

## Education

02/2009 – 11/2012 **University of Western Australia**  
B.Sc. (Hons) in Genetics

## Research experience

- 01/2025 – PRESENT **PhD Student**  
Monash Biomedicine Discovery Institute, VIC. – *Supervisors: Prof. Chris Greening & A/Prof. Gavin Knott*  
Mapping the structural universe of hydrogenases across the tree of life
- 01/2023 – 12/2024 **Research Officer**  
Monash Biomedicine Discovery Institute, VIC. – *Prof. Chris Greening's Lab*  
Investigating the structural biology of enzymes that extract energy from air
- 08/2016 – 08/2021 **Research Assistant**  
Walter and Eliza Hall Institute of Medical Research, VIC – *Prof. Ethan Goddard-Borger's Lab*  
Investigating the structural biology of mucosal proteins and sulfoglycolysis
- 08/2015 **Visiting Scientist**  
Children's Medical Research Institute, NSW – *Host: Dr. Scott B. Cohen*  
Learning how to run a direct telomerase activity assay with radioisotopes
- 02/2014 – 08/2016 **Research Assistant**  
Harry Perkins Institute of Medical Research, WA – *Prof. Oliver Rackham's Lab*  
Designing PPR proteins for programmable nucleic acid binding

## Awards

- 2024 Chemistry Biology Interface Horizon Prize: Rita and John Cornforth Award – Royal Society of Chemistry. *For developing an understanding of sulfosugar metabolism and the discovery of new enzymes and pathways of sulfur recycling.* [\[html\]](#)
- 2012 Honours stipend scholarship – ARC Centre for Plant Energy Biology, The University of Western Australia.

## Publications

### JOURNAL ARTICLES

20. Sharma M, Puldo N, Järvå MA, Kaur A, John A, Burchill L, **Lingford JP**, Epa R, Abayakoon P, Scott NE, Turkenburg JP, Davies GJ<sup>†</sup>, Martens EC<sup>†</sup>, Goddard-Borger ED<sup>†</sup>, Williams SJ<sup>†</sup>. Sulfoglycolysis sustains *Eubacterium rectale* in low-fiber diets. *Journal of Biological Chemistry*. 2025. [\[html\]](#)
19. Kropp A\*, Gillett GL\*, Venugopal H, González MA, **Lingford JP**, Barlow CK, Zhang J, Greening C<sup>†</sup>, Grinter R<sup>†</sup>. Quinone extraction drives atmospheric carbon monoxide oxidation in bacteria. *Nature Chemical Biology*. 2025. [\[html\]](#)
18. Leung PM<sup>†</sup>, Grinter R, Tudor-Matthew E, **Lingford JP**, Jimenez L, Lee H-C, Milton M, Hanchapola I, Tanuwidjaya E, Kropp A, Peach HA, Carere CR, Stott MB, Schittenhelm RB, Greening C<sup>†</sup>. Trace gas oxidation sustains energy needs of a thermophilic archaeon at suboptimal temperatures. *Nature Communications*. 2024. [\[html\]](#)
17. Arumapperuma T, Lee M, Sharma M, Zhang Y, Snow AJD, **Lingford JP**, Goddard-Borger ED<sup>†</sup>, Davies GJ<sup>†</sup>, Williams SJ<sup>†</sup>. Capture-and-release of a sulfoquinovose-binding protein on sulfoquinovose-modified agarose. *Organic & Biomolecular Chemistry*. 2024. [\[html\]](#) [\[pdf\]](#)
16. Sharma M, Kaur A, Soler NM, **Lingford JP**, Epa R, Goddard-Borger ED, Davies GJ<sup>†</sup>, Williams SJ<sup>†</sup>. Defining the molecular architecture, metal dependence, and distribution of metal-dependent class II sulfofructose-1-phosphate aldolases. *Journal of Biological Chemistry*. 2023. [\[html\]](#)
15. Snow AJD, Sharma M, **Lingford JP**, Zhang Y, Mui JWY, Epa R, Goddard-Borger ED, Williams SJ, Davies GJ<sup>†</sup>. The sulfoquinovosyl glycerol binding protein SmoF binds and accommodates plant sulfolipids. *Current Research in Structural Biology*. 2022. [\[html\]](#)
14. Sharma M, **Lingford JP**, Petricevic M, Snow AJD, Zhang Y, Järvå MA, Mui JWY, Scott NE, Saunders EC, Mao R, Epa R, da Silva BM, Pires DEV, Ascher DB, McConville MJ, Davies GJ, Williams SJ, Goddard-Borger ED. Oxidative desulfurization pathway for complete catabolism of sulfoquinovose by bacteria. *Proceedings of the National Academy of Sciences*. 2022. [\[html\]](#)

13. Mao R, Xi S, Shah S, Roy MJ, John A, **Lingford JP**, Gäde G, Scott NE, Goddard- Borger ED<sup>†</sup>. Synthesis of C-mannosylated glycopeptides enabled by Ni-catalyzed photoreductive cross-coupling reactions. *JACS*. **2021**. [\[html\]](#) [\[pdf\]](#)
12. Sharma M, Abayakoon P, Jin Y, Epa R, **Lingford JP**, Shimada T, Nakano M, Mui J, Ishihama A, Goddard-Borger ED<sup>†</sup>, Davies GJ<sup>†</sup>, Williams SJ<sup>†</sup>. The Molecular Basis of Sulfosugar Selectivity in Sulfoglycolysis. *ACS Central Science*. **2021**. [\[html\]](#)
11. Li J, Epa R, **Lingford JP**, Scott NE, Skonesczny D, Sharma M, Snow A, Goddard- Borger ED, Davies GJ, McConville MJ, Williams SJ<sup>†</sup>. A sulfoglycolytic Entner- Doudoroff pathway in *Rhizobium leguminosarum* bv. *trifolii* SRDI565. *Applied and Environmental Microbiology*. **2020**. [\[html\]](#)
10. Järvå MA, **Lingford JP**, John A, Scott NE, Goddard-Borger ED<sup>†</sup>. Trefoil factors share a lectin activity that defines their role in mucus. *Nature Communications*. **2020**. [\[html\]](#)
9. Järvå MA\*, Dramicanin M\*, **Lingford JP**, Mao R, John A, Jarman K, Grinter RW, Goddard-Borger ED<sup>†</sup>. Structural basis of substrate recognition and catalysis by fucosyltransferase 8. *Journal of Biological Chemistry*. **2020**. [\[html\]](#)
8. Sharma M, Abayakoon P, **Lingford JP**, Jin Y, Epa R, Goddard-Borger ED<sup>†</sup>, Davies GJ<sup>†</sup>, Williams SJ<sup>†</sup>. Dynamic structural changes accompany the production of dihydroxypropanesulfonate by sulfolactaldehyde reductase. *ACS Catalysis*. **2020**. [\[html\]](#) [\[pdf\]](#)
7. Zhang Y\*, Mui J\*, Arumaperuma T, **Lingford JP**, Goddard-Borger ED, White J, Williams SJ<sup>†</sup>. Concise synthesis of sulfoquinovose and sulfoquinovosyl diacylglycerides, and development of a fluorogenic substrate for sulfoquinovosidases. *Organic & Biomolecular Chemistry*. **2020**. [\[html\]](#) [\[pdf\]](#)
6. Abayakoon P, Ruwan E, Petricevic M, Christopher C, Mui J, van der Peet P, Zhang Y, **Lingford JP**, White J, Goddard-Borger ED, Williams SJ<sup>†</sup>. Comprehensive synthesis of substrates, intermediates and products of the sulfoglycolytic Embden-Meyerhoff- Parnas pathway. *The Journal of Organic Chemistry*. **2019**. [\[html\]](#) [\[pdf\]](#)
5. Abayakoon P\*, Jin Y\*, **Lingford JP**, Petricevic M, John A, Ryan E, Wai-Ying Mui J, Pires DEV, Ascher DB, Davies GJ<sup>†</sup>, Goddard-Borger ED<sup>†</sup>, Williams SJ<sup>†</sup>. Structural and biochemical insights into the function and evolution of sulfoquinovosidases. *ACS Central Science*. **2018**. [\[html\]](#)
4. Spähr H\*, Chia T\*, **Lingford JP**, Siira SJ, Cohen SB, Filipovska A, Rackham O<sup>†</sup>. Modular ssDNA binding and inhibition of telomerase activity by designer PPR proteins. *Nature Communications*. **2018**. [\[html\]](#)
3. Abayakoon P, **Lingford JP**, Jin Y, Bengt C, Davies GJ, Yao S<sup>†</sup>, Goddard-Borger ED<sup>†</sup>, Williams SJ<sup>†</sup>. Discovery and characterization of a sulfoquinovose mutarotase using kinetic analysis at equilibrium by exchange spectroscopy. *Biochemical Journal*. **2018**. [\[html\]](#)
2. Lopaticki S\*, Yang ASP\*, John A, Scott NE, **Lingford JP**, O'Neill MT, Erickson SM, McKenzie NC, Jennison C, Whitehead LW, Douglas DN, Kneteman NM, Goddard- Borger ED<sup>†</sup>, Boddey JA<sup>†</sup>. Protein O-fucosylation in Plasmodium falciparum ensures efficient infection of mosquito and vertebrate hosts. *Nature Communications*. **2017**. [\[html\]](#)
1. Coquille S\*, Filipovska A\*, Chia T, Rajappa L, **Lingford JP**, Razif MF, Thore S, Rackham O<sup>†</sup>. An artificial PPR scaffold for programmable RNA recognition. *Nature Communications*. **2014**. [\[html\]](#)

#### PREPRINTS

3. Soom S, Urs Moning S, Cook GM, **Lingford JP**, Kropp A, Tran S, Grinter R<sup>†</sup>, Greening C<sup>†</sup>, von Ballmoos C<sup>†</sup>. Hydrogenase-driven ATP synthesis from air. *bioRxiv*. **2025**. [\[html\]](#)
2. Welsh C, Cabotaje PR, Marcelino VR, Watts TD, Kountz DJ, Gould JA, Doan NQ, **Lingford JP**, Solari J, D'Adamo GL, Huang P, Bong N, Gulliver EL, Young RB, Walter K, Wolf PG, Ridlon JM, Gaskins HR, Giles EM, Lyras D, Lappan R, Berggren G, Forster SC, Greening C<sup>†</sup>. A widespread hydrogenase drives fermentative growth of gut bacteria in healthy people. *bioRxiv*. **2024**. [\[html\]](#)
1. Appler KE, **Lingford JP**, Gong X, Panagiotou K, Leão P, Langwig M, Greening C, Ettema TJG, De Anda V, Baker BJ<sup>†</sup>. Oxygen metabolism in descendants of the archaeal-eukaryotic ancestor. *bioRxiv*. **2024**. [\[html\]](#)

\* denotes equal contribution | <sup>†</sup> denotes corresponding author

#### ARTICLES IN NEWS MEDIA

- 06/2024 Samorodnitsky D, Bird K, Carlson J, **Lingford J**, Phillips J, Sear R, Townsend C. Journals that published Richard Lynn's racist 'research' articles should retract them. *STAT*. [\[html\]](#)

#### Conference poster presentations

- 02/2025 [NiFe]-hydrogenases in Asgard archaea resemble Complex I. *50th Lorne Conference on Protein Structure and Function*, VIC.
- 09/2024 [NiFe]-hydrogenases in Asgard archaea resemble Complex I. *BioMolecular Horizons*, VIC. [\[html\]](#)
- 02/2019 Structural, mechanistic, and evolutionary insights into sulfoglycolysis. *44th Lorne Conference on Protein Structure and Function*, VIC. [\[html\]](#)
- 02/2018 Sulfoquinovosidases as the gatekeepers to sulfoglycolysis: insight into structure, function, mechanism, and evolution. *43rd Lorne Conference on Protein Structure and Function*, VIC.

## Service to the academic community

2024 – PRESENT

Contributor to the Australian Structural Biology Computing GitHub page [\[html\]](#).

2024 – PRESENT

Organising committee member of the Monash Structural Biology Symposium. [\[html\]](#)