Researchers identify novel compound to halt virus replication

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A team of scientists from Boston University School of Medicine (BUSM) have identified a novel compound that inhibits viruses from replicating. The findings, which are published online in the *Journal of Virology*, could lead to the development of highly targeted compounds to block the replication of poxviruses, such as the emerging infectious disease Monkeypox.

The basic research was led by Ken Dower, PhD, a postdoctoral fellow in the laboratory of John Connor, PhD, assistant professor of microbiology at BUSM who is corresponding author on the paper. They worked with Scott Schaus, PhD, associate professor of chemistry from the Boston University College of Arts & Sciences and co-principal investigator in the Center for Chemical Methodology and Library Development (CMLD). The researchers collaborated with the United States Army Medical Research Institute for Infectious Diseases (USAMRIID), who conducted the experiments involving Monkeypox at their laboratory in Maryland.

Poxviruses, such as smallpox, vaccinia virus and the Monkeypox virus, invade host cells and replicate, causing disease. Smallpox, a deadly poxvirus that killed hundreds of millions of people worldwide, was declared eradicated by the World Health Organization in 1979 after successful vaccination efforts. Recent data shows that the number of people being infected by Monkeypox is increasing globally.

Utilizing state of the art screening techniques, vaccinia and a library of

chemicals from CMLD, Dower and his colleagues looked for compounds that could stop vaccinia from replicating inside human cells. They identified several. In studying how one of these compounds work, they discovered that the virus can enter the cell in its presence, but once the virus was inside, the compound inactivates an essential piece of virus machinery.

USAMRIID researchers then tested the efficacy of the chemical compound on the Monkeypox virus. Their experiments demonstrated similar results, showing that this chemical compound has the ability to inhibit different varieties of poxviruses.

"The compound we identified forces the catastrophic failure of the normal virus amplification cycle and illustrates a new drug-accessible restriction point for poxviruses in general," said Connor. "This can help us in developing new compounds that fight poxviruses infection."

Provided by Boston University Medical Center

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