Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Kurt Wüthrich

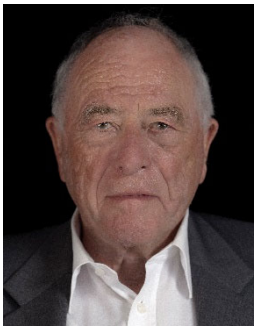

Image: Christoffer P. Michel

Name: **Kurt Wüthrich**
Date of birth: **4 October 1938**

Research Priorities: Nuclear magnetic resonance (NMR) spectroscopy, molecular structural biology, structural genomics, sarcopenia and osteoporosis

Kurt Wüthrich is a Swiss biophysicist and structural biologist, who is known for his pioneering work on determining the structure of proteins in solution by means of nuclear magnetic resonance (NMR) spectroscopy. In 2002 Wüthrich was awarded one half of the Nobel Prize in Chemistry for his development of nuclear magnetic resonance spectroscopy for determining the three-dimensional structure of biological macromolecules in solution, the other half going to the US-American chemist John B. Fenn and the Japanese electrical engineer Kōichi Tanaka for their development of mass spectrometry (MS) of proteins. His current research at the iHuman Institute of ShanghaiTech University in China is focused on studies of GPCR dynamics and transmembrane signalling. In addition, he has a keen interest in sarcopenia and osteoporosis in the ageing human population.

Academic and Professional Career

since 2014	Adjunct Distinguished Chair Professor, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, South Korea
since 2013	Distinguished Senior Professor, iHuman Institute, ShanghaiTech University, Shanghai, China
2012 - 2016	Visiting Scholar, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil
since 2011	Visiting Professor, University of Duisburg-Essen, Duisburg, Germany
2009 - 2013	WCU Distinguished Professor, Yonsei University, Seoul, South Korea

2006 - 2008	Distinguished Professor, Underwood International College, Yonsei University, Seoul, South Korea
since 2004	Cecil H. and Ida M. Green Professor of Structural Biology, The Scripps Research Institute (TSRI), La Jolla, USA
2001 - 2004	Cecil H. and Ida M. Green Visiting Professor of Structural Biology, TSRI, La Jolla, USA
1997 - 2000	Visiting Professor, Department of Chemistry, University of Edinburgh, Edinburgh, UK
1995 - 2000	Chairperson, Department of Biology, Eidgenössische Technische Hochschule Zurich (ETH Zurich), Zurich, Switzerland
1994	Visiting Scholar, TSRI, La Jolla, USA
1994 - 1995	Sherman Fairchild Distinguished Scholar, California Institute of Technology (Caltech), Pasadena, USA
1992	Visiting Scholar, Johns Hopkins University, Baltimore, USA
1988	Visiting Miller Research Professor, University of California, Berkeley, USA
since 1980	Professor of Biophysics, ETH Zurich, Zurich, Switzerland
1976 - 1979	Associate Professor, ETH Zurich, Zurich, Switzerland
1972 - 1975	Assistant Professor, ETH Zurich, Zurich, Switzerland
1970 - 1971	Private Lecturer (Privatdozent), ETH Zurich, Switzerland
1967 - 1969	Member of Technical Staff, Biophysics Department, Bell Telephone Laboratories, Murray Hill, USA
1965 - 1967	Postdoctoral Fellow, University of California, Berkeley, USA
1964 - 1965	Postdoctoral Fellow, University of Basel, Basel, Switzerland and Part-time Sports Instrcutor, Women's High School, Basel, Switzerland
1962 - 1964	PhD in Chemistry, University of Basel, Basel, Switzerland
1962 - 1964	Federal Gymnastics and Sports Instructor Diploma, University of Basel, Basel, Switzerland
1960 - 1962	Part-time Highschool Teacher Chemistry, Highschool (Gymnasium) Biel, Biel, Switzerland
1959 - 1960	Part-time Highschool Teacher Physics, Cantonal School (Kantonsschule) Solothurn, Solothurn, Switzerland
1957 - 1962	Licentiat Degrees in Chemistry, Physics and Mathematics, University of Bern, Bern, Switzerland

Functions in Scientific Societies and Committees

since 2022	Member, Scientific Advisory Board, UNESCO Center “Health-related Basic Science and Human Nutrition”, Mashhad, Iran
since 2020	Member, Global Advisory Board (GAB) ETH Zurich, Zurich, Switzerland
2018 - 2020	Member, President’s Advisory Board, Korea Institute of Science and Technology (KAIST), Daejeon, Korea
2017 - 2019	Member, International Scientific Advisory Board, Innovation Center for Structural Biology (ICSB), Tsinghua University, Beijing, China
2011 - 2022	President, Scientific Committee for Chemistry, International Solvay Institutes, Brussels, Belgium
2008 - 2010	Member, Council, Stiftung Antidoping Schweiz, Switzerland
since 2007	Member, Honorary Advisory Board, International Union of Biochemistry and Molecular Biology (IUBMB)
2005 - 2010	Member, Scientific Committee for Chemistry, International Solvay Institutes, Brussels, Belgium
2001 - 2015	Councillor, Marcel Benoist Foundation, Bern, Switzerland
2000 - 2005	Member, Advisory Board, Genomics Sciences Center, RIKEN, Tokyo, Japan
2000 - 2001	President, Commission on Biophysical Chemistry, International Union of Pure and Applied Chemistry (IUPAC)
1997 - 2005	Member, Advisory Board, Institute of Biotechnology, University of Helsinki, Helsinki, Finland
1997 - 2005	Member, Advisory Board, Novartis Foundation, London, UK
1996 - 1999	Member, Commission on Biophysical Chemistry, International Union of Pure and Applied Chemistry (IUPAC)
1994 - 1997	Member, Advisory Board, Ciba Foundation, London, UK
1993 - 1996	Member, Advisory Board, Institute of Molecular Biotechnology, Jena, Germany
1990 - 1991	President, Zurich Chemical Society, Zurich, Switzerland
1989 - 1995	Member, Advisory Board, European Molecular Biology Laboratory (EMBL), Heidelberg, Germany
1989 - 1995	Member, Advisory Board, Priority Programme “Protein Design”, German Research Foundation (DFG), Germany
1986 - 1992	Member, Executive Committee, Swiss Biochemical Society, Switzerland
1985 - 1988	President, Biophysics Section, Swiss Biochemical Society, Switzerland

1984 - 1987	Vice President, International Union of Pure and Applied Biophysics (IUPAB)
1982 - 1990	Member, Standing Committee on the Free Circulation of Scientists, International Council of Scientific Unions (ICSU)
1980 - 1986	Member, General Committee, ICSU
1978 - 1984	Secretary General, International Union of Pure and Applied Biophysics (IUPAB)
1977 - 1982	President, Swiss Commission for Molecular Biology (SKMB), Switzerland
1975 - 1978	Member, Council, IUPAB
1973 - 1976	Member, SKMB, Switzerland

Honours and Awarded Memberships

2022	Foreign Member, Accademia Nazionale dei Lincei, Italy
2020	Magnolia Award, Shanghai Municipal Government, Shanghai, China
2017	Genome Valley Excellence Award, BioAsia, Hyderabad, India
2016	Social Caring Leadership Award, Hongkong, China
2016	Shanghai Thousand Talents Award, Shanghai, China
2016	Doctor honoris causa, Universidad Nacional de Córdoba, Córdoba, Argentina
2015	Doctor honoris causa, Universidad de Buenos Aires, Buenos Aires, Argentina
2015	Doctor honoris causa in Pharmacology, University of Patras, Patras, Greece
2013	Corresponding Member, Academia Brasileira de Ciências, Brazil
2013	Theodor Bücher Medal, Federation of European Biochemical Societies
2012	Laurea Magistrale in Pharmacology honoris causa, Università degli Studie di Napoli, Napoli, Italy
2012	President's Gold Medal, Government of India
2010	Foreign Member, Royal Society, UK
2010	Ralph and Helen Oesper Award, University of Cincinnati, Cincinnati, USA
2009	Jabir ibn Hyyan (Geber) Medal, Saudi Chemical Society, Saudi Arabia
2008	Paul Walden Medal, Riga Technical University, Riga, Latvia
2008	Johannes M. Bijvoet Medal, Utrecht University, Utrecht, The Netherlands
2007	Doctor honoris causa, Université René Descartes, Paris, France
2007	Laurea Specialistica in Biotechnology honoris causa, University of Verona, Verona, Italy

2007 Doctor honoris causa, Lomonosov Moscow State University, Moscow, Russia

2007 Doctor of Chemistry honoris causa, Universidad del Norte, Asunción, Paraguay

2007 Doctor of Medicine honoris causa, University of Pécs, Pécs, Hungary

2005 Foreign Member, Korean Academy of Science and Technology, South Korea

2005 Corresponding Member, North Rhine-Westphalian Academy of Sciences, Humanities and the Arts, Germany

2005 Doctor of Science honoris causa, King George's Medical University, Lakhnau, India

2004 Honorary Member, Groupement Ampère, Zurich, Switzerland

2004 Foreign Member, Latvian Academy of Sciences, Latvia

2004 Honorary Member, European Academy of Sciences and Arts

2004 Honorary Member, Hungarian Academy of Sciences, Hungary

2004 Profesor Extraordinario con distinción de Académico Ilustre, U.N. Mar del Plata, Argentina

2004 Doctor of Science honoris causa, University of Sheffield, Sheffield, UK

2004 Doctor honoris causa, Universitat de València, València, Spain

2003 Titular Member, European Academy of Arts, Sciences and Humanities (EAASH)

2003 Honorary Member, Swiss Chemical Society, Switzerland

2003 Honorary Fellow, Royal Society of Edinburgh, Scotland, UK

2003 Honorary Fellow, Royal Society of Chemistry, UK

2003 Honorary Member, Wallisellen Football Club, Wallisellen, Switzerland

2003 Honorary Citizen, Municipality of Lyss, Seeland/Bern, Switzerland

2002 Swiss Award "Society", The Swiss Awards, Switzerland

2002 Honorary Award 2002, Municipality of Wallisellen, Wallisellen, Switzerland

2002 World Future Award, World Awards Media GmbH, Vienna, Austria

2002 Nobel Prize in Chemistry (one half, the other half to John B. Fenn and Kōichi Tanaka), Nobel Foundation, Stockholm, Sweden

2002 Member, Swiss Academy of Medical Sciences (SAMW), Switzerland

2001 Member, Swiss Academy of Engineering Sciences (SATW), Switzerland

2001 Médaille d'Honneur en Argent, Société d'Encouragement au Progrès, Paris, France

2001 Docteur honoris causa, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

2000	Foreign Member, Académie des Sciences, France
1999	Otto Warburg Medal, German Society for Biochemistry and Molecular Biology (GBM), Germany
1999	Günther Laukien Prize, Experimental NMR Conference (ENC), USA
1998	Fellow, American Association for the Advancement of Science (AAAS), USA
1998	Kyoto Prize in Advanced Technology, Inamori Foundation, Kyoto, Japan
1997	Dr. phil. honoris causa, University of Zurich, Zurich, Switzerland
1997	Dottore ad Honorem in Chimica, Università degli Studi di Siena, Siena, Italy
1996	Kaj Linderstrøm-Lang Prize, Carlsberg Foundation, Copenhagen, Denmark
1993	Distinguished Service Award, The Miami Bio/Technology Winter Symposia, USA
1993	Louis-Jeantet Prize for Medicine, Fondation Louis-Jeantet, Geneva, Switzerland
1993	International Honorary Member, American Academy of Arts and Sciences, USA
1992	Honorary Fellow, National Academy of Sciences, India
1992	International Member, National Academy of Sciences, USA
1992	Swiss Science Prize Marcel Benoist, Marcel Benoist Foundation, Bern, Switzerland
1991	Gilbert Newton Lewis Medal, University of California, Berkeley, USA
1991	Louisa Gross Horwitz Prize, Columbia University, New York City, USA
1990	Stein and Moore Award, Protein Society, USA
1989	Foreign Fellow, National Academy of Sciences, India
1989	Member, Academia Europaea
1987	Member, German National Academy of Sciences Leopoldina, Germany
1986	Médaille P. Bruylants, Université Catholique de Louvain, Louvain-la-Neuve, Belgium
1984	Member, European Molecular Biology Organization (EMBO)
1983	Shield of the Faculty of Medicine, Tokyo University, Tokyo, Japan
1974	Friedrich Miescher Award, Swiss Society for Biochemistry, Switzerland

Research Priorities

Kurt Wüthrich is a Swiss biophysicist and structural biologist known for his pioneering work on determining the structure of proteins in solution by means of nuclear magnetic resonance (NMR) spectroscopy. NMR spectroscopy is one of the main methods of analysis in chemistry and biochemistry. It allows molecular structures to be depicted in three dimensions and to unravel the

interplay between molecules in their physiological functions. The method's advantage is that proteins can be studied in solution, i.e. in an environment similar to physiological body fluids.

Kurt Wüthrich and his working groups have investigated more than 200 protein and nucleic acid structures of relevance to medicine and biomedical research. For example, Wüthrich's teams managed to detail the significance of the homeobox, a self-folding domain within a larger protein. Homeoboxes play a key role in the binding of DNA to regulate expression of target genes and thus govern differentiation in higher organisms. Kurt Wüthrich managed, by means of his structural analysis, to investigate immunosuppressants, which play a role in preventing the rejection of transplanted organs.

Between 1996 and 2002 the Wüthrich group identified and detailed the prion proteins of numerous organisms, including humans, cattle, and mice. Prions are proteins that are present in the so-called "cellular form" in healthy organisms, but can become misfolded. Prion proteins play an important role in the development of what is commonly known as "mad cow disease" (Bovine Spongiform Encephalopathy, BSE) and Creutzfeldt-Jakob disease in humans.

For the first two decades of the 21st century, Kurt Wüthrich's group at the Scripps Research Institute in California worked in the area of structural genomics. On the one hand, the team developed NMR methods to efficiently investigate the structures of soluble proteins. A second focus during this time period was the study of G protein-coupled receptors (GPCRs).

Currently, NMR investigations of GPCR dynamics and transmembrane signalling are pursued at the iHuman Institute of ShanghaiTech University in China. In his workplaces at the ETH Zürich and at Scripps Research, Kurt Wüthrich follows his interests in sarcopenia and osteoporosis in the ageing human population.