Three Major Studies Identify Different Ways Hep C Attacks Liver

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Within a two-week span in December 2012, three major studies outlined ways that hepatitis C virus (HCV) invades and attacks the liver, potentially opening the door for the development of new antiviral treatment, ScienceDaily reports.

In the December 7 issue of Journal of Biological Chemistry, researchers at the University of Southern California (USC) published a paper describing their findings about how the hep C virus binds to receptors on the surface of liver cells and activates two proteins known as PI3K and AKT. These proteins control both metabolism and cell growth in the liver and allow hep C to enter liver cells.

“When these two protein factors are activated, they trigger a cascade of reactions, altering the physiology of infected cells,” the study’s lead researcher, James Ou, a professor of molecular microbiology and immunology at the Keck School of Medicine at USC, said in a statement. “Later, by continuing to disturb this pathway, the virus may sensitize the liver cells to eventually become cancerous.”

Scientists at the University of North Carolina (UNC) at Chapel Hill published online in the Proceedings of the National Academy of Sciences on December 17 their study of how HCV enters and hijacks the workings of liver cells. They analyzed how hep C binds to the microRNA miR-122 in the liver, which under healthy circumstances regulates gene expression and cellular metabolism, but which hep C tricks into improving the virus’ ability to produce viral proteins.

University of Colorado School of Medicine (UCSM) scientists published a paper online in Nature Structural and Molecular Biology on December 23 describing how HCV’s RNA manipulates liver ribosomes, which manufacture proteins, into developing viral proteins. They found that even slight alterations in the interactions between hep C and the ribosomes during this hijacking can block the entire process.

Look for a more expansive discussion of these studies on hepmag.com in the coming weeks.

For the ScienceDaily story on the USC study, click here.

For the abstract on the USC study, click here.

For the ScienceDaily story on the UNC study, click here.

For the abstract on the UNC study, click here.

For the statement from UNC, click here.

For the ScienceDaily story on the UCSM study, click here.

For the abstract on the UCSM study, click here.

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