

## Professor Dan S. Tawfik

### Winner of the 2015 Enzyme Engineering Award



Since 1983 the Enzyme Engineering Award has been presented at ECI's biennial International Enzyme Engineering Conference. The 2015 Award will be presented at the 23<sup>rd</sup> Enzyme Engineering Conference in St Petersburg, Florida. This award recognizes outstanding achievement in the field of enzyme engineering, through basic or applied research in academia or industry.

The 2015 Enzyme Engineering Award, presented in the name of Engineering Conferences International and Genencor, will be awarded to **Professor Dan S. Tawfik**.

Professor Tawfik earned his B.S. degree in Chemistry and Biochemistry from The Hebrew University of Jerusalem (1988) as well as his M.Sc. in Biochemistry (1990). He earned his Ph.D. degree in the investigation of catalytic antibodies from the Weizmann Institute of Science in 1996. Dan then did postdoctoral study at Cambridge University and positions of increasing responsibility at the MRC Center for Protein Engineering in Cambridge. He returned to the Weizmann Institute in 2001 as a Senior Scientist and as Associate Professor in the Department of Biological Chemistry in 2006. In 2010 he became a full professor and was awarded the Nella and Leon Benozio Professorial Chair.

Professor Tawfik has made significant contributions to biotechnology. His early work with Andrew Griffiths on the use of emulsion droplets as a means of isolating individual reactions in tiny volumes (in vitro compartmentalization) provided a means of performing billions of parallel biochemical and genetic reactions in femtoliter droplets. This technology has become a leading technology in high-throughput DNA sequencing and in digital droplet PCR. More recently, Prof Tawfik's research has provided insight into mechanisms of protein evolution. His and others identification of the roles of enzyme promiscuity in the evolution of new activities and of the importance of protein stability as a component of evolvability led to his recruitment of 'neutral drift' and chaperone-based approaches to overcome problems of acquired instability, yielding important tools to improve the process of enzyme activity increase. Most recently, in conjunction with David Baker, the development through computational design and evolution of a novel enzyme *de novo* resulted in the creation of a Kemp eliminase – a reaction for which no natural enzyme is known. His work continues today in several areas, including *de novo* design, enzyme promiscuity and mechanisms of protein evolution, and the enzyme evolution of important enzymatic activities, such as the complete detoxification of lethal nerve agents.

Prof. Tawfik has more than 140 publications.

**ENZYME ENGINEERING AWARDEES  
and  
LOCATIONS OF ECI ENZYME ENGINEERING CONFERENCES**

1971 - Henniker, New Hampshire, USA

1973 - Henniker, New Hampshire, USA

1975 - Portland, Oregon, USA

1977 - Bad Neuenahr, Germany

1979 – Henniker, New Hampshire, USA

1981 – Kashikojima, Japan

1983 – White Haven, Pennsylvania, USA - **ICHIRO CHIBATA**

1985 – Helsingor, Denmark - **KLAUS MOSBACH**

1987 – Santa Barbara, California, USA - **EPHRIAM KATCHALSKI-KATZIR**

1989 – Kashikojima, Japan - **SABURO FUKUI**

1991 – Kona, Hawaii, USA - **ALEX KLIBANOV**

1993 – Deauville, France - **MALCOLM LILLY**

1995 – San Diego, California, USA - **MARIA-REGINA KULA** and **CHRISTIAN WANDREY**

1997 – Beijing, China - **HARVEY BLANCH**

1999 – Kona, Hawaii, USA - **CHI HUEY WONG**

2001 – Potsdam, Germany - **HIDEAKI YAMADA**

2003 – Santa Fe, New Mexico, USA - **JON DORDICK** and **DOUG CLARK**

2005 – Gyeongju, Korea - **DEWEY RYU**

2007 - Harrison Hot Springs, British Columbia, Canada - **FRANCES H. ARNOLD**

2009 – Groningen, The Netherlands - **SAKAYU SHIMIZU**

2011 – Vail, Colorado, USA – **DAVID ESTELL**

2013 – Toyama, Japan – **YASUHISA ASANO**

2015 – St. Petersburg, Florida – **DAN TAWFIK**