



Dr Charlay Wood, PhD

Plant Biochemist · Science Communicator · Entrepreneur

www.charlaywood.com

PROFILE

Plant biochemist with expertise in metabolism, enzyme discovery, and natural product biosynthesis. Multi-award-winning presenter combining rigorous scientific thinking with strong communication, leadership, and entrepreneurial skills. Experienced across academia, start-ups, and science outreach.

EDUCATION

PhD Biology

2020–2024

University of York, UK

- Thesis: The biosynthesis of *Securinega* alkaloids.
- Skills: plant secondary metabolism, enzyme discovery, molecular biology, heterologous expression in *E. coli* and in planta, transcriptomics, metabolomics, chemical synthesis, isotope labelling, NMR, LC-MS.
- Supervised by Dr Benjamin Lichman and Dr William Unsworth.

MSc Biotechnology, Bioprocessing and Business Management

2016–2017

University of Warwick, UK

- Dissertation: Why are leaves green and not black? How can we increase photosynthetic efficiency?
- Supervisor: Prof. Lorenzo Frigerio.

BSc (Hons) Biochemistry

2013–2016

University of Warwick, UK

- Final-year dissertation: Genes affected by *Hyaloperonospora arabidopsis* in *Arabidopsis thaliana*.
- First-year supervisor: Prof. Jim Beynon · Final-year supervisor: Prof. Miriam Gifford.

RESEARCH EXPERIENCE

Postdoctoral Researcher

2025–Present

University of Wisconsin–Madison, USA · PI: Prof. Hiroshi Maeda

- Investigating the shikimate pathway and aromatic amino acid biosynthesis.
- Discovered an enzyme that increases CO₂ fixation by up to 30%.
- Developing biochemical rerouting strategies to channel additional fixed carbon into high-value compounds such as pharmaceuticals and flavourings.

ENTREPRENEURIAL EXPERIENCE

Co-Founder (Early Stage)

2025–Present

Natural Red Pigments, Madison, Wisconsin, USA

- Driving the development of sustainable, plant-based colourants to replace synthetic dyes such as Red 40 (Allura Red AC).
- Leading customer discovery through the NSF I-Corps programme to validate market demand across food, beauty, and plant processing sectors.

- Focused on project management, business development, and building early business strategy, stakeholder relationships, and pilot pathways.

Account Manager

2019–2020

Alpha Gamma Solutions, London, UK

- Managed direct sales, marketing campaign planning and execution, and sales-team training.
- Organised nationwide business trips and represented the company at corporate events.

Entrepreneur in Residence

2017–2018

Rocket Internet SE, Shanghai, China

- Joined a post-launch start-up at a critical juncture; appointed Scrum Leader within one month.
- Given full operational control, managing five-figure investment budgets and all hiring decisions.
- Streamlined processes to reduce a six-person team to one employee supported by an outsourced team, with no loss of output.
- Mentored directly by the founder, a prominent serial entrepreneur.

SCIENCE COMMUNICATION & OUTREACH

Research Highlights Editor

2026–Present

The Plant Journal

- Selecting and editing research highlights that showcase significant findings, making cutting-edge plant science accessible and engaging for a broad scientific audience.

Plantae Fellow

2026–Present

American Society of Plant Biologists

- Contributing to the global plant science community through themed weekly content, monthly webinars, and collaborative science communication.
- Highlighting research, supporting early-career scientists, and broadening access to plant biology.

Conference Correspondent

2023 & 2025

American Society of Plant Biologists

- Covered two annual Plant Biology conferences as official ASPB Correspondent (Savannah, GA, 2023; Milwaukee, WI, 2025).

Graduate Teaching Assistant

2020–2023

University of York

- Supported undergraduate teaching in Biology: delivered lab sessions, assisted with tutorials, and guided students on practical and written work.

ADDITIONAL EXPERIENCE

Argentine Tango Teacher & Dancer

2014–Present

Various institutions (UK, China, USA)

- Over a decade of teaching and performing across multiple cities, including self-run classes in Shanghai and ongoing involvement at UW-Madison.

Retail Assistant (Seasonal)

2024

Royal Botanic Gardens, Kew, UK

- Christmas retail role at one of the world's most iconic botanical institutions, combining a passion for plants with visitor engagement.

Online English Tutor

2020–2022

iTutor.com

- Delivered one-to-one English language lessons to learners aged 4–16 (plus adults), adapting materials across language and cultural barriers.

English–Chinese Translator

October 2018

Heartbreak Theatre, International Arts Exchange, Wuxi, China

- Live translator between the English acting team and Chinese technical crew for a 10-day tour of *Romeo and Juliet*. Also translated the full script into Mandarin.

Customer Service Assistant

2014–2015

ASDA, Leamington Spa, UK

- Part-time role during undergraduate studies. First point of contact for customer enquiries, responsible for resolving complaints before escalation. Cross-trained across multiple departments.

PUBLICATIONS

Wood, C. et al. (2026) Parallel evolution of plant alkaloid biosynthesis from bacterial-like decarboxylases. *New Phytologist*. DOI: 10.1111/nph.70884

Selected Science Communication & Other Writing

- [What Vanilla, Morphine, and Denim Have in Common](#). *Plantae* (Feb 2026). Co-authored with Plantae Fellows.
- [How to Build a Start-up in Plant Sciences](#). *Plantae* (Feb 2026). Co-authored with Fengoula Avgeri.
- [Review: RUBY — a genetically encoded visible reporter for plant biology](#). *ASPB Plant Science Research Weekly* (Jan 2026).
- [From Plant Biology 2023: The Evolutionary Origin of Acutumine Biosynthesis in Menispermaceae Plants](#). *ASPB Plant Science Today* (Aug 2023). Interview with Prof. Jing-Ke Weng.
- Celebrating those who stand up for science against the odds. *The Biochemist* (Dec 2022). Interview with 2022 Maddox Prize Winner Eucharia Nwaichi. DOI: [10.1042/bio_2022_140](https://doi.org/10.1042/bio_2022_140)

INVITED TALKS

- **Plant Chemical & Molecular Biology Seminar, UW–Madison** — Biosynthesis of the *Securinega* alkaloids. Madison, WI (Apr 2025).
- **University of Minnesota Duluth: Invited Seminar** — Duluth, MN (2025) — Parallel evolution of plant alkaloid biosynthesis from bacterial-like decarboxylases.
- **University of York Postdoc Society: Invited Talk** — How to get conference funding: a practical guide for early-career researchers. York, UK (Jul 2024).
- **PhytoChem Talks: Invited Speaker** — First steps of $\Delta 1$ -piperidine-derived alkaloid biosynthesis in *Flueggea suffruticosa*. Online (Dec 2023).

CONFERENCES

- **Biobased Symposium** — Madison, WI (2026). Speaker. 🏆 **Best Speaker Award.**
- **NeurIPS** — San Diego, CA (2025). Attended.
- **ASPB Plant Biology** — Milwaukee, WI (2025). Attended.
- **PSNA** — Toronto, Canada (2025). Poster.
- **ASPB Plant Biology** — Savannah, GA (2023). Attended.
- **PSNA** — East Lansing, MI (2023). Speaker. 🏆 **Best Speaker Award.**
- **Natural Products** — Warwick, UK (2023). Speaker. 🏆 **Best Speaker Award.**
- **Chem@York** — York, UK (2023). Speaker. 🏆 **Best Speaker Award.**
- **RSC Chemical Biology and Bio-organic Group Symposium** — Oxford, UK (2023). Poster.
- **Directing Biosynthesis VI** — Edinburgh, UK (2022). Poster.
- **High Value Biorenewables Network Annual Meeting** — Northern England (2021–2024). Attended.
- **University of York Interdisciplinary Conference** — York, UK (2021). Speaker.
- **North East Postgraduate Conference** — Online (2021). Poster.
- **Directing Biosynthesis V** — Online (2020). Attended.

PROFESSIONAL QUALIFICATIONS

- NSF I-Corps Entrepreneurial Lead
- Advanced R Programming & Data Analysis (LC-MS, XCMS, Metabolomics)
- Highest Commission Sales Representative (Monthly Award)
- Institutional Biosafety & GMO Handling Certification
- Chemical Safety Training
- Responsible Conduct of Research (RCR) Certification
- TEFL Certified (120 hours)

LANGUAGES

English (native) **Mandarin Chinese** (intermediate) **Spanish** (intermediate)