Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemarkingsdepartement

Private Bag X3, Rondebosch 7701, South Africa
Welgelegen House, Chapel Road Extension, Rosebank, Cape Town
Tel: +27 (0) 21 650 5427/5428/5674 Fax: +27 (0) 21 650 5628

www.uct.ac.za

Structural biology in everyday life: UCT prof breaks it down

Wednesday, 30 October 2013, 17h30, Student Learning Centre Lecture Theatre, Anatomy Building, Medical School Campus

The impact of structural biology touches our daily lives. This field is so relevant that a significant number of Nobel prizes have been awarded to structural biologists since 1953. Professor Trevor Sewell at the University of Cape Town will present his inaugural lecture, "A journey into inner Space: A view of biology from the atomic perspective" on Wednesday, 30 October 2013. The lecture takes place at 17h30 at the Student Learning Centre Lecture Theatre, Anatomy Building, Medical School Campus

"The water that we drink may have been purified with gels made by enzymes that were designed by structural biologists, and the drugs we take have almost certainly passed through the hands of structural biologists. There are many ways to understand biological systems," says Professor Sewell who is based at the Department of Clinical Laboratory Sciences at UCT's Faculty of Health Sciences.

"I have chosen to rationalise the way the systems function by visualising biological macromolecules, especially proteins, at atomic resolution. This approach brings biology into the domain of chemistry and physics, and it enables biotechnology – especially fields such as rational design of medicines and industrial enzymes," says Professor Sewell.

"The discipline that is concerned with every stage of the visualisation and interpretation of the structures is called structural biology. It is a very large field attracting significant investment internationally in both the academic and industrial spheres," continues Professor Sewell.

His work at UCT centres on enzymes called nitrilases. These are widely used in the industry for the synthesis of drug intermediates. Together with his students and colleagues, Professor Sewell has used X-ray crystallography to study related enzymes called amidases – part of the reason being that no nitrilases have yet been crystallized. They, instead, form extended spiral structures that can easily be studied using the electron microscope.

"The work we have done in combining the information from the two sources (atomic resolution X-ray crystallography and lower resolution electron microscopy) by using computer modeling, is bringing us close to understanding how these extraordinary enzymes work," says Professor Sewell.

Background information:

South Africa became the 20th member of the European Synchrotron Radiation Facility on 25 May 2013. This gives scientists at UCT access to a synchrotron, in particular, the mighty machine responsible for the visualisation of more protein molecules than any of its competitors. The instrument, which is larger than several rugby fields, generates very bright, very fine beams of X-rays that can be made to interact with protein crystals and ultimately gives rise to images of huge protein molecules in which the atoms can be clearly seen. The science that turns obscure patterns of spots that arise when the beam strikes the crystal into "maps" in which the atoms can be seen, is called X-ray crystallography.

ENDS

Issued by: UCT Communication and Marketing Department

Kemantha Govender

Media Liaison Officer
Communication and Marketing Department
University of Cape Town
Welgelegen, Upper Chapel Road Extension, Rosebank
Tel: (021) 650 5672 Fax: (021) 650 3780
Cell: (084) 737 6522
E-mail: kemantha.govender@uct.ac.za
Website: www.uct.ac.za