
Preface

The rapidly developing methods of systems biology can help investigators in various areas of modern biomedical research to make inference and predictions from their data that intuition alone would not discern. Many of these methods, however, are commonly perceived as esoteric and inaccessible to biomedical researchers: Even evaluating their applicability to the problem at hand seems to require from the biologist a broad knowledge of mathematics or engineering. This book is written by scientists who do possess such knowledge, who have successfully applied it to biological problems in various contexts, and who found that their experience can be crystallized in a form very similar to a typical biological laboratory protocol.

Learning a new laboratory procedure may at first appear formidable, and the interested researchers may be unsure whether their problem falls within the area of applicability of the new technique. The researchers will rely on the experience of others who have condensed it into a methods paper, with the theory behind the method, its step-by-step implementation, and the pitfalls explained thoroughly and from the practical angle. It is the intention of the authors of this book to make the methods of systems biology widely understood by biomedical researchers by explaining them in the same proven format of a protocol article.

It is recognized that, in comparison to the systems biology methods, many of the laboratory methods are much better established and their theory may be understood to a greater depth by interested researchers with a biomedical background. We intend, however, this volume to shatter the perceived insurmountable barrier between the laboratory and systems-biological research techniques. We hope that many laboratory researchers will find a method in it that they will recognize as applicable to their field, and that the practical usefulness of the basic techniques described here will stimulate interest in their further development and adaptation to diverse areas of biomedical research.

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