

# Making the Right Moves

## A Practical Guide to Scientific Management for Postdocs and New Faculty

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### INTRODUCTION

**Burroughs Wellcome Fund  
Howard Hughes Medical Institute**



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# Introduction



**Y**ou are now a fully trained biomedical research scientist. You have earned a Ph.D. or an M.D. or both and have spent several years as a postdoctoral fellow learning the ropes of your specialty. You have the credentials you need for a career as an academic researcher.

But as you establish your own laboratory and build your research program, you are becoming aware that research skills are only part—albeit a critical part—of what you need to succeed. In your first few years as a tenure-track faculty scientist, you will be asked to balance multiple new demands on top of your research, including teaching, administrative tasks, and perhaps clinical responsibilities. At the same time, you will be expected to hire staff and establish a laboratory, plan a coherent research program, obtain grant funding, and publish in the top journals. Meanwhile, your tenure clock will be ticking, placing you under enormous pressure to produce. You need special skills to meet all these expectations—a mixed bag of competencies that can be loosely characterized as “scientific management” skills.

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*Why do we need something like a lab management course? Biomedical research today is a complex enterprise that spans multiple biological levels, requires a variety of equipment and staff, and demands success with limited funds. Each one of you is really an entrepreneur running your own new small business.*

—Enriqueta Bond, Burroughs Wellcome Fund

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Unfortunately, it is unlikely that you have received explicit instruction in any of these skills in graduate or medical school or during your postdoctoral studies. Like most beginning investigators, you probably were only able to learn a bit through trial and error or by watching your teachers and talking to your advisers, mentors, and fellow students.

This manual provides an outline for filling this educational gap. The content is based on the “Course in Scientific Management for the Beginning Academic Investigator,” held at Howard Hughes Medical Institute (HHMI) headquarters in July 2002. The course was developed and sponsored by the Burroughs Wellcome Fund (BWF) and HHMI for selected BWF and HHMI grantees. BWF and HHMI staff developed the course out of a conviction that scientific management is a teachable subject—that it is possible for beginning scientists to learn how successful scientists manage their research programs. The course covered basic topics in scientific management, including laboratory leadership, getting funded, time management, and collaborations, to give participants a head start in achieving research independence. (Chapter 13 presents detailed information on the development and content of the course.) Although the manual is directed to laboratory-based academic scientists, much of the material would also be of use to beginning investigators in government and industry labs.

The chapters in this manual were developed from the course presentations and panel discussions, handouts from presenters, the question-and-answer (Q&A) sessions, feedback from course participants, and subsequent interviews with the presenters and other scientists. Content was also drawn from many of the resources listed at the end of each chapter. Additional information was obtained from transcripts of interviews with “model laboratory leaders” that had been conducted by executive coaches Christine Harris, Ed.D., and Joan C. King, Ph.D., when they were designing a workshop on basic laboratory leadership skills that they conducted as part of the course.

The first chapter, “Obtaining and Negotiating a Faculty Position and Planning for Tenure,” offers tips on finding and negotiating terms for a faculty position, outlines the expectations of a faculty job, and offers a timeline to help you plan for tenure. The next chapter, entitled “The Scientific Investigator Within the University Structure,” takes a look at the typical decision-making hierarchy of a research university and an academic health center, discusses your professional responsibilities outside the laboratory, and introduces some of the academic offices with which you will interact and the resources available to support your research.

Two chapters deal with people skills. “Defining and Implementing Your Mission” offers guidance in developing a mission statement for your lab and suggests ways to motivate and manage the people in your lab. “Mentoring and Being Mentored” explores what it means to be a mentor, particularly as a strategy for facilitating learning and training new scientists. It includes approaches to help you be an effective mentor and offers advice on how to obtain the mentoring you need.

“Staffing Your Laboratory” provides pointers on recruiting a team of people who will contribute to the success of your lab. It also discusses what to do if you have to let someone go. (The course did not cover this subject, but its importance emerged during the Q&A sessions, as grantees asked for guidance on difficult personnel issues they were facing.)

Several chapters offer tips about time management, project management, and data management. “Getting Funded” and “Getting Published and Increasing Your Visibility” discuss these challenging tasks in the competitive environment of biomedical research. “Setting Up Collaborations” and “Understanding Technology Transfer” are particularly relevant at a time when research projects often involve scientists in different departments and different universities and when research findings are often

shared with industry and government. The final chapter provides a summary of the course, including an abstract of each session, a summary of the postcourse evaluation and lessons learned, and speakers' biographies.

Several sessions of the course were not developed into separate chapters in the manual, but some of the information from these sessions is included in various chapters. For example, information from the session on budgets is found in the chapter "Getting Funded," in the context of preparing a grant application. Given time and space constraints, some topics, such as lab safety, scientific writing, public speaking, communicating science to the public, and science policy, were not covered in either the course or the manual. This information is typically taught at most universities or is available from other sources (e.g., HHMI has published several videos on laboratory safety, available at no charge from HHMI's online catalog at <http://www.hhmi.org/catalog>).

Each chapter was reviewed by the session speaker(s), course developers, and other BWF and HHMI staff. The manual is not meant to be a comprehensive reference text. It is designed to highlight key points about scientific management that are not readily available in print elsewhere. The manual is likewise not meant to be prescriptive. It is a collection of opinions, experiences, and tips from established scientists and professionals. You are encouraged to supplement this information with resources from postdoctoral or professional associations and Web resources, as well as the books and articles mentioned in each chapter. You are also encouraged to discuss ideas in the book with colleagues, mentors, and advisers. It is hoped that these discussions will spark ideas for developing a scientific management style that suits your personality and professional situation. The manual can also serve as a resource for organizations that are developing their own courses in scientific management.

