



# Mentoring Handbook

Second Edition

Copyright 2008 The American Heart Association  
All rights reserved under International and Pan-American Copyright Conventions.

Published by the American Heart Association, Inc.  
Manufactured in the United States of America

Distributed by the American Heart Association National Center, Dallas, Texas.  
[www.americanheart.org](http://www.americanheart.org)

Second Edition, November 2008



# Mentoring Handbook

Second Edition

Foreword

---



# FOREWORD

Most high schools have well-organized advisory systems whose major goal is to match the interests and abilities of students with appropriate colleges to which they can be accepted. Colleges have excellent systems in place to assist premedical students in selecting the medical school that best fits their needs. Similarly, medical schools pay considerable attention to assisting their senior students to match with residency training programs of high quality. Thus, faculty and advisory systems of our high schools, colleges, and medical schools devote considerable effort to counseling students and guiding them as they ascend the educational ladder. While this advisory system is of great importance to students, most of the advice offered is formulaic and greatly aided by available computer programs. For the important minority of residents who aim to enter academic medicine, selecting and gaining acceptance by a research laboratory and subsequently obtaining a junior faculty position is infinitely more complex, and, in my opinion, of even greater importance to their future professional lives than the earlier steps.

For centuries, research training was obtained in the apprentice mode, and the laboratory director or senior investigator was not only the trainee's principal research supervisor but also largely controlled the career path of the aspiring academic physician. Because of the complexities in the relationship between research supervisors and trainees, the supervisor frequently is not the best person to offer the most objective advice to trainees during this critical period. A knowledgeable third party is often better suited to counsel trainees on whether a specific laboratory or other research

Foreword

---

environment provides the optimal experience, including a good mix of supervision and independence. When it comes to a junior faculty appointment, the right balance must be struck between time available for research on the one hand and responsibilities for clinical care and teaching on the other. Again, a third party may be in a better position to give advice on this matter than the division chief who is making the offer.

To provide advice regarding these and a host of other important issues, a relatively new relationship between faculty and trainee—the mentor and mentee relationship—has developed during the past two or three decades. Although the details vary considerably by institution, department, and, most importantly, the personal qualities of the mentor and mentee, a common thread runs through these interactions. Their principal goal is to assist the mentee in navigating the often complex waters of academic medicine. The mentor should be knowledgeable about the mentee's field and serve as a senior friend who listens carefully, asks critical questions, and offers advice when requested. Once a high level of trust between mentor and mentee is established, personal nonacademic issues that have an important influence on career decisions can also be freely discussed. An optimal mentor-mentee relationship not only aids the latter but can be one of the most gratifying experiences for the former.

The American Heart Association has had the wisdom to include the development of the next generation of scientific and clinical leaders among its most important missions. To achieve this laudable goal, the association recognizes the critical importance of establishing optimal mentor-mentee relationships. This handbook is a worthy effort to assist in achieving this important goal.

Eugene Braunwald, MD, FAHA  
First recipient of the AHA Mentoring Award



Introduction

---





# INTRODUCTION

The American Heart Association (AHA) is highly aware of the importance of fostering the development of early career investigators and clinicians in the fields of cardiovascular disease and stroke. Not only does this important group of people represent the future of cardiovascular science, but they are also the future leadership of the AHA.

For that reason, the AHA has consistently offered a variety of educational and mentoring programs, research and travel awards, and research grants designed specifically for early career clinicians and investigators. Even so, recognizing the critical importance of good mentor-mentee relationships to individuals early in their careers and to those in the sciences and medicine in particular, the AHA Early Career Investigator/Clinician Task Force has identified mentoring as a key area for improvement for the organization.

Mentoring requires effort and collaboration. Because of the importance of mentoring, the Early Career Investigator/Clinician Task Force convened a workshop on this topic attended by key volunteers and staff. The discussion at the workshop drew on strengths and experiences within the AHA derived from the annual Epidemiology Ten-Day Seminar, the Biennial Hypertension Summer School, and other events. The first edition of this handbook was the outcome of the workshop and focused on general and specific aspects of the mentor-mentee relationship and concerns for clinical science, basic science, population sciences, and women and minorities working in the areas of cardiovascular disease and stroke.

## Introduction

---

This second edition of the handbook was edited by Drs. Joseph Alpert and Michael Bettmann. It includes several new chapters, including one written by Yoel Korenfeld-Kaplan, MD, Francisco Lopez-Jimenez, MD, Fatima H. Sert-Kuniyoshi, PhD, and Virend K. Somers, MD, PhD, FAHA, on Foreign Medical School Graduates. Debra K. Moser, DNSc, RN, FAHA, FAAN, wrote a new chapter on Registered Nurses and Allied Health Professionals. Joanne S. Ingwall, PhD, FAHA, wrote a new chapter on Dysfunctional Relationships in Mentoring. Dr. Manuel Reyes, from the AHA Minority Mentoring Program, added valuable insight through his review of the second edition.

This handbook contains useful information for mentors and mentees and provides general career advice and tips for both. We hope this handbook will assist future generations of AHA members in their career development.

As Judah Folkman, speaker at one of the first Early Career Investigator Workshops at the AHA Scientific Sessions, observed, involvement in a mentor-mentee relationship provides the rare opportunity for both parties to give something of themselves, while losing nothing and simultaneously gaining as a person.

Participants in the workshop that produced the first edition of this book included the following.

**Michael A. Bettmann, MD, FAHA**

*Workshop Chair, American Heart Association Early Career Investigator/Clinician Task Force  
Professor and Vice Chair for Interventional Services,  
Department of Radiology  
Wake Forest University Baptist Medical Center*

**Joseph S. Alpert, MD, FAHA**

*Editor-in-Chief, American Journal of Medicine  
Professor of Medicine, University of Arizona College of Medicine*

**C. William Balke, MD, FAHA**

*Associate Provost for Clinical and Translational Science  
Senior Associate Dean for Research for the College of Medicine  
Director for the Center for Clinical and Translational Science  
University of Kentucky Medical Center*

**Robert O. Bonow, MD, FAHA**

*Chief, Division of Cardiology and Professor of Medicine  
Northwestern University*

**Michael T. Chin, MD, PhD, FAHA**

*Assistant Professor of Medicine  
Vascular Medicine Research, Cardiovascular Division  
Brigham and Women's Hospital and Harvard Medical School*

**Fernando Costa, MD, FAHA**

*Medical Scientific Director  
Medical & Scientific Affairs, Diabetes  
Novo Nordisk, Inc.*

**Stephen R. Daniels, MD, PhD, FAHA**

*Professor and Associate Chairman for the Department of  
Pediatrics and Professor of Environmental Health  
University of Cincinnati College of Medicine  
Cincinnati Children's Hospital Medical Center*

**Rosalind Fabunmi, PhD**

*Health Outcomes Scientist  
Medical Affairs, Amylin Pharmaceuticals, Inc.*

**David Faxon, MD, FAHA**

*Vice Chair of Medicine for Integrated Clinical Services for  
the Department of Medicine  
Brigham and Women's Hospital and Harvard Medical School*

**Timothy J. Gardner, MD, FAHA**

*Clinical Professor of Surgery, University of Pennsylvania  
Medical Director, The Center for Heart and Vascular Health  
Christiana Care Health System*

Introduction

---

**David C. Goff, Jr, MD, PhD, FAHA**

*Professor of Public Health Sciences and Internal Medicine  
Professor and Chair of the Department of Epidemiology and  
Prevention for the Division of Public Health Sciences  
Wake Forest University School of Medicine*

**Yuling Hong, MD, PhD, FAHA**

*Director, Epidemiology and Research Services  
American Heart Association*

**Joanne S. Ingwall, PhD, FAHA**

*Professor of Medicine (Physiology)  
Vice-Chair of Medicine for Faculty Development  
Consultant for the PhD Initiative of the Partners Healthcare System  
Brigham and Women's Hospital and Harvard Medical School*

**Susan T. Laing, MD, MS**

*Associate Professor, Division of Cardiology  
University of Texas, Houston*

**Beth Patterson**

*Senior Manager, Deloitte & Touche*

**Rose Marie Robertson, MD, FAHA**

*Chief Science Officer  
American Heart Association*

**Kathryn A. Taubert, PhD, FAHA**

*Senior Scientist/Special Assistant to Chief Science Officer  
American Heart Association*

**R. Clinton Webb, PhD, FAHA**

*Robert B. Greenblatt Professor and Chairperson of the  
Department of Physiology  
Medical College of Georgia*

**Karol Watson, MD, PhD, FAHA**

*Assistant Professor of Medicine  
UCLA School of Medicine*

This second edition included chapters from:

**Cheryl A. M. Anderson, PhD, MPH**

*Assistant Professor  
Johns Hopkins University*

**Eugene Braunwald, MD, FAHA**

*Chairman, TIMI Study Group  
Brigham and Women's Hospital*

**Joanne S. Ingwall, PhD, FAHA**

*Professor of Medicine (Physiology)  
Vice-Chair of Medicine for Faculty Development  
Consultant for the PhD Initiative of the Partners Healthcare System  
Brigham and Women's Hospital and Harvard Medical School*

**Yoel Korenfeld-Kaplan, MD**

*Research Fellow  
Cardiovascular Diseases  
Mayo Clinic-Rochester*

**Francisco Lopez-Jimenez, MD**

*Associate Professor of Medicine  
College of Medicine  
Mayo Clinic*

**Debra K. Moser, DNSc, RN, FAHA, FAAN**

*Professor and Gill Endowed Chair  
Editor, *The Journal of Cardiovascular Nursing*  
Co-Director, RICH Heart Program  
University of Kentucky, College of Nursing*

**Fatima H. Sert-Kuniyoshi, PhD**

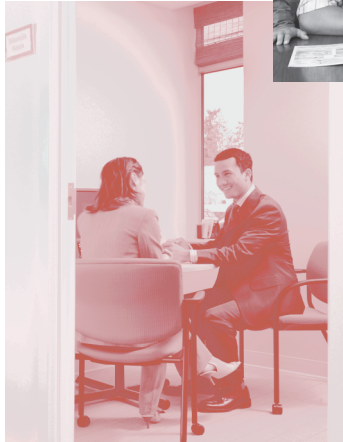
*Research Fellow  
Mayo Clinic, Cardiovascular Disease Division*

**Virend K. Somers, MD, PhD, FAHA**

*Professor of Medicine  
College of Medicine  
Mayo Clinic*

Table of Contents

---



# TABLE OF CONTENTS

<b>Foreword by Eugene Braunwald, MD, FAHA</b> . . . . .	i
<b>Introduction</b> . . . . .	v
<b>Chapter 1: THE MENTORING RELATIONSHIP</b> . . . . .	1
The Mentor-Mentee Relationship	
The Mentee	
The Mentor	
Mentoring Environments and Resources	
Summary	
Mentoring Web Sites	
<b>Chapter 2: MENTORING CONCERNS IN BASIC CARDIOVASCULAR SCIENCE</b> . . . . .	21
The Basic Scientist in Cardiovascular Biology: A Definition	
Special Concerns for Early Career Investigators in Basic Science	
Pitfalls for the Early Career Investigator in Basic Science	
Special Concerns for Mentors in Basic Science	
Special Pitfalls for Mentors in Basic Science	
Special Concerns Regarding the Role of the Parent Institution and the Early Career Investigator's Career Development	
Summary	
<b>Chapter 3: MENTORING CONCERNS IN CLINICAL CARDIOVASCULAR SCIENCE</b> . . . . .	47
The Mentee	
The Mentor	
The Institution and Its Environment	
Summary	
<b>Chapter 4: MENTORING CONCERNS IN CARDIOVASCULAR POPULATION HEALTH SCIENCES</b> . . . . .	67
Mentor-Mentee Considerations	
Challenges and Opportunities for Training in Cardiovascular Population Health Sciences	
Challenges and Opportunities for Career Entry in Cardiovascular Population Health Sciences	

Table of Contents

---

Challenges and Opportunities for Career Advancement in  
Cardiovascular Population Health Science  
Challenges and Opportunities for Leadership in Cardiovascular  
Population Health Science  
Summary  
Mentoring Resources for Cardiovascular Population  
Health Sciences

**Chapter 5: SPECIAL CONSIDERATIONS FOR MENTORING  
WOMEN, UNDERREPRESENTED MINORITIES, AND  
THOSE WHO HAVE TRAINED ABROAD . . . . . 87**

The Magnitude of the Problem  
The American Heart Association’s Commitment to Diversity  
Importance of Establishing a Mentoring Relationship  
Recommendations for Early Career Women  
Recommendations for Early Career Underrepresented Minorities  
Recommendations for Early Career Physicians and Scientists  
Who Have Trained Abroad  
Role of the Mentor  
Summary

**Chapter 6: FOREIGN MEDICAL SCHOOL  
GRADUATES . . . . . 111**

Recommendations for Prospective Mentors of Foreign Medical  
School Graduates  
Recommendations for Foreign Medical School Graduates  
Clinical Training for Foreign Medical School Graduates  
Nonimmigrant and Immigrant Visas  
Language Barriers  
Arriving in the United States  
Cultural Issues  
Measuring the Trainee’s Success  
Making a Career in Research: Future Plans  
Turning a Disadvantage into an Academic Strength



**Chapter 7: MENTORING AND BEING MENTORED:  
REGISTERED NURSES AND ALLIED HEALTH  
PROFESSIONALS . . . . . 129**

- Benefits of the Successful Mentor-Mentee Relationship
- Overcoming Challenges to a Successful Mentor-Mentee Relationship
- Being the Perfect Mentor
- How to Be a Successful Mentee
- Case Study

**Chapter 8: DYSFUNCTIONAL MENTORING  
RELATIONSHIPS . . . . . 143**

- Separating Mentoring From Being the “Boss”
- Dysfunctional Preceptor-Student Relationships: When Goals Are *Not* Aligned
- Dysfunctional Mentoring

**Appendix: Resources . . . . . 153**

- American Heart Association
- Mentoring Web Sites
- Other Funding Resources

Chapter One: The Mentoring Relationship

---

*"I owe much of my success to the patient and friendly mentoring that I received over the years."*

—Joseph S. Alpert, MD, FAHA



# THE MENTORING RELATIONSHIP

**Joseph S. Alpert, MD, FAHA**

**Timothy J. Gardner, MD, FAHA**

**Susan T. Laing, MD, MS**

A mentoring relationship is often seen as an essential step for achieving success in politics, business, and academia. In her best-selling book, *Passages*,<sup>1</sup> Gail Sheehy observes that “all the studies agree that the presence or absence of such a figure [ie, a mentor] has enormous impact on development [of the mentee]...[and] offers a critical leg up.” The studies reported in *Passages* document the developmental handicap that a junior professional incurs if a mentored relationship is lacking. Indeed, most successful people in different areas of human endeavor can point to an individual or mentor who was crucial to their career growth and success. Unfortunately, most early career clinicians and investigators are not aware of the value of a mentoring relationship.

This chapter will explain the essence of the mentor-mentee relationship and will conclude with some simple rules that may help to foster a successful mentored relationship. Our hope is that the junior professional will be encouraged either to seek a mentor or to reexamine her or his existing mentoring relationships.

## The Mentor-Mentee Relationship

The mentoring relationship usually develops between an older professional, the *mentor*, and a younger colleague, the *mentee* (protégé). In Homer's epic poem, *The Odyssey*, Mentor was a trusted friend of Odysseus. When the latter was about to set out for the Trojan War, he entrusted Mentor with the care of his house and the education of his beloved son, Telemachus. From this epic poem came the Greek use of the word "mentor" to refer to a wise and faithful counselor or monitor. Today, we think of a mentor as someone who is both a counselor and a teacher and who instructs, admonishes, and assists a junior colleague in attaining success. Inherent in the background and structure of the word "mentor" are the concepts of wise counsel, mutual respect, responsibility, instruction, discipline, and guidance.

What are the characteristics of the mentor-mentee relationship, and how does one distinguish it from simple career counseling, guidance, or instruction? The answer is simple in concept but complex in psychological overtones. Advising or counseling typically involves supplying information in a neutral fashion. Although the advice or information is given in a friendly manner, a bond does not usually develop between the supplier of the information and the recipient. Mentoring, on the other hand, implies some form of psychological bonding between the mentor and the mentee. The mentor develops a genuine interest in the mentee and feels rewarded with each success that the mentee acquires, which implies an emotional investment on the part of the mentor. The mentor not only supplies information and gives advice but also offers critical support for the mentee during trying periods.

The mentor-mentee relationship is, in most instances, personal and almost familial in nature. The relationship is, however, most successful when it does *not* recapitulate the parent-child connection. Instead, the relationship should resemble that of an older sibling or friend to a younger sibling or friend to avoid the problems inherent in a parent-child

connection. The relationship must be based on mutual trust, respect, and the expectation of hard work and dedication on the part of the mentee and a commitment to furthering the career of the mentee on the part of the mentor.

Traditionally, the younger colleague has a single mentor. This is not always the case, however, and many successful people report that they have had several mentors who assisted them in their careers, either serially or simultaneously. In the simultaneous mentoring (mosaic) model, different mentors help the mentee with various aspects of his or her career and even aspects of his or her personal and social life. For example, one mentor might aid the mentee in understanding the political climate of the institution or a particular organization, a second mentor might help with the purely professional aspects of the mentee's career, and a third might sponsor the mentee's introduction into purely social activities with professional colleagues. Just as one can draw inspiration from several role models, the mentee can have several mentors interested in his or her career to provide counsel.

### **Does Everyone Need a Mentor?**

Although it is possible to forge a successful career without a formally recognized mentor, most successful people will point to a mentor or role model who has played a significant role in making their achievements possible. Science and medicine are knowledge-based professions that require continual training and practice, and a mentor can play a pivotal role in making that process go more smoothly and quickly. Even early career clinicians and investigators choosing a career in private practice or industry are now looking into groups with senior members who can serve as mentors and help them navigate each phase of their careers with better insight and preparation.

## How Does One Find a Mentor?

No hard and fast rules exist for finding a mentor. Often, the mentor-mentee relationship begins as a boss-employee or teacher-student connection, which then evolves over time into a mentoring relationship. This relationship often develops naturally between a senior faculty member and a junior faculty member or trainee with the same research or clinical interests. Sometimes, a trainee or young faculty member is assigned a mentor by the hiring institution, which profits immensely when junior employees develop their professional skills more rapidly than they would on their own. Hence, structured mentoring programs are being developed in many institutions and organizations so that trainees can benefit from the knowledge, experience, and support of formally assigned mentors. Some universities even require that such a relationship be spelled out before the trainee or junior faculty member is hired.

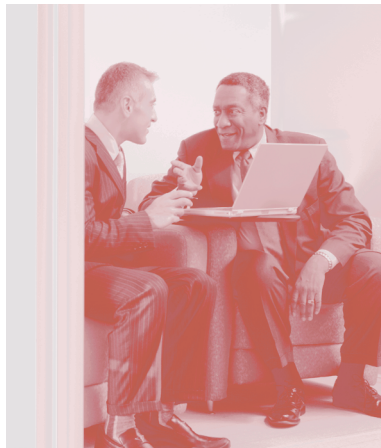
In other cases, however, the trainee or young faculty member may take the initiative in finding a mentor on his or her own. The trainee may hear about a successful mentor from friends and colleagues, approach the individual for advice, and eventually, if it seems like a good fit, ask that individual to become a mentor. The trainee should look for someone whom they trust, like, and respect who will also be reliably accessible when needed. The best mentor may not be the most prominent or the most published senior faculty member or even a midcareer faculty member working toward advancement—primarily because such persons are not likely to have the necessary time. Ideally, a mentor should also be nearby.

Although it helps to have things in common with their mentor, mentees should not limit themselves by looking for someone just like them. For one thing, not enough women and minorities hold senior positions to serve as mentors for every potential mentee with similar backgrounds and experience. Instead, mentees should place greater importance on finding a mentor willing to become their advocate and help them with their research focus than on gender or ethnicity alone.

---

**What to look for in a mentor:**

- *Respected*
- *Trusted*
- *Accomplished*
- *Accessible*



## The Mentee

The mentor-mentee relationship is driven by the mentee. It is only successful insofar as the mentee is willing to take responsibility for and to take advantage of all that the relationship can offer. Imperative to this relationship is the mentee's ability to be proactive in delineating expectations of the relationship. A good mentor can anticipate the next step in the mentee's career, but no mentor is a mind reader. Below are ground rules inherent to the mentor-mentee relationship and tips to make the most out of the relationship.

### Recommendations for Mentees

*Know yourself.* At the start of your professional life, do some soul-searching. Understand your own personality and temperament and realize that what may make your colleagues happy may not make *you* happy. Do not head into a career path because you think it is expected of you. Reflect on what drives you and what gets you up in the morning, and then take your cue from that.

*Be open about your career goals.* Discuss your career goals, needs, and wants with your mentor, as well as any requests that may seem inappropriate or counterproductive. You need to know how to ask for what you want and when to say no.

*Respect your mentor.* A mentee is privy to the inner workings of a mentor's laboratory and may witness private moments when the mentor is most vulnerable and lets her or his guard down. Do not gossip about your mentor or your mentor's team. Remember that you are part of that team, and anything unflattering that you might say undermines your mentor's ability to help you. Show loyalty. Maintain confidentiality.

*Conduct yourself appropriately.* Although some mentor-mentee relationships develop into long-lasting friendships, the relationship is, foremost, a professional one.



*Act responsibly.* A mentor-mentee relationship is personal and symbiotic; your actions reflect positively or negatively on your mentor. Make your mentor proud that you are on her or his team.

*Come prepared.* When you meet with your mentor, remember that his or her time is limited, as is yours, so make sure that time together is well spent.

*Convey a sincere willingness to learn.* Avoid cynicism. The most difficult person to teach is one who already knows everything. Remember that you chose your mentor because he or she has more experience and wisdom than you possess at this stage in your career, and you would do well to tap into that resource.

*Be open to criticism.* Don't fold in the face of disapproval. Take criticism as a gentle nudge to keep you on the right track. Ask for feedback from your mentor to improve yourself. Ask for an evaluation process.

*Work hard.* Be fierce about your work. Develop a sense of self-worth. A successful career requires discipline and perseverance.

*Obtain the best possible training.* An institution may not be equally excellent in clinical medicine and scientific research. Depending on your goals, you may need formal training in clinical investigation or time to devote to developing skills in basic research. Position yourself for success and never stop learning.

*Develop your oral and written communication skills.* A key ingredient to a successful career is the ability to communicate your thoughts and opinions to others. Take courses if need be.

*Know your strengths and weaknesses.* This is probably the most difficult tip to internalize. Think back to when you were successful in the past and build on those experiences. Look for similar opportunities. At the same time, look at those areas in which you may not have been the most successful. Everyone can develop a skill over time, but not everyone will have a natural talent for it. Make a conscious effort to build on your strengths.

*Be flexible and innovative.* Know that plans change and roadmaps sometimes take a detour. Be adaptable, and don't be afraid to take chances with a new opportunity. Don't be afraid to set yourself up for a major discovery. However, to do so, you may need to avoid the crowds.

*Know your limits.* Understand that it is impossible to do everything and do it well. Delegate some responsibilities and realize that you may need to give up certain things. Decide what is important for your career and do it well.

*Focus, focus, focus.* Learn how to turn things off and focus on the task at hand. Manage your time wisely. Be efficient and well organized.

*Build a support system around you.* This support system includes not only your mentor but also other staff, secretaries, and nurses. They can make your life much easier. You cannot develop a successful career in isolation from others.

*Network.* Develop relationships with other faculty members within and outside your division or institution. Many research projects are no longer done in the isolation of a laboratory but in cross-disciplinary and cross-institutional settings. Therefore, interpersonal skills and the ability to work with others are valuable attributes in a mentee.

*Volunteer.* Get involved with professional organizations both locally and nationally. Make yourself visible and known to senior members not only in your specialty but also in other fields of cardiovascular medicine.

*Do your own homework.* As early as possible, understand the culture and structure of your institution. Know the career advancement options available, the criteria for promotion at your institution, and the key individuals who will make decisions regarding your career or promotion. Pick visible leadership roles within your institution.

*Develop a relationship with your chief.* Learn how to promote yourself without alienating others. Let your chief know about your successes, the grants you were recently awarded, and your latest publications. Learn the skills of self-advocacy and healthy competitiveness. Keep track of your academic accomplishments.

*Take the initiative.* Create opportunities for your mentor to help you. Ask for your mentor's help in being considered for specific opportunities that would contribute to your career success.

*Follow through on commitments.* Ensure that you deliver, and deliver well, the tasks entrusted to you. Make the most of each task. Make certain that the work you do is of the highest quality.

*Know when to end the formal mentoring relationship.* Usually this occurs naturally, when the mentee or mentor leaves the institution. However, the best scenario occurs when the mentor and mentee can maintain a relationship at the level of colleagues or friends.

*Keep a healthy perspective about your work.* Have fun and take time off. This will prevent the "burn-out" factor. A relaxed and happy mind is the most open to new ideas.

*Finally, take responsibility for your own career.* Your mentor can only point the way. You will need to make the final decisions, and the final actions are your responsibility. Although a mentor can help guide you to define your goals, ultimately, only you can define success for yourself.

## The Mentor

A mentor gives advice, counsel, and psychological support to the mentee. Compared with advising, mentoring implies a long-term relationship with advice and support that may vary as time passes. An advisor's role is usually transient and related only to a single moment in time. A mentor makes a long-term commitment to further the professional and, at times, personal development of the mentee.

The mentor must bear in mind that this relationship is critical to the professional success of the early career clinician or investigator. Therefore, a definite time commitment is required, as is persistence and careful, attentive listening and communication. Most mentor-mentee connections are highly satisfactory if the two individuals meet for an hour every week or two. Some mentees require many hours of hands-on counseling, whereas others are highly successful with less nurturing. The successful mentor recognizes those individuals who need more attention and supplies the time and effort to guide the mentee as required.

The mentor must respect, support, and teach the mentee. She or he must observe and understand the mentee both professionally and personally. The *good* mentor is aware of the mentee's long-term career and personal goals and assists the mentee in achieving these goals. The good mentor also gives timely, appropriate, and useful feedback on skills, successes, and failures. Admonishment is delivered in a way that is not psychologically damaging to the junior colleague. Positive qualities in a good mentor include trustworthiness, honesty, and a healthy dose of emotional intelligence or empathy. A mentor also helps to sponsor the mentee in the professional world and assists in problem solving; the mentor may even help the mentee to find employment. Finally, the mentor should be a professional and personal role model for the mentee.

---

**Good mentors:**

- *Respect the mentee*
  - *Teach the mentee*
  - *Provide useful feedback*
  - *Make themselves accessible*
- 

One of the best summaries of the many roles played by a mentor comes from Morris Zelditch,<sup>2</sup> who characterized the relationship as follows: “Mentors are advisors, people with career experience willing to share their knowledge; supporters, people who give emotional and moral encouragement; tutors, people who give specific feedback on one’s performance; masters, in the sense of employers to whom one is apprenticed; sponsors, sources of information about and aid in obtaining opportunities; and models of identity, of the kind of person one should be....”

The *bad* mentor (sometimes referred to as a *tormentor*) misinterprets the mentee’s potential, fails to define appropriate professional and personal limits, and may even take credit for the mentee’s work. Other qualities of the bad mentor include inappropriate praise or criticism, disregard for the mentee’s opinions, and other types of unethical and, rarely, immoral behavior. Major negative qualities include exploitation, secrecy, and dishonesty.



## Recommendations for Mentors

- Respect your mentee; do not infantilize him or her. Maintain the same confidential relationship that you would want if the roles were reversed.
- Listen to your mentee's opinions. Often imaginative, creative ideas come from junior colleagues.
- Act responsibly; remember that your actions could destroy your mentee's academic career.
- Maintain cultural and gender sensitivity for your mentee.
- Strenuously avoid open or covert sexual interactions with your mentee.
- Review the long-term goals of your mentee and help him or her to develop career plans appropriate for his or her goals and skills. Plan to review those goals on a scheduled basis.
- Help protect your mentee from excessive institutional demands, such as participation in an excessive number of committees.
- Provide your mentee with advice about career-enhancing and career-killing initiatives.
- Help your mentee to navigate the shoals of institutional and professional politics.
- Inspire your mentee to overcome negative aspects of the work environment.
- Help your mentee to develop effective oral and written communication skills.
- Challenge your mentee to maintain professional and personal flexibility and fluidity.

- Inspire and challenge your mentee to become the very best professional that she or he can be.
- Assist your mentee in finding appropriate professional employment.
- Finally, rejoice in the successes of your mentee. These triumphs can only enhance your own standing.

### **Why Should One Consider Being a Mentor?**

Besides the personal satisfaction that derives from such a close personal relationship, mentors obtain a number of professional benefits. Mentees often become lifelong friends and colleagues. Good mentees are constantly challenging their mentors, thereby enabling both mentor and mentee to be continuously updated on new developments in the field. The best mentors also attract the best mentees, who help to further the standing of their mentors. As mentees go out into the world, they expand the professional network of their mentors. Finally, mentees remember their mentors, thereby keeping their memory alive even after their mentors have retired or died.

### **How Should the Mentored Relationship End?**

Firm rules are difficult to apply here. Some of these relationships end gradually as the mentee achieves success and independence (eg, the mentee gains independent grant support or moves away from the institution). Other relationships continue over the mentor's and mentee's entire academic careers as both individuals move up the academic ladder. Often, the mentor fosters the promotion of the mentee to higher positions within the academic establishment, and the relationship gradually attenuates. What is important is to maintain open communication about the direction of the relationship.

Occasionally, the mentoring relationship does not work or has ceased to become of value. Again, open and honest dialogue between the mentor and mentee is appropriate. Attempt to seek solutions to any problems, and use formal mediation if the problems are particularly difficult to resolve. Outside counseling sometimes can assist in improving a mentor-mentee relationship that is not working.

Keep written documentation of each discussion: problems discussed, problems resolved, and problems not resolved. Try to avoid confrontation; negotiation is always a better strategy. Arrive at a plan for remediation or discontinuance of the relationship. If the relationship is discontinued, try to part as friends. Get advice from the human resources department or even legal advice if necessary.

## Mentoring Environments and Resources

### Mentoring Environments

The specific circumstances in which a mentoring relationship might exist and the resources optimally needed to support such a relationship vary considerably. In the academic world, many formal programs are established at universities or medical schools for mentoring young faculty members. Most universities specifically address the need for effective mentoring and require formal mentoring of new faculty by senior faculty members. In these settings, the mentoring relationship is organized to ensure the successful launching of a faculty career and support effective career development.

A worthwhile mentoring relationship also can develop between a member of the teaching faculty and a medical resident or clinical fellow. This relationship may not be a formalized mentored relationship, but the trainee does need sustained, supportive, and perceptive mentoring as he or she defines his or her career aspirations. With diverse lecture and practical learning experiences, the trainee may have only episodic exposure to individual faculty members. Hence, it may be ideal for a trainee to initiate a long-term mentoring



relationship early in training that could be sustained throughout the mentee's career. However, such individual mentored relationships are hard to come by, and trainees more commonly call upon a variety of faculty members for ad hoc or goal-specific mentoring advice.

The need for effective mentoring, however, is not limited to the traditional academic setting. Young physicians initiating their own clinical practices can be mentored effectively by colleagues and experienced associates. The obvious benefits of junior associate mentoring have contributed to the evolution of multiperson and even multispecialty professional groups. Early career clinicians and investigators entering a new professional environment should take full advantage of the professional and personal insights available from other, more senior associates in a successful and well-functioning clinical practice.

## Resources

The American Heart Association (AHA) and other cardiovascular specialty groups have established a number of specific mentoring opportunities aimed primarily at early career clinicians and investigators. The AHA sponsors an Early Career Development Program immediately preceding the annual Scientific Sessions meeting. This program is directed at early career clinicians and investigators and is intended to include all of the diverse medical specialty groups that come under the umbrella of the AHA. Representative sessions include "How to Find and Work with a Mentor," "How to Advance One's Career in Academic Research (Basic, Clinical, or Population-Oriented)," "How to Enhance One's Likelihood of Being Funded," and "How to Balance the Demands of Surgical Practice and One's Personal Life." The AHA also hosts two Cerebrovascular Fellow and Early Career Development Luncheons at the annual International Stroke Conference. These two informal sessions provide a platform for early career investigators and clinicians to network and share ideas, build relationships with senior investigators and other science mentors, develop career paths, and receive

planning guidance from Stroke Council members. The AHA Research Committee also sponsors a symposium in conjunction with the Early Career Development Program at Scientific Sessions that targets National Research Program awardees in the final year of their Fellow-to-Faculty Transition Award, Scientist Development Grant, and/or Established Investigator Award. Additionally, several councils, such as Epidemiology and Prevention, High Blood Pressure Research, and Quality of Care and Outcomes Research, also sponsor special programs at the annual meetings to foster mentoring opportunities.

Other important mentorship opportunities exist. The National Institutes of Health (NIH) has an annual program for the Public Health Service Fellows participating in the NIH intramural research program. Other organizations, such as the Association for Women in Science, have been developed largely to support and mentor young women scientists. All of the AHA councils provide their council members with opportunities to participate in the large array of council-sponsored works that provide excellent opportunities for young clinicians and investigators to develop additional specific expertise and expanded professional relationships. A number of association, academic institution, and business world Web sites are devoted to a description of or instruction in effective mentoring.

---

*For more on the AHA and its councils and awards,  
please refer to the Appendix, or visit*  
**<http://my.americanheart.org/portal/professional/memberservices>.**

---

## Summary

Support for those who choose to pursue a biomedical career, either in a clinical or a research-oriented field, must be sponsored effectively by those already working in medicine and the biological sciences. In an era in which a single decade can change diagnostic and treatment paradigms along with research goals, those who are new to the field need the guidance, support, and direction of those who have gone before them. Even if individual researchers can be identified as personally responsible for great advances, teams of teachers, investigators, clinicians, and other biomedical scientists have propelled the major achievements in modern cardiovascular medicine. Young people who are just now considering biomedicine or are in the early stages of their careers represent the future of cardiovascular care and continued cardiovascular advancement. Mentoring is the key to their career development. Mentoring is a form of collaboration between generations in medicine, and advances have occurred because senior physicians and scientists shared their experiences with and acquired insights and wisdom from those colleagues following in their footsteps. This mentoring model has worked well in the past and is a model that we should emulate and enhance constantly.

For the early career clinician and investigator, the future horizon should be viewed as unlimited. To achieve all that one hopes for in his or her medical and scientific career, one must identify role models, teachers, counselors, and mentors. The AHA has been especially effective in bringing together a diverse community of cardiovascular physicians, scientists, and investigators and remains an ideal environment in which to encourage, improve, and enhance cardiovascular research and clinical care. The AHA's continued success, however, depends on the future success and effective mentoring of our younger members.

## Mentoring Web Sites

- University of Pennsylvania School of Medicine; Medical Scientist Training Program: <http://www.med.upenn.edu/mstp/overview.shtml>.
- Stanford University School of Medicine; Faculty Mentoring Program: <http://facultymentoring.stanford.edu/>.
- National Academy of Sciences; several mentoring handbooks: <http://search.nap.edu/nap-cgi/naptitle.cgi?Search=mentoring>.
- Association for Women in Science (AWIS); information about the AWIS mentoring program: <http://www.serve.com/awis/mentoring.html>.
- MentorNet; E-mentoring network for diversity in engineering and science: <http://www.mentornet.net>.
- American Physiological Society mentoring site: <http://www.the-aps.org/careers/careers1/mentor/index.htm>.
- Science Next Wave—An Electronic Network of the Next Generation of Scientists: <http://sciencecareers.sciencemag.org/funding/>.
- NIH research programs: <http://grants.nih.gov/training/index.htm>.

## References

1. Sheehy G. *Passages: Crises of Adult Life*. Bantam ed. New York, NY: Bantam Books; 1974, 1976:189.
2. Zelditch M. Mentor roles. In: *Proceedings of the 32nd Annual Meeting of the Western Association of Graduate Schools*. Tempe, AZ; 1990:11.



Chapter Two: Mentoring Concerns in Basic Cardiovascular Science

---

*“Access to good mentoring is a critical determinant of whether early career trainees continue in academic medicine. By focusing on promoting good mentoring skills, the American Heart Association hopes to ensure the development of future generations of cardiovascular investigators.”*

—Michael T. Chin, MD, PhD, FAHA



# MENTORING CONCERNS IN BASIC CARDIOVASCULAR SCIENCE

**Michael T. Chin, MD, PhD, FAHA**

**C. William Balke, MD, FAHA**

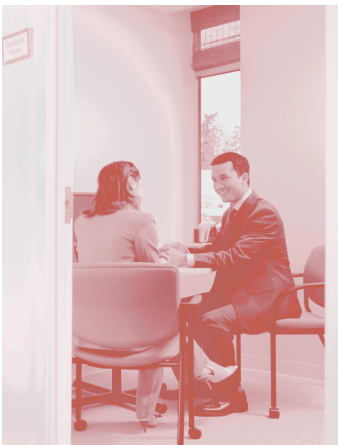
**R. Clinton Webb, PhD, FAHA**

## The Basic Scientist in Cardiovascular Biology: A Definition

A typical definition of a scientist is “one learned in science.” To extend this definition to the *basic scientist* is merely to recognize that medical schools traditionally have split the teaching of medical students into two phases. The basic sciences usually are taught during the first two years of training, and clinical-related components primarily are taught in the final two years.

Basic scientists investigate research problems related to many aspects of animal and human biology. For everyday, on-the-job duties, basic scientists usually run a laboratory or direct a research facility. Because of the integrative nature of cardiovascular biology, a basic scientist can have training or expertise in a variety of disciplines. Basic scientists also hold faculty appointments solely or jointly in graduate schools because they participate in the training of graduate students who are seeking doctoral or master’s degrees. Basic scientists also may take jobs in the pharmaceutical industry or other related businesses.

Regardless of the career path chosen, the beginning cardiovascular basic scientist must master many new skills. Acquiring these skills and developing a career is a process that requires concerted action from the early career investigator, mentor, and institution. The early career investigator must set career goals, choose an appropriate laboratory for training, develop appropriate communication and negotiation skills, learn how to network with colleagues and function professionally within the scientific community, and develop strategies for securing independent funding, while at the same time acquiring skills in technical and scientific methods. Mentors are faced with the challenge of providing a collegial, supportive, and mutually beneficial environment; promoting the early career investigator within the scientific community; managing relationships with early career investigators to maximize productivity; and aiding the early career investigator in navigating the academic advancement process. In addition, mentors must manage their time appropriately by devoting time to mentees without sacrificing scientific progress. Challenges for institutions include providing appropriate laboratory space, startup funds, and an environment that will allow the early career investigator to become successful and independent. The following sections will address these special concerns.





## Special Concerns for Early Career Investigators in Basic Science

### Defining Career Goals and Formulating a Career Development Plan

Multiple career paths do exist for basic scientists. For many clinical fellows, the spectrum of opportunities becomes even broader, given the opportunity to integrate clinical work with basic science and to pursue translational projects. Those truly interested in a career in basic science must identify a career goal and formulate a tentative career development plan. All subsequent decisions, such as choosing a laboratory, developing a mentoring network, and developing skills, will be facilitated by having even the most rudimentary career development plan. For an investigator with the career goal of obtaining a traditional academic position doing 80% basic science and 20% clinical and administrative work, a simple career plan would be as follows: (1) choose a laboratory that has experience in training fellows who have gone on to academic positions; (2) pursue a project that will foster the development of a broad array of research skills; (3) write for a national-level postdoctoral grant as a fellow; (4) start to develop independent projects late in fellowship; (5) write an NIH K-Award late in fellowship; and (6) transition to independent faculty member and write an NIH R01 grant. Once a goal and a plan have been developed, the investigator can focus on the specific aspects of the plan.

### Choosing a Laboratory

Choosing a laboratory for scientific training is probably the most critical decision for the early career investigator at the outset of training after developing a career development plan. The investigator must think carefully, choose wisely, and, above all, not rush to make a choice earlier than necessary. Consultation with other early career investigators and trusted faculty members is essential. If they are familiar with the laboratories being considered, they can give specific advice regarding the pros and cons of each laboratory. However, the investigator must consider the nature of the advisors' relationships to the

laboratories under consideration, because such advice may have some elements of bias. Others may help by giving general advice, even if they are not familiar with the laboratories being considered. Such advisors may develop into mentors and help the early career investigator focus on specific areas of interest. Because most early career investigators will probably spend at least two to three years in a laboratory, they will benefit from taking the time to make an informed and deliberate choice. Here are some important questions to consider:

- What is the principal investigator's (PI) record of accomplishment with early career investigators? (Locating past trainees and discussing the laboratory with them may be helpful.)
- How productive is the laboratory in the area of interest? (A PubMed search is useful to address this question.)
- What is the character of the laboratory in terms of the following?
  - Level of intellectual discussion
  - Physical layout (enough bench space, equipment, etc.)
  - Collegiality among investigators
  - Cultural and gender diversity
- What are the performance expectations of the PI (such as hours worked, number of publications written, and number of grants submitted)?
- How well is the laboratory funded to do the research in the area of interest? (A search of the NIH CRISP Database is usually informative.)
- Are working experimental models and techniques available for immediate use?
- Do active collaborations exist with other productive laboratories?
- When people leave the laboratory, what happens to their projects?

The answers to these questions will vary considerably and are unlikely to be ideal for every question. The importance assigned to each answer will vary among individuals. Sometimes, the only way to get good answers is through observation. Investigators should attend a laboratory meeting of prospective laboratories, if possible. Any potential issue should be discussed and understood before making a final decision. As with any important decision, investigators must gather as much information as possible and weigh it carefully. The best source of information will be senior professors or other early career investigators who are further along in their training. The individuals who provide useful advice may serve as mentors or be part of a mentoring network for the trainee. Choosing a laboratory is often difficult, but the positive consequences of making the right choice cannot be overstated.

### Choosing a Department

For the early career investigator at the beginning of training, choosing a department is usually secondary to choosing a laboratory. For an investigator at the threshold of independence, choosing a department is a critical decision. The most important consideration for many when choosing a department is the scientific opportunities available. Other, less obvious considerations include a department's track record in supporting young junior faculty and the investigator's ability to interact with potential colleagues within the department. If possible, investigators should seek out individuals who previously entered the department at the same career stage and who had similar goals and ask for their opinion about their overall experience.

Additional practical issues should be considered. Those who are clinically trained and choose to pursue basic science must decide between a basic science department and a clinical department. Either choice offers advantages and disadvantages. Most notably, the majority of colleagues in a basic science department may not easily appreciate the clinical applications of basic science; however, they may have a greater understanding of the scientific tools and techniques needed to solve clinical problems.

Some investigators may choose to join a clinical department even though their training is in basic science. Although the scientific skills of the basic researcher in a clinical department may not be fully understood by the majority, the opportunity to apply scientific principles to clinical problems is much greater, and the expertise of the investigator may be highly valued. Regardless of choice, investigators need to realize that research in cardiovascular basic science is rarely a solitary endeavor. Departments often will provide an immediate formal support system for early career investigators, thereby providing sources for career advice, networking, and collaborations.

No matter what departmental choice is made, investigators should realize that a good mentorship can come from many sources that cross traditional boundaries. Developing mentoring relationships in different departments with individuals who can provide objective and unbiased advice may be helpful. The basic researcher, whether in a clinical or basic science department, should maintain contact with and seek advice and guidance from colleagues from all departments.

### **Developing a Mentoring Network**

For early career investigators in basic science, the laboratory PI usually serves as the primary mentor. The nature of basic research requires close interaction between the PI and the trainee, so often the mentoring in terms of promoting scientific skills is associated with mentoring in other areas as well. However, many laboratory directors may not necessarily be skilled at mentoring, even if they are gifted in teaching science. Investigators ought to realize they are not limited to one person as a mentor but can have multiple mentors for different purposes. In fact, developing a mentoring network is often desirable. This is especially true for the junior faculty investigator who has completed laboratory training but still needs guidance from more senior investigators with regard to career development.

So, how does one choose mentors in basic science? No simple answer exists, but perhaps another series of questions can be asked.

- Does the mentor possess the necessary expertise in the area of interest?
- Is the mentor available to the early career investigator or junior faculty member?
- Is the mentor committed to developing the career of the early career investigator or junior faculty member?
- Does the mentor provide unbiased, appropriate advice when consulted?
- Does the mentor have enough experience and knowledge to guide the early career investigator to the next level?

Ideally, the PI of the basic science laboratory should possess most, if not all, of these qualities. However, having several individuals available to the early career investigator or the junior faculty member is usually beneficial. Building a network of individuals whose career paths have developed in an exemplary manner, even if these individuals are at different institutions, can be most useful as long as they are willing to help.

---

**As a mentee in basic cardiovascular science, you should:**

- *Look for mentors committed to mentoring.*
  - *Know you might need more than one mentor.*
  - *Realize that developing your scientific skills is key.*
  - *Remember, ultimately, you are responsible for your own career.*
-

## Developing Skills

The previous discussion in this chapter is predicated on one paramount goal. This goal is to develop the skills necessary to become an effective investigator in basic science. Once all other choices have been made, the investigator can focus on skill development. The basic science investigator, at a minimum, must be able to:

- Perform experiments,
- Evaluate scientific data,
- Plan a series of experiments that lead to a conclusion,
- Communicate effectively,
- Interact with colleagues in a professional and collegial manner,
- Negotiate with reviewers and collaborating investigators, and
- Write grants effectively.

The importance of developing the technical skills to perform experiments, evaluate scientific data, and plan experiments is self-explanatory. Perhaps the most important skill to develop early, other than these technical skills, is the ability to communicate properly. Communication is the foundation for a good mentor-mentee relationship and provides the means for transmission of essential skills in basic science. A mentor who possesses the ability to communicate well will be a good role model for mentees. If one cannot communicate ideas and results to others clearly in both oral and written form, advancement within the scientific community will be limited. As part of honing communication skills, the development of a professional demeanor is important when interacting with one's colleagues. This is especially true when negotiating with reviewers or functioning as a reviewer. Writing grants

successfully also is essential for those who wish to stay in an academic environment and is discussed in more detail later in the chapter. No formula exists for developing these skills, other than continually making efforts at improvement, discussing communication and professional demeanor specifically with mentors, and learning from all possible sources.

### **Developing Independence From the Laboratory Principal Investigator**

Near the end of fellowship training, the trainee must start developing independent projects and negotiate with the laboratory PI about how to transition existing projects. Communication, professional demeanor, and negotiation are important skills in this situation. A variety of situations are possible. In some laboratories, early career investigators are not allowed to take any part of their project; in other laboratories, the investigators can take the entire project. Some laboratories divide the project between the PI and the early career investigator; the investigator is told that she or he can do as they choose, but the PI's laboratory will be doing the same things and competing directly. Discussing this issue before joining a laboratory helps eliminate any surprises during this transition time. Unfortunately, a contest sometimes develops between the PI and the early career investigator as to who retains ownership of current projects, with the PI usually "winning" and animosity developing on both sides. This is a difficult situation for the early career investigator. He or she is usually the one who performed the actual experiments, missed social outings, worked late, read all the literature, and made the initial observations. The PI is usually the one who supplied all the support, infrastructure, environment, opportunity, and scientific advice. The PI usually "wins" because of the threat of poor letters of recommendation, which are extremely important for academic advancement. This difficult situation can be avoided if it is discussed frankly at the beginning, before joining the laboratory. Both parties need to remember that no one has to "lose" and that they may mutually benefit by dividing the

project into areas of separate interest and collaborating on areas of common interest. This is also a key point to remember if one wishes to maintain a good relationship.

Adversarial situations are sometimes unavoidable. In these situations, a good mentoring network is invaluable for soliciting advice and developing possible solutions. The importance of developing such a network *cannot* be overemphasized.

### **Becoming Part of the Community**

As an investigator's career progresses, the need to develop ties within the scientific community becomes increasingly important. These ties should go beyond developing a mentoring network. Other investigators will be long-term colleagues and probably will review papers, grants, and candidacy for jobs as well as write letters of recommendation. Meeting one's colleagues often is accomplished best by presenting and discussing projects in multiple forums, such as local seminars and national and international meetings. Getting involved with local, national, and international organizations that share a common scientific interest such as the AHA and getting involved in community service are outstanding ways of meeting colleagues. In addition, involvement provides valuable insights into how organizations function in advancing the cause of science. Those considering future leadership positions should strongly consider participating in these types of activities.

### **Choosing a Career Path**

Those considering a career in cardiovascular basic science must consider what directions to travel on a long career path and must repeatedly reexamine those decisions. Over time, priorities may change, necessitating modification of the career development plan. Although many will continue to pursue traditional careers at academic institutions, others will opt for less traditional pursuits, such as working in the pharmaceutical industry or for a charitable organization. Individuals also must



choose the degree to which their research directly relates to clinical medicine. They must be sure to get the appropriate training early enough to pursue the types of careers being considered. Overall, individuals must find a career niche. To do so, the following issues need to be considered:

- Area of long-term interest in basic cardiovascular research,
- Desired focus on basic mechanisms versus translational research,
- Desired degree of overlap between laboratory work and clinical work (if clinically active),
- Interest in writing grants,
- Interest in writing manuscripts,
- Interest in running a research laboratory,
- Degree of financial compensation,
- Relative autonomy in choosing areas of scientific exploration,
- Job security, and
- Time and travel commitments.

The consideration of these issues is highly personal but also is critical for choosing the optimal career path. No one path is intrinsically better than any other, and frank self-examination is the key to making the best personal choice.

## Pitfalls for the Early Career Investigator in Basic Science

Common pitfalls that can bedevil the early career investigator in basic science are worthy of special discussion. These pitfalls, discussed below, involve needing to change projects, laboratories, or institutions; having difficulty getting grants; and trying to find a job. As mentioned previously, a good mentoring network will prove invaluable for providing advice and guidance in these special situations.

### Changing Projects, Laboratories, or Institutions

Sometimes the relationship with the laboratory PI does not blossom, the projects do not generate good data, or for some reason the institution does not seem to meet the professional or personal needs of the early career investigator or junior faculty member. The greatest difficulty in this situation is deciding whether the situation will improve over time and whether any of the relationships or data can be salvaged. Obviously, this decision is personal, and many factors must be considered. If the relationship is not working and there is no hope for improvement, the need to move on is clear. In this situation, the investigator must be proactive in trying to address the root causes. If the root causes cannot be addressed adequately, she or he must be prepared to move on without hesitation. Without some discussion, making this decision will be difficult. A mentor distinct from the laboratory PI, one who has no vested interest in the mentee's decision and no personal or professional ties to the PI, would be helpful. Change may be necessary. Changing projects is common, and many individuals who have changed projects, laboratories, or institutions have gone on to successful careers.

### Difficulty Getting Grants

For those considering a career in academia, securing grant funding is the key to future success. Although the basis for successful grants is good scientific data, writing successful grants is an acquired skill. Reading successful grants written by others is the best way to learn the skill. Of course, not

everyone will be willing to provide grants for perusal, as each grant is the intellectual property of the PI. If an investigator has good relationships with successful individuals and these colleagues are certain that confidentiality will be maintained, then examining their grant proposals may be less of a problem. Serving on study sections as a junior investigator often provides many insights into what kinds of grants are funded, and a mentor network can facilitate this service. Probably, the most important thing to do is to ask trusted senior colleagues (ie, mentors) to review the grant proposals before submission. Remember, hearing criticism locally and correcting it before review is better than hearing it from the reviewers later on in the process.

### **Finding a Job**

In seeking a first job, many things need to be considered. Learning what to look for is often done by trial and error. Failure to consider the proper aspects of each opportunity can have disastrous professional and personal consequences. The following questions should be considered:

- Is it the right scientific opportunity?
- Are the scientific resources adequate?
- Is the potential good for scientific collaboration?
- Are there good colleagues?
- Is the division/department/institution/company/organization stable?
- If things don't work out, can one move easily?
- What are the standards for advancement?
- Are the financial resources adequate?
- Is the geographic area acceptable?

The answers to these questions are specific to each individual. Discussing these issues with appropriate individuals at the prospective institution will help. Consulting with mentors is important at this stage, because they are likely to have some useful perspectives on the appropriateness of the job and specific aspects of the job offer. If the job has no obvious pitfalls and the specifics are determined and agreed on by everyone, then remember to get the specifics in writing so there are no misunderstandings at a later date.

## Special Concerns for Mentors in Basic Science

### Becoming a Mentor

At the junior faculty level, investigators suddenly are placed in the position of being potential mentors for technicians, graduate students, medical students, postdoctoral candidates, clinical fellows, and others. Prior training, however, usually has not included the development of mentoring skills. The most important initial goal of the potential mentor is commitment to the development of mentoring skills and to the process of mentoring. Special considerations for mentors in the basic sciences are detailed in the following sections.

### Mentors in the Basic Sciences

The principal reason for becoming a mentor is to share knowledge and experience. As noted in other sections of this handbook, mentors can provide valuable information on how to make the most of educational experiences and what to expect as one progresses toward a new job at a university or other research institution.

Mentors with a background in the basic sciences will be expected to share their experience and knowledge on a wide range of topics. In addition to topics important to career development, mentors can provide guidance on personal needs of the mentee, such as those related to

family and community. The following topics specifically pertain to careers in the basic sciences:

- Laboratory skills
- Administrative skills, including bookkeeping and laboratory finances
- Scientific method
- Ethical issues related to scientific research
- Evaluating the work of other scientists
- Career advancement
- Grantsmanship and peer review
- Publishing
- Successful teaching techniques
- Professional organizations
- Networking with other scientists

Many of these skills are developed by on-the-job training. However, the mentor should not overlook the possibility that the mentee may get formal training from coursework offered by other departments of the university or training courses run by the administration. For example, beginning courses in bookkeeping are offered by many undergraduate programs and might be useful for mentees who want to one day run their own laboratory. Additionally, training in the handling of nuclear and chemical wastes usually is taught by an appropriate administrative unit on campus or at the business. In addition to numerous books and articles, Web-based information is posted by professional organizations such as the American Physiological Society (see <http://www.the-aps.org/careers/careers1/mentor/index.htm> for more information). These rich sources of information should be consulted.

---

**As a mentor in the basic cardiovascular sciences, you should:**

- *Maintain an orderly and professional scientific environment*
  - *Make yourself accessible to mentees*
  - *Encourage formal and informal training opportunities for your mentees*
  - *Be sensitive to hostilities and disputes that might exist between colleagues in the laboratory*
- 

Troubleshooting and problem solving in the workplace are other areas in which the mentor can help guide the mentee. These are often difficult issues and may have a negative connotation. Thus, troubleshooting and problem solving require an ability to be flexible and to treat each case individually. Compromise is often the best solution. Topics to be considered include disputes between students, technicians, and others in the laboratory; work hours; seniority within the laboratory and department; prioritization of experiments and equipment use; rejection of grants and manuscripts; and allotment of bench and office space for students, technicians, and postdoctoral fellows.

### Managing the Laboratory Environment

To facilitate the development of effective mentoring skills and the transmission of essential scientific skills and to minimize the potential for development of suboptimal relationships in the laboratory, the PI/laboratory mentor must expend considerable effort managing the laboratory environment. In particular, an atmosphere of mutual benefit, collegial relationships, shared enterprise, and a good work ethic should be developed. The PI must realize that all early career investigators will take their cue from the PI's management of the laboratory. Accordingly, the PI must treat everyone with respect, demand that everyone treat each other with respect, and demonstrate a strong work ethic and commitment to basic scientific investigation. The PI also must be aware of

cultural differences that might make managing relationships especially challenging. Other challenges the PI faces are ensuring that scientific communication of laboratory findings proceeds unimpeded and that unhealthy competition between trainees does not develop. If all workers perceive that there is mutual benefit to cooperation within the laboratory, then scientific progress is likely to proceed more rapidly.

### **Developing the Mentor-Mentee Relationship**

There are many ways to manage relationships with early career investigators in the laboratory. No one formula works for all individuals. Each investigator will require an individual program. However, some common features useful for all are:

- Setting performance expectations and goals;
- Underscoring the importance of mentor-mentee communication, especially regarding experiments and data; and
- Setting standards of professional conduct and ethics.

The challenge for the laboratory mentor will be to bring out the best in each early career investigator while maintaining scientific productivity. The best way to do this is to maintain a sense of fairness, objectivity, high scientific standards, and professionalism in dealing with the investigator. One also must keep the investigator focused on developing skills as a basic scientific researcher. The laboratory PI can maintain a friendly and informal relationship with the investigator, but the laboratory PI must always remember to provide appropriate feedback and direction, even if it is sometimes unpleasant.

### **Mentoring in the Community**

Often one will be called on to provide advice and guidance to those not necessarily associated with one's own laboratory. Such requests can encompass a broad spectrum of topics. Many requests from early career investigators involve

decision making, such as choosing a laboratory, troubleshooting experiments, and finding a job. Matters that seem minor to the mentor often can be overwhelming for the early career investigator. Advice from a mentor with no conflict of interest can be invaluable to the early career investigator and is usually much appreciated. The importance of such outside mentoring activities to the scientific community at large cannot be overestimated.

### Fostering Independence

The hallmark of a good mentor is the development of a cadre of independent former trainees. Toward this end, the mentor works to aid the mentee in becoming an independent investigator by helping the mentee develop the skills to be independent. The mentor also can help the mentee in other ways. In particular, the mentor may allow the mentee to present data at scientific meetings, meet independently with collaborators, and plan experiments independently with minimal input from the PI. Allowing the mentee to participate independently in external scientific activities will allow the mentee to develop a distinct scientific reputation and to be viewed as a distinct entity from the PI.

Often, the key to developing an independent scientific career is securing independent funding. The mentor should encourage the mentee to apply for grants appropriate for their level of experience. In particular, the mentor should introduce the trainee to transitional grants such as the Mentored Clinical Scientist Development Award (K08) offered by the NIH, the Fellow-to-Faculty Transition Award, the Beginning Grant-in-Aid, or the Scientist Development Grant offered (at the national or affiliate level or both) by the AHA. Even if such efforts to obtain funding are unsuccessful initially, the experience of writing a grant is valuable and may increase the likelihood of success in the future.



---

*For more information on NIH career development awards, see [http://grants.nih.gov/grants/new\\_investigators/index.htm](http://grants.nih.gov/grants/new_investigators/index.htm) and <http://grants1.nih.gov/training/careerdevelopmentawards.htm>. For more information on Veterans Affairs career development awards, see [http://www.research.va.gov/programs/csrd/career\\_dev.cfm](http://www.research.va.gov/programs/csrd/career_dev.cfm). Additionally, the AHA Council on Basic Cardiovascular Sciences offers the Louis N. and Arnold M. Katz Basic Science Research Prize, the Melvin L. Marcus Young Investigator Award in Basic Cardiovascular Sciences, and Basic Cardiovascular Sciences Trainee Travel Awards. For more information on all AHA Council-sponsored awards, see <http://americanheart.org/councilawards> or the Appendix.*

---

## Managing Academic Careers

Mentor-mentee relationships in the basic sciences often last beyond the initial training period, proceeding well into the independent phase of the mentee's career. As the early career investigator prepares to develop an independent career, the mentor can provide invaluable assistance in choosing the appropriate job opportunity, writing the first grants, managing a laboratory, and managing laboratory personnel. In addition, once the mentee has become a fully independent investigator, the mentor can provide valuable advice regarding academic advancement. Specifically, the mentor can suggest activities that enhance the curriculum vitae of the applicant and demystify the academic advancement process for the mentee so that steady progress can be made. Eventually, the relationship can develop into one of collaboration. Ideally, mentor-mentee relationships should be durable and mutually beneficial far beyond the initial training period.

## Special Pitfalls for Mentors in Basic Science

### Allegations of Misconduct

A mentor or PI may sometimes be called on to settle disputes involving members of the laboratory. These disputes can vary widely in scope and include the misuse of laboratory resources, unsafe experimental practices, hostile acts, scientific fraud, and sexual harassment. Occasionally, the mentor/PI will be the target of such allegations. As a mentor, being proactive by maintaining a healthy environment is best. The basic science laboratory is particularly prone to allegations of misuse of resources and scientific fraud. When such allegations are made, the mentor/PI should investigate them fully, document the findings, involve outside consultants if needed, and take corrective action expediently. In these situations, consultation with other mentors is often helpful and underscores the need for mentors at all career stages. Most institutions have set policies regarding how to deal with some of these situations and provide mechanisms to enable mentors/Pis to deal with them. The mentor must be aware of these policies.

---

*For an example of an institution's policies, refer to*  
<http://www.hms.harvard.edu/integrity/>.

---

## Difficulty With Individual Trainees

Occasionally, the mentor-mentee relationship will not develop properly, as mentioned previously. The mentor needs to communicate to the trainee directly, both orally and in written form, that the interaction is not optimal and give suggestions for corrective action. These communications should happen periodically, in a timely fashion. A written record will document the difficulties and steps taken to improve the situation, so that no future allegations can be made about lack of feedback. If the mentee would be better served by leaving the laboratory, a written record will be useful to justify this decision.

## Maintaining Productivity

Even though mentoring of early career investigators and clinicians is essential to developing future investigators in the basic sciences, the mentor is most likely to have the greatest influence on the careers of mentees if the mentor achieves success in the basic sciences. To a great degree, mentoring of mentees is a mutually beneficial experience where the mentees acquire skills and their productivity advances the scientific enterprise of the laboratory mentor. Conversely, mentoring activities cannot dominate the daily activity of the mentor at the expense of personal scientific activities, such as writing and obtaining grants, writing and reviewing manuscripts, serving on study sections, and performing experiments. Developing a balance between mentoring activities and personal scientific achievements is a daily challenge for mentors and requires ongoing assessment.



## Special Concerns Regarding the Role of the Parent Institution and the Early Career Investigator's Career Development

Overall, the early career investigator's institution must provide a nurturing and supportive environment for the mentee, the mentor, and the mentor-mentee relationship. With regard to the mentee, the institution should provide a wide array of intellectual and material resources necessary for career development. These include but are not necessarily limited to the following items:

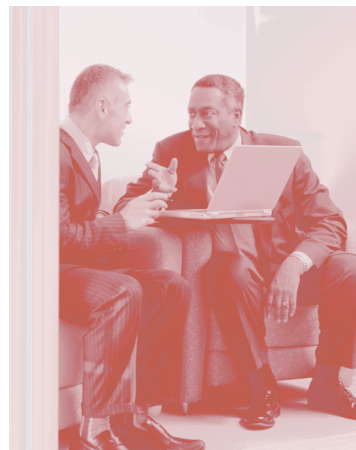
- The presence of a strong, well-established research program related to the early career investigator's area of interest, including a high-quality research environment capable of fostering collaborations with the candidate
- Provision of the appropriate space, supplies, and equipment required for the investigator's research program
- Clear availability and access to necessary support services (eg, core facilities) and personnel (ie, administrative, secretarial, and technical) as required by the research program
- Evidence of an unequivocal commitment to the candidate's development into an independent investigator, including protected time, faculty position (when appropriate), and training in the survival skills necessary for the move to independence

With regard to the mentor, the ideal institution recognizes the importance of the mentor-mentee relationship and has provisions for protecting and rewarding successful mentors. The best institutions share many of the following common features:

- Ongoing faculty development activities centered on enhancing the training skills of the mentor

- Metrics for accessing the quality of the mentor's training activities and provisions for providing feedback to the mentor
- Appropriate recognition, protections, and rewards for the mentor engaged in mentor-mentee relationships (including salary, additional protected time, and award recognition programs)

With regard to the mentor-mentee relationship, the parent institution should support activities that promote the training aspects of career development. These include active training programs (MSTP programs and NIH-funded training programs) as well as intramural and extramural scientific activities (seminars, lectureships, and science and teaching fairs).



## Summary

The early career investigator in cardiovascular basic science is becoming an endangered species. Frequently, individuals who begin training in basic sciences leave the field for other pursuits, often asserting that they have not received appropriate training or mentoring to develop the necessary skills for an independent career in basic science. Acquiring skills in basic science is particularly challenging, as these skills often require years to master. As advances in cardiovascular basic science are the foundation for future advancements in cardiovascular medicine, the continued recruitment of early career investigators to careers in basic cardiovascular sciences is an essential goal. The combined efforts of mentees, mentors, institutions, and outside agencies such as the AHA are required to meet this essential goal.



Chapter Three: Mentoring Concerns in Clinical Cardiovascular Science

---

*"The best mentors I've had have not been in my specialty.  
They were clinicians and scientists I admired,  
who were able to think broadly and with whom I was able  
to establish a relationship that was not based purely  
on their clinical interests or mine."*

—Michael A. Bettmann, MD, FAHA





# MENTORING CONCERNS IN CLINICAL CARDIOVASCULAR SCIENCE

**Michael A. Bettmann, MD, FAHA**

**Fernando Costa, MD, FAHA**

**David Faxon, MD, FAHA**

**Rose Marie Robertson, MD, FAHA**

The clinical setting presents special opportunities and challenges to all. According to the NIH definition, one facet of clinical research is patient-oriented research, which is conducted with human subjects or on material of human origin, such as tissues, specimens, and cognitive phenomena, and which requires investigators to interact directly with human subjects. In contrast, basic research does not include patient-oriented research as a component. Many general principles of mentoring relevant to both mentor and mentee are discussed in other chapters. This chapter addresses the distinct and unique aspects of mentoring related to clinical work.

Clinical research is not easier than basic research. The same attention to generating an appropriate hypothesis, to determining the best study design, and to selecting the best methods of data analysis is required with either approach. Knowledge of the best experimental method or methods to

use for the problem to be addressed is critical, and the successful clinical investigator will have multiple methods in her or his armamentarium. These methods may range from careful phenotyping (a vanishing art) to physiological assessment, pharmacologic intervention, evaluation of biochemical markers, and genetic investigations. Patient-based research, the major difference between clinical and basic research, provides the opportunity for the greatest satisfaction of the clinical approach: the partnering of the investigator with the patient to understand disease and to improve care and outcomes.

This chapter will address the principles, roles, and needs of the mentee and the mentor and the aspects of their relationship relating specifically to the environment of clinical cardiovascular science. The focus will be on physicians, nurses, and clinical scientists without degrees in medicine who have a potential or established interest in clinical research in the fields of cardiology, radiology, nephrology, neurology, endocrinology, pediatrics, gerontology, and surgery. This chapter also addresses the needs of a broader group, including radiation physicists, chemists, pharmacologists, exercise physiologists, and nutritionists; in short, all professionals who are or may become interested or involved in clinical research.

People involved in clinical research will benefit from mentoring at all career levels. Similarly, clinicians may act as mentors at any career stage. They may work in traditional academic medical centers, community hospitals, private practice or group settings, industry, or clinical research organizations. Special concerns of foreign graduate healthcare professionals also deserve attention.

## The Mentee

Mentees need to realize that each person is responsible for her or his own career. Mentees should choose mentors carefully and remember that more than one mentor may be needed at any time. Chapter 1 emphasizes these and other common rules and recommendations that apply to all mentees in all fields.

Additionally, as early career clinicians advance in their careers, they may find different principles apply at each new phase of their career. The following sections offer rules and recommendations for mentees based on their career level in clinical cardiovascular science.

### Recommendations for Students: Medical, Nursing, Pharmacy, Applied Basic Sciences, and Other Fields

- *Involve yourself in a wide breadth of opportunities.* Most students will benefit from broad exposure. A summer or part-time job with involvement in an ongoing clinical project can be helpful. The project should be well-defined and preferably hypothesis-driven. You should have access to regular mentoring and be exposed to a fairly broad segment of clinical medicine. For example, you may seek work on a clinical trial that has relevant and very clear objectives, is well under way, and is run by someone who has completed similar trials previously. Ask for exposure to various elements of the study (ie, development of the study design and data collection instruments, subject recruitment, data collection, and data analysis). If your curriculum allows, take an independent study course that enables you to participate actively in one or more research projects.

- *Know your educational and technical limitations.* In your early years of training, you will have had little or no clinical training and will not be able to perform many of the procedures that are necessary parts of clinical studies. Even if your role is limited to data analysis or other tasks that seem mundane, you can learn a great deal about how studies are designed and how data are handled. If you are available, you gradually may be given more direct experience with patients. Bear in mind, however, that professional and ethical standards for conducting clinical studies prohibit you from performing even the simplest clinical procedures on patients. The person placing an IV or initiating the use of arterial lines or cardiac catheterization must be an expert in its use.
- *Choose your mentor carefully.* Both junior and senior faculty members can be effective mentors, the former because they have the necessary experience and time to spend with you and the latter because they are better able to network you into the broader investigative community. Your mentors must be people with whom you can communicate effectively, who will take the time to understand who you are and where you are in your thinking, and who are committed to making time to meet with you. Your mentor may be a professor, a nurse, a private attending physician, a physician's assistant, or even a resident.
- *Keep an open mind, but don't lose sight of your ultimate career goals.* Being a coauthor on a paper or playing a substantive role in a clinical project can be an important learning process. Such a role also can open doors to help you to get the residency you want, to secure a future job opening, or to boost your career in other ways.
- *Look for mentors appropriate to each new phase of your career.* Some individuals may have one person as a mentor for a long time, perhaps for their entire career. However, a career will go through many different stages over time, and some individuals will need many different

mentors. At least one of your mentors should be someone you can look to as a role model for professional development, but you will need additional mentors with a combination of skills. Look first to people with the same background and interests but to others as well—medical doctors, for example, who may share a common interest in an area of research. In either case, be prepared to stop working with a specific mentor if the relationship is not working or to seek out a new mentor for different, evolving needs.

- *Learn to collaborate effectively.* Collaboration will be important for your success, so seek out mentors who will help you learn to do this well. One such mentor may be someone you will work with directly, but you should also look to others who are successful at collaborative clinical investigation in your field or a related field. Mentoring relationships are two-way collaborations in themselves: the mentor makes a commitment to you and you must make a commitment to your mentor in return.

### **Recommendations for Residents/Fellows or Advanced Practice Nurses**

- *Choose a mentor based on your specific career goals.* Specific career development guidance should be your major goal in choosing a mentor. You need to work with one or more people who can guide you in gaining expertise in specific areas, in designing a clinical project, and, as you progress, in helping you to look for funding sources and in establishing collaborations.
- *A mentor should be a role model.* You will find many possible different models for balancing clinical work and clinical research and outside interests.
- *Look for someone who can help you choose the career path that is right for you.* Your mentor will play an important role in helping you decide on future directions and in helping you to focus on the next level: choosing a

field, getting a fellowship, or getting your first job after training. Making these decisions ultimately will be up to you, but the right mentor or mentors can help you to decide and even can help you to get the position you want or that best fits you.

- *Look for mentors appropriate to each new phase of your career.* Your needs will change as you progress up the career ladder through the steps of residency, fellowship, staff member, and senior staff member. All mentors you work with should recognize your changing needs. You may have to look for different mentors as your level and direction change.
- *Choose someone with experience with the grant process.* A mentor should be able to explain and discuss with you the grant process for clinical research (institutional, commercial, foundation, and federal).
- *Network.* Be aware of the importance of getting to know your mentors and possible mentors outside of the workplace. Attend formal and informal social gatherings such as department holiday gatherings and welcome and orientation meetings. These opportunities allow you to have meaningful contact with future mentors and to develop relationships.

### Recommendations for Early Faculty and Beyond

- *Begin working toward professional independence.* A primary need at this level is to develop independence. With good coaching, your mentors can help you to achieve this. A mentor who cannot make it possible to pursue your own independent projects might still be able to get you moving in that direction by helping with research design, finding funding sources, or balancing competing demands and interests. Honestly defining the limitations of what a mentor can do for you is a big part of becoming professionally independent.

- *Develop a wide network of mentors.* One or more mentors can provide guidance and support throughout your career. However, it is a good idea to seek out new contacts and professional support as your career develops over time. Someone you can discuss scientific and personal development issues with is an important resource no matter where you are in your career development.
- *Observe other mentee-mentor relationships.* Try to understand what makes some relationships effective and apply those insights to your own relationships. Observing others can help you identify the best contacts for other professional issues and concerns.
- *Identify the best mentor for your specific professional need.* Common science interests are helpful and so are interests in shared career goals. You should approach individuals with those characteristics for career guidance. However, a basic scientist who is a wonderful collaborator and your best mentor for helping you to decide what you want to do with your career may not be able to help you to find the best position or source of funding within the arena of clinical research. You might choose a different mentor, then, for more logistical concerns. That mentor could offer better guidance on where to submit an abstract for presentation, on the best journal to submit a particular manuscript to, and on the best sources to fund pilot studies.
- *Begin mentoring others.* Teaching and encouraging others is an enormously effective way to learn. Sharing your knowledge and experience with junior colleagues helps you understand your own work better and fosters relationships that can last a lifetime. As you develop your career, even at a postgraduate training level, you can learn much from mentoring others.

## Recommendations for Nurses

- *Cast a broad net when looking for mentors.* Whereas physicians probably will be able to find mentors among other physicians, you may have to look not only to nurse-researchers but also to physicians and individuals from other disciplines involved in clinical research. Many people are happy to act as mentors. Do not be afraid to ask, whether the potential mentor is a junior resident or a senior professor.
- *Be honest with yourself and your mentor.* Your mentor can guide you and open doors, but you are the one who ultimately has to make the decisions and put in most of the work. Others are in the same position as you, even though it may not seem that way. Look for mentors among successful people in and out of nursing.
- *Don't let the lack of a medical degree limit your options unnecessarily.* At times it may feel that the absence of a doctor of medicine degree puts you at a disadvantage; however, many examples exist of successful nurse investigators, and the right mentor can help you to find the appropriate niche.

## Recommendations for Clinical Scientists

Many highly effective and successful clinical investigators do not have a medical degree. Clinicians with PhDs, master's degree-level nurses, and pharmacists are only a few of the individuals who can be effective in clinical research, whether in collaboration with an investigator who is a medical doctor or on their own.

- You will need one or several mentors, with a combination of skills. Look to people with your same background and to others, such as medical doctors, who share common interests in research.



- Collaboration will be important for your success, so work with one or more mentors who will help you to learn how to work collaboratively. One such mentor may be someone you will work with directly, but you should also look to others who are successful at collaborative clinical investigation in your field or a related field.
- At least one of your mentors should be someone you can look to as a role model.

---

**If you are a mentee in clinical cardiovascular science, you should:**

- *Involve yourself in a wide breadth of opportunities, including exposure to clinical studies early in your career.*
- *Realize you may need many layers of mentoring at any one time by a number of mentors.*
- *Collaborate with others; collaboration is a key to your success.*

---

### Special Concerns for Non-US Graduates

These recommendations are applicable both to those coming to the United States for additional training and to graduates of institutions in other countries who are planning on spending their careers in the United States.

- *Look for help with language.* Mastering scientific writing and speaking can be a major challenge even in one's native language, so look for a mentor who can help you specifically in this regard. Many universities have special language programs for foreign students that are designed to help them master writing and communication skills. For developing skills, free courses with software packages (eg, PowerPoint for slide preparation and EndNote or ProCite for reference handling) are available within most college and universities or through the health science libraries at your location. Periodically ask your mentor for an honest assessment of your language skills.

- *Learn the cultural nuances of your new environment.* Be aware of possible cultural differences between you and people whom you may choose as mentors. This will require sensitivity and awareness on your part and the ability and willingness of your mentor to be sensitive as well. Not every potential mentor will have the necessary abilities.
- *Seek out multiple mentors.* Non-US graduates will want to seek mentoring for language and cultural needs as well as for their scientific and professional development.
- *Find a mentor as quickly as possible.* Do not wait until you are established to find mentors. Look for mentors as soon as you start work or even before. Remember that you may need to work with different mentors at different times in your career.

---

*To show support for young physicians and scientists outside the United States, the AHA has established an International Mentoring Program. This program provides international members with networking opportunities, advice, and advocacy meaningful to their professional development. For more information, visit <http://www.americanheart.org/presenter.jhtml?identifier=3040709>.*

---



## The Mentor

One of the most important aspects of being a good mentor is a commitment to mentoring. Mentoring is neither a passive nor a simple process. It is an ongoing process that may last a few weeks or a whole career. A mentor should respect their mentees and treat them professionally. Chapter 1 emphasizes these and other rules and tips common to all mentors, regardless of the mentor's scientific field. Remember, mentoring can be as beneficial for the mentor as it is for the mentee. The following sections highlight issues particular to mentors in clinical cardiovascular medicine and stroke. A critical concern, particularly in clinical cardiovascular sciences, is the need for a high ethical standard at all times and in all relationships and investigations.

## The Medical Doctor

- *Mentoring is important.* Your time may be constrained due to your clinical commitments and research activities, but the mentoring you provide is important for both you and your mentee.
- *Mentoring is a commitment.* You do *not* have to be a mentor, but if you choose to be one, you have made an emotional and temporal commitment that you need to fulfill.
- *Take an interdisciplinary approach to mentoring.* Be open to opportunities to mentor both within and outside your discipline. Viewing clinical concerns through the eyes of another discipline can expand your insights and enhance your research. Be aware, however, of limitations in your knowledge or expertise that might reduce the usefulness of your input to mentees.
- *Mentors are role models.* Your own professional and interpersonal conduct should foster the development of collegial and collaborative behaviors in the mentee.

- *Direct your mentee toward additional educational and mentoring resources.* Many types of resources can augment your efforts, including the Early Career Investigator/Clinician Program at the annual AHA Scientific Sessions and International Stroke Conference and the Annual Ten-Day Seminar on the Epidemiology and Prevention of Cardiovascular Disease. However, mentoring is ultimately its own reward. You cannot necessarily expect significant institutional support.

---

*The following scientific councils of the AHA can provide opportunities to support the movement of clinicians throughout their careers and are rich resources for mentors and mentees.*

#### **Scientific Councils**

- *Arteriosclerosis, Thrombosis, and Vascular Biology*
- *Basic Cardiovascular Sciences*
- *Cardiopulmonary, Perioperative, and Critical Care*
- *Cardiovascular Disease in the Young*
- *Cardiovascular Nursing*
- *Cardiovascular Radiology and Intervention*
- *Cardiovascular Surgery and Anesthesia*
- *Clinical Cardiology*
- *Epidemiology and Prevention*
- *High Blood Pressure Research*
- *Kidney in Cardiovascular Disease*
- *Nutrition, Physical Activity, and Metabolism*
- *Stroke*
- *Peripheral Vascular Disease*
- *Functional Genomics and Translational Biology*
- *Quality of Care and Outcomes Research*

*For more information on AHA councils and membership, visit <http://my.americanheart.org/portal/professional/memberservices>. You can also find more on AHA conferences, awards, grants, and programs in the Appendix.*

---

## Nurses

Be aware that you may be in higher demand and in shorter supply than many other potential mentors.

Know where to get help. Potential sources include nonregistered nurse colleagues in clinical investigation at your institution, the AHA Council on Cardiovascular Nursing, and nursing professional organizations.

Maintaining communication with past, current, and potential mentees; your own personal mentors; and others who act as mentors is crucial to success for both partners in the relationship and a vital activity that assures a constant rebirth of the discipline.

## Clinical Scientists

Make yourself available as a role model. You are the living proof that working as a nonclinician in clinical investigation can be done successfully.

A major focus in a mentoring relationship is to enhance the collaborative capabilities of your mentees.

As a mentor you will have the opportunity and responsibility of helping your mentee in choosing an appropriate field for clinical research career development, within or outside your area of expertise.

You are part of a diverse group. If you choose to be a mentor, try to make yourself available to mentees outside your specific area of interest.

---

### **A mentor in clinical cardiovascular science should:**

- *Realize that mentoring is a real, emotional, and temporal commitment.*
  - *Be available to mentees both within and outside the discipline.*
  - *Be a role model.*
-

## The Institution and Its Environment

All academic and pharmaceutical institutions and other commercial enterprises rely on early career individuals for new ideas and growth. Mentoring is not an invariable part of such institutions' approach to early career professionals, but it is a tool with tremendous potential. Not only can mentoring bring satisfaction to the mentor and mentee, but it can also enhance progress in research. Thus, providing effective mentoring should reflect enlightened self-interest on the part of the institution. An institution's attention to mentoring is one facet that should be examined when selecting the places an individual wants to train and work. Both the mentor and the mentee need to understand what to realistically expect from an institution.

At the medical-student level, medical schools can facilitate the involvement of students in research and make room for this experience in the curriculum, preferably as early as possible. Also useful is a formal approach to provide willing faculty members as mentors for other aspects of students' career development, including decisions about electing doctor of medicine and doctor of philosophy degree training, taking a year or more off during medical school to gain experience in research, and pursuing postdoctoral training. The medical school should be able and willing to accommodate and facilitate the development of trainee's clinical research interests. As students make the decision regarding their specific specialty and apply to residency programs, the institution should provide help in thinking through not only the specific field but also the career path and research opportunities within that field. The institution should also be able and willing to accommodate and facilitate the development of a trainee's clinical research interests.

The residency institution should also offer to provide mentors. Although the residency director often serves this role for many house officers, individuals should be identified who can offer assistance with the specifics of decisions regarding research tracks and training, especially for those who choose a clinician-investigator track and for those who may "short-track" into fellowship programs to maximize their research experience.

During fellowship training, an institution should provide adequate time and resources for research training, often under the auspices of an institutional training grant. The best institutions have many such grants and allow postdoctoral fellows to train in any area that fits their career goals. This encourages interdisciplinary training, which is often the best way to ensure long-term career success. The fellowship director should guide individuals to mentors who will best fit their future careers. In addition, sufficient training should be provided to ensure success, ideally in formal programs such as those leading to a master of clinical investigation or master of molecular medicine degree (the names of these programs are still variable) or a master of public health degree. The training is not less rigorous than that required for the basic investigator. Although the experimental methods involved in clinical investigation are generally different from those used in the basic sciences, high-quality clinical research, just as basic research, produces information that is of clear benefit to humankind.

The mentor must educate the clinical investigators seeking their first faculty position on what requisites are crucial to define in negotiations. Especially important in clinical research is to be certain that the new institutions and departments ensure that enough time and effort are protected for the research endeavors of the new faculty member. Completing successful clinical research is hard if there is not a genuine commitment by both the institution (ie, section or department) and the individual. The new member's project should not simply be considered an *add on* or *if possible* project to an overcommitted clinical schedule. Although the clinical investigator can sometimes benefit from having the research involve their patient population, this is not always possible or even appropriate. Adequate time must be allotted for all aspects of clinical research, including reading, planning, consulting, preparing grants, conducting the studies, analyzing data, presenting research at scientific events, and preparing manuscripts.

The mentor should discuss what constitutes an appropriate startup commitment on the part of the institution in terms of research support (for time, money, space, and other necessities). Although some support is likely, it may include less laboratory equipment than a basic scientist would receive but may instead include clinical research-related support such as a nursing or research coordinator.

In the present environment, individuals must recognize the constraints within which academic medical centers function. These centers must provide excellent medical care, requiring the engagement of both full-time clinical faculty members and clinician investigators. Care must be cost-effective, high-quality, and evidence-based. Mentors need to help their mentees find the balance between supporting overall institutional goals by being willing to postpone or modify the perfect situation for themselves (being thought of as a team player is high praise in almost all situations) and letting the institutions take such precedence that they hamper the career development of young investigators. In the best circumstances, both the institution and the individual treat each other with respect and make reasonable compromises, and the overall good of both is achieved. Although the trainee seeking a position can learn a great deal from discussion with others at an institution, the mentor plays a critical role in providing more information about the behavior of an institution toward its faculty members. Investigating and following whether or not an institution lives up to the commitments it makes to incoming faculty members is important. In fact, this should be seen as a minimum achievement. The faculty candidate may be unable to envision fully what will be needed to help her or his career progress, and the better institutions will make substantive efforts to accommodate needs that emerge after and beyond their initial offer letter.

As the career of the clinical investigator develops, the mentor plays a continuing role by assisting the mentee with progress through the faculty ranks. Although the criteria for promotion and tenure should be available and clearly delineated, room for interpretation of these standards always exists in a given



institution. The mentor will help the mentee to understand what publication record, level of grant support, national and international presence, and teaching and clinical performance levels are required. The mentor also will help with an understanding of the unwritten rules in a given institution and of what tenure does and does not provide. Finally, a mentor can help in the decision to move from one institution to another, when it is appropriate for career advancement.

---

*Mentor and mentee must work together to define short- and long-term goals, establish clear expectations that may involve compromise, and understand both personal and institutional needs.*

---

## Summary

The career of a clinical investigator is extraordinarily fulfilling, because it exists at the actual interface of understanding health and disease in human beings and in bringing advances in science to patients. The partnership between patients or even healthy subjects and the investigator is personally rewarding, and the progress that can be made is quite visible.

## References

Report on Review of Clinical Research in the Center for Scientific Review.  
<http://www.csr.nih.gov/events/research.htm#note1>. Published June 22, 1998.  
Accessed August 26, 2008.

Blixen CE, Papp KK, Hull AL, Rudick RA, Bramstedt KA. Developing a mentorship program for clinical researchers. *J Contin Educ Health Prof.* 2007;27(2):86-93.

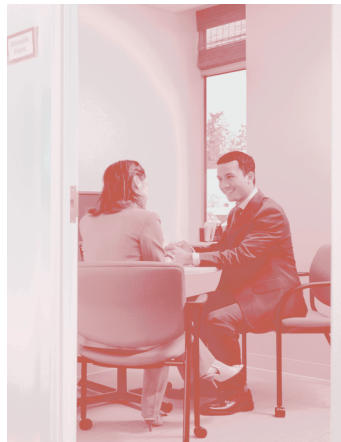
Kaushansky K. ASCI presidential address: mentoring and teaching clinical investigation. *J Clin Invest.* 2004;114:1165-1168.

Chapter Three: Mentoring Concerns in Clinical Cardiovascular Science

---

Ludbrook J. Writing intelligible English prose for biomedical journals. *Clin Exp Pharmacol Physiol.* 2007;34:508–514.

Rancich AM, Pérez ML, Morales C, Gelpi RJ. Beneficence, justice, and lifelong learning expressed in medical oaths. *J Contin Educ Health Prof.* 2005;25(3):211–220.





Chapter Four: Mentoring Concerns in Cardiovascular Population Health Sciences

---

*“The long-term public health impact of time spent mentoring the next generation of clinicians, researchers, and mentors will far outweigh the impact of time spent in other professional endeavors.”*

—David C. Goff, Jr, MD, PhD, FAHA



# MENTORING CONCERNS IN CARDIOVASCULAR POPULATION HEALTH SCIENCES

**David C. Goff, Jr, MD, PhD, FAHA**

**Stephen R. Daniels, MD, PhD, FAHA**

**Yuling Hong, MD, PhD, FAHA**

Cardiovascular population health science is a broad and multidisciplinary field. Cardiovascular population health scientists study the distribution and determinants (risk factors and promoters) of cardiovascular health states on the population. Consequently, population scientists are interested in a variety of health outcomes, which include mortality; morbidity; health-related quality of life; and public satisfaction with medical care, health policies, and cost. In addition, population scientists study behavioral processes, risk factors, public policy determinants, political reform, and healthcare interventions related to screening, diagnosis, treatment, and prevention strategies. Population science is a multidisciplinary field supported by the core disciplines of behavioral sciences, biometry, environmental sciences, epidemiology, management and policy sciences, and biological and biomedical sciences.

## Chapter Four: Mentoring Concerns in Cardiovascular Population Health Sciences

The multidisciplinary nature of cardiovascular population health sciences poses special challenges during career development. In any multidisciplinary field, expertise in a narrow discipline must be balanced with the ability to collaborate effectively across disciplines. The threat exists that academic advancement within a discipline may be impaired because of the need to develop expertise, at least at a working level, across disciplines. Most professional organizations and academic institutions are organized to support discipline-specific activities and career development. Scientists engaged in multidisciplinary research efforts may perceive themselves to be outside of the mainstream of these organizations and institutions. The challenges posed by this aspect of pursuing a career in cardiovascular population health science have important implications for mentoring. In a discipline-focused career, the traditional mentoring model relies primarily on one-on-one mentoring. One-on-one mentoring may be less effective for promoting career development within a multidisciplinary field. Nontraditional models, such as team mentoring, may be required. Specific issues facing the cardiovascular population health scientist and the potential mentoring approaches to addressing these issues will be described in this chapter.



## Mentor-Mentee Considerations

Population science presents some unique challenges for career development. Individuals interested in a career in population research should be cognizant of the unique challenges present throughout the career life course, from training and entry into professional life to career advancement and, ultimately, leadership responsibilities for more senior individuals. The relationship of the mentor and mentee can be critical to the navigation of the career development waters in population science.

General issues for mentors and mentees in population science to consider are shown in the table.

Mentors	Mentees
Adequate supply of mentees	Finding appropriate mentors
Adequate availability of time for mentoring	Establishing an appropriate relationship
Credit for mentoring	Understanding responsibility for own career development and interaction with mentors
Appropriate training in mentoring skills	Appropriate work ethic
Consideration of diversity	Ability to work in teams

Mentors and mentees involved in population science have issues in common. Both the mentor and mentee should act with integrity. This is important on an interpersonal level but also in relationship to the scientific effort. The mentor should provide guidance on ethical aspects of research. Likewise, the mentee should demonstrate integrity in her or his scientific work. The mentor also should provide guidance as to the multidisciplinary nature of population science. This information should include guidance on teamwork and sharing. The mentor can be essential to the identification of appropriate resources for the mentee to use.

## Challenges and Opportunities for Training in Cardiovascular Population Health Sciences

Pursuing the best and most appropriate training is important in the early stages of career development for anyone in cardiovascular science. However, identifying and pursuing appropriate training for population science can be particularly difficult, because such training often must combine education in several different disciplines located in different programs. For example, medical schools usually do not provide appropriate training in the conduct of population research. Such training is often found in schools of public health. On the other hand, schools of public health may not provide adequate education in pathophysiology or biological mechanisms.

The tool kit of any population scientist includes thorough training in the quantitative aspects of epidemiology and biostatistics. Modern population science also may require a multidisciplinary approach. This may include a blending of measurement of biomarkers and genetic data with an epidemiologic evaluation of phenotype and outcomes. Therefore, the modern population scientist requires broad and multidisciplinary training.

Because training is multidisciplinary and the field of population science advances rapidly, no set pathway has been established for training. Some physicians may receive training in epidemiology and biostatistics early in their education, whereas others may receive such training only during residency, fellowship, or later in their career development. Similarly, those in doctoral programs in schools of public health should consider including training in biomedical sciences early in their education. Recognition of diverse training needs as early as possible during the education process is likely to lead to the greatest flexibility in future career development.

Therefore, the potential mentee should look for mentors who have a high level of interest in and understanding of the education process. This individual may be a professor for a



particular course or an investigator in the field of interest. Different types of mentors may be needed at different stages of development.

The mentor should help the mentee to define career goals. These goals should include the original decision concerning whether population science is an appropriate career path for the mentee. The mentor also should help the mentee to define career goals within the disciplines of population research.

A mentor can be most useful for helping the mentee to select appropriate coursework and other training venues consistent with the mentee's career goals. This concordance between career goals and training is important. In addition, this joint evaluation of goals with training should be considered a longitudinal process that may need refinement as the mentee progresses through training.

## **Challenges and Opportunities for Career Entry in Cardiovascular Population Health Sciences**

Mentoring is particularly important as mentees consider their first professional position. A mentor (or mentors) can be particularly helpful when the mentee is considering several possibilities with various strengths and limitations, because the choice of the first professional position is of critical importance in any career development process. Some elements of this selection process are particularly relevant in population research. In the evaluation of potential first jobs, mentees should consider the position offered, the work environment, and the culture of the institutions. Mentees also should be aware that a process of negotiation is essential for determining the details of this first position.

Whether the position is in academia, industry, government, or any other venue, consider the rank and the track. In academia, crucial differences can exist between the instructor and assistant professor positions. Important differences also may exist in opportunities and expectations between schools

of medicine and schools of public health. Some initial positions may include partial appointments in more than one school or department. Such appointments may provide access to more diverse resources but also can lead to differences in goals and expectations in the two areas, which can produce conflict with career development.

For a junior individual who wants to pursue a career in population science and whose goal is to become an independent investigator, the amount of time protected for research is critical. When evaluating a potential program, the amount of protected time should be considered carefully, as should the reputation of the program for honoring promises made in this regard.

The overall environment is crucial in a first professional position. One should evaluate all of the relevant settings for professional interaction (and recognize that often multiple settings exist) in an institution. Having high-quality colleagues in all ranks in all relevant areas is important to ensure that necessary multidisciplinary expertise is available and to allow greater opportunity for one or more mentor-mentee relationships to develop.

Another key aspect of the population science environment is the availability of data sets. Consider both local and national databases. To get the most out of analyses of these data sets, the availability of technical support should be evaluated. This includes the availability of necessary computer hardware, software, and support personnel. Also important is the need to recognize the difference between the presence of resources at an institution and the availability of those resources to junior investigators. In some institutions such resources are present, but junior investigators without grant funding cannot get ready access to them.

---

**Mentees early in their career should:**

- *Look for mentors who can help them weigh their alternatives objectively.*
  - *Look for institutions that foster mentoring, especially across disciplines.*
  - *Not be afraid to negotiate when considering new positions.*
- 

The culture of the institution should be considered. Some institutions strongly emphasize the importance of career development and have strong records of accomplishment. Others do not. Individuals considering their first professional position should recognize these elements as subjects of negotiation. Clearly, the title and career track should be part of the negotiation process, as should level of salary. Resources available and expectations for productivity should be explicit and may be negotiated. Usually, a startup package will be offered, which may include support staff, computer equipment, and other resources. Consider these issues carefully, because they have an important bearing on career development. These issues should be resolved at the beginning of employment rather than being left to future discussion.

The mentee considering entry-level positions should try to find mentors in a more neutral position. A mentee is more likely to get useful advice about the negotiation process from someone not directly involved. Independent mentors may be in a better position to provide an unbiased view of the culture and track record of the institutions being considered. When considering a position, advice from more than one mentor can be helpful.

An important consideration when choosing a first professional position is whether the mentee is likely to find appropriate mentoring at the institution chosen. This can be difficult to assess, given that mentor-mentee relationships often develop in unexpected situations. Nevertheless, an institution with adequate numbers of junior and senior colleagues is the most likely to provide fertile ground for the development of such relationships.

## Challenges and Opportunities for Career Advancement in Cardiovascular Population Health Science

Career advancement can be delayed for population scientists for several reasons related to the nature of population sciences. The multidisciplinary nature of the field may require population scientists to develop expertise, at least at a working level, across several disciplines, thereby potentially harming the ability to develop national or international recognition within a specific discipline. Population research is often multicenter as well as multidisciplinary, a factor that can limit leadership opportunities, whether for study or manuscript leadership. Population science projects may require years of work with respect to participant recruitment and assessment before the development of academic payoff in terms of manuscripts. Hence, manuscript-writing opportunities may be delayed. Effective mentoring can contribute to meeting the following challenges and identifying opportunities for enhancing career development.

### Focus Versus Breadth of Activities

Mentors and mentees should work together to develop a healthy balance between focus and breadth. Early in career development, maintaining focus on a relatively narrow range of activities within a relatively narrowly defined content area is especially important. As a population scientist develops a stronger record of productivity, increasing the breadth of activities, with respect to type of activities and content area, may be reasonable. For example, epidemiologists may begin their careers working predominantly with observational studies and may add clinical trials or health services research to their portfolios as their careers develop.

### Balancing Roles and Responsibilities

Population scientists may play different roles and assume various responsibilities for different types of projects. The mentor and mentee should work together to assess the distribution of roles and responsibilities to ensure the aggregate represents a healthy combination that will support

career advancement toward the mentee's goals. The mentee's responsibility is to define these goals. The mentor's responsibility is to assist the mentee in this effort through reflective listening and providing advice regarding the match of activities to goals.

### **Multidisciplinary Teamwork Versus Leadership**

Multidisciplinary research offers many opportunities for displaying teamwork and fewer opportunities for developing leadership. The mentor should work with the mentee and the institution to ensure the institution values the contribution of the mentee to the multidisciplinary effort. The mentee should look for opportunities to develop a special area of research within projects, including potential new research ideas as spinoffs or ancillary studies that may offer leadership opportunities. Mentors should assist by helping mentees to identify these opportunities and promoting the interests of the mentee.

### **Multicenter Versus Single-Center Research**

Participation in multicenter studies enhances both the challenges and the opportunities mentioned previously. In addition to the issues already raised, mentors can help by assisting their mentees in the networking process and by promoting the visibility of their mentees within the study. Mentees should take responsibility for becoming actively involved in the study committee structure and proactively should seek opportunities to participate in writing groups for manuscripts and ancillary studies.

### **Publishing**

Mentor and mentee should work together to identify a balance of new and established research experiences for the mentee whenever possible. The more established projects may offer greater opportunities for manuscript development in the near term, as data may already be available for analysis, whereas newer projects may offer greater opportunities for developing spinoff studies and for assuming important roles within the study.

Mentor and mentee should work together to identify opportunities to lead and to participate in writing groups. The mentor should promote the mentee's interests by assisting in identifying opportunities to participate in writing groups. The mentee must take responsibility for contributing in a positive and timely manner to increase the likelihood that she or he will be asked to participate in future writing groups. As the mentee's career advances, the emphasis should be on achieving a balance between first author and subsequent author publications. At more advanced career stages, the mentee should begin to mentor others, including students, fellows, and junior faculty members, in manuscript development. At many institutions, the senior (last) author position is reserved for the investigator who is mentoring others.

Mentor and mentee should work together early in the process of getting published to strive for a balance between the quality and quantity of publications.

### **Proactive Versus Reactive Research**

Because population research projects sometimes require investments on a large scale, federal agencies may release requests for applications or proposals to address areas of special interest. Responding to these opportunities has advantages and disadvantages. Advantages include assurance that funding will be available for some projects in the area of interest and some guidance (in the form of the text of the request) regarding the type of research that is of interest. Disadvantages include a potential distraction from the main area of interest for the scientist; the prospect that the work may result in a one-shot opportunity, especially if the request is time limited or for a limited number of projects or sites; and the potential perception that reactive research may be less creative and less highly valued by institutions than investigator-initiated research. The mentor and mentee should work together to strive for a balanced portfolio that reflects the mentee's research interests and includes investigator-initiated research. The mentor and mentee should develop a clear understanding of the institutional culture with respect to this issue.

## Identifying Funding

Population science is funded by federal agencies, including the National Heart, Lung, and Blood Institute (NHLBI) and the National Institute of Neurological Disorders and Stroke (NINDS) of the NIH and the Centers for Disease Control and Prevention (CDC); nongovernmental organizations and charitable foundations, including the AHA; and industry. Federal funding is often the most competitive source of funding; hence, early in career development, mentors and mentees should identify and apply for research career development awards (eg, K Awards from the NIH or Fellow-to-Faculty Transition Awards, Scientist Development Grants, and Beginning Grants-in-Aid from the AHA) and funding from nonfederal sources, to provide the mentee with the opportunity to establish a track record as a funded investigator. Of particular interest to beginning investigators is the AHA's Clinical Research Program, which focuses on patient-oriented research. As the mentee advances, the balance of distribution of funding sources should shift toward a greater proportion of federal funding. Most institutions value federal funding more highly in the promotion and tenure review process, due to the competitive nature of acquiring federal funding.

## Negotiating Institutional Politics

Institutional politics and personalities can be positive or negative influences on career development at all stages. Early in career development, the mentee can be somewhat naive with respect to the unstated issues that influence institutional policies and decisions. The effective mentor can help the mentee by sharing information and perspectives gained during the mentor's history with the institution.

---

### **When advancing careers, mentees should:**

- *Work with mentors to identify opportunities for new research or publishing opportunities.*
  - *Develop a network with the help of your mentors.*
  - *Ask for advice from mentors.*
-

## Challenges and Opportunities for Leadership in Cardiovascular Population Health Science

As in any field, the decision to pursue leadership opportunities poses significant challenges to the cardiovascular population health scientist. Although many think of mentoring only in terms of benefits for early career development, effective mentoring also can be helpful when deciding whether to pursue leadership opportunities and when discharging subsequent leadership responsibilities.

Challenges and opportunities when seeking leadership positions in population science include the following.

### Timing Leadership Opportunities

Regardless of the potential of the individual involved, a decision to pursue an administrative leadership role too early in one's career may be detrimental. Administrative leadership positions require a significant commitment of time and effort. At a minimum, these positions pose an opportunity cost. They may pose a barrier to research career development. The mentee and mentor should carefully balance the potential disadvantages and advantages of pursuing leadership opportunities.

### Focusing Leadership Opportunities

Because most institutions are organized into discipline-based departments, cardiovascular population health scientists may be offered leadership opportunities that are more narrowly defined in terms of discipline and more broadly defined in terms of disease content area than is reflected in their research portfolio. Meeting this challenge requires continued effort to balance disciplinary and multidisciplinary perspectives. Mentees and mentors should work together to identify successful models.



## **Nurturing a Multidisciplinary Environment**

Administrative leaders within cardiovascular population health sciences are faced with the need to nurture a multidisciplinary environment. This aspect of leadership generates challenges with respect to faculty recruitment and retention and resource allocation. A mentor can be helpful, even at this advanced stage of career development, for discussion of approaches to the promotion of a multidisciplinary environment. Expertise in nurturing a multidisciplinary environment is an important asset for an institutional leader. As a result, effort expended earlier in career development to build collaborating and teamwork skills may pay additional dividends at this more advanced career stage. Mentees and mentors should work together to develop good collaboration and teamwork skills.

In addition to the challenges and opportunities leadership presents, there are other issues to consider.

## **Return on Investment**

Leaders within an institution often are asked to provide information regarding the return on investment. This new responsibility requires more sophisticated financial management expertise than required for grant management. An effective mentor can be helpful for discussing options and providing examples of effective approaches for accessing or developing this expertise.

## **Policy Development and Implementation**

Leaders within an institution may be competing for finite resources as institutional decisions are made regarding major investments. Leaders within cardiovascular population health sciences should strive to achieve a balance between advocating for their core needs and the needs of other disciplines with important linkages.

## Conflict

Conflicts may arise within many of the areas described. Conflicts may be more likely because of the competing demands and different perspectives of the various stakeholders in cardiovascular population health sciences. Conflict prevention and resolution skills are important assets to leaders in all fields. Mentees and mentors should work together to identify opportunities to develop this expertise throughout career development.

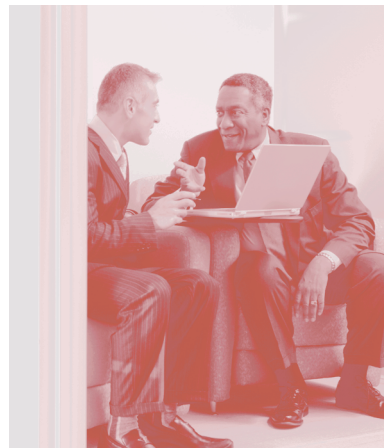
---

*Remember, you are never too old or established to have a mentor!*

---

## Summary

Cardiovascular population health sciences is multidisciplinary by nature. To succeed, it is important to collaborate across disciplines. Mentoring relationships can foster such collaboration and are crucial in contributing to the overall success and viability of both the mentor and the mentee.



## Mentoring Resources for Cardiovascular Population Health Sciences

### American Heart Association

The AHA holds abstract sessions for young investigators at the Annual Scientific Sessions. Additionally, the AHA sponsors mentoring luncheons for trainees at the Council on Epidemiology and Prevention Annual Spring Meeting. Awards the AHA offers include the following:

#### Young Investigator Awards at the Council on Epidemiology and Prevention Annual Spring Meeting

- Jeremiah Stamler Research Award for New Investigators
- Roger R. Williams Memorial Award for Genetic Epidemiology and the Prevention & Treatment of Arteriosclerosis
- Sandra Daugherty Award for Excellence in Cardiovascular Disease (CVD) and Hypertension Epidemiology
- Trudy Bush Fellowships for CVD Research in Women's Health Award

#### Young Investigator Award in the field of epidemiology at the Annual Scientific Sessions

- Elizabeth Barrett-Connor Research Award in Epidemiology and Prevention

For more information on these AHA research awards as well as others (at national and affiliate levels) that can fund young investigators, see <http://my.americanheart.org/portal/professional/research>.

The Annual Ten-Day Seminar on Epidemiology and Prevention of CVD is designed for health professionals planning careers in research, teaching, or practice in the area of epidemiology and prevention of CVD. Up to 20 faculty members and 32 fellows attend a series of discussions, lectures, and laboratory and tutorial sessions. Travel stipends are available for underrepresented minorities. For more information, see <http://my.americanheart.org/portal/professional/conferencesevents>.

#### **National Institutes of Health, National Heart, Lung, and Blood Institute**

The NHLBI provides an excellent venue for trainees to meet fellow trainees and some senior investigators in the field.

#### **Centers for Disease Control and Prevention**

The CDC periodically offers funding opportunities for a variety of public health issues. More information can be found at <http://www.cdc.gov/funding.htm>. In addition, the CDC and the National Center for Health Statistics conduct various nationwide surveys and house many databases that can be used for epidemiological studies.

#### **World Heart Federation**

The World Heart Federation (WHF) offers the International Ten-Day Seminar on CVD Epidemiology and Prevention, sponsored by the WHF Council on Epidemiology and Prevention, the World Health Organization (WHO), and the International Federation of Cardiology. More information can be found at <http://www.world-heart-federation.org/about-us/scientific-advisory-board/scientific-councils/>.

#### **Behavioral Genetic Association**

The Behavioral Genetic Association offers the International Workshop on Methodology of Twin and Family Studies annually in Boulder, Colorado, in March. This workshop provides a good training opportunity for those interested in behavioral genetics and genetic epidemiology. For more information, see <http://www.bga.org/training.html> or <http://www.theaga.org/overview.html>.

**International Genetic Epidemiology Society**

Those interested in genetic epidemiology will find the International Genetic Epidemiology Society Annual Meeting and Genetic Analysis Workshop to be highly beneficial for career development. See <http://www.geneticepi.org/>.

**Summer Schools on Epidemiology**

The following institutions offer summer training sessions:

- Johns Hopkins Bloomberg School of Public Health; Graduate Summer Institute of Epidemiology and Biostatistics  
([http://www.jhsph.edu/Dept/EPI/Degree\\_Programs/Summer\\_Institute/index.html](http://www.jhsph.edu/Dept/EPI/Degree_Programs/Summer_Institute/index.html))
- University of Michigan School of Public Health, Graduate Summer Session in Epidemiology  
(<http://www.sph.umich.edu/epid/GSS>)
- Erasmus Summer Programme  
(<http://www.erasmussummerprogramme.nl/>)

**Agency for Healthcare Research and Quality**

The Agency for Healthcare Research and Quality (AHRQ) funds research to enhance quality, appropriateness, and effectiveness of healthcare services and access to those services. More information can be found at <http://www.ahrq.gov/fund>. In addition, AHRQ has Grant On-Line Databases (GOLD), searchable databases of grants funded by AHRQ. See <http://www.gold.ahrq.gov>.

**National Academy of Sciences**

The National Academy of Sciences offers grant opportunities in the fields of behavioral and social science, health and medicine, policy, and research issues, among other scientific topics. See <http://www.nas.edu>.

**Centers for Medicare and Medicaid Services**

The Centers for Medicare and Medicaid Service (CMS) funds a wide range of research. Current research priorities include monitoring and evaluating CMS programs; improving managed care payment and delivery; improving fee-for-service payment and delivery; following future trends influencing its programs; strengthening Medicaid; monitoring state children's health insurance and state programs; meeting the needs of vulnerable populations; analyzing outcomes, quality, and performance; and building research capacity. For more information, see <http://www.cms.hhs.gov/ResearchGenInfo/>.

**World Health Organization**

The WHO offers a wide range of grant opportunities, including research training grants. See <http://www.who.int/tdr/grants> for details.

For a more complete list of resources and funding opportunities, see the Appendix.





Chapter Five: Special Considerations for Mentoring

---

*"The AHA Mentoring Handbook offers strategies for a successful career  
in cardiovascular medicine through the art of mentoring."*

—Joanne S. Ingwall, PhD, FAHA





# SPECIAL CONSIDERATIONS FOR MENTORING WOMEN, UNDER- REPRESENTED MINORITIES, AND THOSE WHO HAVE TRAINED ABROAD

**Joanne S. Ingwall, PhD, FAHA**

**Rosalind Fabunmi, PhD**

**Kathryn A. Taubert, PhD, FAHA**

**Cheryl A. M. Anderson, PhD, MPH**

*The institutions*—To succeed in our goals of fighting CVD, teaching, and conducting state-of-the-art research, all institutions, for-profit and not-for-profit alike, must train and hire a diverse staff and provide opportunities for early career development that are tailored to all. As the number of women, underrepresented minorities (URMs), and non-US-trained physicians, physician scientists, and scientists grows, awareness is increasing on the importance of investing in their career development, beginning with medical and graduate schools and continuing throughout early career paths. Establishing career development programs specifically for these groups in our academic centers and in our for-profit

## Chapter Five: Special Considerations For Mentoring

institutions not only recognizes the value of a diverse faculty and staff for conducting clinical care, education, and research at the institutional level but also emphasizes the value of the potential contributions of each member of the biomedical community.

*The early career physician and scientist*—Due to the increased clinical, research, and administrative demands being made today on all of us, many young physicians and scientists feel isolated, believe that opportunities for advancement in their careers are few or even unattainable, and take it for granted that salary inequities exist for equal work. *Whether perceived or real, women, URM's, and those who have trained abroad feel this sense of isolation and these barriers to success more acutely than do white men.*

This chapter addresses the problems faced in creating a profession that is truly diverse and offers some strategies for a successful career in cardiovascular medicine through the art of mentoring. Advice is given for mentor and mentee alike.



## The Magnitude of the Problem

Although representation of women, URMs, and those who have trained abroad in science and medicine has improved at some levels during the past decade, many specialties, particularly cardiovascular medicine, remain dominated by white men. A large disparity exists between women and URMs who choose careers in cardiovascular science compared with those in medicine as a whole. The number of female medical school graduates in the United States increased during the last 30 years from 9.2% in 1971, to 42.5% in 2000, to close to 50% today,<sup>1</sup> but very few women choose to become cardiologists. For example, 43.3%<sup>1</sup> of internal medicine residents are female, but less than 20%<sup>2</sup> of cardiology trainees are female.

The following table presents both the numbers of female physicians in cardiovascular medicine (total and by race/ethnicity) and the race/ethnicity breakdown of all physicians in cardiovascular medicine. This table was published in the original AHA *Mentoring Handbook* in 2003, and data were obtained from the same source for 2007. Comparable data are not available for nonphysicians working in the area of cardiovascular medicine, such as PhDs in clinical and nonclinical academic departments, but the basic conclusions are likely to be similar. The numbers given below speak to the magnitude of the problem far better than words can express. Neither the percentage of female physicians nor the percentage of URMs in cardiovascular medicine has changed significantly over the past 5 years. For cardiovascular science and medicine to remain a robust discipline, the current homogeneity must be reversed. The AHA believes this can be achieved through improved mentoring.

### Physician Characteristics and Distribution in the United States in 2000<sup>3</sup> and 2006<sup>4</sup>

	<b>2000</b>	<b>2006</b>
<b>Total female physicians</b>	<b>195,537</b>	<b>256,257</b>
<b>Total female physicians in cardiovascular medicine</b>	<b>1,766 (0.9%)</b>	<b>2,192 (0.86%)</b>

<b>Race/ethnicity of female physicians in cardiovascular medicine:</b>		
	<b>2000</b>	<b>2006</b>
White	928 (53%)	1,167 (53%)
Black	64 (3.6%)	101 (4.6%)
Hispanic	62 (3.5%)	115 (5.2%)
Asian	251 (14%)	440 (20%)
Other	103 (5.8%)	41 (1.9%)
American Indian/ Alaskan Native	3 (0.2%)	10 (0.6%)
Unknown	355 (20%)	318 (14.5%)
<b>Total physicians in cardiovascular medicine</b>	<b>22,989</b>	<b>22,426</b>
White	12,351 (54%)	12,032 (54%)
Black	436 (1.9%)	555 (2.5%)
Hispanic	863 (3.7%)	1,062 (4.7%)
Asian	2,716 (11.8%)	3,688 (16.4%)
Other	1,079 (4.7%)	522 (2.3%)
American Indian/ Alaskan Native	21 (0.1%)	40 (0.2%)
Unknown	5,523 (24%)	4,527 (20%)

## The American Heart Association's Commitment to Diversity

The AHA is committed to increasing diversity in its leadership and the leadership of the profession of cardiovascular medicine. Attention is paid to ensuring diversity in terms of gender, race, and ethnicity in selecting chairpersons and plenary speakers at Scientific Sessions and members of AHA committees, task forces, councils, officers, staff, and the board of directors.

Great racial, ethnic, and gender diversity exists among those at risk for CVD and stroke, and therefore, diversifying cardiovascular medicine would bring about many advantages. For example, more effective communication and trust are likely between clinician and patient when clinicians reflect the gender and racial diversity in the patient population being served. By encouraging academic medical centers, private practice groups, and for-profit institutions to develop mentoring programs, the AHA believes that the diversity of our future leaders will increase.

The AHA also believes that increasing diversity in the practice of cardiovascular medicine will improve clinical care for many populations at risk for CVD and stroke. This is central to the mission of the AHA.

Also central to the diversity mission is the need to educate the public about cardiovascular risk factors and how to manage disease for specific populations. Effective communication with the public both for education and fundraising requires an active, diverse body of spokespersons.

*The AHA has a Women and Minorities Leadership Committee responsible for facilitating diversity throughout the AHA, involving all segments of the community in AHA activities, and ensuring the participation of women and minorities in leadership positions.*

*The AHA recently began a Minority Mentoring Program. This program is for US-based minority scientists and clinicians from ethnic groups considered to be underrepresented in science and medicine who are within five years of their first clinical position and have completed their postdoctoral training or are currently engaged in a postdoctoral fellowship program. This program aims to (1) help early career minority clinicians and scientists develop their professional careers, (2) promote the highest-quality science and practice in cardiovascular and cerebrovascular disease throughout the world by enriching the scientific base of junior minority scientists and clinicians, and (3) increase collaboration in basic, clinical, population, outcomes, and translational research in cardiovascular and cerebrovascular disease. For more information, go to <http://www.americanheart.org/presenter.jhtml?identifier=3050133>.*

*The AHA also has an International Mentoring Program that provides international members with networking opportunities, advice, and advocacy meaningful to their professional development. The goals of the program are to (1) help young physicians and scientists outside the United States develop their professional careers, (2) promote the highest possible quality of science and practice in cardiovascular and cerebrovascular disease throughout the world by enriching the scientific base of junior scientists and physicians, and (3) increase international collaboration in basic and clinical research in cardiovascular and cerebrovascular disease. For more information, go to <http://www.americanheart.org/presenter.jhtml?identifier=3040709>.*

---

---

*The AHA continually works to integrate diversity into daily business operations with initiatives such as:*

**CEO Diversity Advisory Cabinet**—a cross section of AHA staff who make recommendations on ways to change or improve programs focused on developing a culturally competent workforce.

**Affinity Groups**—small groups of employees with common perspectives, interests, or backgrounds who gather regularly to interact and exchange ideas.

**Supplier Diversity**—a formal program that promotes and reports on the AHA's purchasing with qualified minority- and women-owned business enterprises.

**Office of Cultural Health Initiatives**—a business initiative to help reduce health disparities related to heart disease and stroke among core racial and ethnic populations.

*In 2003, the AHA sponsored a conference on ethnic disparities in CVD that brought together leading experts in the field of science and advocacy to discuss and fill a void in our current understanding of this complicated subject. Experts in several disciplines presented new research and outlined important strategies for research, programs, education, and advocacy. Summit attendees included healthcare leaders from the AHA, the National Medical Association, the Association of Black Cardiologists, the International Society on Hypertension in Blacks, and the Robert Wood Johnson Foundation. The proceedings from the conference were published in a special disparities-themed issue of *Circulation: Journal of the American Heart Association*, which also featured original research articles solicited by the editors.<sup>5</sup>*

---

## Importance of Establishing a Mentoring Relationship

Other chapters of this book have emphasized how important both having a mentor and being a mentor can be to one's career. For women, URMs, and those who have trained abroad, this is particularly true. The mentee's responsibility is to actively seek out a mentor. Because of the lack of similar role models for women, URMs, and those educated in a different culture, these mentees may not find a mentor like themselves. Realistically, mentees cannot expect to find mentors of their same race, ethnicity, or gender but should develop a mentoring relationship as early as possible. Forming this relationship should be a high priority. Having more than one mentor, or layering of mentors, helps ensure that the diverse needs of the mentee, which change over time, are met. This process is especially important for women trying to balance demands of family with career development.

Sometimes an early career investigator, clinician, or junior faculty member may be reluctant to go to a senior advisor for guidance, fearing the possible mentor is too famous; too busy to invest in caring about another's career; or unwilling to mentor someone of another gender, race, or ethnicity. Entering into a mentoring relationship requires willingness on the part of both parties. A mentor-mentee relationship does not always "click," but all too often, early career investigators, clinicians, and junior faculty miss opportunities for good mentoring because of reluctance to ask. Also, a potential mentor can miss the benefits of mentoring because he or she lacks the courage to nurture someone up the career ladder; fears that the junior person could become a competitor; or feels discomfort when nurturing someone from a different race, ethnicity, or gender. Being a good mentor takes courage in addition to skill. Both mentor and mentee need to take a chance.



---

**Take-home messages for mentees:**

- *Establish mentoring relationships early in your career.*
- *Do your homework about your possible mentor and the institution you are joining.*
- *Know that finding a role model like you may not be possible.*
- *Take a chance and ask the colleague you want to be your mentor.*

**Take-home messages for mentors:**

- *Recognize the value of mentoring even if you did not or do not have one.*
  - *Be flexible about your mentoring style—one style does not fit all.*
  - *Do your homework about what is involved in mentoring and the particular mentee.*
  - *Take a chance and say yes when you get asked to mentor.*
- 



## Recommendations for Early Career Women

### Do Not Be Afraid To Pick a Male Mentor

Many studies, especially in the business world, have concluded that women mentoring women can be an effective tool for career advancement. However in cardiology, too few women are available to serve in this important role. Choosing a male mentor may be necessary. Fortunately, the number of cases of sexual harassment has been reduced dramatically over the past few decades, in large part due to increased sensitivity to the issue and the fact that leaders of our academic and for-profit institutions no longer tolerate such behavior. These factors make it easier for a woman to ask a man to be her mentor.

### One Size May Not Fit All—Use Secondary and Peer Mentors

One may find that a mentoring team is useful. Mentoring does not always have to be done solely by senior faculty or individuals. While having a senior person as a primary mentor is good, secondary mentors and peer mentors can be valuable as well. They may be essential in helping one transition into a new work environment; helping with problem-solving; and providing support, honest feedback, and advice. You will benefit from the different strengths of each member of your mentoring team. One individual may provide excellent advice about building a strong research agenda, where to publish manuscripts, and where to seek funding. Another individual may be a great example of how to balance work and family life. A third may be very knowledgeable about departmental policies and be a highly skilled negotiator. Having a mentoring team may be the best way to meet the differing needs one has at each career stage.

### Face All Issues Head-On

A mismatch of gender (or race and ethnicity) in the mentor-mentee relationship should not be ignored in problem-solving discussions. Issues surrounding gender, race, and ethnicity

can be barriers to career advancement that must be dealt with directly. Ignoring these issues does everyone a disservice.

### **Choose Your Work Environment Carefully**

Because women remain the primary caregivers for children and elderly parents, knowing the institutional policies with regard to maternity and personal leave is important. It is also important to know whether your institution's leaders practice these policies without prejudice. Do your homework and ask the right questions before picking your laboratory, your residency and fellowship programs, and your first job.

### **Be Careful About Becoming Overloaded**

Career advancement requires you to be a good citizen and to serve on committees. This service work is an essential part of networking that allows you to expand your horizons, to become known by those in leadership positions, and to meet peers. Committee service also provides the opportunity to learn how to lead and to influence policy and practice. However, being the token woman on too many committees can be counterproductive. This practice remains all too common in graduate programs, academic medical centers, and hospitals. Consider your time commitments *before* agreeing to serve in any leadership capacity. Also, you must periodically reevaluate how you spend your time, and, if necessary, make adjustments. You will be respected for using your time wisely, and you will accomplish more. Ask your mentor for advice on how to best allot your time and provide service to your institution.

### **Define Your Own Success**

You are striving toward goals that are yours and yours alone. Be clear about your definition of success and balancing work and family in your own vision. Do not let others define success for you. You may discover that you choose to balance work and family issues differently from your mentor or that you wish to seek a nontraditional career path. Your mentor need not be a role model for all aspects of your life. Your mentor should support your decisions.

## Network

Networking is a very effective tool for career development. Networking is a form of peer mentoring. Knowing that you are not alone is important for surviving and thriving. Learning how to solve problems together can lead to fast-tracking success. Especially because so few women are found in cardiovascular medicine, women should seek out activities in appropriate AHA councils (and other professional groups) and should make an effort to attend events held for women cardiologists, neurologists, and cardiovascular scientists (see below). This helps you and others.

---

*The AHA councils have several activities for women. The Council on Arteriosclerosis, Thrombosis, and Vascular Biology has a Women's Leadership Committee whose activities include a Junior Investigator Award for Women and a networking luncheon at their annual spring meeting at which they present a women's mentoring award and an early career investigator award for women. This council also has a luncheon at the annual AHA Scientific Sessions with a motivational speaker.*

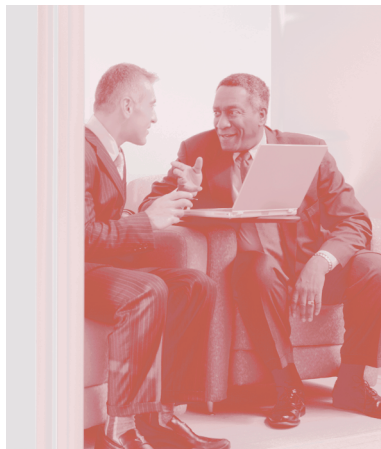
*The Council on Clinical Cardiology has a Women in Cardiology Committee. This committee awards travel grants to female fellows, who are then invited to attend a dinner at the annual AHA Scientific Sessions. Additionally, these travel grant recipients benefit from a speaker training session to enhance presentation skills. Other activities of the Women in Cardiology Committee at Scientific Sessions include a women's mentoring award and a Women in Cardiology Luncheon.*

*The Council on Epidemiology and Prevention offers the Trudy Bush Fellowships for Cardiovascular Disease Research in Women's Health.*

---

## Be a Role Model

Remember that no matter what stage you are at in your career, you are a role model for others. Act and live up to the part. You help others as well as yourself if you win awards and gain other measures of recognition. Your success can encourage others. Take every opportunity to nominate other women for awards and honors. See previous page for the special awards AHA gives to women.



## Recommendations for Early Career Underrepresented Minorities

### Beware of Overloading

Have you noticed that the same representatives of race and ethnicity serve on all the committees? This is the result of an imbalance between institutions wanting to have comprehensive minority representation on their decision-making bodies (a desirable goal) and the inability to recruit and retain URMs (a failure). This is a vicious cycle; without successful role models in senior positions, few junior people will choose to enter the field. Choose your service commitments wisely in spite of the real need to be heard in decision-making committees and task forces. Consider your possible impact, whether you will have opportunity to be heard, and your total time commitment to such activities. Decide how much time you can afford to give to them.

### Join Minority Organizations

Just as described for women, networking is an important defense against feeling isolated and a useful offense for furthering your career. Take advantage of opportunities to learn how others have solved problems that you are facing and to develop strategies to effect change useful for your community. Learn from your peers which institutions, programs, and laboratories nurture people of all races and ethnicities.

### Choose More Than One Mentor

With so few URMs in cardiovascular medicine working in academic medical centers, minorities have difficulty finding someone like themselves to serve as a mentor. Choosing a senior person in your institution to help guide you through the early career decision-making process is crucial, even if this mentor is not like yourself. Choosing someone outside of your own institution as one of your mentors (in addition to a local mentor) can be helpful for planning what you should do next and where you should go for the next round of training.

---

## **Research Opportunities for Minorities and Non-US Citizens**

*If you are interested in doing research, you can find out more about AHA funding opportunities at <http://my.americanheart.org/portal/professional/research>. The goal of the AHA National Center is to annually award at least 6% of research dollars to fund applications from ethnic groups underrepresented in science.*

*The following awards are offered through the AHA National Center and/or through AHA Affiliates.*

**Predoctoral Fellowship**—*Helps students initiate careers in cardiovascular or stroke research by providing research assistance and training.*

**Postdoctoral Fellowship**—*Helps a trainee initiate a career in cardiovascular research while obtaining significant research results.*

**Clinical Research Program**—*Encourages mentoring of early career investigators to help them engage in high-quality introductory and pilot clinical studies.*

**Fellow-to-Faculty Transition Award**—*Provides funding for trainees with outstanding potential for careers as physician-scientists in cardiovascular or stroke research during the crucial career development from the completion of research training through the early years of the first faculty/staff position.*

**Beginning Grant-in-Aid**—*Promotes the independent status of promising beginning scientists.*

**Scientist Development Grant**—*Supports highly promising beginning scientists in their progress toward independence by encouraging and adequately funding research projects that can bridge the gap between completion of research training and readiness for successful competition as an independent investigator.*

**Established Investigator Award**—Supports mid-term investigators with unusual promise who have demonstrated a commitment to the cardiovascular or cerebrovascular science area as indicated by prior publication history and accomplishments.

**Grant-in-Aid**—Encourages and adequately funds the most innovative and meritorious research projects from independent investigators.

All of these awards are available for citizens, permanent residents, and noncitizens holding various visas. Further information is available on the AHA Web site.

Additionally, the NIH sponsors supplements to existing grants to fund salaries of URMs and has training grants available for junior faculty-level URMs. For more information on those programs, visit <http://grants1.nih.gov/training/extramural.htm>.

---

## Be a Role Model and Advocate

No matter how junior you may feel, always remember that you are a role model and can mentor your peers and those who are junior to you. Take every opportunity to share what you have learned with those who are following in your footsteps. Support and be an advocate for others.

## Carefully Consider Your Career Choices

Many URM physicians have a strong desire to return to and serve their own community both as physicians and as role models. You may help your community even more when you are successful in another way. Carefully consider all of your choices within academia, industry, and professional and governmental organizations. Think outside of the box.



## **Recommendations for Early Career Physicians and Scientists Who Have Trained Abroad**

### **Use All the Tools Available to You To Overcome Your Sense of Isolation**

The excitement of coming to the United States to train or practice medicine can quickly turn to terror as you confront the long list of practical issues involved, such as finding a place to live, mastering the language, interacting with your peers, and learning to eat strange foods. Ask your supervisor to identify someone who can help you settle in and who knows the system well enough to guide you through the early inevitable challenges.

### **Make It a High Priority To Identify a Mentor as Soon as Possible**

If you cannot find someone like yourself, find someone who has empathy as well as knowledge. Most people have moved to a new place at some point in their lives and can extrapolate to your situation. Do not delay choosing a mentor. If necessary, ask your boss for help.

### **Learn the Rules**

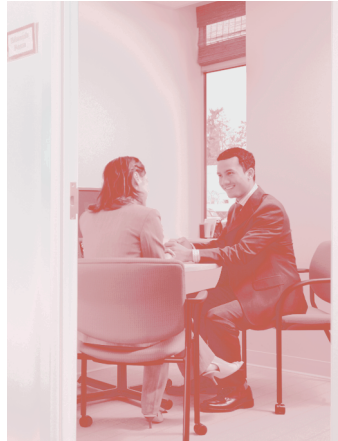
Every institution has its own culture and mores. To succeed, you need to learn what they are and how to survive and thrive within the system. In addition to your mentor, talk to your colleagues about their perceptions of the culture and watch how they manage certain situations. Talk to your mentor about your perceptions for a reality check, and allow them to decide what is best for you.

## Stay Connected to Your Own Culture

Join organizations that bring people like you together for fun and for sharing ideas about how to survive and thrive in your new home. Such networking is essential for survival.

## Place a High Priority on Mastering English

Whatever your job, you must be able to communicate effectively. Even if you have a good mastery of English, make it an excellent mastery, both oral and written. If you are having trouble communicating, hire a tutor. It will make a difference.



## Role of the Mentor

Other chapters in this handbook address rules and recommendations for being a good mentor. Here we focus on suggestions that have direct impact on the career development of women, URMs, and those who have trained abroad.

Mentors have the responsibility to work within the structures of their own institution to ensure a level playing field for all and to create an environment that leads to success. As the number of women, URMs, and those who have trained abroad increases in our medical centers and institutions, the criteria for success will need to be redefined to reflect different styles of leadership inherent in these groups. Mentors must play a major role in this process.

### Recommendations for Mentors of Women, URMs, and Those Trained Abroad

- Create a system whereby a faculty member has annual reviews of the mentee's career progress with the department chair, including a discussion of the faculty member's goals and departmental expectations, time management, and any impediments to success. This discussion should take place independently of negotiating salary.
- Apply all rules and guidelines consistently, fairly, and as transparently as possible, especially with regard to allocation of resources and to promotion.
- Encourage women and URMs to apply for positions of leadership.
- Empower search committees for leadership positions to choose qualified leaders from women and URMs.
- Provide opportunities for senior leaders to develop their leadership skills.

---

Chapter Five: Special Considerations for Mentoring

- Provide opportunities for promising junior faculty to develop leadership skills by providing leadership courses designed to address the junior faculty leader.
- Require leaders of departments, divisions, and centers to be evaluated on how well they nurture the careers of women and URMs and make it possible for those who have trained abroad to succeed.
- Create a community in which young women and URMs have role models like themselves.
- Create a culture in which mentoring is rewarded and career development for all is recognized as good business.
- Open doors for your mentee. Connect your mentee with the right professional contacts and activities (eg, speaking, peer review, and writing).
- Recruit members of minority groups into fellowship training programs.
- Establish faculty partners/mentors (planned mentoring) and offices for career development with special focus on career development for those in minority groups.
- Practice policies of nondiscrimination and do not tolerate discrimination in any form.

- Create a culture in which work and family balance is valued.
- Women mentors should be advocates for other women and look out for negative tactics, such as unhealthy competition among women, not giving credit where due, tokenism, conscious and unconscious support for policies that maintain barriers to success for women, and promoting conflict between genders within the institution.
- Mentors should use their influence to encourage institutions and professional organizations to hold networking functions for women, minorities, and those who have trained abroad. Graduate and medical student bodies should take the initiative and do the same thing.
- Connect mentees, especially those from other cultures, to colleagues with similar backgrounds.
- Provide the necessary skills for success (eg, ESL for those who have trained abroad).
- Finally, support the mentee in her or his career decisions. Only the mentee can decide what career path is appropriate, and she or he should be supported in any career-path changes.

## Summary

Women, URMs, and non-US-trained leaders remain underrepresented in the leadership of our academic medical centers and other professional institutions. Great racial, ethnic, and gender diversity exists in populations at risk for CVD and stroke, and many advantages exist to diversifying the profession of cardiovascular medicine to fight disease. Institutions must train and hire a diverse faculty and staff and provide opportunities for all groups to excel. By encouraging academic medical centers and other professional institutions to develop mentoring programs, the AHA believes the number of future leaders who are women and URMs will increase.



## References

1. Magrane D, Lang J, Alexander H, Leadley J, Bongiovanni G; Association of American Medical Colleges. Women in US Academic Medicine Statistics and Benchmarking Summary, 2006–2007. <http://www.aamc.org/members/wim/statistics/stats07/table02.pdf>. Published 2007. Accessed January 28, 2008.
2. American Board of Internal Medicine. Resident and fellow workforce data—Percentage of first year fellows by gender and type of medical school attended. <http://www.abim.org/about/examInfo/data-fellow/chart-05.aspx>. Accessed January 28, 2008.
3. American Medical Association. *Physician Characteristics and Distribution in the US*. 2002–2003 ed. Washington, DC: AMA Press; 2002:36–38.
4. American Medical Association. *Physician Characteristics and Distribution in the US*. 2008 ed. Washington, DC: AMA Press; 2008:41–43.
5. *Circulation*. 2005;111(10):1205–1331. Special issue.

Chapter Six: Foreign Medical School Graduates

---

*“As an International Medical Graduate (IMG), I have encountered several barriers to my clinical and academic career development. The guidance, advice, and perspective that my mentors have provided have been critical elements in helping overcome these obstacles and in helping attain my long-term career goals.”*

—Yoel Korenfeld-Kaplan, MD





# FOREIGN MEDICAL SCHOOL GRADUATES

**Yoel Korenfeld-Kaplan, MD**  
**Francisco Lopez-Jimenez, MD**  
**Fatima H. Sert-Kuniyoshi, PhD**  
**Virend K. Somers, MD, PhD, FAHA**

For more than a century, the United States has been a magnet for young investigators. The current American dominance in medical research, manifested by the breadth of discoveries, inventions, and medical research infrastructure, naturally attracts talented individuals from around the world.

This is true for most scientific disciplines, and cardiovascular medicine is no exception. Although there are no statistics to determine the percentage of cardiovascular research fellows coming from overseas, foreign medical school graduates (FMGs) may represent at least half of all physicians doing postgraduate research training in cardiovascular diseases. In the Mayo Clinic College of Medicine alone, from 2002 to 2007, 85% of the cardiovascular research fellows held a nonimmigrant US visa. These numbers make it important to understand the opportunities and challenges both of mentoring an FMG and of being an FMG pursuing research training in the United States.

FMGs come to the United States to do research for many and varied reasons. Some may see this US postgraduate training as a springboard to pursue clinical training in an academic center by improving their curriculum vitae and becoming more competitive in the selection process for residency and fellowship. Others look for a bona fide research experience, seeking to carry out high-quality research and even pursue a graduate school degree such as a master of public health or a doctor of philosophy. Some FMGs may come to the United States to learn a specific research technique or procedure, while others may be in search of a broader research agenda. They might be sent from their home country institutions as part of their own faculty development or national programs or they might independently seek out research training. The FMGs have a wide spectrum of prior research experience; some have little exposure to research, while others bring an extensive record of publications in peer-reviewed journals.

Regardless of the primary reasons for coming to the United States, the support mechanisms, or the research experience, FMGs are often brimming with enthusiasm, ideas, and energy. They generally enrich research teams, providing fresh ideas, different skills, and cultural diversity. Often they evolve into lifelong research collaborators and an integral part of the scientific network of the primary mentor.

The following sections will address two primary subjects: recommendations for the mentor and recommendations to the current or prospective FMG trainee.



## **Recommendations for Prospective Mentors of Foreign Medical School Graduates**

### **Establish a Relationship With the Mentees Before Their Arrival in the United States**

The relationship between the FMG and the mentor should start well before the prospective mentee arrives in the United States or in the institution. An FMG will likely become more productive more quickly if he or she becomes acquainted with the research team and ongoing projects before joining the laboratory, and becomes engaged in one or more specific research projects soon after arrival.

### **Assess the Skills of the Trainee so as To Leverage Any Prior Research Experience**

An FMG with a good foundation in biostatistics can assist in performing statistical analysis for other members of the research laboratory soon after his or her arrival. A trainee with excellent writing skills can participate early on in the preparation of manuscripts or book chapters, led by other members of the research team. The initial assessment of skills also helps pinpoint areas needing improvement, such as writing skills, becoming familiar with a particular laboratory technique, and handling institutional procedures and requirements like review boards, so that the mentee can contribute to ongoing or new protocols relatively soon after arrival. For many FMGs, English will be a second or third language, and writing, reading, or verbal English skills may not be optimal before arriving in the United States. Some otherwise gifted FMGs might have only limited experience writing in English, representing a barrier to scientific productivity. To overcome this limitation, some institutions have offices and resources specifically designed to assist FMGs in the editorial aspects of manuscripts and grant applications. Some online services provide similar help to those lacking this kind of support in their host institutions.

## Facilitate the Trainee's Adaptation to a New Culture

Arriving in America offers many surprises, both good and bad. The FMGs coming to the United States need to conduct many activities related to daily living that might be time consuming and frustrating. Signing up for health insurance, completing immigration paperwork, getting a social security number (SSN), adapting to a new school system for their children, becoming familiar with local laws and regulations, getting a driver's license, setting up a checking account, and signing contracts for rental all may be cumbersome and anxiety-provoking for newcomers. Many of these actions require a particular sequence that sometimes may seem like a catch-22. For example, to rent a house might require that one have a checking account; to open a checking account in a local bank might require an SSN; to obtain an SSN might require a US address that cannot be obtained because the FMG is still looking for a place to live. The mentor can assign a senior research fellow, preferably a more seasoned FMG, to assist the new trainee with these issues.

FMGs might find the United States to be extremely different compared to their home country. They need to become familiar with American culture to avoid major misunderstandings, to facilitate their social integration into the investigative team, and to avoid embarrassment or even legal problems. Some things that may be socially or legally acceptable in other countries can get FMGs into trouble in the United States. Some examples include spanking a child, which might be considered child abuse, or greeting someone with kisses on the cheek, which, although common in European and Latin American countries between people of the opposite sex or women, could be considered sexual harassment in the United States.

## Discuss Goals and Expectations

Unlike graduate programs that have a structured curriculum and evaluation process, the learning experience for an international fellow rarely has a well-defined curriculum or a method to objectively assess the success of the FMG. Goals and expectations might vary from mentor to mentor, and also depend upon the long-term career goals of the mentee. These goals and expectations should be thoroughly discussed before the mentee comes to the United States or soon after arrival. They should be clear and preferably use measurable outcomes such as presentations at national meetings, preparation of manuscripts and publications, and completion of specific projects. In some instances a primary goal could be securing extramural funding. Goals should also have a timeline and should be divided into short-, mid-, and long-term objectives. The ultimate aim of the mentor should be to facilitate the success of the mentee in whatever he or she is pursuing for their professional and academic life.

## Set Individual, Regular Meetings and Foster the Involvement of Co-Mentors

The mentor and the mentee should meet regularly, at least once a month in a one-to-one fashion, to discuss progress, problems, and future plans. The mentor should encourage the participation of co-mentors in the development of the trainee.



## Recommendations for Foreign Medical School Graduates

Conducting research can be an excellent strategy to help launch an academic career in cardiovascular medicine in the United States. Although competitive residencies and fellowships like cardiology are considered extremely difficult for FMGs, in reality 25% of US cardiologists received their medical degree abroad and 30% of current cardiology fellows are FMGs. Cardiology fellowship programs are interested in applicants with strong academic training. Research in cardiovascular-related areas is broad and can include basic, translational, and clinical research. Trainees should focus on long-term goals and be practical when deciding what type of research best fits their future plans and goals.

### Finding a Mentor and a Place To Do Research

A mentor is a person who can guide and help you, assessing your strengths and weaknesses as well as helping you develop certain skills required for success. The ideal mentor will support your long-term career plans. While trying to find a good mentor, prospective trainees should consider research areas they find appealing and exciting but should be open to areas that are new to them and those suggested by their home mentors. Making a list of potential institutions and mentors may seem daunting, but it is an important start to the process. Usually, the future trainee will need to contact several potential mentors or institutions before being accepted at one. Electronic mail and Web-based information can be used as a screening tool to identify and contact potential mentors who could fulfill the mentee's expectations. The message should be general, honest, and should show interest and knowledge about the mentor and the specific area of research.

If the future mentee is still living in his or her home country, meeting with the prospective mentor during the selection process might be difficult. To gain knowledge on the research interests of potential mentors, the future mentee should read the most recent publications and, if possible, should talk with

current or former fellows and ask about their experiences in the laboratory. Another valid strategy is to find an investigator in your home country who knows a peer in the United States who can facilitate selection of the mentor and making contact. A telephone interview is another good option in getting to know a prospective mentor. Inquire about the current focus of research, funding opportunities, and his or her general expectations about future trainees. Based on the information gathered, trainees should analyze the potential mentor's goals and compare them to their own. Both parties must understand clearly what is expected before making a final commitment.

Sometimes, following an established path between the trainee's home institution or country and a particular laboratory may be an efficient alternative. If a colleague has trained or is training in a particular US laboratory, then a new trainee may have an easier time joining that laboratory or stepping into a pending position. Taking the place of a colleague who has completed training in a specific laboratory may enable a more seamless transition both for the mentor and the prospective mentee. Also, the new arrival may often find overlapping with his or her predecessor useful, and may even purchase or take over furniture, accommodation, and motor vehicles.

The process of choosing a good mentor can be quite challenging, and the decision should not be made based on any single factor; therefore, when potential mentees contact prospective mentors, they need to get comprehensive information about that mentor's laboratory, institution, and city (see Table 1).



**Table 1. Five Characteristics of the Ideal Mentor**

<b>General principles</b>	<b>How to do it</b>
Match the mentor expertise area to your area of interest.	Look for recent publications Speak with current or former trainees.
Recognition and credit for trainee's contributions	Find out how often the potential mentor's trainees are listed as first author in recent publications. Speak with current or former trainees.
Funding and likelihood of continuity	Check mentor's investigator profile at the institutional Web site. Review section "Acknowledgments" at the end of recent publications for listed grants and other funding sources.
Stability and mobility between positions	Look into a mentor's curriculum vitae or recent publications to evaluate how long a mentor usually stays in a given institution; the trainee does not want to be left behind when a mentor with high mobility moves away sooner than expected.
Laboratory organization and approachability of the mentor	Ask current or former trainees about the organization and structure of the laboratory, frequency of meetings, and mentor's availability.



## The Laboratory/Research Program

Usually, mentors who are well-established investigators will have limited time for mentoring. If this is the case, mentees should try to identify co-mentors or senior fellows in the laboratory who can guide them at the beginning, until they are acquainted with the system. Knowing how the research group works as a team is helpful. The mentee should inquire about laboratory meetings, journal clubs, and how often the mentor meets individually with trainees. If possible, the mentee should try to attend a conference where the prospective mentor will give a lecture and they can meet each other in person. More information about a prospective mentor is usually available on the institutional Web site.

Choosing a laboratory or research program that is well recognized and whose group leader has broad contacts is important. A good network will provide new mentees the opportunity to create and cultivate relationships with faculty members and laboratory colleagues within and outside the institution. Choosing one or several co-mentors is an option that can help in building solid research careers.

## The Institution

The institution where the prospective mentor's laboratory is located should play an important role in the mentee's final decision; sometimes a famous institution is not necessarily the best one in a specific research area or the best in which to cultivate a particular skill. The mentee should find out what kind of resources the institution has to offer; some institutions have research fellowships along with formal graduate programs offering master's or doctor of philosophy degrees. Institutions with an NIH-funded Center for Translational Science Activities usually offer structured programs and curricula for new clinical investigators.

## The City

Weather conditions, city size, transportation systems, geographic location, cultural life, and cost of living are

important factors to consider before deciding whether any specific city fulfills the trainee's needs and expectations.

## Clinical Training for Foreign Medical School Graduates

If pursuing clinical training is one of the goals of the FMG, he or she must focus on completing all the requirements for medical school certification as early as possible, so as to prevent this being a distraction during the research fellowship. Keep in mind that research fellowships do not leave much time to study, as good research training programs usually take up most of the trainee's time and attention. The FMG should complete the US Medical Licensing Examination (USMLE) tests as early as possible. Any medical students who plan to come to the United States to continue their clinical training should complete the examinations while they are in medical school or just after graduation.

The USMLE is composed of three steps. Step 1 tests basic science. Step 2 has two parts. The step 2 clinical knowledge (CK) portion focuses on clinical aspects; the step 2 clinical skills (CS) portion is a practical examination that tests the ability of the applicant to interact with patients. Step 3 is aimed at testing management and therapeutic decision making. To be certified by the Educational Commission for Foreign Medical Graduates, and therefore have the opportunity of applying for a residency, an FMG needs to pass USMLE steps 1, 2 CK, and 2 CS. Step 3 is usually taken during the first years of residency and can also be a requirement if applying for an H-1B visa. If an FMG wants to get this type of visa for clinical training, step 3 should be taken before residency starts.

## Funding Opportunities

The FMGs are often required to identify their own sources of support before coming to the United States to do research. Writing a grant during research training is a great learning opportunity; nevertheless, a trainee preferably should not be obligated to have a grant in order to receive full training. A grant proposal is quite complex, and the chance of getting it

funded at first submission is low. Therefore, the trainee should find out how many grants the laboratory already has and how successful the mentor is at getting research projects funded. A good option is to find funding sources in one's home country before coming to the United States. Many countries offer funding opportunities through federal or state agencies; local mentors can be of great help in finding these sources.

Some opportunities to get support for postdoctoral fellowships related to cardiovascular medicine are available (Table 2). Fellowships sponsored by the NIH usually require US citizenship or permanent residency (a green card); therefore, individuals on temporary or student visas may not be eligible.

**Table 2. Examples of Funding Opportunities in Cardiology**

- **American Physiological Society**—*several scholarships. Look for Perkins award. Web site: <http://www.the-aps.org/awards/index.htm>*
- **American Heart Association (AHA)**—*predoctoral and postdoctoral peer-reviewed fellowships granted by region. Web site: <http://www.americanheart.org>*
- **American College of Cardiology (ACC)**—*awards granted for annual meetings and cardiology fellowships. Web site: <http://www.acc.org/about/award/awardopps.htm>*
- **International Atherosclerosis Society**—*visiting fellowship award. Web site: <http://www.athero.org>*
- **American Society of Echocardiography**—*offers fellowships and awards for research in echocardiography. Web site: <http://www.asecho.org/i4a/pages/index.cfm?pageid=3315>*

## Nonimmigrant and Immigrant Visas

Most FMGs are not US citizens nor do they hold immigrant visas. Therefore, many FMGs have to go through the sometimes overwhelming process of getting a nonimmigrant visa and working permit as well as facing other regulatory issues. The process of obtaining a nonimmigrant visa is time consuming, and the outcome is sometimes unpredictable. The type of visa and other conditions will vary depending on multiple factors. For instance, the institution where the new mentee will work may offer one or more types of visas based on its policies and previous experience. The type of visa will depend on the source of funding. If the mentee is coming with his or her own funds or is sponsored by a local governmental agency, either public or private, an exchange visa (J-1) may be offered. If the research position includes a salary paid entirely by the host institution, a work visa H-1B could be the option. If the research fellowship is part of an academic postgraduate program (eg, master of public health or doctor of philosophy), the trainee can request a student visa (F-1). If the research program is of short duration (less than three months), the mentee may be able to enter the United States with a tourist/business visa (B1/B2). These suggestions are meant to serve only as a rough guide, and details may vary. Please visit <http://www.unitedstatesvisas.gov/> to obtain more detailed information about US visas.

## Language Barriers

Those FMGs whose native language is not English should be aware that English skills well beyond the basics are required in order to get the most from the research experience. Most mentors or institutions may not formally require proof of English proficiency unless the trainee is entering a graduate program. However, FMGs are strongly advised to assess their own English proficiency in an objective way using established tests like TOEFL (test of English as a foreign language). The Internet-based TOEFL is available overseas; it has four sections—reading, listening, speaking, and writing. Each part is scored 0–30; universities usually require a total

score of at least 80. Twenty in each subsection is considered adequate. These cutoff scores provide a good measure of English proficiency. In some American universities, FMGs can enroll in English courses for medical professionals to improve their communication skills. Good communication skills are necessary for a successful academic research career.

## Arriving in the United States

Trainees need to arrive in the United States at least a week before the official start date of their position to settle into their new life. Seeing to daily living arrangements may require a full-time commitment initially. Searching for a place to live, contacting utilities, opening a checking account, finding a car or public transportation, and becoming familiar with the school system are some examples of the initial necessary tasks.

If a trainee is arriving in a large city or a community with many educational institutions, he or she should try to locate housing well in advance because it may otherwise be extremely expensive. Many cities across the United States have large student communities. Finding an inexpensive, well-located apartment to rent, especially if the trainee has a family to support, may be difficult.

If a trainee intends to stay for a prolonged period and holds a work or exchange visa (H-1B or J-1), an SSN is needed. The trainee should go to the closest Social Security Office with a passport and fill out a form. It takes around two to three weeks to get a social security card. The trainee needs to give her or his SSN to the institution sponsoring the research. The SSN's primary purpose is to track individuals for taxation purposes. It also is necessary for establishing a credit history, which will be helpful when doing tasks such as contracting with a cell-phone company or subscribing to health insurance.

## Cultural Issues

The United States is an extraordinary place where freedom, opportunity, and hard work create a substrate rich with promise for those pursuing an academic career. However, American culture can be quite different from the FMG's native home country's environment. Mentees have to make themselves aware of cultural issues, rather than learn them the hard way.

*Racial, ethnic, and religious issues:* America is a place where negative racial, gender, or other comments and actions as well as pejorative comments with racial, ethnic, or religious content, even those perceived as mere "jokes," are considered inappropriate and even sometimes could be unlawful.

*Sexual harassment:* As alluded to earlier, some behaviors that may be acceptable elsewhere may be considered sexual harassment in the United States. These could range from telling jokes with implicit or explicit sexual content to flirting acts that could be considered unwelcome or inappropriate. The line between permissible and inappropriate behavior is easily and sometimes unwittingly crossed. The FMGs should be more conservative initially until they better understand the acceptable modes of interaction in the new environment. Many institutions have mandatory courses on sexual harassment. The FMGs are strongly advised to become familiar with the broad scope of the definition of sexual harassment.

*Animal protection:* Americans have a strong interest in protecting animals. Unfortunately, in some countries the mistreatment or abuse of animals may be commonly accepted. However, this is not usually the case in the United States, where such behavior may be considered criminal.

## Measuring the Trainee's Success

The research fellow may find evaluating their own successes and flaws difficult. If the mentor does not provide feedback, then the trainee will not fully appreciate how they are doing at any point of the fellowship. Measuring success in research can be a challenge. In general, success depends on the trainee's own goals and objectives. If learning a technique to implement it back home is the major goal, mastering this piece of knowledge would be a good marker of success. If getting into a residency program is the final goal, then other markers can be used by the trainee to self-evaluate his or her achievements. Table 3 suggests a list of success markers that can be used by research fellows to assess their performance and success in a research training program. This list is not intended to be comprehensive but merely to serve as a guide.

**Table 3. Markers of Success for International Research Trainees**

1. Publishing original articles as first or second author in peer-reviewed journals.
2. Publishing other types of articles such as viewpoints or reviews.
3. Achieving degrees during research fellowship (eg, master of public health, master of science, or doctor of philosophy).
4. Having success in funding applications.
5. Receiving young investigator awards for work presented in international or national meetings.
6. Presenting at international or national meetings.
7. Learning and applying new laboratory techniques, especially if a certificate is issued and will enhance competitiveness for future positions.
8. Being proficient in basic biostatistics, data handling, and regulatory aspects of research.

## Making a Career in Research: Future Plans

The ultimate goal of research is to generate original and important knowledge. Choosing a research question, developing a strategic approach, and communicating the results to the scientific community are key components for building a strong, successful, and enduring academic career. As early as possible, the trainee should identify a research focus and concentrate on that particular scientific area. The focus can be disease-specific (heart failure, myocarditis, sleep apnea), methodology-specific (assessment of quality of life, clinical trials, field epidemiology, bench research), or a combination of these (progenitor cells and vascular regeneration, genomics of peripheral vascular disease). Finding the particular subject of interest may take some time and the trainee should keep a wide scope of interests and an open mind at the beginning, and indeed even in the later stages, of his or her academic career.

## Turning a Disadvantage into an Academic Strength

Some of the challenges to cardiovascular trainees described in this chapter may be discouraging. However, we want to highlight that FMGs doing research in the United States have many desirable attributes that make them unique and competitive, including cultural diversity, curiosity, creativity, and productivity. Coming to the United States to do cardiovascular research can be a gratifying experience for both mentors and mentees, leading to long-lasting scientific collaboration and friendship. Certainly, thousands of FMGs who have built careers in academic cardiology (both in the United States and their home countries) will bear testimony that being a foreign graduate training in the United States is not an easy path to tread. However, the prize is worth the challenges.



## References

Flores G. Language barriers to health care in the United States. *N Engl J Med.* 2006;355:229–231.

Flores G, Laws MB, Mayo SJ, Zuckerman B, Abreu M, Medina L, Hardt EJ. Errors in medical interpretation and their potential clinical consequences in pediatric encounters. *Pediatrics.* 2003;111:6–14.

Fuster V. Symposium presentations. How to become a cardiovascular investigator. *J Am Coll Cardiol.* 2005;46:A5–A70.

Prabhakaran P, Ajay VS, Prabhakaran D, Gottumukkala AK, Shrihari JS, Snehi U, Joseph B, Reddy KS. Global cardiovascular disease research survey. *J Am Coll Cardiol.* 2007;50:2322–2328.

Shackelford B, Jankowski J. *National Patterns of R&D Resources: 2006 Data Update.* NSF 07–331. Arlington, VA: National Science Foundation, Division of Science Resources Statistics; 2007.

### NOTES:

---

---

---

---

---

---

---

---

Chapter Seven: Mentoring and Being Mentored: Registered Nurses and Allied Health Professionals

*"Can a single person change the course of another's professional journey? A mentor can, and I can attest that the mentorship I received from a single amazing nurse helped me travel paths, achieve successes, and enjoy my professional journey more than I had ever imagined possible."*

*—Debra K. Moser, DNSc, RN, FAHA, FAAN*



# MENTORING AND BEING MENTORED: REGISTERED NURSES AND ALLIED HEALTH PROFESSIONALS

**Debra K. Moser, DNSc, RN, FAHA, FAAN**

Nursing is a unique profession in that nurses have the opportunity to assume one or more widely varying roles. For example, nurses work in hospitals delivering direct bedside care; they work in outpatient clinics or in the community; they work as advanced practice nurses, managers and administrators, and counselors and educators; they are faculty members in small colleges and in academic medical centers; and they are scientists. Given this variety of roles, special attention must be given to mentoring and choosing a mentor so that the outcomes of the mentoring experience are optimal for both mentor and mentee. Similarly, the umbrella term *allied health professional* encompasses a number of diverse roles. The focus of this chapter is the mentor-mentee relationship for nurses and allied health professionals and includes the benefits of the successful mentor-mentee relationship, how to overcome challenges to a successful mentor-mentee relationship, how to be the perfect mentor, and how to be a successful mentee.

## Benefits of the Successful Mentor-Mentee Relationship

The tradition of mentoring is not as long and established in nursing or the allied health professions as it is in other disciplines. As a consequence, many nurses and allied health professionals have not experienced the benefits of either mentorship or mentoring. Indeed, many in these professions remain unaware of the possibilities for mentorship. A good understanding of mentorship is fundamental to establishing a successful mentor-mentee relationship. Even the term *mentor* is often not well understood. A mentor is far more than a teacher or an advisor (although often these people make exceptional mentors).

A mentor is a more experienced colleague who provides guidance, counsel, and advice to a junior or less experienced individual trying to achieve expertise, competence, and professional standing. Most successful mentor-mentee relationships are long-lasting and evolve as the mentee gains confidence and ability. As the relationship grows, the nature of the interactions between mentor and mentee evolve and become more complex and fulfilling for both parties.

A mentor has been described as a coach, a facilitator, a counselor, and a networker.<sup>1</sup> Thus, one of the major benefits of having a mentor is having access to these roles of a mentor. The *coach* delivers (1) information and advice (both explicit and implicit) necessary to help the mentee succeed and excel; (2) feedback about the mentee's strengths and areas needing improvement; (3) support and encouragement; (4) guidance about how to accomplish goals and move forward; and (5) a grounded, realistic perception of successes and failures so that each experience, regardless of its outcome, is a valuable learning experience.

The *facilitator* works to help the mentee grow by creating opportunities as well as delegating authority to and advocating for the mentee. Growth can only be achieved when one is given the chance to test new skills and gain new experiences.

Good mentors are adept at promoting growth by making new opportunities available to their mentees and challenging their mentees to accept and excel at these opportunities.

The *counselor* helps a mentee visualize wide-ranging goals that can be attained, often pushing the mentee to imagine possibilities not previously considered or believed to be achievable. The counselor encourages the mentee to explore multiple options and consider the consequences of decisions made. The counselor also knows how to listen, allowing the mentee the opportunity to explore his or her voice by expressing opinions, ideas, and possibilities without harsh judgment.

The *networker* opens the professional world to the mentee. He or she assists the mentee in developing important professional relationships. The networker connects the mentee with other potential mentors and with future collaborators.

Clearly, to be successful, mentors must be unselfish in their promotion of mentees. Successful mentors are generous with their resources, whether intellectual, professional, or personal. This generosity results in multiple benefits to both the mentor and mentee.

Mentors receive as much benefit from mentoring as do mentees. The primary benefit to mentors and mentees during their relationship is enhanced personal and professional growth. A mentorship may be one of the most important methods of achieving such growth. Mentorship is characterized by the ability to provide support and encouragement while simultaneously challenging the mentee. Personal and professional growth is a direct result of overcoming challenges using the support and encouragement provided by others. Indeed, many would argue that growth is not possible without challenge. Thus, a major benefit of a successful mentor-mentee relationship is the ability of the mentor to challenge mentees and support them through the challenge.

Another major benefit of mentorship is increased access to the professional world and its many opportunities. As a result of a successful mentor-mentee relationship, professional doors open, and they open more quickly than they would without the guidance of a mentor. In many cases, nurses and allied healthcare professionals are unaware of the many professional opportunities available to them. A mentor provides access to an already established network of individuals and to networks of people within institutions and associations. Without a mentor, this access could take months or maybe even years longer to develop, if it develops at all.

Mentors also assist their mentees in attaining credibility earlier than they would otherwise. Early credibility is often the result, in part, of “insider” knowledge that is imparted by the mentor. Mentors also provide their mentees with the skills, knowledge, and confidence to achieve success.

The successful mentor-mentee relationship is usually a deep and enduring professional and personal relationship in which both members of the relationship achieve their full potential. However, to make the relationship a successful one, challenges must be faced and overcome.

## Overcoming Challenges to a Successful Mentor-Mentee Relationship

Successful mentor-mentee relationships develop over time and require the recognition and appropriate management of challenges that inevitably will develop.

Maintaining open communication is essential. Conflicts should be discussed and resolved as soon as they arise. Open communication allows for correction of misperceptions that, if left uncorrected, can damage the intent of the mentor-mentee relationship. Both mentor and mentee must strive for clarity in communication and must be explicit in their expectations. Both mentor and mentee should keep files, notes, and possibly journal entries to track the details of exchanges.

Many problems can be avoided if both parties in the relationship remember that each is responsible for the relationship. Although the mentor will usually have much more experience in maintaining a mentor-mentee relationship and often bears a greater responsibility for setting the stage for open communication, the mentee also must assume responsibility for keeping communication clear and open. This can often be difficult for the mentee who must overcome the fear of appearing unprepared for the challenge of being mentored. Trust and mutual respect are vital, and recognizing the hard work involved in promoting a successful mentor-mentee relationship is essential.

A major challenge that can threaten mentor-mentee relationships is overcoming the many time commitments of the mentor. Successful mentors are busy individuals with multiple commitments and often more than one mentee at a time. The issue of ensuring adequate time to nurture the mentor-mentee relationship is one that must be addressed by every mentor, and mentees often find themselves asking, does he or she have time for me? Before undertaking any mentoring obligation, potential mentors must realistically consider the long-term commitment associated with a mentor-mentee relationship. They must consider the fact that they and their time are the important resources that a mentee expects from a mentor, and the mentor must realistically assess their own ability to commit the time necessary to effectively mentor.





## Being the Perfect Mentor

Successful mentors receive substantial tangible and intangible benefits from the mentor-mentee relationship. However, before launching into a relationship, potential mentors must honestly and carefully assess their ability to provide mentees with what they need for success. Good mentors have values that support success in the professional life they are modeling. This requires an appreciation for the value of hard work coupled with passion for the area and enjoyment in the work one is doing and will be mentoring. One can be an outstanding nurse, but without an enjoyment of the work, one can not be a successful mentor. Other values essential to success as a mentor include integrity, rigor, discipline, creativity, and flexibility. In addition, a successful mentor is productive and has a sustained record of productivity.

Successful mentors have or develop a number of qualities that support their success. They are supportive of mentees without forcing mentees into their mold. A successful mentor delights in the successes of his or her mentees as they reflect favorably upon his or her mentoring. Successful mentors encourage risk-taking but provide support for these risky ventures. They balance support with the promotion of independence. Mentors also must master the art of constructive critique. This, too, requires development of balance; one must learn to give an honest and true critique without appearing mean-spirited. Nothing improves a mentee's growth more than receiving a constructive critique that helps the mentee grasp how to reach new levels of writing, presentation, or creativity, but nothing quashes a mentee's desire to grow more than mean-spirited critique. Finally, a successful mentor models successful behavior but resists endlessly telling mentees what to do.

Having had the perfect mentor,<sup>2</sup> who promoted me and my career unselfishly, gave me the confidence to try things I never would have considered, and endlessly inspired me to strive for quality in everything I do, I share my list of qualities for a perfect mentor below:

- Wildly productive in multiple areas
- Loves what she or he does
- Generous
- Kind
- Good humored
- Provides excellent critique without undermining your confidence
- Honest
- Promotes mentees
- Has experience in your clinical area of interest

—Debra K. Moser, DNSc, RN, FAHA, FAAN

---



## How to Be a Successful Mentee

To attain the maximum benefit from mentorship, the mentee must be an active partner in the relationship. Passivity and the expectation that the mentor will do most of the work in the relationship are damaging to the mentor-mentee relationship and diminish the possibility that the relationship will be successful. Mentees must be responsible and accountable for their own learning and experiences. A successful mentee is open, willing to learn, and dedicated to achieving. Successful mentees have respect for and interest in the relationship and their mentor. They are serious about the work to be done, and they have respect for the mentor's time and experience. They have realistic expectations of the mentor. Just as a good mentor is flexible, so is a good mentee.

Successful mentees have values supportive of learning, sharing, and promoting the profession. They are enthusiastic about the possibilities in the mentor-mentee relationship. They are willing to be challenged and to relate and share. Successful mentees value being prepared and have formulated ideas about what they want in a mentor and what they want from the mentor-mentee relationship. In addition, the successful mentee takes every opportunity to learn and engage by being open to opportunities provided by the mentor and others.

A true sign of success in the mentor-mentee relationship is when the mentee begins to mentor others early in the relationship. Mentees can mentor fellow mentees and others who are junior. Successful mentees also develop the confidence to share their expertise with their mentor and to provide their mentor with feedback about the relationship and the mentor's work. These signs of the mentee's success come about as the mentee begins to develop an identity unique from the mentor's identity.

Just as there are a number of things one can do to promote a successful mentor-mentee relationship, there are a number of things one can do to damage the relationship. Lack of respect for each other's goals undermines mentor-mentee relationships, as does failure to promote or support one another. Inappropriate praise or criticism can damage the relationship, as can failure to resolve conflicts, taking credit for the other's work, or fostering a selective agenda that does not consider the other member of the relationship.

Mentoring and being mentored are both privileges and responsibilities. Nurses and allied health professionals often have not been able to take advantage of mentorship, but, as more and more of these professionals strive to excel and achieve, the opportunities to mentor and be mentored have expanded. Mentoring and being mentored is about opening up and responding to possibilities heretofore thought impossible. As J. S. Rabatin and colleagues state in their study on mentoring in academic medicine, "to function as either a mentor or a mentee involves parallel qualities of attending to the process of the relationship, managing conflict effectively, and learning and continuing to be open to possibility."<sup>3</sup>

## Case Study

JD was hired at a small local community hospital after graduating with a BS in nursing from a state university. She worked on the night shift in the general medical-surgical area of the hospital for six months, after which time she often was floated to the intensive care unit (ICU) to work when they needed extra help. In the ICU, JD came to the attention of two nurses, CM and PY. These nurses had worked for years in intensive care and were considered leaders for their expertise, their support of other nurses, and their unfailing good humor even in the face of negative circumstances. They thought that JD would make an excellent critical care nurse and pushed her supervisor and theirs to invite JD to transfer to the ICU. They also talked to JD about their desire to have her come work in the ICU given her many strengths and her potential. Although JD was fearful of working in ICU, did not believe she had any strengths, and always felt inadequate when she was floated to the ICU, she also craved a challenge and agreed to transfer into the ICU.

For the first three months, CM and PY arranged for JD to always be working with either one or both of them so they could provide consistent orientation and training along with support and so JD could identify them as her mentors. As one of them was always the charge nurse when JD worked, they could assign her to patients who would challenge but not overwhelm her. They also could give her progressively more challenging patients as she mastered new skills and gained confidence. Both CM and PY worked at being excellent role models and consciously modeled the behaviors they felt were vital to good ICU nursing. These included use of evidence-based practice, creative problem-solving, seeking information when questions arose and making it available for all staff, patient advocacy, exceptional patient care with an emphasis on balancing personal contact with the highly technical aspects of critical care, a family-centered approach to patient care (they were instrumental in changing the ICU visiting policy to an open one), collegiality with physicians and allied health professionals, and support of

learning. Seeing the positive impact of these behaviors on patient care and on work as a nurse in the ICU, JD quickly assimilated these behaviors.

When they determined that she was ready, CM and PY pushed JD to try new experiences, knowing that she was often unsure of herself even though she was highly proficient. They made sure she had the proper support from them to be successful so that she could gain confidence. As her mentors, CM and PY introduced JD to the many possibilities related to professional nursing. They asked her to be the first to try a preceptor program with the local nursing school in which senior students worked the preceptor's schedule for a quarter. Nurse JD took to heart this opportunity to mentor someone and worked to make sure the student benefitted from her mentorship as she did from the mentorship of PY and CM. Guided by her mentors, JD attended her first professional meeting and joined her first professional organization. Inspired by and at the urging of CM and PY, she became the first nurse at the hospital to obtain critical care certification.

Ultimately, JD became a regular charge nurse in the ICU. Inspired by her success in this area and her increasing confidence, she began making suggestions in staff meetings and was instrumental in starting a number of new programs to increase the use of evidence-based practice in the ICU. She developed continuing education modules for nurses throughout the hospital and took on a part-time position at her alma mater as a clinical instructor. Intrigued by teaching, she went back to school to obtain her master's degree and acute care nurse practitioner certification. She now works as an acute care nurse practitioner in the ICU of a large academic medical center hospital and also serves on the faculty of the associated college of nursing. She considers her mentors, CM and PY, instrumental to her success in these areas. As a consequence of the benefits she received from her mentors, she views mentorship as one of her major goals in nursing.

---

## References

1. Marks MB, Goldstein R. The mentoring triad: mentee, mentor, and environment. *J Rheumatol*. 2005;32(2):216–218.
2. Moser DK. Kathleen Dracup, mentor extraordinaire. *J Cardiovasc Nurs*. 1998;12(2):11–17.
3. Rabatin JS, Lipkin M Jr, Rubin AS, Schachter A, Nathan M, Kalet A. A year of mentoring in academic medicine: case report and qualitative analysis of fifteen hours of meetings between a junior and senior faculty member. *J Gen Intern Med*. 2004;19(5 pt 2):569–573.

## NOTES:

---

---

---

---

---

---

---

---

---

---

---

Chapter Eight: Dysfunctional Mentoring Relationships

---



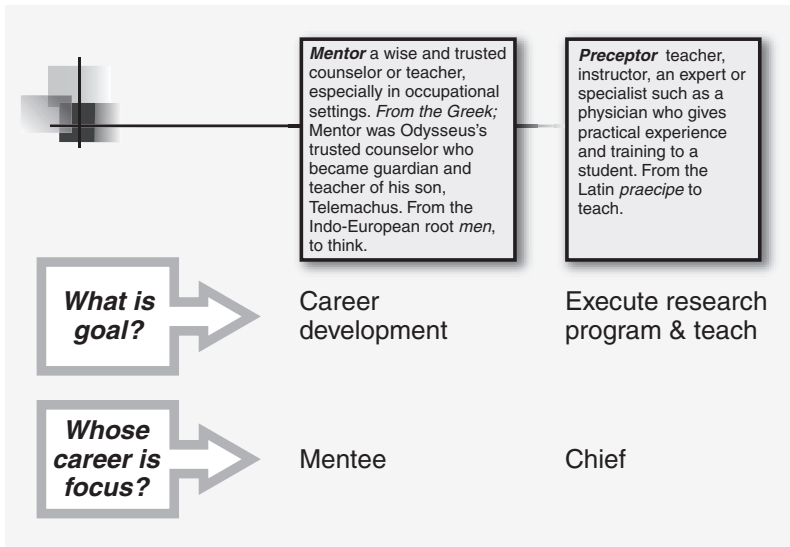


# DYSFUNCTIONAL MENTORING RELATIONSHIPS

**Joanne S. Ingwall, PhD, FAHA**

## Separating Mentoring From Being the “Boss”

The mentor-mentee and preceptor-student relationships are fundamentally different (preceptors may also be known as principal investigator, teacher, chief, supervisor, or boss). Consider the dictionary definitions of *mentor* and *preceptor* given in Figure 1. The goal of mentoring is career development of the mentee, with nothing but satisfaction to be gained by the mentor. The goals of the preceptor-student relationship are focused on executing a project or task and on the primary career development of the preceptor.



**Figure 1.**

The difference between being a mentor and being a boss is made clear by considering the nature of the activities of the mentor-mentee and preceptor-student relationships (Figure 2). The primary activity of the pure mentor-mentee relationship is to provide support or give *LEGS* to the mentee: the mentor *Listens, Evaluates, Guides, and Supports*. The relationship is personal and focused on the mentee. In contrast, the activities of the preceptor-student relationship are focused on the task or the project. The components of this relationship require the preceptor to *Identify* projects, *Teach* how to do them, *Track* progress, and communicate the *Successful results (ITTS)*. Although the preceptor or principal investigator (PI) has the responsibility of stewarding the garnered resources, conducting the projects, and being a good teacher, he or she also has the most to gain from the success of the project. Success for both the PI and student occurs when the relationship stays focused on the work and when their goals are aligned.

<b><i>Mentor/mentee relationship</i></b>	<b><i>Preceptor/student relationship</i></b>
ACTIVITIES	ACTIVITIES
<p>Listen</p> <p>Evaluate choices</p> <p>Give advice, guide</p> <p>Support decisions</p>	<p>Identify projects</p> <p>Teach/provide tools</p> <p>Track progress, guide</p> <p>Success: communicate results</p> <p><b>KEY: Align goals</b></p>

**Figure 2.**

In the real world, the boss (preceptor, teacher, chief, or supervisor) often takes on the role as mentor and provides career guidance with the employee's goals and needs in mind. However, serving both as boss and mentor can bring about a situation that is inherently conflicted. A conflict of interest can arise from the tension between providing guidance for what is good for the student and maintaining what is good for the PI.

In this chapter, some examples of how mixing mentoring and *being boss* can lead to less than ideal career development for the mentee, and some examples of *tormenting* or dysfunctional mentoring practices will be presented. The examples come from the basic research laboratory, but similar issues arise in the clinical and teaching worlds as well.

## Dysfunctional Preceptor-Student Relationships: When Goals Are *Not* Aligned

### Case 1

You aspire to become an independent investigator but you are treated like a technician, you are not given the tools to succeed, and you are not taught or allowed to communicate your results. The PI collects your data, makes all data presentations, and writes the papers.

Expectation: The PI is responsible for providing the trainees with the tools for success and being fair in the treatment of trainees.

*Before* taking a position, students must do their homework and determine the PI's reputation as a boss by talking to trainees currently working in the laboratory or talking to those who have recently left. Students should visit the laboratory if at all possible and take note of its tone—do people like going to work there?

If trainees already have joined their laboratory group, then they need to decide if anything short of leaving will help them to achieve their long-term goals. Trainees or students need to find a mentor, preferably one who knows both parties, who can help find ways to change the environment and/or develop a strategy to leave gracefully with minimum repercussions. A respectful discussion with the PI could turn things around. For example, suggestions could be made for holding group meetings where everyone takes a turn presenting data, or permission could be obtained to go to a meeting to present results or to prepare the first draft of a paper. If all fails, the student should plan an exit strategy that produces as little harm as possible to either party. Remember, the PI is more senior than the student is and has influence in the field and on the student's future.

## Case 2

As a postdoctoral trainee, you have been working on the PI's main research project and, because you have done all the work, now plan to take the project with you to a new job.

Some laboratories make it abundantly clear that all ideas and data generated while in their laboratory belong to the PI and the institution. Carving out a project to take along to a new job is rarely possible and probably should not be possible at the postdoctoral and student levels. This is a more difficult problem for junior faculty members who often have an NIH K Award or the equivalent to work on their PI's research program. This difficult issue is best discussed *before* starting work on the project. Students need to put themselves in their PI's place and ask what would they think if all of their students left with their projects—would there be any projects left? On the other hand, the chief may be divesting interest in that project and would welcome the student taking ownership. The student should talk to the PI about ownership, but also be prepared to leave the project behind.

## Case 3

Your PI will not write a letter of recommendation for you for a job opportunity, stating that you can do better. Besides, he needs you to stay longer.

An especially difficult problem is figuring out when to leave. From the PI's point of view, much time and energy have been invested in training, and the longer the trainee stays, the more productive she will be. Students are more productive at the fourth-year postdoctoral level than at the first-year postdoctoral level. On the other hand, trainees are eager to build their own laboratories.

This is a true conflict of interest on the part of the PI, and one that overrides the PI-trainee relationship. Adding mentoring to the role of PI in this situation is rarely good for the mentee. This particular example may be best solved by going to the

division or department chair, who should be able to convince the PI to write a good letter for you. The bigger issue is when to leave. The best answer is when you think you are ready and able to leave. Find a mentor—one who really is impartial—to help you identify the path to success and help implement it.

#### **Case 4**

The department chair has offered you the opportunity to carve out an independent career at the same institution where your PI works. Should you do this?

This is one of the most difficult situations to be in. To accept, you will need the full support of your PI. You need to be confident that she has the generosity and integrity to refrain from being a coauthor on your work (unless deserved) and genuinely supports this plan. This scenario is risky even in the best of circumstances, as outsiders may not easily separate your independent contributions from those of your former PI. This is such a sufficiently difficult situation that many institutions simply do not allow this practice. Others, believing that selecting one's own most successful trainees to become junior faculty is a good strategy, espouse it. What is important here is for you, with the help of a mentor, to be clear on your path to success.

## Lessons

A PI should not commit to the responsibilities of having a student until he or she is ready to identify a subproject that can be given to the student to execute.

The PI has the responsibility to teach and provide the tools for success to all of the students, fairly and equitably.

The PI has the responsibility to stay focused on the work, keeping the goals of PI and trainee aligned. Offering career guidance (mentoring) must be done with care and full recognition of blending the roles of being *boss* and *mentor*. The PI should encourage the student to seek additional guidance if there is any chance the PI is conflicted.

Intellectual property disputes are the most frequent disputes in academic settings today. The institution and the PI must clearly define the rules of ownership—before, during, and after execution of projects. The trainee or junior member of the relationship must respect decisions about ownership of projects, authorship, and other work.

Finding one's path to success should be done with the help of a true mentor.

## Dysfunctional Mentoring

### Case 1

Your mentor does not listen to you. Your mentor only talks about how he accomplished career goals and thinks that way is the only path to success.

The cardinal rule in the mentor-mentee relationship is for both parties to *listen*. Failure to listen makes meeting a waste of time. The mentee and the mentee's career should be the focus of the discussions. In this case, even if the mentee set aside the mentor's egotistical focus on the mentor's own career, then the mentor probably still would be in the wrong. The paths to success in this decade are not the same as paths used by now-established investigators.

### Case 2

Your mentor is not available when needed.

Mentees need to be respectful of the mentor's time, but the mentor also should be available and make time for the mentee.

### Case 3

Your mentor does not keep your confidences.

Imagine the consequences of not keeping confidences about health issues, planned pregnancies, possible job offers, and having the information made public prematurely.

The solution to all of these cases: stop seeking the mentor's advice. If the mentee or the mentee's career is not the focus of the conversation, if all the mentee does is listen without being heard, if the mentee's career development is not what is most important in this relationship, then maintaining this relationship is not worth the mentee's time. This is the case even if the mentor is the most famous person in the



mentee's potential career field. But remember, the mentee does need to exit the relationship gracefully. The mentor was chosen for her power and influence, so the mentee should take care not to offend.

The mentee can also be the problem. The mentor-mentee relationship cannot be successful if the mentee

- Does not respect the mentor's time (the *needy-greedy* mentee),
- Does not do the agreed upon job (the *talks a good story but does not deliver* mentee), or
- Does not show up (the *irresponsible* mentee).

If any of these scenarios are the case, then the mentor should not have to spend any more time on the mentee. The mentor can tell the mentee that the responsibilities of the relationship have not been met and, unless the mentee changes her or his behavior, the relationship cannot continue.

## Lessons

The mentee's career development is the focus of the mentor-mentee relationship. Whenever that is not the case, the relationship fails and the mentor must be replaced.

Having a mentor, or even more than one mentor, in addition to a good PI relationship is ideal, especially for decisions concerning taking the next step in the mentee's career.

Appendix: Resources

---



# APPENDIX: RESOURCES

## American Heart Association

The AHA is a national voluntary health agency whose mission is to build healthier lives, free of cardiovascular diseases and stroke.

The AHA has 16 councils:

- Arteriosclerosis, Thrombosis, and Vascular Biology
- Basic Cardiovascular Sciences
- Cardiopulmonary, Perioperative, and Critical Care
- Cardiovascular Disease in the Young
- Cardiovascular Nursing
- Cardiovascular Radiology and Intervention
- Cardiovascular Surgery and Anesthesia
- Clinical Cardiology
- Epidemiology and Prevention
- High Blood Pressure Research
- Kidney in Cardiovascular Disease
- Nutrition, Physical Activity, and Metabolism
- Stroke
- Peripheral Vascular Disease
- Functional Genomics and Translational Biology
- Quality of Care and Outcomes Research

Each scientific council conducts multidisciplinary efforts that lead to a better understanding of the heart, the circulatory system, the brain, and the interdependent organs. In turn,

these efforts ensure that sound medical and scientific knowledge underlies the efforts of AHA to reduce the impact of heart disease and stroke. The last three councils (Peripheral Vascular Disease, Functional Genomics and Translational Biology, and Quality of Care and Outcomes Research) were originally commissioned as Interdisciplinary Working Groups (IWGs) and now have full council status. These groups are formed to serve as focal points for a new science area or for an area that is spread out through several areas of practice and research.

### **Council Awards for Early Career Clinicians and Investigators**

The AHA councils sponsor many awards for early career clinicians and investigators. The list below is a representation of some of the awards available. For a complete listing of all opportunities, visit <http://www.americanheart.org/councilawards>.

#### **Arteriosclerosis, Thrombosis, and Vascular Biology**

- Brinkhous Young Investigator Prizes in Thrombosis
- Irvine H. Page Young Investigator Research Awards
- Junior Investigator Award for Women
- ATVB Scientific Sessions Travel Awards for Young Investigators
- ATVB Conference Travel Awards for Young Investigators

#### **Basic Cardiovascular Sciences**

- Louis N. and Arnold M. Katz Basic Science Research Prize
- Melvin L. Marcus Young Investigator Award
- Basic Cardiovascular Sciences (BCVS) Trainee Travel Awards
- BCVS International Travel Grants
- BCVS Minority Travel Grants
- Outstanding Early Career Investigator Award
- BCVS Conference New Investigator Travel Awards
- Cardiovascular Outreach Awards

**Cardiopulmonary, Perioperative, and Critical Care**

- Cournand and Comroe Young Investigator Award
- Junior Investigator Travel Stipends

**Cardiovascular Nursing**

- Martha N. Hill New Investigator Awards
- Early Career Clinical Nursing Award

**Cardiovascular Radiology and Intervention**

- Melvin Judkins Young Clinical Investigator Award

**Cardiovascular Surgery and Anesthesia**

- Vivien Thomas Young Investigator Awards
- Junior Investigator Travel Stipends

**Clinical Cardiology**

- Laennec Young Clinician Award
- Samuel A. Levine Young Clinical Investigator Award
- Women in Cardiology Trainee Awards for Excellence
- Clinical Cardiology Fellowship Travel Grants

**Epidemiology and Prevention**

- Elizabeth Barrett-Connor Research Awards for Young Investigators
- Jeremiah and Rose Stamler Research Award for New Investigators
- Trudy Bush Fellowships for Cardiovascular Disease (CVD) Research in Women's Health
- EPI Minority Travel Grants

**High Blood Pressure Research**

- Annual Aventis Pharma Hypertension Research Clinical Fellowship Program
- High Blood Pressure Research Conference Travel Awards
- Harry Goldblatt Award in Cardiovascular Research

Appendix: Resources

---

**Kidney in Cardiovascular Diseases**

- Young Investigator Award (managed by the American Society of Nephrology)
- Kidney Council New Investigator Travel Awards

**Nutrition, Physical Activity, and Metabolism**

- Nutrition, Physical Activity, and Metabolism Young Investigator Award

**Stroke**

- Student Scholarships in Cerebrovascular Disease & Stroke
- Robert G. Siekert New Investigator Award
- Mordecai Y.T. Globus Young Investigator Award

## Funding Opportunities

The AHA National Center and affiliates offer different early career research awards, including Predoctoral and Postdoctoral Fellowships, Fellow-to-Faculty Transition Awards, Beginning Grants-in-Aid, Scientist Development Grants, and Clinical Research Program Awards. For more information on these awards, see <http://my.americanheart.org/portal/professional/research>.

## Membership Opportunities

The AHA offers an Early Career Membership package. For more information on AHA membership, see <http://my.americanheart.org>. Additionally, an early career clinician or investigator is required to serve on the AHA Science Advisory and Coordinating Committee, the AHA Research Committee, and all council leadership committees.

- The Annual Ten-Day Seminar on Epidemiology and Prevention is designed for health professionals planning careers in research, teaching, or practice in the area of epidemiology and prevention of CVD. Up to 20 faculty members and 32 fellows attend a series of discussions, lectures, and laboratory and tutorial sessions. Travel stipends and grants are available.
- The AHA's Council on Epidemiology and Prevention hosts *Meet-the Expert Roundtable* luncheons at its annual conference each year. This program provides a forum for early career investigators and clinicians to hold detailed discussions with senior investigators on current science topics, career planning, and strategies for obtaining research funding.

---

**Appendix: Resources**

- The AHA hosts an Early Career Development Program at the AHA Scientific Sessions. This program provides a forum for early career investigators and clinicians to network with other investigators and includes a keynote address, panel discussions, workshops, and breakout sessions. The AHA also hosts two Cerebrovascular Fellow and Early Career Development Luncheons at the annual International Stroke Conference. These informal sessions provide a platform for early career investigators and clinicians to network and share ideas, build relationships with senior investigators and other science mentors, develop career paths, and receive planning guidance. In addition, two abstract-based awards are presented to early career investigators at the International Stroke Conference—the Globus and the Siekert awards.
- The AHA Research Committee offers a symposium targeted to National Research Program awardees in the final year of their Scientist Development Grant and/or Established Investigator Grant. The program includes poster sessions, a scientific presentation by an eminent scientist, and networking time for attendees and AHA Research Committee members. The Hypertension Summer School attracts and motivates early career clinicians and investigators into research in hypertension and cardiovascular disease. This conference provides trainees with an opportunity to interact with experts in the science and practice of hypertension medicine and to assist them in choosing mentors, programs, and careers. Travel stipends are available.

Other AHA meetings also provide awards and travel stipends for meeting attendance. For more information on these and other conferences, visit <http://my.americanheart.org/portal/professional/conferencesevents>.



## Mentoring Web Sites

Following are links to some Web sites of other institutions that offer mentoring programs and resources.

- University of Pennsylvania School of Medicine; Guidelines for conversations with tenure-track faculty:  
<http://www.med.upenn.edu/mentee/bs1-3.shtml>
- Stanford University, School of Medicine; Faculty Mentoring Program: <http://facultymentoring.stanford.edu/>
- Virginia Commonwealth University; Faculty Mentoring Guide:  
[http://www.medschool.vcu.edu/facultyaffairs/career\\_dev/facultymentoringguide/index.html](http://www.medschool.vcu.edu/facultyaffairs/career_dev/facultymentoringguide/index.html)
- National Academy of Sciences; various mentoring handbooks:  
<http://search.nap.edu/nap-cgi/naptitle.cgi?Search=mentoring>
- Association for Women in Science (AWIS); mentoring program information: <http://www.awis.org/careers/mentoring.html>
- MentorNet; E-mentoring network for diversity in engineering and science: <http://www.mentornet.net>
- American Physiological Society mentoring site:  
<http://www.the-aps.org/careers/careers1/mentor/index.htm>
- Science Next Wave—An Electronic Network of the Next Generation of Scientists:  
<http://sciencecareers.sciencemag.org/funding/>
- NIH research programs: <http://grants.nih.gov/training/index.htm>

---

Appendix: Resources

- FASEB (Federation of American Societies for Experimental Biology) Development Plan for Postdoctoral Fellows: <http://opa.faseb.org/pdf/idp.pdf>
- Doctors Without Orders: Postdoctoral Survey Highlights: <http://postdoc.sigmaxi.org/results>
- How to Get the Mentoring You Want: <http://www.rackham.umich.edu/downloads/publications/mentoring.pdf>

## Other Funding Resources

### **National Institutes of Health, National Heart, Lung, and Blood Institute**

The NIH supports biomedical research and research training through a variety of grant mechanisms. The NIH consists of 16 institutes that fund research grants, including the NHLBI, which funds projects related to CVD. For detailed information, go to <http://grants1.nih.gov/grants/oer.htm>.

The NHLBI holds an NHLBI Training Session at the AHA Annual Conference on Epidemiology and Prevention. Additionally, the Genetic Approaches to Complex Heart, Lung, and Blood Diseases course is an excellent training opportunity for those interested in genetic epidemiology. This course is held at the Jackson Laboratory in Maine. For more information, see <http://pga.jax.org/courses.html>.

In addition, the NIH offers an electronic search engine to query funded NIH grants from 1972 through the present, the Computer Retrieval of Information on Scientific Projects. See <http://crisp.cit.nih.gov> for more information.

**Centers for Disease Control and Prevention**

The CDC periodically offers funding opportunities for a variety of public health issues. More information can be found at <http://www.cdc.gov/funding.htm>. In addition, CDC and the National Center for Health Statistics conduct various nationwide surveys and house databases that can be used for epidemiological studies.

**Agency for Healthcare Research and Quality**

The AHRQ funds research to enhance quality, appropriateness, and effectiveness of healthcare services and access to those services. More information can be found at <http://www.ahrq.gov/fund>. In addition, AHRQ has a Grants On-Line Database (GOLD), a searchable database of grants funded by AHRQ. See <http://www.gold.ahrq.gov>.

**US Department of Agriculture**

The US Department of Agriculture offers grants for food assistance and nutrition research programs. See <http://www.ers.usda.gov/Briefing/FoodNutritionAssistance/funding/> for details.

**National Academy of Sciences**

The National Academy of Sciences offers grant opportunities in the fields of behavioral and social science, health and medicine, policy, and research, among other scientific topics. Further information is available at <http://www.nas.edu>.

**Centers for Medicare and Medicaid Services**

The CMS funds a wide range of research. Current research priorities include monitoring and evaluating CMS programs; improving managed care payment and delivery; improving fee-for-service payment and delivery; following future trends influencing CMS programs; strengthening Medicaid; monitoring state children's health insurance and state programs; meeting the needs of vulnerable populations; analyzing outcomes, quality, and performance; and building research capacity. For more information, see [http://www.cms.hhs.gov/ResearchGenInfo/02\\_Research%20Data%20Assistance%20Center%20\(ResDAC\).asp](http://www.cms.hhs.gov/ResearchGenInfo/02_Research%20Data%20Assistance%20Center%20(ResDAC).asp).

**White House Fellows**

Founded in 1964, the White House Fellows program is America's most prestigious program for leadership and public service. White House Fellowships offer exceptional young men and women first-hand experience working at the highest levels of the federal government. See <http://www.whitehouse.gov/fellows/> for more information.

**American Diabetes Association**

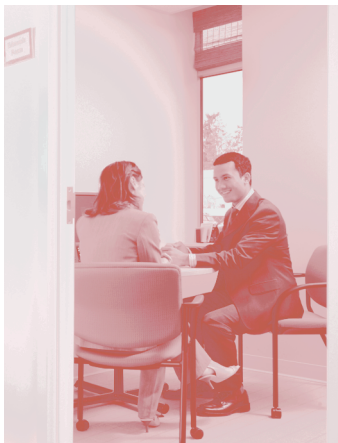
The American Diabetes Association funds some studies related to diabetes, obesity, and cardiovascular diseases. See <http://www.diabetes.org/diabetes-research/ada-funded.jsp> for more information.

**World Health Organization**

The WHO offers wide-range grant opportunities, including research training grants. See <http://www.who.int/tdr/grants> for details.

**Robert Wood Johnson Foundation**

The Robert Wood Johnson Foundation funds a variety of projects that serve its mission to improve the health and health care of all Americans. For more information, see <http://www.rwjf.org>.



Appendix: Resources

NOTES:

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---



Appendix: Resources

---

NOTES:

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---