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Illustrated Guide To Home Biology Experiments: All Lab, No Lecture (DIY Science)



Synopsis

Experience the magic of biology in your own home lab. This hands-on introduction includes more than 30 educational (and fun) experiments that help you explore this fascinating field on your own. Perfect for middle- and high-school students and DIY enthusiasts, this full-color guide teaches you the basics of biology lab work and shows you how to set up a safe lab at home. The Illustrated Guide to Home Biology Experiments is also written with the needs of homeschoolers firmly in mind, as well as adults who are eager to explore the science of nature as a life-long hobby. To get the most from the experiments, we recommend using this guide in conjunction with a standard biology text, such as the freely downloadable CK-12 Biology (ck-12.org). Master the use of the microscope, including sectioning and staining. Build and observe microcosms, soda-bottle worlds of pond life. Investigate the chemistry of life from simple acids, bases, and buffers to complex carbohydrates, proteins, lipids, enzymes, and DNA. Extract, isolate, and observe DNA. Explore photosynthesis, osmosis, nitrogen fixation, and other life processes. Investigate the cell cycle (mitosis and cytokinesis). Observe populations and ecosystems, and perform air and water pollution tests. Investigate genetics and inheritance. Do hands-on microbiology, from simple culturing to micro-evolution of bacteria by forced selection. Gain hands-on lab experience to prepare for the AP Biology exam. Through their company, The Home Scientist, LLC (thehomescientist.com/biology), the authors also offer inexpensive custom kits that provide specialized equipment and supplies you'll need to complete the experiments. Add a microscope and some common household items and you're good to go.

Book Information

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Customer Reviews

Robert Bruce Thompson is a coauthor of *Building the Perfect PC*, *Astronomy Hacks*, and the *Illustrated Guide to Astronomical Wonders*. Thompson built his first computer in 1976 from discrete chips. It had 256 bytes of memory, used toggle switches and LEDs for I/O, ran at less than 1MHz, and had no operating system. Since then, he has bought, built, upgraded, and repaired hundreds of PCs for himself, employers, customers, friends, and clients. Robert spends most clear, moonless nights outdoors with his 10-inch Dobsonian reflector telescope, and is currently designing a larger, computerized, truss-tube Dobsonian that he plans to build. Barbara Fritchman Thompson is, with her husband Robert, the co-author of numerous books about computers, science, and technology. With her Masters in Library Science and twenty years' experience as a public librarian, Barbara is the research half of our writing team.

All lab-- no lecture. They're not kidding! This book **MUST** be supplemented with an appropriate microbiology book or the student (such as myself) will only have an incomplete understanding of what's going on. There are suggestions inside the book. The illustrations and photos are top-notch and the instructions are relatively clear. (I still manage to confuse myself sometimes, but I can't in good conscience blame the instructions since they always make sense in retrospect.) If you want a preview of the book, the complete text is available as a PDF on the Home Scientist website. A simple Google search should find it. If you will actually be performing the experiments, a paper copy plus the supply kit from that same website makes the whole process go much smoother.

After purchasing Thompson's *Illustrated Guide to Home Chemistry*, I decided to purchase this book for biology. As a home scientist (actually a real scientist with a PhD) and a potential educator, I had my eyes on this book for a while. This is a nice lab manual, and any serious home scientist/hobbyist interested in hands-on biology will enjoy this book. Anyone with a decent microscope (or two) could stand to gain a lot using this book, which addresses a number of diverse areas of the science, including environmental science. The chapter on how to set up a home lab will be particularly useful. Thompson's book would also be very well suited for home schooling at the high school level. Though I haven't gone through the book in detail, I've looked through it thoroughly, and am extremely happy with the content and the level of the material. Highly recommended for any budding biologist or student-- or home hobbyist.

Ever since the authors wrote the "Illustrated Guide to Home Chemistry Experiments" I have been eagerly awaiting this book. Both books are exceptionally well written for all levels of experience. I use these books for self education to expand my knowledge on various topics and conduct my own experiments and these are perfect for me. This book is laid out succinctly with abundant illustrations and numerous suggestions for keeping your expenses to a minimum. Very much appreciated. I have a lot of books on self taught biology and this is by far the best. If you do like this resource, you should also check out the associated chemistry book. I now eagerly await their book regarding Forensic science and experiments, which has been previously hinted about.

This is the perfect biology lab manual for the serious hobbyist or student. This book has everything you need to review first year biology lab and then some. The layout and content is fantastic. Each section opens with a list of materials you'll need and some brief background; this is a serious lab manual and includes sections of lab safety, microscopy, how to keep a lab notebook. There are even some excellent DIY projects, including how to build an electrophoresis apparatus. I can't say enough good things about this manual. It is by far better than the manual I used for general biology in college.

I have been feeling rather bored with my current occupation and just felt I needed something to kick start my intellectual curiosity. Biology is a field I toyed with in college but never took the plunge. Well, college was a long, long time ago, and now I want to at least feel connected to the field without having to face going back to school with a room full of 19-year olds. I wanted to buy a microscope, but was completely confused by all the terms and features. Then I got this book. There is a whole chapter dedicated to microscopy, including what features and brands to look for. I hadn't realized there is a whole DIY Biology subculture out there- people just like me. I think it helps to have at least some science courses under your belt so you would get the most out of the labs. But even if you don't, the text is excellent, and worth having even if you never opened a petri dish. Make sure to heed their safety warnings, especially with regards to safe practices with live cultures. I am really looking forward to doing as many of the labs as possible. Also, as another reviewer noted, you will have some serious practical knowledge and lab skills by the end of the coursework.

Very readable and demonstrates important information that is very relevant in today's world. If you're the type of person who needs to see something to believe it, this book is a great resource!

The authors obviously put a lot of love into the writing of it, and go out of their way to make the experiments accessible to low budgets. Would recommend to anyone who is interested in biology!

I'm a retired biotech executive who is teaching high school biology for a post-retirement second career. I've been searching for a source of information to help me plan lab projects for introductory biology students in 9th and 10th grade. I needed the labs to be uncomplicated enough to conduct in a 48 minute class, not demanding of expensive equipment or supplies, and yet rich enough in substance to be intellectually rewarding for the students. This book does an excellent job of all of that, exceeding my expectations by all measures. It's terrific!

Excellent textbook. No other book like this for clarity and rigor. Companion to lab kit offered by thehomescientist.com .

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