

# Ben W.F. Colville

 : [orcid.org/bencolville](https://orcid.org/bencolville)  : [scholar.google.com/bencolville](https://scholar.google.com/bencolville)

- Postdoctoral Scholar in the [Szostak Lab](#) at the University of Chicago and the Howard Hughes Medical Institute. Working on the origins of protocellular systems, alternate genetic polymers and prebiotic chemistry.
- PhD in Chemistry from University College London in organic chemistry. Studied prebiotic chemistry of non-canonical nucleotides, their photochemistry and their implications at the Origins of Life.

## Education

2016–2021	<b>University College London</b> <i>Ph.D. Organic Chemistry</i> Supervisor: Prof. Matthew Powner Thesis: <b>Studies Towards Nucleic Acids at the Origins of Life</b>
2012–2016	<b>University College London</b> <i>MSci. Chemistry, 1st Class Honours</i> Awards: <b>Charles Vernon Prize for Best Final Year Biological Chemist</b>

## Research Experience

2022–PRESENT	<b>University of Chicago/Howard Hughes Medical Institute</b> <i>Postdoctoral Scholar, Department of Chemistry</i> Advisor: <b>Prof. Jack W. Szostak</b> Investigating the protocellular origins of life by developing novel single-cell RNA-Seq techniques to study populations of primitive protocells.
2021–2022	<b>Massachusetts General Hospital / Harvard Medical School</b> <i>Postdoctoral Scholar, Department of Molecular Biology</i> Advisor: <b>Prof. Jack W. Szostak</b> Developed small-RNA sequencing pipeline to investigate non-enzymatic RNA copying.
2016–2021	<b>University College London</b> <i>PhD Researcher</i> Advisor: <b>Prof. Matthew Powner</b> Designed, planned, and executed complex organic synthesis projects. Developed novel nucleosides, discovered a self-purifying photochemical synthesis of xeno nucleic acids, and built photochemical tools to explore nucleic acid properties. Conducted NMR analysis and Python data processing. Presented work at IOoLM 2018.
2015–2016	<b>University College London</b> <i>Master's Researcher</i> Advisor: <b>Prof. Matthew Powner</b> Achieved the highest mark among biological chemistry students. Conducted nucleic acid synthesis and photochemistry.

## Publications

- **Colville B.W.F.**, Zhao J., Hade, L., Szostak, J. W. tinyRNA-seq: An optimized approach for studying primitive RNA genomes, Manuscript in preparation, (2026).
- Duzdevich, D., Carr, C. E., **Colville, B. W. F.**, Aitken, H. R. M., and Szostak, J. W. Overcoming nucleotide bias in the nonenzymatic copying of RNA templates. *Nucleic Acids Research*, 52(22), 13515–13529 (2024). <https://doi.org/10.1093/nar/gkae982>
- Whitaker, D. E., **Colville, B.W.F.**, and Powner, M. W. Nucleotide Photochemistry on the Early Earth. In: *Conflicting Models for the Origin of Life*, Chapter 15, pp. 369–405. John Wiley & Sons, Ltd (2023). <https://doi.org/10.1002/9781119555568.ch15>
- **Colville, B.W.F.** and Powner, M.W. Selective Prebiotic Synthesis of  $\alpha$ -Threofuranosyl Cytidine by Photochemical Anomerization. *Angew. Chem. Int. Ed.* (2021) <https://doi.org/10.1002/anie.202101376>
  - Selected as a Hot Paper by the Editors

## Mentoring

---

2022-PRESENT	<b>Jamie Zhao</b> <i>Undergraduate, University of Chicago</i> Current Position: Postgraduate Research Technician, University of Chicago
2024-2025	<b>Liam Hade</b> <i>Undergraduate, University of Chicago</i> Current position: Software Developer, CDS Visual
2017-2018	<b>Sophie Walpole</b> <i>Undergraduate, University College London</i> Current Position: NHS Doctor

## Teaching Experience

---

2021-PRESENT	<b>Research Supervision</b> <i>Szostak Group, University of Chicago</i> Project and experimental design, lab and instrument skill training for undergraduate and postgraduate researchers.
2017-2020	<b>Undergraduate Instruction</b> <i>Tutor and lab demonstrator at UCL</i> Tutored up to 15 1st-year organic chemistry students. Instructed lab techniques and safety for students in years 1 to 3.
2017-2018	<b>Supervision of Master's Students</b> <i>Powner Group, UCL</i> Provided mentoring, project planning, lab skills training, and report feedback for Master's researchers.

## Invited Talks

---

2024	<b>"Insights into RNA Copying from Deep Sequencing"</b> <i>Origins Federation Conference, Cambridge, UK</i>
2021	<b>"Chemical studies of Nucleic Acids at the Origin of Life"</b> <i>Life and Space, Polish Astrobiological Society, Poland</i>
2018	<b>"Chemical studies of Nucleic Acids at the Origin of Life"</b> <i>International Origins of Life Meeting (IOoLM), Düsseldorf, Germany</i>

## Poster Presentations

---

2025	<b>"tinyRNA-seq: An optimized approach for studying primitive RNA genomes"</b> Origins Federation Conference 2025
2025	<b>"Studying primitive genetic systems with tinyRNA-seq"</b> Gordon Research Conference: Nucleosides, Nucleotides and Oligonucleotides
2024	<b>"Insights into RNA Copying from Deep Sequencing"</b> 8th Cambridge Symposium in Nucleic Acids Chemistry and Biology
2021	<b>"Selective Prebiotic Synthesis of <math>\alpha</math>-Threofuranosyl Cytidine by Photochemical Anomerization"</b> CRC 235: Molecular Origins of Life, Munich
2019	<b>"Selective Prebiotic Synthesis of <math>\alpha</math>-Threofuranosyl Cytidine by Photochemical Anomerization"</b> CRC 235: Emergence of Life Summer School, Regensburg