My laboratory uses cryo-electron microscopy (cryo-EM) and molecular biology approaches to explore the three-dimensional (3D) structures of bacteria, viruses and cells. In this talk, I will discuss some of our contributions to the fields of electron microscopy and structural biology. In particular, I will present data on our cryo-EM structural investigations of bacteria and bacteria-bacteriophage interactions. I will also present results of our cryo-EM methods development as applied to studies of viruses and cells. I will conclude by briefly outlining some of our future directions.