



Curriculum Vitae Venkatraman Ramakrishnan Ph.D.

Name: Venkatraman Ramakrishnan

Date of birth: 1952

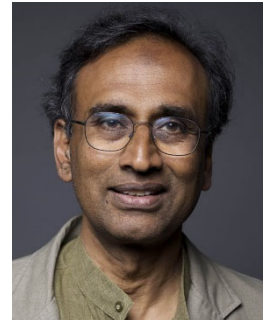


Image: Markus Scholz | Leopoldina

Research Priorities: Ribosome, protein biosynthesis, proteins, translation, crystal structure, antibiotics

Venkatraman Ramakrishnan is an Indian-British-American structural biologist. In 2009, he received the Nobel Prize in Chemistry together with the US-american molecular biologist Thomas A. Steitz and the Israeli structural biologist Ada Yonath. The three researchers have decoded the ribosome, the protein factory of the cell, described its three-dimensional structure and elucidated the mechanism of protein production.

Academic and Professional Career

- 2015 - 2020 President, Royal Society, UK
- 2006 - 2008 Fellow, Trinity College, Cambridge, UK
- since 1999 Team Leader, MRC Laboratory for Molecular Biology Cambridge, Medical Research Council (MRC), Cambridge, UK
- 1995 - 1999 Professor of Biochemistry, University of Utah, Salt Lake City, USA
- 1983 - 1995 Research Associate, Biology Department, Brookhaven National Laboratory, Long Island, USA
- 1982 - 1983 Research Associate, Oak Ridge National Laboratory, Oak Ridge, USA
- 1978 - 1982 Postdoctoral Fellow in Chemistry, Yale University, New Haven, USA
- 1976 - 1978 Degree in Biology, University of California, San Diego, USA
- 1976 PhD in Physics, Ohio University, Athens, USA

1971 BSc in Physics, Maharaja Sayajirao University of Baroda, Baroda (since 1974: Vadodara), India

Functions in Scientific Societies and Committees

since 2019 Science Partner, Ahren Innovation Capital, London, UK

2008 - 2011 Member, Scientific Advisory Board, Research Institute for Molecular Pathology (IMP), Vienna, Austria

2008 - 2015 Editorial Advisory Board, Proceedings of the National Academy of Sciences of the United States of America (PNAS), USA

2004 - 2011 Member, Scientific Advisory Board, Rib-X Pharmaceuticals Inc., New Haven, USA

2013 - 2015 Member, Scientific Advisory Board, European Molecular Biology Laboratory (EMBL), Heidelberg, Germany

2002 - 2006 Member, Scientific Advisory Board, EMBL, Heidelberg, Germany

2001 - 2015 Editorial Advisory Board, Cell

Honours and Awarded Memberships

2020 Member, American Philosophical Society, USA

2014 Jimenez Díaz Prize & Lecture, Fundación Conchita Rábago, Madrid, Spain

2012 Sir Hans Krebs Medal and Lecture, Annual Meeting, Federation of European Biochemical Societies (FEBS), Seville, Spain

2012 Knights Bachelor, New Year Honours, UK

2010 Padma Vibhushan, Civilian Award, President of India, India

since 2010 Member, German National Academy of Sciences Leopoldina, Germany

2009 Rolf Sammet Visiting Professor, Goethe-University, Frankfurt, Germany

2009 Nobel Prize in Chemistry (together with Thomas A. Steitz and Ada Yonath), Royal Swedish Academy of Sciences, Sweden

2008 Foreign Member, Indian National Science Academy, India

2008 Heatley Medal, British Biochemical Society, UK

2007 Datta Lecture and Medal, FEBS, Seville, Spain

2007 Louis-Jeantet Prize for Medicine, Louis-Jeantet Foundation, Geneva, Switzerland

since 2004 Member, National Academy of Sciences, USA

German National Academy of Sciences Leopoldina
www.leopoldina.org

- since 2003 Member, Royal Society, UK
- since 2002 Member, European Molecular Biology Organization (EMBO)
- 1991 - 1992 Guggenheim Fellowship, John Simon Guggenheim Memorial Foundation, New York City, USA

Research Priorities

Venkatraman Ramakrishnan is an Indian-British-American structural biologist. In 2009, he received the Nobel Prize in Chemistry together with the US-american molecular biologist Thomas A. Steitz and the Israeli structural biologist Ada Yonath. The three researchers have decoded the ribosome, the protein factory of the cell, described its three-dimensional structure and elucidated the mechanism of protein production.

Ribosomes are molecule complexes consisting of hundreds of thousands of atoms. They are divided into two subunits. In protein biosynthesis, ribosomes translate genetic information into proteins. This process is known as translation. Proteins assume many tasks in organisms and are responsible for the entire metabolic process. Venkatraman Ramakrishnan's research has contributed to the understanding of translation. Using x-ray structural analysis, he investigated the ribosomes of the bacteria *Thermus thermophilus* and – in the same year as the Israeli structural biologist Ada Yonath – decoded the smaller subunit's structure. At almost the exact same time, American biochemist Thomas Steitz published the first crystal structure of the larger subunit. The knowledge gained by the three researchers has contributed to the understanding of protein creation – one of the basic life processes.

In his further research work, Ramakrishnan investigated the ribosome subunit's binding to various antibiotics. Many of the antibiotic substances latch on to the bacteria's ribosomes and inhibit these. However, the increase in antibiotic resistance is a challenge for medicine. Only a few substances are still available as reserve antibiotics. Ramakrishnan and his colleagues hope that their research will help to develop a new generation of antibiotics which can more specifically inhibit the protein synthesis of bacteria ribosomes and thus cause less resistance.

Over the last years Venkatraman Ramakrishnan's work group has focused on exploring which factors start the translation process in a protein's genetic information. The researcher was able to identify at least twelve factors that bind to the small subunit of the ribosome and thus give the starting signal for the ribosome to read the mRNA step by step. The better researchers understand the regular translation pathway, the earlier they will be able to detect the fatal deregulation that can result in tumour diseases or neuronal degeneration. Alongside x-ray structural analysis, high-resolution electron microscopy provides biochemistry with deeper insights into the translation process.