Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Investigating structural details of lipid-cholesterol-Aβ interactions DURGESH RAI, DIVINA ANUNCIADO, WILLIAM HELLER, HUGH O'NEILL, VOLKER URBAN, SHUO QIAN, Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831 — Alzheimer's disease (AD) is the most common form of dementia and is predicted to affect 1 in 85 people around the world by 2050. Amyloid beta (Aβ)-peptide, a peptide composed of 40-42 amino acids that is the product of cleavage from the amyloid precursor protein (APP), is regarded to play a major role in the development of AD. In addition, accumulating evidence points to a positive association between cholesterol and AD. Here, we present results from our studies about Aβ-peptide and cholesterol in bilayer by small-angle neutron scattering (SANS) using a combination of dimyristoyl, phosphocholine (DMPC) and partially deuterated cholesterol (cholesterol-d7) with and without Aβ. We compare the results using grazing incidence and transmission SANS on lipid bilayer films and unilamellar vesicles respectively. The structural details on vesicles and bilayers work in conjunction with the circular dichroism on peptide in solution and oriented circular dichroism in bilayer films. The studies confirm a positive association of Aβ with the membrane layers. The results from different studies will be compared and contrasted in presentation.

Durgesh Rai
Oak Ridge National Lab

Date submitted: 14 Nov 2014 Electronic form version 1.4