



BAYES 2018: Bayesian Biostatistics Workshop, Satellite of ISBA 2018

Wednesday 20th – Friday 22nd June 2018
Homerton College, Cambridge, UK

We welcome you to BAYES 2018: Bayesian Biostatistics Workshop, Satellite of ISBA 2018. This workshop brings together scientists interested in the latest applications and methodological developments of Bayesian Biostatistics in trial designs, addressing the need for more efficient and flexible approaches to answer key clinical questions; and in the analysis of complex observational data, to enhance causal understanding of disease processes in support of personalised clinical care and public health policies.

Day 1 (Wednesday 20th June)

Training Course

| Time | Session & Topic | Course Leader |
|---------------|---|---|
| 08:45 – 09:30 | <i>Registration & Refreshments</i> | |
| 09:30 – 09:45 | Lecture 1: Introduction and motivating examples | Nicky Best, GlaxoSmithKline |
| 09:45 – 10:30 | Lecture 2: methods for using single historical dataset in analysis of trial data | Maxine Bennett, MRC Biostatistics Unit |
| 10:30 – 11:15 | Practical 1: Introduction to R package and implementation of power prior approach | Isaac Gravestock, University of Zürich |
| 11:15 – 11:30 | <i>Refreshments</i> | |
| 11:30 – 12:15 | Lecture 3: Using historical data from multiple studies in analysis of trial data | Maxine Bennett, MRC Biostatistics Unit |
| 12:15 – 13:15 | <i>Lunch</i> | |
| 13:15 – 14:15 | Lecture 4: Empirical power priors | Leonhard Held, University of Zürich |
| 14:15 – 15:00 | Practical 2: MAP, robust MAP and power priors using R package | Isaac Gravestock, University of Zürich |
| 15:00 – 15:15 | <i>Refreshments</i> | |
| 15:15 – 16:15 | Lecture 5: Designing a study that includes historical controls | Maxine Bennett, MRC Biostatistics Unit |
| 16:15 – 17:00 | Practical 3: Designing a study using historical controls using R package | Isaac Gravestock, University of Zürich |
| 17:00 – 18:00 | <i>Welcome Drinks Reception</i> | |

Day 2 (Thursday 21st June)

| Time | Title | Presenter |
|---|---|--|
| 08:45 – 09:15 | <i>Registration & Refreshments</i> | |
| 09:15 – 09:30 | Welcome | Daniela De Angelis, MRC Biostatistics Unit & Bruno Boulanger, Arlenda |
| Bayesian contributions to regulatory setting | | |
| Chair: Leonhard Held, University of Zürich | | |
| 09:30 – 10:30 | <i>Bayesian approaches in the regulation of medicines: current and future potential</i> | Invited Speaker: Deborah Ashby, Imperial College London |
| 10:30 – 11:00 | <i>Refreshments</i> | |
| 11:00 – 12:20 | Contributed Presentations: <ul style="list-style-type: none"> • <i>Large Scale process optimization using Bayesian modelling with Reduced Scale process priors</i> • <i>Bayesian Modelling for benefit-risk balance analysis</i> • <i>Bayesian meta-analytic methods for inclusion of external evidence to inform surrogate endpoint evaluation</i> • <i>Bivariate network meta-analysis with second order consistency assumption and application to surrogate endpoint evaluation</i> | Jean-François Michiels & Pierre Hubin, Arlenda Konstantinos Vamvourellis, London School of Economics Tasos Papanikos, University of Leicester Sylwia Bujkiewicz, University of Leicester |
| 12:30 – 13:30 | <i>Lunch</i> | |
| Adaptive trials | | |
| Chair: Adrian Mander, MRC Biostatistics Unit | | |
| 13:30 – 14:30 | <i>Bayesian adaptive designs – from theory to practice</i> | Invited Speaker: Jack Lee, University of Texas |
| 14:30 – 14:50 | <i>Refreshments</i> | |
| 14:50 – 16:10 | Contributed Presentations: <ul style="list-style-type: none"> • <i>A Bayesian adaptive design in cancer phase I/II trials with drug combinations using escalation with overdose control (EWOC) and adaptive randomization</i> • <i>The influence of particular design elements on operational characteristics of trials using Bayesian biomarker-driven outcome-adaptive randomization</i> • <i>A forward looking covariate-adjusted response-adaptive (CARA) patient randomisation rule: delivering</i> | José Jiménez, Politecnico di Torino Leandro García Barrado, Hasselt University Sofía Villar, MRC Biostatistics Unit |

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| | <p><i>personalised treatments, patient benefit and power gains in multi-armed trials</i></p> <ul style="list-style-type: none"> • <i>Bayesian Adaptive Multi-Arm Platform Trials</i> | Julie Marsh, Telethon Kids Institute, University of Western Australia |
| 16:30 – 18:00 | Poster Presentations | |
| 19:30 | Conference Dinner | |

Day 3 (Friday 22nd June)

| Time | Title | Presenter |
|---|--|--|
| 09:00 – 09:30 | <i>Refreshments</i> | |
| Bayesian approaches to bias modelling and causal inference | | |
| Chair: Gianluca Baio, University College London | | |
| 09:30 – 10:30 | <i>Bayesian nonparametrics, missing data, and causal inference</i> | Invited Speaker: Mike Daniels, University of Florida |
| 10:30 – 11:00 | <i>Refreshments</i> | |
| 11:00 – 12:20 | Contributed Presentations: <ul style="list-style-type: none"> • <i>Estimating Heterogeneous Treatment Effects for Latent Subgroups in Observational Studies</i> • <i>Bayesian Measurement Error Models for air pollution and health Studies</i> • <i>Determining organ weight toxicity with Bayesian causal models: Improving on the analysis of relative organ weights</i> • <i>Use of Bayesian methods to correct for bias from exposure measurement error and select the best polynomial regression model</i> | Bo Lu, The Ohio State University Erica Ponzi, University of Zürich Stanley Lazic, AstraZeneca Christen Gray, London School of Hygiene and Tropical Medicine |
| 12:30 – 13:30 | <i>Lunch</i> | |
| Decision support for health policy and clinical care | | |
| Chair: Lorenz Wernisch, MRC Biostatistics Unit | | |
| 13:30 – 14:30 | <i>Tutorial: Machine Learning in Intensive Care Data Analysis</i> | Invited Speaker: Lorenz Wernisch, MRC Biostatistics Unit |
| 14:30 – 14:50 | <i>Refreshments</i> | |
| 14:50 – 16:10 | Contributed Presentations: <ul style="list-style-type: none"> • <i>Individualising model-based predictions of neutropenia for decision support in oncology using sequential Bayesian data assimilation</i> • <i>Model-based network meta-analysis for time-course relationships: A union of two methodologies</i> | Corinna Maier, University of Potsdam, Freie Universität Berlin Hugo Pedder, University of Bristol |

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| | <ul style="list-style-type: none"> • <i>The quantile probability model - A novel approach to Bayesian variable selection for clinical prediction</i> • <i>Group-regularized logistic elastic net regression: improved omics-based classification</i> | <p>Rachel Heyard, University of Zürich</p> <p>Magnus Münch, Amsterdam Public Health Research Institute, VU University Medical Center</p> |
| 16:10 – 16:20 | Closing Remarks | Sylvia Richardson, MRC Biostatistics Unit |

With many thanks to the scientific organising committee:

- Gianluca Baio, University College London
- Alun Bedding, Roche
- Nicky Best, GlaxoSmithKline
- Bruno Boulanger, Arlenda
- Daniela De Angelis, MRC Biostatistics Unit, University of Cambridge (Chair)
- Leonhard Held, University of Zürich
- Emmanuel Lesaffre, KULeuven
- Sylvia Richardson, MRC Biostatistics Unit, University of Cambridge

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