Viral protein structure study offers HIV therapy hope

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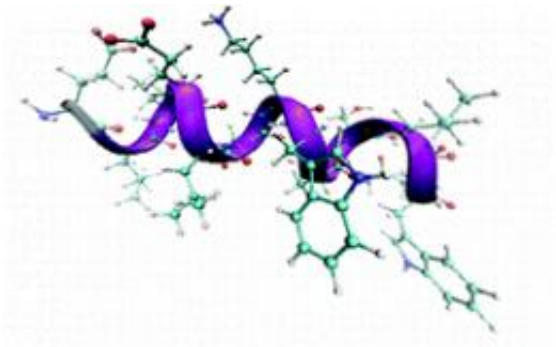

National Physical Laboratory is involved in a collaborative project that is helping to further the understanding of HIV viral protein structure which could lead to new molecular medicines.

In May 2010 the project team, comprising biotechnology experts from NPL, the University of Edinburgh and IBM T.J. Watson Research Center, published some of their research in *Journal of Physical Chemistry B*.

The article sets out to resolve controversy over how part of an HIV protein is structured. The research team present a definitive structure of the protein, which was obtained using experimental techniques and computer simulation. It is important to know exactly how viral proteins

are structured so that drug developers can target weaknesses within it, and therefore devise better treatments for people.

NPL's Eleonora Cerasoli says: "In this research, we were looking at a part of the HIV virus that helps it fuse with, and then infect, healthy cells within the human body. By confirming the structure of this tiny, but significant, fragment of the HIV-1 protein we are helping to shed more light on its infection mechanism. Further work in this area will hopefully lead to a full understanding of exactly how it works, and therefore lead to better treatments for HIV."

To continue their efforts to understand the interactions between human cells and the HIV virus proteins, the research team will also be using the unique synchrotron facility available at Diamond Light Source. The insight this provides may help enable the next steps towards rational drug design and commercial exploitation.

This study is the first outcome of different investigations the research team are carrying out on biomedically important model systems. The overall scope, therefore, goes beyond understanding HIV's structure alone. The team are working on establishing structure-activity relationships which will further our understanding and treatment of other diseases, such as Alzheimer's.

More information: Read the 'Conformational Plasticity in an HIV-1 Antibody Epitope' article in *Journal of Physical Chemistry B*.

Provided by National Physical Laboratory