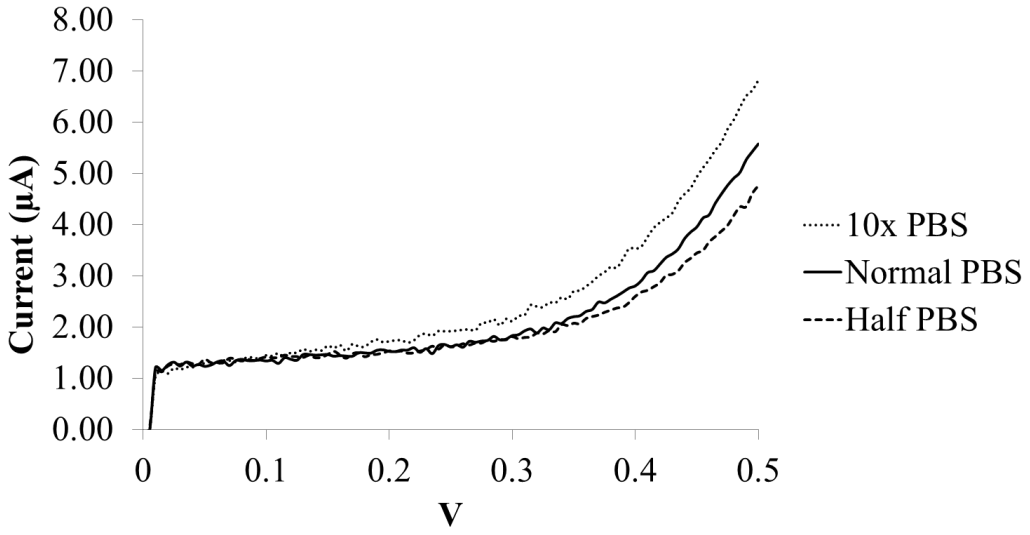
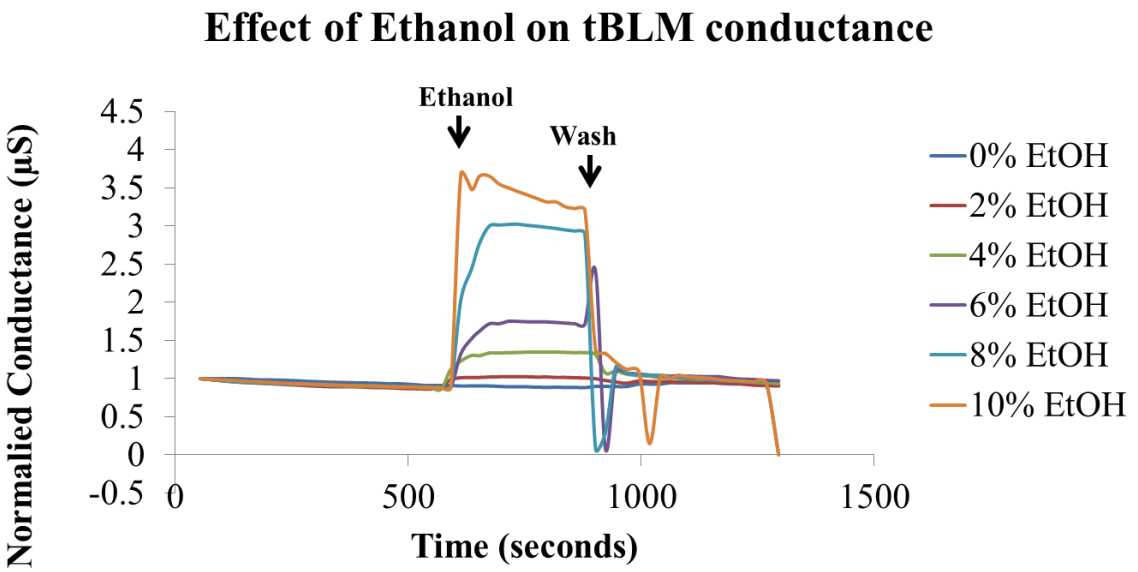
Supporting Material

Fig S1 Data demonstrating the ability of tBLMs to withstand applied potentials of 500mV.



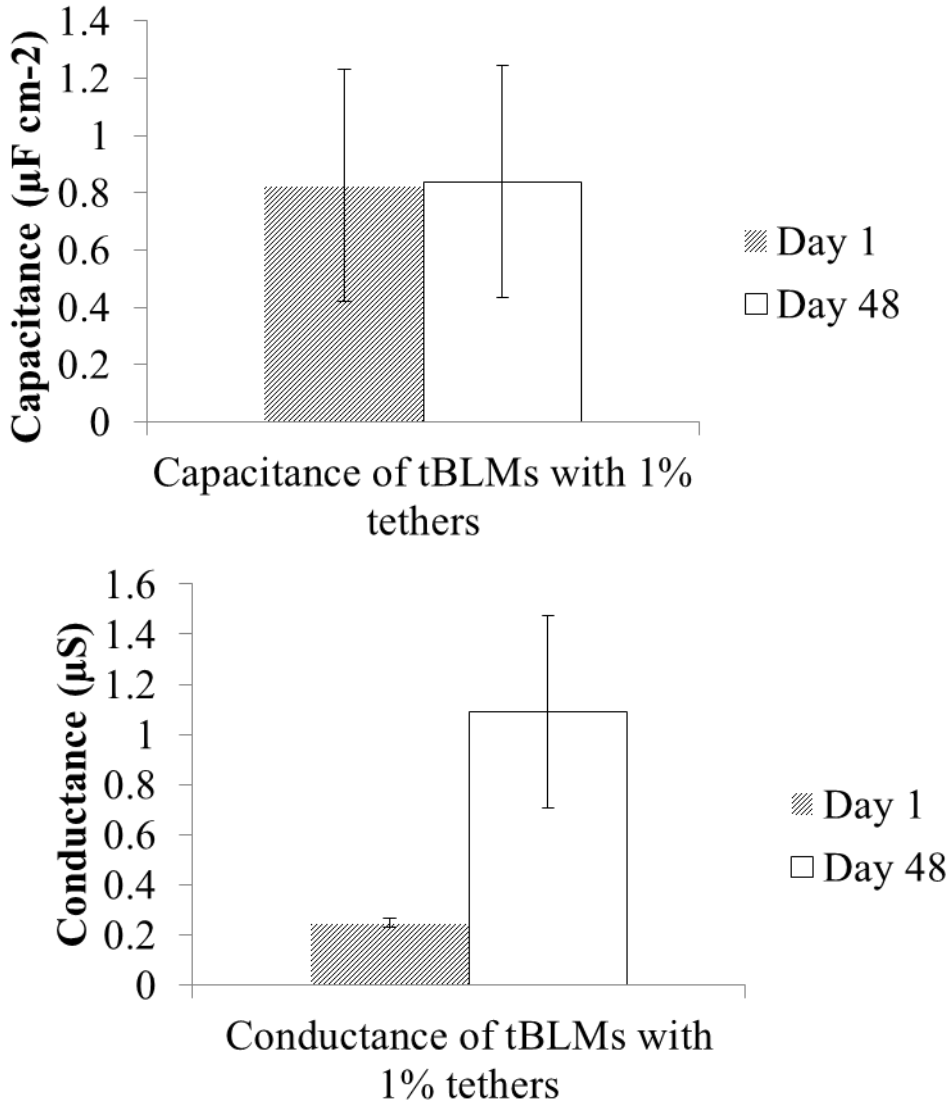
In a tBLM that is repeatedly exposed to ramped potentials up to 500 mV the initial capacitive spike remains the same indicating the membrane has not altered or disintegrated as a result of these relatively high potentials. The measured current variations are due to the bathing solution containing differing concentrations of standard phosphate buffered saline (PBS). The greater the concentration of ions leads to a greater current response as would be expected.

Fig S2 The ability of PBS rinsing to eliminate residual ethanol from the tBLM.



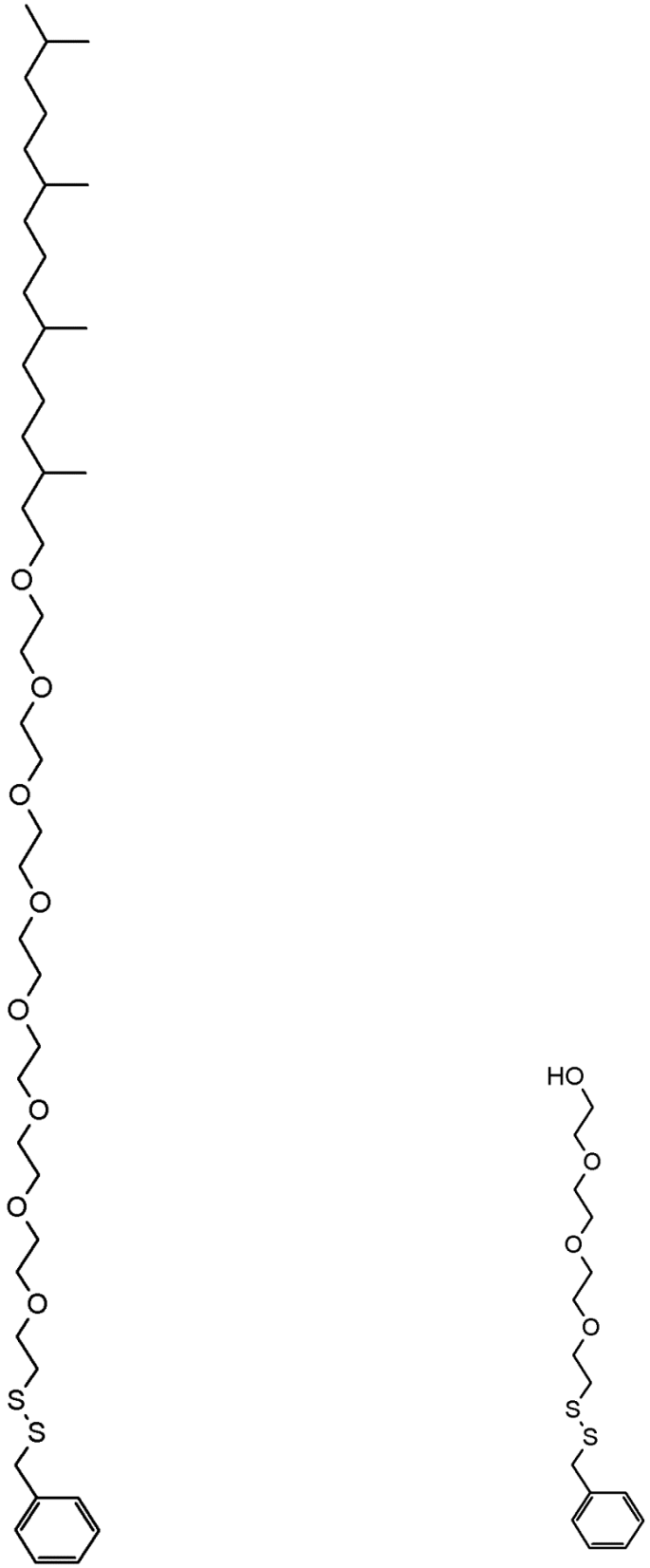
DphPC tBLMs in response to increased ethanol concentrations. Ethanol does increase membrane conduction but can be rapidly washed out, returning membrane conduction to baseline levels.

Fig S3 Data demonstrating tBLM stability in excess of 1 month.



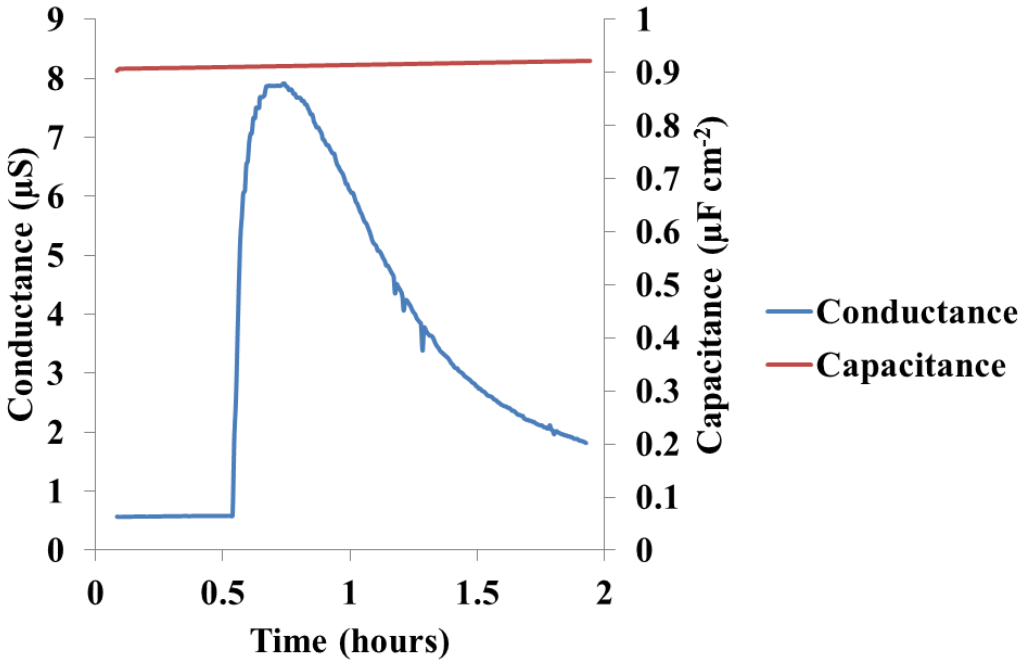
tBLMs even with tether densities as low as 1% remain intact for a period of greater than one month. These 1% tethered tBLMs do have a larger baseline conduction indicating that they do become more "leaky" over time (n=3). In this report we used 10% tethers which are significantly more stable than the 1% tethers.

Fig S4 Tether and Spacer Chemistries



Benzyl disulfide octo-ethylene glycol phytanyl "tether" molecule (above left) and a hydroxy-terminated *benzyl disulfide tetra-ethylene glycol* "spacer" molecule (above right)

Fig S5 Capacitance remains little changed following PGLa addition.



The addition of 30 µM PGLa to a tBLM containing 20% POPG lipids causes a large initial increase in conductance (right axis), but only a small increase in capacitance (left axis).