

# Cracking 'virus code' could help fight cancer

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Virus experts from Cardiff University's School of Medicine have uncovered, for the first time, how a virus known as Adenovirus type 26 (Ad26), which has been used effectively in a tamed form as a vaccine, can infect human cells.

Ad26 is a virus of great interest to the scientific and [medical community](#). Ad26 is both a human pathogen causing severe respiratory distress, and potentially death in vulnerable patients, and a key component in new vaccines to fight deadly diseases.

An Ad26 based vaccine is currently being deployed in Africa to fight the Ebola epidemic. However, until now, science has yet to understand how this virus works inside the [human body](#), and what about it makes it such a good vaccine.

The research, published in the journal *Science Advances*, provides the first detailed analysis of the structure of the virus in complex with its newly discovered receptor.

"Our research finds that Ad26 uses a type of sugar found on the surface of most cells to enter and infect [human cells](#)," according to Alexander Baker, who led the research.

"Previously the [scientific community](#) believed that Ad26 used a protein called CD46 to infect cells.

"Our research shows this to be extremely unlikely and offers an alternative explanation."

By understanding how the virus infects human cells the team believe this will allow them to develop antivirals to prevent the spread of infectious forms of Ad26 and will result in the development of more effective vaccines, based on tamed Ad26, to fight infectious diseases as well as cancer.

Alexander added: "We know that an Ad26 based vaccine is already showing promise in life-threatening infections, like Ebola.

"However, until now, there is little, if any, understanding of the virus works as a vaccine or as a disease. Our research provides new answers.

"Now we've established how it enters the body and spreads, scientists and clinicians can use this knowledge to target the sugar binding site to

develop drugs to prevent its spread and develop vaccines to fight life threatening infections.

"Cracking the virus's code could prove important in understanding how the viral [vaccine](#) works effectively to protect against life-threatening infections."

The team will use this knowledge to develop new [virus](#)-based vaccines and more effective cancer-vaccines to stimulate the body's immune system to fight back against cancer, when it develops.

**More information:** Alexander T. Baker et al. Human adenovirus type 26 uses sialic acid–bearing glycans as a primary cell entry receptor, *Science Advances* (2019). [DOI: 10.1126/sciadv.aax3567](https://doi.org/10.1126/sciadv.aax3567)

Provided by Cardiff University

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