

GLYCOMICS DATA CLUB

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12:00 - 1:00 pm
SCHOOL OF MEDICINE 190P



Mumps Virus Glycan Receptors: Sickening Sweet, but Low-Carb?

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Since 2006, there have been several relatively large outbreaks of mumps virus among highly vaccinated populations in the U.S. The basis for these outbreaks is not clear since there is only one serotype of virus and since there are no parameters of the immune response that are known to reliably assure protection from symptomatic disease. In certain individuals, wildtype mumps virus infection generates poorly protective immunity as evidenced by recurrent symptomatic infections. Similarly, certain individuals who have received two or even three doses of vaccine are susceptible to symptomatic infection. (parotitis, and orchitis in post-pubertal males). In contrast, it is estimated that as many as 30% of immunologically naïve individuals experience no symptoms following wildtype infection, despite evidence of seroconversion. The reasons for this divergence in clinical outcomes are unknown.

Mumps virus requires sialic acid to bind and enter the host cell, and previous reports suggest that mumps binds sialic acid in α 2,3, α 2,6, and α 2,8 linkages, with a neurovirulent strain showing preference for α 2,6 binding. A very recent report by Kubota et al (2016 PNAS,113:11579-11584; PMID 27671656) indicates that several mumps strains bind only α 2,3 sialic acid in simple unbranched trisaccharides and that binding is inhibited by branched glycan structures. While these studies have used a limited number of glycans, we propose to utilize an extensive library of glycan structures available through the Emory Glycomics Core Facility to more fully characterize mumps receptor binding. We hypothesize that variation in host expression of specific glycan structures may contribute to individual susceptibility to symptomatic infection and to the characteristic pathology.

See also: Latner DR and Hickman CJ (2015) "Remembering Mumps" *PLoS Pathog.* 2015 May 7;11(5):e1004791.

PIZZA WILL ARRIVE AT 11:30 IN MEDICAL SCHOOL 190P