1988 PROGRAM

A.M.

9:00 **Registration and Coffee—Room 137, Chemistry-Physics Building**

9:30 **Welcome by President David P. Roselle, University of Kentucky, Room 139, Chemistry-Physics Building**

9:35 **Introductory Remarks**

9:40 **Prof. Roland R. Rueckert, University of Wisconsin**
Picornavirus Vaccines and Chemotherapy—Past, Present, and Future

The picornaviruses include a number of structurally similar pathogens including poliovirus, human rhinoviruses (common cold), hepatitis A virus, and foot and mouth disease virus; hence they are historically important targets for vaccine development and continue to be key models for development of vaccines and antivirals. Determination of their gene sequences and mapping of antigenic sites and drug-resistance mutations within the 3-dimensional structure of these viruses has heightened enthusiasm for development of synthetic peptide vaccines, vaccines from recombinant DNA, and design of improved neutralizing drugs, but success still hinges upon mastery of new research frontiers. Some problems and opportunities presented by the special biology of these viruses will be discussed.

10:40 **Break**

10:50 **Prof. Michael G. Rossmann, Purdue University**
What Does the Molecular Structure of Viruses Tell Us About Viral Functions?

The structures of the protein shell of a number of simple icosahedral RNA plant and animal viruses are now known at atomic resolution. In addition, components of viral capsids such as the haemagglutinin and neuraminidase spikes of influenza virus and the hexon unit of adenovirus are known in similar detail. These structures have provided a wealth of information on viral assembly, viral disassembly, the antigenic surface on viruses available to neutralizing antibodies, the host cell receptor attachment site, fusion of viral particles with the host cell, processing of polyproteins during maturation and the manner in which antiviral agents can interfere with the function of a viral capsid.

P.M.

12:15 **Lunch, Faculty Club**
(See enclosed card)

1:15 **Prof. Eckard Wimmer, State University of New York at Stony Brook**
Genetic Manipulations of Capsid Protein Synthesis and the Formation of Neutralization Epitopes of Poliovirus

2:15 **Break**

2:30 **Dr. Mark A. McKinlay, Sterling-Winthrop Research Institute**
Antiviral Activity of Compounds Which Inhibit Picornavirus Uncoating

A series of orally active antiviral agents which suppress picornavirus replication through an inhibition of the virion uncoating process has been discovered and developed at the Sterling-Winthrop Research Institute in Rensselaer, New York. These antiviral agents have been shown to insert themselves in a hydrophobic pocket within the virus capsid protein VP_1, and to induce large conformational changes (up to 5.5 Å) in the virion structure. These conformational changes are thought to stabilize the virion and prevent uncoating or disassembly and the subsequent release of the infectious RNA. Representatives of this class of antiviral agents have a broad spectrum of *in vitro* antiviral activity against the nearly 200 serotypes of human rhinoviruses and enteroviruses which cause diseases ranging in severity from the common cold to life threatening paralytic poliomyelitis and neonatal sepsis. In addition to the potent *in vitro* activity, these agents are orally effective in preventing paralysis and death in mice infected with human enteroviruses. A representative of this class of antiviral agents, disoxaril (WIN 51711), is currently in clinical trials to evaluate its ability to treat picornavirus infections in man.

3:30 **Informal Discussion, Room 137, Chemistry-Physics Building**

We encourage symposium participants, especially students, to take this opportunity to meet with the speakers.

Department of Chemistry
University of Kentucky
Lexington, Ky. 40506-0055

Fourteenth Annual Symposium on

Chemistry and Molecular Biology

established in the memory of
Anna S. Naff

STRUCTURE AND FUNCTION OF SMALL RNA VIRAL PATHOGENS

Speakers

MICHAEL G. ROSSMANN
MARK A. McKINLAY
ROLAND R. RUECKERT
ECKARD WIMMER

Monday, March 28, 1988
Department of Chemistry
University of Kentucky
Lexington, Kentucky 40506-0055