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SPOTLIGHT

Articles of Significant Interest Selected from This Issue by the Editors

Poliovirus Permissivity in Cultured Cells

Poliovirus is a neurotropic virus that replicates in vivo in only a few tissues, including the brain and spinal cord. However, poliovirus replicates efficiently in monolayer cultures of almost any cells of primate origin. How cells acquire susceptibility to poliovirus after cultivation is not known. Yoshikawa et al. (p. 4313–4325) show that the acquisition of susceptibility to poliovirus by cultured cells is associated with the loss of a rapid and robust interferon response. This finding answers a question that had remained unresolved since the time of Enders.

Insight into DNA Replication by Simian Virus 40 Large T Antigen

For simian virus 40 (SV40), initiation of DNA replication depends on the viral protein, large T antigen, which assembles as double hexamers at the origin of replication and acts as a helicase. Meinke et al. (p. 4304–4312) determined the crystal structure of the origin-binding domain of large T antigen and found that the domains are arranged with helical symmetry, incorporating six subunits per turn. The origin-binding domains surround a positively charged channel that is large enough for double-stranded DNA. This structure, together with previous mutagenesis and biochemical data, provides insight into the assembly of the SV40 preinitiation complex.

Herpes Simplex Virus Anterograde Microtubule-Mediated Transport In Vitro

In neurons, herpes simplex virus (HSV) capsids or enveloped particles utilize microtubule-mediated anterograde transport to travel to the nerve terminal for subsequent release from cells. Lee et al. (p. 4264–4275) show that green fluorescent protein-containing HSV particles are capable of binding to rhodamine-labeled microtubules in an imaging microchamber. Following the addition of ATP, these particles are transported along microtubules in a manner consistent with kinesin-mediated, plus-end-directed motility. This minimal system should aid in the identification of viral and cellular proteins involved in HSV anterograde transport.

Constitutive Activation of Focal Adhesion Kinase during Hepatitis B Virus Replication: a Possible Link to Cancer

The hepatitis B virus (HBV) HBx protein is a multifunctional regulatory protein that is critical for HBV replication and thought to be a cofactor in the development of HBV-associated liver cancer in humans. Bouchard et al. (p. 4406–4414) show that, during viral replication, HBx causes prolonged activation of focal adhesion kinase, a member of the Src kinase family associated with the development and progression of liver cancer. These findings may lead to a better understanding of the viral factors that contribute to the increased incidence of hepatic neoplasms in persons chronically infected with HBV.

Patterns of Chemokine Expression in Th1- versus Th2-Biased Viral Lung Disease

Respiratory syncytial virus (RSV) infection induces unusual patterns of immunity. Prior immunization with inactivated RSV can lead to enhanced disease and lung eosinophilia following challenge with viable virus. Culley et al. (p. 4521–4527) show that this Th2-cell mediated eosinophilic lung disease is associated with increased and prolonged production of CCL2, CCL3, CXCL10, and CCL11 in mice. This pattern of chemokine expression is evident surprisingly early during challenge with RSV and is similar to that described for other models of lung eosinophilia. This work suggests that selective blockade of chemokines might be of therapeutic value in children with severe RSV infections.

Viable Measles Virus with a Segmented Genome Generated by Reverse Genetics

Viruses classified in the order *Mononegavirales* (mononegaviruses) have a single nonsegmented negative-strand RNA molecule as the genome. The nonsegmented form of the genome is thought to confer enhanced fitness in nature. Takeda et al. (p. 4242–4248) generated measles virus, a member of the *Mononegavirales* order, with a segmented genome by reverse genetics. The virus shows high replication competence and has the capacity to encode additional genes. This work provides novel insights into the divergence of the negative-strand RNA viruses having segmented and nonsegmented RNA genomes.