



Speaker Biography
Sir Peter Ratcliffe, MD

Peter Ratcliffe is a physician scientist who trained in medicine at Gonville and Caius College, Cambridge and St. Bartholomew's Hospital, London, before moving to Oxford to specialise in renal medicine. After studying the physiology of renal circulation, he became interested in the regulation of the haematopoietic growth factor erythropoietin, which is produced by the kidneys in response to reduced blood oxygen availability.

In 1990, with funding as a Wellcome Trust Senior Fellow, he set up the Hypoxia Biology Laboratory in the Weatherall Institute of Molecular Medicine, Oxford. This work led to the unexpected discovery that the oxygen sensing process underlying the regulation of erythropoietin production in the kidneys and liver operates across essentially all animal cells, irrespective of the production of erythropoietin, and that it directs a broad range of other cellular and systemic responses to hypoxia. These include altered energy metabolism, angiogenesis and cell survival/differentiation decisions. The laboratory went on to elucidate the mechanism of 'oxygen sensing', an unprecedented mode of signal transduction mediated by oxygen-dependent catalysis of prolyl and asparaginyl hydroxylation at specific sites within the key transcription factor, HIF (Hypoxia Inducible Factor). His laboratory showed that these hydroxylations are catalysed by a series of 'oxygen-splitting' 2-oxoglutarate dependent dioxygenases, whose activity is reduced in hypoxia.

Peter was elected to the Fellowship of the Royal Society and to the Academy of Medical Sciences in 2002. His work on oxygen sensing has been recognised by a number of awards including the Louis-Jeantet Prize in Medicine, the Canada Gairdner International Award, and the Albert Lasker Basic Medical Research Award. He was knighted for services to medicine in the New Year's Honours, 2014, and won the Nobel Prize in Physiology or Medicine in 2019.

In 2004, he was appointed Nuffield Professor of Clinical Medicine at the University of Oxford and served as Head of Department from 2004-2016. In May 2016 he was appointed Director of Clinical Research at the Francis Crick Institute, retaining a position at Oxford as a Distinguished Scholar of the Ludwig Institute of Cancer Research and Director of Oxford's Target Discovery Institute. Peter's current research aim is to understand the biological roles and therapeutic tractability of signalling through protein hydroxylation and related oxidations.