



TRAINING SCIENTISTS TO MAKE THE RIGHT MOVES

**A Practical Guide to Developing Programs
in Scientific Management**

**Burroughs Wellcome Fund
Howard Hughes Medical Institute**

© 2006 by the Howard Hughes Medical Institute and Burroughs Wellcome Fund
All rights reserved.

09 08 07 06 1 2 3 4 5

Permission to use, copy, and distribute this manual or excerpts from this publication is granted provided that (1) the copyright notice above appears in all reproductions; (2) use is for noncommercial educational purposes only; and (3) the publication or excerpts are not modified in any way (except when used for noncommercial educational purposes). Requests beyond that scope should be directed to labmgmt@hhmi.org.

The views expressed in this publication are those of its contributors and do not necessarily reflect the views of the Howard Hughes Medical Institute or the Burroughs Wellcome Fund.

This publication is also available online at <http://www.hhmi.org/labmanagement>.

Project Developers: Maryrose Franko, Ph.D., and Martin Ionescu-Pioggia, Ph.D.
Editor: Laura Bonetta, Ph.D.
Managing Editor: Patricia Davenport
Production Manager: Dean Trackman
Designer: Raw Sienna Digital
Writer: Barbara Shapiro
Copyeditors: Cay Butler and Kathleen Savory

Burroughs Wellcome Fund
21 T.W. Alexander Drive
P.O. Box 13901
Research Triangle Park, North Carolina
27709-3901
<http://www.bwfund.org>

Howard Hughes Medical Institute
4000 Jones Bridge Road
Chevy Chase, Maryland 20815-6789
<http://www.hhmi.org>



Chapter 5

FINE-TUNING THE AGENDA

In This Chapter

Narrowing Down the Session Content

Figuring Out the Format

This chapter shifts focus from making more global decisions about the training event to narrowing down the topics, learning objectives, and formats of the sessions themselves.

NARROWING DOWN THE SESSION CONTENT

Regardless of whether your training covers an array of scientific management issues or focuses on a single aspect, such as grantsmanship, the following tips can help you select the specific topics that speakers should cover.

Develop Session-Specific Learning Objectives

Write an overview of each session that includes brief narrative descriptions, information about potential speakers, and an outline of topics. Most importantly, spell out exactly what information or skills you want participants to learn. The clearer you are about what should be imparted, the higher the odds that it will be. (For examples of session objectives, see page 4, “Setting Goals and Objectives.”)

Think It Through

“The more effort and thought you put into carefully defining the scope of the session and what you want the participants to get out of it, the easier it will be to identify speakers appropriately positioned to provide the information or help generate the discussion that will lead to the desired outcome.”

—Crispin Taylor, American Society of Plant Biologists

Understand Trainees’ Career Development Needs

When writing down the proposed content for a session, ask yourself this question: If I were a postdoc or junior faculty member, what would I like to learn from this session? You’ll probably come up with a list of topics. Separate critical information from nice-to-know content. This will help ensure that you cover all fundamentals in the allotted time. Remember, content that is not absolutely critical can always be provided in handouts.

Find Out What Information Is Already Available

Print or Web-based material can either guide or supplement a session, and the titles and URLs can become a resource list for participants. For example, you may want to look at appendix 2, which contains summaries of session content from the 2005 BWF-HHMI Course in Scientific Management. Publications such as Kathy Barker’s *At the Helm: A Laboratory Navigator* and

BWF-HHMI's *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (<http://www.hhmi.org/labmanagement>) also contain ideas for session content as well as extensive lists of print and Web resources.

Universities and societies that have established career development programs for beginning scientists can also provide good ideas, for example, the University of North Carolina–Chapel Hill (<http://postdocs.unc.edu>), the University of Pittsburgh (<http://www.oacd.health.pitt.edu>), the National Postdoctoral Association (<http://www.nationalpostdoc.org>), the Laboratory Management Institute at the University of California–Davis (<http://www.research.ucdavis.edu/LMI>), and the Work–Life Resource Center at the University of California–San Francisco (<http://www.ucsf.edu/wrklife>).

Check Previous Surveys of Trainees

Evaluation data from earlier training activities (yours or another organization's) can provide rich veins of topic-specific information; mine what's available. It can help you tailor the content to better serve the audience by identifying what topics are useful (and which speakers not to invite back).

FIGURING OUT THE FORMAT

What Works Best?

Standard formats include keynote addresses, panel discussions, question-and-answer (Q&A) periods, lectures, and breakout sessions for small-group discussion or peer critiques. These can be combined in assorted ways to good effect to meet your training objectives. How do you decide which formats to use? Experienced training organizers offer some advice.

Vary formats to help hold participants' interest. No single teaching style works best for every person; presenting the same information in different ways and combining lectures with more interactive approaches can extend your effective reach. Speakers and participants alike will appreciate opportunities to move around and combine listening with asking.

Tip

A “mock study section” can be an effective way to convey the grant review process. (See “Inside the NIH Grant Review Process” at <http://www.drg.nih.gov/Video/Video.asp> for some ideas.)

QA

What are some examples of topics that lend themselves to a mix of formats?

Many topics are suited to a session that combines lecture and interactive elements. For example, in a session on writing a good scientific paper, an overview could be covered in the lecture, with participants breaking up into small groups afterward to work through the development of an abstract. A session on ethics could begin with a speaker presenting the key concepts in a case study or two, followed by small-group discussion, possibly led by facilitators.

Consider a panel-style session when a diversity of views is desirable.

When multiple viewpoints would be informative—say, for a session on mentoring or interviewing for a faculty appointment—a panel is ideal. How many people should be on a panel? A commonsense guideline is to have enough panelists to represent the desired diversity of background and experience, but not so many that the session is too long and the Q&A is too short. Many experienced planners find that a three-person panel works well for a 90-minute session because it ensures plenty of time for Q&A.

Be sure to allot sufficient time for Q&A. Participants value Q&A periods. They are able to follow up on topics of most interest to them and to ask more-senior professionals how they have handled particular situations.

Tip

A good moderator is key—one who can minimize dominance by one speaker on a panel or in a Q&A session and encourage participation by the entire audience.

Make sure you include hands-on or interactive segments. A recurring refrain from program planners is the value of time for participants to practice what they have learned and reinforce those lessons. Virtually all topics are adaptable to an interactive learning segment, but some are especially helped by this. At the 2005 BWF-HHMI Course in Scientific Management, for example, the rather dry topic of project planning—which many beginning scientists approach with resistance—included a case study for groups of 8 to 10 participants to discuss during lunch. Also popular at both the 2002 and 2005 BWF-HHMI courses were small-group breakout sessions in which participants discussed case studies that represented challenging situations often encountered by beginning scientists. These case studies can be found in the resources at <http://www.hhmi.org/labmanagement>.

Consider including leadership self-assessment exercises. Interpersonal management skills sound like common sense when discussed in a lecture, but participants will get a lot more value out of activities that help them gain insights into the ways they perceive information and interact with other people. At the 2005 BWF-HHMI Course in Scientific Management, participants were presented with the results of two personality and management skills assessments they had taken before the course—the Myers-Briggs Type Indicator (<http://www.myersbriggs.org>) and the Skillscope 360-degree assessment, published by the Center for Creative Leadership (<http://www.ccl.org>). After participants were led through a series of interactive exercises by a facilitator, the results of these assessments gave them a better understanding of their communication and leadership styles.

Q&A

Beginning scientists, especially postdocs, sometimes have trouble seeing the relevance of the Myers-Briggs assessment and other leadership development activities. How can training organizers convince them that these are worthwhile?

Organizers should make clear the connection between skills learned in these activities and results in the lab: effective conflict resolution, better mentoring, team building that binds people into a motivated and productive

unit, and an encouraging and rewarding work environment. (Chapter 3, “Laboratory Leadership in Science,” in the second edition of *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* provides examples of how assessments such as the Myers-Briggs can be used to help beginning scientists improve their leadership skills.)

Organizers also need to make sure that any pretraining assessments that are conducted are crafted in language that is relevant to the academic research setting instead of the business setting, and that the training exercises themselves reflect the real-life challenges faced by scientists (see page 52, “The Importance of Science-Speak”).

According to the evaluations of the BWF-HHMI courses, many participants were surprised to find the personality assessment and small-group exercises to be valuable (see appendix 2, “The BWF-HHMI Courses in Scientific Management: A Case Study”).

Include small-group breakout sessions, when possible. These can be used to offer more in-depth information or feedback on a variety of topics. You could allow participants to opt for one session in a multisession menu or allow enough time for participants to attend several sessions of their choice. If you want to reach a large number of participants in a small-group setting, it may be feasible to offer sessions on the same topic multiple times during a training event. Before making a commitment to this approach, however, you want to be sure that

- ❖ You have enough interested attendees for the number of repeat sessions you are contemplating.
- ❖ Your speakers are willing to lead the session more than once or you have several qualified facilitators for those sessions.

Ultimately, however, there is no hard-and-fast rule for what works. Sometimes you just have to close your eyes and choose, knowing that any format can be a crowd-pleaser with an engaging speaker. Feedback from your post-training evaluation will be key in telling you what works and what does not.

ASM’s Five-Day Institute

“For a training activity with postdocs and grad students, I used a five-day interactive, intensive institute for high school teachers as a model, even though the content and audience would be different. The five-day institute engages participants in hands-on activities, and they come away with actual products. It covers grant writing, scientific presentation, effective teaching, and career planning. Participants have to bring a 10-page pre-proposal and a 10-minute PowerPoint presentation on their research. They leave with a written proposal—or at least the goals and aims—marked up from peer review. They do a mock study section. They also leave with a totally revamped scientific presentation. After didactic training, they rework it, present it to each other in small groups, then participate in critiques for ideas on how to improve it.”

—Amy Chang, American Society for Microbiology

Session Length

How much time do you need to cover a given topic? Again, there are no magic formulas. The same session can be run for two hours or two days, depending on how much information you want to disseminate, the hands-on activities you want to do, the number of viewpoints you want to present, the amount of time for Q&A, and the breakout sessions you want to offer.

In general:

- ❖ Less than an hour per topic is probably unrealistic for providing any type of meaningful information.
- ❖ An hour can work for a lecture or keynote address.
- ❖ With a good moderator, panels of three or four people can fit comfortably in a 90- to 120-minute session with time for Q&A or other interactive components.
- ❖ More than two hours works well for a sequence of lecture, practice, critique, and revision. That type of intensive structure, with hands-on time for reinforcement of learning, has special value for certain skills, such as interviewing for a job, presenting a paper, and writing any part of a grant application. If the session lasts longer than two hours, you will want to schedule a break during the session.

Tip

Your speakers may have their own ideas, based on experience, about how much time they need to cover the assigned topic comfortably. However, you may find that they want more time than you can allot to them.

Limitations of Lunch-Hour Learning

“About 100 folks attend our biweekly lunch series from a total of about 160 post-docs and 300 graduate students—a pretty good turnout. The disadvantage is that more complicated topics can’t be dealt with in a one-hour session or series of them. We need to figure out whether we can cram some of these issues into our current format or whether we need some longer sessions.”

—Philip Clifford, Medical College of Wisconsin

Variety as the Spice of Academic Life

“We have found it essential to offer a wide variety of formats, lengths, and times of day and year. For example, a schedule of 8:30 a.m. to noon every day for five days for a minicourse on scholarly writing works well for some people; shorter sessions work better for others. Grant writing is more labor- and time-intensive than other topics, so some sessions on this topic have been a full day. However, we also offer a one-and-a-half-hour session on finding funding in the participants’ training area. This session takes place in a computer lab and is totally interactive but fairly short. We rarely offer anything after 5 p.m., as that time doesn’t seem to work well for most people. When we offered a weekly professional development course for a full semester (13 weeks), we found that participants missed important material because it was just too long.”

—Melanie Sinche, University of North Carolina—Chapel Hill

Pacing Multiday Courses

“We can push people for long days the first two days because they come in pretty energetic. We like to bring people in the night before for a kick-off, and participants start doing assignments that first evening for presentation the next morning. Our experience is that there’s no need to accommodate travel fatigue and waste that time. We start with a strong speaker and topic the first morning. Because everyone tends to show up for the early morning sessions, this is a good time for participants to critique their own presentations. We provide meals to keep them there. We don’t want them wandering off, because they can use mealtimes as networking time. We have a series of speakers with different personal and professional perspectives, and lots of time for Q&A. After lunch, we have an activity where they have to do the work—very hands-on. Some didactic time is needed to break up long afternoons. Evenings are discussion time.”

—Amy Chang, American Society for Microbiology

Intentional Breaks: Time to Mingle and Make Contacts

As you work your way through the agenda, whether it is for a single-topic session or a multiday course, avoid the temptation to fill every minute. Consider the fatigue factor; you don’t want to exhaust the training participants. Remember that breaks are beneficial; they are not wasted time. Especially for events with long, information-packed days, people need breaks between sessions to use restrooms, to stretch, to touch base with home institutions and families, and to refuel with snacks.

The breaks between sessions and unstructured time have other benefits as well. Participants want opportunities to network with their peers and with the speakers. One program planner has found that 15- to 30-minute breaks work well for a group of 100. A longer block of social time—a reception or meal—is also valuable. Although food can be a substantial cost, experienced planners realize it sets a tone conducive to chatting—the kind of informal networking that participants consistently say they find valuable.

The Benefits of Breaks

“We are constantly being told by people who attended the BWF-HHMI courses that one of the lasting benefits has been the connections they made during the breaks and social events with other scientists who were at a similar point in their careers. We found that the expense of the breaks and the time we made for them in the course schedule were well worth it.”

—Maryrose Franko, HHMI

Encouraging Open Discussion

It is difficult to have an open and meaningful discussion about sensitive subjects, such as how to be a good mentor or how to deal with sexual harassment, if your supervisor or a senior colleague is sitting in the room with you. An off-site venue can offer a certain degree of confidentiality because participants are more likely to be away from senior staff in their departments. Regardless of whether you hold your training activity off-site or on home ground, here are some tips for encouraging frank discussions:

- ❖ For sessions where participants submit case studies in advance and small-group discussion of the case studies is part of the teaching plan, be sure you make assurances of confidentiality explicit in the registration materials.

- ❖ If possible, try to separate participants into groups where it is highly unlikely that someone will be sitting near a supervisor or mentor. That may mean having separate sessions for different categories of participants, such as junior faculty and postdocs.
- ❖ At the start of sessions where sensitive information may arise, remind participants about the need for frank and open discussion that is carried out in a respectful, professional manner and spell out the ground rules. An important one is that confidentiality is critical. You can instruct participants by emphasizing, “What is said here stays here.” Those who have used this approach report that people understand the stakes and abide by this injunction.
- ❖ Prepare facilitators to gently stop questions that turn into personal stories or accusations of particular people. Although these accounts may be relevant, it is the facilitator’s job to keep the discussion from becoming too personal and ensure that it stays on track. For example, the facilitator might say, “You raise an interesting point, let’s see if anyone else has thoughts about [topic x].” Or “That certainly is a concern, perhaps we can discuss it further at the break.”

Making It Safe to Share

“Anonymity is very important for topics such as mentoring, collaborating, and lab leadership. It’s the only way to get an honest and useful dialogue.”

—Maryrose Franko, HHMI

