

Genomics is being driven by new measurement technologies that permit us to observe certain molecular entities for the first time. These observations are leading to discoveries analogous to identifying microorganisms and other breakthroughs permitted by the invention of the microscope. Choice examples of these technologies are next generation sequencing and microarrays. This book was written for the many life science researchers who are becoming data analysts due to the emergence of these new types of data.

Although the content of the book is mostly focused on advanced statistical concepts, the basics are covered to make sure readers have a strong grounding on the fundamental statistical concepts required for all data analysis. The book begins with statistical inference and then proceeds to an introduction to linear models and matrix algebra, high-dimensional data, distance and dimension reduction, and batch effects and factor analysis.

The emphasis is on using a computer to perform data analysis. All sections of this book are reproducible as they were made with R markdown documents that include the code used to produce the book's figures, tables and results.

Rafael A. Irizarry is Professor of Applied Statistics at the Dana Farber Cancer Center and Harvard School of Public Health. In 2009 he was awarded The Presidents' Award by the Committee of Presidents of Statistical Societies (COPSS). His work has been highly cited and his open source software tools widely downloaded.

Michael I. Love is a Postdoctoral Fellow at Harvard School of Public Health. He received his Ph.D. in computational biology in 2013 from the Freie Universität Berlin.

Professors Irizarry and Love have taught seven computational biology courses on edX to hundreds of thousands of students.



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6000 Broken Sound Parkway, NW
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711 Third Avenue
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