

Gardiner, W.P.: **Statistics for the Biosciences.** (Data Analysis using Minitab Software.) - Prentice Hall, London - New York - Toronto - Sydney - Tokyo - Singapore - Madrid - Mexico City - Munich - Paris 1997. ISBN 0-13-447582-8. 314 pp., USD 35.95.

Familiarity with correct usage of statistical techniques is essential for all scientists, if they are to design experiments to obtain the most relevant information. Statistical methods enable the information contained within experimental data to be translated into meaningful biological knowledge.

The book is divided into nine chapters, each beginning with a general outline of topics to be presented within it. The first chapter briefly reviews the role of statistics and explains how design of biological experiments is fundamental to good data handling. The introduction to simple plots and summary statistics is provided by the following chapter. Chapter 3 explains one and two sample parametric inference procedures for both mean response and variability in response. Alternative non-parametric procedures to the parametric routines and methods for testing the normality of experimental data are illustrated in Chapter 4. Aspects of analysis of one-factor designs which represent extensions to the two sample procedures, including initial analysis, significance tests, multiple comparison, contrasts and diagnostic checking are introduced in Chapter 5. The following chapter presents factorial-based design structures. The emphasis within Chapter 7 is on how to fit linear, non-linear, polynomial, and multiple linear relationships and how to assess the validity of the fitted model from both the statistical and practical perspective. Chapter 8 provides an introduction to two linear regression methods of particular interest in laboratory experimentation, linear calibration, and comparison of two linear equations. The last chapter describes principal component analysis and discriminant analysis to illustrate the applicability of multivariate techniques.

Each chapter starts with a solid introduction into selected topics. Then numerous examples and problems from real laboratory experiments illustrate the application of statistical techniques which enable better understanding of the topic discussed. All aspects of data analysis are illustrated through the use of output from the statistical software package *Minitab*. Each chapter contains practical, applicable problems for the readers to examine if they understand how to present and analyse data using the principles and techniques presented. Detailed solutions are presented at the end of the book. The book is further enhanced by two appendices containing statistical formulae and statistical tables, a list of basic and recommended references, and an index. For people, who are not able to use *Minitab*, detailed information on *Minitab* step-by-step procedure might be rather excessive.

This book assumes the reader has some prior knowledge of basic statistics, even though the first two chapters provide an introduction to the background. As the author claims, it is intended for undergraduate students in bioscience, but it will also be beneficial to research students and other scientists, who need statistical skills and techniques for their practical experimentation.

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