Curriculum Vitae Professor Dr Sarah E. O'Connor

Image: Sebastian Reuter

Name: **Sarah E. O'Connor**
Born: **1 February 1973**

Research Priorities: Biosynthesis, plant natural products, enzymology, metabolic engineering techniques

Sarah E. O'Connor is an American chemist. She develops methods and resources to discover the enzymatic basis for the biosynthesis of complex small molecules produced by plants. Sarah E. O'Connor has discovered the biosynthetic pathways of numerous molecules, including vinblastine and strychnine, elucidated the mechanism that underlies these enzymatic transformations, and developed innovative metabolic engineering strategies to produce these compounds.

Academic and Professional Career

since 2022	Honorary Professor of Chemistry, Friedrich Schiller University, Jena, Germany
since 2019	Director, Department of Natural Product Biosynthesis, Max Planck Institute of Chemical Ecology, Jena, Germany
2011 - 2019	Project Leader, John Innes Centre, Department of Biological Chemistry, Norwich, UK
2015 - 2019	Honorary Professor of Chemistry, University of East Anglia, School of Chemistry, Norwich, UK
2012 - 2014	Professor, University of East Anglia, School of Chemistry, Norwich, UK
2011 - 2012	Lecturer, University of East Anglia, School of Chemistry, Norwich, UK
2007 - 2011	Associate Professor of Chemistry, Massachusetts Institute of Technology (MIT), Cambridge, USA
2003 - 2007	Assistant Professor of Chemistry, MIT, Cambridge, USA
2000 - 2003	Postdoctoral Fellow in Biochemistry, Harvard Medical School, Boston, USA
2001	Ph.D. in Chemistry, MIT, Cambridge, USA

1995 - 2000 Doctoral Studies in Chemistry, MIT, Cambridge, USA

1991 - 1995 Bachelor of Science in Chemistry, University of Chicago, Chicago, USA

Functions in Scientific Societies and Committees

since 2022 Associate Editor, Journal of Biological Chemistry

Project Coordination, Membership in Collaborative Research Projects

2017 Principal Investigator, Advanced Grant "Harnessing the Molecules of Medicinal Plants", European Research Council (ERC)

Honours and Awarded Memberships

since 2024 Member, German National Academy of Sciences Leopoldina, Germany

2024 Prelog Medal, Laboratory of Organic Chemistry, ETH Zurich, Zurich, Switzerland

2023 Gottfried Wilhelm Leibniz Award, German Research Foundation (DFG), Germany

2023 Elected Fellow, Royal Society, UK

2023 Elected Fellow, American Society of Pharmacognosy, USA

2022 ACS Ernest Guenther Award in the Chemistry of Natural Products, American Chemical Society (ACS), USA

2019 RSC Perkin Prize for Organic Chemistry, Royal Society of Chemistry, UK

2017 Member, European Molecular Biology Organization, Heidelberg, Germany

2013 Wain Medal, University of Kent, Canterbury, UK

2007 Arthur Neisch Young Investigator Award, Phytochemical Society of North America, USA

2007 - 2009 Sloan Research Fellowship, Alfred P. Sloan Foundation, New York City, USA

2007 - 2010 Research Scholar Grant, American Cancer Society, USA

2005 - 2008 Beckman Young Investigator, Arnold and Mabel Beckman Foundation, Irvine, USA

2004 Innovation Fund, 3M, Saint Paul, USA

2003 - 2005 New Investigator, Smith Family Foundation, Trenton, USA

2003 Amgen New Faculty Award, Amgen, Thousand Oaks, USA

2000 - 2002 Irving S. Sigal Postdoctoral Fellowship, American Chemical Society, USA

1998 - 1999 Graduate Fellowship, American Chemical Society Organic Division, USA

1998	Distinguished Graduate Student Everhart Lecture Series, California Institute of Technology, Pasadena, USA
1995 - 1996	Institute Graduate Fellowship, California Institute of Technology, Pasadena, USA

Research Priorities

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Plants have developed special enzymes and synthetic pathways to produce organic compounds with which they can defend themselves against predators and parasites. These natural plant products are of major ecological, evolutionary, and pharmaceutical importance. Many of these natural products are used as medicines; however, it is often not possible to reproduce them using conventional chemical methods. Sarah E. O'Connor has made a major contribution to research into metabolism of plant and natural products. She has led the establishment and development of sequencing resources for medicinal plants and has pioneered the development of new approaches in the area of plant metabolism.

Sarah E. O'Connor has studied, for example, biosynthetic pathways in plants using newly discovered gene functions, enzymatic mechanisms of action, as well as molecular-genetic and genomic methods. This enabled her to discover the synthesis of complex natural products, such as cancer-inhibiting or neuroactive substances. Her research focuses on alkaloids and iridoids in particular. Sarah E. O'Connor's working group managed, for example, to fully elucidate the biosynthetic pathway of many complex alkaloids.

The scientist also used the insights gained to produce novel compounds in plants. By establishing and developing biological platforms she makes it possible, for example, to cheaply and quickly produce natural products and gain synthetic access to new classes of molecules. Many of these substances have beneficial medicinal effects and are therefore used in both traditional and modern medicine, in areas ranging from cosmetics to cancer therapy.