

Frank Reidy Research Center for Bioelectrics Seminar Series

How one makes pores in membranes?

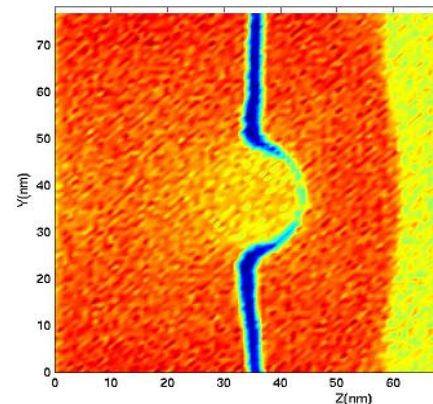
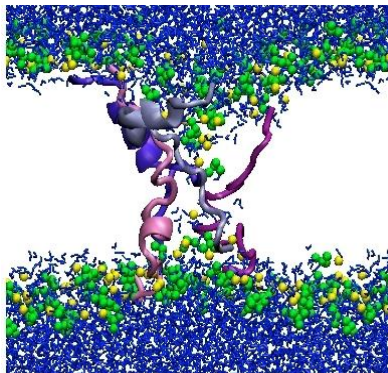
Speaker: Max Berkowitz, Ph.D.
Professor,
Department of Chemistry,
University of North Carolina,
Chapel Hill NC, 27599



When: 9:00 AM, Tuesday, April 12, 2016
Where: 1st floor conference room, IRP II

Abstract:

I will discuss the results from our molecular dynamics simulations performed to study the action of a peptide, melittin, on the model lipid membranes. Melittin anti-microbial activity is due to creation of pores in membranes. Results describing structural and thermodynamic information about the initial stages of membrane poration will be presented. We also performed simulations to study how the shock



wave assisted implosion of nanobubbles located next to lipid bilayers produce bilayer damage by creating pores in them. It is speculated that this kind of damage to membranes may cause traumatic brain injury. In addition, I will present some results from simulations that study how shock-wave-induced bubble implosion damages the blood brain barrier or proteins imbedded in the lipid bilayer.

Biosketch:

Max L. Berkowitz is a Professor in the Department of Chemistry at the University of North Carolina, Chapel Hill. He earned his PhD from the Weizmann Institute of Science and was a visiting Professor at UCLA and University of Houston. His research interests include studies of the structure and dynamics in aqueous ionic solutions, structural and dynamical properties of biomembranes, structure of lipid rafts, and interaction of peptides with membranes. He has given numerous invited talks and presentations, and published nearly 150 peer-reviewed journal publications. He is Fellow of the American Physical Society.