

BOOK REVIEWS

What I consider the best part of the book is that it makes you think about the cellular activities a little more carefully. Almost everyone, when it suits, uses hyperbole about selectivity and specificity in biology from replication of DNA, protein synthesis to trafficking in cells. They view cells as a pool of chemicals dissolved in water, free to associate every whichever way and add on impermeant bilayers to sequester groups of activity. Pollack's case for association and induction is strong and has to be read with an open mind. I believe this book is a good read, whether you agree with the author or not.

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Statistical Methods and Application in Biology and Medicine. D. K. Subbakrishna and V. G. Kaliaperumal (eds). Department of Biostatistics, NIMHANS, Bangalore 560 029, India. 2001. 344 pp. Price not mentioned.

The book under review contains proceedings of the first joint conference of the Indian Society for Medical Statistics and International Biometric Society (Indian region). As the title suggests, the papers included mostly deal with applications of statistics in biological and medical sciences. About 7/8 papers are mainly theoretical in nature and about 20/21 papers deal with applications. There are 7 invited papers, among

which special mention must be made of review papers by Sundarraj on linear models, G. S. Shukla on longitudinal data analysis and a paper by Prajneshu on the use of Box-Cox transformations to reduce heterogeneity of error variances in nonlinear models. These papers review models/techniques used extensively in research, not only in biological or medical sciences, but also in life and social sciences. The paper by Pradhan introduces many important concepts in a short span of about 10 pages, such as Kolmogorov-Chaitin complexity, Hausdorff (fractional) dimension, Liapovov exponent and correlation dimension. The discussion is sketchy and would be difficult to follow even for scientists with some mathematics or statistics background. However, the presentation of the data by actual curves and coloured topographic pictures would be very useful to those who do not have adequate mathematics or statistics background.

Among the papers of theoretical nature, the one by Laxminarayana and Misra on inflated compound distributions is very disappointing as it does not include any applications even those of the special cases. Similarly, the paper by Nair on expected size and duration of a birth/death epidemic model gives only mathematical derivations without any applications to real (or simulated) data. The other papers in this category present the theory with applications in areas such as comparison of event rates by Ezhil and Jabbar, errors which are symmetric but non-normal by Ganguly, modeling for recurrent events by Purohit, digital preferences by Ramanath, proportionate reduction of error by Sarmukaddam, estimation of relative risk size from samples of unequal sizes by Gupta and Singh, modeling and estimation for contraceptive effect by

Madhura and Vaman, and projection of AIDS by Rao and Venkatramana.

The remaining papers deal with applications to a variety of situations. Among these the reviewer would like to mention the papers by Shubha Rani on introduction to bootstrap, Chinchole *et al.* on effect of donor age on kidney transplants, Subbakrishna *et al.* on age at onset of schizophrenia in females, Antony *et al.* on suitability of human development index, Murthy *et al.* on health status of women and Gupta on nutritional status of individuals in four districts of Rajasthan. The papers by Murthy *et al.* and Gupta show how adult women/girls receive a raw deal in such basic needs as food and health, particularly in 'BIMARU' states.

The proceedings indicate that a lot more hard work coupled with good mathematical and statistical training is necessary to bring the level of research up to the world standard. Unfortunately, in the Indian school and college systems bifurcation between Life Sciences and Mathematical Sciences occurs very early and unless this is removed, Indian scientists working in this area would be handicapped. It is hoped that 'powers that be' would make efforts to rectify this situation and produce some graduates in life sciences with adequate background in mathematical sciences and graduates in mathematical sciences with adequate background in life sciences.

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