

FOX CHASE CANCER CENTER

ELISA Assay for the Detection of Ectromelia and Vaccinia Virus Antibodies in Mice, using Recombinant Viral Proteins

Description

Dr. Luis Sigal has developed an ELISA (enzyme linked immunosorbent assay) specific for ectromelia antibodies or vaccinia virus in mice by utilizing recombinant ectromelia protein EVM 135 or vaccinia A33R, generated in *E. coli*.

Background

Orthopoxviruses are responsible for pox diseases, including mousepox and smallpox. Ectromelia virus, the causative agent of mousepox, represents a mouse model for smallpox in humans. Smallpox, originating from the Variola virus, was eliminated due to the cross protection offered by a live Orthopoxvirus vaccine with Vaccinia virus. However, extensive smallpox immunization has not taken place since the late 1970's, and with the possible threat of bio-terrorism, many people would be unprotected. Therefore, a safer alternative to the live Vaccinia virus must be developed. Importantly, ectromelia and variola viruses are genetically similar, and thus, investigation of mousepox may shed insight into smallpox immunity. The Sigal lab has demonstrated that recombinant ectromelia EVM135 and the related vaccinia protein, A33R provide partial defense against deadly Orthopoxvirus exposure in natural hosts. In addition, using the above mentioned ELISA assay, the Sigal lab has shown that sera from ectromelia or vaccinia infected mice recognize the heterologous proteins but react much better with the homologous one (i.e. sera from vaccinia infected mice react stronger with A33R, while sera from ectromelia infected mice react stronger with EVM135).

Advantages

At present, ELISA analysis for anti-ectromelia antibodies in mice uses vaccinia virus antigen from infected cells and does not allow for differentiation between the ectromelia and vaccinia viruses. The use of recombinant ectromelia protein avoids the potential hazards of exposure to infectious virus, and significantly, the parallel use of EVM135 and A33R as antigens allows for the differentiation of the infecting virus.

Applications

It is anticipated that the recombinant EVM135 protein will be useful for companies in testing experimental mice. This is especially likely since many research facilities already have an established procedure for the analysis of anti-ectromelia antibodies in mice. In addition, there exists an opportunity for researchers working with ectromelia or vaccinia virus to utilize the assay as a kit in individual labs. This assay could also be used to determine anti-Orthopoxvirus antibodies in other species, including humans.

Opportunity

Recombinant EVM135 and/or A33R are available for non-exclusive licensing.

For further information please contact:

Frances Galvin
Assistant Director
Office of Business Development
Fox Chase Cancer Center
333 Cottman Avenue
Philadelphia, PA 19111
Tel: (215) 728-1113
Fax: (215) 214-1440
Email: F_Galvin@fccc.edu
<http://www.fccc.edu>

About Fox Chase Cancer Center

Fox Chase Cancer Center is an independent, not-for-profit institution devoted to cancer treatment and prevention, clinical research, and basic research on cancer prevention, initiation, and progression. More than 150 clinical trials are typically ongoing at any time. Key discoveries of Fox Chase researchers include the Scid mouse and the Hepatitis B vaccine. Fox Chase was one of the first institutes to be designated as a comprehensive cancer center by the National Cancer Institute and remains among the top three NCI-core grant recipients in the country. Fox Chase is a founding member of the National Comprehensive Cancer Network, an alliance of the world's leading cancer centers, and has a network of hospital affiliations in Pennsylvania, New Jersey and Delaware.