Case #638

Augmenting Vaccine Viral Production Using Late Domain Manipulation

Vaccines against infectious disease have dramatically decrease mortality and morbidity in the western hemisphere and have led to the eradication of small pox globally. In order to expand this impact, the industry needs increased and improved vaccine development methods. Reduced production time and costs would significantly alter and impact the market for the best and efficacious vaccines, as well as change how the global health community approaches vaccination for both controllable diseases and in preparation for novel threatening vectors.

The Botten lab has identified a late domain motif, PPXY that regulates defective interfering (DI) particle formation and release. Use of the PPXY domain and its mechanism of action, in virus vaccine development could reduce production costs in multiple ways. In one iteration, the use of the domain increases D1 particle formation and attenuates virulent viruses. In another iteration, addition of the PPXY domain increases the yields of virus without additional virulence. Lastly, growth of virus in cells without an ESCRT pathway, blocks the phosphorylation of PPXY, which would also allow increased yield of virus, but without genetic modification of the vaccine strain.

Applications:

- Vaccine virus development and production.

Advantages:

- Provides a rapid method for generating novel vaccine virus strains.
- Increases the yield and general efficacy of vaccine virus production.
- Reduction of production costs will expand global vaccine availability and use.

Intellectual Property and Development Status:

PCT Application No. WO2017156146A1
Researchers are looking for research and development collaboration and licensing opportunities.

References:

A novel phosphoserine motif in the LCMV matrix protein Z regulates the release of infectious virus and defective interfering particles. Journal of General Virology (2016), 97, 2084–2089

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