Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Benjamin List

Image: Markus Scholz | Leopoldina

Name: **Benjamin List**
Born: **11 January 1968**

Research Priorities: Organocatalysis, catalysis concepts, proline-catalysed intermolecular aldol-reaction, asymmetrical catalysis, textile-organic catalysis

Benjamin List is a chemist. He co-founded the field of asymmetrical organocatalysis – a process with which molecules can be constructed. Organocatalysts are used, for example, in the production of drugs and solar cells. Their advantage is that they do not require metal compounds, which are often detrimental to health or the environment and comparatively expensive. For the discovery of this third class of catalysts, he was awarded the 2021 Nobel prize in chemistry together with David W.C. MacMilan.

Academic and Professional Career

since 2022	Professor, Graduate School of Chemical Science and Engineering, Hokkaido University, Sapporo, Japan
since 2021	Specially Appointed Professor, Hokkaido University, Sapporo, Japan
2012 - 2014	Executive Director, Max-Planck-Instituts für Kohlenforschung, Mülheim an der Ruhr, Germany
2008	Guest Professor, Sungkyunkwan University, Seoul, South Korea
2005	Guest Professor, Gakushuin University, Tokyo, Japan
since 2005	Director, Max-Planck-Institut für Kohlenforschung, Mülheim an der Ruhr, Germany
since 2005	Scientific Member, Max-Planck Society, Munich, Germany
since 2004	Honorary Professor, University of Cologne, Cologne, Germany
2003 - 2005	Director, Research Unit, Max-Planck-Institut für Kohlenforschung, Mülheim an der Ruhr, Germany

1999 - 2003	Assistant Professor (Tenure Track), Scripps Research Institute, La Jolla, USA
1997 - 1998	Postdoctoral Fellow, Scripps Research Institute, La Jolla, USA
1997	PhD, Johann Wolfgang Goethe-Universität Frankfurt am Main, Frankfurt am Main, Germany
1993	Diploma, Freie Universität (FU) Berlin, Berlin, Germany

Functions in Scientific Societies and Committees

since 2017	Member, Advisory Board, Institute for Molecular Science, Okazaki, Japan
since 2015	Chief Editor, Synlett
since 2011	Editor, Synlett
since 2010	Member, Editorial Advisory Panel, Nature Communications
since 2008	Member, Editorial Advisory Board, Beilstein Journal of Organic Chemistry
since 2005	Editor, Synfacts
2008 - 2009	Editor, Asymmetric Organocatalysis, Topics in Current Chemistry
2006	Editor, Organocatalysis, Chemical Reviews
2004	Co-Editor, Special Edition, Organocatalysis von Adv. Synth. Cat
2004	Co-Editor, Special Edition, Enantioselective Organocatalysis of Accounts on Chemical Research

Project Coordination, Membership in Collaborative Research Projects

since 2022	Advanced Grant “ESO – Early-Stage Organocatalysis“, European Research Council (ERC)
2005 - 2014	Spokesperson, Priority Programme (SPP) 1179 “Organocatalysis“, German Research Council (DFG)
2005 - 2011	Coordinator, SPP 1179 “Organocatalysis“, DFG
2005 - 2011	Applicant, Subproject “Development of New Strategies and Concepts for the Solution of Remaining Problems in Asymmetrical Aminocatalysis” („Entwicklungen neuer Strategien und Konzepte zur Lösung verbliebener Probleme der asymmetrischen Aminokatalyse“), SPP 1179, DFG

Honours and Awarded Memberships

since 2022	Member, Academy of Sciences and Literature, Mainz, Germany

since 2022	Nordrhein-Westfälische Akademie der Wissenschaften und der Künste, Düsseldorf, Germany
since 2022	Honorary Member, Chinese Chemical Society, China
since 2022	Member, Austrian Academy of Sciences, Austria
2022	Grand Cross of the Order of Merit of the Federal Republic of Germany, Federal Republic of Germany
2022	Herbert C. Brown Award for Creative Research in Synthetic Methods, American Chemical Society, USA
2021	Nobel Prize in Chemistry (together with David MacMillan), Royal Swedish Academy of Sciences, Sweden
since 2018	Member, German National Academy of Sciences Leopoldina
2017	Prof. U.R. Ghatak Endowment Lecture, Kolkata, India
2017	Ta-shue Chou Lectureship, Institute of Chemistry, Academia Sinica, Taipei, Taiwan
2016	Gottfried Wilhelm Leibniz Prize, German Research Council (DFG), Germany
2015	Carl Shipp Marvel Lectures, University of Illinois at Urbana-Champaign, Urbana, USA
2014	Highly Cited Researcher, Thomson Reuters, Toronto, Canada
2014	Arthur C. Cope Scholar Award, American Chemical Society, USA
2013	Ruhrpreis, Mülheim an der Ruhr, Germany
2013	Mukaiyama Award, Society of Synthetic Organic Chemistry, Japan (SSOCJ), Japan
2013	Horst Pracejus Prize, German Chemical Society, Germany
2012	Otto Bayer Award for Chemistry and Biochemistry, Bayer Cares Foundation und Bayer Science and Education Foundation, Leverkusen, Germany
2012	Novartis Chemistry Lectureship Award, Department of Chemistry, University of Pennsylvania, Philadelphia, USA
2011	Boehringer-Ingelheim Lectureship, Harvard University, Cambridge, USA
2009	Thomson Reuters Citation Laureate for Chemistry, Clarivate, London, UK
2009	Organic Reactions Lectureship, University of Illinois at Urbana-Champaign, Urbana, USA
2009	Boehringer-Ingelheim Lectureship, Canada
2007	AstraZeneca Award in Organic Chemistry, AstraZeneca, Cambridge, UK
2007	OBC-Lecture Award, Royal Society of Chemistry, London, UK

2007	Preis des Fonds der Chemischen Industrie, Verband der Chemischen Industrie (VCI), Frankfurt am Main, Germany
2006	100 Masterminds of Tomorrow, Germany
2006	Fellowship Award, Japan Society for the Promotion of Science (JSPS), Japan
2006	Wiechert Lectureship, FU Berlin, Germany
2005	Novartis European Young Investigator Award in Chemistry, Novartis AG, Basel, Switzerland
2005	AstraZeneca European Lecturer 2005, AstraZeneca, Cambridge, UK
2005	Lectureship Award, The Society of Synthetic Organic Chemistry Japan (SSOCJ), Japan
2004	Dr. Lieseberg Prize, Faculty for Chemistry and Earth Science, University Heidelberg, Heidelberg, Germany
2004	Lecturer Scholarship, Verband der Chemischen Industrie, VCI, Frankfurt am Main, Germany
2004	Degussa Prize for Chirality in Chemistry, Degussa Sonne/Mond Goldhandel GmbH, Munich, Germany
2003	Carl Duisberg Memorial Prize, Gesellschaft Deutscher Chemiker, Germany
2000	Synthesis-Synlett Journal Award, Synlett
1997	Feodor Lynen-Research Fellowship, Alexander von Humboldt Foundation, Bonn, Germany
1994	Nachwuchsförderungsgesetz (NaFöG)-Award, State of Berlin, Germany

Research Priorities

Benjamin List is a chemist. He co-founded the field of asymmetrical organocatalysis – a process with which molecules can be constructed. Organocatalysts are used, for example, in the production of drugs and solar cells. Their advantage is that they do not require metal compounds, which are often detrimental to health or the environment and comparatively expensive. For the discovery of this third class of catalysts, he was awarded the 2021 Nobel prize in chemistry together with David W.C. MacMilan.

Benjamin List found that the naturally occurring amino acid proline is an efficient catalyst (proline-catalysed intermolecular aldol-reaction) and thus opened the field of organocatalysis. With that, naturally occurring substances and nonmetals could be used as catalysts for the first time in chemistry. Previously, only two types of catalysts – which accelerate chemical reactions and make them more efficient – were known: metal catalysts and enzymes. By comparison, organic catalysts are more easily reusable and generally less toxic than metal catalysts. They contribute to a

chemistry that is more sustainable and more resource efficient as 80 per cent of all chemical products are made with the help of catalysts.

Together with his team, Benjamin List discovered new principles of asymmetric catalysis (asymmetric counteration-directed catalysis, ACDC) and textile-organic catalysis. During textile-organic catalysis, soluble organic catalysts are sequestered to textile materials. This principle can help to treat water where people are cut off from water supply.