

Tools for rational drug discovery



Researchers at the University of Dundee have developed methods for determining the structures of molecules. Reagents and methods for crystallization of the proteins PDK1, PKB and TAPP1, can be used in co-crystallisation studies to design modulating molecules of best fit. PRODRG is a program for generating molecular topologies and unique molecular descriptors from coordinates of small molecules. These systems can be used to design more effective drugs.

Background

The proteins 3-Phosphoinositide Dependent Protein Kinase-1 (PDK1), Protein Kinase B (PKB) and Tandem PH domain containing Protein-1 (TAPP1), regulate a wide range of cellular process including responses to insulin and cell proliferation and survival. Work at the University of Dundee has provided the first crystal structures of the kinase domain of PDK1 and the Pleckstrin Homology (PH) domains of PKB and TAPP1. This has revealed important features which increase our understanding of how these proteins are regulated, and provides scope to carry out co-crystallisation studies with compounds to enable identification of specific regulators of best fit. Thus these provide important tools to aid drug design.

Researchers at the University of Dundee have also developed a computer software tool for generating GROMOS/MOL2/WHATIF topologies and hydrogen atom positions from small molecule PDB files. The PRODRG software will convert coordinates for small molecules in PDB format to the following topology formats: GROMOS, GROMACS, WHAT IF, REFMAC5, CNS, O, SHELX, HEX and MOL2. In addition, coordinates for hydrogen atoms are generated. This can be used as a tool for X-ray structure refinement, and for drug-design by optimising molecule docking.

Commercial Opportunities

Crystal structures: Licenses to the coordinates, X-ray data, crystallisation conditions and the constructs are available.

PRODRG: Rapid, non-exclusive software licences for academic or commercial/ industrial use are available on the University of Dundee, Research & Innovation Services web-site at www.dundee.ac.uk/research/NCDs/NCD.htm

Patent Information

Crystal structure of PDK1:
PCT/GB03/02509 (Pending)

Crystal structure of PKB (PH Domain):
GB0207652.9 (Pending)

Crystal structure of TAPP1:
GB0402001.2 (Pending)

- Tools to aid drug discovery process
- Crystal structures to PDK1, PKB and TAPP1.
- Computer program for generating molecular topologies developed
- Opportunities for licensing crystal co-ordinates, X-ray data, methods, constructs
- Online Licenses to PRODRG
- Patents Pending

For more information contact:

Diane Taylor
Director
Tel: +44 (0) 1382 384426
Fax: +44 (0) 1382 386765
Email: research@dundee.ac.uk

Research and Innovation Services
University of Dundee
11 Perth Road, Dundee, DD1 4HN
Scotland, UK

Tel: +44 (0)1382 384426
Fax: +44 (0)1382 386765

Email: research@dundee.ac.uk
Web: www.dundee.ac.uk/research/