

A Prefusion Stabilized Lymphocytic Choriomeningitis Virus (LCMV) Glycoprotein

Researchers at the La Jolla Institute for Immunology (LJI) have designed a prefusion stabilized lymphocytic choriomeningitis virus (LCMV) glycoprotein that may be useful in designing a LCMV vaccine.

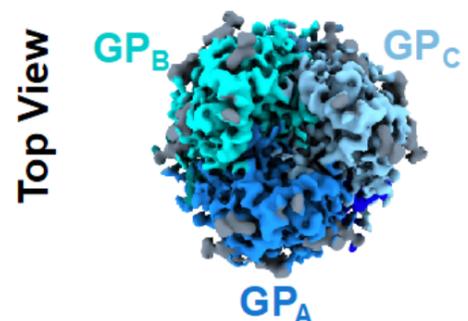
LCMV exists in all populated continents with a 2-5% worldwide seroprevalence. LCMV can cause neurologic disease and mild to lethal febrile disease in transplant recipients. Importantly, LCMV acquired during pregnancy can cause congenital hydrocephalus, chorioretinitis, and other birth defects in the fetus. The disease is historically underreported but appears to be re-emerging, especially among the immune compromised, children, and pregnant women. There are currently no licensed vaccines or therapies for the treatment of LCMV infection. A major target for neutralizing antibodies against the related Lassa virus (LASV) are quaternary epitopes presented only in the context of the prefusion GPC trimer, and the conservation in both sequence and structure between LASV and LCMV suggests that similar epitopes also exist on LCMV. Thus, the availability of a prefusion template for LCMV GPC could facilitate the development of vaccines and immunotherapeutics to protect vulnerable populations (e.g., transplant recipients and pregnant women) from LCMV infection.

As such, researchers in the Ollmann-Saphire lab have designed a trimeric LCMV glycoprotein that is prefusion stabilized due to a set of unique mutations that afford incredible expression and stability. This engineered arenaviral immunogen can be employed in many clinical and research applications and may lead to the development of the first LCMV vaccine.

ADVANTAGES:

- Formation of a prefusion stabilized LCMV glycoprotein
- Can be utilized in many different clinical and research applications
- Could facilitate the development of LCMV vaccine/immunotherapeutic

A Trimeric LCMV Glycoprotein that is Prefusion Stabilized



Top view of the cryoEM density map of LCMV GP, showing the trimeric nature of the GP