



Curriculum Vitae Professor Dr Jules A. Hoffmann



Name: Jules A. Hoffmann

Date of birth: 2 August 1941

Research Priorities: Immune system, innate immunity, receptor proteins, Toll-gene, Toll-like receptors, TLR

Jules Hoffmann is a French biologist. In 2011, he was awarded the Nobel Prize in Physiology or Medicine together with Bruce Beutler and Ralph M. Steinmann. The three scientists researched how the body fends off bacteria and viruses, fungi, and parasites. Jules Hoffmann's discoveries are based on his research into the immune system and the associated proteins in flies. Similar proteins in humans, the Toll-like receptors, play a role in differentiating between "self" and "non-self". These discoveries have contributed substantially to understanding illnesses and have advanced the development of new therapies against infections and cancer.

Academic and Professional Career

- since 2009 Professor of Integrative Biology, The University of Strasbourg Institute for Advanced Study, University of Strasbourg, Strasbourg, France
- 1994 - 2005 Director, Institute of Molecular and Cellular Biology, French National Centre for Scientific Research (CNRS), Strasbourg, France
- 1974 - 2006 Research Director and Head of the Research Unit "Immune Response and Development in Insects", CNRS, Strasbourg, France
- 1969 Doctorate, University of Strasbourg, Strasbourg, France
- 1964 - 1973 Research Assistant, CNRS, Strasbourg, France
- from 1961 Degree in Chemistry and Biology, University of Strasbourg, Strasbourg, France

Functions in Scientific Societies and Committees

- 2005 - 2008 President, French Academy of Sciences, Paris, France
- 1999 - 2002 Member, Board of Trustees, CNRS, Strasbourg, France
- 1996 - 2001 Member, Steering Committee, Center of Excellence of Insect Science, Japan
- 1995 - 2000 President, Section de biologie du développement et de la reproduction du Comité national, CNRS, Strasbourg, France
- 1995 - 2001 Member, Board, Department "Life-Science", CNRS, Strasbourg, France
- 1994 - 1997 Member, High Council for Research and Technology, Ministry of Higher Education, Research and Innovation, France
- 1990 - 2002 Director, DEA Cellular and Molecular Biology, Louis Pasteur University, Strasbourg, France
- 1989 - 1992 Member, Commission des réseaux des Centres d'excellence, Ottawa, Canada
- 1983 - 1991 Member, Board, Department "Life-Science", CNRS, Strasbourg, France
- 1983 - 1991 President of the Commission de biologie des organismes et biologie du développement du Comité national, CNRS, Strasbourg, France

Honours and Awarded Memberships

- 2020 Order of the Rising Sun, Gold and Silver Star, Japan
- 2016 Commander of the National Order of the Legion of Honour, France
- 2015 Grand Officer of the Order of the Oak Crown, Luxembourg
- 2014 Honorary Medal, Signal Transduction Society, Germany
- since 2012 Member, Académie française, France
- 2011 Nobel Prize in Physiology or Medicine (jointly with Bruce Beutler and Ralph M. Steinman), Nobel Assembly of the Karolinska Institute, Stockholm, Sweden
- 2011 Canada Gairdner International Award for Life Sciences, Gairdner Foundation, Toronto, Canada
- 2011 Shaw Prize in Life Science and Medicine, Hong Kong
- 2011 Médaille d'or, CNRS, Paris, France
- 2010 Rosenstiel Award, Brandeis University, Waltham, USA
- 2010 Keiō Medical Sciences Prize, Keiō University, Tokyo, Japan
- 2008 Member, National Academy of Sciences, USA

2007	Balzan Prize, International Balzan Prize Foundation, Milan, Italy
2006	Member, Russian Academy of Sciences, Russia
2004	Grand Prix, Fondation pour la Recherche médicale, Paris, France
2004	Robert Koch Award, Robert Koch Foundation, Berlin, Germany
2003	Member, American Academy of Arts and Sciences, USA
2003	William B. Coley Award, Cancer Research Institute, New York, USA
since 1995	Member, European Molecular Biology Organisation (EMBO), Heidelberg, Germany
since 1993	Member, Academia Europaea
1992	Grand Prix Joannidès, French Academy of Sciences, Paris, France
since 1992	Member, French Academy of Sciences, Paris, France
since 1988	Member, German National Academy of Sciences Leopoldina, Germany
1987	Correspondent Member, French Academy of Sciences, Paris, France
1983	Gay-Lussac-Humboldt Prize, Ministry of Higher Education, Research and Innovation, France and The Humboldt Foundation, Bonn, Germany
1965	Member, Institut Grand-Ducal des Sciences du Luxembourg, Luxembourg

Research priorities

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All organisms have an innate immune system which protects them from microorganisms. Hoffmann and Beutler discovered receptor proteins which recognise bacteria and other microorganisms upon entry into the body and which activate the immune system. Dendritic cells, discovered by Steinman, become active on a further "defensive level". These large cells track down intruders and activate the second defence system, the body's innate immune response with the activation of T-cells and B-cells. Hoffmann and his numerous team members found out through experiments with the *Drosophila* fruit fly that a certain gene, the Toll-gene, is important for this task. He discovered that flies which had Toll-gene mutations died of bacterial or fungal infections, because their bodies were unable to trigger an effective immune response. After all, this is the gene that activates

receptors which set the immune response system in motion. Thus, the Hoffmann laboratory demonstrated the importance of the Toll-gene for the immune system.

His research colleague, Bruce Beutler, found a similar receptor in mice (Toll-like receptor, TLR). He had thus discovered a new class of immune molecules and proven that the immune reaction is activated via the same mechanism in insects and mammals. The discoveries of the three immunologists have contributed substantially to understanding illnesses and have advanced the development of new therapies against infections, cancer, and inflammatory diseases.