
Honorary Doctor of Science

Professor WONG Chi-huey

Citation written and delivered by Professor Paul LAM Kwan-sing

Pro-Chancellor:

There can be few fields of academic endeavour that have attracted so much attention in recent years than the fight against global pandemics. It is in this highly charged and fast-moving environment that Professor Chi-Huey Wong has established a global reputation for his pioneering work to safeguard and improve human health. His cutting-edge contributions to research have shown how chemistry can be used to modify enzymes, to increase or decrease enzymatic function, and create better biologically active compounds. The work of his research groups has had major implications for improving human health by producing safer and more effective substances of biomedical importance.

Professor Wong is a Taiwan-born chemist and is one of the world's most original and prolific researchers in bio-organic chemistry. He is globally recognised for his pioneering work on the development of chemical and enzymatic methods enabling elucidation of carbohydrate-mediated biological recognition processes. Professor Wong received his BS and MS degrees from National Taiwan University and obtained a PhD in Chemistry from Massachusetts Institute of Technology in 1982, before moving to Harvard University as a postdoctoral fellow. He started his independent career as Assistant Professor of Chemistry at Texas A&M University in 1983, becoming Associate Professor in 1986 and quickly achieving the status of Professor in 1987. He was Professor, and held the Ernest W. Hahn Chair in Chemistry, at the prestigious Scripps Research Institute from 1989 to 2006, and was the founding director of the Genomics Research Centre at Academia Sinica, Taipei from 2003 to 2006. He currently holds appointments as Distinguished Professor of Chemistry and Biochemical Sciences at National Taiwan University and National Tsing Hua University, and as Professor of Chemistry at the Scripps Research Institute. In 2006, he was appointed as the President of Academia Sinica in Taiwan.

Professor Wong's research interests are in the areas of bioorganic and synthetic chemistry and biocatalysis, including development of new synthetic chemistry based on chemical and enzymatic reactions, synthesis of complex carbohydrates, glycoproteins and small-molecule probes for the study of post-translational glycosylation and carbohydrate-mediated biological recognition, drug discovery, development of oligosaccharide microarrays for high-throughput screening and study of reaction mechanism.

Professor Wong introduced his new invention "molecular vaccine" in June this year, whose lower cost, simpler processing, higher reliability and stronger antigen strength illustrated the originality, practicality, and value of his research. Professor Wong demonstrated that traditional vaccines retained these sugar molecules on protein antigens, hypothetically to avoid destroying the structure of the vaccine protein. However these sugar molecules also wrapped up the key part of the vaccine, the protein antigen. The research team changed the idea, cutting off most of the surface sugar molecules with hydrolytic enzymes and leaving only core sugar molecules exposing the destructive protein. The team applied their methods to the novel influenza virus, and noted that the molecular vaccine became stronger when its surface sugar molecules were cut off. The implications of Professor Wong's process for developing new universal vaccines for viruses such as H5N1 or H1N1, and the potential applications to the production of vaccines for HIV and cancer, including breast, prostate, ovarian, lung and colon cancer, are considerable.

Professor Wong has a long and illustrious list of awards, prizes and accolades to his name, including the Presidential Young Investigator Award in Chemistry (1986), the American Chemical Society A.C. Cope Scholar Award (1993), The Chinese American Chemical Society Distinguished Research Achievement Award (1994), The Taiwanese American Foundation Prize in Science and Engineering (1997), the American Chemical Society Harrison Howe Award in Chemistry (1998), the International Enzyme Engineering Award (1999), the Presidential Green Chemistry Challenge Award (2000), the American Chemical Society Award for Creative Work in Synthetic Organic Chemistry (2005), Humboldt Research Award for Senior Scientists (2006) and F.A. Cotton Medal for Excellence in Chemical Research (2008).

He is a member of Academia Sinica, Taipei (1994), the American Academy of Arts and Sciences (1996), and the U.S. National Academy of Sciences (2002). He is also a fellow of the American Association for the Advancement of Science (2005) and serves as Editor-in-Chief of *Bioorganic & Medicinal Chemistry*. He is also an editorial advisor of the *Journal of American Chemical Society*, *ChemBiochem*, *Advanced Synthesis and Catalysis*, *Current Opinion in Chemical Biology*, and *Chemistry-An Asian Journal*. He was head of the Frontier Research Programme on Glycotechnology at RIKEN (Institute of Physical and Chemical Research, Japan, 1991-1999), a board member of the U.S. National Research Council on Chemical Sciences and Technology from 2000 to 2003, a scientific advisor of the Max-Planck Institute (2000-2008), and chairman of the Executive Board of Editors of *Tetrahedron Publications* (2006-2008).

Professor Wong's dedication to alleviating human suffering and promoting positive human health is amply demonstrated by the inexhaustible energy he continues to show for his work. Professor Wong's research efforts have resulted in breakthrough discoveries in the fields of biochemical and medical science, helping to pave the way for future therapies, combating diseases and health problems that are afflicting the world, leading to the advancement of scientific progress for many years to come.

Mr Pro-Chancellor, in recognition of his contributions to biochemistry and medicine, it is my great privilege to present Professor Chi-Huey Wong to you, for the award of degree of Doctor of Science, *honoris causa*.