The crystallographic techniques for structure determination of proteins and nucleic acids at near atomic resolution using synchrotron X-radiation has become almost automatic. However the limits of this procedure are determined by the availability of crystals. As the size and complexity of the molecular assemblies being studied increases, the likelihood of growing useful crystals diminishes. Cryo electron microscopy and tomography have extended the range of biological objects that can be determined at near atomic resolution. Furthermore it is now becoming apparent that the function of the molecular assemblies most often requires very large conformational changes that could never be contained within a crystal. Examples will be presented of the structural changes that occur in viruses as they assemble and prepare to infect new cells.

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