

## Media Backgrounder Replicating hepatitis C

- Viruses need to invade healthy cells in order to replicate and spread throughout the body. The hepatitis C virus (HCV) replicates in liver cells.
- There is no certain cure or vaccine for hepatitis C. Patients are given interferon-based treatments to slow and sometimes halt the disease.
- Interferon is produced naturally by cells in response to a viral infection. Interferon stimulates genes with antiviral properties, such as the protein kinase R (PKR) gene.
- Professor Williams and his team created a mouse cell culture system that demonstrated the replication of HCV. Their findings showed that:
  - HCV replicated more efficiently in mouse cells that did not carry the PKR gene. This showed that PKR inhibits the replication of HCV.
  - The PKR protein expressed by the PKR gene appeared in higher amounts in HCV-infected mouse cells.
  - The expression of another gene stimulated by interferon, p56, also increased with HCV replication. This demonstrated that the replication of HCV also activates antiviral pathways independent of PKR.
  - Two different types of interferon blocked the replication of HCV in mice with the PKR gene and mice without the gene. This showed that interferon can induce an antiviral response with or without PKR.
- The new mouse cell culture system will be a valuable tool for the study of HCV infection and the effects of interferon therapies.

