

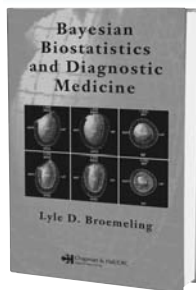
Use Bayesian techniques for the design and analysis of clinical trials

**NEW!**

# BAYESIAN BIOSTATISTICS AND DIAGNOSTIC MEDICINE

Lyle D. Broemeling • Medical Lake, Washington, USA

## A Bayesian Approach to Diagnostic Medicine



There are numerous advantages to using Bayesian methods in diagnostic medicine, which is why they are employed more and more today in clinical studies. Exploring Bayesian statistics at an introductory level, **Bayesian Biostatistics and Diagnostic Medicine** illustrates how to apply these methods to solve important problems in medicine and biology.

After focusing on the wide range of areas where diagnostic medicine is used, the book introduces Bayesian statistics and the estimation of accuracy by sensitivity, specificity, and positive and negative predictive values for ordinal and continuous diagnostic measurements. The author then discusses patient covariate information and the statistical methods for estimating the agreement among observers. The book also explains the protocol review process for cancer clinical trials, how tumor responses are categorized, how to use WHO and RECIST criteria, and how Bayesian sequential methods are employed to monitor trials and estimate sample sizes.

With many tables and figures, this book enables readers to conduct a Bayesian analysis for a large variety of interesting and practical biomedical problems.

## FEATURES

- Presents various fields where Bayesian statistics is used in diagnostic medicine, from imaging to pathology to surgery
- Uses WinBUGS® and Minitab® for statistical calculations
- Provides examples that are based on actual consulting activities
- Covers unique topics not found in other books, such as agreement among observers and the analysis and design of Phase I and II clinical trials
- Explores the receive operating characteristic (ROC) curve for determining diagnostic accuracy
- Discusses previous experimental studies of the Bayesian approach that can be used in the design of future diagnostic studies

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 **Chapman & Hall/CRC**  
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