

**Speaker:** **Prof. Dr. Sarah O'Connor**  
Director, Department of Natural Product  
Biosynthesis, Max Planck Institute for Chemical  
Ecology, Jena, Germany



**Title:** ***Harnessing the Chemistry of Natural Products***

**Time:** **Tuesday, December 9, 2025, 2 pm**  
<https://ipk-gatersleben-de.zoom-join.com/j/64783767811?pwd=hndGulynz0tMsTZ3oKnPjTsgHfQDL8.1>  
ID: 647 8376 7811  
Kenncode: 184928

**Place:** **IPK Lecture Hall and via Zoom,**  
Corrensstr. 3, 06466 Seeland OT Gatersleben

#### **Abstract:**

Nature makes thousands of molecules– natural products– that have many applications in medicine and beyond. Plants in particular are an extremely important source of these molecules. Synthetic biology approaches are being used with increasing success to overproduce medicinally and agriculturally important plant-derived molecules in heterologous hosts. However, to pursue such approaches effectively, we must first fully understand the chemistry and biology of the biosynthetic pathways that generate these molecules. Given the complexity of plants and plant genomics, this pathway discovery process has been a major bottleneck in harnessing the chemical power of plants. Our research aims to develop methods and resources to unlock the biosynthesis of complex molecules produced by plants. We are developing new omics methods to find these genes more efficiently. We also explore mechanisms by which these complex plant pathways have evolved to create extraordinary chemical diversity.

#### **Short CV**

Study of Chemistry at the University of Chicago, BSc in Chemistry (1995), PhD at the Massachusetts Institute of Technology (MIT) in Cambridge working on "Conformational Effects of Asparagine-Linked Glycosylation" in Barbara Imperiali's lab (2000), Professor at MIT (2003-2010), Project Leader at the John Innes Centre in Norwich, United Kingdom (from 2011), Director and Scientific Member at the Max Planck Institute for Chemical Ecology (since 2018).

**Selected Awards:** Leibniz Prize 2023

#### **Selected publications:**

- Alam, R. M.; Nakamura, Y.; Bartram, S.; Ueberschaar, N.; Zetzsche, T.; Ulrich, Y.; O'Connor, S. E.; Köllner, T. G.: Identification and stereoselective total synthesis of an insect homosesquiterpene from the clonal raider ant *Ooceraea biroi*. *Journal of Natural Products* 88 (9), S. 2107 - 2116 (2025)
- Caputi, L.; O'Connor, S. E.: Flowers with bad breath: How an old gene acquired a new function to exploit an insect's sense of smell. *Science* 388 (6747), S. 586 - 587 (2025)
- Carr, S. C.; O'Connor, S. E.: A tight-knit family: The medium-chain dehydrogenase/reductases of monoterpene indole alkaloid biosynthesis. *Biochemistry* 64 (13), S. 2712 - 2726 (2025)

*Prof. Dr. N. Stein (organizer and host)*