EXECUTIVE SUMMARY

This report summarizes the 1998 reporting year data about the National Science Foundation's (NSF's) Graduate Research Traineeship (GRT) program. The GRT program supports the research and education of talented students pursuing graduate degrees in critical and emerging areas of science, mathematics, engineering, and technology (SMET) and SMET education. The GRT program has targeted its support, on an annual basis, toward fields in which an increase in the number of Ph.D. students is in the national interest. The program's objective is to "stimulate the development of graduate training environments that simultaneously address areas of national science and technology priority and proactively build an infrastructure capable of promoting and sustaining student diversity." (NSF Graduate Research Traineeships Fiscal Year 1995: Announcement and Guidelines for Submission of Proposals, NSF 94-140, pg.1.)

GRT has funded four groups or "cohorts" of projects: 1992, 1993, 1994, and 1995, for a total of 92 postsecondary institutions that house 157 GRT projects. GRT awards to institutions are packages of student support, providing stipends and cost-of education allowances instead of tuition and fees that would normally be charged to the graduate students. The funded institutions select which students receive traineeships, determine the length of traineeship positions, and enhance the trainees' graduate education experiences through the development of various project features. Through these university partners, the GRT program has funded the enrollment of almost 1,600 doctoral students, as well as encouraged the development of numerous innovative features in the students' graduate training environments.

Data for this outcomes report were collected from all GRT projects by the program's web-based Distance Monitoring Survey System. This monitoring system collects quantitative and descriptive information regarding faculty and student project participants, strategies used to recruit trainees, other project features to enhance their educational experiences, and the institutional impact of the project.

This 1998 outcomes report builds upon a baseline study that summarized the first set of data submitted by GRT projects through this web-based reporting system in 1997, as well as input collected during visits to selected GRT projects in the field. The major purpose of this 1998 report is to provide information useful for monitoring the GRT program. Data will also be useful for measuring achievement toward NSF's Government Performance and Results Act (GPRA) Outcome Goal Number Three: creating a diverse, globally oriented workforce of scientists and engineers. The following are some of the findings drawn from analysis of the 1998 reporting year data.

Program Implementation

Enrollment. Minority enrollment in the GRT program was stable, decreasing only from 12 to 11 percent, between the 1997 and 1998 reporting years. Between those same years, the percentage of female trainees also decreased only slightly from 38 to 37 percent. The percentage of disabled trainees in those two reporting years remained the same, at 1 percent. The percentage of minority trainees in 1998 varied only slightly among the various cohorts, from a high of 16 percent (1994) to a low of 9 percent (1992 and 1995).

GRT Enrollment Compared to National Data. Comparison of data from the GRT Distance Monitoring Survey System with those from NSF's biennial Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) for 1997 shows that the percentage of women participating in the GRT program (37 percent) was lower than the percentage of women graduate students in science and engineering overall in the country (43 percent).

Data from the same sources show that the overall rates of participation of GRT trainees and GSS respondents by race/ethnicity group varied by no more than 2 percent.

Project Features to Support Trainees' Educational Experiences. The percentage of GRT projects that reported efforts to recruit minority and female trainees increased over the reporting period. In the 1997 reporting year, 41 percent of projects reported using various strategies to recruit these groups. In 1998, about 38 percent reported visiting minority-serving institutions or women's colleges to recruit trainees, and 50 percent made some other effort to recruit trainees from underrepresented groups.

Projects placed increased emphasis on international opportunities for their trainees; 59 percent of projects reported such opportunities in 1998, compared to 38 percent in 1997. In

addition, initiatives to prepare their trainees for faculty positions were reported by 85 percent of projects in 1998, an increase from 54 percent in 1997.

Program Outcomes

Trainee Ph.D. Completion and Subsequent Employment. The cumulative percentage of GRT trainees who had completed their Ph.D.s by the 1998 reporting period was about 12 percent, almost double the cumulative completion rate reported in 1997. Completion rates were similar for males and females, but higher for nonminorities than for minorities (13 percent and 4 percent, respectively). This gap in cumulative completion rates between minority and nonminority trainees increased between 1997 and 1998.

Overall, the cumulative percentage of GRT trainees requiring 4 years or less to complete their Ph.D.s increased since the 1997 reporting year. In 1998, 21 percent of GRT trainees who had completed their Ph.D.s took 4 years or less to do so, compared to 12 percent in the 1997 reporting year.[1] On the other hand, the cumulative percentage of trainees who took 7 or more years to complete their Ph.D.s increased from 3 to 19 percent. The average time to complete the GRT Ph.D. (5.5 years) did not vary by gender or minority status. Almost half of the 194 trainees who completed a GRT-supported Ph.D. program by the 1998 reporting year were in postdoctoral positions. Most of the others were employed as educators or by private organizations.

Attrition and Employment of Trainees Who Left GRT Program Prior to Obtaining Ph.D. The cumulative percentage of GRT trainees by 1998 who had stopped their pursuit of a Ph.D. was 18 percent overall, an increase from the 10 percent rate in 1997. Minority students had a higher cumulative attrition rate than nonminority students (24 percent compared to 17 percent) in 1998. The most common reason for leaving the GRT program was to pursue employment; more than half of the Engineering and Computer and Information Sciences and Engineering trainees who left the program did so to pursue employment.

The 1998 data showed that trainees who left the GRT program before Ph.D. completion were most likely to be employed in the private sector (39 percent). Most of the others were in graduate school either at the GRT institution or elsewhere, or employed in the public sector or an academic setting.

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[1] The average time that students receive GRT funding is less than the number of years required to complete a Ph.D.

GRT Course Features. Projects continued to develop courses and/or curricula that will remain with the GRT-funded department after the GRT project has ended. A total of 316 new courses, other institutional offerings, or course requirements were developed by the 157 GRT projects during the 1998 reporting year alone. These institutional outcomes are in addition to the 1,061 that had already been reported during the 1997 reporting year for all years of project operation prior to the 1998 reporting year.

As more trainees complete their Ph.D. programs, subsequent years of GRT trend data should provide additional useful information about subsequent employment in the workforce. Along with related analyses, such data should contribute to NSF's assessment of the GRT program investment and of related agency endeavors, in support of postdoctoral activities.

Finally, in addition to this report on outcomes of the GRT Program, Abt Associates has prepared a report based on site visits to selected GRT projects. This report also is available through the NSF On-Line Publications website.