

Medicine, Nursing and Health Sciences

Biomedicine Discovery Lecture

Biomedical Sciences

The Vallee Foundation Lecture
Drugging the undruggable: Targeting
PTP1B for novel therapeutics

Date: Thursday 14 May 2015

Time: 12 – 1 pm

Location:

New Horizons G29/30
20 Research Way (Building 80),
Clayton campus



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attendance

visit <http://goo.gl/b9oAOM>

Abstract

As a validated target for diabetes and obesity, as well as HER2-positive cancer, PTP1B has been the subject of extensive drug discovery efforts in industry. Several potent, specific, reversible small molecule inhibitors of PTP1B have been developed, but they target the conserved, highly charged active site and exhibit poor oral bioavailability, which limits their drug development potential. This led industry to conclude that the members of the PTP family are “undruggable”. In contrast, I will illustrate how a detailed understanding of the structure and function of PTP1B, which has been generated in an academic setting, has revealed new approaches to the development of small molecule drug candidates that target this enzyme, in particular allosteric inhibitors. In addition, I will describe how the application of these inhibitors is revealing new roles for PTP1B and suggesting new indications in which inhibition of PTP1B function may be of therapeutic benefit.



Presenter

Professor Nicholas K Tonks

*PhD, FRS
Cold Spring Harbour Laboratory,
New York, USA*

About the Presenter

Nick Tonks was awarded a BA in Biochemistry from Oxford University, and a PhD in Biochemistry from the University of Dundee, working with Prof. Sir Phil Cohen. From 1985-88 he performed postdoctoral studies in the laboratory of one of the pioneers in the field of protein phosphorylation, Prof Edmond Fischer (1992 Nobel Laureate), in the Department of Biochemistry at the University of Washington and in 1988 he accepted a faculty position there as Research Assistant Professor. In 1990 he joined the faculty of Cold Spring Harbor Laboratory and was promoted to full Professor in 1995.

While at the UW he was the first to purify a protein tyrosine phosphatase, the enzyme PTP1B, and he went on to show that this was the prototype for a large family of such enzymes that includes receptor-like proteins. His research has made important contributions to the recognition of the PTPs as critical regulators of signaling in their own right, with disruption of their function underlying several major human diseases. He takes a multidisciplinary approach to characterizing the structure, regulation and function of members of the PTP family, with the overall objective of exploiting these enzymes as new therapeutic targets and the basis for novel therapeutic strategies through which to address major diseases.

He has published 187 papers (H-index 85) and has been granted 10 patents. His research has been recognized by several awards, including the Colworth Medal of the British Biochemical Society, a Pew Scholarship in the Biomedical Sciences (1991-95) and in 2001 he was elected a Fellow of the Royal Society, which is the National Academy of Sciences of the UK. He is currently in Australia as a Vallee Foundation Visiting Professor.



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