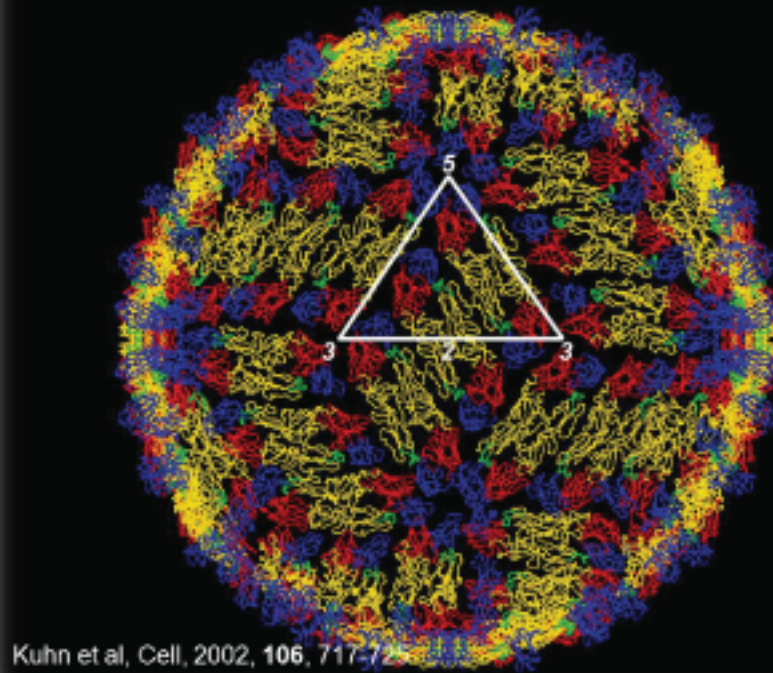


Michael G. Rossmann

“Using Synchrotron Radiation and Electron Microscopy to Map the Huge Structural Changes that Occur in Viruses During Their Life Cycle”

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.



Michael G. Rossmann is a physicist, microbiologist, and Hanley Distinguished Professor of Biological Sciences at Purdue University. He studied physics and mathematics at the University of London, where he received BSc and MSc degrees. He moved to Glasgow in 1953 and taught physics in the technical college and received his Ph.D. in chemical crystallography in 1956. He began his career as a crystallographer as a student of J. Monteath Robertson at the University of Glasgow. In 1956 he moved to the University of Minnesota, where he worked for

two years with Professor William N. Lipscomb, Jr., publishing on the structure of an Iresin Diester and a terpenoid, writing computer programs for analyzing protein structures. He returned to the University of Cambridge in 1958, where he worked with Max Perutz on the structure of haemoglobin. In 1964, he joined the faculty of the Department of Biological Sciences at Purdue as an associate professor and has been there since. Rossmann led a team of researchers that was the first to map the structure of a human common cold virus to an atomic level. He also discovered the Rossmann fold protein motif. Among other honors, Rossmann has been elected a Fellow of the American Academy of Arts and Sciences in 1978, Member of the National Academy of Sciences in 1984, Foreign Member of the Royal Society of London in 1996, and Fellow of the American Association for the Advancement of Science in 1999. He was presented with the Purdue University Medal of Honor in 1995.

Wednesday, September 7, 2011 | 3:00 p.m.

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