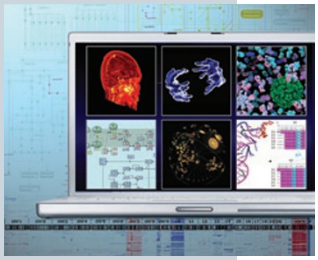
nature methods

Supplement on visualizing biological data



The cover image shows a range of data visualizations currently used by life scientists. Source images come from figures in the *Nature Methods* supplement "Visualizing biological data" and from *Nature Cell Biology* and *Nature Biotechnology*. Cover design by Seán O'Donoghue and Bang Wong. Supplement Foreword p193

Biology is a visually grounded scientific discipline—from the way data is collected and analyzed to the manner in which the results are communicated to others. Visualization methods have advanced greatly from the hand-drawn pictures found in scientific publications before the twentieth century and now rely almost exclusively on computer-based visualization tools. But the similarity of modern computer-generated phylogenetic trees to their ancestral hand-drawn evolutionary trees illustrates the challenges involved in developing novel visualization methods that present information in a self-evident way and yet can handle the demands placed on them by modern methods of data generation.

The exponentially increasing amount of scientific data is taxing the abilities of scientists to make sense of it all and communicate it to others in a concise and meaningful way. Although the computers responsible for facilitating this data deluge can also help handle it, it is critical that scientists be able to participate intimately in the analysis steps using qualitative and quantitative abstractions of the underlying data.

An online supplement describes the data visualization methods and challenges in fields dealing with biological entities. On the following two pages we provide brief summaries of the Commentary and five Review articles contained in the supplement. Please visit our website to read the supplement itself.

One of the most daunting tasks facing biologists is choosing from the multitude of tools available, and so the authors of each review highlight a selected fraction of available tools that are most likely to be of use. Because these tools can be very specialized and the writers themselves are developers of some of the tools, there is little comparative assessment. Instead, the reviews focus more on the challenges and methods behind the tools. The tools themselves, ranging from simple stand-alone software to complex integrated software packages, are conveniently listed in tables within each review, and links are provided so that readers may easily access the tools and evaluate which ones best meet their specific needs.

Daniel Evanko

ONLINE CONTENTS

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