

Michael Brigham, PhD

Expertise in microbiology, fermentation, biochemistry, molecular biology and metabolomics

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🏠 Seaham, Co. Durham, United Kingdom

Extensive experience in the production and purification of protein and metabolites from various bacterial species. Strong and varied skill set enables adaptability to any microbiological question and research environment. Self-taught programming and bioinformatics to ensure streamlined data processing and management. Pride in strong interpersonal skills, e.g. collaborating with fellow scientists to achieve research goals, proactively managing communal lab activities. Recognises the importance of industry towards to ensure sustainable, high-quality and impactful work. Committed to being a proactive leader within a research team.

Highlighted skills

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| Microbiology | Manipulation and handling of <i>E. coli</i> , streptomycetes and other micro-organisms. Design and optimisation of whole-cell enzyme assays in <i>E. coli</i> to rapidly assess protein functionality. |
| Metabolite chemistry | Metabolite extraction and development of purification strategies. Analytical and preparative HPLC, analytical LC-(HR)MS(MS) / metabolomics, flash chromatography across a wide range of instruments and manufactures (Agilent, Bruker, ThermoFisher, Biotage). |
| Molecular biology | Extensive application of different cloning strategies in <i>E. coli</i> (e.g. cut and paste, Gibson assembly, CPEC, CRISPR/Cas mediated recombination). Plasmid and chromosomal engineering. Next-generation sequencing (e.g. Nanopore 16S sequencing) and assessment of sequencing data. |
| Biochemistry | Optimisation of protein production (e.g. solubility tags, codon optimisation, choice of expression line, cofactor supplementation) and purification (bench top and ÄKTA based Ni-NTA, ion-exchange, size exclusion). Design and optimisation of biochemical assays. Usage of HTP liquid-handling handling robots. |
| Office and computational work | Microsoft Office. Adobe Illustrator. Common genetic construct design, bioinformatic and protein modelling tools (Benchling, PyMol, AlphaFold, AutoDock). Experience with languages such as Bash, Python, R for automated data processing. |
| Lab management | On-boarding, off-boarding and management of junior lab members. Project creation and management for junior members. Procurement (via SAP) and management of lab consumables. |

Applicable research experience

Oct '24 – **Research Fellow in Microbiology,**
Dec '24 **University of Leeds**

Oct '20 – **BBSRC White Rose Doctoral Training**
Sep '24 **Programme, University of Leeds**

- Engineered a streptomycete bacterium to produce a new antimicrobial compound, and then characterised enzymes responsible for metabolite synthesis.
- Logically improved metabolite yields through metabolic engineering and assessment of culture conditions. Developed metabolite purification strategies.
- Overcame poor yield of soluble protein by assessing alternative *E. coli* production strains, re-cloning of protein encoding gene with additional solubility tags, enzyme co-factor supplementation.
- Designed and optimised biochemical assays with purified enzyme and whole-cell lysate; detection through spectrophotometry, UV-HPLC, LCMS

Additional experiences

Sep '22 – **Industrial placement at MORF,**
Dec '22 **University of York spin-out**

Independently coded and prototyped a new graphical user interface for customers to upload and interact with 'omic data.

Aug '23 **Grand challenges in synthetic biology and industry, University of West England**

Multiday workshop focusing on academic-industrial partnerships, research commercialisation and entrepreneurship.

Oct '24 **Exploring Biofoundries,**
Earlham Institute

Multiday workshop on miniaturisation, automation and high-through approaches to molecular biology, biochemistry with various liquid handling systems.

Education

Oct '20 – **BBSRC White Rose Doctoral Training**
Sep '24 **Programme, University of Leeds**
PhD awarded

Sep '16 – **Bachelor of Science with integrated Master**
June '20 **of Biology - Microbiology, University of Leeds**
First Class Honours

Full education history, certificates and transcripts can be provided upon request

References

Dr. Ryan Seipke

Postdoctoral and PhD supervisor, University of Leeds

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Dr. Glyn Hemsworth

PhD co-supervisor, University of Leeds

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