In light of unprecedented cuts affecting research, building a high-quality grant proposal is more critical than ever. This fully updated and revised edition of a classic guide to grant writing for health and human service professionals addresses, step-by-step, the fundamental principles for effectively securing funding. It is the only book to provide grant-writing information that encompasses many disciplines and offers a step-wise process to grant writing for those building a research career.

This fourth edition reflects two major changes in grant writing: updated National Institutes of Health (NIH) application processes, and an increased emphasis on interprofessional and team approaches to science. Other significant funding trends addressed include the movement toward community-based health models to address health disparities, the importance of impact and innovation, such as using new methodologies and integrating biobehavioral indicators, and a focus on online methods for organizing grant submissions.

New to the Fourth Edition:
- Reflects recent changes to the field, including an emphasis on interprofessional approaches to science and new NIH application processes
- Examines new trends, such as the movement toward community-based health models and the importance of using new methodologies such as mixed methods
- Offers additional case examples relevant to social work, nursing, psychology, rehabilitation, and occupational, physical, and speech therapies
- Includes strategies for developing a grant budget and building an investigative team
- Focuses on electronic mechanisms for organizing grant submissions, including software and online tools such as RefWorks and Google Alerts
- Expands the section on postaward requirements
- Provides links to NIH websites containing videos on grant writing
- Offers new chapter on common writing challenges along with examples of strong and weak aims and purpose statements
- Includes appendices of helpful charts, graphics, acronyms, and websites
Laura N. Gitlin, PhD, is a professor in the Department of Community Public Health in the School of Nursing with joint appointments in the Department of Psychiatry and Division of Geriatrics and Gerontology, School of Medicine, Johns Hopkins University. She is also the founding director of the Center for Innovative Care in Aging at Johns Hopkins University School of Nursing. Its mission is to develop, test, and implement novel services, programs, and models that advance and support the well-being of older adults, their families, and communities, as well as provide mentorship and research training in behavioral intervention research. The goal is to shorten the time from intervention to implementation of clinical trial evidence and enhance the yield of programs, policies, practices, and tools to help diverse older adults and family members remain healthy, independent, and living in their own homes and communities. Dr. Gitlin’s own programs of research are multifaceted and include developing, testing, and implementing innovative psychosocial, behavioral, and environmental approaches to address a wide range of challenges in old age, including physical disability, depressive symptoms, neuropsychiatric behaviors, dementia care, family caregiving, and health disparities. Dr. Gitlin is nationally and internationally recognized in these areas and is a well-funded researcher, having received continuous research and training grant funds from federal agencies and private foundations, including the Alzheimer’s Association and the National Institutes of Health (NIH), for over 25 years. She currently has over $15 million of committed research grant monies, has helped garner over $50 million in grant funding over the past 25 years, and has had hundreds of publications and national and international speaking engagements. Dr. Gitlin has also served as a grant reviewer for the National Institute on Disability and Rehabilitation Research (NIDRR), the Alzheimer’s Association, the National Institute on Aging, the National Institute of Nursing Research, the Agency for Healthcare Research and Quality, the American Occupational Therapy Foundation, and other foundations and international bodies. She has published extensively in peer-reviewed journals and is a coauthor of a research text on quantitative and qualitative research methodologies, a book on the environmental skill-building intervention for family caregivers, and a book on physical function in older adults.

Kevin J. Lyons, PhD, is assistant vice president for program evaluation and director of the Office of Institutional Research at Thomas Jefferson University. He has over 35 years of experience in higher education as a faculty member and administrator. He has presented numerous articles at national and international scientific meetings and has been a frequent consultant to universities and government agencies on issues such as research development and program improvement. Dr. Lyons has written chapters for the books Medicine and Health Care into the 21st Century, Leadership in Rural Health: Interprofessional Education and Practice, and Allied Health: Practice Issues and Trends in the New Millennium, and served as coeditor for the last. He has served on the Institute of Medicine of the National Academy of Sciences’ Committee on Health Services Research: Training and Workforce Issues and recently participated in their workshop on Allied Health Workforce and Services. Dr. Lyons has also written a white paper for the National Commission on Allied Health on Current Organizational Research Agendas Related to Allied Health
Practices. For 10 years, Dr. Lyons served as editor for the Journal of Allied Health, the scholarly journal of the Association of Schools of Allied Health Professions, has received the J. Warren Perry Distinguished Author Award, and has been elected a fellow in that organization. He has coedited a special issue of the journal that was published in September 2010 on interprofessional education, which featured articles from national and international leaders in the field.

Dr. Lyons is a funded investigator having received grants and contracts from the Bureau of Health Professions to advance the research mission of the allied health professions. He also has served as project evaluator and member of the steering committee for two grants from the NIH and the Health Resources and Services Administration. Dr. Lyons has served on peer-review panels for the Fund for the Improvement of Postsecondary Education, the Office of Special Education and Rehabilitative Services, the National Center for Complementary and Alternative Medicine, and the NIDRR in the U.S. Department of Education, the Bureau of Health Professions, and for numerous professional journals. Dr. Lyons is one of the founding members of the American Interprofessional Health Collaborative. He also sits on the Board of Trustees for Rocky Mountain University of the Health Professions.
Successful Grant Writing

Strategies for Health and Human Service Professionals

FOURTH EDITION

Laura N. Gitlin, PhD
Kevin J. Lyons, PhD

© Springer Publishing Company, LLC.
To Eduardo, Keith, and Eric, and my family. Como siempre—L.N.G.

As before, to Brendan, Margaret, Patrick, and Bridget with love. And to the newest additions: Matt, Christine, Mike, Beth, and especially the next generation of grant writers, Ryan, Ashley, Ivy, Ronan, Ava, Lily, and Madison. For you it’s worthwhile—K.J.L.

To our students and colleagues and to all new investigators whose creative ideas and dedication to the improvement of health and health care delivery for all make grantsmanship a most worthy endeavor.
Contents

Preface xi
Acknowledgments xv
Introduction xvii

PART I: GETTING STARTED
1. Why Write a Grant? 3
2. Becoming Familiar With Funding Sources 27
3. Developing Your Ideas for Funding 51
4. Infrastructure to Support Grantsmanship 63

PART II: WRITING A COMPETITIVE GRANT APPLICATION
5. Common Sections of Proposals 79
6. Strategies for Effective Writing 105
7. Common Pitfalls in Writing Proposals 117
8. Writing Considerations for Specific Types of Research Proposals 125
9. Concept Papers, Pilot Studies, and Supporting Documentation 135

PART III: PREPARING A BUDGET
10. Developing a Budget 149
11. Putting It All Together to Create a Budget 167
12. Technical Considerations in Budget Development 179
<table>
<thead>
<tr>
<th>PART IV: MODELS FOR PROPOSAL DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Four Project Structures             185</td>
</tr>
<tr>
<td>14. Understanding the Process of Collaboration   199</td>
</tr>
<tr>
<td>15. Forming a Collaborative Team         213</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART V: SUBMITTING THE PROPOSAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Learning About Your Institution    229</td>
</tr>
<tr>
<td>17. Electronic Considerations          243</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART VI: LIFE AFTER A GRANT SUBMISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Understanding the Review Process   251</td>
</tr>
<tr>
<td>19. Responding to the Proposal Review  265</td>
</tr>
<tr>
<td>20. A Case Study                       277</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART VII: STRATEGIES FOR MANAGING A GRANT AWARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Welcome to the World of Postaward          289</td>
</tr>
<tr>
<td>22. More Postaward Considerations              301</td>
</tr>
<tr>
<td>23. Budget Management                           311</td>
</tr>
</tbody>
</table>

Appendix A  Common Questions and Their Answers  317
Appendix B  Selected Key Acronyms       321
Appendix C  Selected Helpful Websites    323
Appendix D  Sample Timeline, Budget Sheets, and Flow Charts  325
Appendix E  Guidelines for Evaluating Collaborative Teams  331
References  339
Index       341
Preface

Welcome to the fourth edition of *Successful Grant Writing!* With this edition, we continue to confront unprecedented cuts in the support of research. Budgets for all agencies continue to be tight. Nevertheless, new funding opportunities are available to move science forward and that can impact the health of the public. Novel and important calls for applications from federal agencies and foundations are still forthcoming. So, yes! The world of grant making is a bit restrictive and highly competitive but that should not reduce your enthusiasm or passion for your work nor prevent you from submitting proposals. The one thing we can guarantee is this—if you don't apply for a grant, you will definitely not be awarded it. If you do apply and follow the strategies found in this book, then you have a fighting chance!

Important changes in the process of proposal submissions and evaluation have occurred since the third edition and these changes are reflected in this new edition. For example, most applications are now submitted electronically. This has reduced investigator and institutional burden of printing, duplicating, and mailing paper copies. However, this new approach has also required new electronic and software capacities of institutions for uploading grant applications and tracking submissions.

Other important changes since our last edition include the implementation of new peer review procedures and evaluative criteria in the National Institutes of Health (NIH), shorter applications, and electronic communications for learning about the review process and its outcomes. For example, within 3 days of the peer review of an application, the investigator will receive an electronic notification that the score for the application has been posted on the investigator’s eRA Commons website (Electronic Research Administration of the NIH). The investigator will also receive another e-mail notification when the comments by reviewers have been posted.

There continue to be clear and persistent societal trends influencing funding opportunities, including health disparities, the need for interprofessional collaborations and team science approaches to address complex health issues, movement toward community-based health models, and recognition of the importance of using new methodologies such as mixed method, community-based participatory research, to understand and address complex and
multifaceted health and human conditions, and derive efficient and effective health and human service delivery models.

The NIH Roadmap initiated in 2002 continues to be followed and updated. The Roadmap advances a broad formulation for three directions in research, which include new pathways to discovery, the need for collaborative team research efforts, and the “reengineering” of the research enterprise to address complex public health problems and reduce the time lag between knowledge generation and its implementation. This Roadmap, a must read for those interested in the NIH arena and its funding trends, has shaped most of the NIH initiatives since 2004, when new funding opportunities were unveiled to address this bold new direction (commonfund.nih.gov/aboutroadmap.aspx). In 2006, Congress enacted into law the NIH Common Fund to move the Roadmap concept forward by supporting research programs that cut across NIH institutes and centers. The Common Fund supports collaborative research efforts across the NIH that are short-term, high impact, and very innovative, and that respond to new ideas, challenges, or scientific opportunities (commonfund.nih.gov/index.aspx).

Similarly, foundations have become increasingly interested in research projects that involve the dissemination and implementation of proven programs or new evidence into practice settings, that is, taking science from bench to bed, to community and home, to benefit the health of the public. The reality remains, however, that monies are tight and competition is high in both federal and foundation grant worlds. Although this situation continues now and will continue into the near future, securing grants and conducting high-quality funded research and education programs remain fundamental and critical activities for improving the health of the public and are part of the mission of health and human service professionals. Thus, knowing the principles for effectively securing funds and gaining the knowledge of how to strategically build a meaningful and successful grant portfolio is even more critical now than ever before. It is in this spirit that we present this updated and revised fourth edition of Successful Grant Writing: Strategies for Health and Human Service Professionals.

This edition, similar to previous versions, presents the fundamental principles for effectively securing funds. The book describes an approach to thinking about and engaging in grant writing and the necessary vocabulary and knowledge to effectively read a funding opportunity, determine its appropriateness to pursue vis-à-vis your ideas and level of professional development, and the processes for applying for funding. As the NIH remains the premier funding source for research, we continue to emphasize the requirements of this agency. However, as there have been significant cutbacks in NIH levels of funding, we believe it continues to be important to develop a diverse funding portfolio to initiate and maintain innovative research and education programs. Thus, we emphasize principles and approaches versus procedural details associated with any single grant submission.

This edition also includes expanded coverage of important areas, including how to develop a grant budget, implement effective interprofessional collaborations (an approach that is advocated in many NIH-funding opportunities), interpret reviewers’ comments, and manage a grant project upon its award. We have also added special considerations for pre- and postdoctoral
level professionals throughout the book to maximize the relevance of this fourth edition to emerging professionals.

As in previous editions, each chapter is peppered with examples and helpful tables that summarize key points; they outline specific questions to ask colleagues, program officers, and administrators to obtain the critical information you need for success.

Our approach continues to differ from other grant-writing books in several important ways. We focus on helping novice health and human service professionals learn how to be competitive for external funds, although this book contains helpful information for individuals at any level of exposure to or experience with grant writing, including those who have successfully acquired funding in the past. We also focus on principles to guide the pursuit of funding primarily from federal agencies, although these principles also apply to foundations. Because grant requirements change from one competition and agency to the next, and over time, it is more important to understand the process and principles than the specific details that are typically time- and competition-dependent. This book also helps readers gain an appreciation of how grant writing fits into a career path, and how to develop ideas in a systematic way so that one funded project builds logically onto the next.

We hope readers enjoy and learn from this new, improved, and expanded fourth edition, and we wish our readers much success in grant writing and related career endeavors. We will all benefit from competitive and thoughtful funded programs.
Acknowledgments

We are grateful to the numerous individuals who helped us with the preparation of this fourth edition and, in particular, Dr. Katherine Marx, project manager, and Bryan Hansen, RN, predoctoral student and research assistant for the Center for Innovative Care in Aging, Johns Hopkins University, School of Nursing.

Our continued heartfelt thanks to Sheri W. Sussman, our wonderful editor at Springer Publishing Company, for her belief in the importance of this project, ongoing encouragement, and excellent suggestions for making the fourth edition even better.

Although we did not have a grant to write this book, we would like to extend our gratitude to the many federal and foundation sponsors who have supported our research and education projects over these many years.
You have a great idea that you believe can significantly improve educational programming for your students or services for your clients, or advance the science in your field. To implement the idea, you need financial support. How can you obtain this support?

One way is to apply for a grant, whether it is from your own institution, the federal government, a private foundation, or a corporation. A grant is a mechanism by which an agency awards money to fund a research study or other activity, such as an educational program, service program, demonstration, or project.

The task of writing a grant proposal, or even knowing how to get started, can be daunting, especially if it is your first attempt. As with any venture, grantsmanship has a language of its own, a set of rules, and relatively standard procedures, all of which you can learn and become successful in using.

You may well ask why you need to learn the process of grantsmanship. After all, it involves considerable time and effort and requires a new set of skills. There is more than one purpose for obtaining a grant. Obviously, if you need money to develop and implement a new program, a grant is one way to obtain that support.

However, there are other very important but less tangible reasons to pursue external funding.

What can grants do for you? Grants can help you:

- Initiate a program of research
- Develop and advance scientific knowledge in your field
- Support training activities
- Provide support for institutional activities
- Expand opportunities for educating students and clinicians
- Legitimize your research program or training projects
- Enhance the prestige of your institution
- Advance your professional career

© Springer Publishing Company, LLC.
Let’s examine each of these reasons more closely:

Initiate a program of research: You may need funds to conduct your dissertation work or postdoctoral activities. Writing a grant application is an important approach for obtaining this needed support. Although there are a limited number of funding opportunities dedicated to the support of doctoral and postdoctoral work, it is worth identifying and pursuing these possibilities. For example, the Agency for Healthcare Research and Quality, the Hartford Foundation, and specific health professional associations offer support for one or more years for this type of activity. In addition to providing funds to support specific research activities, a grant also affords other important advantages such as professional recognition, a competitive edge in the job market, and help with initiating a program of funding.

Develop and advance scientific knowledge in your field: The basic mission of most federal funding agencies and the reason those in the health and human service professions pursue research or educational grants is to develop and advance knowledge in a particular field that can enhance the health of the public. For example, funding for a research study on the determinants of older women’s compliance with mammography, or examining the impact of an occupational therapy or nurse-based home intervention to help frail elders remain safe in their homes, is critical for advancing knowledge in these areas and improving the health and functioning of individuals and groups.

Support training activities: Another purpose of grant funding is to support the development and implementation of new training programs. Developing new programs can be expensive, and institutions are often hesitant to support new ventures unless they have been systematically tested and shown to be effective. Training or education grants can be important catalysts for implementing change in an institution’s approach to educating health and human service professionals. The support for these programs also leads to new and effective instructional methods that can improve the education and, therefore, the practice of health and human service professionals.

Provide support for institutional activities: Success in gaining external funding can also contribute to the vitality and financial health of your department, school, or agency. The direct costs derived from a funded project may support a special program your institution wants to run or, in some cases, contribute toward its general operating expenses. At a university, funds might pay for part of your salary or that of other important staff members, as well as statistical support or consultants, and expenses such as supplies and professional travel. The Facilities and Administrative (F&A) cost recovery, or indirect costs, which we define later in this book, helps defray operating costs such as heat, light, telephone use, and administrative support for your institution.

Expand opportunities for educating students and clinicians: As college tuition continues to rise, it becomes increasingly difficult for students to afford an education, particularly in the health and human service fields, where relatively low starting salaries can make it difficult to pay back loans for tuition. Many PhD and master’s-level students in health and human services are often fully or partially supported by research projects awarded to their mentors, primarily through positions such as research assistants, interviewers, or project coordinators.

Legitimize your research program or training projects: Obtaining funding for your project provides public recognition of the worth of your educational or
research program. Grant applications are reviewed and approved by a jury of your peers, and this process provides external validation and legitimization of your work. An award indicates that experts in the field acknowledge your idea as important and worthy of public or private support.

Enhance the prestige of your institution: Health and human service professionals in higher education are increasingly encouraged to obtain external funding, not only to advance knowledge in their field but also to contribute to the prestige of their institution. External funding is often used as an index of the prestige of a college or university and the quality of its faculty. Consequently, universities typically measure quality, in part, by the extent to which faculty members obtain external funding. Schools or departments educating health and human service professionals are being evaluated not only on their ability to train competent clinicians but also as to their contribution to part of the overall mission of the university, which is to generate new knowledge and evidence for effective clinical work.

Advance your professional career: A funded grant also enhances your professional standing, both within the institution and in the profession at large. Funded health and human service professionals become known among their peers through professional newsletters, journals, or other national forums. Thus, funding success not only advances your knowledge base and professional development, but will also provide increased professional prestige and job mobility.

HOW TO USE THIS BOOK

In this book we take you step-by-step through the process of grantsmanship, from its basic components to an understanding of what is required to implement a successful grant project.

The book is organized into seven parts (see Figure I.1), moving the reader from identifying a competitive idea (Part I), to writing the narrative (Part II), developing an appropriate budget (Part III), identifying an effective project structure (Part IV), submitting the proposal (Part V), understanding the review process and grant critiques (Part VI), to managing the associated grant activity (Part VII).

More specifically, we begin by emphasizing the importance of developing a career plan and learning the language of grantsmanship. We then examine ways to develop your ideas for funding and effective strategies for writing proposals, and describe each section of a grant application and its contents. This is followed by a discussion of different approaches to
organizing grant projects, with particular emphasis given on consultative and collaborative team approaches. A team approach is essential in today’s funding environment and to address the complex health-related questions that need to be addressed. We then present a description of the review process and how to evaluate and respond to reviewers’ critiques. We conclude with an examination of the postaward stage, that is, what you will need to do upon being awarded a grant.

Each chapter describes a specific aspect of grantsmanship and provides innovative strategies for being successful based on our own experiences, that of our colleagues, and published literature. The appendices contain helpful materials, such as a list of key acronyms, examples of timelines, and sample budgets. The guidelines and suggestions in this book are based on over 25 years of experience by each of the authors—or 50 years combined—in obtaining external support for education and research programs and working with many health and human service professionals, as well as from interviews with experienced grant writers and program officers in key federal agencies and foundations.
Welcome to the world of grantsmanship! Grantsmanship is the process of using knowledge and of implementing a series of activities to obtain a grant to carry out a program, whether it be for research, education, training, or other purpose. It is both an art and a technical skill that involves hard work, and sometimes trial and error prior to a successful outcome.

A basic tenet of grantsmanship is that being well-informed about the process and funding sources is critical for success. The more you know about an agency’s mission and objectives, its funding priorities, and its review process, the greater the likelihood that you will be able to write a proposal that is competitive and matches the intent of the funding source.

The funding environment is constantly changing. This is especially true today in light of health care reform. Therefore, finding the right funder for
your particular idea takes time and requires knowledge of multiple sources that provide information about funding opportunities.

Grant writing, however, really begins with you—your passion, your innovative ideas—your vision. As a professional activity, grant writing should fit within a career path. Therefore, we begin Part I by discussing the reasons for writing a grant and how these reasons must fit within a career trajectory (Chapter 1). Next, we discuss sources for and strategies by which to identify funding sources (Chapter 2), and how to develop a competitive grant idea (Chapter 3). Finally (Chapter 4), we discuss the basic elements of an infrastructure that is needed to support grant writing.

Our journey begins …
Why Write a Grant?

After reading this chapter, you will be able to:

- Understand key terms used in grantsmanship
- Identify where you are located along a career trajectory
- Develop a plan of action for your career stage and moving forward
- Identify key attributes of successful researchers

Do you have a great idea, but need money to carry it out? Do you need funds to support your dissertation or postdoctoral studies? Where can you obtain information about potential sources for support for a new research program you want to develop? What is the best way to convince a funding source to support your interprofessional training idea?

These are basic questions that students, health and human service professionals, and faculty members new to grant writing ask. Although it is not easy to obtain funds, there are agencies in both the public and private sectors that do have monies to award and who seek worthy projects to fund. If you are new to grant writing, you may not realize that the goal of federal funding agencies and private foundations is to actually give money away. Agencies of the federal government are funded by Congress to address the health problems the American people are facing. Each agency is charged with the responsibility of addressing a different issue, such as women’s health or cancer prevention. Based on its charge, each agency has a mission and sets priorities for the types of research, training, and educational programs it will fund. Each year agencies must compete for continual funding from Congress.
to support their grant programs. To obtain congressional funds, an agency must demonstrate to Congress that it is making significant progress toward meeting its goals. Indices of progress include the number of grant proposals submitted to and funded by the agency, the quality of the programs that have been funded, and the contributions that these programs have made to the advancement of knowledge, and ultimately the health of the public. It is in an agency’s best interest to encourage the submission of excellent proposals. Your job as the grant writer is to prove to the agency that your idea is sound and has the potential to be successful, that you are the best person to carry out the project, and that you are located in an institutional environment that can support your efforts.

Grant writing is challenging. Not every great idea for a research, training, or education project will be competitive or receive funding. This is true for several reasons. First, funding agencies have specific areas that they seek to fund. These targeted areas for funding may differ from the specific ideas that you may wish to pursue or those that may be identified as in need of systematic inquiry in the scientific literature. One of the first rules of grantsmanship is that it is necessary to identify an agency whose goals match your areas of interest. Even if there is a match, be prepared to develop and modify your ideas to meet any specific requirements, interests, and goals expressed by the agency. You may initially find it difficult to identify an agency that funds your interests. If this is the case, you will need to think somewhat differently as to how your interests and areas of expertise can be developed or transformed, or, alternately, you will need to find a new area of investigation if you expect to be funded. However, you may want to place your initial idea for funding in a personal file for future consideration as agencies do change priorities and interests over time. It is possible that your idea or an iteration of it will be of interest to a funder in the future.

Grantsmanship is a systematic process. One reason to seek external funding is to build a coherent program of research, education, or training. Each grant proposal that is written (and ultimately funded) becomes a stepping-stone for the next grant submission. A grant proposal should be viewed as one component of a larger plan for developing a long-term program of scholarship. A mistake frequently made by novice investigators is that they find an interesting project and, even if it is funded, lose interest in the project after it is completed and then shift their effort to an entirely different area of inquiry. This approach often results in a series of disjointed projects that produces only small amounts of funding support over time and an inability to systematically build a coherent program of science that builds from one project to the next.

We are not suggesting, however, that only one research or training idea be singularly pursued over one’s career. Rather, we encourage you to consider how one grant-writing activity can lead to the next and be logically linked. For example, let’s say you are interested in developing and testing a service for families involved in the care of older adults with dementia. After receiving funding and completing the project, you may determine that the next logical step of scientific importance and interest to you is to evaluate whether your caregiver program is effective for other types of caregivers such as those caring for older adults with a stroke or cancer; alternately, of interest may be to evaluate whether the caregiver program has benefits for the older adult care
recipient. In this example, knowledge gained from the initial funded effort is logically expanded to include other caregiving groups or care receivers and represents a logical step-wise building of a program of research. It also affords opportunities to seek funding from different sources such as multiple institutes in the National Institutes of Health (NIH) or the leading national associations for stroke or cancer.

Grantsmanship is integral to one’s professional responsibilities. Research, teaching, and service are all fundamental components of a career as a health and human service professional, particularly for faculty members in a university setting. External funding has the potential to provide opportunities to advance practice or develop new and innovative services. For many faculty members, writing a grant proposal must be integrated within and complement other job responsibilities. Each of your responsibilities can serve to enhance and advance the other. For example, the courses that one teaches can provide a basis from which to delve into a body of literature that may suggest an important topic for a research study. Interactions with clinicians might suggest important gaps in service provision. Discussions with colleagues at your institution or professional meetings can stimulate ideas for fundable projects. Ideas can come from a variety of sources so it’s important to keep an open mind to the many possibilities. (See Chapter 3, which examines different sources for generating competitive grant ideas.)

Developing a funded research career is usually accomplished in a series of interrelated steps, each building on the one before. To begin, ask yourself, “Where do I want to be 2, 3, 5, or 10 years from now with respect to my research or professional career?” Initially, this may feel like a difficult question to answer, particularly when you are just beginning your professional career. However, keep in mind that developing proficiency at obtaining funding for your ideas takes time and patience and involves a planned, focused effort with well-defined professional and research goals that evolve over time. It is always helpful to consult with a senior faculty member, an established professional, or a designated mentor who can help you identify short- and long-range professional goals and a pathway toward achieving them.

Let’s consider a fairly common situation in which a faculty member needs funding for a project that is of importance and that interests her.

### 1.1 A GRANT STORY

Ms. L is an assistant professor of social work at an urban university. The school in which she works has departments of physical therapy, occupational therapy, physician assistants, counseling, and nursing. Ms. L volunteers in a number of homeless shelters throughout the city and has organized a student volunteer program. In her volunteer work, she notices that shelter residents have significant health problems and difficulties accessing social services. She also notices that the supervisors in the shelter are not experienced at managing health problems and do not have knowledge about the social services network. She is convinced that a formal educational
program to prepare social work, nursing, and other health professional students to work in these shelters could be an important way to help alleviate some of these problems. While Ms. L is confident that she knows what the components of such a program should be, she is not sure about the best way to implement it.

Ms. L decides to meet with her department chairman to inquire about recruiting more students to work in the shelters and to suggest that the department offer a formal educational program to prepare clinicians to work in underserved areas. At the meeting, her chairman points out that, while Ms. L’s idea is a good one, starting a new program is expensive and time-consuming. Since the school is short of both money and faculty, the chairman tells her that it is not possible to invest the department’s limited resources into a program such as this. The only way that such a program could be supported would be for Ms. L to find money elsewhere to pay for its development and implementation. During her next evening of volunteer work, Ms. L becomes even more determined to do something about the health problems she sees. The next day she makes an appointment to meet with a senior faculty member, Dr. A, who has received grant funding for a number of related projects. She explains her idea and asks for advice. Dr. A is sympathetic but tells her that because of her inexperience, it is unlikely that she will be successful in finding funding for her project by working alone. He suggests that she develop a systematic plan to develop her credentials and that she partner with a more senior investigator and a team of experienced faculty. Given that some agencies are interested in proposals reflecting interprofessional strategies and that the problems in the shelter are complex, he also suggests that she form an interprofessional team to address them. An interprofessional team would not only help her gain the experience necessary to develop and conduct a program, but the participation of a variety of disciplines on the project would strengthen the proposal and make it more competitive.

He suggests that she start by conducting a literature review to learn the magnitude of the health problems that exist among shelter residents locally and nationally, the major problems that residents have in accessing social services, and whether there are existing programs that have addressed these problems, and if so, their effectiveness. Dr. A also encourages her to write up the results of this research and submit it as a manuscript or for presentation at a meeting of her professional association. Finally, he recommends that she “cast a wide net” in her search for a funding agency because it would be difficult to obtain funding from some of the larger, well-known agencies such as the NIH.

Ms. L is a little discouraged but decides to meet with senior faculty members in occupational therapy, physical therapy, nursing, and social work who have had relevant experience in the homeless clinics. She explains her idea about developing a program to prepare students to work in the shelters and asks if they would be interested in working on the grant proposal with her. All of the faculty members express great interest in working with her if she can identify a funding source.

Where does Ms. L begin her search for funding? Her first step is to learn the basic language of grantsmanship.
1.2 THE LANGUAGE OF GRANTSMANSHIP

As in other fields, there is a language that is specific to grantsmanship. It is important to learn this language in order to understand the grant world and application process, to be able to communicate with agency personnel, and to interpret application instructions for submitting a proposal. Listed in Box 1.1 and defined in the following, are 15 key terms related to grantsmanship that are used by most foundations and federal agencies.

Box 1.1 15 Common Terms in Grantsmanship

- Research grants
- Training or educational grants
- Demonstration grants
- Agency
- Call for proposals
- Competition
- Preferences, priorities, and special considerations
- General instructions/supplemental instructions
- Grantee/grantor
- Principal investigator/coinvestigator/project director/project manager/study coordinator
- Program officer/project officer
- Peer-review panel
- Reviewers’ comments (formerly pink sheets)
- Funding cycle
- Grants.gov

Research grants: Research grants provide money for an investigator to conduct a specific research study, either basic or applied. In basic research, an investigator examines a question that will add to the theoretical body of knowledge in a discipline. In applied research, the investigator applies a specific theoretical principle, program, or approach to a practical situation. A research grant usually provides money for salary support of the investigator and his or her team; materials needed to carry out the research, such as laboratory specimens, chemicals, supplies, or mailings; data analysis; and travel to professional meetings. The grant may also provide stipends for graduate or undergraduate students. In some instances, the grant will also pay for the purchase of special equipment needed to carry out the project. However, it is important to refer to the application requirements to understand the specific allowable and unallowable budgetary categories and items (we discuss this further in Part III).

For a research grant, federal agencies, such as the NIH, also provide a certain amount of money to the applicant’s university over and above the requested budget for direct costs associated with implementing the project in
order to help defray basic operational expenses. These monies are referred to as facilities and administrative (F&A) costs (formerly referred to as indirect cost recovery) and are based on a rate negotiated between the university and funding agency, which could be as much as 50% to 60% of the direct operating costs required for the conduct of the study. These costs are discussed in more detail in Chapter 7.

*Training or educational grants:* Training or educational grants are those that have, as a main purpose, the education or training of students, faculty, clinicians, or other practitioners. These grants can be used for planning and implementing new undergraduate or graduate programs, revising or updating curriculum materials, recruiting students into special programs, or helping health and human service professionals to gain new knowledge or develop new skills. These types of grants provide money for salary, supplies, travel, consultants, and stipends for graduate students and, in some instances, equipment. These grants also come with F&A costs, but at a rate that is lower than federal research grants. Typically, the rate is between 8% and 10% of the direct operating costs of the grant.

*Demonstration grants:* Demonstration grants provide support to projects that evaluate a model program, set of services, or methodology. A demonstration project often tests a program that is already in place, but it can also be used to develop and then test a program if there is evidence that suggests a given model or service is an effective way to address a specific issue. These types of grants are most commonly pursued by health and human service providers who wish to expand existing services or develop innovative model programs that can be replicated. Demonstration projects can also be used to translate and adapt a previously proven intervention to a new practice-care setting or for use with a different target population.

*Agency:* Throughout this book, we use the generic term *agency* to refer to any funding source. A funding agency can also be referred to as the sponsor. The federal government is divided into a bewildering array of organizational units called centers, offices, institutes, bureaus, divisions, departments, or administrations, all of which may have programs of funding. Private foundations and companies have different organizational structures through which money is awarded and their own set of instructions for proposals and procedures for reviewing them.

*Call for proposals:* A call for proposals is a notice of an opportunity to submit a proposal on a specific topic. A call for proposals may also be referred to as a request for proposals (RFPs), a funding opportunity, a program announcement (PA), or a request for applications. Agencies publish announcements describing a problem area and inviting interested parties to propose ways to investigate aspects of the problem. These announcements vary considerably in the level of funding provided, type of projects solicited, and scope of work involved. The federal government tends to provide very explicit and targeted calls for proposals that describe in detail what needs to be included. In contrast, foundations and private companies vary in the detail of their calls for proposals with some being similar to those of the federal government whereas others are more general.

*Competition:* The term “competition” will be used throughout this book. It simply refers to a particular grant program for which a call for proposals has been issued.

© Springer Publishing Company, LLC.
Preferences, priorities, and special considerations: Some federal agencies such as the Department of Education identify a specific focus or emphasis that they would like addressed in a grant proposal. For example, an agency may wish to increase involvement of a particular minority or underserved group in the project, and thus offers “extra credit” or increased points to proposals that meet this additional priority or preference. There are three categories for which extra credit may be given by some agencies: funding preferences, funding priorities, and special considerations. If a funding preference is specified, special attention will be given to applications that address the stated preference. For example, if preference is given to problems in underserved communities and your proposal meets this requirement and is approved for funding, you will be funded before other approved applicants who do not meet the preference. If you qualify for a funding priority, the score assigned to your proposal will be adjusted favorably by a predetermined amount, such as 5 or 10 points. In competitions that contain a special consideration, reviewers have additional latitude in assigning points to those proposals that address the consideration. The use of these funding mechanisms varies across agencies. However, in some instances the legislation authorizing funding may require that the agency use one or more of these funding mechanisms. When applying for grant monies from an agency that offers a preference, priority, or special consideration, it is important to address it as part of your application. Although for most competitions it is not a requirement to address the preference or priority, there is a strong competitive advantage in doing so. Some agencies will provide a special section in the proposal for you to indicate that you are applying for one or more of these special categories. If they do not, make sure you state your intent in an introductory paragraph and describe the specific reasons why.

General instructions/supplemental instructions: General instructions provide guidelines for submitting a grant application. These guidelines must be followed very carefully. Agencies in the federal government provide the most detailed general instructions. They usually contain the following types of information: a general overview of the requirements of the project; the date the application is due; where it should be sent; how to submit the application (e.g., for most agencies and competitions electronic submissions are required; however there are still a few competitions that require paper submissions); identification of preferences, priorities, or special considerations; the amount of money allocated for the funding mechanism; the average expected funding range of projects; and the date grants will be reviewed and funded.

General instructions also may include the guidelines that will be used by reviewers to evaluate proposals, and for some competitions, the optimal number of points that can be given to any one particular section of the proposal. Supplemental instructions extend or modify the general instructions. These need to be read very carefully because the agency may have made significant changes in the requirements for a proposal after the general instructions were issued. Supplemental instructions provide critical information for writing your proposal and may provide alternative requirements than that described in the general instructions.

Grantee/grantor: The grantee is the institution or individual who submits the grant application and receives a grant award. A grantor is the agency or sponsor providing the grant funds.
Principal investigator/Co-investigator/project director/project manager/study coordinator: The term principal investigator (PI) is used most often in research grants and refers to the person who provides the scientific oversight and integrity of the proposed grant activity. Presently, the NIH allows for two persons to serve in the role of PI. Referred to as a multiple PI arrangement, an additional one-page description of the arrangement is necessary, explaining how the two PIs will divide responsibilities plus a strong rationale for why two PIs are necessary. In this arrangement, one person and their institution assume responsibility for being the applicant organization and main contact with the NIH.

A coinvestigator (Co-I) is an individual who contributes substantially to the conceptual development of a research study and who assists the PI. A project director is typically the term used in training, educational, or demonstration grants and is applied to the person who is responsible for the daily operations or day-to-day activities of the project. For these types of grants, the project director is considered equivalent to the PI in that it is the person who oversees the grant activity, ensures the scientific integrity of the endeavor, and is responsible for ensuring that the grant is conducted in accordance with all regulations.

Project manager and study coordinator are terms applied to persons who are hired to assist the PI in implementing a research study. These persons may have a wide range of responsibilities, including hiring and supervising assessors, research assistants, or data entry personnel, and implementing study procedures.

Program officer/project officer: A program officer is an employee of an agency who manages a specific program of grant funding. A project officer is someone who is assigned to supervise and provide technical assistance to a particular funded grant within a particular program of funding. These terms are sometimes used interchangeably.

Peer-review panel: A peer-review panel is a group of experts selected by an agency to evaluate the grant proposals submitted to that agency. The panel evaluates and scores each proposal according to the agency’s evaluative criteria. Each agency structures the review panel differently. The structure and composition of panels within the federal government are determined by statute or other federal guidelines. The NIH, for example, selects individuals with expertise in different scientific areas, such as health services, behavioral science, or medical research, and areas of expertise, such as statistics, economics, sociology, and medicine. These panels are referred to as Initial Review Groups (IRGs) or study sections. Members are appointed for specified periods of time (usually 3 years) and generally meet three times a year to review proposals. Agencies also select special emphasis panels of experts who serve as reviewers for particular competitions. Panels may vary in size from 3 to 15 to 30 members. Different formats are used when convening review panels, and we discuss this further in Part IV.

Most private foundations do not use peer-review panels. Decisions concerning funding are made by a board of directors or trustees of the foundation. Their decision is often based on the evaluations and recommendations made by program officers who work for the foundation. Proposals may also be reviewed by foundation workgroups or committees of experts who are asked to convene for a specific competition.
Reviewers' comments (summary sheets): Once referred to as “pink sheets” for the color of the paper on which they were printed, reviewers’ comments are written evaluations provided by a review panel of an application. A summary sheet of reviewers’ comments usually provides an in-depth critique of a proposal, summarizing the major strengths and weaknesses, and a total score that rates the proposal. Scoring criteria vary widely among agencies so it is always best to consult the application guidelines or the agency website for the most up to date scoring system being used. Most agencies use either web-based programs or e-mail to distribute scores and summary sheets of the review.

Funding cycle: Most federal and foundation competitions follow a schedule for receiving, reviewing, and awarding funds, referred to as a funding cycle. Most federal agencies have funding cycles that occur at the same time each year. For example, in the NIH, there are three primary deadlines for submitting individual investigator research grant applications (commonly referred to as an RO-1): October 5, February 5, and June 5. Submission dates for federal and private foundations and corporations can be found on the website of the agency and in the call for proposals. Always check the websites to obtain the most up-to-date submission deadlines. Of importance is that due dates for grant applications are nonnegotiable. Late applications are rarely if ever accepted. Exceptions are only made in the case of a national disaster. In this case, a federal agency will typically allow late applications from the region of the country most affected.

Grants.gov: This refers to the website (www.grants.gov) that contains information about grant opportunities in the federal government. It is a source that identifies grant opportunities from the more than 1,000 programs sponsored by the government. Grants.gov is also the electronic mechanism for submitting NIH grant proposals.

In addition to the 15 terms defined above, there is another vocabulary specific to the NIH environment listed in Box 1.2.

Box 1.2 Seven Common Terms in the NIH Environment

- SF-424
- Funding Opportunity Announcement (FOA)
- Electronic Research Administration (eRA) Commons
- Electronic Streamlined Noncompeting Award Process (e-SNAP)
- Integrated Review Group (IRG)
- Scientific Review Officer (SRO)
- NIH Roadmap and Common Fund

SF-424: This refers to the electronic application forms that are now in use by the NIH for all applications.

Funding Opportunity Announcement (FOA): Also known as program announcements (PAs) or program announcement requests (PARs), requests for application (RFA), or notice of funding availability. These terms refer to publically available announcements for applications issued by federal agencies or specific institutes in the NIH that addresses a particular area of research. When applying
to the NIH using electronic submission and the SF-424 forms, you must identify a particular FOA that is relevant to your proposal. If none exist, you may use the generic FOA that the NIH has created for this purpose. FOAs can be found at Grants.gov/FIND and the NIH Guide for Grants and Contracts.

Electronic Research Administration (eRA) Commons: This refers to the electronic infrastructure that allows NIH to electronically receive, review, and administer grant awards. The eRA is the most important tool for monitoring your NIH grants and their status, and from which to download reviewers’ comments. Be sure to register for an account as part of your start up activities for preparing a grant application to the NIH.

Electronic Streamlined Noncompeting Award Process (e-SNAP): This refers to the streamlined process to request continuing support of a Public Health Service (PHS)-supported grant. For multiyear funded grants, you will need to submit a progress report 2 months prior to the beginning of a new budget period. In most cases, these progress reports will be due electronically. The initial Notice of Grant Award that you receive upon a grant award will state whether the grant is awarded under e-SNAP. For more information about this process refer to the NIH e-SNAP guide at: era.nih.gov/grantees/how-to_steps.cfm#3.

IRG (Integrated Review Group): This refers to the study sections of the NIH that conduct peer review of all grant proposals submitted to the NIH. Study sections are organized around scientific areas.

Each section is composed of scientists who conduct the initial peer review of submitted grant applications. Related terms include peer review, study section, and scientific review group.

Scientific Review Officer (SRO): This individual is the federal scientist who is responsible for overseeing a scientific review group. He or she is responsible for coordinating and reporting the results of each peer review of each application assigned to an integrated review group. The SRO acts as an intermediary between the applicant and reviewers, answers questions from applicants about the review, and prepares a summary review statement for each application.

NIH Roadmap and Common Fund: In May of 2002, the director of the NIH convened a series of meetings to chart a “roadmap” for medical research in the 21st century. The purpose was to identify major opportunities and gaps in biomedical research that no single institute at NIH could tackle alone but that the agency as a whole must address to make the biggest impact on the progress of medical research. The NIH Roadmap for Medical Research was launched in September 2004. This transformative initiative to redesign the conduct of biomedical research was initially funded by a 1% contribution from each of the NIH institutes and centers. Then in 2006, Congress responded to the need for dedicated funding to support cross-cutting programs of the Roadmap by funding the NIH Common Fund. The Common Fund is now the new home in NIH for the Roadmap, which has dedicated funding and develops new funding initiatives that cut across institutes and centers. These initiatives are designed to be responsive to newly emerging scientific opportunities, have high impact, and address three broad themes: New Pathways to Discovery, Research Teams of the Future, and Reengineering the Clinical Research Enterprise. See commonfund.nih.gov/aboutroadmap.aspx for information about the Common Fund and its initiatives.
For additional information about all aspects of the NIH grants process, visit the NIH website at grants.nih.gov/grants. Also, for a full glossary of terms specific to the NIH, visit the NIH grants glossary website at: grants.nih.gov/grants/glossary.htm.

1.3 DEVELOPING A CAREER TRAJECTORY

Now that we have reviewed key principles and terminology associated with grantsmanship, it is important to understand how grant writing fits within the context of a research or professional career trajectory. Participating in grantsmanship should be part of a research career trajectory or a long-range plan for professional growth and development. It is compatible with the goal of being a health and human service professional. Also, developing skills in grantsmanship and writing a grant proposal represent a significant investment of time and energy. A related point is that a grant application is evaluated in part based on whether the applicant demonstrates expertise in the proposed work. An applicant must have a record of presentations, publications, and previous experience in managing a project. Thus, building one’s credentials in a focused area is an important part of developing a career as well as grantsmanship. Box 1.3 lists the five components of a strategy for incremental professional growth that enhances one’s competitiveness in grant writing.

Box 1.3 Five Components of a Professional Growth Strategy for Funding

- Develop a plan for short- and long-range professional development.
- Build credentials through presentations and publications.
- Build a track record of funding, starting with pilot funds.
- Work on teams with more experienced researchers.
- Seek mentorship.

Let’s take a close look at each of these components of a growth strategy. Develop a plan for short- and long-range professional development: To develop a plan for professional growth, begin by outlining your career or professional goals. Ask yourself “What do I want to be doing 2 to 5 years from now?” “Am I more interested in research, teaching, clinical work, or a combination?” While these are interrelated, the area you select will influence the type of grant programs for which you will seek funding. After identifying immediate and long-range career goals, talk to your supervisor or your department head. Learn what their expectations are for you, the department, and the institution as a whole and how your goals may fit with the strategic planning of the institution. This will provide a better idea of how compatible your goals are with those of your department or institution. If your goals are not in keeping with the department or institution, you may not have access to or be able to obtain the necessary resources and intellectual and financial support to reach your goals. For example, if you are interested in curriculum...
development and your department values and supports educational innovation, then you will probably receive the institutional support necessary to pursue a training grant. If, on the other hand, your department has a greater interest in research, you will need to rethink your goals and perhaps develop your research skills or examine your interest in curriculum from a research perspective.

Matching interests to the intellectual resources available in your department or school is particularly important at the pre- and postdoctoral level. When selecting a dissertation topic or postdoctoral-related research project, the expertise needed to advance the idea must be reflected among the faculty at your disposition who can then be approached to serve on your dissertation committee or mentorship team. When submitting a grant application at this level of your career, the faculty mentorship team will be critically evaluated for its adequacy and relevance to your proposed topic and project, and whether you have access to the expertise necessary to ensure that you can be successful.

It is always important to discuss your goals with more experienced grant writers and researchers. These individuals will have moved through the career steps necessary to be successfully funded and can provide important insight and lessons learned from their vantage point. They will know the challenges you may confront and will be able to suggest effective strategies for developing an effective career and grant-writing plan.

Build credentials through presentations and publications: Building your credentials requires time and patience, but it is critical to becoming funded. When submitting a grant proposal, the peer-review panel will closely examine the credentials of the applicant as part of the evaluation process. Box 1.4 contains a typical comment by a review panel regarding the credentials of an investigator who did not demonstrate sufficient expertise in the topic of his proposal: congestive heart failure and a nursing home care intervention.

Box 1.4 Example of a Peer-Review Evaluation of Applicant Credentials

The Principal Investigator, Dr. T, has a PhD in sociology and is an assistant professor. His past experience has included extensive research in gerontology and health care interventions for stroke patients. However, he has no previous research experience or publications on nursing, home care, or congestive heart failure. There is not a doctorally prepared nurse on the project, which is also a problem. In particular, the team lacks clinical research expertise with congestive heart failure patients. The project would be enhanced by collaboration with nurses who have both clinical and research expertise in this area.

Building your credentials in a particular area can be accomplished in a number of ways. These include: presenting papers at professional meetings; developing these presentations for publication; writing a book review or column for your professional newsletter; serving as a reviewer for a professional

© Springer Publishing Company, LLC.
journal; reviewing abstracts for a professional meeting; and serving as a reviewer for a grant competition.

**Build a track record of funding, starting with pilot funds:** One component of building one’s credentials involves developing a track record of funding. Funding agencies require that an applicant demonstrate expertise in the proposed area. Therefore, reviewers will carefully evaluate biographical material by the number of professional presentations and publications in the proposed area and by previous funding or project management experience. Obtaining even small funds from intramural sources such as one’s department, college, institution, or professional association to carry out small research project will help you get started in developing a track record.

**Work on teams with more experienced researchers:** There are two key strategies to follow to gain funding experience if you are early in your grant-writing and professional career. The first is through obtaining small grant funds. Most universities have intramural competitive grant programs that provide seed money for novice investigators to conduct research and obtain pilot data. Many professional associations also have small grant programs. A second strategy is to work with others who have more experience and existing funded programs of research. Working on the grant of an experienced investigator is a very helpful approach from which to learn project management as well as for providing opportunities to participate in presentations and publications related to the project. Becoming a member of an investigative team provides hands-on experience with funded activity. This experience will also allow you to obtain critical insight into how proposals are written and funded projects implemented.

**Seek mentorship:** Mentorship is invaluable at any stage of one’s career, but is particularly important at the pre- and postdoctoral level and during the early stages of your career as a faculty member. A mentor with funding experience can provide you with important guidance to help you navigate through the grantsmanship maze. If a mentor is not available, it is important to identify an experienced investigator in your institution who would be willing to read and respond to drafts of your work. This kind of intensive critiquing is essential for developing a competitive grant application.

### 1.4 A PROFESSIONAL CAREER TRAJECTORY

Being successful at grantsmanship over an extended period of time involves a step-by-step progression by which you systematically build your portfolio or expertise. Figure 1.1 outlines a systematic approach to developing a career trajectory for grant writing. This particular career trajectory is most appropriate for those in faculty positions. However, many of the activities we list are also relevant to health and human service professionals in practice settings who need to seek funding to support innovative programming. As shown by this trajectory, building a research career is a planned series of highly interrelated and iterative steps that move an individual from novice, to intermediate, to advanced, to expert levels of research and grant-writing skill. Each level is composed of three fundamental activities. These include making presentations at professional meetings, publishing in professional journals, and
Figure 1.1 Research Career Trajectory
conducting research. The number and type of activities undertaken, and the depth in which each is pursued, will change depending upon one’s level of expertise and position along the trajectory.

The time frame for moving from novice to intermediate to expert will vary, depending on a number of factors. These include the match of your research idea with the interests of a funding agency, your success at gaining funding at various stages, the amount of time you have available, and a certain amount of luck. This research trajectory is a guide for thinking about and planning a grant-writing career in a systematic way. It is also a helpful tool for mentoring others and/or in department planning.

Novice

At the novice level, the primary goal is to identify a research area of interest that is broad enough that it allows a meaningful set of questions to be developed and from which to build a strong program of research. This requires that you initially identify a broad area of inquiry within which to examine specific research questions.

Let’s say you are interested in issues related to the functional capacity of individuals with dementia. Your first step is to develop focused research questions that address this broad area of investigation. For example, as a health professional, you may find that it is difficult to evaluate physical function in persons with dementia. The accuracy of reports of daily functioning provided by either a caregiver or the person with dementia may not be accurate. The research literature suggests that caregivers tend to over- or underestimate functional capacity depending on their own level of stress. Thus, one researchable question might be, “What caregiver characteristics, other than stress, have an impact on the accuracy of proxy reports of functional capacity?” Another question might be, “What is the relationship between performance-based measures and self-report measures of physical function for this clinical population?” A similar process occurs when developing an educational or training program. A broad educational idea may be identified, such as training health professionals in early intervention programs for children. A grant application would then focus on one aspect, such as testing the effectiveness of web-based strategies or interprofessional approaches to such training.

At the novice level, other activities such as making presentations at professional meetings, publishing in journals, and seeking money for pilot studies are very important.

Let’s examine each of these activities in more depth.

Presentations and Publications

As a novice, it is critical to start with a comprehensive literature review on your topic. This literature review will help you become familiar with the current state of knowledge in the field. You will learn what research has been conducted in your area and the gaps that exist in the knowledge base. It will show you the kinds of research questions that are being asked in the field.
as well as the research designs and measurement instruments that are most common. A literature review is an ongoing process that you must continually engage in at each step of the research trajectory, particularly since the field is constantly changing as the research evidence around a specific topic grows. An initial review will enable you to determine the primary issues, and the significant research questions suggested by the gaps in the knowledge base. This is one way to identify a broad area of inquiry and, within that, narrow your focus to a researchable question.

The knowledge gained from a systematic review may put you in a position to develop an abstract suitable for presentation at a professional meeting. One approach may be to identify a gap in knowledge and make recommendations as to how to address it. Another might be to apply a particular theoretical framework to a practical situation to explain why a specific technique works in practice. Yet another approach may be to present an innovative teaching technique that you have developed and found to be effective. At this point in your career, you should target your local professional association and submit abstracts for presentation at their next meeting.

The next step would be to use this presentation as a base, expand on it, and turn it into a short article that you can submit for publication. Again, at this stage in your career, the most appropriate places to submit your manuscript would be local or state journals or online, open access journals or even professional newsletters.

Another way to build credentials is to contact journals or publishers in your field and offer to review books. Publishers are sometimes open to receive reviews of new books by those in the field. Some journals also have special sections that introduce readers to the latest works in a particular area of inquiry. Publishers, and some journals, provide you with a copy of the book to review.

Some journals also publish summaries/abstracts of recent, relevant published articles to enable their membership to become aware of the latest thinking in the field. Conducting these reviews can provide you with up-to-date information and, at the same time, give you a publication related to your research area of interest.

Research Funding

As a novice, you will need to develop skills in conducting research. As we have previously suggested, one way to gain experience is to identify a funded researcher in your department or college and volunteer to work on his or her grant. Some investigators welcome the involvement of novice faculty in their research. You may be asked to conduct a literature review or engage in other related research activities such as interviewing subjects. This involvement will provide you with information about the day-to-day activities of a funded project, as well as experience working on a research team.

Another way to develop hands-on research experience is to seek funding for a small research project. Based on your background reading, you should be able to formulate a question that can be studied on a small scale. Many universities have small pots of money earmarked for faculty development. This money might be available from your department chair or from your
college. Usually, these are small amounts of money ranging from $500 to a few thousand dollars. You can use these in-house monies to conduct a small pilot study that can provide preliminary data from which to develop a larger study. Be sure to plan to present the results of this study at your professional association meeting and then publish it in a journal.

Each of the above strategies and suggested activities helps you to develop the necessary skill set and knowledge base from which to pursue a competitive research grant application. The strategies will also build qualifications in a research area that will help you become more competitive for funding as you move to the next phase of your career.

**Intermediate**

Now that you have established a research or project direction, at this stage it is time to think about refining it. Your next steps should be designed to further refine your research question and engage in studies of a larger scope.

**Presentations and Publications**

As you advance in your career, you need to continue to give presentations at professional meetings and develop these presentations into publishable manuscripts. At this point you should target national meetings for your presentations and peer-reviewed journals for your publications.

Another valuable experience at this stage of your research career is to serve as a peer reviewer for your professional journal. Most journal editors need to identify individuals with expertise in specific areas to review manuscripts. Serving as a peer reviewer will give you exposure to the latest thinking in your field and a better understanding of the components of publishable manuscripts. In addition, critically reviewing manuscripts helps to hone your writing skills and avoid common mistakes in scientific writing.

**Research Funding**

If you have received seed money to conduct a pilot study, the results of this study can be used to identify a larger research study in the same area, justify it empirically, and pursue a larger grant award. Most grant applications include a section in which the applicants must outline their previous efforts in the proposed area and empirical evidence to support the need for conducting research on this topic.

Numerous sources for small pockets of money exist including your own institution, professional organization, and local foundations and agencies within the federal government. Many professional organizations offer small grant awards for projects related to the profession and for which you might qualify. Descriptions and requirements for these competitions are usually advertised in the professional journal or found on the association's website.

At the federal level, many of the institutes in the NIH have small award programs that are designed to help new investigators gain research

© Springer Publishing Company, LLC.
experience. One of these is called the K01 mentored research scientists award. There are many different types of development awards under the K series. Be sure to check the “K kiosk” online, which explains in detail eligibility criteria and application information at grants.nih.gov/training/careerdevelopmentawards.htm. Some K award mechanisms provide funds to support an experienced scientist in your area of research to act as your mentor or will support a mentoring team.

There are other opportunities as well. These include R03 and R21 awards for small research studies, first investigators, or to initiate a new program of research. The budget and number of years supported in these mechanisms vary widely by the institutes in the NIH. These are detailed in the specific PAs. It is always important to check online to become knowledgeable about the specific requirements.

The pilot data collected in your earlier in-house study will be important for these small grant or mentorship awards. Pilot data will make your proposal more competitive because reviewers like to see that you have already begun to investigate an area. These small grants are designed to prepare you for developing a R01 grant application, which is the main mechanism for funding investigator-initiated research studies at the NIH. R01 grants are awarded to experienced investigators who have a well-developed research program and preliminary evidence to support a larger study. These are the grants that you will be competing for in the next stage of your research career.

The NIH is not the only source of funding. At this stage, you should also consider other funding sources. The U.S. Department of Education has numerous research, training, and educational funding opportunities. For example, the National Institute on Disability and Rehabilitation Research in the Department of Education has a field-initiated program. This competition invites applications on topics identified by investigators as long as they are related to the overall goals of the agency. The Bureau of Health Professions in the Health Resources and Services Administration of the Department of Health and Human Services has many training and educational grant programs appropriate for health and human service professionals.

At this point in your career trajectory, you may want to target two to three agencies whose funding interests are similar to your area(s) of expertise, learn about their funding priorities and proposal requirements, and contact the project officers and other investigators whom they are funding. There are at least three ways to develop a better understanding of an agency’s goals. The first is to contact a project officer in an agency. We discuss ways to do this in more detail in Chapter 2.

A second strategy is to attend a technical assistance workshop sponsored by an agency. Many agencies at the federal level conduct these workshops a few months prior to a due date for the grant proposal. These workshops are typically free, via a webinar format or face-to-face. You can obtain information about these workshops either from the agency’s web page or by asking a project officer. If the agency is conducting an invitational workshop, you may have to submit a letter indicating your research goals and specific research questions. This letter serves as an application. If there is a match between your level of experience, research goals, and the agency’s areas of interest, you will be invited to attend. At the workshop, members of the agency staff will discuss the upcoming competition, provide information on
the kinds of studies or projects that they are interested in, and talk about
the major components of proposals. There is often time set aside for you to
ask specific questions or meet with project officers to discuss your ideas.
Most professional organizations, such as the National Council of University
Research Administrators, also hold technical assistance workshops. Similar
workshops are also provided by professional associations at their annual
meetings. Although some have a registration fee, these workshops provide
opportunities for you to listen to presentations given by representatives
from a number of federal agencies, who discuss the kinds of projects they
are interested in funding, elements of a competitive application, and upcom-
ing grant initiatives.

Another excellent way to learn about submitting proposals for fund-
ing is to serve on the peer-review panel of an agency. Although the NIH has
standing panels in which experts who are funded by the agency serve for a
3-year term, other agencies appoint panels for a single competition. Many
of these agencies are required by legislation to construct review panels with
geographic and ethnic representation, so they are often seeking peer review-
ers. Contact an agency that interests you and inquire about the possibility
of serving on one of these panels. They will send you an application form
that will ask you to identify your areas of expertise or to write a brief letter
outlining your experiences. Your application will be kept on file and when a
competition is held in your area of expertise, you may be asked to serve. The
experience you obtain from serving as a reviewer is invaluable. You will be
able to see the range of proposal ideas that are submitted and common pitfallsto avoid. You will also have opportunities to meet other experts in your area,
who may be able to help advance or improve your ideas.

**Advanced**

The advanced level is characterized by a well-developed and ongoing funded
research program. This will have resulted from the systematic flow of ideas
from one grant project to the next, as well as an extensive publication history
that is built from previous research/grant activity.

**Presentations and Publications**

Presentations at national meetings, publishing in journals, and network-
ing with colleagues who have similar interests all remain critical activities.
However, at this stage, these activities are more focused, and the advanced
researcher is often more selective, presenting primarily as an invited or key-
ote speaker and also targeting international forums from which to develop
or expand collaborations with colleagues in other countries.

It is at this point that as an advanced researcher you will receive invita-
tions to present at national and international conferences. In addition, you
may be invited to present suggestions to other new investigators at the techni-
cal assistance seminars conducted by various agencies or professional asso-
ciations. Finally, many agencies periodically conduct long-range planning
meetings to set future funding goals. These agencies will often invite many
of their funded investigators to participate in these meetings. Involvement in these planning sessions will not only provide you with more knowledge about the agency and its priorities, but will also allow you to influence their future funding decisions.

Research

If you have not already done so, you should be competing for the larger grants, such as the R01s and program grants in the NIH, or the similar grant programs in other agencies that we discussed in a previous section.

If you have already received one or more R01 grants from an institute in the NIH, or major grants from other agencies, you may be invited to serve on one of their standing peer-review sections or ad hoc review panels. The standing peer-review sections are typically a 3-year commitment, during which you will be required to review grant proposals in your field three times a year. These are prestigious appointments that provide important networking opportunities, insight into review committee decision making, and exposure to a wide range of grant applications that can enhance one's own grant writing. Serving as a reviewer also solidifies one's reputation as an established investigator within the agency.

Large foundations, such as Robert Woods Johnson or Kellogg, may also have research funding opportunities in your area. These foundations usually fund experienced over novice investigators so you may want to consider their initiatives at this point.

Expert

The expert level is characterized by having an active research program underway with one or more active grants at any one time. Collaborations with other experts, nationally or internationally, participation in expert panels, keynote addresses, program projects, and/or multisite studies are core activities at this stage.

Presentations and Publications

Your presentation and publication efforts should continue, since the results of your research should be very influential in your field and pave the way for even larger grant projects. You will also be invited to present your research as keynote speeches at various national or international meetings.

Research

Now, you might also consider applying for P30 or P50 grants, which are large, multimillion dollar specialized center grants. In these programs you would have a number of grants under your supervision as well as a team of other researchers.
1.5 PERSONAL ATTRIBUTES OF SUCCESSFUL RESEARCHERS

Now that you are familiar with the language of grantsmanship and have familiarity with how to plan a research career, begin to think about acquiring the specific skills necessary to successfully move along the trajectory. Box 1.5 presents a list of skills that can be helpful for developing a research career.

**Box 1.5 Skills of Funded Veteran Researchers**

- Knowledge of the research process, methodology, and design
- Domain expertise
- Knowledge of funding sources and methods to obtain funds
- Knowledge of descriptive and/or inferential statistics
- Expertise with various software packages and other analytic technologies
- Organizational skills
- Ability to think creatively and critically
- Writing ability
- Ability to network with other professionals
- Group leadership in helping others collaborate

Let’s briefly consider each of these skills.

*Knowledge of the research process, methodology, and design:* These are basic to the grantsmanship process. As a novice, you do not have to be an expert in all of these areas, but as you proceed along a research trajectory, you should become more knowledgeable about each.

*Domain expertise:* By domain expertise we mean a familiarity with the research and writing in the area that you plan to investigate in your grant proposal. This comes from a thorough understanding of the literature and staying on top of the current thinking in your area.

*Knowledge of funding sources and methods to obtain funds:* This is why you are reading this book! Also, seek opportunities to attend grant-writing workshops sponsored by the NIH, professional organizations, or your institution.

*Knowledge of descriptive and/or inferential statistics:* An understanding of the basic principles of statistics will be helpful for those involved in conducting both funded research, evaluation, and education projects. Statistical knowledge is obtainable in most graduate education programs, and by working with more experienced investigators and having a statistician as part of your project team. Knowledge of basic statistical principles is helpful for developing your idea and knowing when you need to bring in more sophisticated statistical help.

*Expertise with various software packages and other analytic technologies:* It is helpful to be familiar with current and emerging technologies that can help you be more efficient in grant writing, implementing, and monitoring your project, or referencing citations for publications and grant applications. Since most agencies are now requiring electronic submissions, you will need to
become familiar with how to use packages for uploading grant materials to allow you to meet that requirement.

Organizational skills: Grantsmanship is a systematic process. It requires an organized approach to finding funding sources and putting together a competitive proposal.

Ability to think creatively and critically: In addition to being organized you will need to think creatively to match your ideas with the goals of a funding agency. Critical thinking skills are also important to any health professional. This allows you to develop appropriate research questions and the approaches to their analyses.

Writing ability: This skill is something that you should develop as you progress along the trajectory. We discuss this in more detail in Chapter 5.

Ability to network with other professionals: Again, this is something you should learn. Networking with other professionals is an important process because this is one of the ways in which you can identify potential funding ideas and, possibly, find colleagues with whom you can collaborate. We discuss the importance of this approach in Chapter 2.

Group leadership in helping others get on the same page: This is an important skill associated with developing collaborative teams. We discuss this in greater detail in Chapters 11 and 12.

Summary

In this chapter, we have discussed the core terminology of grantsmanship and the importance of developing a professional growth plan that integrates grant writing with other aspects of your professional life. Seven key take-home points have been made.

1. The essence of grantsmanship is to seek available money from a funding agency by writing a grant proposal that convinces an agency of the importance of your project idea and your ability to carry it out.
2. There is a specific language used by grant writers, and it is important to learn this language to communicate effectively with individuals in funding agencies and with colleagues.
3. To be successful in obtaining a grant, it is essential to understand the priorities of an agency.
4. Grantsmanship is a systematic process. There are well-defined and discrete steps in pursuing external funding. Each grant proposal that is written should be a stepping-stone for the next grant application.
5. Grantsmanship is an integral part of the professional career of health and human service professionals, whether in academic or practice settings.
Gaining financial support from outside agencies can advance the body of knowledge in a particular field, improve health and human service practice, or evaluate innovative services.

6. Developing a research career takes time and patience. It can be accomplished in a systematic way through a series of well-defined steps, each building on the one before.

7. There are certain skills that need to be acquired to be successful in competing for grant funds. These can be learned by reading this book, attending grant-writing workshops, joining a team led by an experienced grant writer, and through direct experience.