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London-made HIV injection has potential to cure millions worldwide

Western University researchers are gearing up for clinical trials of a London-made injection that could rid patients of HIV, helping tens of millions worldwide.

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Eric Arts, right, a professor of microbiology and immunology at the Schulich school of medicine and dentistry at Western University, Ryan Ho, left, and Minh Ha Ngo, rear, were photographed in the ImPaKT facility at Western University in London on Monday March 25, 2024. (Derek Ruttan/The London Free Press)

Western University researchers are gearing up for clinical trials of a London-made injection that could rid patients of HIV, helping tens of millions worldwide.

The shot, developed by researchers at Western University's Schulich school of medicine and dentistry in partnership with scientists in the United Kingdom and United States, could help patients on HIV treatment drugs get off them permanently by clearing out the residual virus lurking in their bodies, an intervention set for human trials later this year.

"It would drive out the last little bits of virus that stay hidden in the body, and in doing so, you hope, they can stop their treatment and live life-long without HIV," said Eric Arts, professor of microbiology and immunology at Schulich.

"What we've designed is a very targeted approach. We're only hitting the cells that have the remnant HIV inside."

HIV is a virus that, if left untreated, can turn into AIDS, an autoimmune disease that kills nearly one million people a year globally.

Treatment options for HIV-infected people have evolved considerably since the virus became recognized worldwide in the early 1980s, Arts said, from courses of 15 or more pills a day decades ago to sometimes just one a day now. About 30 million people around the world are on long-term treatment for the virus, he said.

While the drugs effectively suppress the virus, low levels of HIV continue to hide in the immune cells of patients, Arts said. If a patient were to go off their HIV treatment, the virus would roar back with a vengeance.

It means patients are on HIV treatment drugs for life, which can have its own long-term consequences and side-effects, Arts said, not to mention the lasting toll of living with the stigmatized diagnosis.

The HIV-like particle developed by the Western-led research team stimulates an immune response, triggering it to attack the particle and any residual virus that's lurking around, Arts said.

Other attempts by researchers and pharmaceutical companies to kill off residual HIV were very broad, involving various low-dose chemotherapies that hit all cells indiscriminately, Arts said. The new approach is highly targeted and is not expected to cause significant side-effects for patients, he said.

“We’re looking at potentially three to four injections, spaced out one a month. It’s very similar to a vaccine approach, except with more boosters,” said Arts, executive director of Western’s Imaging Pathogens for Knowledge Translation (ImPaKT) lab program.

The first human trials will test whether the product is safe, Arts said. Other phases will test its effectiveness of freeing patients from the residual HIV in their bodies and getting them off long-term drug treatments, he said.

While the clinical trials will unfold in several centres and results are still years away, the injection will be made here in London, Arts said.

STORY CONTINUES BELOW

A study on the effectiveness of the HIV-like-particle is being published this week in the journal Emerging Microbes and Infections. The study tested the HIV-like-particle intervention on blood samples from people on long-term HIV treatment drugs in Uganda, Canada and Cleveland, Ohio.

“We looked (to see) if, in essence, we could cure their immune cells of HIV and if we could use it in a clinical setting to do the same thing,” Arts said. “It was very, very successful in doing so. So, we’re moving forward now.”

The lead author on the study, Western master’s degree student Ryan Ho, said he is grateful to be part of such a deeply meaningful research project with the potential to turn the page on HIV/AIDS.

In the coming months, the team hopes to publish additional papers on the HIV-like-particle that build off the latest study, Ho said.

Not content to sit in the lab, Ho began volunteering at the Regional HIV/AIDS Connection in London during the pandemic, assembling harm-reduction kits.

“It feels really special to see how what we do on the lab bench will hopefully help those HIV-positive clients someday,” he said, adding he tries to stop in regularly to volunteer.

“I’m grateful to get the full picture. When we do science, it’s important to remember who we do it for.”

The latest paper is a collaboration with the University of Bristol in the United Kingdom, Case Western Reserve in Cleveland, and Johns Hopkins and National Institutes of Health in Maryland.

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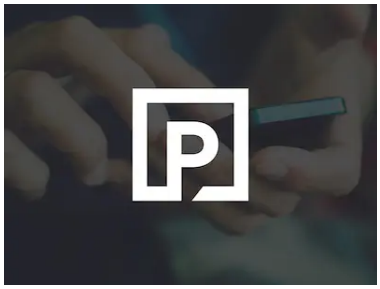
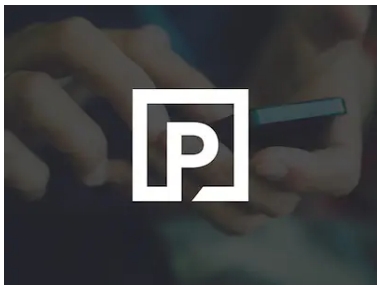
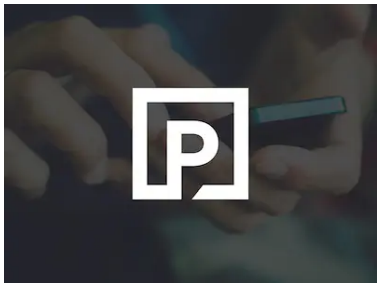
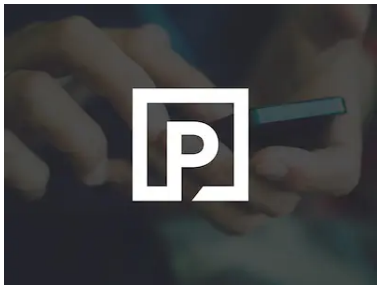
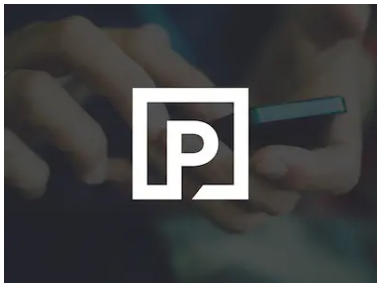

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