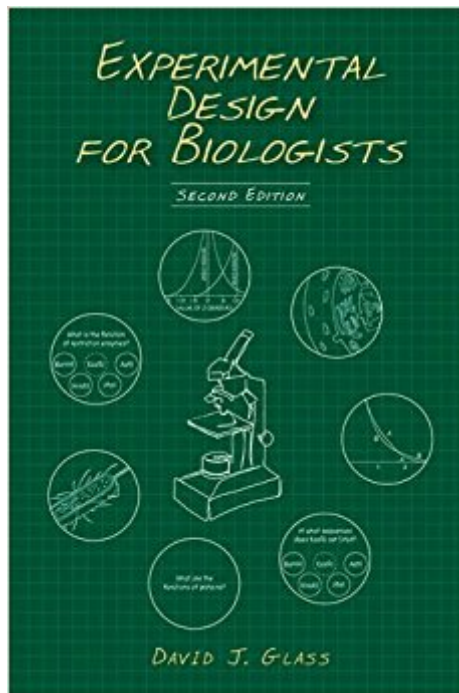


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# Experimental Design For Biologists, Second Edition



## Synopsis

The effective design and analysis of experiments in biology are critical to success, yet graduate students in biological and medical sciences typically receive very little formal training in these steps. With feedback from readers of the first edition, colleagues, and students taking the very popular experimental design courses taught by the author, this second edition of *Experimental Design for Biologists* retains the engaging writing style while organizing the book around the four elements of experimental design: the framework, the system, the experiment, and the model. The approach has been tested in the classroom, where the author has taught numerous graduate students, MD/PhD students, and postdoctoral fellows. The goal of every scientist is to discover something new and with the aid of *Experimental Design for Biologists*, this task is made a little easier. This handbook explains how to establish the framework for an experimental project, how to set up all of the components of an experimental system, design experiments within that system, determine and use the correct set of controls, and formulate models to test the veracity and resiliency of the data. This thoroughly updated edition of *Experimental Design for Biologists* is an essential source of theory and practical guidance for designing a research plan.

## Book Information

Hardcover: 294 pages

Publisher: Cold Spring Harbor Laboratory Press; 2 edition (August 6, 2014)

Language: English

ISBN-10: 1621820416

ISBN-13: 978-1621820413

Product Dimensions: 10.2 x 0.9 x 7.2 inches

Shipping Weight: 1.6 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 7 customer reviews

Best Sellers Rank: #112,032 in Books (See Top 100 in Books) #29 in [Books > Science & Math > Biological Sciences > Biology > Developmental Biology](#) #118 in [Books > Science & Math > Biological Sciences > Biology > Molecular Biology](#) #174 in [Books > Engineering & Transportation > Engineering > Bioengineering > Biochemistry](#)

## Customer Reviews

"[David Glass] has written an extraordinarily concise, highly instructive book based on a course he developed. It guides potential and practicing researchers through scientific epistemology and sound research design. The author uses extensive application examples, especially biological ones. Early

chapters focus on philosophical constructs related to research issues, especially critical rationalism. The volume presents effective framing of both testing a hypothesis and a question/answer format."

- Choice

Interestingly enough, little to no training on the nature of science is given to graduate or undergraduate science students. This is a crime, in my opinion. How are we to expect the students we are training to become quality scientists without educating them on what science is, how it came to be, and what it can and cannot answer? This book does a fantastic job of summarizing everything that a scientist needs to be aware of when designing an experiment, but it does so while emphasizing the importance of thinking of science in the larger picture rather than simply trying to support or disprove a hypothesis.

This should be required reading for every student pursuing a career in biological research!

The second edition of *Experimental Design for Biologists* offers all of the practical and insightful suggestions of the original, but with an improved flow, better organizational scheme, and more useful examples. Throughout the book, Dr. Glass lays out how proper implementation of the scientific method requires one to ask the right questions, how different experiments require different frameworks, and how data should be interpreted so as to minimize the potential for confirmation bias. Broadening the reader's understanding of experimental design, the book helps fortify the essential tools that one needs to be a fully competent fundamental scientist. This book is highly recommended for all those running their own experiments, especially young researchers.

Whether you are just beginning in research or have experience, you will find this book a valuable resource. Favorite aspects of the book include: the discussion of the hypothesis--the perspective is likely to be new to readers, a lucid discussion of types of positive & negative controls, & a two-page Synopsis, which reads like a master class in experimental design. There is nothing like it available.

*Experimental Design for Biologists* is a great read for anyone interested in designing and running experiments! It is written in an engaging and approachable manner and really teaches the reader to apply philosophies of experimental design to their own work.

Theoretically rigorous and practically useful, this book provides a lucid, compelling explanation of

the application of the scientific method, as well as its philosophical and statistical underpinnings. The book focuses heavily on biologically relevant examples, including clear, step-by-step explanations for the implementation of a statistically rigorous experiment (a critical addition to this latest edition). It is this combination of theoretical foundation and practical explanation which makes the book uniquely instructive for any scientist who hopes to achieve rigorous and repeatable results.

This book helped me to see the road map of scientific thinking clearly.

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