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## University of Lethbridge researchers make strides to help in the fight against Mpox

Mpox (monkeypox) made headlines last year due to a global outbreak, with the World Health Organization reporting 87,000 cases and 112 deaths in 110 countries.

Now University of Lethbridge researchers have identified important DNA sequences in its genome that could lead the way for novel treatments. The current options for treatment are limited and include the smallpox vaccine, which provides partial (approximately 85 per cent effectiveness) protection against Mpox, and an antiviral drug used to treat smallpox.



“Our work provides critical insights into the genomic makeup of this family of viruses,” says Dr. Trushar Patel, associate professor in the ULethbridge Department of Chemistry & Biochemistry, and leading researcher in the study. “We discovered that certain DNA sequences in the Mpox genome can fold into intricate structures called G-quadruplexes. These structures play a crucial role in regulating gene expression and are being investigated as potential targets for developing new medications.”

“These structures have significant importance in viral survival,” says Dr. Higor Pereira, a post-doctoral researcher in Patel’s lab supported by the NSERC CREATE RNA Innovation program.

“We have discovered a unique and conserved structure within the Mpox genome that is not present in closely related viruses,” says Darren Gemmill, a PhD candidate in Patel’s lab. “Our study specifically targeted these structures using a chemical compound which has demonstrated promising antiviral properties against Ebola and Herpes viruses in previous reports.”

Mpox is endemic, or consistently present, in West and Central Africa and various human outbreaks have occurred since the 1980s, resulting from the stoppage of smallpox vaccinations. More recently, the Mpox virus has emerged in nations where it occurs only rarely.

The Mpox virus is transmitted to humans from animals and was so named after the virus was discovered in monkeys in 1958. The virus is spread from person to person through close physical contact with skin lesions, body fluids, respiratory droplets and contaminated materials like bedding. Mpox symptoms include headache, fever, muscle and body aches, back pain and an acute rash.

“Typically, Mpox is geographically limited to African countries such as Cameroon, the Central African Republic and Nigeria, for example,” says Patel. “Having confirmed cases of Mpox without any travel history to an endemic area is unusual and requires raising awareness about Mpox, as well as the development of more effective treatments.”

Their study, titled *Mapping and characterization of G-quadruplexes in monkeypox genomes*, was recently published in the prestigious [Journal of Medical Virology](#).

This news release can be found online at [Mpox research](#).

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**Contact:**

Caroline Zentner, public affairs advisor  
University of Lethbridge  
403-394-3975 or 403-795-5403 (cell)  
[caroline.zentner@uleth.ca](mailto:caroline.zentner@uleth.ca)

*Our University's Blackfoot name is Iniskim, meaning Sacred Buffalo Stone. The University is located in traditional Blackfoot Confederacy territory. We honour the Blackfoot people and their traditional ways of knowing in caring for this land, as well as all Indigenous Peoples who have helped shape and continue to strengthen our University community.*