

# Bayesian Clinical Trials

## Course introduction

# Instructors

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# Outline - part I

9.15-9.45 **Brief introduction to phase I and phase IIB 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 GItHUB SITE.
- ▶ To re-compile the slides:
  - ▶ Download the directory containing the lecture from Github
  - ▶ Set the working directory to the lecture directory
  - ▶ Click the *KnitHTML* button on Rstudio or run the following commands:

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