Emily Alger
The Institute of Cancer Research, 15 Cotswold Road, London, SM2 5NG
Website Email: emilyl.alger@gmail.com Google Scholar

I currently develop novel Bayesian adaptive dose-finding trial designs with Patient-reported Outcomes. My goal is to promote the adoption of rigorous Bayesian methods within clinical trial design and practice.

Education

October 2022 – October 2025: Institute of Cancer Research, PhD in Early Phase and Adaptive trials

- Awarded bursary of full fees and stipend for three years.

October 2017 – June 2022: University of Warwick, Mathematics and Statistics (BSc MMathStat)

- First Class - Bachelor of Science, Master of Mathematics and Statistics (with Honours)
- Relevant final year modules: Monte Carlo Methods (93), Statistical Learning and Big Data (82), Bayesian Statistics and Decision Theory (82), Bayesian Forecasting and Intervention (76).

Upcoming Statistical Methodology publications

PRO-ADD: Patient-Empowered Dose-Finding Trials by Integrating Safety, Efficacy and Patient-Reported Outcomes for Optimal Dose Selection [Under Review: Statistics in Medicine]

- Loss-based dose recommendation framework with Bayesian generalized linear mixed effect models and inverse PIPE-classifiers.
- Simulation study includes realistic clinical data synthesis, Bayesian estimation with RJags and execution on a High-Performance Computing System using Linux.

Calibration of dose-agnostic priors for Bayesian dose-finding trial designs with joint outcomes [To be submitted: Statistics in Medicine]

- Divergence minimisation to calibrate priors for noninformative a priori dose recommendations in joint-outcome dose-finding trials, including analytical derivations and extensive simulations.

Upcoming collaborations: Biostatistics Department, MD Anderson Cancer Center

- Development of Bayesian model to identify optimal doses, with Patient-reported Outcomes and patient dose discontinuation/modification data to assess tolerability to treatment.

Recent First Author Publications:

- U-PRO-CRM: designing patient-centred dose-finding trials with patient-reported outcomes (ESMO Open) - Simulation of novel trial design incorporating non-parametric benchmarking.
- Patient and public involvement and engagement in the development of innovative patient-centric early phase dose-finding trial designs (Research Involvement and Engagement).
- Statistical methods and data visualisation of patient-reported outcomes in early phase dose-finding oncology trials: a methodological review (eClinicalMedicine).

Grants and Awards

- **May 2025: American Statistical Association Biopharmaceutical Section Scholarship Award,** recognising notable research and academic achievement within biopharmaceutical statistics.
- **May 2025: ESMO Merit Travel Grant,** Travel bursary to present at ESMO TAT Asia Congress 2025.
- **February 2025: Institute of Cancer Research Undergraduate Summer Scholarship Scheme,** secured funding to supervise an undergraduate summer student in summer 2025.
- **October 2024: TMRP Student Network Funding,** Travel grant to visit MD Anderson Cancer Centre in October 2024 to research adaptive borrowing techniques for Patient-Reported Outcomes.
- **May 2024: Student award,** ***Advanced Statistical Designs to Empower Biomarker-driven Clinical Trials*** workshop**,** Travel bursary to present at the University of Bath.
- **May 2024: Training Support Fund, The Alan Turing Institute,** Travel bursary to support my oral presentation at the Society for Clinical Trials annual general meeting in May 2024.
- **October 2023: Enrichment Scheme award, The Alan Turing Institute, London, UK**
- **March 2023: ESMO Merit Travel Grant,** Travel bursary to present at ESMO TAT 2023 in March 2023.

- **October 2022: Early-career researcher grant, 7th Early Phase Adaptive Trials Workshop.**
- **June 2022: Best Undergraduate Dissertation in Biostatistics, PSI.**
- **October 2021-June 2022: Statistics Senior Scholarship, University of Warwick.**

Research visits

October 2024: MD Anderson Cancer Centre, Houston, US.

- 10-day research visit to develop novel Phase I/II trial design to incorporate Patient-Reported Outcomes with Professor Jack Lee, Professor Ying Yuan and Dr Ruitao Lin.

May 2023: Columbia University, Mailman School of Public Health, New York, US.

- 3-week research visit to develop novel dose-finding trial designs which incorporate Patient-Reported Outcomes with Dr Shing Lee and Professor Ying Kuen Cheung.
- Associated paper published in ESMO Open with on-going collaboration on second project.

Talks and posters

- **Talk:** *Calibration of dose-agnostic priors for Bayesian dose-finding trial designs with joint outcomes,* 46th Annual Meeting of the Society for Clinical Trials.
- **Invited talk:** *The use of restricted mean survival time to estimate joint treatment effects in the presence of interaction terms under model misspecification - a simulation study*, Efficient study design discussion group, MRC Biostatistics Unit, University of Cambridge.
- **Talk:** *Patient-Centred Dose-Finding Trials using Safety, Efficacy and Patient-Reported Outcomes*, 45th Annual Conference of the International Society for Clinical Biostatistics.
- **Invited talk:** *Advanced Bayesian dose-finding adaptive designs for assessment of joint outcomes*, UCL Statistical Sciences PhD seminar, University College London.
- **Talk:** *Statistical methods and data visualisation of patient-reported outcomes in early phase dose-finding oncology trials: a methodological review*, 45th Annual Meeting of the Society for Clinical Trials.
- **Invited talk:** *U-PRO-CRM: Designing Patient-Centred Dose-Finding Trials with Patient-Reported Outcomes*, IDENT Research Dissemination Workshop, University of Bath.

Experience

October 2023 – July 2024: Enrichment Student, The Alan Turing Institute

- Established Bayesian Statistical Methods reading group: Generalised Bayes, Martingale posteriors.
- Collaborated with Academic services as an Enrichment student blogger.
- Successfully obtained funding to run student events to promote engagement and cohort building among the Turing community as part of my Community Champion role.

July – September 2022: Research Assistant, MRC Biostatistics Unit, University of Cambridge

- Investigated Restricted Mean Survival Time endpoint within clinical trial design.
- Simulated fixed sample and group sequential clinical trials in R using cluster computing techniques.
- Paper currently under review and published on arXiv.

July – August 2021: Summer vacation student within Early Phase and Adaptive Trials, The Institute of Cancer Research

- Researched and developed new flow diagram designs to support the communication of participant flow within Phase I clinical trial papers.
- Associated paper published in Contemporary Clinical trials: Reporting quality of CONSORT flow diagrams in published early phase dose-finding clinical trial reports: Improvement is needed.

Services to the scientific community

- **Section Committee Member,** NIHR Statistics Group, Early Phase Clinical Trials**.**
- **Peer reviewer** for *Annals of Applied Statistics*, *Nature Communications*, *ESMO Open* and *Clinical Trials: Journal of the Society for Clinical Trials*.
- **On-site organiser** of the Trials Methodology and Research Partnership's Adaptive Design Working group in-person meeting, 16th-17th April 2024, hosted at the Institute of Cancer Research.
- **Co-chair of Bayesian Statistical Methods reading group**, The Alan Turing Institute.