Bayesian Clinical Trials

Course introduction

Instructors

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Outline - part I

9.15-9.45 **Brief introduction to phase I and phase IIA trials** both single-stage and two-stage with proportion as outcome.

9.45-10.30 **Dose-finding phase I and the CRM method**

10.30-11.00 **Real data case study**

11.15-12.00 **An introduction to the Beta-Binomial model** binomial likelihood, beta prior, conjugacy, posterior density and posterior predictive distribution

12.00-12.30 *Hands-on* **example** informative vs. non-informative beta priors

Outline - part II

13.30-14.30 **Bayesian Sample Size Determination for Binomial Proportions** choose a sample size that allows one to estimate the accuracy to within a desired credible interval width (ACC, ALC, WOC) choose a sample size n for which the probability of a *successful trial* is large enough, in the sense that it exceeds a specified threshold (single threshold designs and extensions)

14.30-15.00 **Case study** to compare ACC, ALC, WOC

15.00-15.30 **Case study** to compare two-stage phase II with different priors vs. Simon

15.45-16.30 **Insight into building priors**

16.30-17.30 "Our" design???

Pre-requisites

- There are no formal pre-requisites
- Analysis will be performed in the R programming language: `http://www.r-project.org/`
- Rstudio `http://www.rstudio.com/products/rstudio/` is recommended
- The following R package will be used in class:
  - SampleSizeProportions
  - LearnBayes
  - shiny
  - BRugs

Getting the slides

- The slides for this course were created with Rmarkdown: `http://rmarkdown.rstudio.com/`.
- They are available from `https://github.com/berkeley3/bayesianCT-course`.
- To re-compile the slides:
  - Download the directory containing the lecture from Github
  - In R open the .Rmd file and set the working directory to the lecture directory
  - Click the *KnitHTML* button on Rstudio or run the following commands:

```
library(rmarkdown)
render("index.Rmd")
```