I-2

The Adenovirus 2 Encoded Proteinase - A Model for Development of Viral Proteinase-Specific Antiviral Agents. C. W. Anderson, J. LaRocca, A. Ostermeyer, and W. Mangel, Biology Department, Brookhaven National Laboratory, Upton, NY 11973.

Adenovirus 2 encodes a serine-type proteinase that is responsible for cleavage of at least 5 virion components during virion maturation. In the absence of proteinase activity, virions assemble, but these virions are not infectious. Adjacent glycine residues form part of the cleavage site specificity for virion component precursors. The proteinase is encoded at the end of late transcription region 3; it is synthesized as a 23,000 MW precursor which, after assembly into virions, is processed to a 19,000 MW form. Although a late virus protein, the precursor appears to be synthesized in relatively small amounts. It is, however, a phosphoprotein. We have cloned the gene for the proteinase into a bacteriophage T7-base plasmid vector expression system which is capable of efficient fusion protein production. Antibodies prepared against the fusion protein will be used to prepare proteinase-specific antisera. This antisera, will in turn be used to characterize and purify the mature viral proteinase. It should then be possible to develop specific proteinase inhibitors capable of preventing the formation of infectious virions.

I-3

Purification of a Human Protein Related to the Anti-Influenza Protein Mx of Mice. G. Weitz and H. Arnheiter, Laboratory of Molecular Genetics, NINCDS, NIH, Bethesda, Maryland 20892, United States of America.

The mouse Mx protein is an interferon alpha/beta induced nucleophilic protein responsible for protection of cells against influenza viruses. Polyclonal antibodies and a particular monoclonal antibody, 2C12, raised against this protein crossreact with related proteins in interferon treated cells of other mammals including man. In contrast to the mouse Mx protein, the Mx related protein(s) of man recognized by these antibodies are strictly cytoplasmic. It is possible that the human Mx homologue(s) are likewise involved in interferon mediated protection against influenza viruses. In order to test this possibility, we purified a water soluble human Mx related protein from recombinant interferon beta treated human embryonic foreskin fibroblasts by immunoaffinity chromatography using antibody 2C12. This one-step purification resulted in a highly enriched preparation of a protein with an apparent M_r of 75000 as determined by SDS-PAGE. It crossreacts with polyclonal anti-mouse Mx antibodies, and, like the mouse Mx protein, has a strong tendency to aggregate. Currently, we are testing the activity of this protein by microinjection into cultured mouse and human cells.