Ben J. **Draper**

PhD Candidate · Industry Sponsored

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Skills

Programming R, BASH/UNIX, Python
HPC SLURM, CONDA, Singularity, CGAT
Languages English, Korean

Education

University of Sheffield — *Sheffield, U.K.*

PhD in Biological Engineering — *Oct. 2021 - Apr. 2025*

- Industry-Sponsored Bioinformatics Research with **Lonza Biologics**.
- Graduate Teaching Assistance in R, RNASeq and Command-Line.
- Assisted Supervisory Role with Master's Research Projects.

University of Southampton — *Southampton, U.K.*

Integrated Master's (MBiomedSci) in Biomedical Sciences — *Sept. 2017 - Aug. 2021*

- Achieved First Class Honours.
- Awarded the John W Caddick Vacation Scholarship.
- Semester Abroad at Korea Advanced Institute of Science and Technology (KAIST) , South Korea, 2019.

Research Experience

PhD Research Project / UoSheffield / Lonza Biologics — *Sheffield, U.K.*

Supervisor: David C. James — *Oct. 2021 - April. 2025*

- Conducted advanced **Transcriptomic** analysis of high-dimensional RNASeq data to engineer synthetic cell factories.
- Adapted RNASeq Workflows (CGAT) to conduct **Differential Expression/Splicing Analyses** using DEXSeq/DESeq2.
- Developed novel mathematical methods to quantify and rank spliced transcript dynamics.
- Integrated public sequence/pathway information from databases such as NCBI, UniProt and GO/KEGG API services.
- Applied predictive modelling of 3D-Protein Structure using AlphaFold 2.0 from candidate mRNA transcript sequences.
- Translated highly technical computational terminology to foster collaboration with cell culture specialists.

DPUK (Dementias Platform UK) Research Project — *Remote, U.K.*

Team Lead: Ullrich S. Bartsch — *Jan. 2021 - Ongoing*

- Meta Analysis of 20+ medical cohorts from the DPUK Platform to harmonise sleep data.
- Utilised REST API concepts to retrieve expert definitions from the Unified Medical Language System (UMLS).
- Applied **Natural Language Processing (NLP)** to deconvolute complex definitions.
- Performed linguistic analysis using BERT-based embeddings, dimensionality reduction and unsupervised clustering principles.

Master's Research Project / UoSouthampton — *Southampton, U.K.*

Supervisor: Rob M. Ewing — *Oct. 2020 - Jun. 2021*

- Explorative multi-omics analysis of colorectal cancer biomarkers.
- Analysed a diverse array of data: **Mass-Spectrometry, RNASeq and CRISPR Knockout arrays**.
- Clustered anti-correlations between genes and identified key biomarkers to aid post-graduate 'wet-lab' research.

Academic Record

Publications

First Author and Coauthors

- Draper BJ, Dunning MJ and James DC. Selecting differential splicing methods: Practical considerations. F1000Research 2025, 14:47 (https://doi.org/10.12688/f1000research.155223.1)
- Al-Eidan A, Draper BJ, Wang S, Coke B, Skipp P, Wang Y, Ewing RM. Knockdown proteomics reveals USP7 as a regulator of cell-cell adhesion in colorectal cancer via AJUBA. Molecular & Cellular Proteomics 2024 (https://doi.org/10.1016/j.mcpro.2024.100878)

Conferences

Oral Presentations

- Invited Speaker (Full 45 Minute Session) for 2024 KSBB Fall Meeting and International Symposium, Jeju Island – South Korea.
- Presented findings (15 Minute ECR talk) at the DPUK Translation 2024 Conference, London - UK.
- Attended the Festival of Genomics 2023, London - UK.