Molecular Cellular Biology and Neurosciences

Adaptation to a Cholesterol Free Environment by *Tricholplusia ni* (Tn) Insect Cells[MAS]

Dan Nicholls and Amber Osborne
MSU-Billings, Billings, MT 59101

For many years, researchers have known that cholesterol is an integral component of eukaryotic cell membranes. Cholesterol is found in the bilayer membrane and helps to maintain cellular membrane structure and fluidity. Recent research has found that a specific invertebrate cell line can be grown in cell culture without any cholesterol contained in the cells. Insect cells are not capable of synthesizing cholesterol and therefore require supplementation in their media. Surprisingly, withdrawal of exogenous cholesterol from a *Trichoplusia ni* cell line is not lethal for these cells. This suggests that sterols are not essential for the viability of certain animal cells. This brings up worthwhile questions. How do these cells maintain membrane structure and fluidity without cholesterol? Is there a structural change in the fatty acids of the membrane lipids or does some other lipid take cholesterol's place in the bilayer membrane? Utilizing analytical gas chromatography the composition of membrane lipids from cholesterol depleted *Trichoplusia ni* cells was analyzed and characterized.