ACS Infectious Diseases

In This Issue

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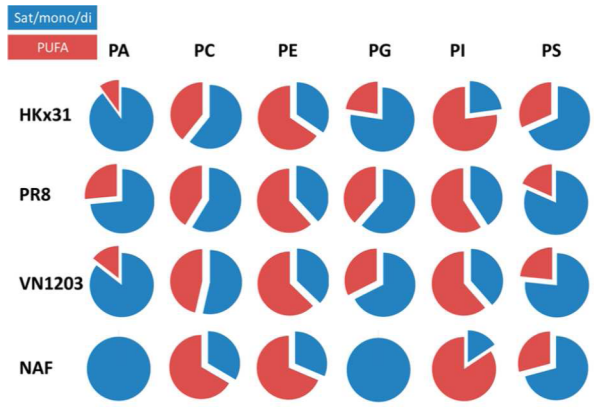
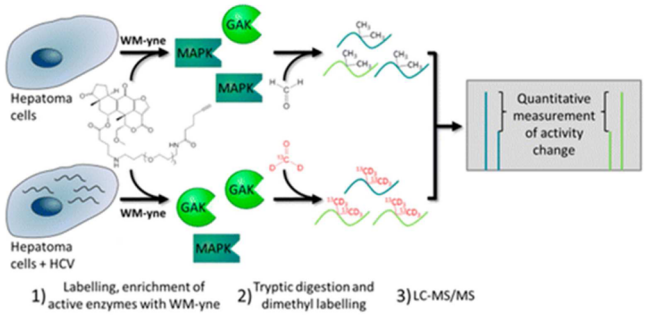
MEMBRANE LIPIDS – AFFECTING THE CURVE



Seasonal epidemics of flu are caused by influenza A and influenza B viruses with particular subtypes being the predominant culprits in any given year. Influenza viruses are enveloped viruses and virus entry requires fusion of the viral envelope with the membrane of the target cell. Variations in the lipid composition of the envelope between strains can thus affect viral infectivity and pathogenesis. In particular, the nature of the viral lipids can affect curvature of the envelope, with negative curvature favoring fusion.

Here, Ivanova et al. (DOI 10.1021/acsinfecdis.5b00040) conduct a systematic study using rigorous purification techniques to quantify the differences in phospholipid composition between three strains of influenza A virus as well as host cells. In total, the authors identify more than 200 lipid species from 7 major classes and demonstrate notable differences in particular classes of lipids that can affect curvature between strains. The differences in membrane composition between various strains of influenza noted here contribute to a greater understanding of influenza pathogenesis.

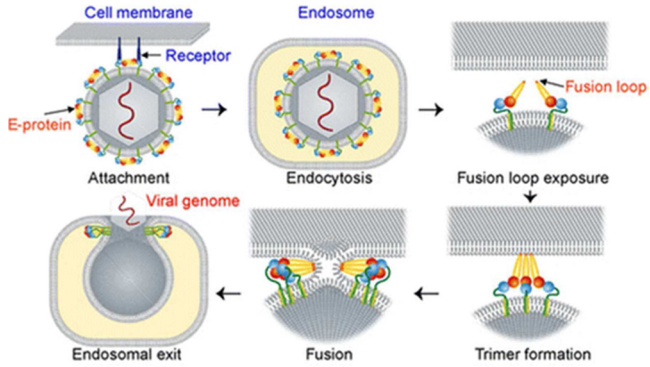
PROBING THE KINOME TO UNDERSTAND HCV INFECTION



Host cell kinases are the ultimate cellular regulators acting in response to infection as they initiate an immediate reaction to pathogens and can trigger global changes in signaling activity. Although host cell kinase activity can play a role in controlling infection, pathogens such as hepatitis C virus (HCV) also depend on the activity of certain host kinases to complete their life cycle. As such, kinases present as a potential target for therapeutic development.

In this issue, Desrochers et al. (DOI 10.1021/acsinfecdis.5b00083) use a wortmannin-yne probe for high-throughput activity-based protein profiling of the active kinome of human hepatoma cells infected with HCV. The authors identify a number of pathways that appear to be modulated in response to the various stages of viral infection which may serve as potential targets for therapeutic development.

CAN TARGETING VIRUS ENTRY FILL AN UNMET NEED IN THE TREATMENT OF FLAVIVIRUS INFECTIONS?



Flaviviruses comprise a diverse group of viruses that include the mosquito-borne pathogens yellow fever virus, dengue virus, Japanese encephalitis virus, and West Nile virus. With increased globalization, flavivirus infections have emerged as a significant threat to global health, yet no antiviral therapies have been developed for treatment of any flavivirus infections.

The review by Wang and Shi (DOI 10.1021/acsinfecdis.5b00066) discusses the potential for targeting flavivirus entry as a therapeutic option. The authors describe current efforts in academia and industry aimed at developing small molecule inhibitors of flavivirus entry.

Special Issue: Virus Entry

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