



# Bridging Disciplinary Divides: Developing an Interdisciplinary STEM Workforce

*Findings from a Follow-up Study of PhD Graduates of the National Science Foundation's Integrative Graduate Education and Research Traineeship (IGERT) Program*

*Prepared for:*

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## Executive Summary

Since 1998, the National Science Foundation (NSF) has supported interdisciplinary training of doctoral students across the nation through the **Integrative Graduate Education and Research Traineeship (IGERT) Program**. NSF awards IGERT grants to institutions that develop innovative, interdisciplinary doctoral training programs in science, technology, engineering, and mathematics (STEM) disciplines. During the program's first decade (1998 to 2007), more than 4,000 doctoral students benefited from IGERT support, and more than 800 earned doctoral degrees.

This report summarizes a recent study of the IGERT program conducted by Abt Associates Inc. The study examined degree completion and short-term professional outcomes of IGERT graduates and compared the outcomes with those of other STEM doctoral students. The study found that:

- **IGERT addresses national calls for greater emphasis on interdisciplinary training in graduate education.** High proportions of both IGERT and non-IGERT graduates report that they were interested in interdisciplinary education when applying to graduate school. However, IGERT students receive more interdisciplinary training and are significantly more likely to complete interdisciplinary dissertation research: 75 percent of IGERT graduates report that they drew on at least two disciplines in their dissertation research, compared with 61 percent of non-IGERT graduates.
- **IGERT helps students obtain advanced degrees in less time.** Students who receive IGERT traineeships are required to participate in IGERT-specific activities—such as courses, laboratory rotations, research projects, or internships—in addition to the activities required by their home departments. Despite these additional requirements, IGERT graduates complete their doctoral degrees nearly half a year sooner than their non-IGERT counterparts.
- **IGERT prepares students well for today's STEM workforce.** IGERT graduates report feeling equally or better prepared than their non-IGERT peers for research positions in government, industry, and academia. Both groups were equally successful obtaining jobs in a variety of employment sectors, but IGERT graduates report that the preparation received through IGERT gave them a competitive edge in the job market. They also report experiencing less difficulty landing their first jobs than their non-IGERT peers.
- **IGERT graduates surpass non-IGERT graduates at integrating multiple disciplines.** Both IGERT and non-IGERT graduates draw on multiple disciplines in their current positions. However, IGERT graduates are more likely to report that their IGERT training prepared them for interdisciplinary work, and are significantly more likely than their non-IGERT peers to work on research projects or teach courses that require the integration of two or more disciplines.
- **IGERT training is valued by IGERT graduates.** Most IGERT graduates place high value on their IGERT experience. They credit IGERT with helping them complete their degree, secure employment, and prepare for the demands of the scientific workforce. Graduates cite two specific factors as particularly helpful in obtaining professional positions: the program's interdisciplinary research training and professional networking opportunities. One finding is perhaps the most revealing about whether IGERT training is valued by its graduates: 94 percent stated that they would recommend their IGERT graduate program to prospective students pursuing similar career paths.

## Introduction

*This report begins with a brief overview of the IGERT program and the study's methodology, followed by selected findings from the study.*

### About the IGERT Program

Since 1998, the National Science Foundation (NSF) has supported interdisciplinary training of doctoral students across the nation through the Integrative Graduate Education and Research Traineeship (IGERT) Program. NSF awards IGERT grants to institutions that develop innovative, interdisciplinary doctoral training programs in science, technology, engineering, and mathematics (STEM) disciplines. Unlike traditional graduate research or teaching assistantships, IGERT provides doctoral students with unrestricted funds, including a living stipend plus tuition and fees. During the program's first decade (1998 to 2007), more than 4,000 doctoral students benefited from IGERT support, and more than 800 earned doctoral degrees. The IGERT program's ultimate goal is to effect a new paradigm for training the next generation of America's scientists—one that integrates multiple disciplines and gives graduates the tools needed to understand and help solve today's increasingly complex scientific problems.

### About the Study

This study, conducted by Abt Associates Inc., examined degree completion and short-term professional outcomes of IGERT graduates and compared their outcomes with those of other STEM doctoral students.<sup>1</sup> The study surveyed the population of IGERT graduates as of Spring 2008 (N=869, 74% response rate) and also surveyed a comparison group of PhD recipients from academic departments similar in academic quality that did not have an IGERT training program (N=827, 52% response rate).<sup>2</sup> These survey data were supplemented by two other data sources: extant data from the population of IGERT Principal Investigators and IGERT trainees; and national data. A more detailed description of the study's research methods can be found in the appendix on page 9.

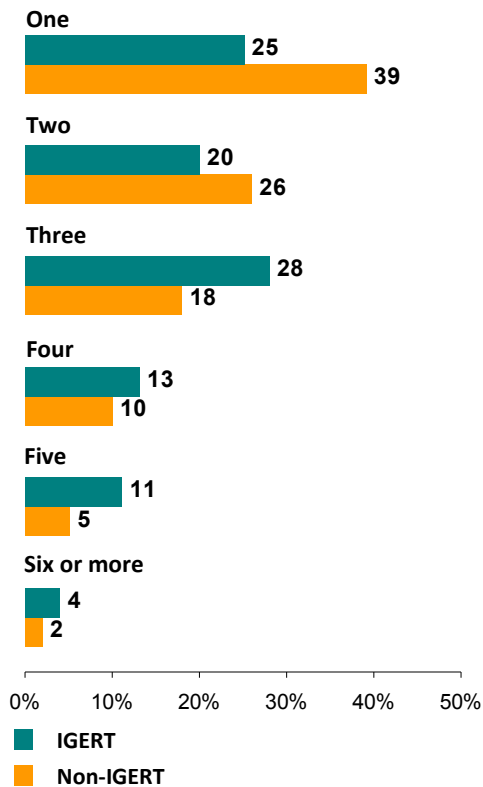
### Report Contents (Brief)

This report is organized around five themes that reflect selected study findings:

- IGERT Addresses Calls for Graduate Education Reform (page 3)
- IGERT Helps Students Obtain Advanced Degrees in Less Time (page 4)
- IGERT Prepares Students Well for Today's STEM Workforce (page 5)
- IGERT Graduates Surpass Non-IGERT Graduates at Integrating Multiple Disciplines (page 6)
- IGERT Training is Valued (page 7)

When completing their dissertation research, **IGERT** graduates drew upon an average of **3** disciplines, while **non-IGERT** graduates drew upon an average of **2** ( $p < .05$ ).

**Number of Disciplines IGERT and Non-IGERT Students Used in Their Dissertation Research<sup>3</sup>**



## IGERT Addresses Calls for Graduate Education Reform

The growing complexity of today’s scientific problems along with advancements in science and technology have spurred the need for greater interdisciplinary collaboration among researchers and professionals in the science, technology, engineering, and mathematics (STEM) disciplines (Reis, 2000; COSEPUP, 2004; Stokols et al., 2008). These changes have amplified the demand in the job market for interdisciplinary individuals, which in turn has increased the number of students seeking interdisciplinary training from postsecondary institutions (Gross, 2000; Caserio et al, 2004).

Reflecting this trend, high proportions of both IGERT and non-IGERT graduates report having a keen interest in interdisciplinary education when applying to graduate school (85 and 75 percent, respectively,  $p < .05$ ). Moreover, some IGERT graduates specifically seek out IGERT training: 12 percent say they would not have enrolled at their institutions without the IGERT training program.

Once enrolled, however, IGERT students receive more extensive interdisciplinary training than non-IGERT students and report greater opportunities to learn about other disciplines, interact with faculty and students from other disciplines, and work on projects involving multiple disciplines (Carney et al., 2006). The interdisciplinary nature of the IGERT program is consistently referenced as the most valuable and relevant aspect of graduate training for IGERT graduates’ educational and career pursuits.

The IGERT graduate experience culminates in IGERT students producing more interdisciplinary dissertations than non-IGERT students: 75 percent report that they drew on at least two disciplines in their dissertation research, compared with 61 percent of non-IGERT graduates. In addition, IGERT graduates report having used an average of three major disciplines in their dissertations, while non-IGERT graduates report using an average of two disciplines ( $p < .05$ ).

***“Interdisciplinary programs are more interesting to me than traditional programs because they incorporate a variety of topics to solve problems. As the problems in science and engineering become more complex, it is necessary for individuals to draw upon an expanded knowledge and experience base.”***

-IGERT Graduate

***“[IGERT] allowed me to design, conduct, and complete an interdisciplinary dissertation.”***

-IGERT Graduate



## IGERT Helps Students Obtain Advanced Degrees in Less Time

The path to completing a STEM PhD is marked by extensive time dedicated to course work, research, and teaching (Nettles and Millett, 2006). IGERT students are required to participate in a variety of activities—including courses, seminars, discussion groups, laboratory rotations, research projects, and/or internships—in addition to their home department requirements. Despite these additional requirements, IGERT students successfully earn PhD degrees at rates comparable to those reported in the Council of Graduate Schools' *PhD Completion Project*.<sup>4</sup>

Furthermore, given the extra demands placed on IGERT students, one might expect a significant increase in the time required to obtain the degree. Yet, students receiving IGERT traineeships complete their doctoral degrees nearly half a year sooner than their non-IGERT counterparts in similar departments (5.63 versus 6.04 years, respectively,  $p < .05$ )—a feat attributed in part by IGERT graduates to the unrestricted nature of IGERT funding, which frees students to focus on their own research.

Nearly all IGERT graduates credit aspects of their IGERT experience with helping them complete their degrees. The IGERT traineeship's financial support is highly valued by graduates, as is the accompanying interdisciplinary focus; access to resources, equipment, and technology; and freedom to pursue independent research interests.

***“My IGERT funding was critical for completing my degree. It gave me resources to have a year to pursue research, which I would not normally have been able to pursue; it gave me the ability to collaborate with outside researchers; it gave me the ability to be trained outside my area; it gave me the ability to have a fantastic scientific community in [my field of study].”***

-IGERT Graduate

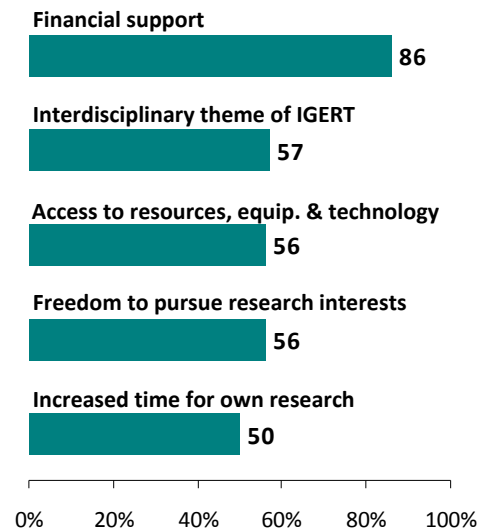
***“IGERT allowed me more time to focus on research.”***

-IGERT Graduate

***“The financial support allowed me to focus on a challenging, interdisciplinary research topic that was new in my adviser's laboratory. I would have struggled if I had been required to teach and try to pursue this challenging project.”***

-IGERT Graduate

### Elements of IGERT That Contribute to Graduates Ability to Complete Their Degrees<sup>5</sup>

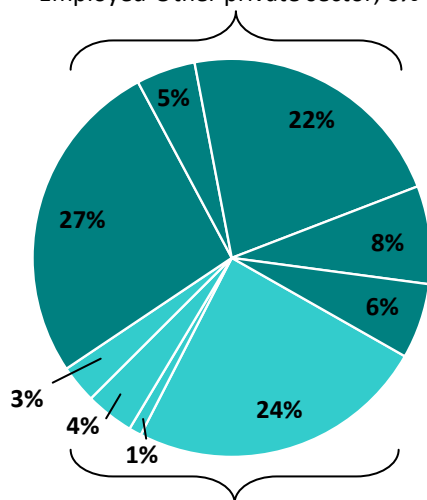


## IGERT Graduates in the Workforce, One to Eight Years After Graduation<sup>6</sup>

### Employed Position

68%

- Employed-University faculty, 27%
- Employed-University non-faculty, 5%
- Employed-Industry, 22%
- Employed-Government, 8%
- Employed-Other private sector, 6%



### Postdoctoral Position

32%

- Postdoc-University, 24%
- Postdoc-Industry, 1%
- Postdoc-Government, 4%
- Postdoc-Other private sector, 3%

*"I got this job because I could explain why quantum theoretical/computational chemistry is important to a group of experimentalists. Without IGERT, I would not have been able to do this as well as I did."*

-IGERT Graduate

*"I was hired because I am a computer programmer that is fluent in biology. People like this, who really can cross the disciplines and...appreciate the subtle, yet very significant, differences in how different groups think about problems and data, are very rare. My boss appreciates this."*

-IGERT Graduate

## IGERT Prepares Students Well for Today's STEM Workforce

IGERT is designed to better prepare graduates for a broad range of career options and the increasingly interdisciplinary nature of the STEM workplace. This goal directly aligns with those in favor of a reformed American graduate training model that produces a workforce capable of meeting the demands of the 21st century—working across disciplines, with both depth and breadth of knowledge, and the ability to participate in and lead integrative teams in a variety of professional settings (COSEPUP, 1995; Nyquist & Woodford, 2000; Campbell, Fuller, & Patrick, 2005).

Over 80 percent of IGERT PhD graduates agree that, upon graduation, they were well prepared to work as researchers across multiple employment sectors, including academia, industry, and government. Specifically, the proportion of IGERT graduates who felt prepared for government and industry research positions was equal to or greater than that for non-IGERT graduates; and a greater proportion of IGERT graduates report feeling prepared for a university-based research position ( $p < .05$ ).

IGERT graduates, and their comparison peers, report that they were able to obtain jobs either before or upon graduation, and that they found the types of positions they were seeking in academia, industry, or government. IGERT graduates report no negative consequences in their job searches attributable to the interdisciplinary and nontraditional nature of the IGERT program; indeed, 94 percent of IGERT graduates believe that the IGERT experience *helped* them find professional positions. They report that the preparation and training received through IGERT gave them a competitive edge in the job market, and that they experienced less difficulty landing their first jobs than non-IGERT peers.

At the time of this study, the IGERT graduates surveyed were at an early stage in their careers, between one and eight years out from graduation. Of those employed at the time (98 percent), 32 percent were in a postdoctoral appointment. Overall, more than half of all IGERT graduates were situated at colleges or universities (24 percent in postdoctoral appointments, 27 percent in faculty positions, and 5 percent in other university positions). One-quarter of graduates were employed in industry or business, and the remainder were working in other private sector organizations or in government. Non-IGERT graduates were employed in similar positions. Academic institutions were the most frequent employers of both IGERT and non-IGERT graduates, followed by industry or business, and then government.

IGERT graduates are more likely than non-IGERT graduates to list research as their primary job responsibility (75 versus 63 percent, respectively,  $p < .05$ ), and less likely to list teaching or training as their primary responsibility (17 versus 24 percent,  $p < .05$ ). IGERT graduates more often

cite the interdisciplinary training or cross-disciplinary collaboration they undertook in graduate school as the single greatest contributing factor in meeting their current job demands.

In addition to engaging in research and education, IGERT graduates are beginning to exhibit the qualities that characterize STEM leaders of the future, such as demonstrating global awareness of STEM research and taking on leadership roles in their current positions. Eighty-four percent of employed IGERT graduates who teach in higher education settings report that they have begun training the next generation of interdisciplinary STEM researchers by fostering interdisciplinary collaborations, courses, or research experiences for students. Almost all employed IGERT graduates (91 percent) report being aware of the relevance of international research to their own work, and 40 percent work with colleagues outside the U.S. Many employed IGERT graduates have already assumed leadership roles, including directing projects or programs (75 percent), revising academic curricula (71 percent of those in academic positions), and directing the technical or scientific agenda of their organizations (42 percent).

## IGERT Graduates Surpass Non-IGERT Graduates at Integrating Multiple Disciplines

Employed IGERT graduates report that they have extended the interdisciplinary nature of their graduate school experience by continuing to conduct interdisciplinary work and drawing from multiple disciplines in their careers. Over three-quarters (79 percent) of employed IGERT graduates report using two or more disciplines in their work, and 54 percent use three or more disciplines. In addition, although all IGERT graduates use at least some of their dissertation disciplines in their current work, 43 percent are already working in new fields.

Of course, given the interdisciplinary nature of today’s scientific research, engagement with multiple disciplines is not unique to IGERT graduates. Graduates from IGERT and non-IGERT programs both report active involvement in interdisciplinary activities, working with colleagues in other disciplines, and drawing from multiple disciplines once they are employed in the workforce—whether primarily conducting research or teaching at a university.

IGERT graduates differ from non-IGERT graduates in one important respect, however: whatever their work responsibilities (research or teaching) or environment (academia, business, or government), IGERT graduates report greater integration of multiple disciplines in their current work assignments. IGERT graduates are significantly more likely than non-IGERT graduates to work on scientific or technical projects that require the *integration* of two or more disciplines (84 versus 73 percent,  $p < .05$ ), and to teach courses, seminars, or workshops that require the *integration* of two or more disciplines (63 versus 50 percent,  $p < .05$ ).

*“Without IGERT’s interdisciplinary training, I would not be able to conduct the research I do. My training allows me to integrate formal, mathematical, and computer science methods with the experimental techniques of applied psychology. If I had attended a traditional graduate program I would have a subset of these skills, and I would not know how to truly integrate them.”*

-IGERT Graduate

### Engagement in Interdisciplinary Research and Education

Work on scientific projects requiring integration of 2+ disciplines<sup>7</sup>



Collaborate with individuals outside own discipline<sup>7</sup>



Teach courses requiring integration of 2+ disciplines<sup>8</sup>



0% 20% 40% 60% 80% 100%

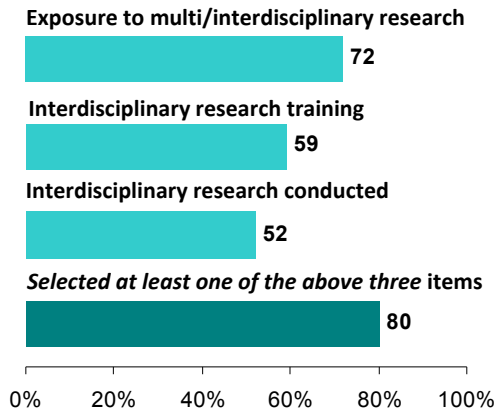
IGERT  
Non-IGERT

\* $p < .05$

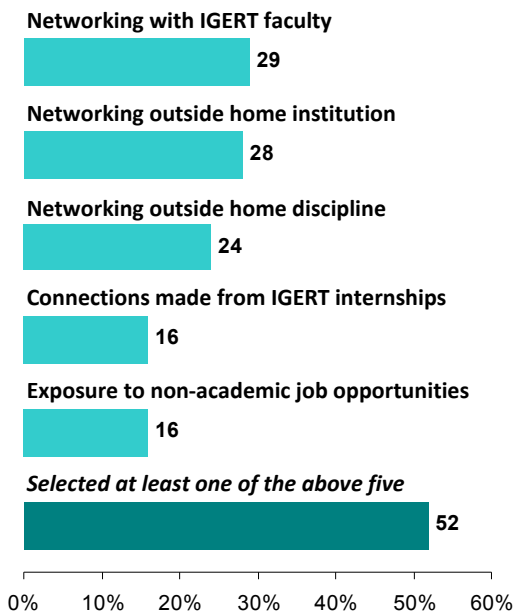
### “Interdisciplinary Science”: A Continuum

In the progression from (1) collaborating with scientists from other fields, to (2) using aspects of multiple disciplines in one’s work, to (3) truly integrating disciplines into interdisciplinary science, study data suggest that IGERT and non-IGERT students may be equally capable of the first two, whereas IGERT students surpass non-IGERT students on the third.

### Interdisciplinary Aspects of IGERT That Contributed to Graduates Securing Employment<sup>9</sup>



### Networking Connections That Contributed to IGERT Graduates Securing Employment<sup>10</sup>



*“Working across the disciplines in my IGERT was the best job training I received in graduate school, for work outside the academic world. I knew much more about environmental policy from my IGERT than I learned in any other part of graduate school. I also learned how to speak about climate change science in a way that is comprehensible to more of the public than most scientists learn to do. I also learned how to think outside my own discipline in my IGERT, an experience which has proven invaluable in a job where my greatest assets are being flexible and knowledgeable across many different fields.”*

-IGERT Graduate

### IGERT Training is Valued

IGERT projects create opportunities for IGERT trainees to work on research projects with individuals from a range of disciplines and occupations; receive training in areas of professional development (such as grant writing); present their own research; and conduct internships or work off-campus in other environments (Carney et al., 2006; Martinez et al., 2006; Brown and Giordan, 2008). These opportunities are highly valued by IGERT trainees. Many credit their IGERT experience with helping them complete their degree, secure employment, and prepare for the demands of the scientific workforce. Specifically, IGERT graduates value the interdisciplinary nature of their IGERT experience, the connections they establish with individuals in other disciplines, and opportunities to present their research, especially to those in other disciplines. Of those now employed in the workforce, 94 percent would recommend their IGERT-related graduate program to prospective students interested in pursuing similar career paths.

The interdisciplinary nature of the IGERT training experience is consistently referenced as the most valuable and relevant aspect of graduate training for IGERT graduates’ career pursuits and activities. Eighty percent of graduates credit one or more aspects of the IGERT interdisciplinary experience as having been helpful in their employment searches. Of those employed, nearly all report that their graduate program prepared them for cross-disciplinary activities such as explaining their own work or research to scientists or technologists in other disciplines (96 percent) and working and networking with scientists or technologists in other disciplines (94 percent). They cite these activities as contributing factors in their ability to successfully interview for jobs and collaborate across disciplines in the workforce. Finally, when asked to describe the single greatest contribution of their graduate education relative to their current job responsibilities, 53 percent of IGERT graduates cited interdisciplinary training or opportunities for cross-disciplinary collaboration, compared with only 16 percent of their non-IGERT peers.

One of IGERT’s core objectives is to expand students’ professional networks by developing a community of IGERT students, faculty, and non-academic professionals who can interact with one another about an integrated interdisciplinary issue. IGERT graduates cite connections made by collaborating with a broader range of faculty members (within and outside their home departments) and researchers outside their university (through internships or other mechanisms) as valuable assets in obtaining the professional position of their choice; and, for some, these opportunities are directly linked to receiving a job offer. In total, 52 percent of IGERT graduates report that the networking provided through IGERT played a role in their ability to obtain professional positions.



## Summary

Already in its second decade of operation, the IGERT program represents a significant investment by the federal government in developing America's STEM workforce, and one which has received national attention. IGERT was recognized in the 2007 America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education and Science (America COMPETES) Act, which explicitly legislated the expansion of innovation in graduate student research and education through the IGERT program.

Previous evaluations indicate that the IGERT program has demonstrably promoted interdisciplinary training and research for students and faculty within institutions (Carney et al., 2006). Findings from this study suggest that the IGERT program is achieving its purpose: training a new generation of graduates to apply the interdisciplinary knowledge and skills needed to meet today's scientific workplace demands.

- IGERT trainees overwhelmingly describe the experience as a positive influence on completing their doctoral degree, finding employment, and preparing for the modern scientific work environment.
- IGERT graduates enter similar employment sectors as their non-IGERT peers with equal or greater ease, dispelling any concerns that their interdisciplinary, nontraditional training might hinder job placement.
- IGERT graduates report that their graduate program prepared them well for their current responsibilities—including those that transcend disciplinary boundaries, such as explaining their research to, or working and networking with, colleagues in other disciplines.
- IGERT graduates recommend IGERT training to students currently pursuing advanced training in STEM fields, suggesting that graduates truly value IGERT and its relevance to today's workplace requirements.
- Perhaps most noteworthy, given the increasing need for STEM graduates who can work across multiple disciplines, employed IGERT graduates are more likely to be engaging in integrative interdisciplinary research and education than their non-IGERT counterparts.

This evaluation expands NSF's understanding of the IGERT program by examining post-graduation outcomes of IGERT students, finding that recipients of IGERT graduate training successfully enter the STEM workforce and engage in integrative research and education as intended.

*"My IGERT experience allowed me to spend more time developing the breadth of my research, to include statistics and computer science in my biological research. Also, the IGERT experience allowed me to interact with a broader array of scientists, both faculty and students. Lastly, the IGERT internship connected me with faculty from a university at which I was recently offered a tenure-track position."*

-IGERT Graduate

*"In this respect my IGERT experience played a very important role in obtaining my current position. The main reason for this was simply because of the unique multidisciplinary theme of my research and the program in general. My current employers were very impressed with my working knowledge of several traditionally disparate areas, giving the impression that, "this person can do two jobs!"*

-IGERT Graduate

*"Academic and professional contacts I made while in the IGERT program at [my university] helped raise the profile of my research and expertise so that I was familiar with the necessary players and subjects when it came time to make a job transition."*

-IGERT Graduate

## Appendix: Study Methodology

This study used descriptive and quasi-experimental methodologies. A Web-based survey collected descriptive data from all IGERT graduates; a quasi-experimental design was used to compare outcomes for a subsample of IGERT graduates with those from a matched comparison group of non-IGERT graduates—individuals who had graduated with a doctoral degree from a department that did not have an IGERT training program but was similar in academic quality. Below we describe these two samples, study response rates, and the strengths and limitations of our methodologies. Details on the study’s sampling strategies, power calculations, and methods used to match departments can be found in the full study report.

- **IGERT sample:** Students who graduated with a PhD degree from an IGERT training program between 1998 and 2007. The IGERT subsample only included a sample of students who graduated between 2001 and 2006.
- **Matched comparison group:** Students who graduated with a PhD degree from non-IGERT departments between 2001 and 2006. Non-IGERT departments were identified using two methods: (1) self-identified IGERT competitor departments and (2) *U.S. News & World Report* rankings of doctoral programs by field of study. Within each pair of departments, IGERT graduates were matched with non-IGERT graduates on citizenship status and graduation year.
- **Study sample sizes and response rates:** The exhibit below presents the study’s overall sample sizes and response rates. We did not observe any differences in outcomes between the IGERT subsample and full sample of IGERT graduates.

Target Population	Final Sample	Cooperation Rate <sup>a</sup>	Response Rate <sup>a</sup>
All IGERT PhD Graduates (1998-2007) <sup>b</sup>	869	80%	74%
IGERT Subsample	396	75%	66%
Non-IGERT Comparison Sample	827	69%	52%

<sup>a</sup> Some individuals in our final samples could not be located and thus never received an invitation to participate in the study. The Cooperation Rate is calculated as the number of completed surveys or interviews divided by the number of individuals who received a survey invitation. The Response Rate is calculated as the number of completed surveys divided by the original sample, which includes individuals who never received a survey invitation.

<sup>b</sup> Consists of trainees who participated in the first six cohorts of IGERT between 1998 and 2003 and had graduated with their PhDs by December 2007

- **Benefits of this design:** The study design measures what is gained (or lost) by offering students IGERT training. The selected comparison approach accounts for institutional and departmental characteristics that may affect the outcomes of interest. It also accounts for national trends for scientists to engage in joint work across disciplines that might influence the cross-disciplinary activities offered by both IGERT and non-IGERT departments.
- **Limitations of this design:** The comparison group design is limited because it does not fully account for potential selection bias—i.e., the differences observed between IGERT and non-IGERT students may be influenced by underlying differences in students’ personal interests, abilities, and motivations, and not the IGERT training they received. Thus, findings in this report should be viewed as exploratory rather than confirmatory.

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- 1 The full study report will be released in Fall 2010.
  - 2 Comparative analyses between IGERT and non-IGERT graduates only included a subsample of the population of IGERT graduates (N=396, 66% response rate). There were no observable differences between the IGERT subsample and the full sample of all IGERT graduates.
  - 3 Source: *IGERT Follow-up Survey, 2008*. N=261 IGERT (subsample), 436 non-IGERT graduates
  - 4 The Council of Graduate Schools (CGS) estimated that for a small sample of institutions, the ten-year completion rate for STEM doctoral students ranged from 55 to 64 percent, with moderate variation among STEM disciplines (CGS, 2007). Similarly, the ten-year completion rate for IGERT graduates is 54%, also with moderate variation among STEM disciplines.
  - 5 Source: *IGERT Follow-up Survey, 2008*. N=645 IGERT graduates
  - 6 Source: *IGERT Follow-up Survey, 2008*. N=628 IGERT graduates
  - 7 Source: *IGERT Follow-up Survey, 2008*. N=228 IGERT (subsample), 356 non-IGERT graduates
  - 8 Source: *IGERT Follow-up Survey, 2008*. N=124 IGERT (subsample), 209 non-IGERT graduates
  - 9 Source: *IGERT Follow-up Survey, 2008*. N=628 IGERT graduates
  - 10 Source: *IGERT Follow-up Survey, 2008*. N=628 IGERT graduates

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Since its founding in 1965, Abt Associates Inc. has played an instrumental role in the development and evaluation of public policy in the United States at national, state, and local levels. We have helped shape healthcare, housing, economic growth, environment, criminal justice, education, child development, and welfare policies that improve the efficiency and effectiveness of government programs. Abt Associates' staff members apply rigorous research and consulting techniques and technical-assistance expertise to a wide range of issues in social, economic, and health policy, international development, and business research.

Any opinions, conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the United States Government or Abt Associates.