



PRESS RELEASE

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2009 LOUIS-JEANTET PRIZE FOR MEDICINE

The **2009 LOUIS-JEANTET PRIZE FOR MEDICINE** is awarded to the Swiss-American biologist **MICHAEL N. HALL**, Professor of Biochemistry at the Biozentrum of the University of Basel, and to the British doctor and cell biologist **PETER J. RATCLIFFE**, holder of the Nuffield Chair of Clinical Medicine and Head of the Department of Medicine at the University of Oxford.

The LOUIS-JEANTET FOUNDATION awards the sum of CHF 600'000 to each of the prize-winners for the continuation of their work, and CHF 100'000 for their personal use.

The prize-winners are conducting fundamental biological research with significant implications for medicine.

MICHAEL N. HALL is awarded the 2009 Louis-Jeantet Prize for Medicine for his pioneering research on fundamental mechanisms in the control of cell growth.

He identified a protein - known as TOR (Target of Rapamycin) - that is a central controller of cell growth. Although Michael N. Hall's research is clearly of a fundamental nature, it should lead to the development of new therapeutic strategies. The TOR protein plays a key role in development and ageing, but is also implicated in immune response, cancer, cardiovascular disease, obesity and diabetes.

Michael N. Hall will use the prize money to continue his research on TOR, to explain this protein's role not only in single cells, but also in tissues and in the body in general.

PETER J. RATCLIFFE is awarded the 2009 Louis-Jeantet Prize for Medicine for his pioneering research on the mechanisms by which cells detect levels of available oxygen.

He identified the fundamental processes by which cells detect and adapt themselves to changes in oxygen availability, and especially how they respond to a lack of oxygen (which is known as hypoxia). Peter J. Ratcliffe's work has led to a better understanding of the development of numerous pathologies, such as cancer and pulmonary or cardiovascular disease, where a lack of oxygen in the cell (hypoxia) plays an important role.

Peter J. Ratcliffe will use the prize money to continue research on the biological responses to hypoxia, and to identify new therapeutic strategies.

THE AWARD CEREMONY will take place in Geneva (Switzerland) on Thursday, April 23, 2009.

MICHAEL N. HALL

Michael N. Hall was born in 1953 in Puerto Rico (United States). He received his PhD from Harvard University and was a postdoctoral fellow at the Pasteur Institute in Paris and at the University of California in San Francisco. In 1987, he joined the Biozentrum of the University of Basel (Switzerland), where he is currently Professor and Vice-Director. He has produced a number of books on science, and serves on the editorial advisory boards of various scientific journals. He has already received several distinctions, notably the Cloëtta Prize for Biomedical Research.

Research on cell growth

Life is often defined as the ability of an organism to replicate. This replication requires two separate processes which, although often linked together, are nonetheless different: cell growth and cell division (into two daughter cells). While numerous studies have focused, for many years, on the molecular mechanisms that control cell division, those which control cell growth, despite their fundamental importance and clinical relevance, were poorly understood until relatively recently.

The biochemist became a world leader in the field with the early 1990s discovery of the TOR protein and the elucidation of its role as a central controller of cell growth. This protein has moreover survived evolution, as it is found in all eukaryotes, from yeast to human. Michael N. Hall subsequently demonstrated that TOR operates within two larger protein complexes that are structurally and functionally distinct. More recently he was able to show that the TOR pathway in adipose tissue controls energy metabolism and weight gain.

Michael N. Hall's research could have significant therapeutic implications, as the TOR signalling pathway represents a promising target for the treatment of various disorders. It is estimated that 70% of human cancers are associated with malfunctions of the TOR signalling pathway. The TOR protein is also involved in cardiovascular disease, obesity and diabetes.

PETER J. RATCLIFFE

Peter J. Ratcliffe was born in 1954 in Lancashire (Great Britain), and studied medicine. Having specialised in renal medicine, he then turned towards cell and molecular biology, while at the same time maintaining close links with the clinic. He currently holds the Nuffield Chair of Clinical Medicine and heads the Department of Medicine at the University of Oxford. He also runs the Hypoxia Biology Laboratory of the Centre for Cell and Molecular Physiology at this university. He is a fellow of the Royal Society and of the European Molecular Biology Organization (EMBO). In 2007, he was elected a foreign honorary member of the American Academy of Arts and Sciences.

The consequences of hypoxia on cells

Oxygen is indispensable for the life of our cells. Cells are capable of detecting the lack of oxygen (hypoxia), to which they respond by producing a protein known as HIF (hypoxia inducible factor).

Peter J. Ratcliffe discovered the widespread operation of these pathways in cells and the processes that connect HIF to oxygen, including the enzyme HIF prolyl hydroxylase – the key oxygen sensor that controls oxygen-dependent degradation of HIF. Active when normal amounts of oxygen are available (normoxia), HIF prolyl hydroxylase becomes inactive if there is a lack of oxygen (hypoxia), leading to a rapid increase in HIF concentration in the cell, where HIF then reprograms the genetic transcription affecting notably energy metabolism, angiogenesis (creation of new blood vessels) and cell proliferation. These hypoxia signalling pathways thus play an important part in the development of numerous diseases, such as cancer and cardiovascular or pulmonary disorders.

Peter J. Ratcliffe's research has thus helped to better understand these diseases. It has aroused interest among numerous pharmaceutical groups seeking to use it in the development of new treatments.

THE LOUIS-JEANTET PRIZE FOR MEDICINE

Every year, the Louis-Jeantet Prize for Medicine distinguishes leading-edge researchers who are active in the European Council member countries.

Since its establishment in 1986, the Louis-Jeantet Prize for Medicine has been awarded to 68 researchers: 22 in the United Kingdom, 14 in Switzerland, 11 in France, 10 in Germany, three in the Netherlands, three in Sweden, two in Belgium, two in Finland and one in Austria. Their geographical distribution by country does not reflect the nationalities of the prize-winners - who can come from all over the world. It reflects the spread of the European centres of excellence in biomedical research.

The key research fields encouraged by the Louis-Jeantet Prize for Medicine are physiology, biophysics, structural biology, biochemistry, cellular and molecular biology, developmental biology and genetics.

As one of the best-endowed awards in Europe, the Louis-Jeantet Prize for Medicine fosters scientific excellence. It is not intended as the consecration for work that has been completed, but to encourage the continuation of innovative research projects with high added value and of more or less immediate practical significance in the treatment of disease.

Since 1986, a total sum of approximately CHF 47m has been awarded by the Foundation to the 68 prize-winners for the continuation of their work.

THE LOUIS-JEANTET FOUNDATION

The aim of the Louis-Jeantet Foundation is to move medicine forward, and to defend the role and identity of European biomedical research vs. international competition. It is the posthumous work of Louis Jeantet, a French businessman and a citizen of Geneva by adoption. Established in Geneva (Switzerland), the Foundation commenced activities in 1983.

The Louis-Jeantet Foundation devotes some CHF 4.5m each year to promoting biomedical research. It invests this sum in equal proportions for European and for local research projects. Apart from awarding the Louis-Jeantet Prize for Medicine, the Foundation encourages teaching and the development of research at the Faculty of Medicine of the University of Geneva, as well as the synergy of competences between this faculty and the graduate schools and university hospitals of the Lake Geneva region.

A more detailed summary of the prize-winners' work is available on request at info@jeantet.ch.

For any further information you may require, please do not hesitate to contact:

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