

## A Novel Cytomegalovirus Cell-Entry Protein Complex

Researchers at the La Jolla Institute for Immunology (LJI) and Louisiana State University Health Shreveport (LSUHS) have discovered a novel human cytomegalovirus (HCMV) protein complex that they believe facilitates cell-to-cell spread of HCMV in cell types key for virus-induced disease. This complex is composed of three known HCMV proteins that were not known to bind together and be incorporated into the virion envelope, and thus is termed the “3-mer.”

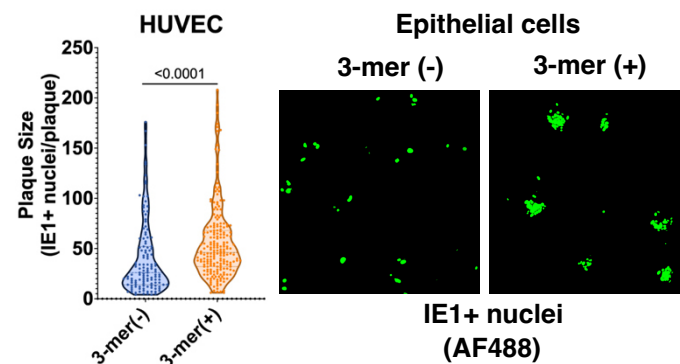
HCMV is a ubiquitous herpesvirus that infects the vast majority of the world’s population and is carried for life. Although infection is typically asymptomatic, the virus causes serious disease in people with compromised or naïve immunity (e.g., transplant and chemotherapy patients). HCMV is also the #1 infectious cause of congenital birth defects resulting from *in utero* infection ranging in severity from mild hearing loss to profound neurodevelopmental defects and even death. As of yet, there is no approved vaccine, and existing antiviral drugs show undesirable levels of toxicity. Accordingly, HCMV is ranked in the highest priority tier by the National Vaccine Advisory Committee.

As such, researchers at LJI and LSUHS have worked together to identify this novel protein HCMV complex. Current protein engineering approaches to stabilize the recombinant 3-mer are underway to 1) enhance its efficacy as a new vaccine antigen and 2) facilitate the generation of diagnostic tools and therapeutic antibodies for use in infected people.

### ADVANTAGES:

- Novel protein complex that facilitates cell-to-cell spread of HCMV
- May perform better than current vaccine antigens under development
- Can also be used to find novel 3-mer-directed antibodies

*A novel HCMV “3-mer” protein complex that facilitates cell-to-cell spread of HCMV*



*Left: 3-mer promotes HCMV cell-associated spread in primary human umbilical vein endothelial cells (HUVEC)*

*Right: 3-mer increases the size of HCMV foci in epithelial cells (ARPE-19)*