

## **Books Analysis Of Multivariate Survival Data**

The Statistical Analysis of Multivariate Failure Time Data: A Marginal Modeling Approach provides an innovative look at methods for the analysis of correlated failure times. The focus is on the use of marginal single and marginal double failure hazard rate estimators for the extraction of regression information. For example, in a context of randomized trial or cohort studies, the results go beyond that obtained by analyzing each failure time outcome in a univariate fashion. The book is addressed to researchers, practitioners, and graduate students, and can be used as a reference or as a graduate course text. Much of the literature on the analysis of censored correlated failure time data uses frailty or copula models to allow for residual dependencies among failure times, given covariates. In contrast, this book provides a detailed account of recently developed methods for the simultaneous estimation of marginal single and dual outcome hazard rate regression parameters, with emphasis on multiplicative (Cox) models. Illustrations are provided of the utility of these methods using Women's Health Initiative randomized controlled trial data of menopausal hormones and of a low-fat dietary pattern intervention. As byproducts, these methods provide flexible semiparametric estimators of pairwise bivariate survivor functions at specified

covariate histories, as well as semiparametric estimators of cross ratio and concordance functions given covariates. The presentation also describes how these innovative methods may extend to handle issues of dependent censorship, missing and mismeasured covariates, and joint modeling of failure times and covariates, setting the stage for additional theoretical and applied developments. This book extends and continues the style of the classic *Statistical Analysis of Failure Time Data* by Kalbfleisch and Prentice. Ross L. Prentice is Professor of Biostatistics at the Fred Hutchinson Cancer Research Center and University of Washington in Seattle, Washington. He is the recipient of COPSS Presidents and Fisher awards, the AACR Epidemiology/Prevention and Team Science awards, and is a member of the National Academy of Medicine. Shanshan Zhao is a Principal Investigator at the National Institute of Environmental Health Sciences in Research Triangle Park, North Carolina.

Survival data or more general time-to-event data occur in many areas, including medicine, biology, engineering, economics, and demography, but previously standard methods have requested that all time variables are univariate and independent. This book extends the field by allowing for multivariate times. As the field is rather new, the concepts and the possible types of data are described in detail. Four different approaches to the analysis of such data are presented

from an applied point of view.

The Wiley-Interscience Paperback Series consists of selected books that have been made more accessible to consumers in an effort to increase global appeal and general circulation. With these new unabridged softcover volumes, Wiley hopes to extend the lives of these works by making them available to future generations of statisticians, mathematicians, and scientists. "The book is a valuable completion of the literature in this field. It is written in an ambitious mathematical style and can be recommended to statisticians as well as biostatisticians." -Biometrische Zeitschrift "Not many books manage to combine convincingly topics from probability theory over mathematical statistics to applied statistics. This is one of them. The book has other strong points to recommend it: it is written with meticulous care, in a lucid style, general results being illustrated by examples from statistical theory and practice, and a bunch of exercises serve to further elucidate and elaborate on the text." -Mathematical Reviews "This book gives a thorough introduction to martingale and counting process methods in survival analysis thereby filling a gap in the literature." -Zentralblatt für Mathematik und ihre Grenzgebiete/Mathematics Abstracts "The authors have performed a valuable service to researchers in providing this material in [a] self-contained and

accessible form.. . This text [is] essential reading for the probabilist or mathematical statistician working in the area of survival analysis." -Short Book Reviews, International Statistical Institute

Counting Processes and Survival Analysis explores the martingale approach to the statistical analysis of counting processes, with an emphasis on the application of those methods to censored failure time data. This approach has proven remarkably successful in yielding results about statistical methods for many problems arising in censored data. A thorough treatment of the calculus of martingales as well as the most important applications of these methods to censored data is offered. Additionally, the book examines classical problems in asymptotic distribution theory for counting process methods and newer methods for graphical analysis and diagnostics of censored data. Exercises are included to provide practice in applying martingale methods and insight into the calculus itself.

This thesis investigates determinants of factors associated with retention of injecting drug users on the South Australian methadone program over the decade 1981 to mid 1991. Truncated multivariate survival models are proposed for the analysis of data from the program, and the theory of graphical chain models applied to the data. A detailed analysis is presented which gives further insight into the nature of the relationships that exist amongst these data. This

provides an application of graphical chain models to survival data.

Survival analysis arises in many fields of study including medicine, biology, engineering, public health, epidemiology, and economics. This book provides a comprehensive treatment of Bayesian survival analysis. It presents a balance between theory and applications, and for each class of models discussed, detailed examples and analyses from case studies are presented whenever possible. The applications are all from the health sciences, including cancer, AIDS, and the environment.

Bayesian statistical methods have become widely used for data analysis and modelling in recent years, and the BUGS software has become the most popular software for Bayesian analysis worldwide. Authored by the team that originally developed this software, The BUGS Book provides a practical introduction to this program and its use. The text presents complete coverage of all the functionalities of BUGS, including prediction, missing data, model criticism, and prior sensitivity. It also features a large number of worked examples and a wide range of applications from various disciplines. The book introduces regression models, techniques for criticism and comparison, and a wide range of modelling issues before going into the vital area of hierarchical models, one of the most common applications of Bayesian methods. It deals with essentials of modelling

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without getting bogged down in complexity. The book emphasises model criticism, model comparison, sensitivity analysis to alternative priors, and thoughtful choice of prior distributions—all those aspects of the "art" of modelling that are easily overlooked in more theoretical expositions. More pragmatic than ideological, the authors systematically work through the large range of "tricks" that reveal the real power of the BUGS software, for example, dealing with missing data, censoring, grouped data, prediction, ranking, parameter constraints, and so on. Many of the examples are biostatistical, but they do not require domain knowledge and are generalisable to a wide range of other application areas. Full code and data for examples, exercises, and some solutions can be found on the book's website.

Excerpt from Annual Report of Program Activities, 1982, Vol. 2 This Section has been very productive in developing statistical methodology covering areas related to clinical trials and other associated problems. The following is a list Of the areas in which this work was done to indicate the range Of this activity: theory of survival analysis, sequential monitoring Of clinical trials, methods for direct adjustment of survival curves, development of confidence limits for estimates of median survival times, estimating coefficients in multivariate survival models, study of the impact Of secondary treatments in randomized trials on the outcome Of interest, prospective matched analyses, logistic regression for serial data, chi-square tests for equality Of proportions, subset analysis in epidemiologic studies, a two-sample test for positive random

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The place in survival analysis now occupied by proportional hazards models and their generalizations is so large that it is no longer conceivable to offer a course on the subject without devoting at least half of the content to this topic alone. This book focuses on the theory and applications of a very broad class of models – proportional hazards and non-proportional hazards models, the former being viewed as a special case of the latter – which underlie modern survival analysis. Researchers and students alike will find that this text differs from most recent works in that it is mostly concerned with methodological issues rather than the analysis itself.

This book introduces readers to advanced statistical methods for analyzing survival data involving correlated endpoints. In particular, it describes statistical methods for applying Cox regression to two correlated endpoints by accounting for dependence between the endpoints with the aid of copulas. The practical advantages of employing copula-based models in medical research are explained on the basis of case studies. In addition, the book focuses on clustered survival data, especially data arising from meta-analysis and multicenter analysis.

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Consequently, the statistical approaches presented here employ a frailty term for heterogeneity modeling. This brings the joint frailty-copula model, which incorporates a frailty term and a copula, into a statistical model. The book also discusses advanced techniques for dealing with high-dimensional gene expressions and developing personalized dynamic prediction tools under the joint frailty-copula model. To help readers apply the statistical methods to real-world data, the book provides case studies using the authors' original R software package (freely available in CRAN). The emphasis is on clinical survival data, involving time-to-tumor progression and overall survival, collected on cancer patients. Hence, the book offers an essential reference guide for medical statisticians and provides researchers with advanced, innovative statistical tools. The book also provides a concise introduction to basic multivariate survival models.

Modelling Survival Data in Medical Research describes the modelling approach to the analysis of survival data using a wide range of examples from biomedical research. Well known for its nontechnical style, this third edition contains new chapters on frailty models and their applications, competing risks, non-proportional hazards, and dependent censo

A practical guide to methods of survival analysis for medical researchers with limited statistical experience. Methods and techniques described range from descriptive and exploratory analysis to multivariate regression methods. Uses illustrative data from actual clinical trials and observational studies to describe methods of analysing and reporting results. Also reviews the features and performance of statistical software available for applying the methods of analysis discussed.

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Handbook of Statistics: Advances in Survival Analysis covers all important topics in the area of Survival Analysis. Each topic has been covered by one or more chapters written by internationally renowned experts. Each chapter provides a comprehensive and up-to-date review of the topic. Several new illustrative examples have been used to demonstrate the methodologies developed. The book also includes an exhaustive list of important references in the area of Survival Analysis. Includes up-to-date reviews on many important topics Chapters written by many internationally renowned experts Some Chapters provide completely new methodologies and analyses Includes some new data and methods of analyzing them

Multivariate Survival Analysis and Competing Risks introduces univariate survival analysis and extends it to the multivariate case. It covers competing risks and counting processes and provides many real-world examples, exercises, and R code. The text discusses survival data, survival distributions, frailty models, parametric methods, multivariate

This issue of Thoracic Surgery Clinics, guest edited by Dr. Bryan M. Burt, is devoted to Malignant Pleural Mesothelioma. Dr. Burt has assembled expert authors to review the following topics: Biomarkers for the Diagnosis and Monitoring of Malignant Pleural Mesothelioma; Taken Together: Effective

Multimodal Approaches for Malignant Pleural Mesothelioma; Pleurectomy/Decortication for Malignant Pleural Mesothelioma; Preoperative Identification of Benefit from Surgery for Malignant Pleural Mesothelioma; The Role of Extrapleural Pneumonectomy in Malignant Pleural Mesothelioma; The Molecular Basis of Malignant Pleural Mesothelioma; Radiation Therapy for Malignant Pleural Mesothelioma; The Staging of Malignant Pleural Mesothelioma; Intraoperative Adjuncts for Malignant Pleural Mesothelioma: The Fourth Dimension; The Pathology of Malignant Pleural Mesothelioma; and more! This dissertation, "Modelling Multivariate Survival Data Using Semiparametric Models" by ???, Yau-wing, Lee, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. DOI: 10.5353/th\_b4257528 Subjects: Survival analysis (Biometry) Multivariate analysis Medicine - Research - Statistical methods

This dissertation, "Cure Models for Univariate and Multivariate Survival Data" by Feifei, Zhou, ???, was obtained from The University of Hong Kong (Pokfulam,

Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. DOI: 10.5353/th\_b4570097 Subjects: Survival analysis (Biometry) Multivariate analysis

The aim of this book is to bridge the gap between standard textbook models and a range of models where the dynamic structure of the data manifests itself fully. The common denominator of such models is stochastic processes. The authors show how counting processes, martingales, and stochastic integrals fit very nicely with censored data. Beginning with standard analyses such as Kaplan-Meier plots and Cox regression, the presentation progresses to the additive hazard model and recurrent event data. Stochastic processes are also used as natural models for individual frailty; they allow sensible interpretations of a number of surprising artifacts seen in population data. The stochastic process framework is naturally connected to causality. The authors show how dynamic path analyses can incorporate many modern causality ideas in a framework that takes the time aspect seriously. To make the material accessible to the reader, a large number of practical examples, mainly from medicine, are developed in

detail. Stochastic processes are introduced in an intuitive and non-technical manner. The book is aimed at investigators who use event history methods and want a better understanding of the statistical concepts. It is suitable as a textbook for graduate courses in statistics and biostatistics.

This book introduces readers to advanced statistical methods for analyzing survival data involving correlated endpoints. In particular, it describes statistical methods for applying Cox regression to two correlated endpoints by accounting for dependence between the endpoints with the aid of copulas. The practical advantages of employing copula-based models in medical research are explained on the basis of case studies. In addition, the book focuses on clustered survival data, especially data arising from meta-analysis and multicenter analysis. Consequently, the statistical approaches presented here employ a frailty term for heterogeneity modeling. This brings the joint frailty-copula model, which incorporates a frailty term and a copula, into a statistical model. The book also discusses advanced techniques for dealing with high-dimensional gene expressions and developing personalized dynamic prediction tools under the joint frailty-copula model. To help readers apply the statistical methods to real-world data, the book provides case studies using the authors' original R software package (freely available in CRAN). The emphasis is on clinical survival data,

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involving time-to-tumor progression and overall survival, collected on cancer patients. Hence, the book offers an essential reference guide for medical statisticians and provides researchers with advanced, innovative statistical tools. The book also provides a concise introduction to basic multivariate survival models.

The Year Book of Oncology brings you abstracts of the articles that reported the year's breakthrough developments in oncology, carefully selected from more than 500 journals worldwide. Expert commentaries evaluate the clinical importance of each article and discuss its application to your practice. There's no faster or easier way to stay informed! Topics include Supportive Care, Breast Cancer, Gynecologic Cancers, Genitourinary Cancers, Hematologic Malignancies, Thoracic Cancer, Gastrointestinal Cancer and Cancer Biology. The Year Book of Oncology is available annually in November.

For advanced undergraduate and graduate courses in Social Statistics. An in-depth introduction to today's most commonly used statistical and multivariate techniques Using Multivariate Statistics, 7th Edition presents complex statistical procedures in a way that is maximally useful and accessible to researchers who may not be statisticians. The authors focus on the benefits and limitations of applying a technique to a data set - when, why, and how to do it. Only a limited

knowledge of higher-level mathematics is assumed. Students using this text will learn to conduct numerous types of multivariate statistical analyses; find the best technique to use; understand limitations to applications; and learn how to use SPSS and SAS syntax and output. 0134790545 / 9780134790541 Using Multivariate Statistics, 7/e

This dissertation, "Topics in Survival Analysis" by Kwok-fai, Lam, ???, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Abstract of thesis entitled "TOPICS IN SURVIVAL ANALYSIS" Submitted by Kwok-fai LAM For the Degree of Doctor of Philosophy at The University of Hong Kong in June 1994 This thesis deals with the modelling and analysis of failure time data and is divided into four main topics in survival analysis. In modelling proportion of immunes or surviving fraction in a population, it is common to assume a mixture model which combines a logistic regression model and a positive distribution. In some applications, the model may not be appropriate especially in the presence of heterogeneity among individuals in subpopulations.

It is shown that frailty or random effects model can also be used in such situations provided that the frailty distribution has a discrete mass at zero, and the mixture model mentioned is only a special case of the frailty model representations when the frailty term has a logistic regression model. Examples of some frailty distributions and their relative merits are discussed in the first topic. It is well known that frailty models can also be used to generate dependent multivariate survival distributions. A large number of estimation methods have been proposed in the literature, most of them depend on specific distributional assumptions for the frailties. The second topic advocates the marginal likelihood approach as a unified approach to parameter estimation in frailty models for multivariate survival data analysis. As it is impossible to evaluate the marginal likelihood function analytically, two Monte Carlo approximations are proposed, and the frailty prediction by Monte Carlo empirical Bayes approach is also considered. Two classes of multivariate non-parametric tests are proposed for testing the equality of failure rates in a competing risks setup, which turns out to be of equivalent form. Optimal weight functions which yield optimal local asymptotic power for certain alternative hypotheses are considered for the two classes, and a more empirical way of choosing weight function in application to a data set is illustrated with an example in the third topic. The last topic deals with a

special type of multivariate survival data which can be represented by a compartmental model or the so-called illness and death model. A non-parametric inference procedure in estimating the cumulative rate of morbidity of a certain disease is proposed with the time to onset of the disease being unobservable, which is generally true in real life. General difficulties for such models are also discussed. ii DOI: 10.5353/th\_b3040899 Subjects: Survival analysis (Biometry) Failure time data analysis

Handbook of Survival Analysis presents modern techniques and research problems in lifetime data analysis. This area of statistics deals with time-to-event data that is complicated by censoring and the dynamic nature of events occurring in time. With chapters written by leading researchers in the field, the handbook focuses on advances in survival analysis techniques, covering classical and Bayesian approaches. It gives a complete overview of the current status of survival analysis and should inspire further research in the field. Accessible to a wide range of readers, the book provides: An introduction to various areas in survival analysis for graduate students and novices A reference to modern investigations into survival analysis for more established researchers A text or supplement for a second or advanced course in survival analysis A useful guide to statistical methods for analyzing survival data experiments for practicing

statisticians

Computer-Aided Multivariate Analysis, Fourth Edition enables researchers and students with limited mathematical backgrounds to understand the concepts underlying multivariate statistical analysis, perform analysis using statistical packages, and understand the output. New topics include Loess and Poisson regression, nominal and ordinal logistic regression, interpretation of interactions in logistic and survival analysis, and imputation for missing values. This book includes new exercises and references, and updated options in the latest versions of the statistical packages. All data sets and codebooks are available for download. The authors explain the assumptions made in performing each analysis and test, how to determine if your data meets those assumptions, and what to do if they do not. What to Watch out for sections in each chapter warn of common difficulties. By reading this text, you will know what method to use with your data set, how to get the results, and how to interpret them and explain them to others. New in the Fourth Edition: Expanded explanation of checking for goodness of fit in logistic regression and survival analysis Kaplan-Meier estimates of survival curves, formal tests for comparing survival between groups, interactions and the use of time-dependent covariates in survival analysis Expanded discussion of how to handle missing values Latest features of the S-

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PLUS package in addition to SAS, SPSS, STATA, and STATISTICA for multivariate analysis Data sets for the problems are available at the CRC web site: <http://www.crcpress.com/product/isbn/9781584883081> Commands and output for examples used in the text for each statistical package are available at the UCLA web site: <http://www.ats.ucla.edu/stat/examples/cama4/>

Easily accessible and clinically focused, Abeloff's Clinical Oncology, 6th Edition, covers recent advances in our understanding of the pathophysiology of cancer, cellular and molecular causes of cancer initiation and progression, new and emerging therapies, current trials, and much more. Masterfully authored by an international team of leading cancer experts, it offers clear, practical coverage of everything from basic science to multidisciplinary collaboration on diagnosis, staging, treatment and follow up. Includes new chapters on Cancer Metabolism and Clinical Trial Designs in Oncology and a standalone chapter on lifestyles and cancer prevention. Features extensive updates including the latest clinical practice guidelines, decision-making algorithms, and clinical trial implications, as well as new content on precision medicine, genetics, and PET/CT imaging. Includes revised diagnostic and treatment protocols for medical management, surgical considerations, and radiation oncology therapies, stressing a multispecialty, integrated approach to care. Helps you find information quickly with updated indexing related to management recommendations, focused fact summaries, updated key points at the beginning of each chapter ideal for quick reference and board review, and

algorithms for patient evaluation, diagnosis, and treatment options. Offers more patient care coverage in disease chapters, plus new information on cancer as a chronic illness and cancer survivorship. Discusses today's key topics such as immuno-oncology, functional imaging, precision medicine, the application of genetics in pathologic diagnosis and sub-categorization of tumors as well as the association of chronic infectious diseases such as HIV and cancer.

Global experts, in conjunction with the International Association for the Study of Lung Cancer, bring you up to date with today's best approaches to lung cancer diagnosis, treatment, and follow-up. IASLC Thoracic Oncology, 2nd Edition, keeps you abreast of the entire scope of this fast-changing field, from epidemiology to diagnosis to treatment to advocacy. Written in a straightforward, practical style for the busy clinician, this comprehensive, multidisciplinary title is a must-have for anyone involved in the care of patients with lung cancer and other thoracic malignancies. Offers practical, relevant coverage of basic science, epidemiology, pulmonology, medical and radiation oncology, surgery, pathology, palliative care, nursing, and advocacy. Provides authoritative guidance from the IASLC – the only global organization dedicated to the study of lung cancer. Includes new content on molecular testing, immunotherapy, early detection, staging and the IASLC staging system, surgical resection for stage I and stage II lung cancer, and stem cells in lung cancer. Features a new full-color design throughout, as well as updated diagnostic algorithms.

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Completely revised with practical guidance in daily urological pathology sign-out and the latest recommended diagnostic approaches, the new edition of this comprehensive reference equips you to accurately diagnose specimens of the entire urinary tract and male reproductive system plus the adrenal glands. It begins with a look at normal anatomy and histology for each organ system...followed by discussions of the pathology of congenital anomalies, inflammations, non-neoplastic diseases and neoplasia. An emphasis on clinicopathologic and radiographic-pathologic correlations makes this a true diagnostic decision-making guide. A consistent format enables you to locate critical information quickly, and more than 1500 high-quality illustrations — most in full color — make diagnosis even easier. Presents the practice-proven experience of today's authorities to enable you to diagnose with confidence. Limits coverage of general mechanisms of disease and anatomy to the most relevant information needed to fully comprehend the clinical picture. Includes boxed lists of types and causes of diseases, differential diagnosis, characteristic features of diseases, complications, classifications, and staging that help you quickly locate the specific information you need. Presents two brand-new chapters covering urinary cytology and fine needle aspiration to keep you up to date. Covers newly described entities and application of ancillary study for precise diagnosis. Features integration of new molecular techniques and immunohistochemical analysis for differential diagnosis. Equips you with the latest recommended diagnostic approaches help you make the most informed decisions.

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Provides you with a critical review of the current classifications of cancer and disease. Features more than 1500 high-quality illustrations-in full color—providing a complete visual perspective of the conditions encountered in pathology.

This new version of the bestselling Computer-Aided Multivariate Analysis has been appropriately renamed to better characterize the nature of the book. Taking into account novel multivariate analyses as well as new options for many standard methods, Practical Multivariate Analysis, Fifth Edition shows readers how to perform multivariate statistical analyses and understand the results. For each of the techniques presented in this edition, the authors use the most recent software versions available and discuss the most modern ways of performing the analysis. New to the Fifth Edition Chapter on regression of correlated outcomes resulting from clustered or longitudinal samples Reorganization of the chapter on data analysis preparation to reflect current software packages Use of R statistical software Updated and reorganized references and summary tables Additional end-of-chapter problems and data sets The first part of the book provides examples of studies requiring multivariate analysis techniques; discusses characterizing data for analysis, computer programs, data entry, data management, data clean-up, missing values, and transformations; and presents a rough guide to assist in choosing the appropriate multivariate analysis. The second part examines outliers and diagnostics in simple linear regression and looks at how multiple linear regression is employed in practice and as a foundation for understanding a

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variety of concepts. The final part deals with the core of multivariate analysis, covering canonical correlation, discriminant, logistic regression, survival, principal components, factor, cluster, and log-linear analyses. While the text focuses on the use of R, S-PLUS, SAS, SPSS, Stata, and STATISTICA, other software packages can also be used since the output of most standard statistical programs is explained. Data sets and code are available for download from the book's web page and CRC Press Online.

This book presents selected papers on statistical model development related mainly to the fields of Biostatistics and Bioinformatics. The coverage of the material falls squarely into the following categories: (a) Survival analysis and multivariate survival analysis, (b) Time series and longitudinal data analysis, (c) Statistical model development and (d) Applied statistical modelling. Innovations in statistical modelling are presented throughout each of the four areas, with some intriguing new ideas on hierarchical generalized non-linear models and on frailty models with structural dispersion, just to mention two examples. The contributors include distinguished international statisticians such as Philip Hougaard, John Hinde, Il Do Ha, Roger Payne and Alessandra Durio, among others, as well as promising newcomers. Some of the contributions have come from researchers working in the BIO-SI research programme on Biostatistics and Bioinformatics, centred on the Universities of Limerick and Galway in Ireland and funded by the Science Foundation Ireland under its Mathematics Initiative.

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