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Training Ph.D.s: The Views of Faculty on Their Role and Their Institutions' Role in Promoting the Development of Responsible Researchers

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CONTENTS

CONTENTS (*continued*)

Chapter **Page**

LIST OF TABLES

LIST OF FIGURES

I. BACKGROUND AND STUDY OVERVIEW

The development of skilled and ethical researchers in the United States is a well documented national objective.[1] A core component of this objective is to train and educate new researchers about ethical research standards. The Office of Research Integrity (ORI) "focuses resources, not only evaluating institutional reports of research misconduct but also on preventing misconduct and promoting research integrity through deterrence and education" (Wright et al 2008). The influence of faculty is believed to be critical to promoting research integrity and preventing research misconduct. Faculty who serve as mentors and advisors are in a pivotal position to promote the development of young scientists' research skills in a responsible and ethical manner. Working with ORI, Mathematica Policy Research designed a study to learn what role faculty advisors and mentors believe they play in educating doctoral students to conduct responsible research. Up to this time, there has been an assertion of the importance of the roles of mentors and advisors, but there have been no focused studies that demonstrate what these faculty members do to promote research integrity.

A. RESEARCH NEEDS AND QUESTIONS

In the past decade there has been an emphasis on institutional commitment to promote mentoring that fosters quality scientific training and prevents misconduct among doctoral students engaged in research. In 2000, the Division of Education and Integrity (DEI) at ORI was directed to "focus more on preventing misconduct and promoting research integrity through expanded education programs." Specifically, DEI was directed to "conduct policy analyses,

[1] Examples include publications by the National Academy of Sciences, Institute of Medicine, such as *On Being a Scientist: A Guide to Responsible Conduct of Research* and *Integrity in Scientific Research: Creating an Environment That Promotes Responsible Conduct.*

evaluations, and research to improve DHHS research integrity and build the knowledge base in research misconduct, research integrity and prevention."[2] In 2002, the Institute of Medicine (IOM) issued a report on integrity in scientific research. The report advocates that "institutions should develop a multifaceted approach to promoting integrity in research appropriate to their research environments." The IOM report also states that mentoring is the key to producing responsible researchers. And, the third edition of *On Being a Scientist: A Guide to Responsible Conduct in Research* (2009) emphasizes the influence advisors and mentors can have on beginning researchers.

To respond to the emphasis on producing responsible researchers, we need to understand more about who is training new Ph.D. candidates in the responsible conduct of research and how this is being done. Do faculty advisors and mentors rely on the pro forma Responsible Conduct of Research (RCR) training programs that are often created to fulfill the training grant requirement of the National Institutes of Health (NIH)? Is there a distinction in the perceived responsibilities for advisors versus mentors? Who is in charge of the training? What responsibilities do faculty members perceive they and their institutions have for training doctoral students in the responsible conduct of research?

The ORI Faculty Survey was designed to explore these questions. In this report, we use the data from this survey to address three key research questions to learn how faculty influence the training of responsible researchers:

1. How do faculty members perceive or define the roles of mentor and advisor?

[2] Noted in the Federal Register May 12, 2000, Volume 65, Number 93.

2. What practices or activities do faculty members actually engage in to help doctoral students achieve successful outcomes?
3. How do faculty perceive the role of universities to promote or support mentoring and advising doctoral students?

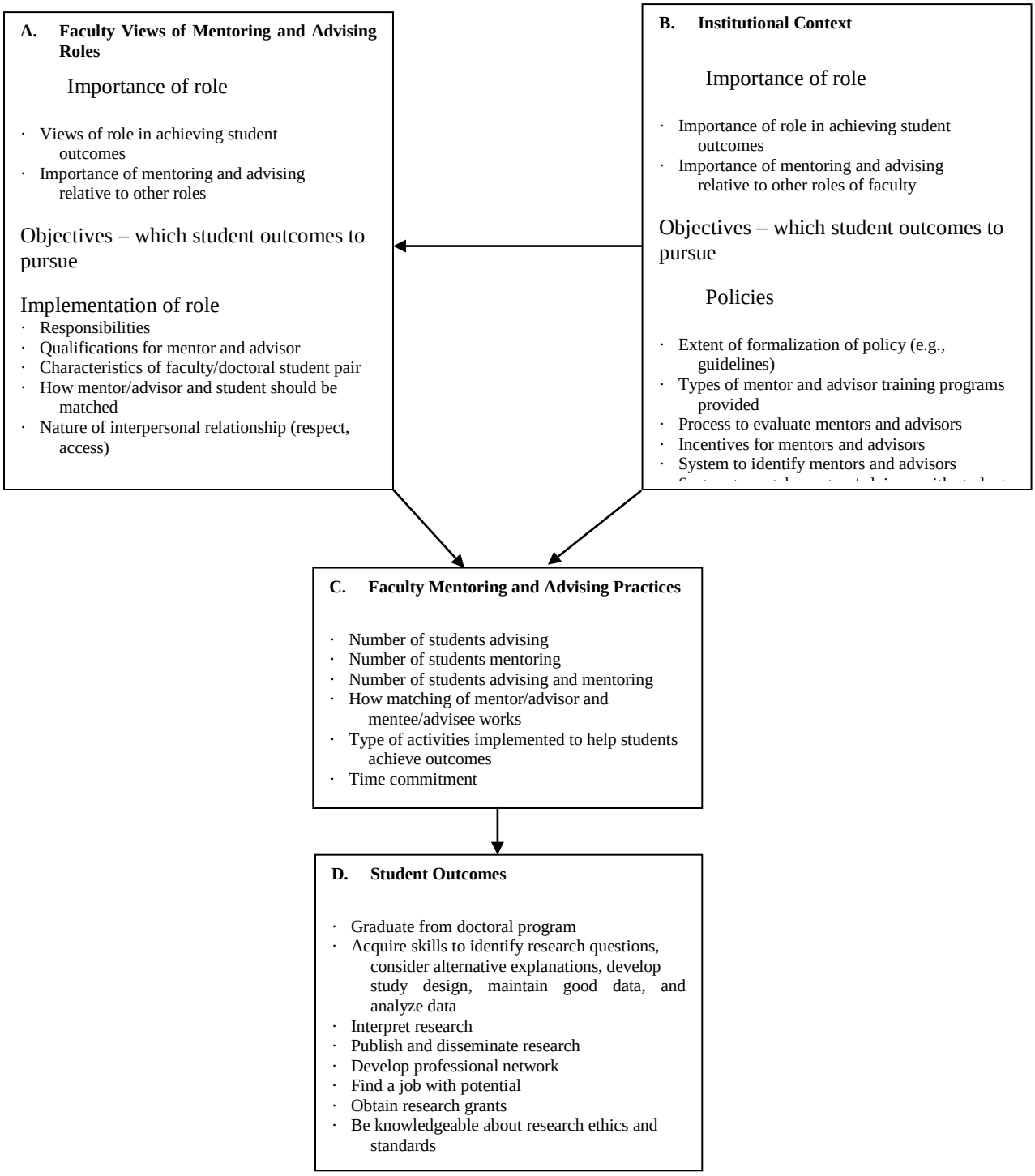
B. CONCEPTUAL FRAMEWORK FOR THE STUDY

As shown in Figure 1, Box A, we suggest that the roles of mentor and advisor might be defined with respect to three dimensions: (1) importance of the role, (2) objectives of the role, and (3) implementation of the role. The views of faculty members who consider themselves a mentor may differ from those who consider themselves an advisor in how instrumental they believe they are in the overall development of successful researchers. It may be valuable to understand how faculty members assess the importance of the mentor and/or advisor roles relative to the importance of the other roles they play. Although the primary objective of mentoring and advising is to help students achieve successful outcomes (Box D), faculty may believe each of these roles suggests responsibility for different student outcomes. For example, the definitions of mentor and advisor used by the National Academy of Sciences imply that a mentor may help the student find publishing opportunities, whereas the advisor is concerned with completion of the dissertation.

Implementation of mentoring and advising is effected by who becomes a mentor or an advisor and the expectations regarding: (1) the responsibilities of these roles, (2) the qualifications needed to be a mentor or an advisor, (3) the characteristics of the faculty/doctoral student match, (4) the process for matching mentors/advisors and doctoral students, and (5) the nature of the social interaction with the doctoral student. Faculty members may have different beliefs about the qualifications of a mentor and advisor. While the terms are often considered synonymous, there are descriptions that distinguish between the roles. For example, guidelines

FIGURE I.1

A CONCEPTUAL MODEL TO UNDERSTAND HOW FACULTY MEMBERS VIEW THEIR ROLE AND THEIR INSTITUTION'S ROLE IN PROMOTING THE DEVELOPMENT OF RESPONSIBLE RESEARCHERS



for mentoring such as the National Academy of Sciences' *Advisor, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering*, Stephanie Bird's article "Mentors, Advisors and Supervisors: Their Role in Teaching Responsible Conduct of Research," and others listed on the ORI website typically mention substantial research knowledge and experience and communication skills as necessary qualifications for an effective mentor. Some faculty members may prefer to mentor a certain type of student; for example, they may believe that, for the relationship to be effective, the mentor and doctoral student should have a similar work ethic or research interest.

Our research questions link directly to the model. Our first question, "How do faculty members perceive or define the roles of mentor and advisor?" corresponds to Box A. We are interested in learning how faculty members view their roles and go about implementing them. Our second question, "What practices or activities do faculty members actually engage in to help doctoral students achieve successful outcomes?" relates to Box C of the model. The practices or activities faculty members engage in are shaped by the number of students they are advising or mentoring, by how they are matched with students, and by how much time they are able to invest in mentoring. All of these factors impact student outcomes. Box B in the model corresponds to our third research question, "How do faculty perceive the role of universities to promote or support mentoring and advising doctoral students?" Faculty views on the value universities put on their role as mentors and advisors, the guidelines and training they put in place to support faculty/student relationships, and the activities they provide to contribute to successful doctoral student training are institutional characteristics that foster a climate for the responsible conduct of research. Without documenting faculty members' roles and their perception of their institutions' roles, we know little about their participation in the scientific training of doctoral students. The data from the ORI Faculty Survey provides information related to mentoring and

advising by identifying how faculty view their role and their institution's role in training and educating doctoral students to become responsible researchers. To the best of our knowledge, there is not a similar set of data.

C. OVERVIEW OF DATA COLLECTION METHODOLOGY

To address the research questions, provide a first-ever profile (from the faculty perspective) of faculty/doctoral student training and education, and to establish a baseline of information that can be used to track changes in faculty/doctoral student activities, we designed a web survey of a random sample of faculty members who have received 2005-2006 NIH grant funding to focus on faculty who have been recognized by NIH for their research expertise. The results reported are weighted percentages. There is a comprehensive methodology report that provides the technical details related to conducting the survey and the development of the sample weights (Ballou et al. 2009). The following summarizes the research methods:

Sample. The sample frame was a list of 30,366 2005 and 2006 NIH grant recipients from which a sample of 10,000 was selected using two strata: (1) grant recipients associated with institutions that have medical schools and (2) those who were not associated with medical schools. To be eligible to participate in the survey, grant recipients had to have at least one student currently or within the last five years.[3] Appendixes A.1 and A.2 have an overview of the sample strata distribution and response rates. Appendix A.3 has a description of the weighted population estimates for gender, age, race/ethnicity, country of birth, tenure status, years at current institution, type of academic institution, and NIH funding amount.

Questionnaire Development. Questionnaire development began with experts at ORI, Dr. Sandra Titus and Dr. Lawrence Rhoades, and Dr. Frank Macrina at Virginia Commonwealth University. Mathematica® reviewed related literature with a focus on identifying comparable faculty surveys to inform the crafting of questionnaire items. To cognitively test the draft questionnaire, we conducted nine in-person interviews with eligible faculty. The cognitive interviews were used to assess overall clarity and potential measurement error. A paper version of the web questionnaire is in Appendix B.

[3]The two eligibility screening questions were: (1) Do you currently have primary responsibility for overseeing at least one doctoral student's research leading to his or her doctorate? and (2) IF NO: In the last five years, did you have primary responsibility for overseeing at least one doctoral student's research leading to his or her doctorate?

Data Collection. The ORI Faculty Survey used a web-administered questionnaire. We were able to use the web mode because the sample frame of 2005 and 2006 NIH grant recipients included email addresses for sample members; we had confidence the email addresses were valid at the time of the grant because email was the mode of communication with NIH. We sent sampled faculty members an email invitation to participate in the survey with a hyperlink to the questionnaire. Data collection was conducted between October 13, 2008, and March 16, 2009. The overall response rate was 53 percent without incentives for a total of 3,534 completed questionnaires. Appendix A.4 has a complete disposition of the 10,000 sample cases.

D. ORI FACULTY SURVEY RESULTS

In Chapter II, we profile faculty personal and professional characteristics to provide a context for the description of how faculty perceive and define the roles of advisors and mentors. In Chapter III, we describe the activities faculty engage in to achieve specific training and educational outcomes and how these activities relate to the advisor and mentor role. The institutional resources, rewards, and responsibilities faculty perceive as supporting and promoting doctoral student training and education are discussed in Chapter IV. We conclude in Chapter V with a summary of the survey results, and observations on the implications and limitations of the study.

II. FACULTY VIEWS ON THE ROLES OF ADVISOR AND MENTOR

How do faculty members perceive or define the roles of mentor and advisor?

A. INTRODUCTION

Mentoring and advising comprise a set of relationships and activities between students and faculty to guide doctoral students toward successful outcomes. While these terms are used interchangeably, research as described in *Three Magic Letters: Getting to PH.D.* (Nettles and Millet 2006) suggests that doctoral students who have mentors are more likely to have positive educational experiences. The literature also indicates that students perceive mentoring as highly critical to completing their graduate programs (Hartnett 1976; Blackwell 1987; Arce and Manning 1984).

There are multiple sources that describe mentoring and advising and provide training for these activities. However, little consensus exists on the use of the terms mentor and advisor, and a given faculty member may serve one or both roles from the student's perspective (Nettles and Millet 2006). The way in which faculty members view these roles may greatly shape the nature of the mentoring and advising support they provide to doctoral students, but little is known about the faculty who are responsible for mentoring and advising activities. Before we can move forward to offer solutions related to mentoring and advising and to improve the research training of future scientists, we need to know how faculty perceive or define the roles of mentor and advisor.

B. LABELS USED FOR FACULTY MEMBERS

Published articles, instructional information, and anecdotal information related to faculty responsibilities for the training and education of doctoral students acknowledge that multiple

labels—*advisor, mentor, supervisor, role model, director*, and others—are given to faculty who have this role. Some would argue that the responsibilities overlap, and others, such as the faculty member who made the following comment, say the label does not matter:

> *"I have not completed the survey. I find the line of questions totally irrelevant as to the role of advisor? Mentor? It is not what we are called but what we do."*

However, there is also a call for a common understanding of how to refer to the person who is responsible for educating doctoral students. Nicholas H. Steneck (2006) describes this problem and its consequences: "The lack of common definitions makes it difficult to establish a critical framework for assessing, responding to, and changing research behavior." As Steneck suggests, there are important reasons for having a common definition to foster research integrity.

With these survey results, we now have a description of how faculty define their role and what responsibilities for training doctoral students they assign to mentors, advisors, or both. This information can be used to have a discussion about whether (1) a standard definition, or definitions, of *mentor* and *advisor* will improve doctoral student education, especially for the responsible conduct of research training; or (2) the label used for faculty who train doctoral students does not matter—it is what they do that matters and standard definitions of these terms are not likely to make a difference.

1. Perception of Label Used by Institution

To find out how many faculty perceive an institutional clarity on the label for their role, we identified those who named only one term for the faculty members who work most closely with a student on his or her dissertation research. (Table II.1). About 1 in 3 identified only advisor (26.9 percent), mentor (6.6 percent), or supervisor (2.0 percent) as the one label used by their institution. In comparison, the majority of faculty operate in academic institutions where multiple

terms are used to refer to their role in relation to doctoral students. The most common combinations in use are advisor/mentor (33.5 percent) and advisor/mentor/supervisor (23.3 percent).

TABLE II.1

TERMS FOR FACULTY MEMBERS' ROLE (PERCENTAGES)

		(n)
Term Faculty Prefer		3,534
Advisor	53.5	
Mentor	37.6	
Supervisor or Other	8.9	
Term Faculty Think Institution Uses		3,530
Advisor only	26.9	
Mentor only	6.6	
Supervisor only	2.0	
Advisor and Mentor	33.5	
Advisor and Supervisor	4.9	
Mentor and Supervisor	1.5	
Advisor, Mentor and Supervisor	23.3	
Other	1.4	
Term Faculty Think Students Use		3,528
Advisor only	32.7	
Mentor only	8.3	
Supervisor only	1.9	
Advisor and Mentor	32.2	
Advisor and Supervisor	4.5	
Mentor and Supervisor	1.7	
Advisor, Mentor and Supervisor	17.0	
Other	1.6	

Source: ORI Faculty Survey

2. Perception of Label Used by Doctoral Students

Faculty members' perception of what their doctoral students call them is similar to their perception of the label used by their institution. A majority of faculty members report that their doctoral students use more than one label when they refer to them, whereas about 40 percent say

their students use only advisor (32.7 percent), mentor (8.3 percent), or supervisor (1.9 percent). Among the multiple labels, one-third of faculty members (32.2 percent) say students use both advisor and mentor and close to one-fifth (17.0 percent) report students refer to them as advisor, mentor, and supervisor (Table II.1).

3. Faculty Label Preference

While faculty report both their institutions and their students identify them with a range of labels, when asked to identify the label they prefer slightly more than half—53.5 percent—say advisor compared to 37.6 percent who say mentor. Supervisor (2.4 percent) or some other label (6.4 percent) was named by about 1 in 10[4] (Table II.1).

To further understand what, if any, differences there are among the faculty who work with doctoral students related to the terms they prefer, we compared personal and professional characteristics. Table II.2 shows faculty who are male, more than 65 years old, White non-Hispanic, and born in the United States are more likely to prefer advisor than the faculty who are female, non-White, age 55 or younger, and foreign born. There are also differences based on professional characteristics. Faculty who prefer advisor are more likely to have tenure and to have been at their institution for 16 years or more than those who are non-tenured and affiliated with their institution for 15 years or less.

[4] Examples of the other labels faculty say students use are their first name, *chair*, or *professor*.

TABLE II.2

PREFERRED NAME BY FACULTY CHARACTERISTIC (PERCENTAGES)

	Advisor	Mentor	Supervisor/ Other	(n)
Total	53.5	37.6	8.9	3,534
Gender***				3,249
Male	54.0	36.0	10.0	
Female	52.8	40.7	6.5	
Age***				3,194
<=45	53.2	40.1	6.7	
46-55	53.5	38.8	7.7	
56-65	52.8	36.8	10.4	
>65	59.4	28.5	12.2	
Race/Ethnicity***				3,212
White Non-Hispanic	55.5	35.3	9.2	
Black Non-Hispanic	47.6	49.3	3.1	
Asian Non-Hispanic	47.9	45.4	6.7	
Hispanic/Latino	44.3	45.2	10.4	
Other	44.6	44.0	11.4	
Country of Birth***				3,242
USA	57.5	34.0	8.6	
Other	44.8	45.4	9.8	
Tenure***				3,250
Tenured	55.3	35.4	9.3	
Not Tenured	47.8	44.0	8.3	
Years at Current Institution***				3,175
0-7	52.2	38.6	9.2	
8-15	52.6	39.3	8.1	
16-25	56.5	34.9	8.6	
>25	56.9	32.1	11.0	
NIH Funding***				3,534
$300,000	54.3	35.9	9.8	
$300,000 to <$600,000	54.2	38.1	7.7	
$600,000 to <$1 million	54.1	39.4	6.5	
$1 million to <$2 million	50.3	38.4	11.4	
$2 million and >	55.1	34.5	10.4	

Source: ORI Faculty Survey

*P<.01
**P<.001
***P<.0001

C. PERCEIVED ATTRIBUTES OF ADVISOR AND MENTOR ROLES

There is evidence that the terms *advisor* and *mentor*—when used to describe faculty/doctoral student relationships—are considered synonymous and used interchangeably. To find out to what extent, if any, faculty perceive a difference between these terms, we asked them to identify activities that only an advisor, only a mentor, both, or neither would engage in. The intent of this question was to identify possible distinctions between advisor and mentor activities to inform discussions to help distinguish between these terms. The results confirm that, as treated in the literature, faculty view the terms *advisor* and *mentor* and their related activities as synonymous. Among a list of 19 activities, described in the literature as attributes of faculty/doctoral student relationships, a high percentage of faculty responded that all 19 describe both advisor and mentor (Table II.3).

TABLE II.3

FACULTY PERCEPTIONS OF ADVISOR AND MENTOR ACTIVITIES (PERCENTAGES)

Activity	Advisor Only	Mentor Only	Both	Neither	(n)
Provide career counseling	3.4	5.4	90.9	0.3	3,511
Provide professional socialization (e.g., passing on values and norms of the profession)	2.7	8.8	87.8	0.7	3,510
Provide networking opportunities	3.2	8.5	87.8	0.4	3,510
Provide moral support	2.3	7.9	87.2	2.6	3,514
Serve as a role model	2.3	9.4	87.0	1.3	3,510
Help students gain greater exposure and visibility in the field	4.8	10.9	84.2	0.1	3,513
Train students in identifying and handling research misconduct	7.7	7.2	84.2	0.9	3,511
Measure progress and accomplishments through feedback (written and verbal)	11.6	6.2	82.1	0.1	3,513
Sponsor students for desirable positions such as assistantships, practica, or internships	8.9	8.7	80.6	1.8	3,511
Help students choose topics of research	12.3	7.3	80.2	0.2	3,511

Activity	Advisor Only	Mentor Only	Both	Neither	(n)
Train students in good research practices	9.8	10.3	79.8	0.1	3,514
Help students choose classes	16.4	2.1	79.2	2.3	3,512
Set standards for data collection	16.1	11.2	72.4	0.3	3,513
Co-author papers and presentations with students	15.9	12.4	71.4	0.2	3,512
Teach life skills or social skills	2.4	13.6	67.4	16.6	3,513
Prepare contract or grant proposals	17.8	13.7	64.0	4.6	3,514
Chair student's dissertation committee	26.2	8.9	56.5	8.3	3,516
Provide financial support	27.0	12.3	51.6	9.1	3,515
Serve as a friend	2.1	11.4	48.1	38.5	3,510

Source: ORI Faculty Survey

Among the 19 activities, some garnered more consensus on the perception that advisor and mentor are interchangeable than others. About 80 percent or more of the faculty members reported that 12 of the 19 activities describe both advisors and mentors. Somewhat fewer faculty identified setting standards for data collection (72.4 percent), co-authoring papers (71.4 percent), teaching life or social skills (67.4 percent), and preparing contract or grant proposals (64.0 percent) as activities that both an advisor and a mentor would engage in. Two activities—chair student's dissertation committee (56.5 percent) and provide financial support (51.6 percent)—were identified by even fewer faculty members as performed by both advisors and mentors. There is only one activity, "serving as a friend" that less than half (48.1 percent) of the faculty indicated both advisors and mentors would engage in; and 38.5 percent reported that neither an advisor nor a mentor would engage in this activity.

Among the smaller number of faculty who attributed an activity to only an advisor or only a mentor, a useful grouping of activities emerges that suggests some possible distinctions to inform discussions of these terms. Group A below is made up of five activities for which advisor

predominated over mentor, Group B has activities for which mentor predominated over advisor, and Group C shows the activities for which neither mentor nor advisor predominated.

Group A: Mostly Advisor (5 activities)

These are activities for which faculty who selected only advisor or only mentor had higher percentages for advisor. Percentages are for the advisor choice.

- Provide financial support (27.0 percent)
- Chair student's dissertation committee (26.2 percent)
- Help students choose classes (16.4 percent)
- Help students choose topics of research (12.3 percent)
- Measure progress and accomplishments (11.6 percent)

Group B: Mostly Mentor (8 activities)

These are activities for which faculty who selected only advisor or only mentor had higher percentages for mentor. Percentages are for the mentor choice.

- Teach life skills or social skills (13.6 percent)
- Serve as a friend (11.4 percent)
- Help students gain greater exposure and visibility in the field (10.9 percent)
- Serve as a role model (9.4 percent)
- Provide professional socialization (e.g., passing on values and norms of the profession) (8.8 percent)
- Provide networking opportunities (8.5 percent)
- Provide moral support (7.9 percent)
- Provide career counseling (5.4 percent)

Group C: Advisor or Mentor Equal (6 activities)

These are activities for which faculty who selected only advisor or only mentor had similar percentages for each.

- Prepare contract or grant proposals (17.8 percent advisor/13.8 percent mentor)
- Set standards for data collection (16.0 percent advisor/11.2 percent mentor)
- Co-author papers and presentations with students (15.9 percent advisor/12.4 percent mentor)
- Train students in good research practices (9.8 percent advisor/10.3 percent mentor)
- Train students in identifying and handling research misconduct (7.7 percent advisor/7.2 percent mentor)
- Sponsor students for desirable positions (8.9 percent advisor/8.7 percent mentor)

Remembering that there are much smaller percentages of faculty who solely attribute an activity to an advisor or mentor, the activities that are most likely to predominate as being performed by an advisor or mentor only are similar to the distinctions described in Chapter I. The advisor provides the administrative or doctoral student link to institutional requirements such as the dissertation committee, class selection, and measuring student doctoral program progress. In contrast, the activities associated with a mentor may occur outside of the institution such as getting visibility in their field, professional socialization, and networking. In addition, faculty are more likely to relate the more personal aspects of the faculty/doctoral student relationship—teaching life or social skills, being a friend, and providing moral support—to the *mentor* rather than the *advisor* label.

D. SUMMARY

The survey results describe how the faculty working with doctoral students view the terms *advisor* and *mentor*. It confirms that, as mentioned in the literature, faculty use the terms *advisor*

and *mentor* interchangeably. And, with some minimal distinctions noted above, when faculty describe activities related to the education and training of doctoral students, they use the terms synonymously. When faculty identify a preference for one term or another to describe themselves, there are significant differences among the characteristics of those who prefer *advisor* or *mentor*. These results could begin a discussion on the merits of standard and distinct definitions for these terms. The doctoral student survey conducted by Nettles and Millet suggests the importance of having clarity in these terms, which are related to faculty responsibilities. Their research found that doctoral students who say they have had a mentor are more likely to have a more positive educational experience than those who say they have not had one.

III. FACULTY ACTIVITIES WITH DOCTORAL STUDENTS

What practices or activities do faculty members actually engage in to help doctoral students achieve successful outcomes?

A. INTRODUCTION

To complement faculty members' perceptions of advising and mentoring described in Chapter II, we asked them to describe the actual experiences they have with doctoral students. Information in the literature suggests that faculty who work with fewer students are more likely to provide positive learning experiences. And guidelines for faculty performance include multiple examples of the types of advisor and mentor activities that promote successful student outcomes. The extent to which faculty do or do not engage in these prescribed activities provides useful information about what faculty are actually doing when they work with their doctoral students.

B. PROFILE OF FACULTY/DOCTORAL STUDENT RELATIONSHIP

The relationship between a faculty member and a doctoral student begins with pairing them. Six in 10 faculty members describe a joint faculty and student decision as the typical way they are matched with incoming doctoral students. Slightly more than 1 in 4 report that the student selects his or her own advisor. A small percentage of faculty members select the students they work with (3.9 percent) or are paired with students by the doctoral program or department (5.9 percent).

Overall, among the faculty who currently have doctoral students, the average is about two students (Table III.1). Those who describe themselves as an advisor, mentor, or supervisor report about the same average number of current students with mentors (2.1) having somewhat fewer than advisors (2.5) or supervisors (2.4). Mentors were also more likely than advisors or

supervisors to average somewhat fewer total students and graduates in the last five years. (Table III.1).

TABLE III.1

NUMBER OF DOCTORAL STUDENTS FACULTY REPORT CURRENTLY, IN THE PAST 5 YEARS, AND WHO EARNED DEGREE IN PAST 5 YEARS

	Total	Advisor	Mentor	Supervisor/ Other
Average Number of Current Ph.D. Students				
(n)	3,524	1,888	1,331	305
Mean	2.3	2.5	2.1	2.4
Median	1.3	1.5	1.2	1.1
Range	0-24	0-24	0-15	0-15
Average Number of PhD Students in Past Five Years				
(n)	3,533	1,889	1,334	310
Mean	4.6	4.8	4.2	5.0
Median	3.3	3.3	2.9	3.8
Range	0-40	0-40	0-30	0-37
Average Number of PhD Students Who Earned Degree in Past Five Years				
(n)	3,506	1,884	1,319	303
Mean	2.3	2.4	2.1	2.7
Median	1.3	1.4	1.1	1.6
Range	0-33	0-20	0-20	0-33

Source: ORI Faculty Survey

C. FACULTY ACTIVITIES WITH DOCTORAL STUDENTS

To find out what activities faculty typically engaged in with doctoral students, the questionnaire included a list of 17 activities developed from a review of publications and guidelines related to mentoring. We asked faculty to report whether they had engaged in each activity with all, some, or none of the students who had received their doctorates in the past five years (Table III.2). Overall, more than half reported doing 13 of the 17 activities listed with all of their doctoral student graduates. However, the extent of faculty engagement with all of their doctoral students among these activities varied. Eighty percent or more faculty reported engaging

TABLE III.2

KEY ACTIVITIES FACULTY REPORTED DOING WITH ALL STUDENTS (PERCENTAGES)

	Total (n=2,806)	Advisor (n=1,540)	Mentor (n=1,008)	Supervisor/ Other (n=259)
Key Activities Did With All Students				
Discussed good research practices**	88.6	88.0	89.9	87.5
Discussed student's professional goals with student**	86.6	86.2	87.8	84.5
Interpreted student's original data with student**	86.3	85.6	87.7	85.0
Reviewed research data with student for publication	85.2	84.7	86.3	84.0
Gave your personal email address or home telephone number	82.8	82.6	83.7	80.5
Assisted with preparing presentations***	80.6	79.7	82.6	78.6
Discussed methods of data management***	77.7	76.9	80.4	72.5
Reviewed rules for working in lab***	72.5	70.6	76.2	69.6
Helped student develop professional relationships with others in field***	71.8	69.7	76.0	67.5
Co-authored publication with student where the student was named as the first author***	69.3	68.6	71.6	64.2
Took a student to meeting or conference***	66.4	66.4	68.0	60.6
Helped secure funding	64.3	64.9	63.7	62.6
Discussed research misconduct policies***	59.1	55.5	65.7	54.3
Taught student how to write grant or contract proposals***	49.9	46.9	56.5	42.1
Co-authored publication with student where student was not named as first author***	45.3	42.8	49.4	43.9
Prepared human or animal subjects protections protocols (IRB or IACUC)***	42.4	39.2	48.5	37.7
Provided student with written data management rules***	36.2	32.2	42.6	34.8

Source: ORI Faculty Survey

Note: Due to item nonresponse, the number answering each of these items varied. The numbers on the table represent the maximum of the following ranges: Total 2,794-2,806; Advisor 1,532-1,540; Mentor 1,003-1,008; Supervisor/Other 256-259

*P<.01
**P<.001
***P<.0001

in the following six activities with all of their graduate students: (1) discussed good research practices (88.6 percent), (2) discussed student's professional goals (86.6 percent), (3) interpreted student's original data (86.3 percent), (4) reviewed research data for publication (85.2 percent), (5) gave personal email address or home telephone number (82.8 percent), and (6) assisted with preparing presentations (80.6 percent). Somewhat fewer reported engaging in the following seven activities with all graduating students: (1) discussed methods of data management (77.7 percent), (2) reviewed rules for working in the lab (72.5 percent), (3) helped develop professional relationships with others in the field (71.8 percent), (4) co-authored publications with the student as the first author (69.3 percent), (5) took the student to a meeting or conference (66.4 percent), (6) helped secure funding (64.3 percent), and (7) discussed research misconduct policies (59.1 percent).

Less than half of faculty reported engaging in the following four activities with all of their students: (1) training to write grant or contract proposals (49.9 percent), (2) co-authoring publications on which the student was not named as first author (45.3 percent), (3) preparing human or animal subjects protections protocols (42.4 percent), and (4) providing written data management rules (36.2 percent).

Faculty who consider themselves mentors were more likely than those who consider themselves advisors or supervisors/others to report doing all 17 activities with doctoral student graduates except helping secure funding, which similar numbers of mentors and advisors reported. As Table III.2 shows, the values of the chi-square tests are statistically significant for all of the activities except three: (1) reviewed research data with student for publication, (2) gave your personal email address or home telephone number, and (3) helped secure funding.

There are several notable differences between faculty who prefer the term *mentor* and those who prefer *advisor*. By about a 10 percentage point difference, mentors were more likely to

report that for all of their doctoral students who had graduated they had provided written data management rules, discussed research misconduct policies, taught the students how to write grant or contract proposals, and taught them how to prepare IRB-required documents. This suggests doctoral students are more likely to experience core activities—the discussion of research misconduct policies in particular—related to training responsible researchers when they are paired with faculty who think of themselves as mentors.

D. SUMMARY

The basic measure of a successful outcome for a doctoral student is for him or her to obtain a Ph.D. Along the way to the Ph.D., faculty and doctoral students engage in many activities—such as the 17 included in the questionnaire—to achieve the degree and to prepare the student to become a responsible researcher. The faculty members' descriptions of the activities they engage in with all of their graduating doctoral students provide their view on what is important for them to train and educate doctoral students. As the results indicate, a majority of faculty members do not engage in certain activities, such as preparing IRB or IACUC protocols or providing the student with written data management rules. This may be because doctoral students are likely to experience these activities with other entities such as a university IRB office or a laboratory manager who are expected to provide students with these experiences. A thoughtful review of these results by those who establish the standards for experiences all students should have with faculty could provide suggestions for focusing more attention on certain areas to improve the doctoral student learning experience. One example is the 60 percent of faculty who say they engaged all of their doctoral students who had graduated in the past five years in discussions about research misconduct policies. Educators and institutional administrators focused on doctoral training in the responsible conduct of research might expect faculty to carry out this

activity with all of their students during the course of their doctoral program and will recognize the need to reinforce this expectation.

IV. INSTITUTIONAL DOCTORAL STUDENT TRAINING AND EDUCATION RESPONSIBILITIES

How do faculty perceive the role of universities to promote or support mentoring and advising doctoral students?

A. INTRODUCTION

Institutions have been the focus of recommendations to improve and promote the training of doctoral students, in particular, with a focus on the responsible conduct of research (RCR). For example, in *The Responsible Conduct of Research in Health Sciences,* the Institute of Medicine suggests specific actions for universities to take:

> "Universities should not rely upon formal complaints of scientific misconduct as the sole source of monitoring the integrity and quality of the research conducted under their auspices. They need continuing mechanisms to review and evaluate the research and training environment." (1989)

Within universities faculty typically implement university policies and programs developed to respond to these recommendations. And, as Wright et al. (2007) suggest "we are striving to build a culture of integrity" and to do that requires the involvement of both faculty and institutions. The ORI Faculty Survey found out what faculty perceive as the institution's responsibility for activities related to the training and education of doctoral students in the responsible conduct of research. Faculty also reported on their awareness and use of institutional resources and the extent of institutional rewards they experience for their work with doctoral students as key components in the development of a culture of integrity.

B. RESPONSIBILITY FOR RESPONSIBLE CONDUCT OF RESEARCH ACTIVITIES

Institutions are complex organizations in which faculty train and educate doctoral students.

Depending on the university, faculty may be in one or more academic departments and may also work in graduate programs that combine departments. Asking faculty to identify who is ultimately responsible for specific actions related to doctoral student training and education can be challenging. However, faculty do have perceptions of activities they view as the responsibility of the institution or of an individual faculty member. The questionnaire provided the following example to guide faculty in their decision on where to assign the responsibility:

> *If the institution mandates that all doctoral students must complete a training in how to conduct research responsibly, but it is up to each faculty member to conduct this training, you would mark, "Primarily Institution's Responsibility." If, on the other hand, it is each faculty member's decision to train their own students in this skill, you would mark "Primarily Faculty Member's Responsibility.*

Among nine activities related to training doctoral students, a majority of faculty members identified five as primarily faculty member responsibilities and four as primarily the institution's responsibility.

FACULTY RESPONSIBILITY	INSTITUTION'S RESPONSIBILITY
Set standards for data collection	Manage cases of misconduct such as data falsification
Provide training in data management	Provide training in identifying research misconduct
Provide policy on authorship	Provide IRB or IACUC training
Provide financial support	Provide training in responsible conduct of research
Monitor doctoral student progress	

In Table IV.1 two of these activities stand out, with 9 in 10 faculty members reporting setting standards for data collection (93.5 percent) and providing training in data management (91.9 percent) as primarily faculty responsibilities. Faculty also report that providing a policy on authorship (81.4 percent), providing financial support (72.5 percent), and monitoring doctoral student progress (55.6 percent) are primarily faculty responsibilities rather than institutional responsibilities.

TABLE IV.1

WHO IS RESPONSIBLE: INSTITUTION OR FACULTY? (PERCENTAGES)

	Total (n=3,502)	Advisor (n=1,875)	Mentor (n=1,322)	Supervisor/ Other (n=307)
Set Standards for Data Collection***				
Institution	5.8	5.8	6.2	4.0
Faculty	93.5	93.5	93.4	94.7
Provide Training in Data Management***				
Institution	6.9	6.7	7.3	6.7
Faculty	91.9	91.9	92.1	91.4
Provide Policy on Authorship***				
Institution	17.6	17.6	17.9	15.9
Faculty	81.4	81.5	81.1	81.6
Provide Financial Support***				
Institution	23.7	24.7	22.3	23.2
Faculty	72.5	71.6	74.1	71.4
Monitor Doctoral Student Progress***				
Institution	36.5	36.2	36.9	36.5
Faculty	55.6	56.3	55.3	52.3
Provide Training in RCR**				
Institution	51.4	52.0	51.0	49.1
Faculty	46.2	45.3	47.0	47.8
Provide Training in Understanding IRB or IACUC Regulations*				
Institution	52.2	53.5	42.2	46.7
Faculty	43.8	42.2	45.8	44.4
Provide Training in Identifying Research Misconduct***				
Institution	57.0	57.7	56.6	54.8
Faculty	39.6	38.4	41.1	41.1
Manage Cases of Misconduct such as Data Falsification***				
Institution	65.3	67.3	63.6	60.1
Faculty	31.2	29.5	33.5	33.3

Source: ORI Faculty Survey

Note: Due to item non-response, the number answering each of these items varied. The numbers on the table represent the maximum of the following ranges. Total: 3,467-3,502; Advisor: 1,854-1,875; Mentor: 1,311-1,322; Supervisor/Other: 301-307. Percentages do not add to 100 percent because "other" responses are not included on the table.

*P<.01
**P<.001
***P<.0001

Institutions are perceived by faculty as having primary responsibility to manage cases of misconduct such as data falsification (65.3 percent), provide training in identifying research misconduct (57.0 percent), provide training in understanding IRB or IACUC regulations (52.2 percent), and provide training in responsible conduct of research (51.4 percent).

Among the nine activities, training in the responsible conduct of research, commonly referred to as RCR, is the single activity for which about equal percentages of faculty members report that institutions (51.4 percent) and faculty (46.2 percent) are primarily responsible. RCR training is expected to have the most influence on the ethical development of new scientists in their learning experience related to the responsible conduct of research. In practice, having both faculty and institutions perceived as being responsible for RCR could result in strengthened RCR education experiences if both provide this, or it could "fall through the cracks" if each expects that the other entity is accomplishing this doctoral training objective. As reported in Chapter III, 6 in 10 faculty members discussed research misconduct policies with all of their doctoral students who had graduated, which suggests that not all doctoral students can be expected to receive this training from the faculty member they work with.

Faculty who describe themselves as advisors, mentors, and supervisor/other were generally similar in their perceptions of who is responsible for all nine of these activities. A difference was that more faculty who prefer to be called mentors rather than advisors reported that they considered providing training in understanding IRB or IACUC regulations primarily a faculty rather than an institutional responsibility.

C. INSTITUTIONAL AND GRADUATE PROGRAM GUIDELINES AND TRAINING FOR WORKING WITH DOCTORAL STUDENTS

Institutions and graduate programs provide faculty and students with guidelines, training, and rewards to facilitate and encourage RCR training and education. Having a formal, written

policy or guideline describing faculty members' responsibilities when they work with doctoral students can bring attention to the importance of this responsibility and aid in accomplishing doctoral student RCR. Faculty awareness and use of these resources can make a difference in whether or not having these resources is effective and can be used by institutions to build a climate of integrity.

1. Awareness of Institutional and Graduate Program Policies and Guidelines

Survey findings of faculty awareness of a formal, written policy or guideline describing faculty members' responsibilities suggest that institutions and graduate programs that have the potential to promote and support faculty doctoral student RCR development are falling short of that expectation. Faculty were asked whether, to the best of their knowledge, they knew if the graduate program had a formal, written policy or guideline describing faculty members' responsibilities and they were asked the same question about their academic institution. When the answers to both of these questions are combined, less than half (45.7 percent) of these faculty members report both their institutions and graduate programs provide these resources (Table IV.2). Among an additional 20 percent who report only knowing about graduate program or institutional resources, more identify these formal, written policies or guidelines with graduate programs (15.1 percent) than with institutions (5.1 percent). Most problematic to those who recommend institutional leadership in RCR is the finding that one in three faculty members either do not know or report that neither entity (17.7 and 12.4 percent, respectively) provides formal, written policies or guidelines on faculty responsibilities in working with doctoral students. Mentors (50.1 percent) were more likely than advisors (43.3 percent) or supervisors/others (42.4 percent) to report their graduate program or institution had a written policy or guidelines describing a faculty member's responsibility in working with doctoral students.

TABLE IV.2

WRITTEN POLICY OR GUIDELINES DESCRIBING FACULTY RESPONSIBILITIES (PERCENTAGES)

	Total (n=3,519)	Advisor (n=1,883)	Mentor (n=1,327)	Supervisor/ Other (n=309)
Has written policy or guideline describing faculty responsibilities***				
Both graduate program and institution	45.7	43.3	50.1	42.4
Only graduate program	15.1	14.6	15.9	14.7
Only institution	5.1	5.4	4.5	5.9
Neither graduate program nor institution	12.4	14.5	9.6	11.8
Don't know graduate program and institution	17.7	17.6	16.8	22.1
Other	3.9	4.7	3.1	3.0

Source: ORI Faculty Survey

*P<.01
**P<.001
***P<.0001

2. Training Opportunities

Training is another method that institutions and graduate programs can use to educate faculty and clarify their responsibilities in working with doctoral students. Among six types of training, most faculty report two—human or animal subjects protections (89.6 percent) and the Responsible Conduct of Research (72.3 percent)—are offered (Table IV.3). Far fewer have training opportunities for a "Train the Trainer" program on better mentoring (27.9 percent), mentoring doctoral students (27.7 percent), advising doctoral students (25.4 percent), or developing students' research skills (21.1 percent). Faculty who prefer to be called a mentor were significantly more likely than those who prefer advisor to report having training available for all six of these skills. In particular, the differences between mentors and advisors reporting that training in these skills was offered were approximately eight percentage points for "Train the

TABLE IV.3

TRAINING OFFERED TO FACULTY (PERCENTAGES)

	Total (n=3,247)	Advisor (n=1,736)	Mentor (n=1,241)	Supervisor/ Other (n=270)
Training Offered to Faculty				
Human or animal subjects protection*	89.6	88.5	90.7	91.9
Responsible conduct of research*	72.3	70.4	75.0	71.6
"Train the Trainer" program on better mentoring***	27.9	23.9	32.6	31.4
Mentoring doctoral students*	27.7	25.1	31.0	28.8
Advising doctoral students*	25.4	23.1	28.2	28.1
Developing students' research skills***	21.1	17.5	25.6	23.7

Source: ORI Faculty Survey

Note: Due to item non-response, the number answering each of these items varied. The numbers on the table represent the maximum of the following ranges. Total: 2,446-3247; Advisor: 1,278-1,736; Mentor: 945-1,241; Supervisor/Other: 215-270.

*P<.01
**P<.001
***P<.0001

Trainer" program on better mentoring (32.6 to 23.9 percent) and developing students' research skills (25.6 to 17.5 percent), and five percentage points for mentoring doctoral students (31.0 to 25.1 percent), advising doctoral students (28.2 to 23.1 percent), and responsible conduct of research (75.0 to 70.4 percent).

D. INSTITUTIONAL AND GRADUATE PROGRAM REWARDS FOR WORKING WITH DOCTORAL STUDENTS

The competing pressures for faculty performance in many areas such as teaching, obtaining grants, conducting their own research, and being responsible for doctoral students has been suggested as a reason why RCR and other doctoral education may receive minimal attention from faculty members. A possible solution is that providing institutional recognition and rewards

for faculty members' actions related to developing ethical and responsible doctoral students might contribute to positive change in the institution's culture of integrity. Overall, 35.4 percent of faculty receive a great deal or some reward from both their institution and their department for their work with doctoral students and 20.6 percent receive these rewards from only their department or only their institution (14.0 and 6.6 percent, respectively) (Table IV.4). However, 44 percent of faculty members do not receive a great deal or some rewards for their work with doctoral students. While these results are similar for faculty who prefer to be called mentors and advisors, advisors were somewhat more likely to report a great deal or some rewards than mentors.

TABLE IV.4

DEPARTMENT OR INSTITUTION REWARDS FOR WORKING WITH DOCTORAL STUDENTS (PERCENTAGES)

	Total (n=3,409)	Advisor (n=1,827)	Mentor (n=1,283)	Supervisor/ Other (n=299)
Rewarded for Work with Doctoral Students [Great Deal/Some]***				
Department and Institution	35.4	36.6	33.0	38.8
Department only	14.0	15.3	13.0	10.1
Institution only	6.6	5.2	9.1	4.4
Neither Department nor Institution	44.0	42.9	44.9	46.6

Source: ORI Faculty Survey
*P<.01
**P<.001
***P<.0001

E. SUMMARY

Prior to this survey, few studies known to us described how faculty perceive (1) their responsibilities for activities related to the education and training of doctoral students compared to the institution's responsibilities or (2) their awareness and use of institutional and graduate program guidelines and training programs, which are necessary components to building a climate

of integrity. Institutions might, in fact, have programs, policies, and training in place to promote research integrity. However, if faculty are not aware of them, doctoral student education cannot benefit. The survey findings offer an opportunity for institutions to review and clarify who is responsible for specific activities—in particular, the responsible conduct of research—and to make sure faculty have the training and resources to carry out the activities they are responsible for to build, as Wright et al. suggest, a culture of integrity.

V. CONCLUSIONS

A. OVERVIEW OF RESEARCH QUESTIONS

This report was designed to focus on the survey results for three research questions related to faculty views on their role and their institution's role in promoting the development of responsible researchers. Overall, the survey provides new information that describes, from the faculty perspective, how doctoral students are being trained in the responsible conduct of research (RCR). These results can inform discussions on how to improve the faculty/doctoral student relationship to best promote ethical scientific behavior, and to identify the role of institutions in meeting this goal.

1. How do faculty members perceive or define the roles of mentor and advisor?

The survey results underscore the lack of clarity in the terms *advisor*, *mentor*, *supervisor* and other labels used to describe the person who has the primary responsibility for overseeing student research that results in a doctoral degree. The consequence, to summarize the problem cited by Nicholas Steneck (2006), is that without a common definition we lose the opportunity to assess and discuss standards to achieve the ultimate objective of promoting and improving the research ethics education and training of doctoral students to prevent scientific misconduct. In their responses to a list of faculty/doctoral student relationship activities typically included in mentoring and advising guidelines, faculty confirm the lack of distinction between these terms. The typical faculty answer is both mentor and advisor relationships include these activities. A starting point for discussions to differentiate between these terms can be the distinctions found in the survey between faculty who prefer *advisor* and those who prefer *mentor*. Having explicit terms associated with specific responsibilities for faculty who work with doctoral students can result in institutions being more directive in the expectations they have and the standards they

establish for the faculty role in training doctoral students in the responsible conduct of research and the prevention of research misconduct. However, making this case may be a challenge since the synonymous use of these terms currently prevails. And, contrary to those who encourage definitions and related standards, there are those who maintain that it is not what faculty are called, but what they do that matters.

2. What practices or activities do faculty members actually engage in to help doctoral students achieve successful outcomes?

Having a student get his or her Ph.D. is the primary successful outcome for both faculty and doctoral students. During the time doctoral students are working with faculty to meet that goal, there are activities, such as those included in the survey, that are expected for doctoral students to have a comprehensive research training experience and, in particular, to learn how to be responsible researchers. Faculty report variation in the extent to which each of these activities is in practice with all of their doctoral students from a high of 88.6 percent of faculty members who say they discussed good research practices with all of their students to a low of 36.2 percent who report all of their students were provided with written data management rules. Of particular note, the survey results found that about 6 in 10 faculty members have discussions related to research misconduct policies with all of their doctoral students, which is considered a core experience for training doctoral students to be responsible researchers. These results suggest that faculty view their roles in different ways as documented by the activities they focus on when they work with their doctoral students. These differences are notable in a comparison between those who prefer to be called *advisors* and those who prefer to be called *mentors;* mentors were about 10 percentage points more likely to report that, for all of their doctoral students who had graduated, they had provided written data management rules, discussed research misconduct policies, taught the students how to write grant or contract proposals, and taught them how to prepare IRB-

required documents. This suggests doctoral students are more likely to experience core activities related to training responsible researchers, particularly a discussion of research misconduct policies, when they are paired with faculty who think of themselves as mentors.

These results can inform discussions of common definitions and related labels for faculty roles, and a review of best practices to ensure all doctoral students experience the essential training and educational activities that results in the responsible conduct of research.

3. How do faculty perceive the role of universities to promote or support mentoring and advising doctoral students?

Recommendations for improving doctoral education, in particular RCR training, generally focus on the institution. To build a culture of integrity, both faculty and the institution need to be involved; however, we do not know of any previous studies that describe how faculty perceive their role and that of the university or what universities do to promote or support them to educate and train responsible researchers. Among nine activities that are essential to the education and training of responsible researchers, faculty indicate they have primary responsibility for five and the institution has primary responsibility for four. Of particular note, about equal percentages of faculty view RCR training as primarily an institutional responsibility and a faculty responsibility, which suggests a need to clarify who is accountable for this training. For RCR, as well as the other activities relevant to training responsible researchers, there can be a benefit to doctoral student training in having both the institution and the faculty responsible. However, these results suggest that there is a need to make sure the primary responsibility for these activities is well defined.

One in three faculty report either they do not know or there is not any formal, written policy describing a faculty member's responsibility in working with doctoral students provided by their institution and/or graduate program. This underscores the need to not only have guidelines for

training students in the ethical conduct of research but also increase awareness of them. To increase confidence that doctoral students receive appropriate RCR training during their doctoral education experience, institutions need to make sure the responsibility is both explicitly conveyed and then evaluated and monitored.

B. LIMITATIONS

All of the findings from this study are based on faculty who have received NIH grant funding. Whether or not faculty working with doctoral students who are not funded by NIH grants would answer the questions in the same manner is unknown. However, since NIH requires training grant recipients to receive RCR training, we expected this sample to be more proactive in this effort. Therefore, we would expect that research scientists who have been acknowledged by NIH as leaders in their field would provide descriptions of their relationships with doctoral students that would be a standard for other faculty to follow. The results suggest that faculty actions are not uniform and, as a result, not all doctoral students receive the same training in the responsible conduct of research.

There may be some social desirability related to the faculty answers that could have resulted in answers that indicate more positive behaviors than actually occur in the doctoral student training experience. Faculty pride themselves on their relationships with doctoral students. In addition, faculty recognize that any suggestion of doctoral student research misconduct would reflect negatively on them as well as the student. Even with the possibility that faculty might present themselves in a favorable manner, we did find reports of behaviors that could be considered below the expected standard, such as not discussing research misconduct policies with all of their students.

C. FUTURE RESEARCH QUESTIONS

To the best of our knowledge, the ORI Faculty Survey is the first survey to find out what faculty do to train doctoral students to be responsible researchers. It provides useful information on the extent to which faculty engage in activities related to training doctoral students, and can be used to identify areas to focus future inquires to best inform discussions about improving doctoral student training. However, this information is not enough to understand the quality of the doctoral student experience and why some doctoral students have more positive experiences than others. To confidently recommend best practices and standards for training responsible researchers, we need to learn more about the relationships between faculty members and their doctoral students from both perspectives. This suggests using conversational research techniques that provide an opportunity to assess dimensions of the doctoral training experience that can best be learned from listening to how both faculty and their doctoral students view the experience. Such conversations could increase the understanding of mentoring; inform discussions of standards, assessment, and monitoring responsible conduct of research goals for doctoral education; and provide case studies to promote faculty/doctoral student training on best practices.

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APPENDIX A

RESPONSE RATES, SAMPLE CHARACTERISTICS, AND FINAL SAMPLE DISPOSITIONS

TABLE A.1

DISTRIBUTION OF MEDICAL/VETERINARY FLAG AND RESPONSE RATES
DURING AND AFTER DATA COLLECTION

Strata	Frequency Number	Population Percentage	Eligibility Rate Percentage	Response Rate Percentage
Medical/Veterinary School	8,208	82.08	64.3	53.5
Not a Medical/Veterinary School	1,792	17.92	77.9	52.8
Total	10,000	100.00	66.7	52.9

Source: ORI Faculty Survey

Note: The faculty members with duplicate records are counted only once in this table.

TABLE A.2

DISTRIBUTION OF AWARD AMOUNTS
(SUMMED ACROSS INSTITUTIONS WHERE NECESSARY)
AND RESPONSE RATES DURING AND AFTER DATA COLLECTION

Award Amount Group	Frequency Number	Population Percentage	Eligibility Rate Percentage	Response Rate Percentage
$0 - <$300,000	2,727	27.27	53.7%	54.3%
$300,000 - <$600,000	2,513	25.13	67.9	53.2
$600,000 - <$1,000,000	2,036	20.36	74.5	53.7
$1,000,000 - <$2,000,000	1,683	16.83	75.8	51.1
$2,000,000 or more	1,041	10.41	68.4	50.8
Total	10,000	100.00	66.7	52.9

Source: ORI Faculty Survey

TABLE A.3

FACULTY PERSONAL AND PROFESSIONAL CHARACTERISTICS

	Percentage	Number
Total	100	3,534
Gender		
Male	68.7	2,233
Female	31.3	1,016
Age		
≤ 45	22.2	709
46-55	38.5	1,230
56-65	28.8	920
> 65	10.5	335
Race/Ethnicity		
White Non-Hispanic	78.5	2,523
Black Non-Hispanic	13.2	37
Asian Non-Hispanic	4.0	425
Hispanic/Latino	1.2	129
Other		98
Country of Birth		
USA	69.8	2,264
Other	30.2	978
Tenure Status		
Tenured	76.1	2,472
Not Tenured	24.0	778
Years at Current Institution		
0-7	28.8	913
8-15	31.6	1,002
16-25	24.3	772
>25	15.4	488
Type of Academic Institution		
Medical School	78.9	2,777
Non-Medical School	21.1	756
NIH Funding		
$300,000	22.5	796
$300,000-to <$600,000	25.7	909
$600,000-to <$1 million	23.1	815
$1 million- to <$2 million	18.5	652
$2 million and >	10.5	362

Source: ORI Faculty Survey

TABLE A.4

FINAL SAMPLE DISPOSITIONS

Disposition	Percentage	Number
Complete	35.3	3,534
Ineligible	19.6	1,956
Deceased	<1	15
Refusal	<1	73
Refusal—partial (logged in; critical items missing)	<1	27
Other partials (logged in; critical items missing)	4.4	435
Unavailable during field period Sabbatical Maternity leave Medical leave	<1	20
Effort ended Never logged in, logged in—no data, Undeliverables/SPAM Out of office Mailbox full Unknown	39.4	3,940
Total	100	10,000

Source: ORI Faculty Survey

APPENDIX B

QUESTIONNAIRE

ORI Faculty Survey Web Questionnaire

October 15, 2008

ELIGIBILITY SCREENER

1. Do you currently have <u>primary responsibility</u> for overseeing at least one doctoral student's research leading to his or her doctorate?

- *Only include PhD students or MD/PhD students.*

1 ☐ Yes → **GO TO A1**

0 ☐ No

2. In the last 5 years, did you have <u>primary responsibility</u> for overseeing at least one doctoral student's research leading to his or her doctorate?

- *Only include PhD students or MD/PhD students.*

1 ☐ Yes → **GO TO A1**

0 ☐ No

[If NO to BOTH questions, GO TO BOX below, then End.]

BOX. In the last 5 years, about how many doctoral students did you work with <u>informally</u>?

- *By "informally," we mean that you did not have official responsibilities in overseeing students' work but you gave them advice, support, or guidance.*

|__|__| NUMBER OF DOCTORAL STUDENTS

End. Thank you for your interest in participating in this research. At this time, we are only surveying faculty who have doctoral student training responsibilities

A. FACULTY ROLES

A1. Institutions vary in what they call faculty members who work most closely with a student on his or her dissertation research. Does your <u>institution</u> refer to these faculty members as…

		CHECK YES OR NO FOR EACH ITEM	
		Yes	**No**
a.	Advisors?	1 ☐	0 ☐
b.	Mentors?	1 ☐	0 ☐
c.	Supervisors?	1 ☐	0 ☐
d.	Other? *(Please specify)*	1 ☐	0 ☐

_____

_____

A2. [FILL: "Do" if Screener 1=Yes; FILL: "Did" if Screener 2=Yes] your doctoral students refer to you as their…

		CHECK YES OR NO FOR EACH ITEM	
		Yes	**No**
a.	Advisor?	1 ☐	0 ☐
b.	Mentor?	1 ☐	0 ☐
c.	Supervisor?	1 ☐	0 ☐
d.	Other? *(Please specify)*	1 ☐	0 ☐

_____

_____

A3. What do you prefer to be called?

CHECK ONLY ONE ANSWER

1 ☐ Advisor

2 ☐ Mentor

3 ☐ Supervisor

4 ☐ Other *(Please specify)*

_____

_____

A4. In your view, what are the three most important responsibilities of a(n) [FILL: A3 RESPONSE]?

1._____

2._____

3._____

The items below are about mentor and advisor roles.

A5. Some people think that the terms 'advisor' and 'mentor' are synonymous and describe the same type of relationship a faculty member would have with doctoral students. Others view the terms as describing two distinct types of faculty and doctoral student relationships.

For the following list of activities, please indicate whether you think it is an activity that only an advisor would engage in, an activity that only a mentor would engage in, whether both would engage in it, or whether neither would engage in it.

CHECK ONLY ONE ANSWER FOR EACH ITEM

	Advisor Only	Mentor Only	Both	Neither
a. Provide financial support	1 ☐	2 ☐	3 ☐	4 ☐
b. Chair student's dissertation committee	1 ☐	2 ☐	3 ☐	4 ☐
c. Help students choose classes	1 ☐	2 ☐	3 ☐	4 ☐
d. Help students choose topics of research	1 ☐	2 ☐	3 ☐	4 ☐
e. Measure progress and accomplishments through feedback (written or verbal)	1 ☐	2 ☐	3 ☐	4 ☐
f. Train students in good research practices	1 ☐	2 ☐	3 ☐	4 ☐
g. Train students in identifying and handling research misconduct	1 ☐	2 ☐	3 ☐	4 ☐
h. Set standards for data collection	1 ☐	2 ☐	3 ☐	4 ☐
i. Prepare contract or grant proposals	1 ☐	2 ☐	3 ☐	4 ☐
j. Co-author papers and presentations with students	1 ☐	2 ☐	3 ☐	4 ☐
k. Sponsor students for desirable positions such as assistantships, practica, or internships	1 ☐	2 ☐	3 ☐	4 ☐
l. Help students gain greater exposure and visibility in the field	1 ☐	2 ☐	3 ☐	4 ☐
m. Provide networking opportunities	1 ☐	2 ☐	3 ☐	4 ☐
n. Provide career counseling	1 ☐	2 ☐	3 ☐	4 ☐
o. Provide professional socialization (e.g., passing on values and norms of the profession)	1 ☐	2 ☐	3 ☐	4 ☐
p. Teach life skills or social skills	1 ☐	2 ☐	3 ☐	4 ☐
q. Serve as a role model	1 ☐	2 ☐	3 ☐	4 ☐
r. Serve as a friend	1 ☐	2 ☐	3 ☐	4 ☐
s. Provide moral support	1 ☐	2 ☐	3 ☐	4 ☐

B. YOUR DOCTORAL STUDENTS

The next several questions are about your activities with doctoral students.

B1. <u>In the last 5 years</u>, for how many doctoral students have you had <u>primary responsibility</u>?

- *By "primary responsibility," we mean that you had official responsibilities in overseeing students' research leading to their doctorates.*
- *Only include PhD or MD/PhD students.*

|__|__| NUMBER OF DOCTORAL STUDENTS

B1 range. (if B1 = 0 or missing)

You have been unable to provide an estimate. Which of the following categories best fits how many doctoral students you have had <u>primary responsibility</u> for <u>in the last 5 years</u>?

1 ☐ 0
2 ☐ 1-3
3 ☐ 4-6
4 ☐ 7-10
5 ☐ 11-14
6 ☐ 15 or more

B2. For how many of these [FILL: B1 NUMBER or B1 range] students do you <u>currently</u> have <u>primary responsibility</u>?

- *Only include PhD or MD/PhD students.*

|__|__| NUMBER OF DOCTORAL STUDENTS

B2 range. (if B2 = 0 or missing)

You have been unable to provide an estimate. Which of the following categories best fits how many doctoral students you <u>currently</u> have <u>primary responsibility</u> for?

1 ☐ 0
2 ☐ 1-3
3 ☐ 4-6
4 ☐ 7-10
5 ☐ 11-14
6 ☐ 15 or more

B3. As the person who [FILL: "has" if B2 > 0; "had" if B2=0 OR S2 = Yes] primary responsibility to oversee doctoral student research, what [FILL: "is" if B2 > 0; "was" if B2=0 OR S2 = Yes] your title?

CHECK ONLY ONE ANSWER

1 ☐ Do not have a title for this responsibility

2 ☐ Advisor

3 ☐ Mentor

4 ☐ Some other title *(Please specify)*

_____

B4. For how many of the [FILL: B1 NUMBER or B1 range] students you have had primary responsibility for in the last 5 years have you considered yourself…

	Number of Students
a. an advisor only?	|__|__|
b. a mentor only?	|__|__|
c. both an advisor and a mentor?	|__|__|
d. neither an advisor nor a mentor?	|__|__|

B5. In the last 5 years, how many of these [FILL: B1 NUMBER or B1 range] doctoral students earned PhD's or MD/PhD's?

- *Do not include current students who have not yet completed their degrees.*
- *Do not include students who left the program without completing their degrees.*

|__\|__\| NUMBER OF DOCTORAL STUDENTS

B6. In the last 5 years, not including these [FILL: B1 NUMBER or B1 range] students, about how many doctoral students did you work with informally?

- *By "informally," we mean that you did not have official responsibilities in overseeing students' work, but you gave them advice, support, or guidance.*

|__|__| NUMBER OF DOCTORAL STUDENTS

IF B5 = 0 or missing, SKIP TO D1

B7. Please indicate if you did each of the following activities with all, some, or none of the [FILL: B5 NUMBER] students who received their doctorates in the last 5 years.

CHECK ONLY ONE ANSWER FOR EACH ITEM

	DID FOR ALL	DID FOR SOME	DID FOR NONE
a. Helped secure funding for doctoral studies?	1 ☐	2 ☐	3 ☐
b. Discussed good research practices?	1 ☐	2 ☐	3 ☐
c. Reviewed with student the rules of working in a lab?	1 ☐	2 ☐	3 ☐
d. Prepared with student human or animal subjects protections protocols (IRB or IACUC)?	1 ☐	2 ☐	3 ☐
e. Discussed methods of data management such as data recording, custody, and ownership?	1 ☐	2 ☐	3 ☐
f. Provided student with written data management rules?	1 ☐	2 ☐	3 ☐
g. Discussed research misconduct policies?	1 ☐	2 ☐	3 ☐
h. Interpreted student's original data with student?	1 ☐	2 ☐	3 ☐
i. Reviewed research data with student for publication?	1 ☐	2 ☐	3 ☐
j. Taught student how to write grant or contract proposals?	1 ☐	2 ☐	3 ☐
k. Co-authored publication with student where the student was named as the first author?	1 ☐	2 ☐	3 ☐
l. Co-authored publication with student where the student was not named as the first author?	1 ☐	2 ☐	3 ☐
m. Assisted with preparing presentations?	1 ☐	2 ☐	3 ☐
n. Took student to a meeting or conference?	1 ☐	2 ☐	3 ☐
o. Helped student to develop professional relationships with others in the field?	1 ☐	2 ☐	3 ☐
p. Discussed student's professional goals with student?	1 ☐	2 ☐	3 ☐
q. Gave your personal email address or home telephone number?	1 ☐	2 ☐	3 ☐

C. STUDENT OUTCOMES

The next questions are about your doctoral students.

C1. You indicated that <u>in the last 5 years</u>, [FILL: B5 NUMBER] students received their doctorates. How many of these students completed their degrees in…

a. less than 4 years? ..... |___|

b. in 4 years? ..... |___|

c. in 5 years? ..... |___|

d. in 6 years? ..... |___|

e. in 7-9 years? ..... |___|

f. in 10 or more years? ..... |___|

C2. Prior to completing the doctoral program, how many of these [FILL: B5 NUMBER] students were listed as an author on at least <u>one</u> publication (article in peer-reviewed journal, book, book chapter, etc.)?

- *Do not count any students with publications that were "in progress"—that is, under review, being revised or edited, or accepted for publication but not yet published.*
- *Do not count any students with presentations, informal papers (not peer-reviewed), or theses or dissertations, unless they were also published.*

|___|___| NUMBER OF STUDENTS

C3. After they received their doctorates, how many of your [FILL: B5 NUMBER] students…

	NUMBER OF STUDENTS
ACADEMIC INSTITUTION	
a. stayed on at your institution in a position (such as an academic position, a non-academic position or postdoc)?	|___|
b. went to another institution to take a position (such as an academic position, a non-academic position or postdoc)?	|___|
PRIVATE SECTOR	
c. went to work in the private sector?	|___|
d. went to work in private practice or to work for themselves?	|___|
GOVERNMENT	
e. went to work for the government (local, state, or federal)?	|___|
UNEMPLOYED	
f. were unemployed and seeking employment?	|___|
g. were unemployed and not seeking employment?	|___|
OTHER	
h. pursued additional education other than post-doc?	|___|
i. did something else? *(Please specify)* _____	|___|
j. Do not know what happened to them	|___|

D. INSTITUTIONS, DEPARTMENTS, AND PROGRAMS

D1. In your doctoral program, which of the following <u>best</u> describes how doctoral students are paired with advisors?

CHECK ONLY ONE ANSWER

1 ☐ Students select faculty members to be their advisors

2 ☐ Faculty members select which students they will work with

3 ☐ Faculty members and students jointly decide to pair up

4 ☐ The program or department pairs students with faculty members based on some criteria (e.g., availability, funds, interests, etc.)

5 ☐ Other *(Please specify)*

_____

D2. Institutions vary in who takes primary responsibility for different activities.

For each activity below, please indicate whether it is the institution's, the faculty member's, or some other entity's primary responsibility.

Example: If the institution mandates that all doctoral students must complete a training in how to conduct research responsibly, but it is up to each faculty member to conduct this training, you would mark, "Primarily Institution's Responsibility." If, on the other hand, it is each faculty member's decision to train their own students in this skill, you would mark "Primarily Faculty Member's Responsibility."

Whose primary responsibility is it to…	**CHECK ONLY ONE ANSWER FOR EACH ITEM**			
	Primarily Institution's Responsibility	**Primarily Faculty Member's Responsibility**	**Primarily Other Entity's Responsibility**	**What other entity was this?**
a. Provide financial support?	1 ☐	2 ☐	3 ☐→	_____ _____ _____
b. Provide training in responsible conduct of research (RCR)?.....	1 ☐	2 ☐	3 ☐→	_____ _____ _____
c. Provide training in identifying research misconduct?	1 ☐	2 ☐	3 ☐→	_____ _____ _____
d. Provide policy on authorship?	1 ☐	2 ☐	3 ☐→	_____ _____ _____
e. Set standards for data collection?	1 ☐	2 ☐	3 ☐→	_____ _____ _____
f. Provide training in data management?.....	1 ☐	2 ☐	3 ☐→	_____ _____ _____
g. Provide training in understanding IRB or IACUC regulations or completing IRB or IACUC packages?	1 ☐	2 ☐	3 ☐→	_____ _____ _____
h. Manage cases of misconduct such as data falsification?	1 ☐	2 ☐	3 ☐→	_____ _____ _____
i. Monitor doctoral student progress (such as whether taking the right number of credits, taking qualifying exams on time, completing paperwork for the dissertation)?	1 ☐	2 ☐	3 ☐→	_____ _____ _____

D3. To the best of your knowledge, is there a formal, written policy or guideline describing a faculty member's responsibilities in working with doctoral students provided by…

CHECK YES OR NO FOR EACH ITEM

	Yes	No	Don't Know
a. the graduate program?	1 ☐	0 ☐	d ☐
b. your institution?	1 ☐	0 ☐	d ☐
c. other? *(Please specify)* _____	1 ☐	0 ☐	d ☐

IF D3a AND D3b AND D3c = No OR Don't Know OR missing, SKIP TO D6

D4. Have you read all or part of [FILL: "your <u>institution</u>" if D3b=Yes; "the <u>graduate program</u>" if D3a=Yes AND D3b=No or DK; "D3c <u>other specify</u>" if D3c=Yes AND (D3a and D3b=No or DK)] policy or guideline?

1 ☐ Yes

0 ☐ No → **SKIP TO D6**

D5. How useful to you was this policy or guideline?

CHECK ONLY ONE ANSWER

1 ☐ Very useful
2 ☐ Somewhat useful → **SKIP TO D7**

3 ☐ Not very useful
4 ☐ Not at all useful → **SKIP TO D8**

[PROGRAMMER: SKIP TO D8 IF D5 = MISSING]

D6. How useful would it be to you to have this kind of policy or guideline?

1 ☐ Very useful
2 ☐ Somewhat useful
3 ☐ Not very useful
4 ☐ Not at all useful → **SKIP TO D8**

[PROGRAMMER: SKIP TO D8 IF D6 = MISSING]

D7. What are the one or two main reasons why this policy or guideline (was/would be) useful?

_____

_____

IF D3a AND D3b AND D3c=NO OR DON'T KNOW OR missing, SKIP TO D10, ELSE SKIP TO D9

D8. What are the one or two main reasons why this policy or guideline (was not/would not be) useful?

_____

_____

IF D3a AND D3b AND D3c=NO OR DON'T KNOW OR missing, SKIP TO D10, ELSE CONTINUE TO D9

D9. Still thinking about these policies or guidelines on a faculty member's responsibility in working with doctoral students, have any of the following ever taken place <u>at this institution</u>?

CHECK ONLY ONE ANSWER FOR EACH ITEM

	Yes	No
a. You talked to the department chair or another senior department faculty member about these policies or guidelines?	1 ☐	0 ☐
b. You talked with your doctoral students about these policies or guidelines?	1 ☐	0 ☐
c. Your doctoral students asked you about the policies or guidelines?	1 ☐	0 ☐
d. You gave a talk, workshop or brown bag on these policies or guidelines either for your department, the graduate program, or for the university at large?	1 ☐	0 ☐

D10. Are faculty members <u>offered</u> training in…

CHECK ONLY ONE ANSWER FOR EACH ITEM

	Yes	No	Don't Know
a. advising doctoral students?	1 ☐	0 ☐	d ☐
b. mentoring doctoral students?	1 ☐	0 ☐	d ☐
c. developing students' research skills?	1 ☐	0 ☐	d ☐
d. The Responsible Conduct of Research (RCR)?	1 ☐	0 ☐	d ☐
e. Human or animal subjects protection?	1 ☐	0 ☐	d ☐
f. "Train the Trainer" program on better mentoring?	1 ☐	0 ☐	d ☐

[PROGRAMMER: SKIP TO D13 IF D10a THROUGH f ALL = NO OR MISSING]

D11. Are faculty members <u>required</u> to attend training in…

[PROGRAMMER: Display only "Yes" items from D10]

	Yes	No	Don't Know
a. advising doctoral students?	1 ☐	0 ☐	d ☐
b. mentoring doctoral students?	1 ☐	0 ☐	d ☐
c. developing students' research skills?	1 ☐	0 ☐	d ☐
d. The Responsible Conduct of Research (RCR)?	1 ☐	0 ☐	d ☐
e. Human or animal subjects protection?	1 ☐	0 ☐	d ☐
f. "Train the Trainer" program on better mentoring?	1 ☐	0 ☐	d ☐

D12. Have you <u>attended</u> training in…

[PROGRAMMER: Display only "Yes" items from D10]

	Yes	No	Don't Know
a. advising doctoral students?	1 ☐	0 ☐	d ☐
b. mentoring doctoral students?	1 ☐	0 ☐	d ☐
c. developing students' research skills?	1 ☐	0 ☐	d ☐
d. The Responsible Conduct of Research (RCR)?	1 ☐	0 ☐	d ☐
e. Human or animal subjects protection?	1 ☐	0 ☐	d ☐
f. "Train the Trainer" program on better mentoring?	1 ☐	0 ☐	d ☐

D13. Have you ever <u>taught</u> training in…

CHECK YES OR NO FOR EACH ITEM

	Yes	No
a. advising doctoral students?	1 ☐	0 ☐
b. mentoring doctoral students?	1 ☐	0 ☐
c. developing students' research skills?	1 ☐	0 ☐
d. The Responsible Conduct of Research (RCR)?	1 ☐	0 ☐
e. Human or animal subjects protection?	1 ☐	0 ☐
f. "Train the Trainer" program on better mentoring?	1 ☐	0 ☐

D14. To what extent does your <u>department</u> reward faculty members for their work with doctoral students? Would you say…

CHECK ONLY ONE ANSWER

1 ☐ A great deal

2 ☐ Some

3 ☐ Not much

4 ☐ Not at all

D15. Please give one or two examples [FILL: "of these <u>department</u> rewards" if D14=A great deal or Some; FILL: "of rewards the <u>department</u> could give" if D14=Not much OR Not at All OR Missing].

_____

_____

_____

D16. To what extent does your <u>institution</u> reward faculty members for their work with doctoral students? Would you say…

CHECK ONLY ONE ANSWER

1 ☐ A great deal

2 ☐ Some

3 ☐ Not much

4 ☐ Not at all

D17. Please give one or two examples [FILL: "of these <u>institution</u> rewards" if D16=A great deal or Some; FILL: "of rewards the <u>institution</u> could give" if D16=Not much OR Not at All OR Missing].

_____

_____

_____

E. PROFESSIONAL ACTIVITY

- **This section is about your professional and research background.**
-

E1. In the last 5 years, how many...

1 Presentations have you given at regional, national or international conferences? *Do not count presentations of the same work more than once.*

|__|__| NUMBER OF PRESENTATIONS

2 Articles, authored by you, have been accepted for publication in a refereed professional journal?

|__|__| NUMBER OF ARTICLES

3 Books or book chapters, authored by you, have been published or accepted for publication?

|__|__| NUMBER OF BOOKS OR BOOK CHAPTERS

-
-

E2. Is any of your work <u>currently</u> supported by an extramural grant or contract?

1 ☐ Yes

0 ☐ No → **SKIP TO E7**

[PROGRAMMER: SKIP TO E7 IF E2=MISSING]

E3. How many extramural grants or contracts <u>currently</u> fund your work?

|__| NUMBER OF GRANTS OR CONTRACTS

E4. How many of these grants or contracts are from…

|__| National Institutes of Health?

|__| National Science Foundation?

|__| Other government agencies?

|__| Non-profit foundations?

|__| For-profit companies?

|__| Other sources? *(Please specify)*

_____

E5. What is your approximate current amount of <u>annual</u> grant or contract funding from all sources?

Your best estimate is fine.

$ |__|__|,|__|__|__|,|__|__|__|.00

E6. <u>Currently</u>, how many of your doctoral students are supported in any way by your extramural grants or contracts?

|__|__| NUMBER OF SUPPORTED DOCTORAL STUDENTS

If None, enter zero.

E7. Are you the principal investigator of a research group?

A 'research group' can be a team that shares a laboratory.

1 ☐ Yes

0 ☐ No → **SKIP TO F1**

[PROGRAMMER: SKIP TO F1 IF E7=MISSING]

E8. How many doctoral students do you <u>currently</u> supervise in your research group?

|__|__| NUMBER OF DOCTORAL STUDENTS

F. FACULTY RESPONSIBILITIES

F1. In total, about how many hours do you spend in a typical 7-day week engaged in activities related to your position at this institution?

|__|__| TOTAL NUMBER OF HOURS PER WEEK

F2. About what percentage of these total hours do you typically spend on each of the following activities?

All of your activities at this institution need to total to 100 percent.

____% a. Teaching undergraduate courses
(Include in-class time, class preparation, grading, laboratory time)

____% b. Teaching graduate courses
(Include in-class time, class preparation, grading, laboratory time)

____% c. Working with your doctoral students on their research

____% d. Your own research

____% e. Preparing grant applications or proposals

____% f. Overseeing a lab

____% g. Clinical practice

____% h. Departmental or institutional administrative activities or service

____% i. Other *(Please specify)*

_____

[PROGRAMMER: All of the activities at this institution need to total to 100 percent]

F3. On a scale of 1 to 5, where 1 is "Very Unsatisfied" and 5 is "Very Satisfied," please indicate how satisfied you are with the percentage of time you spend on each activity.

	Current Level of Satisfaction with Percentage of Time You Spend on Activity				
	Very Unsatisfied 1	2	Neither Satisfied nor Unsatisfied 3	4	Very Satisfied 5
a. Teaching undergraduate courses (Include in-class time, class preparation, grading, laboratory time)	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. Teaching graduate courses (Include in-class time, class preparation, grading, laboratory time)	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. Working with your doctoral students on their research	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. Your own research	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
e. Preparing grant applications or proposals	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
f. Overseeing a lab	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
g. Clinical practice	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
h. Departmental or institutional administrative activities or service	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
i. Other *(Please specify)* _____ _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

F4. What percentage of your time would you <u>ideally</u> like to spend on each activity? For your convenience, the percentage of time you indicated you typically spend on each activity is pre-filled below.

[PROGRAMMER: FILL percentages from question F2 in this column]

		Percentage of Time You Indicated	Percentage of Time You Would Ideally Spend
a.	Teaching undergraduate courses (Include in-class time, class preparation, grading, laboratory time)	_____%	_____%
b.	Teaching graduate courses (Include in-class time, class preparation, grading, laboratory time)	_____%	_____%
c.	Working with your doctoral students on their research	_____%	_____%
d.	Your own research	_____%	_____%
e.	Preparing grant applications or proposals	_____%	_____%
f.	Overseeing a lab	_____%	_____%
g.	Clinical practice	_____%	_____%
h.	Departmental or institutional administrative activities or service	_____%	_____%
i.	Other *(Please specify)* _____ _____	_____%	_____%

[PROGRAMMER: If F4c > F2c, then ask F5, else SKIP TO G1]

F5. You indicated that you would ideally like to spend more time working with your doctoral students on their research. What are the one or two main reasons why you do not spend more time working with your doctoral students now?

_____

_____

_____

G. BACKGROUND INFORMATION

The final questions ask for some demographic information. Your personal information will not be shared with others and will only be used to analyze results.

G1. What is your faculty rank?

CHECK ONLY ONE ANSWER

1 ☐ Full professor
2 ☐ Associate professor
3 ☐ Assistant professor
4 ☐ Adjunct faculty
5 ☐ Instructor or lecturer
6 ☐ Other *(Please specify)*

_____

G2. Are you currently serving in an administrative position as:

CHECK YES OR NO FOR EACH ITEM

	Yes	No
a. Department chair?	1 ☐	0 ☐
b. Dean?	1 ☐	0 ☐
c. Other? *(Please specify)*.....	1 ☐	0 ☐
_____		
_____		

G3. What is your tenure status at [FILL UNIVERSITY]?

CHECK ONLY ONE ANSWER

1 ☐ Tenured
2 ☐ On tenure track, but not tenured
3 ☐ Not on tenure track, but institution has tenure system
4 ☐ Institution has no tenure system

G4. In what year did you become a faculty member at this institution?

- |___|___|___|___| YEAR

G5. Which of the following degrees do you have?

		CHECK YES OR NO FOR EACH ITEM	
		Yes	**No**
a.	Bachelor's degree (BA, BS, AB, etc.)	1 ☐	0 ☐
b.	Master's degree (MA, MS, etc.)	1 ☐	0 ☐
c.	Doctoral degree (PhD, EdD, etc.)	1 ☐	0 ☐
d.	Professional degree (MD, JD, DDS, etc.)	1 ☐	0 ☐
e.	Other? *(Please specify)* _____ _____	1 ☐	0 ☐

G6. In what year did you receive your <u>most recent</u> degree?

|__|__|__|__| YEAR

G7. In what country were you born?

1 ☐ USA → **SKIP TO G9**

2 ☐ Other *(Please specify)*

_____

[PROGRAMMER: IF G7 = missing, skip to G9]

G8. In what year did you come to the United States?

|__|__|__|__| YEAR

G9. Are you of Hispanic or Latino origin or descent?

1 ☐ Yes, Hispanic or Latino

0 ☐ No, not Hispanic or Latino

G10. What is your race?

CHECK ALL THAT APPLY

1 ☐ White

2 ☐ Black or African American

3 ☐ Asian

4 ☐ Native Hawaiian or other Pacific Islander

5 ☐ American Indian or Alaska Native

6 ☐ Other *(Please specify)*

_____

G11. What is the year of your birth?

19 |__|__|
YEAR

G12. Are you…

1 ☐ Male

2 ☐ Female

G13. Someone from the study team may contact you in the future as a follow-up to this survey. Are you willing to be contacted?

1 ☐ Yes

0 ☐ No

END. Thank you for participating in this survey.