

DELL Innovation that inspires. Latitude 12 7000 Series 2-in-1

Learn More

With Intel® Core™ M processor



March 21, 2016

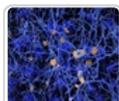
Other search tools: [Drugs](#) | [Health](#) | [News](#)

WHAT IS
**BINGE EATING
DISORDER** AND
HOW CAN YOU HELP
ADULT PATIENTS
MANAGE IT?
CLICK HERE

S11244 02/16

Advertisement

Trending Stories



Real maple syrup shows promise in protecting brain health



New method to harvest stem cells reduces side effects for donors



Secondary non-Hodgkin's lymphoma a concern for CML patients using TKIs

[Surprising bone health findings](#)

First atomic-scale view of inte capsid and host protein cyclo

Published on March 7, 2016 at 5:23 AM · [No Comments](#)

Recommend [Share](#)

A new study offers the first atomic-scale view of an the protein coat that shepherds HIV into the nucleu known as cyclophilin A. This interaction is key to HI

A paper describing the research appears in the jour

Cyclophilin A is found in most tissues of the human inflammatory response, immunity and the folding a it fails to work properly or is overproduced in cells, diseases such as rheumatoid arthritis, asthma, can facilitates some viral infections, including HIV.

"We have known for some time that cyclophilin A p University of Illinois physics professor Klaus Schulte postdoctoral researcher Juan R. Perilla and Universi Zhang and postdoctoral researcher Chuang Liu.

The HIV capsid somehow tricks this cellular protein transits through the cell and makes its way to the r capsid interacts with a nuclear pore that offers an e virus uses the pore as a channel to inject its geneti commander the cell.

This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out m



in women with restless legs syndrome



New procedure allows kidney transplants from incompatible donors



Maternal diet during pregnancy and lactation leads to epigenetic changes in offspring

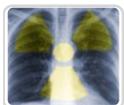
Latest News



Antipsychotic drugs may do significantly more harm to Parkinson's disease patients



Researchers use DNA sequencing technology to identify gene variants that aff...



Doctors now have better tool to assess individual kidney function



Anthim (obiltoximab) injection approved for treatment of inhalational anth...



Researchers disprove previously assumed behavior of macrophage immune cells



Advanced genomic sequencing tracks deadly blood infection in cancer patients

Studies in cell culture have found that the virus can disguise itself as cyclophilin. Drugs that interfere with cyclophilin cannot be used in human HIV treatment because they would suppress the immune response.

In the new study, the researchers used a massive computer simulation which they developed in a 2013 study. Building this model of the interactions of 64 million atoms, a feat that required a supercomputer at the National Center for Supercomputing Research Institute.

For the new study, the team used Blue Waters as well as the Ridge National Laboratory to simulate the interaction between the virus and cyclophilin. The 3-D structure of cyclophilin A was known from X-ray crystallography studies.

"We knew every atom of the underlying capsid, and then we put the cyclophilin on top of that, of which we also knew every atom," Schulten said.

The simulations revealed that cyclophilin A binds to the capsid in two ways. First, there is the "classic" binding site, one revealed decades earlier in crystallography studies. But in some places, a single cyclophilin A protein also bound the capsid at a second site, forming a bridge between two hexamers. (The HIV capsid is made up of a lattice of pentamers.) Cyclophilin's bridging behavior occurred only at the capsid, the researchers found.

Further research with NMR spectroscopy, which can corroborate the existence of a second binding site.

By varying the amount of cyclophilin A added to the simulation, the researchers also saw that cyclophilin did not compete for binding sites at low concentrations, individual cyclophilin molecules attached to the capsid, disrupting their ability to bind.

Laboratory experiments also showed that having too much cyclophilin interfered with the virus's ability to infect cells.

"What we think is happening is, where there is no capsid, a cell can recognize it and trigger a process that destroys the capsid. If the capsid is fully occupied by cyclophilin A, it prevents the virus from forming a complex. So there is an optimal amount of cyclophilin that allows the virus to infect cells."

Related

- [New white drug](#)
- [VIGOR to be used](#)
- [Clinic using advanced](#)

This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out more



News Medical

247,298 likes



Be the first of your friends to like this



News Medical

G+ Follow

+1

+ 4,646

allows the HIV infection to go forward."

"The HIV capsid has to show some of its surface to docks there properly and can inject its genetic mat
"Now, we understand a little bit better the HIV viru defenses. That gives insight into battling the syste

Source:

University of Illinois at Urbana-Champaign

Be the first to rate this post

Posted in: [Medical Science News](#) | [Medical Research News](#) | |

Tags: [Arthritis](#), [Asthma](#), [Cancer](#), [Cardiovascular Disease](#), [Cell Genetic](#), [HIV](#), [Protein](#), [Rheumatoid Arthritis](#), [Spectroscopy](#), [Vi](#)

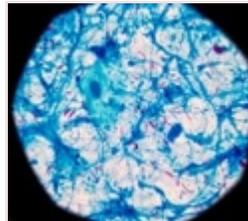
Prior News

[Study shows link between obesity and treatment outcomes in breast cancer patients](#)

[IVF](#)

Read in | [English](#) | [Español](#) | [Français](#) | [Deutsch](#) | [Português](#) | [文](#) | [Nederlands](#) | [Русский](#) | [Svenska](#) | [Polski](#)

Suggested Reading



[Simple TB screening and isoniazid can be effective for HIV patients at risk for TB](#)

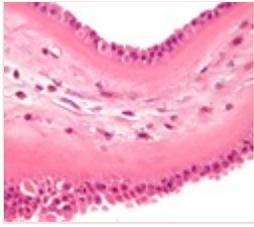


[HIV-positive individuals in Africa with certain genetic variant have lower chance of developi...](#)



[New tech pron diagi...](#)

This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out m



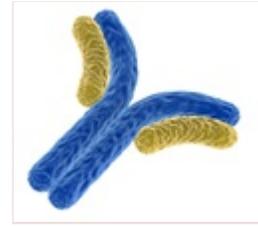
Low bone mass higher in HIV-infected males than in females



Low cost, easy-to-use test could help reduce TB death rate of HIV patients in sub...



HIV drug could delay drug resistance, making skin cancer treatment effective...



Study: 2.3 million people living with HIV co-infected with HCV

Comments

The opinions expressed here are the views of the writer and do not necessarily reflect the views and opinions of News-Medical.Net.

Post a new comment



This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out m

News-Medical.Net provides this medical information service in accordance with these [terms and conditions](#). Please note that medical information found on this website is designed to support, not to replace the relationship between patient and physician/doctor and the medical advice they may provide.

[News A to Z](#) | [Drugs A to Z](#) | [Health A to Z](#) | [Clinic](#)
[Consumer Products](#) | [News Archive](#)

Owned and Operatec

This site complies with
[trustworthy h](#)

This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out m