# Preface

Since 2005, when the first edition of *Molecular Ecology* was published, the field has continued to evolve. As a result, this second edition contains numerous updates and additions that reflect the fast-moving pace of genetic discovery. Perhaps the most significant development in molecular ecology in the past five years has been in the area of ecogenomics. In a nutshell, ecogenomics moves away from the more traditional approach of using neutral (non-adaptive) molecular markers to infer patterns of genetic diversity and gene flow, and instead attempts to provide an understanding of adaptive gene functions in an ecological context. We have therefore incorporated into this second edition a new chapter entitled 'Studying Ecologically Important Traits: Ecogenomics, QTL Analysis, and Reverse Genetics' (Chapter 5). In addition, updates to many other sections of the textbook include explanations of how ecogenomics is being applied to conservation genetics, behavioural ecology and evolutionary biology. Other revisions to this second edition are too numerous to list here, but include discussions of next-generation sequencing, landscape genetics, experimental design and spatial autocorrelation. As before, up-to-date examples are used extensively throughout the text, and are based on studies that have employed a wide range of molecular markers.

Although each chapter may be read in isolation, the book is structured so that it begins with some of the basic theory of genetics and population genetics, and then in later chapters builds on this theory by providing thorough treatments of phylogeography, behavioural ecology and conservation genetics. At the end of each chapter are lists of relevant software programs, further reading and review questions. Also new to this edition is a selection of data sets and assignments, linked to individual chapters, that can be downloaded from the website (www.wiley.com/go/freeland_molecular2e) and used either for review by individual students, or as the basis of labs and workshops in molecular ecology and population genetics courses. The figures

and tables from the text can also be downloaded from this website and used in PowerPoint lecture slides or other teaching tools. At the end of the textbook are a glossary and an extensive bibliography. It seems inevitable that the discipline of molecular ecology will continue to grow; please feel free to contact the lead author, Joanna Freeland (joannafreeland@trentu.ca), with comments on the existing text or suggestions for a future edition.