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Elucidating molecular interaction between model cell membranes and ion channels

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A lipid bilayer membrane as a model cell membrane is used in a variety of biophysical studies including activities of ion channel/membrane proteins and lipid-lipid/lipid-protein interactions. In addition, ion channel integrated membranes provide versatile platforms for biosensing at the single molecular level. In this study, we have established two model membrane platforms. A planar lipid bilayer allows us to measure ion current across the membrane in a very quantitative manner. Furthermore, we are able to study ion transport across the membrane in a low salt condition. To elucidate molecular interactions of ion channels and the membranes, we used gramicidin A as a model ion channel, which create cation selective channels when they are dimerized. Each monomers freely diffuses laterally along the membrane. Perturbation of the membrane due to small molecules may change the free energy of gA dimerization, which can be measured by electrical current, as well as ion transport across the membrane. We will show how the small molecules are interfering with membranes and ion channels.

Biography

Tae-Joon Jeon has completed his PhD from University of California, Los Angeles. He is an Associate Professor in the Department of Biological Engineering and the Vice Director of Biohybrid Systems Research Center at Inha University, Korea. He has published more than 40 papers in reputed journals including *Analytical Chemistry, Scientific Reports, Journal of the American Chemical Society, and PNAS.*

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