Modeling dose-response microarray data in early drug development experiments using R : order-restricted analysis of microarray data

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Abstrak

This book focuses on the analysis of dose-response microarray data in pharmaceutical settings, the goal being to cover this important topic for early drug development experiments and to provide user-friendly R packages that can be used to analyze this data. It is intended for biostatisticians and bioinformaticians in the pharmaceutical industry, biologists, and biostatistics/bioinformatics graduate students.

Part I of the book is an introduction, in which we discuss the dose-response setting and the problem of estimating normal means under order restrictions. In particular, we discuss the pooled-adjacent-violator (PAV) algorithm and isotonic regression, as well as inference under order restrictions and non-linear parametric models, which are used in the second part of the book. Part II is the core of the book, in which we focus on the analysis of dose-response microarray data. All methodological issues in the book are illustrated using real-world examples of dose-response microarray datasets from early drug development experiments.