

'Bill Shipley has done an excellent job in tackling the fundamental issue of testing causality in biology and making it accessible to any biology student or scholar. This book is about statistics, but the storytelling is for biologists. When the first edition for this book came out, in 2000, path analyses were not a common tool for biologists. Although the first edition convinced us to use structural equation modelling, this second edition supplies the essential toolbox. This book is the best route to take if you want to master structural equation modelling in biology, and the very good news is that this second edition not only provides updates and extensions, it also offers R codes to run your analyses.'

Anne Charmantier, Centre d'Écologie Fonctionnelle et Évolutive (CEFE), Montpellier, France

'For a long time biologists have inferred causation only from carefully designed experiments. Shipley's book broadens horizons by showing how to use observational data to infer whether a causal model is plausible, and to estimate the variation in response due to competing causes.'

Professor David Warton, University of New South Wales, Sydney, Australia

Many problems in biology require an understanding of the relationships among variables in a multivariate causal context. Exploring such cause-effect relationships through a series of statistical methods, this book explains how to test causal hypotheses when randomised experiments cannot be performed.

This completely revised and updated edition features detailed explanations for carrying out statistical methods using the popular, and freely available, R statistical language. Sections on d-sep tests, latent constructs that are common in biology, missing values, phylogenetic constraints and multilevel models are also an important feature of this new edition.

Written for biologists and using a minimum of statistical jargon, the concept of testing multivariate causal hypotheses using structural equations and path analysis is demystified. Assuming only a basic understanding of statistical analysis, this new edition is a valuable resource for students and practising biologists alike.

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