

William R. Wiley

EMSL In Brief

Environmental Molecular Sciences Laboratory

Mass Spectrometry Capabilities Aid in Large Poxvirus Study

Using state-of-the-art mass spectrometry capabilities at the Environmental Molecular Sciences Laboratory (EMSL), researchers successfully conducted one of the largest proteomic studies of the vaccinia virus, a poxvirus nearly identical to smallpox and used as a vaccine to prevent the sometimes fatal disease.

The team of researchers was led by scientists from the National Institutes of Health (NIH) and involved EMSL researchers and users from the Pacific Northwest National Laboratory, on whose campus EMSL resides. The team used a combination of EMSL's tandem mass spectrometry and Fourier-transform ion cyclotron resonance (FTICR) mass spectrometry capabilities to detect 80 vaccinia virus-encoded proteins—confirming and extending the list of vaccinia virus proteins known to be produced. Ten of the proteins detected during the study accounted for approximately 80 percent of the virion mass of vaccinia virus—or the infectious form of the virus as it exists outside of the host cell. Another 13 proteins were identified that were not detected and reported in earlier studies.

The study, funded by the NIH, will help provide researchers with a biological understanding of poxviruses and is expected to aid in development of improved antiviral drugs and vaccines to combat outbreaks of poxviruses that might occur as a result of biological threat. Researchers will continue efforts to study and learn more about the previously undetected proteins.

The results of the study were reported in the recent online version of *Virology*. For more information, contact Mary Ann Showalter (509-376-5751).



State-of-the-art proteomic capabilities such as EMSL's 11.5-tesla FTICR mass spectrometer allowed collaborators from the National Institutes of Health, EMSL, and Pacific Northwest National Laboratory to conduct one of the largest studies of the poxvirus, vaccinia virus.

P.O. Box 999 Richland, WA 99352 • <http://www.emsl.pnl.gov> • 509-376-2553