
Learn all the basic principles involved in initiating an academic career and building an externally funded academic research program with this practical guide. Based on the author’s extensive experience as a government funding agency director and successful academic, it provides step-by-step advice on how to identify an appropriate funding agency and program manager, how to present your research in a concise and effective manner, and, ultimately, how to obtain your first research grant. It explains the faculty recruitment process in detail and outlines the key timelines associated with being on the tenure track. Providing a unique insight into research funding agency operation and expectations, this is the “go to” guide for new faculty members in engineering, the sciences, and mathematics looking to gain a head start in their academic careers.

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To my family, Diane, Heather, and Robin, for their continuing encouragement and support.
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>xiii</td>
</tr>
<tr>
<td>1 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2 A Brief History of Research Funding in the United States</td>
<td>9</td>
</tr>
<tr>
<td>2.1 US Government Support for Academic Research</td>
<td>11</td>
</tr>
<tr>
<td>2.2 Industrial Support for Academic Research</td>
<td>21</td>
</tr>
<tr>
<td>2.3 What We’ve Learned</td>
<td>23</td>
</tr>
<tr>
<td>3 The Academic Recruitment Process: Position Announcement through Performance Reviews</td>
<td>25</td>
</tr>
<tr>
<td>3.1 The Academic Recruitment Process</td>
<td>26</td>
</tr>
<tr>
<td>3.2 During the Interview and After Being Offered a Position</td>
<td>32</td>
</tr>
<tr>
<td>3.3 Performance Reviews</td>
<td>36</td>
</tr>
<tr>
<td>3.4 Permanent Tenure</td>
<td>41</td>
</tr>
<tr>
<td>3.5 The Probationary Academic Review Process</td>
<td>43</td>
</tr>
<tr>
<td>3.6 The Start-Up Package</td>
<td>48</td>
</tr>
<tr>
<td>3.6.1 Salary</td>
<td>50</td>
</tr>
<tr>
<td>3.6.2 Travel</td>
<td>55</td>
</tr>
<tr>
<td>3.6.3 Student Tuition and Stipend Support</td>
<td>61</td>
</tr>
<tr>
<td>3.6.4 Access to Laboratory and Computing Facilities</td>
<td>63</td>
</tr>
<tr>
<td>3.6.5 Temporary Reduction in Academic Duties</td>
<td>65</td>
</tr>
<tr>
<td>3.6.6 External Consulting for Pay</td>
<td>68</td>
</tr>
<tr>
<td>3.6.7 Professional Development</td>
<td>69</td>
</tr>
<tr>
<td>3.6.8 Dual Career Opportunities</td>
<td>70</td>
</tr>
<tr>
<td>3.7 What We’ve Learned</td>
<td>71</td>
</tr>
</tbody>
</table>

vii
viii CONTENTS

4 Getting Started and Marketing Your Research 72
  4.1 The Professor as an Entrepreneur 74
  4.2 Getting Started 76
  4.3 Consulting and the Relationship to Research Program Development 79
  4.4 University Mentoring 81
  4.5 Know Yourself 83
  4.6 Your Research Area 85
  4.7 Your Research Area within Your Department 88
  4.8 When Should I Change My Research Area? 90
  4.9 Self-Evaluation and Projecting Confidence 95
  4.10 Group Research Activities versus Single Principal Investigators 98
  4.11 Success-Breeds-Success 100
    4.11.1 Funding Agency Program Director Visits 101
    4.11.2 Maintaining Communication with Program Managers and Program Directors 103
  4.12 What We’ve Learned 106

5 Know Where the Money Is 107
  5.1 Basic Principles for US Government Research Funding 108
    5.1.1 Broad Agency Announcement (BAA) 116
    5.1.2 Other Research Opportunity Announcement Mechanisms 118
    5.1.3 Contracts 120
    5.1.4 Grants 121
    5.1.5 Cooperative Agreements 122
    5.1.6 Other Transactions 123
  5.2 Where Do I Find the Appropriate Funding Agency for My Research? 124
    5.2.1 Agency Websites 124
    5.2.2 Grants.gov 125
  5.3 Other Research Funding Sources 127
  5.4 Research Funding Background and Trends 130
CONTENTS ix

5.5 What Time of the Year Should I Submit My Proposal? 141
5.6 What We’ve Learned 144

6 Making Contact and Communicating with Program Managers and Program Directors 145
   6.1 The Need to Personally Communicate with Program Managers and Program Directors 145
   6.2 Program Managers and Program Directors 148
      6.2.1 The Program Manager Evaluation Process 149
   6.3 Funding Agencies and Organizations 152
      6.3.1 The National Institutes of Health (NIH) 152
      6.3.2 The National Science Foundation (NSF) 154
      6.3.3 The US Department of Defense (DOD) 155
      6.3.4 The Department of Energy (DOE) 159
      6.3.5 The National Aeronautical and Space Administration (NASA) 160
   6.4 How Do I Identify and Make Contact with a Program Manager or Program Director Appropriate for my Research Interests? 162
      6.4.1 White Papers 172
      6.4.2 Year-End Money 174
   6.5 Proposal Evaluation Considerations 177
   6.6 Research Grants Basics: Standard Grants, Follow-Up Grants, and Incremental Funding 181
      6.6.1 The US Government Research Budget Process 183
      6.6.2 University Policy Regarding Research Grants and Continuing Resolutions 185
   6.7 Research Funds Management by Program Managers and Program Directors 186
   6.8 Professional Networking 188
   6.9 What We’ve Learned 191
x CONTENTS

7 The Proposal 192

7.1 Some General Comments From an Experienced Proposal Reviewer 195

7.2 Who are Proposal Reviewers and How Does the Proposal Review Process Function? 197

7.2.1 The NSF Proposal Review Panel Procedure 199

7.2.2 Mission Agency Proposal Review Process and Panels 206

7.3 How Experienced Reviewers Read Proposals 207

7.4 Basic Principles for Preparing a Research Proposal 210

7.4.1 Principle 1: Know Your Subject 211

7.4.2 Principle 2: Not All Proposals are the Same – Learn to Write Your Proposal for the Funding Agency and Their Reviewers 212

7.4.3 Principle 3: Read the Call for Proposals! 215

7.4.4 Principle 4: Make Sure Your Proposal is Not Summarily Rejected 219

7.5 The Basic Proposal 222

7.5.1 The Title or Cover Page 223

7.5.2 Abstract, Executive Summary, or Project Summary 224

7.5.3 Table of Contents 227

7.5.4 The Project Narrative, Project Description, or Statement of Work (SOW) 227

7.5.5 References and Literature Review 232

7.5.6 Personnel Biographies 233

7.5.7 Budget and Budget Justification 234

7.5.8 Current and Pending Support 237

7.5.9 Facilities, Equipment, and Other Resources 238

7.6 The NSF CAREER Proposal 239

7.6.1 Differences Between an NSF CAREER Proposal and a Regular Research Grant Proposal 240

7.6.2 Eligibility 242
CONTENTS xi

7.6.3 The Project Summary 243
7.6.4 The CAREER Grant Proposal Project Description 243
7.6.5 Additional Supplementary Documentation 246
7.6.6 The PECASE Award 248
7.6.7 Common Mistakes 249
7.7 What to do if Your Proposal is Declined 250
7.8 What We’ve Learned 253

8 Cautions and Other Concerns 254
  8.1 Disclosure Requirements 254
  8.2 Summer Salary Limitations and Time Commitments 257
  8.3 Export Control Laws and Academic Research 260
    8.3.1 ITAR (International Traffic in Arms Regulations) 261
    8.3.2 EAR (Export Administration Regulations) 263
    8.3.3 NSDD 189 and Fundamental Research Exclusions 264
  8.4 International Travel 267
  8.4 What We’ve Learned 268

9 You’re on Your Way 270

Index 274
Preface

The material presented in this book is directed towards helping someone either searching for, or just embarking upon, an academic faculty position, to learn how to go about establishing an externally funded research program. The search for research funding is a never-ending struggle, and one that is becoming increasingly competitive. Getting a head start by learning how research grant funding agencies operate, and learning what program officers look for in a new researcher, can facilitate the process. This book is dedicated to providing this information. However, before proceeding, and to give you some confidence that you are not wasting your time by reading this book, let me say a few words about myself, specifically my credentials regarding my knowledge relative to establishing and funding an academic research program, and why I am writing this book.

First, I have had an extensive and diverse career, and have worked over the past four decades in a variety of industrial, government, and academic organizations. Basically, I have experience, and have served on all sides of the academic and research program enterprise, extending from starting my own academic career, as well as serving as an academic department head involved in recruiting and mentoring young faculty, to initiating and managing funded research programs as a US government research program manager and director. I served for about eight years as a Program Manager in the Electronics Division of the US Army Research Office, where I was actively engaged in both the identification and definition of new research areas, and the establishment and management of directed research program funding opportunities. I also served for over three years as the Director of Research for the US Department of Defense (DOD), with management oversight responsibility for the entire basic research program that is...
sponsored and funded by DOD. Also, I served for four years as Director of the Electrical, Communications, and Cyber Systems Division in the Engineering Directorate of the National Science Foundation.

Altogether, I have about 15 years’ experience working in various program director and research program management positions within US government research funding agencies. In my US government research manager and director role I worked within US government research funding agencies, collaborated with program managers in numerous and various US government funding agencies, and helped to identify and define research areas for future sponsored research, and then helped to define specific topics for directed research program funding. I have been, and am currently, also heavily involved in the review and evaluation of research programs, both external and internal to US government agencies. As a US government program manager, I initiated and managed academic research programs to address specific research topics that were directed to nationally identified research problems. In this role I have had significant experience working with both young and experienced faculty members working on academic research projects. Over my career I have personally read and evaluated a very large number of research proposals, numbering in the high hundreds and approaching 1000, and I am well aware of the elements of a good research proposal, as well as pitfalls that can result in a poorly written proposal that has little chance of obtaining funding. Over time, and with experience, I have learned how to read a research proposal and extract the significant attributes in a very efficient manner and with minimal time expenditure. An excellent research proposal should be written very concisely and effectively so that the reader can quickly and efficiently learn what is being proposed.

Second, I am fundamentally an academic engineer, although I have worked in industry, major universities, and the US government, with a career extending over essentially four decades, heavily focused upon research. I have built a successful academic research program as a university faculty member, and have been successful in obtaining...
research funding adequate to support a significant number of graduate students and my research activities. In this effort I have probably written close to 100 research proposals, with a high rate of success in obtaining funding. I have, to date, served as mentor and faculty advisor to a significant number of PhD and MS students. All have been funded from Research Assistantships from research funds that I have obtained from US government funding agencies and industrial research and development (R&D) grants. In addition, I have served as the Head of the Electrical and Computer Engineering Departments at three major research-oriented universities: North Carolina State University, Virginia Tech, and Case Western Reserve University. In this academic department management role, I have been responsible for recruiting new faculty members, and for helping them to establish research programs. In addition, I have been responsible for academic research laboratory facilities, and associated support issues. I have also had overall responsibility for recruitment of new graduate students. I am well aware of the issues that new faculty members face, and am familiar with providing advice and guidance to them.

Third, my reasons for writing this book are essentially explained above. I have gained much experience and knowledge in my career relative to building an academic research program. As stated, I have served virtually on all sides of the academic research program enterprise. I know how US government research funding agencies identify and define new research program areas, and I know what US government research funding agencies are looking for in new researchers. Also, I understand the issues associated with a new faculty member’s expectations and responsibilities as they initiate an externally funded research program. My insight into the factors and problems that a new faculty member will encounter is probably unique, owing to my extensive experience in both the world of the US government funding agencies, as well as my personal experience in the academic research world. My goal is to convey as much of this information as possible to new and interested faculty members, and to help them to initiate their own research programs with as much efficiency and minimal effort as
possible. I want to help new faculty members understand how the research grant funding system functions, and how they can optimize their interactions and participation. Hopefully, this information will facilitate the transition into an academic position. This is my main reason for writing this book.