Get Funded: An Insider's Guide to Building An Academic Research Program

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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University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

4843/24, 2nd Floor, Ansari Road, Daryaganj, Delhi – 110002, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781107068322

First published 2017

Printed in the United Kingdom by Clays, St Ives plc

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data
Names: Trew, Robert J., author.
Title: Get funded : an insider's guide to building an academic research program / Robert J. Trew.
Description: New York : Cambridge University Press, 2017.
Identifiers: LCCN 2016057390| ISBN 9781107068322 (hardback) | ISBN 9781107657199 (paperback)
Subjects: LCSH: Proposal writing for grants – United States. | Federal aid to higher education – United States. | Research grants – United States.
Classification: LCC HG177.5.U6 T74 2017 | DDC 001.4068/1–dc23
LC record available at https://lccn.loc.gov/2016057390

ISBN 978-1-107-06832-2 Hardback
ISBN 978-1-107-65719-9 Paperback

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

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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.