

National Institutes of Health
National Institute of General Medical Sciences
Community for Advanced Graduate Training (CAGT)
Web Site Evaluation



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1. Executive Summary

The National Institute of General Medical Sciences (NIGMS) launched the Community for Advanced Graduate Training (CAGT) Web site in the summer of 2007 in order to provide a “matching service” between approximately 600 undergraduate students from the NIGMS Minority Access to Research Careers (MARC) Undergraduate Student Training in Academic Research (U-STAR) T34 program and 282 graduate research training programs funded through T32 National Research Service Award (NRSA) Institutional Predoctoral Training grants. The Web site has undergone several annual revisions, but has never been formally reviewed by anyone outside of NIGMS. In the fall of 2010, the NIGMS Office of Program Analysis and Evaluation (OPAE) hired Highrise Consulting, Inc., to conduct a formal evaluation of the Web site in order to determine whether it met the needs of its users and how its usability and functionality might be improved.

Between September 2010 and February 2011, the evaluation team from Highrise Consulting, Inc., conducted phone and in-person interviews, surveyed stakeholders, and solicited program staff input to thoroughly evaluate the existing CAGT Web site. This report is a primary output of the evaluation, followed by the presentations to both internal NIGMS senior staff and NIGMS Advisory Council.

The team concluded that while the Web site is generally considered a helpful resource by the majority of the users, it could greatly benefit from a number of enhancements and updates.

In general, the CAGT Web site currently offers the following main features:

- Students can register on the site and save personal information in the CAGT database;
- Students and other visitors can search for information about T32 and T34 programs and contact those programs;
- MARC U-STAR (T34) Program Directors can review student profiles and approve students’ inclusion in CAGT’s searchable student database; and,
- T32 Program Directors can search for registered student profiles and contact the students.

While the core features of CAGT would remain the same, the evaluation team proposes a number of enhancements that would make the “matching” process more effective. The changes can be grouped into two categories: programmatic (those that will require changes to the underlying business rules governing the functionality of the site), and functional (those that can be implemented by software updates to the site).

Recommended programmatic changes include:

- Expanding the program beyond MARC U-STAR students to undergraduate students supported by additional NIGMS programs, such as the Research Initiative for Scientific Enhancement (RISE), and to other students outside of MARC; and,
- Updating the rules governing account retention to remove the annual maintenance shutdown period for CAGT, and requirement for the annual student registration.

Recommended functional changes include the following major enhancements to the software:

- Add robust activity and statistics tracking capability;
- Enable students to login and update their profile information;
- Add several additional fields to student profiles;
- Allow students to save T32 programs in their profile;
- Add the ability for students to contact T32 programs using a form presented on the site; and,
- Reformat the Web site's front page.

In addition, a number of smaller enhancements are proposed and described in more detail later. The evaluation team believes that implementation of the recommended changes will ultimately result in a resource that is both useful for its intended audience and conforms to the mission of NIGMS.

2. Introduction

2.1. Description of this Document

Sections 2.2 and 2.3 of this report describe the CAGT Web site and provide an overview of the program's mission and operations. Section 3 describes the evaluation design and methods while Section 4 follows with an overview of findings. The final section discusses recommendations clarifying the needs of individual user groups and how recommendations would benefit them.

2.2. Program Description

NIGMS primarily supports research that lays the foundation for advances in disease diagnosis, treatment and prevention. In addition, the Institute's research training programs support the next generation of scientists. These programs are spread across the following divisions and center: Division of Cell Biology and Biophysics; Division of Genetics and Developmental Biology; Division of Minority

Opportunities in Research (MORE); Division of Pharmacology, Physiology, and Biological Chemistry; and the Center for Bioinformatics and Computational Biology. MORE, in particular, has the specific mission of increasing the diversity of the biomedical and behavioral research workforce. Two programs are particularly relevant for this evaluation: the MARC U-STAR and the NRSA Institutional Predoctoral Training Grants (T32 program).

The MARC Branch of MORE seeks to increase the number of highly-trained underrepresented biomedical and behavioral scientists in leadership positions. One of the major components of the MARC program is the U-STAR award program. This program provides undergraduate students who are historically underrepresented in the biomedical and behavioral sciences with support to improve their preparation for high-caliber graduate training at the Ph.D. level. MARC U-STAR awards are also referred to as T34 programs, and for the purposes of this document both terms are equivalent and used interchangeably.

MARC U-STAR awards are made to colleges and universities that offer the baccalaureate degree. Currently 57 educational institutions are included in the MARC U-STAR program; support is provided to approximately 600 honor students majoring in biomedical and behavioral sciences. The students are selected by participating institutions and have typically expressed interest in pursuing post-baccalaureate education leading to the Ph.D., M.D.-Ph.D. or similar degrees. The MARC U-STAR awards are typically granted during the final two years of the undergraduate training (junior and senior years).

NRSA Institutional Predoctoral Training Grants (also referred to as T32 grants) are institutional grants which support promising students who seek research training in the basic biomedical sciences and related behavioral and clinical fields.

The overall goal of these programs is to promote interdisciplinary, collaborative and innovative research training in areas relevant to the mission of NIGMS, including 11 pre-Ph.D. program areas and one pre-M.D.-Ph.D. area. These grants currently support approximately 3100 trainees annually across 282 programs in 97 research institutions. Recruitment of trainees is performed by individual programs and associated institutions; NIGMS does not directly participate in the recruitment process. It does, however, stipulate additional requirements for institutions applying for T32 grants to include recruitment and retention policies for diversity, so that students from underrepresented racial and ethnic groups, as well as students with disabilities, are included in the training programs.

The CAGT program is designed to bridge the two programs mentioned above. Its goal is to help MARC U-STAR (T34) undergraduate students find suitable research training opportunities at the graduate level, and to assist directors of NIGMS' Predoctoral Training Grants (T32) in recruiting students from underrepresented racial and ethnic groups and individuals with disabilities into their programs. As mentioned above, demonstration of successful efforts to recruit and retain a diverse trainee population is one of the requirements for the T32 programs. Launched in the summer of 2007, CAGT was informally described as a “matching service” between the T34 students and T32 institutions.

The program is directly supported by the CAGT Web site that allows students to provide their personal information for use by the T32 programs and to search for information about such programs, and provides information about MARC U-STAR students to T32 Program Directors. The general goal of this evaluation is to assess the current Web site and to propose improvements that would make the program more useful and effective for all participants.

A question could be posed as to whether CAGT's mission could be accomplished via other means, and not through establishing a Web site developed and hosted at NIGMS. There are a number of alternate approaches, such as establishing a relationship with an existing commercial resource providing information to students considering graduate programs, and supplying this resource with a data feed of those graduate programs that receive NIGMS funding. Exploration of such approaches was outside the scope of this evaluation.

2.3. CAGT Web Site Overview

The CAGT Web site is designed to help MARC U-STAR undergraduate students and recent alumni find suitable research training programs at the graduate level, and to assist directors of NIGMS Predoctoral Training Grants in recruiting MARC U-STAR students into their programs.

The primary audience for the Web site consists of four major user groups:

- MARC U-STAR Students;
- T34 Program Directors;
- T32 Program Directors and designated delegates; and,
- NIGMS Program Administrators.

The Web site opens for student registration every fall (approximately September through November). MARC U-STAR students are notified and encouraged by their MARC U-STAR (T34) Program Directors to

register their profiles on the site. The registration is not a requirement for participation in the MARC U-STAR program, thus a 100% registration rate has never been achieved. In the current year, approximately 384 students have registered on the site, out of approximately 600 eligible students, corresponding to a 64% registration rate. After registration, and after their profiles have been approved by the corresponding T34 Program Directors, the student profile data becomes available for search by the T32 Program Directors and any delegates that they choose to designate.

At the same time, CAGT provides students with the ability to search for T32 programs by scientific area of interest, state or institution. This search feature is currently open to all Web site visitors, without the need for prior registration or login.

3. Evaluative Approach

The following section describes the data-collection methodologies utilized over the course of this evaluation, and describes the overall strategy of evaluation.

3.1. Data Collection Methodologies

3.1.1. Online Feedback Form

An online feedback form was posted on the CAGT Web site between November 8, 2010, and December 10, 2010. The form contained three different sets of questions targeted to three major CAGT user groups. The questions from the feedback form are contained in Appendix A. Most questions were deliberately phrased in an open-ended format, and no multiple choice or ranking-type questions were used. A survey approach was not used because securing clearance from the Office of Management and Budget (OMB) was not feasible given the short timeline of the evaluation. The questions were developed in conjunction with NIGMS staff, and were reviewed by the NIH Project Clearance Branch located within the Office of Extramural Research (OER) to ensure compliance with the Paperwork Reduction Act of 1995 (PRA), P.L. 10413.

Potential participants were engaged by both direct introduction email from NIGMS and by posting a link to the feedback form on the front page of the CAGT Web site. On November 9, 2010 a personalized email message requesting program feedback was sent to 389 students that registered with CAGT up to that point, as well as to 285 T32 Program Directors, and 57 T34 Program Directors. A total of 28 feedback submissions were received, including 18 from T32 Program Directors and delegates (6.2% of

285 total number of programs), six from T34 Program Directors (10.5% of 57 total number of MARC programs), and four from MARC U-STAR students (1.0% of 384 total registered student users). The evaluation team was disappointed by the low response rate that made it impossible to generalize the collected data. However, such a low response rate can be due to a variety of factors, including overall low return rate for site visitors among all user groups, lack of knowledge about the CAGT program among the students, and use of open-ended questions. Still, the form did yield some very useful feedback and remained an integral part of the evaluation process. While the team was not able to draw statistically significant conclusions from the responses, the open-ended nature of the questions did result in some candid and ultimately helpful opinions from all user groups, particularly T32 and T34 Program Directors.

3.1.2. In-Person Usability Study

The evaluation team conducted an in-person usability study with two MARC U-STAR students at the University of Maryland Baltimore County (UMBC). Both students were seniors who were asked by the T34 Program Director at UMBC to assist with this evaluation. The students were observed and their experiences noted while going through the profile registration process and performing T32 program searches on the Web site. In addition, upon the conclusion of the usability test, an interview was conducted with these students to solicit their feedback. Finally, the MARC U-STAR Program Director at UMBC, Lasse Lindahl, Ph.D., was consulted about his experience with CAGT and his ideas for improvement of the program.

3.1.3. Phone Interviews

Individual phone interviews were conducted with three major user groups of the Web site: MARC U-STAR students, T34 Program Directors, and T32 Program Directors. The sample script for an interview was developed jointly with NIGMS and can be seen in Appendix B. The interviews were meant to gauge the effectiveness of the site, user understanding of the program and its features, and to solicit feedback for any possible improvements. The number of interviews was limited to a maximum of nine per user group, with different sets of questions, as required by the PRA. The interview participants were first notified of the evaluation effort by an introductory email from NIGMS, which was then followed by a direct email and ultimately a phone conversation with a member of the evaluation team. The potential interview participants were generally randomly picked from the lists provided by NIGMS. Some minor adjustments to random selection were made to achieve a good geographic distribution so that feedback

from the programs across the country and from different types of institutions was included in the evaluation process. The interviews took place between November 29, 2010, and January 7, 2011. The interview time ranged from 23 to 45 minutes, with a mean of approximately 30 minutes. The opinions and suggestions expressed during interviews were reviewed by the evaluation team and included in this report.

3.2. Usability Review

The CAGT Web site was thoroughly evaluated by the evaluation team from various technical perspectives, including current industry trends, general usability guidelines, and compliance with accessibility standards. General usability guidelines include those recommended for government Web sites at Usability.gov. The evaluation included both a qualitative assessment by the usability expert, and scanning the Web site using automated scripts to determine compliance with accessibility and Web standards. The findings are summarized in Section 4.1 *Overall Impression*, and applied to the proposed new features and updates to the existing functionality.

4. Results of the CAGT Web Site Evaluation

The following sections describe the results of the CAGT Web site evaluation in detail. First, the overall impression of the site is discussed, as well as evaluation results for the site in general. It is then followed by the description of the functions limited to specific groups of users.

4.1. Overall Impression

The CAGT program itself received largely positive feedback from the respondents, both from the students and Program Directors. The program goals were understood by the majority of both T32 and T34 Program Directors, and by many students. The following factors were mentioned as positive aspects of the CAGT program:

- Makes it easier for research programs to recruit students from under-represented minority groups;
- Provides access for T32 institutions to high-quality, dedicated students, most of whom have plans for graduate education; and,

- Provides students with one convenient place to search for various T32 programs across the country according to a particular research training area or geographic area that may interest them.

The effectiveness of the program, however, was questioned by many of the respondents. It appears that effectiveness was reduced due to a combination of functional and business factors. The former are related to specific features offered by the Web site, and the visual and functional organization of the Web pages. The latter are related to the program itself, such as student eligibility criteria, registration timeline, and other non-technical factors. Discussion of the proposed improvements to the functional factors will be addressed further in this document. The business factors, however, while not a primary focus of this evaluation, need to be considered as well. Specifically, the following drawbacks related to the business process were mentioned during the interviews:

- Limited pool of potential MARC students, and low response rate by students when contacted by T32 Program Directors;
- Scheduling issues with the Web site, which usually opens for registration later than necessary, when it is of limited use to senior students since many of them have already selected a short list of potential graduate research training programs to apply to by the middle of fall; and,
- Lack of more detailed information about individual students, so T32 Program Directors had a hard time targeting those students that may be most interested in their research programs.

Proposed improvements for these stated deficiencies are further discussed in Section 5.1 *Recommended Program Changes* of this document.

4.2. Overall Web Site Review

Overall the site conforms to established usability guidelines, with some minor room for improvement. The sections below discuss general areas of the site and different perspectives for the evaluation. Specific usability improvements are discussed in Section 5.2 *Recommended Functional Web Site Updates*.

4.2.1. Site Structure

Based on the currently available features, the site follows a well-defined page flow. The following diagram documents the currently-utilized page flow (Figure 1). It will be useful to compare this with the proposed flow in later sections in the document.

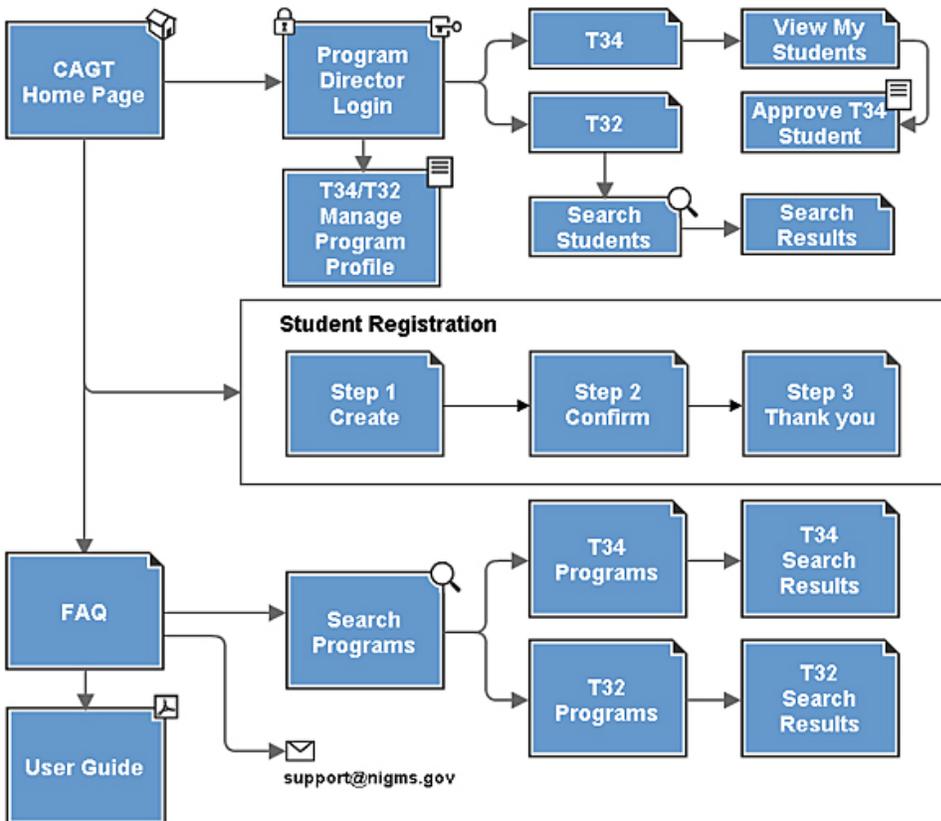


Figure 1: Page flow for the current version of CAGT

4.2.2. Visual Design

The site follows a relatively simple overall visual design, using standard HTML components. Several recommended updates to the overall design, largely based on guidelines described on the Usability.gov Web site, are listed further in Section 5.2 *Recommended Functional Web Site Updates*.

It is also worth noting that the site has some visual appearance issues when used with several different Web browsers. For example, on Firefox® 3.x the buttons on the front page are shifted, breaking the intended visual layout of the site (Figure 2).

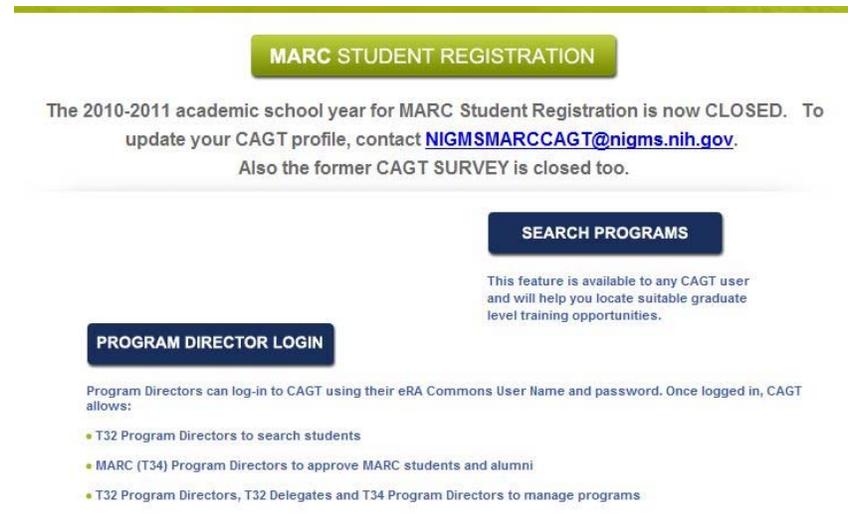


Figure 2: Sample visual presentation issue on the CAGT Front Page using Firefox 3.6 browser

As part of a regular release process, any site that is intended for the general public should be tested using different Web browsers on a number of different platforms. The following is the suggested list of browsers and platforms on which a site should be tested prior to its release to the public:

- Internet Explorer® 7.x and/or 8.x on Microsoft® Windows® platforms;
- Firefox 3.x on Microsoft Windows platforms;
- Google Chrome™ 8.x and/or 9.x on Microsoft Windows platforms; and,
- Safari® 5 on Mac OS® (or Safari 5 on Microsoft Windows if Mac OS is unavailable).

By validating the site's visual presentation with these configurations, compatibility with 99% of Internet users in the United States can be assured.

In addition, the HTML source for the site should be validated for compliance with common standards established by the World Wide Web Consortium (W3C), ensuring maximum compatibility with current and future Web browsers used by site visitors. Such validation can be easily accomplished using freely-available and commercial validation tools, such as those located at <http://validator.w3.org/>. The site currently does not pass the validation, resulting in multiple errors and non-compliance with the common standards.

4.2.3. Compliance with Accessibility (Section 508) Regulations

The Web site was evaluated for compliance with Section 508 of the Rehabilitation Act Amendments of 1998 (29 U.S.C. 794). The current implementation of the CAGT Web site is only partially compliant with

Section 508 requirements. The Web site was scanned using Cynthia Says™ - Web Content Accessibility reporting tool from HiSoftware®. Specifically, the front page of the site and *Student Profile Registration* pages were certified as compliant with accessibility requirements. However, the *T32 Program Search* page was not compliant, due to errors related to formatting of radio button and checkbox form elements present on the search page. The Section 508 compliance evaluation was not meant to be exhaustive, but it is important to note that the site needs to be verified for compliance using commonly-available tools prior to its public release.

4.3. Specific User-based Functionality

The following sections describe site functionality based on particular user groups. Each user group generally has access to several distinct features, so site functionality is reviewed from each perspective to ensure coverage of all features.

4.3.1. Students and Alumni

4.3.1.1. Current Functionality

Currently, the Web site offers two primary functions for MARC U-STAR student visitors. The first feature is *Profile Registration*, which allows students to register their basic contact and research interest information, so that they can be contacted by T32 Program Representatives during their recruiting and outreach activities. During profile registration, students are asked to provide the following data about themselves:

- Full name;
- Contact information (email address and phone number);
- MARC U-STAR program information (state and institution);
- Student status (junior, senior, or alumnus);
- Graduation information (month/year – actual or expected); and,
- Areas of research training interest (a list of well-defined areas listed on the *NRSA Institutional Predoctoral Training Grants Program Description and Guidelines* page on the NIGMS Web site).

The registration itself is a three-step process. A student first fills out a form with the requested information. A confirmation page is then presented, listing the information entered, giving a student an ability to return to the previous page and correct any information, or submit it for approval. Finally, a confirmation page is shown. After the information is submitted, an email with notification of a new

pending student registration is sent to T34 Program Director associated with the institution selected during the registration process. Below are the screenshots of the three steps in student profile registration process (Figures 3-5).

Community for Advanced Graduate Training

Student Registration Form

Step 1 of 3:

To register for an account, enter the requested information below and click the "Next" button to advance to Step 2.

* Indicates required field.

* First Name

Middle Name

* Last Name

* E-mail Address user@example.com

* Re-type E-mail Address user@example.com

Telephone # 555-555-5555

Please identify the state and institution of your MARC U-STAR (T34) Program, and your expected graduation date.

* State

* Institution

* Current Status

* Expected Graduation Month

* Expected Graduation Year

* **Select one or more Areas of Research Training Interest:**

Graduate-level research training Program Directors will search for you based, in part, on the interests you select below. More complete descriptions of the following program titles, and the scientific research areas covered by them, can be found at the [NIGMS Institutional Training Grant](#) page. Please check areas that interest you.

<input type="checkbox"/> Behavioral-Biomedical Sciences	<input type="checkbox"/> Cellular, Biochemical and Molecular Sciences	<input type="checkbox"/> Molecular Biophysics
<input type="checkbox"/> Bioinformatics and Computational Biology	<input type="checkbox"/> Chemistry-Biology Interface	<input type="checkbox"/> Molecular Medicine
<input type="checkbox"/> Biostatistics	<input type="checkbox"/> Genetics	<input type="checkbox"/> Pharmacological Sciences
<input type="checkbox"/> Biotechnology	<input type="checkbox"/> Medical Scientist Training (MD/PhD)	<input type="checkbox"/> Systems and Integrative Biology

Figure 3: Step 1 of the Student Profile Registration

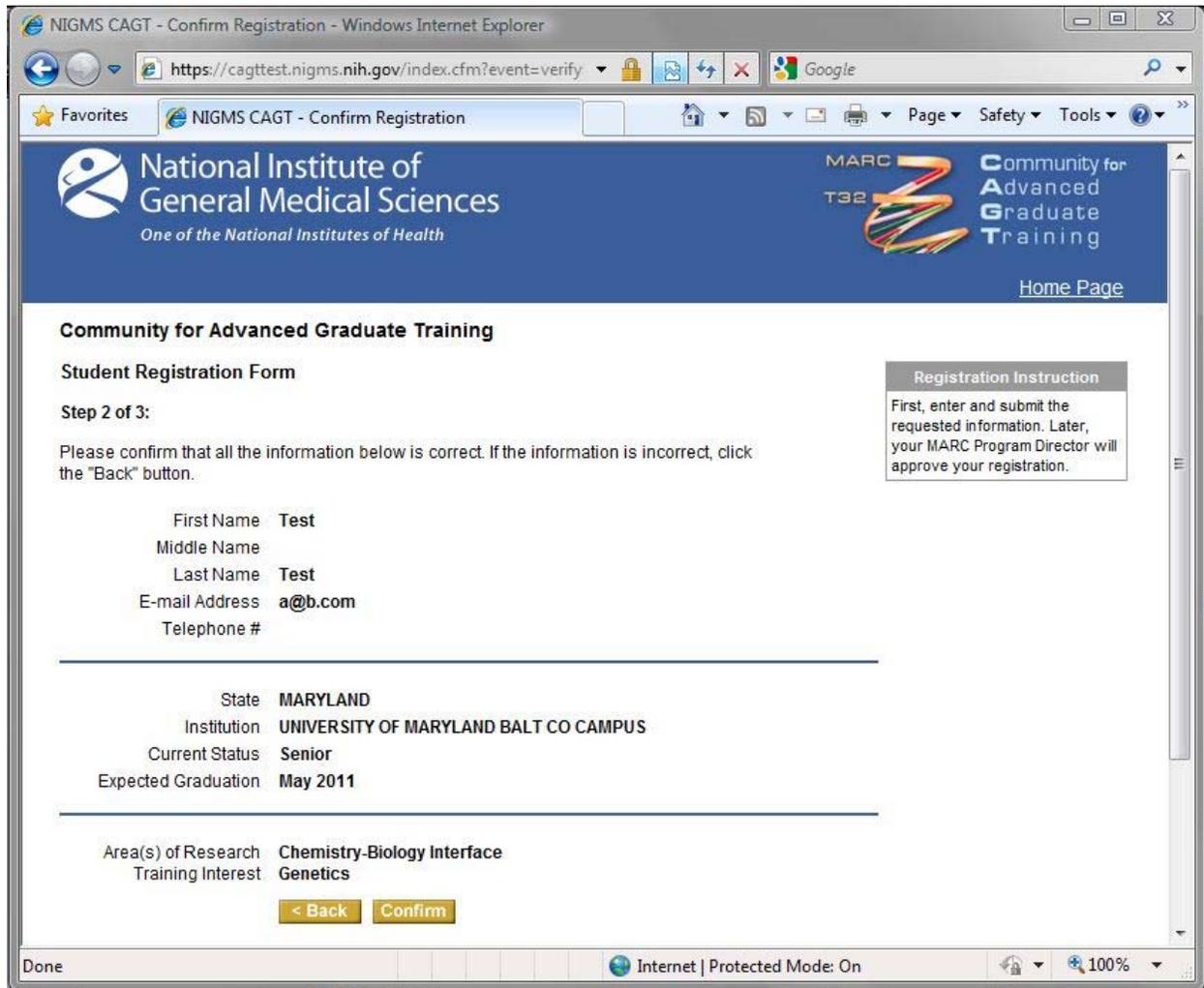


Figure 4: Step 2 of the Student Profile Registration

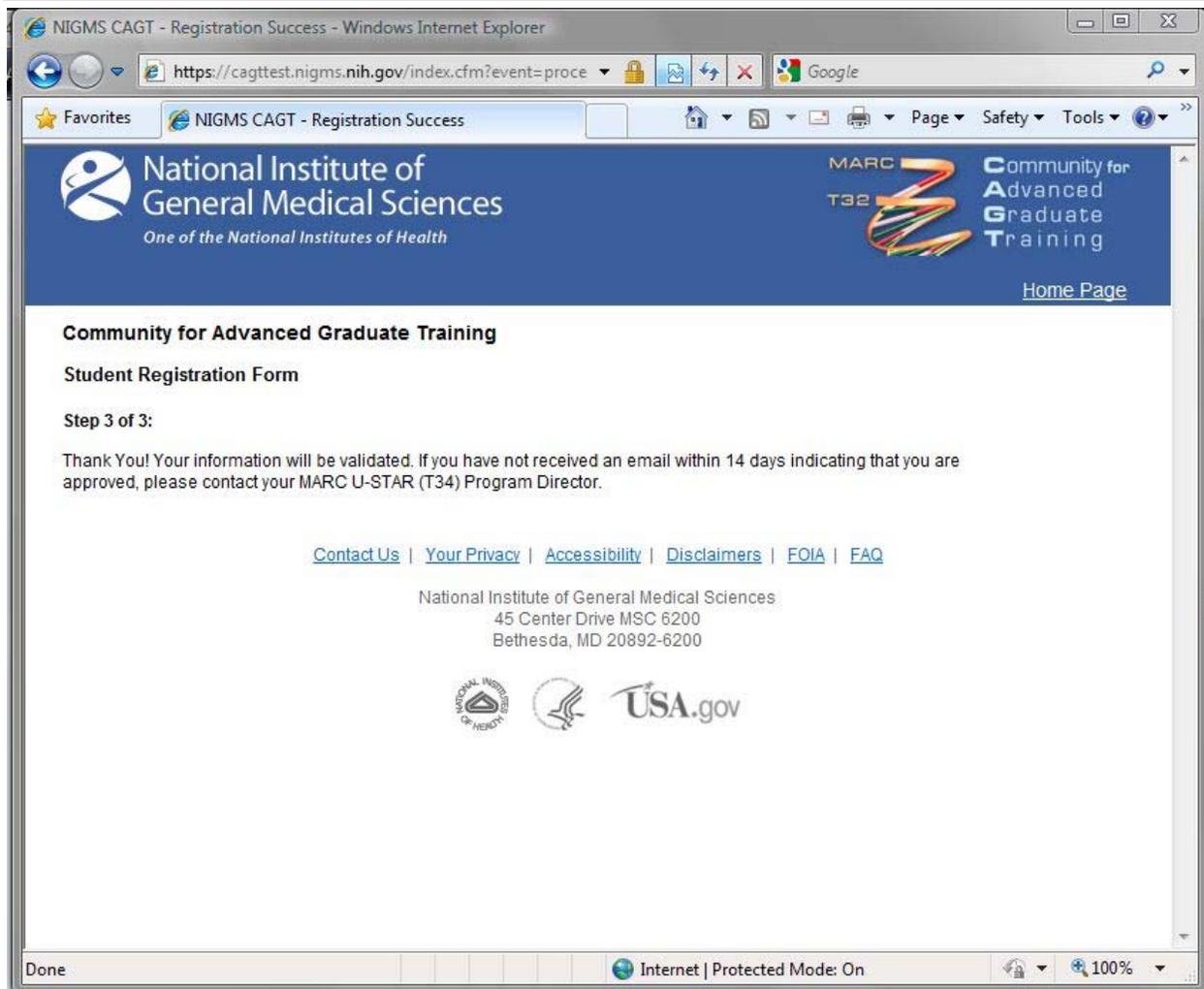


Figure 5: Final Step of the Student Profile Registration

The second feature is *Program Search* that allows students to search for available T32 programs by area of research training interest, state or the name of a participating institution. A search of T34 programs is also available, but is of limited use to student visitors because it can be safely assumed that they are already participating in that program.

4.3.1.2. Observations

The data obtained during the evaluation show that the *Profile Registration* is currently the primary reason that students visit the CAGT Web site. The students are normally alerted about the CAGT program and its profile registration option by their T34 Program Director. While they are not required to register their profiles, this is usually encouraged by the T34 Program Directors in their institutions. There is a broad understanding among the students that registering profile information is beneficial to

their future educational and career goals by exposing their personal information to a large number of research training programs. However, the students generally expressed that the information being asked during the profile registration does not allow them to adequately describe themselves or their research interests. Various possibilities were mentioned from allowing students to enter their GPA, GRE score, and a brief description of their research experience or publications, to allowing students to post their entire Curriculum Vitae.

Most students also indicated that they would like to have the ability to update their profile information, by being able to return to the site and authenticate with a username and password. This feature is currently not available on the CAGT Web site. Some students indicated that they came back to the Web site looking for the student login and were not able to find it. Such a feature was previously available on CAGT, but was removed during the most recent release of the software. The primary reason for the removal of this feature was a workload issue. A large number of students would forget their login credentials (either username, or password, or both) generating a large volume of Information Technology (IT) support contacts for NIGMS. It also contributed to students' frustration with the program. The evaluation team agrees that the T32 Program Search should be open and freely available without authentication (same as in the current release of CAGT). However, the ability to manage their profiles, as well as several additional features proposed for CAGT make an authenticated login a highly-desired feature. There are several technical options available that would simplify management of the login credentials for all registered users. Ideally, a common login mechanism proposed and currently piloted for NIH and most of the universities could be utilized for this purpose. In the meantime, easy access to username lookup and password reset features should eliminate most of the support contacts for NIGMS, while maintaining the ability to have authenticated logins for the students.

As far as the program's search capability, a surprisingly large number of students were not aware that this feature is available or applicable to them. It also appears that they did not have a full understanding of what are T32 programs; and that they could initiate contact with the research institutions through the CAGT Web site. Most mentioned that they would normally use Google™ or other generic Internet search engines to search for potential graduate research programs and access information on the institution's own Web sites, without regard to T32-grant status for a particular university or college.

4.3.2. T34 Program Directors

4.3.2.1. Current Functionality

Currently, the primary reason for T34 Program Directors to visit the CAGT Web site is to manage approval of student profiles. After a profile form is completed by a student, an email is sent to the Program Director of his or her MARC institution notifying them of that fact. A Program Director then logs into the CAGT Web site, reviews the student’s registration, and confirms that the student or recent alumnus is enrolled in the MARC program by approving his or her record. See Figure 6. Once approved, the student profile becomes searchable by T32 Program Directors or delegates. The student is notified via email when his or her profile has been approved by the T34 Program Director of their institution.

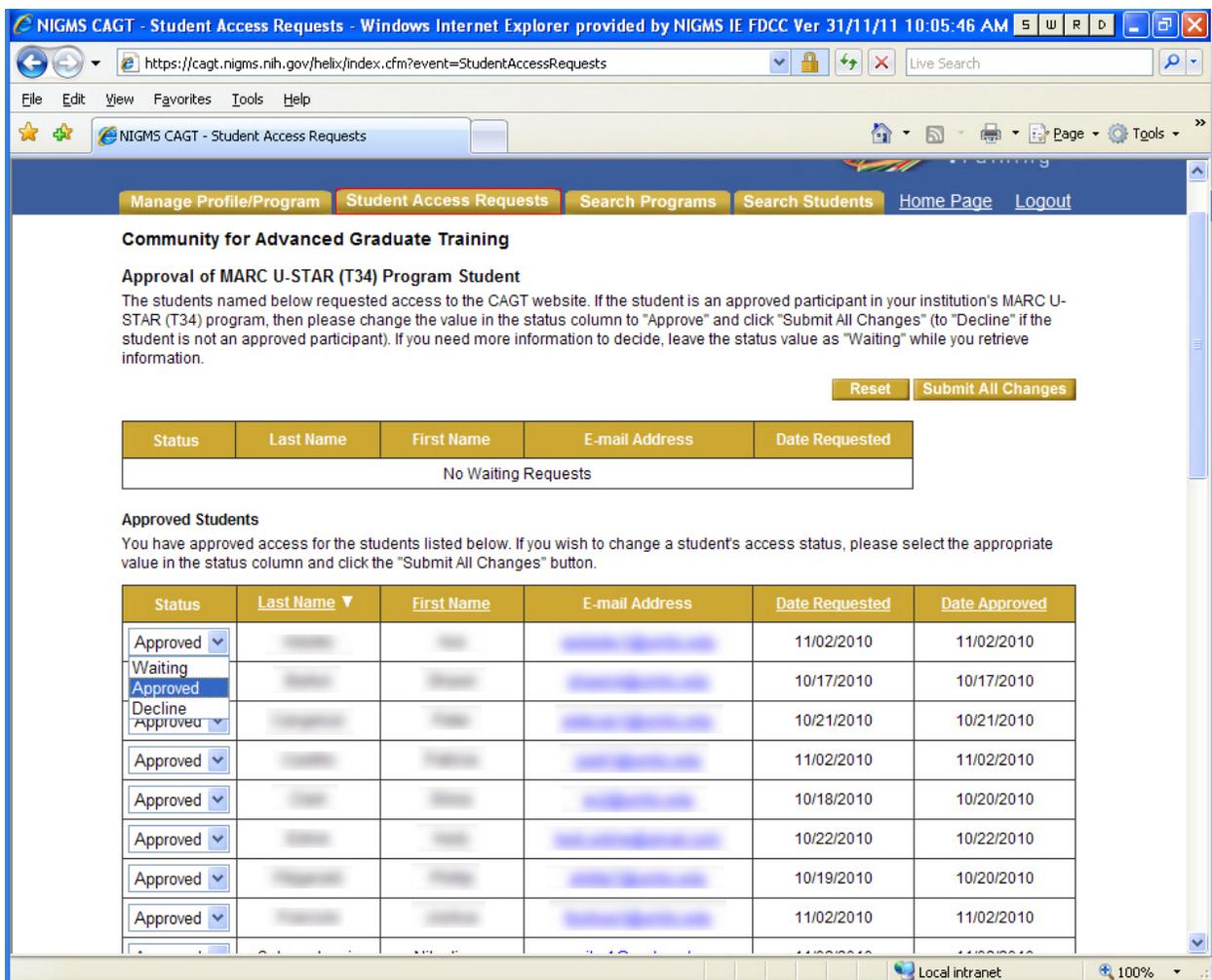
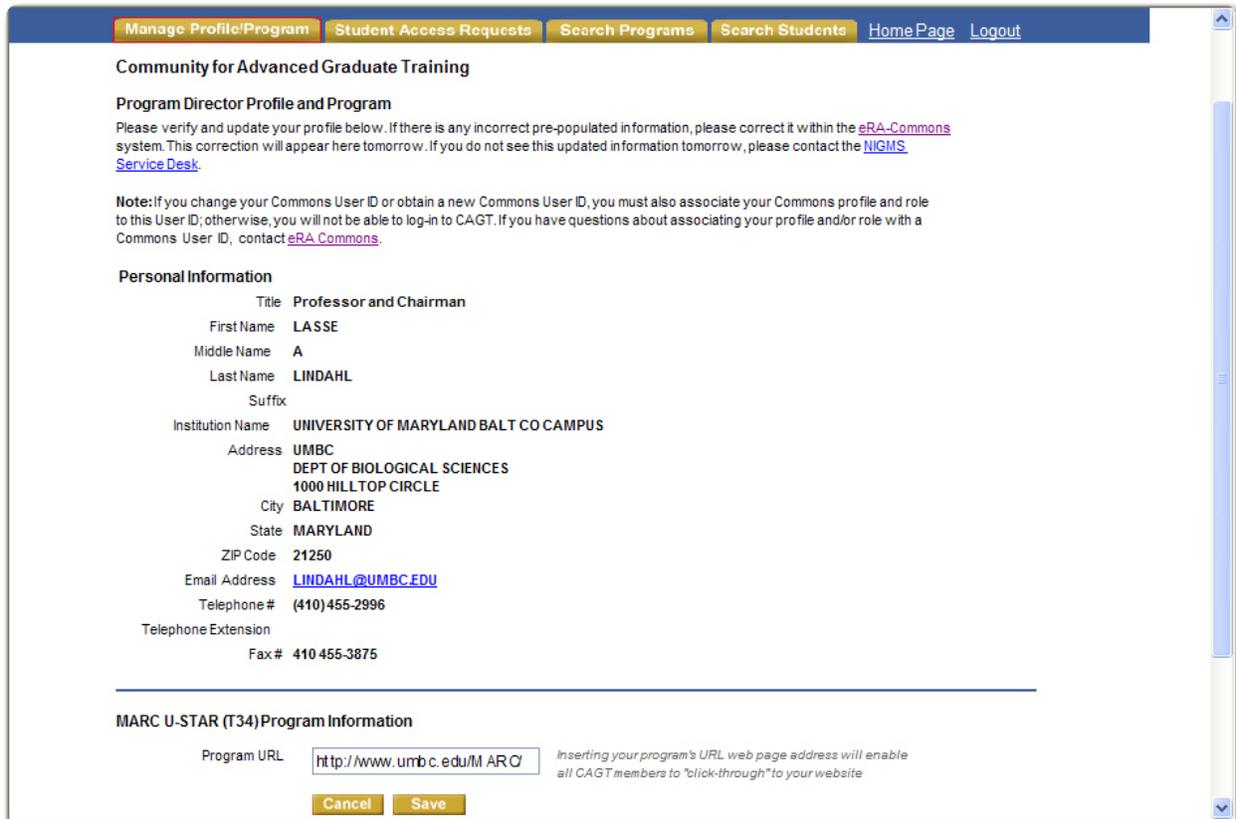


Figure 6: T34 Program Director View/Approve Students Page

In addition, T34 Program Directors can review basic information about their program and institution, which is imported from the electronic Research Administration (eRA) Commons NIH-wide system. Also, they can optionally add and update the address of the Web page (usually at their institution) for their MARC U-STAR program. See Figure 7.



Community for Advanced Graduate Training

Program Director Profile and Program

Please verify and update your profile below. If there is any incorrect pre-populated information, please correct it within the [eRA-Commons](#) system. This correction will appear here tomorrow. If you do not see this updated information tomorrow, please contact the [NIGMS Service Desk](#).

Note: If you change your Commons User ID or obtain a new Commons User ID, you must also associate your Commons profile and role to this User ID; otherwise, you will not be able to log-in to CAGT. If you have questions about associating your profile and/or role with a Commons User ID, contact [eRA Commons](#).

Personal Information

Title	Professor and Chairman
First Name	LASSE
Middle Name	A
Last Name	LINDAHL
Suffix	
Institution Name	UNIVERSITY OF MARYLAND BALT CO CAMPUS
Address	UMBC DEPT OF BIOLOGICAL SCIENCES 1000 HILLTOP CIRCLE
City	BALTIMORE
State	MARYLAND
ZIP Code	21250
Email Address	LINDAHL@UMBC.EDU
Telephone #	(410)455-2996
Telephone Extension	
Fax #	410 455-3875

MARC U-STAR (T34) Program Information

Program URL Inserting your program's URL web page address will enable all CAGT members to "click-through" to your website

Figure 7: T34 Program Director View Program Profile Page

Other features of the CAGT Web site, such as T32 or T34 program searches are also available to T34 program directors, but they are not frequently utilized by them.

4.3.2.2. Observations

In general, most of the T34 Program Directors interviewed over the course of the evaluation expressed positive feelings about the program. No difficulties were experienced during the profile approval process, and the functionality was clear. The interviewed Program Directors largely welcomed additional opportunities provided by CAGT to match their students with suitable graduate research training programs. However, there were several common suggestions for improvements expressed by the T34 Program Directors:

- The student registration period generally occurs too late in the academic year. It should begin in the early summer, and definitely be available in August or September when many students go through the orientation or through an early cycle of selection of their potential future research training programs. One common question asked was why the registration period is time limited at all, and whether there are any obstacles to having it open throughout the year. In that case, it would be the responsibility of the T34 Program Directors to continuously manage the students to ensure continued eligibility, but this didn't appear to be a concern on their end.
- The program should be extended beyond MARC students, to other qualified students. Specifically, those enrolled in the RISE program were mentioned as being highly qualified and having plans for future graduate-level work. RISE is a student development program established to increase the number of students from groups underrepresented in biomedical and behavioral research who complete Ph.D. degree programs in these fields. Many Program Directors mentioned that they would also consider other students as being qualified for CAGT, and that they would manage the screening process to make sure that only well-performing and qualified students were approved for inclusion in the database accessible to T32 institutions.
- The T34 Program Directors indicated that they want to be copied by default on the individual emails sent to students by T32 Program Directors, yet they have no convenient way to track those contacts because of a large volume of email. Plus, they have no way of tracking contacts initiated by students after searching for the programs in which they may be interested. It was stated that better tracking of such contacts could be beneficial for establishing long-term relationships between T34 MARC U-STAR programs and T32 graduate programs. For example, if it was known that several students have contacted a specific T32 program, a Program Director would be able to follow up with a personal contact and facilitate further communication with that program.

4.3.3. T32 Program Directors

4.3.3.1. Current Functionality

T32 Program Directors access CAGT by clicking on the "Program Director Login" button on the front page. There are two main pieces of functionality that are currently available and frequently utilized by T32 Program Directors: Student Search and Program Profile Update.

The Student Search function allows Program Directors to search and ultimately contact MARC students registered for CAGT. Currently T32 Program Directors are able to search students' profiles by area of research interest and by institution. Search results are presented in a paginated tabular format. Program Directors are able to click on an individual student's email address to initiate the contact using the default email client on their computer. When initiating individual contacts, students' T34 Program Directors would be automatically copied on the outbound email, unless removed manually in the email client used by the T32 Program Director. In addition, T32 Program Directors are able to export a list of contacts into comma-delimited format for use by mail-merge software to contact multiple students at once. The following screenshots represent two pages related to student search: Search Form and Search Results (Figures 8 and 9, respectively).

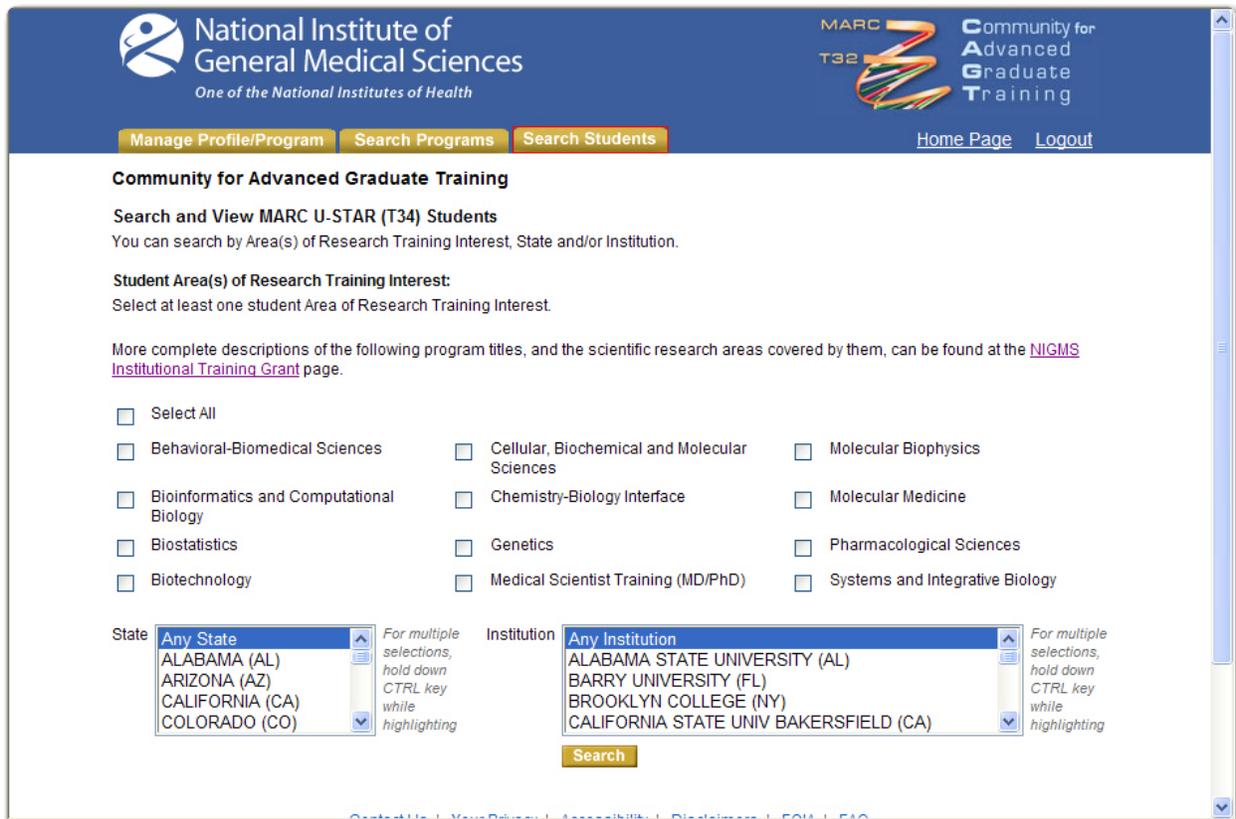


Figure 8: T32 Program Director Search Students Page

Search results for 'UNIVERSITY OF CALIFORNIA SAN DIEGO (CA)'. 88 students found, 88 total records returned. Displaying 25 per page. Page 1 of 4.

Student	Institution	Area(s) of Research Training	Email Address	Telephone #	Student Status	Program Director Name	Program Director Email Address
[Redacted]	CALIFORNIA STATE UNIV SAN BERNARDINO	Pharmacological Sciences	[Redacted]	[Redacted]	Senior	[Redacted]	[Redacted]
[Redacted]	CITY COLLEGE OF NEW YORK	Pharmacological Sciences	[Redacted]	[Redacted]	Senior	[Redacted]	[Redacted]
[Redacted]	UNIVERSITY OF MARYLAND BALT CO CAMPUS	Pharmacological Sciences	[Redacted]	[Redacted]	Junior	[Redacted]	[Redacted]
[Redacted]	CALIFORNIA STATE UNIVERSITY NORTHRIDGE	Pharmacological Sciences	[Redacted]	[Redacted]	Senior	[Redacted]	[Redacted]
[Redacted]	UNIVERSITY OF PUERTO RICO AT HUMACAO	Pharmacological Sciences	[Redacted]	[Redacted]	Senior	[Redacted]	[Redacted]
[Redacted]	UNIVERSITY OF TEXAS EL PASO	Pharmacological Sciences	[Redacted]	[Redacted]	Junior	[Redacted]	[Redacted]
[Redacted]	SAN JOSE STATE UNIVERSITY	Pharmacological Sciences	[Redacted]	[Redacted]	Junior	[Redacted]	[Redacted]
Jose-Marc	UNIVERSITY OF	Pharmacological	[Redacted]	[Redacted]	[Redacted]	MARC	[Redacted]

Figure 9: T32 Program Director View Student Search Results Page

The Update Program Profile function is used by T32 Program Directors and delegates in order to update some information about their programs. Specifically, they are able to associate a Web page on the program’s own Web site (usually a page on the university Web site with which this program is associated) with the program record on the CAGT Web site. In addition, they are able to enter information about a summer research program (if available) that is available at their educational institution. As shown in Figure 10, the following fields are available for a summer research program:

- Program name;
- Address of program Web site (URL); and,
- Name and contact information for the summer program.

Telephone Extension		list above. If it does not appear in the drop-down list after one calendar day, contact your institution's AA.
Fax # (617) 432-3969		
CAGT Delegate(s)	No CAGT Delegate selected	CAUTION: If your delegate already has an eRA-Commons account with a role/authority other than "ASST," your institution's AA or SRO needs to add an "ASST" role to the existing account, rather than create a new account. Otherwise your delegate will not be able to log into CAGT -- see the "Note" in the introduction of this page.

Institutional Predoctoral Training Grants (T32) Program Information

NIGMS Program Name **Cellular, Biochemical, and Molecular Sciences (CMB)**
 NIGMS Area(s) of Research Training **Cellular, Biochemical and Molecular Sciences**

Program URL Inserting your program's URL web page address will enable all CAGT members to "click-through" to your website

Summer Term Contact Name

Summer Term Contact E-mail

Summer Term Contact Phone Number

Summer Term URL Inserting your summer program's URL web page address will enable all CAGT members to "click-through" to your website

[Contact Us](#) | [Your Privacy](#) | [Accessibility](#) | [Disclaimers](#) | [FOIA](#) | [FAQ](#)

National Institute of General Medical Sciences
 45 Center Drive MSC 6200
 Bethesda, MD 20892-6200

Figure 10: T32 Program Director Update Program Profile Page

One additional feature available to T32 Program Directors is the ability to assign and manage Program Delegates, i.e. other people that have the authority to manage program profiles and initiate student contacts (Figure 11). Delegates have access to all of the same features as Program Directors, with the exception of the ability to manage delegates. For the purposes of this evaluation, the two roles are considered identical.

Community for Advanced Graduate Training

Program Director Profile, Delegate and Program

Please verify and update your profile below. If there is any incorrect pre-populated information, please correct it within the [eRA-Commons](#) system. This correction will appear here tomorrow. If you do not see this updated information tomorrow, please contact the [NIGMS Service Desk](#).

Note: If you change your Commons User ID or obtain a new Commons User ID, you must also associate your Commons profile and role to this User ID; otherwise, you will not be able to log-in to CAGT. If you have questions about associating your profile and/or role with a Commons User ID, contact [eRA Commons](#).

Personal Information

Title **Professor**

First Name **Joan**

Middle Name **Siefert**

Last Name **Brugge**

Suffix **PhD**

Institution Name **HARVARD UNIVERSITY (MEDICAL SCHOOL)**

Address **HARVARD MEDICAL SCHOOL
DEPT OF CELL BIOLOGY
240 LONGWOOD AVENUE
C1-513A
BOSTON
MASSACHUSETTS**

ZIP Code **02115**

Email Address **JOAN_BRUGGE@HMS.HARVARD.EDU**

Telephone # **(617) 432-3974**

Telephone Extension

Fax # **(617) 432-3969**

Delegate to Program Director

As a Program Director, you can designate up to three persons to support your use of CAGT. Select the appropriate name(s) in the drop-down list below (use CNTL-Select for multiple selections) and click "Save".

No CAGT Delegate
adams, nancy A (NADAMS)
Alvear, Sunny K (ALVEAR)
Andrews, Sally (SALLY_ANDREWS)

If the person(s) you wish to make your CAGT Delegate(s) does not appear on the list, then you must first establish an ASST account for them in eRA-Commons. To do so, contact your institution's eRA-Commons Account Administrator (AA) or Sponsored Research Office (SRO). When your delegate (s) has an eRA-Commons account as an "ASST," the next calendar day his/her name(s) will appear in the drop-down list above. If it does not appear in the drop-down list after one calendar day, contact your institution's AA.

CAUTION: If your delegate already has an eRA-Commons account with a role/authority other than "ASST," your institution's AA or SRO needs to add an "ASST" role to the existing account, rather than create a new account. Otherwise your delegate will not be able to log into CAGT --

CAGT Delegate(s) No CAGT Delegate selected

Figure 11: T32 Program Director Assign Delegates Page

4.3.3.2. Observations

Again, members of this particular group of users expressed largely positive feelings towards the CAGT program and Web site. Most understood and supported the goals of the CAGT program, and welcomed it as another tool to increase participation of students from underrepresented racial and ethnic groups in graduate training. However, while acknowledging the usefulness of the site in general, T32 Program Directors discussed a large number of shortcomings with the existing implementation and served as the largest source of new ideas with regard to the site functionality. The complaints as well as possible ideas for improvement have centered on several distinct areas, mentioned by multiple T32 Program Directors.

One of the areas mentioned most frequently was lack of more detailed information about the students. The Program Directors stated that information currently available about each student is too basic in nature and does not allow them to perform more targeted outreach. Program Directors mentioned that access to information such as a student's academic major, current GPA, and other more detailed data would allow them to more effectively find and reach out to those students who would be genuinely

interested in their program. Several Program Directors complained of a low response rate to their outreach emails and said that if they had more information about students, they would be able to conduct more focused, and thus more effective, contacts. Expanding the student profile was also mentioned as one of the desired features by the student users of CAGT.

Several T32 Program Directors also mentioned that it may not be the most effective approach to list them as primary contacts for students, as there are frequently additional people at their institutions that are responsible for recruiting and student outreach. They said they would welcome flexibility with regard to who should be listed as a primary student contact and would like the ability to add additional contacts.

Many T32 Program Directors also stated that the time period when CAGT is open for searches and filled with student information may need to be shifted to earlier months. Most of the outreach by T32 programs takes place between September and November, but at that time the majority of students may not have registered for CAGT yet.

4.3.4. NIGMS CAGT Program Administrators

4.3.4.1. Current Functionality

Currently, CAGT Program Administrators at NIGMS do not have many features available to them specifically. One option that is available is the ability to display announcements on the top portion of the front page.

In addition, the IT team has access to an extremely-useful capability that allows an IT Administrator to assume a role of any actual user of the system, specifically any T32 or T34 Program Director. This makes it easy to perform troubleshooting and act on any problem reports received from a specific user. One additional feature that is not readily available and would be very useful to Program and CAGT Administrators is access to statistics reports about the Web site. Suggested reports are described further in Section 5.2 *Recommended Functional Web Site Updates*.

5. Discussion and Recommendations

As mentioned above, the CAGT program, while deemed useful in general, could benefit from a number of improvements. Suggestions for such improvements were expressed by all stakeholders during the data collection process. In addition, the evaluation team developed several recommendations based on

experiences with other Web-based information services, both in commercial and government contexts. The following section presents and discusses the suggested improvements. The exact implementation scenarios will need to be further discussed and refined within NIGMS and are not included in this evaluation. This report is meant to present a framework and to start a discussion which will ultimately lead to an enhanced CAGT program.

5.1. Recommended Program Changes

While the evaluation focuses on technical aspects of the CAGT Web site, several suggestions were expressed by various stakeholder groups that, while useful in general, cannot be implemented by technical means alone. In many cases, the evaluation team thought that such suggestions have a significant degree of merit, and it would make sense to include them in the final report. Specifically, the team believes that the following changes to the program would make it more useful for all participants.

5.1.1. Expansion of the pool of eligible students

Currently, the number of student participants in the CAGT program is limited to about 600 current and former MARC students. The T32 Program Directors have stated that the pool of potential program participants was too small when they narrowed down search results by area of research interest or another search criterion. Also, because of geographic distribution of the MARC program several T32 programs do not have institutions with MARC programs in their geographic vicinity. See Figure 12. Based on the comments made by multiple students and T32 Program Directors, the geographical factor is often a major consideration for prospective participants in graduate research training programs, particularly those from the underrepresented minority groups. The students frequently rely on support from family members, and often exclude institutions located too far from their current undergraduate institution. This particular factor was stated as one of the reasons for the low response rates when undergraduate students were contacted by some T32 Program Directors. For example, one of the T32 Program Directors in the Midwest has received only a single relevant response over a two-year period using the CAGT Web site, after emailing more than 50 students. His possible explanation for this was that there are no MARC institutions within the immediate geographic area.

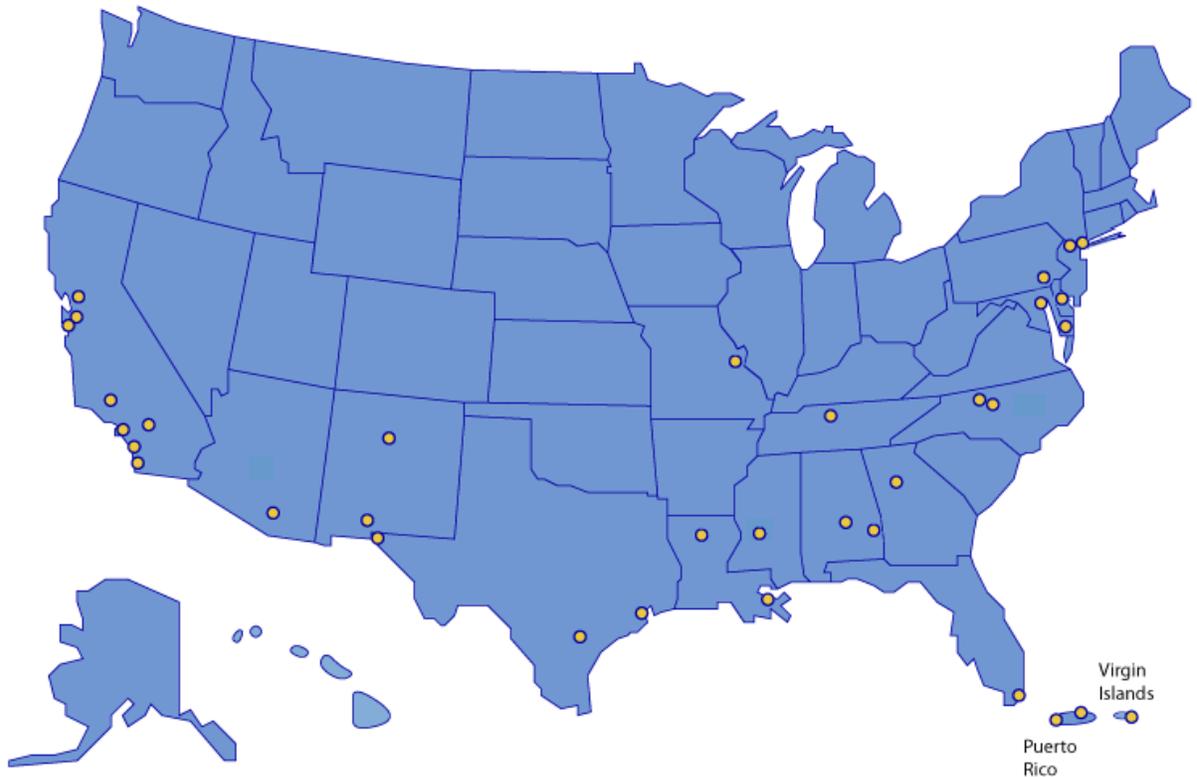


Figure 12: Map of MARC U-STAR Participating Institutions

Also, several T34 Program Directors have stated that they are aware of multiple, highly-qualified students in their institutions that, for one reason or another, did not qualify for or decided not to participate in the MARC program. Often these students are participating in the RISE program, or they are listed as being MARC affiliates or having “Pre-MARC” status.

Thus the usefulness of the program can be improved by increasing the number of eligible students. Such an expansion can be accomplished through only a small technological change, keeping the cost of such change to a minimum. While the implementation and maintenance of the CAGT Web site represents a fixed-cost investment for NIGMS, per-student costs would be significantly lower if the program was expanded to additional participants. Screening of such students to make sure that only qualified students would be listed in CAGT could still be done by T34 Program Directors or Program Directors for other qualified programs (i.e. RISE), and the students would still have to go through the approval process by a faculty member of their undergraduate institution. Specific requirements for additional students would be defined by NIGMS, to make sure that only qualified students are included in the searchable database that would be used by T32 Program Directors. Such criteria may include a

student's GPA or other academic achievements, or a subjective opinion given by a Program Director. MARC U-STAR students are likely to enroll in graduate programs even without CAGT, but this is not always true for participants in other programs targeting undergraduate students in underrepresented minority groups. Therefore, ultimately this change would work towards fulfilling the NIGMS goal to increase recruitment of underrepresented minorities in graduate research training programs.

5.1.2. Removing Annual Maintenance Shutdown Period for CAGT

Based on several conversations with T32 Program Directors, as well as students, it appears that the current annual shutdown of CAGT coupled with limited registration period for students (fall of every year) hinders the usefulness of the program. Specifically, some graduate schools perform their outreach activities in summer or early fall, and would prefer to contact students at that time. However, many students have not yet registered in CAGT at that time, and those registered in a previous year are no longer in the database. Also, it was stated by several senior students, that by the middle of October they have already created a shortlist of their preferred graduate schools, and that they have either submitted or are already working on their admission applications. Therefore, they would likely ignore any additional emails from T32 institutions received after that time. Plus, based on today's fast-paced world of technology, if a first visit to any given resource is not successful - because a registration has not yet started, for example - there is a good chance that the visitor will not return to the site. So, the evaluation team recommends to keep the registration period open 365 days a year and not to remove student accounts each fall.

A common reason stated for requiring annual re-registration with CAGT was the requirement to keep the database open only to qualified students that are still eligible for MARC participation. NIGMS also needs to make sure that the pool of students presented to T32 Program Directors represents those students that are likely to continue on the path of graduate education. There are several strategies that can assist with this. The evaluation team suggests the following business rules to guide student profile registration:

- Allow students to register and keep their accounts in the database for five years from the moment of registration (to account for junior and senior years at a university plus two to three years immediately following graduation).
- Student profiles would still need to be verified and manually approved by T34 Program Directors, who will also have the ability to disable or remove any profiles should a student

withdraw from the program or lose their eligibility status. T34 Program Directors would be emailed annually in mid-fall to remind them that they need to review the list of students in their program and to update it accordingly.

- Account status would be automatically changed to inactive one year after the most recent login to the system. Inactive accounts would not be included in searches performed by T32 Program Directors, but the profile information would still be maintained until removed.
- Annual notification emails would be sent to registered students reminding them to visit CAGT and update their profiles with the most recent personal data.
- Student profiles would be automatically removed from the system five years after the initial registration. Should the student still have a need for CAGT after that time, they could always complete the registration process again.
- As part of a student profile, a student would be able to indicate whether they are interested in a summer research program, graduate program, both or neither. Depending on this selection, their names would not be available for search by T32 Program Directors, unless they indicate the relevant interest.

By implementing such an approach, T32 Program Directors would be able to perform student searches at any point in time, according to the recruitment schedule of their institution, and would still have access to a large number of qualified undergraduate students that have expressed interest in further graduate research training.

5.2. Recommended Functional Web Site Updates

5.2.1. Overall Web Site Changes

5.2.1.1. General Web Site Design and Organization

The following comments are related to visual and design components across all pages of the CAGT Web site that are not limited to a particular group of users. The suggested changes are designed to make the site more useful for all visitors and better comply with generic usability guidelines. The recommendations are split into separate categories.

Visual Program Identification

For better program identification, it is recommended that the CAGT logo be moved to the left or be better integrated with the NIGMS logo. As part of Web design best practices, the branding of the visited site is more visually significant when located in the left corner. Currently, the NIGMS logo is seen as primary and there is no clear CAGT branding because it gets lost visually in the top right corner. One option is to move the CAGT branding into the flash promo area under the NIGMS logo.

Global Navigation

The top global navigation is not consistent across pages, and the functionality of the tabs could be improved. Currently, the top tabs are “Search Programs” and “Search Students”. It is suggested that the “Search Students” tab should not show up in areas that are used mostly by students, such as the Search T32 Programs and Student Profile pages. The tabs at the top can be changed for students to select which program they want to search, go to their profile page, and return to the home page. The “Home Page” link is presented visually differently from the other tabs and is placed to the far right. It should be moved to the first position on the left according to Web best practices. On the right, adding a personalization and utilities area would improve the user experience. It can show a “Welcome [Student Name]” message and allow the student to choose “My Profile” or “Logout” after the student authenticates and logs into CAGT.

Flash Animation Promo Area

The flash animation on the home page does not provide significant information to visitors, takes up too much screen space, and is visually distracting. The large number of rapidly-moving images and excessive text content prevent the site visitor from focusing on a clear message or making a decision about what to do on the site. Optimally, this area should be broken up into photographs that are matched with a clear message that can be rotated in a slideshow. The area should be reduced in size to allow other important home-page content, like the audience channels, to be presented higher on the page.

Audience Channels

The site does not have clear audience channels that allow a visitor to self identify and make a choice about how to proceed further on the site. The visitor is unclear about the actions he or she can take on the site, particularly considering the different capabilities available to different CAGT user groups. For instance, if the visitor is a student, it is unclear if he or she should first register or go to search programs. These problems with usability can be solved by creating audience channels. Each audience channel could have a clearly-labeled area that is easily identified by the site visitor and contains action-oriented

buttons that prompt further action. The next section presents an updated design for the front page and describes the channel-based reorganization in more detail.

5.2.1.2. Reorganization of the Front Page

The evaluation team proposes reformatting and reorganizing the front page of the Web site. Specifically, the page should include more dynamic elements, so that any changes within the CAGT program or updates from particular T32 or T34 institutions would be communicated to the visitors. This would help return visitors to the site to inquire about the updates with the program. In addition, the Web site should more clearly direct visitors to areas for students and areas for T32 Program Directors, by implementing a channel-based approach. Based on received feedback, it was not clear to some students that there is any information available to them after the initial profile registration, and therefore, they missed the ability to search for regular T32 or summer research programs. The following are two possible proposed mock-ups of the front page address this issue (Figures 13 and 14).

National Institute of General Medical Sciences
One of the National Institutes of Health

MARC T32 Community for Advanced Graduate Training

Welcome to the Community for Advanced Graduate Training (CAGT)!
This Web site is provided by NIGMS to help MARC U-STAR (T34) undergraduate students find suitable research training opportunities at the graduate level and to assist directors of NIGMS Predoctoral Training Grants (T32) in recruiting MARC U-STAR students into their programs
We wish you the best of luck in matching up!

For Students

[Search Programs >>](#)

[Create Your Profile >>](#)

[Login >>](#)

Once logged in you can
Update profile. Save programs
and Contact program directors

For Program Directors

[Login to CAGT >>](#)

Once logged in you can:
Search for students,
Approve students and alumni,
Manage program pages

About Our Programs

Undergraduate

[NIGMS MARC U-STAR \(T34\)](#)

This program trains honor undergraduate underrepresented students in the biomedical and behavioral sciences [more info >](#)

[Search this program >](#)

[View map of MARC programs >](#)

Predoctoral

[NIGMS Institutional Predoctoral Training Grants \(T32\)](#)

These grants support graduate research training programs in a range of biomedical and behavioral research areas. [more info >](#)

[Search this program >](#)

[View map of T32 programs >](#)

Summer

[Summer Undergraduate Research Opportunities](#)

This program trains honor undergraduate underrepresented students in the biomedical and behavioral sciences

[Search this program >](#)

[View map of T32 programs >](#)

News / Announcements

The 2010-2011 academic school year for MARC Student Registration is now CLOSED. If you have any questions contact NIGMSMARCCAGT@nigms.nih.gov

01-11-2011
Learn how to fill out your profile for the best match for your research interests

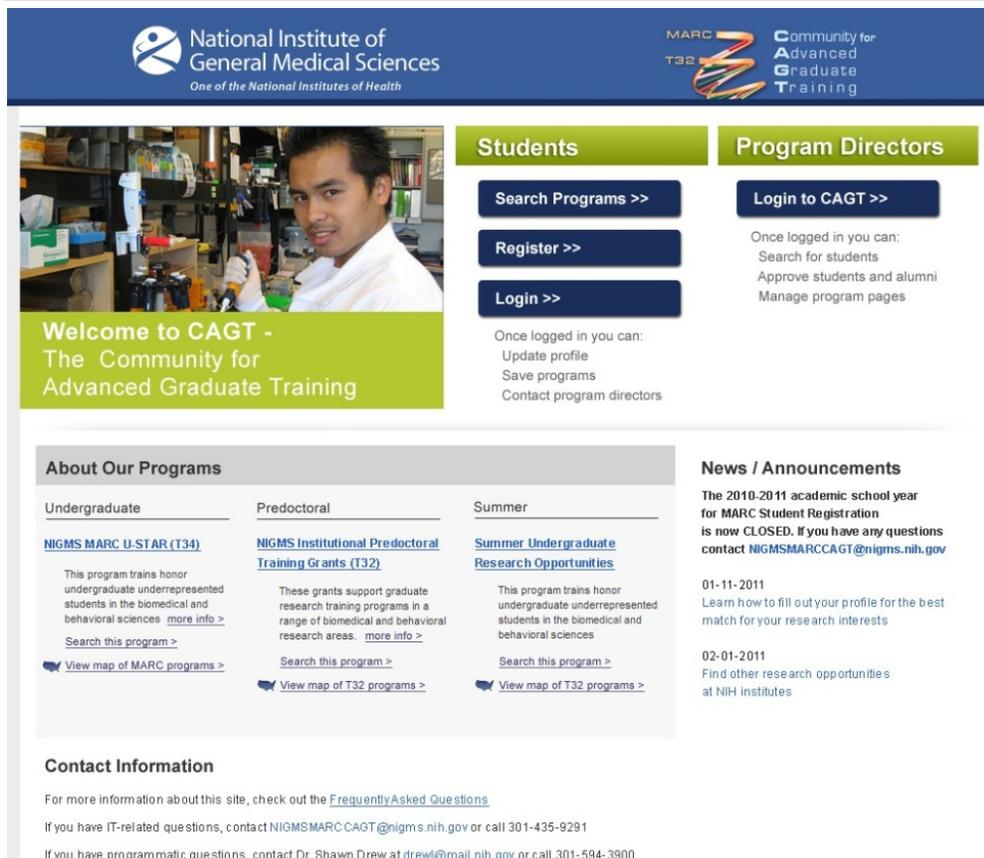
02-01-2011
Find other research opportunities at NIH Institutes

For more information about this site, check out the [Frequently Asked Questions](#)

If you have IT-related questions, contact NIGMSMARCCAGT@nigms.nih.gov or call 301-435-9291

If you have programmatic questions, contact Dr. Shawn Drew at drewl@mail.nih.gov or call 301-594-3900

Figure 13: Proposed Home Page Redesign - Alternative 1



The image shows a proposed website redesign for the National Institute of General Medical Sciences (NIGMS) Community for Advanced Graduate Training (CAGT). The header features the NIGMS logo and the CAGT logo. Below the header, there is a main navigation area with two columns: 'Students' and 'Program Directors'. The 'Students' column includes buttons for 'Search Programs >>', 'Register >>', and 'Login >>', along with a list of functions available after logging in: 'Update profile', 'Save programs', and 'Contact program directors'. The 'Program Directors' column includes a 'Login to CAGT >>' button and a list of functions: 'Search for students', 'Approve students and alumni', and 'Manage program pages'. A central banner features a photo of a student in a lab and the text 'Welcome to CAGT - The Community for Advanced Graduate Training'. Below this, there is a section for 'About Our Programs' with three columns: 'Undergraduate' (NIGMS MARC U-STAR (T34)), 'Predoctoral' (NIGMS Institutional Predoctoral Training Grants (T32)), and 'Summer' (Summer Undergraduate Research Opportunities). Each column provides a brief description and links to 'Search this program >' and 'View map of [program] programs >'. To the right of the 'About Our Programs' section is a 'News / Announcements' section with a notice about the 2010-2011 academic school year for MARC Student Registration being closed, and two dates: 01-11-2011 and 02-01-2011, with links to learn more. At the bottom, there is a 'Contact Information' section with links to 'Frequently Asked Questions' and contact details for IT-related and programmatic questions.

Figure 14: Proposed Home Page Redesign - Alternative 2

Both alternatives above include the following major components:

- Clear delineation between student and Program Director functions;
- Brief description of additional functions available after logging in;
- A section for CAGT news and/or announcements;
- Links to further information about relevant NIGMS programs; and,
- Clearly-communicated contact information for the program and the Web site.

5.2.2. Student Functions

The evaluation team recommends several important changes related to functionality available for the students, including the following:

- Add the ability to login;
- Add additional fields to the profile;
- Make research training areas descriptions available directly on the Profile Registration page;
- Make several updates to T32 Program Search pages;

- Add the ability to save institutions;
- Add the ability to contact programs via a form on the page; and,
- Add the ability to leave private notes about a particular program.

The following is the proposed page flow for student visitors of the CAGT Web site (Figure 15).

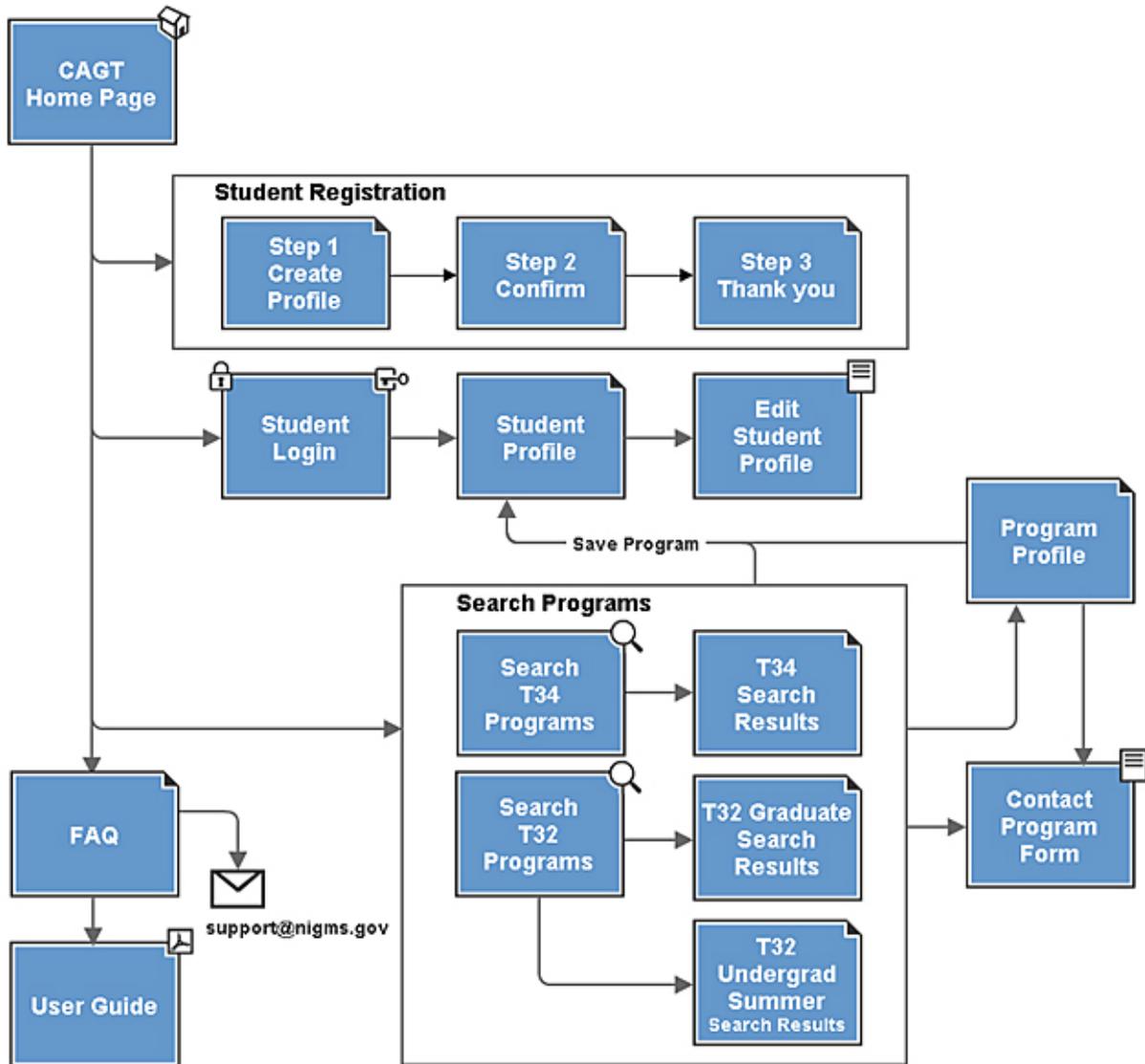


Figure 15: Proposed Page Flow for Student Users

5.2.2.1. Profile Registration

As mentioned in Section 4 *Results of the CAPT Web Site Evaluation*, a common complaint from both the students and T32 Program Directors was that the students can only share limited information about

themselves. T32 Program Directors have stated that if they wanted to engage in more focused student contacts, they would need to know more about the students. Several options were considered, but ultimately it was decided to include the following new fields in the student profile registration form:

- Password and password confirmation (mandatory fields);
- Academic major (mandatory field);
- Academic minor (optional field);
- Brief paragraph describing academic and research interests (optional);
- Brief paragraph describing past research experience (optional);
- GPA or GPA range (optional); and,
- GRE score or GRE score range (optional).

In addition, based on the usability test and overall usability analysis, the students would benefit from easier access to descriptions of research areas. Currently this information is located on a separate page linked from the Profile Registration page. If a user clicks on that page during profile registration, they would easily lose the context of the registration process, which is not very convenient. Plus, it is currently hard to find this specific information on the NIGMS Institutional Grant page where it is mixed with a lot of other data. In order to improve this, the evaluation team proposes making a brief area of research training descriptions available in a pop-up window directly on the Profile Registration page. When a user moves a mouse over the title of an area of research interest, a small pop-up window would display a paragraph with a description copied directly from the NIGMS Institutional Grant page. An additional link to that page would still be present should the students require more detailed information about the research training areas.

The following screen mock-up illustrates the inclusion of additional new fields and functions of a pop-up area to display the research training description (Figure 16).



Community for Advanced Graduate Training

Student Registration Form

Step 1 of 3:

To register for an account, enter the requested information below and click the "Next" button to advance to Step 2.

Registration Instruction
First, enter and submit the requested information. Later, your MARC Program Director will approve your registration.

*** Indicates required field**

* First Name	<input type="text"/>	If you have a common name, please include your middle name to help uniquely identify you.
Middle Name	<input type="text"/>	
* Last Name	<input type="text"/>	
* E-mail Address	<input type="text"/>	user@example.com
* Re-type E-mail Address	<input type="text"/>	You will login to your profile with this email address. We will use this email address if you need to reset your password or unlock your account.
New Password	<input type="text"/>	
* Re-type New Password	<input type="text"/>	
Telephone #	<input type="text"/>	555-555-5555
Any additional information or academic and research interests	<input type="text"/>	
Past relevant research experience	<input type="text"/>	

Please identify the state and institution of your MARC U-STAR (T34) Program, and your expected graduation date.

* State	<input type="text" value="Select a State"/>
* Institution	<input type="text" value="Select an Institution"/>
* Current Status	<input type="text" value="Select a Status"/>
* Expected Graduation Month	<input type="text"/>
* Expected Graduation Year	<input type="text"/>
Academic Major	<input type="text"/>
Academic Minor	<input type="text"/>
GPA	<input type="text"/>
ORE	<input type="text"/>

*** Select one or more Areas of Research Training Interest:**

Graduate-level research training Program Directors will search for you based, in part, on the interests you select below. More complete descriptions of the following program titles, and the scientific research areas covered by them, can be found at the [NIGMS Institutional Training Grant](#) page. Please check areas that interest you.

<input type="checkbox"/> Behavioral-biomedical Sciences	<input type="checkbox"/> Cellular, Biochemical Sciences	Programs in this area should provide significant biological training to students receiving in-depth training in synthetic/mechanistic chemistry and provide significant training in synthetic/mechanistic chemistry to students being trained in depth in the biological sciences.
<input type="checkbox"/> Bioinformatics and Computational Biology	<input type="checkbox"/> Chemistry-Biology Int	
<input type="checkbox"/> Biostatistics	<input type="checkbox"/> Genetics	
<input type="checkbox"/> Biotechnology	<input type="checkbox"/> Medical Scientist Trai	

[Cancel](#) [Next >](#)

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National Institute of General Medical Sciences
45 Center Drive MSC 6200
Bethesda, MD 20892-6200

Figure 16: Proposed Student Profile Registration Page

5.2.2.2. T32 Program Search

The T32 Programs Search function, similar to any standard search implementation, consists of two distinct parts: the Search Form and Search Results pages. Most of the stakeholders did not experience any major difficulties or express significant suggestions about the Search Form page. Therefore, only minor updates are recommended to this page. Specifically, the following changes would improve the functionality behind the search form:

- Create separate search functions for regular and summer training opportunities. This is primarily due to the fact that student visitors search for summer and regular training programs during different times in their academic progress. Plus, not all T32 programs include summer training opportunities, and always displaying those programs during search is not helpful. Such separation could be achieved either by adding two separate buttons leading to two separate forms, or by adding a radio button to the search form requiring user to select either a regular or summer program search.
- Similar to the Profile Registration page, a more detailed description of the areas of research training should be made available directly on the search form.
- When a particular state is selected in the State list box, the list of institutions should immediately update to only display institutions in the selected state(s). Otherwise it is too easy to execute a search that returns no results, by selecting a particular state and an institution not located in the selected state, for example. Plus, due to the number of different T32 programs, the current list of institutions is considered too long according to generally-accepted usability standards. By dynamically limiting the list when a state is selected, the list of institutions would be more usable due to its shorter length.
- Add the ability to indicate desired sort criteria on the search form. Currently, it is not clear to site visitors how the search results are sorted. There is a small arrow indicator in the Area(s) of Research Training column title, but if a single area is selected, it is not clear how search results are sorted and what are the secondary sort criteria (if any). By adding a “Sort By” dropdown list box to the search form, a user would be able to easily control and understand the sorting of the search results.

The screen mock-up below represents a visual representation of the updated T32 Programs Search form (Figure 17).

National Institute of General Medical Sciences
One of the National Institutes of Health

MARC T32 Community for Advanced Graduate Training

Home Search Programs Search Students

Community for Advanced Graduate Training

Search for **T32 Programs**

pick either

Graduate training programs

Undergraduate summer research programs

Search and View Pre-doctoral Training Grants (T32) Programs
You can search by Area(s) of Research Training Interest, State and/or Institution.

NIGMS Area(s) of Research Training:
Select at least one Area of Research Training Interest.

More complete descriptions of the following program titles, and the scientific research areas covered by them, can be found at the [NIGMS Institutional Training Grant](#) page.

Select All

Behavioral-biomedical Sciences

Bioinformatics and Computational Biology

Biostatistics

Biotechnology

Cellular, Biochemical Sciences

Chemistry-Biology Int

Genetics

Medical Scientist Trai

Programs in this area should provide significant biological training to students receiving in-depth training in synthetic/mechanistic chemistry and provide significant training in synthetic/mechanistic chemistry to students being trained in depth in the biological sciences.

State: Any State, ALABAMA (AL), ARIZONA (AZ), CALIFORNIA (CA), COLORADO (CO)

Institution: Any Institution, ALBERT EINSTEIN COL OF MED YESHIVA UNIV (NY), BAYLOR COLLEGE OF MEDICINE (TX), BOSTON UNIVERSITY (MA), BOSTON UNIVERSITY MEDICAL CAMPUS (MA)

Search

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National Institute of General Medical Sciences
45 Center Drive MSC 6200
Bethesda, MD 20892-6200

NATIONAL INSTITUTE OF HEALTH USA.gov

Figure 17: Proposed Program Search Page

Recommendations for the Search Results page include a more significant visual transformation. Specifically, due to the number of data fields for each program, as well as the length of individual fields, the tabular approach currently utilized on the site is not the best solution. The evaluation team recommends changing the search results to display individual programs in separate visual blocks. Also, based on usability best practices, any field available as a search criterion on a search form should be

included on the search results page. Otherwise it is not clear if this search criterion was taken into consideration during search execution. Also, displaying the selected search criteria at the top of the Search Results page would be convenient to the user. This way if the user decides to print out the results, he or she would have a record of what students are included in the results.

Finally, due to proposed updates to the contact process for T32 institutions (described in more detail below), the contact information would no longer be displayed on the search results form. It would still be freely available on the new Program Details page as a link from a Program Title on the Search Results page, but would be deemphasized, in favor of a form-based contact capability. Finally, two additional buttons would be displayed: “Save to My Programs” and “Contact Program”. Clicking on the former button would allow a student to save a particular program in their profile for later consideration. The latter button would lead students to a form that would allow the student to contact program

The following diagram represents the visual mock-up of the updated Search Results page (Figure 18).

List of Programs (4 programs found)

Display

Most data in this table is from eRA COMMONS

[Change your search](#)

Print search results | Export to Excel

UNIVERSITY OF SOUTH CAROLINA AT COLUMBIA
[Biomedical-Behavioral Interface: Prevention and Developmental Sciences Training](#)

a Behavioral-Biomedical Sciences Program in **South Carolina**

SAN DIEGO STATE UNIVERSITY
[Transdisciplinary Training for Predoctoral Behavioral Scientists](#)

a Behavioral-Biomedical Sciences Program in **California**

WEST VIRGINIA UNIVERSITY
[Research Training Program in the Behavioral and Biomedical Sciences](#)

a Behavioral-Biomedical Sciences Program in **West Virginia**

UNIVERSITY OF CALIFORNIA LOS ANGELES
[Integrated Training in the Population, Behavioral, and Biomedical Sciences](#)

a Behavioral-Biomedical Sciences Program in **California**

[Change your search](#)

Figure 18: Proposed Program Search Results

The new Program Details page includes full-program information available in CAGT. Specifically, it includes program title, area of research training, state, URL address of the program page on the institution’s Web site, and a brief description of the program. The URL and description would be entered by a T32 Program Director for each program. If this information is not entered, it would simply be omitted from the page. In addition, address and contact information would be displayed on this page, as well as two buttons to save and contact the program (same as on the Search Results page). Finally, the proposed Program Details page includes an ability to share or save the page on multiple social-media Web sites (Figure 19). This functionality can be accomplished by using one of the social-media plug-ins, such as the U.S. General Services Administration (GSA)-approved AddThis™ button. Specific guidelines for using such a third-party service are available on the U.S. Government Web site: <http://www.apps.gov/>.

UNIVERSITY OF ALABAMA AT BIRMINGHAM
Predocctoral Training in Cell and Molecular Biology
www.cmdb.uabwebsites.org

a Behavioral-Biomedical Sciences Program in **Alabama**

Save to My Programs

Contact Program

About This Program

Greetings, and welcome to the Cell, Molecular, and Developmental Biology (CMDB) theme, part of the Graduate Biomedical Sciences program at the University of Alabama at Birmingham School of Medicine. The CMDB theme consists of a diverse group of collegial scientists and physicians who have a collective interest in fundamental processes in cell, molecular, and developmental biology and how alterations in these processes result in human diseases and birth defects.

CMDB is a cross-disciplinary theme at a major research University in the sunny south where enthusiasm for scientific discovery through rigorous experimentation is at the forefront. UAB is one of the top 25 NIH funded research institutions in the US. We hope that you consider this an invitation to explore the many possible opportunities offered by the CMDB theme. The rapid pace with which science has advanced in recent years makes this an exciting time to be involved in biomedical research. It is now possible to address fundamental questions thought unapproachable only a few years ago.

University Address:

The University of Alabama
 at Birmingham
 1530 3rd Avenue South
 Birmingham, Alabama 35294-1150
[Map + Directions](#)

Contact person:

Bradley YODER
byoder@uab.edu
 205-934-0994

[Share this Program](#)

Like

Be the first of your friends to like this.

Bookmark	
Email	
IM	
Blog	
Social	

Figure 19: Program Details Page

5.2.2.3. Contacting T32 Programs

The Contact T32 Program form would be a new addition to the CAGT Web site (Figure 20). The form would allow a student to easily contact T32 program without having to send an email or make a phone call. This approach has the following advantages:

- It makes it more likely that the student will initiate the contact. Because having to make an unsolicited phone call or send an email represents an obstacle for a student, often the contact is never made, even though a student may be interested in a given program. By using the Web form, suggested text can be pre-populated in a form by the software, making it easier for a student to initiate the contact. This is also similar to how contacts are established in major social-networking services, such as LinkedIn® or Facebook, so the students are likely to be familiar with this approach.

- The record of the contact is kept and displayed for a student in their personal profile, so that they would be able to keep track of the different contacts that they have made.
- By facilitating contact using a Web form, a student's T34 Program Director can be automatically notified, giving them the ability to follow up with either a student or a program and to assist in establishing a more productive contact between both parties.
- When the Web-site software is used to process the contact, the record of such contact would be stored within the CAGT database. Later, these records can be used to judge the effectiveness of CAGT by reporting the number of contacts between students and programs (at least those processed by CAGT).

Send a note to the program contact person

Subject

Include a personal note:

Greetings, I am interested in your program. Could you please tell me more about your research opportunities

- Student Name

or [Cancel](#)

Figure 20: Contact Program Page

5.2.2.4. Student Profile Page

The Student Profile page would allow registered students to easily access the following information:

- Personal information that was reported by a student;
- A link or button leading to an Edit Profile page used to update all personal information and to allow a student to opt-out of being included in student search results;
- A list of universities and programs saved by this student, along with the ability to remove programs from the list; and,
- A list of programs contacted by this student using the CAGT Web site.

The page should include access to a printer-friendly version, so that the information could be easily printed if desired.

Below is the suggested layout of a Student Profile page (Figure 21).

Student Profile

[Edit Profile](#)

First Name **test name**
 Middle Name **test middle name**
 Last Name **test last name**
 E-mail Address **test@test.com**
 Password *********

 Telephone # **555-555-5555**
 Additional Information / Academic and Research Interests **Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam sed turpis augue, a consequat nibh. Nunc orci elit, scelerisque vitae gravida imperdiet, tempor nec nibh. Morbi sed ante nunc. Morbi non lorem lacus, ac sagittis orci. Cras erat arcu, egestas sit amet commodo quis, egestas quis mauris. Morbi ut aliquet sem. Duis sed rhoncus nibh. Pellentesque eu nisl t turpis mollis vehicula vel eu mi.**
 Relevant Research Experience **Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam sed turpis augue, a consequat nibh. Nunc orci elit, scelerisque vitae gravida imperdiet, tempor nec nibh. Morbi sed ante nunc.**

State **ALABAMA**
 Institution **ALABAMA STATE UNIVERSITY**
 Current Status **Junior**
 Expected Graduation **October 2011**
 Academic Major **Biology**
 Academic Minor **Chemistry**
 GPA **3.90**
 GRE **0.00**

Area(s) of Research **Behavioral-Biomedical Sciences**
 Training Interest **Bioinformatics and Computational Biology**

MY SAVED PROGRAMS

- * UNIVERSITY OF SOUTH CAROLINA AT COLUMBIA
[Biomedical-Behavioral Interface: Prevention and Developmental Sciences Training](#)
- * SAN DIEGO STATE UNIVERSITY
[Transdisciplinary Training for Predoctoral Behavioral Scientists](#)
- * WEST VIRGINIA UNIVERSITY
[Research Training Program in the Behavioral and Biomedical Sciences](#)

MY CONTACTS / NOTES

- 01-10-2011 [Subject of a note that was sent](#)
 reply-> 01-11-2011 [Subject of a note that was sent](#)
 reply-> 01-11-2011 [Subject of a note that was sent](#)
- 01-10-2011 [Subject of a note that was sent](#)
 reply-> 01-11-2011 [Subject of a note that was sent](#)
- 01-10-2011 [Subject of a note that was sent](#)

Figure 21: Proposed Student Profile Page

5.2.3. T34 Program Director Functions

T34 Program Directors have been generally satisfied with the features available to them, so no major changes are proposed for the pages that are specific to this user group. However, if CAGT is expanded beyond the MARC Program, as suggested in this evaluation, the wording and page layout may need to change to accommodate this. Specifically, instead of referring to T34 Programs in various pages, links and buttons, the wording would need to be updated to refer to these users, for example, as Undergraduate Student Coordinators or Student Advisors. The site would also need to include additional help text that provides a list of definitions for these terms. Upon login, members of this user group would then see the name of the exact NIGMS program with which they are affiliated.

The only relatively significant addition to the T34 Program Director functions is the ability to view detailed Student Profiles, including any contacts initiated by the student through CAGT. The page layout would be similar to that of a page available to individual students, but without the ability to update the profile information.

Below is the proposed page flow for the T34 Program Directors (Figure 22).

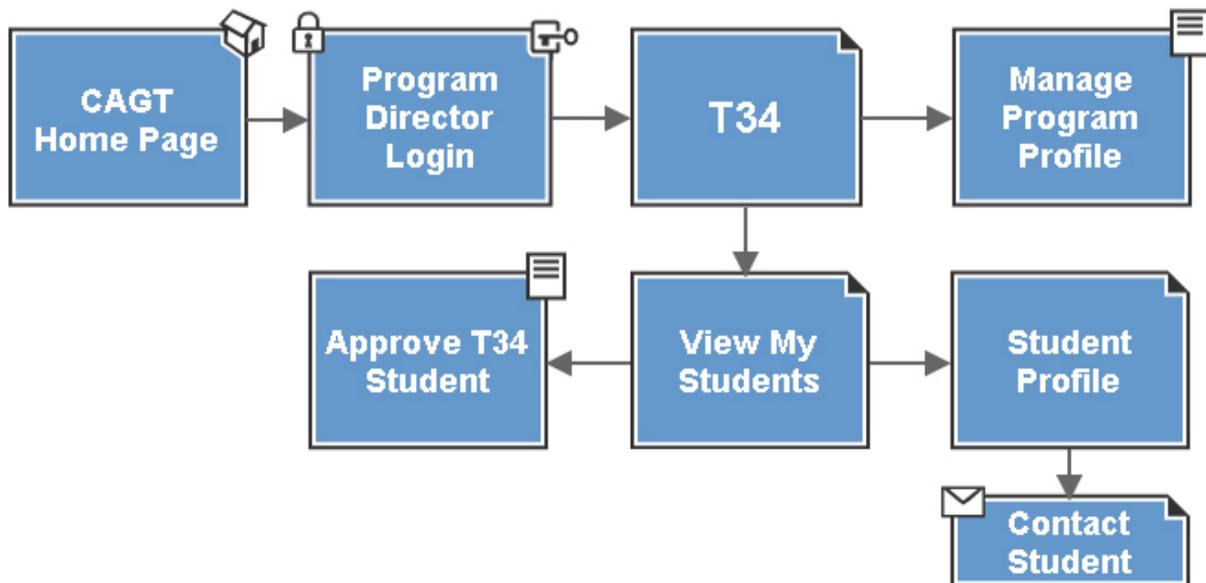


Figure 22: T34 Program Director Proposed Page Flow

5.2.4. T32 Program Director Functions

The functionality available for T32 Program Directors would remain somewhat similar to the present version of the application. Specifically, Program Directors would be able to search for student profiles, as well as update the information listed about their program. Both of the features would be updated, however, to incorporate several enhancements. Below is the proposed page flow incorporating all pages accessible specifically to T32 Program Directors (Figure 23).

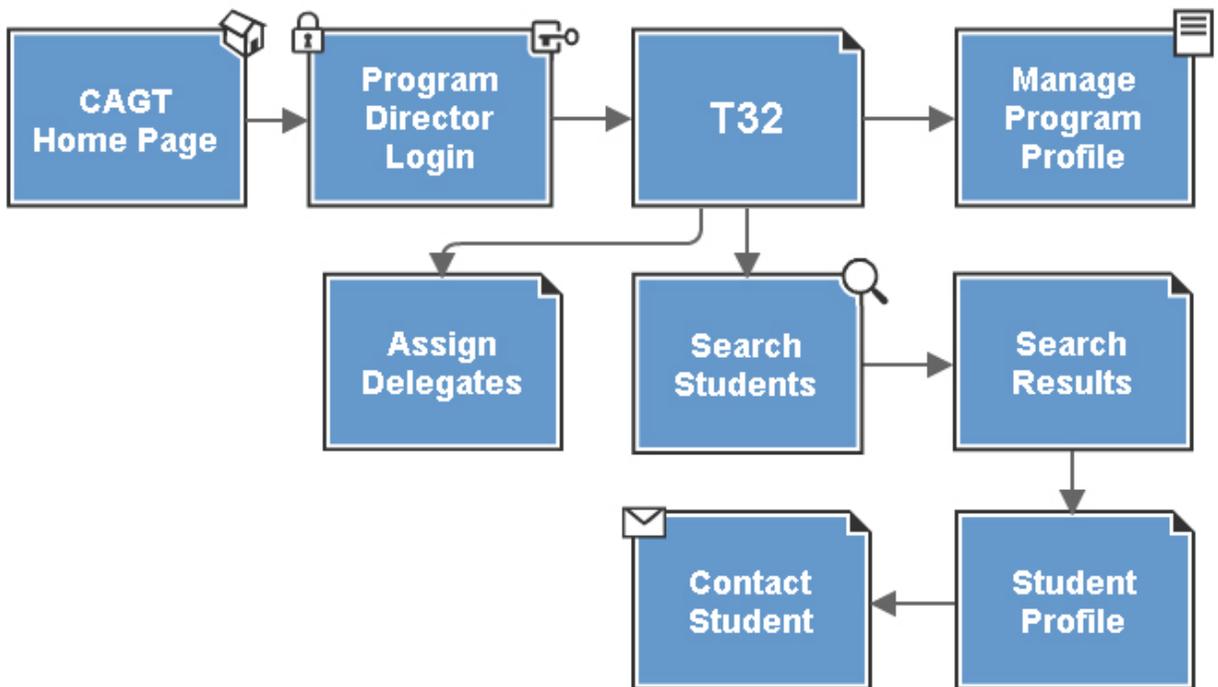


Figure 23: T32 Program Director Proposed Page Flow

5.2.4.1. Student Search

The Student Search form would be extended to include additional search criteria made available within the student profiles. For example, T32 Program Directors would be able to search students by academic major in addition to area of research training interest available presently. It was stated by T32 Program Directors on several occasions that the number of students returned by the search form is sometimes too large, and they have no way of narrowing the list so that they can perform a more focused outreach to the students. Currently, most of the contacts initiated by T32 institutions include mass emails with broad information about the program. By adding an ability to execute more refined searches and receive smaller and more focused result sets, T32 Program Directors would be able to initiate a more

targeted and ultimately more personal contact with the students, increasing the likelihood of the successful recruitment of a student by the T32 institution.

The search results would remain in tabular format and very similar to the current Search Results page. Some minor visual improvements are proposed, including:

- Add registration date and the ability to sort students by registration date. By doing that, T32 Program Directors can limit their searches to newly-registered students, so that no duplicate contacts are made.
- Similar to student searches, add the ability to contact students using a form. Again, the record of such contact would remain available in the database and be displayed on both the page accessible by T32 Program Directors and on a Student Profile page shown to the students.
- The student name in the Name column would be linked to an updated Student Profile page containing all information available about this student, including new fields added during student registration.
- The Student Academic Major column would be added to the search results.
- The Student Email and their T34 Program Director's Email columns would be eliminated, replaced instead with a small "letter" icon located next to the student and Program Director's name. Moving the mouse over this icon would display their email address in a pop-up window. Clicking on this icon would launch a Compose Mail window from the user's default mail client with the recipient's email address pre-populated. This approach would save some horizontal space on the Search Results page, without affecting the available functionality.
- The "Export to Excel" portion would remain available and allow users to export full search results for use by mail-merge programs to perform mass outreach, for example.
- One confusing feature of the existing Search Results page should be corrected. Currently, if a student indicates multiple areas of research training interest in their profile, their record is returned several times in the search results. That confused users, and the evaluation team recommends always returning a single record/table row per student, but listing their areas of research training in a single-table cell, combining multiple areas if necessary.

The following mock-up represents a portion of the Student Search Results page that includes the suggested changes (Figure 24).

Student Name	Telephone #	Student Status	Institution	Area(s) of Research Training	Major	Registration Date	Program Director Name
 	415-476-3784	Senior	CALIFORNIA STATE UNIV SAN BERNARDINO	Pharmacological Sciences	Pharmacology	2/1/11	Sanders McDougall 
 		Senior	CITY COLLEGE OF NEW YORK	Pharmacological Sciences	Pharmacology	1/5/11	JONATHAN LEVITT 
 		Junior	UNIVERSITY OF MARYLAND BALT CO CAMPUS	Pharmacological Sciences	Pharmacology	2/1/11	LASSE LINDAHL 

Figure 24: Proposed Student Search Results

5.2.4.2. Program Profile Update

T32 Program Directors would continue to be able to update information about their programs. Several alternatives were considered by the evaluation team, including providing T32 Program Directors with the ability to also issue updates about their programs, including program announcements, information about upcoming deadlines, etc. It was judged, however, that T32 Program Directors already publish such information on their program Web sites, and it would not be effective to ask them to update this information on the CAGT Web site separately. Still, the student users would benefit from the additional program information displayed directly on CAGT, without having to navigate to the program Web site to find basic information about it, such as the focus of the research, basic admission criteria, etc.

Therefore, an additional text field is proposed to be added to the Program Profile page that would have to be populated by the T32 Program Director or an authorized delegate. If left blank, then the field would simply not be shown on the public side of the application.

Several T32 Program Directors indicated that addition of the Summer Program Search in a recent CAGT release was a very welcome feature. Some have mentioned, however, that their institutions have multiple summer programs, with different admission criteria, primary contacts, and focus. Because program search results are being reformatted from a tabular to block-based approach, and because it is being proposed to physically separate search for summer programs, it would become possible to allow T32 Program Directors to add more than one summer program to the profile. The same fields that are currently listed for one program would be duplicated and become available for as many summer programs as desired. There should be no technical limitations with regard to how many of these programs could be added, although it is not likely than more than two or three would be added in total per each T32 program.

Finally, one additional change proposed for the T32 Profile pages is the ability for T32 Program Directors to list alternate contact information for their program. It was stated on several occasions that the Program Director is often not the most appropriate person listed as a primary contact. By default the Program Director would remain a primary contact, unless he or she logs in and adds alternate contact information to his or her program profile. Alternate contact information would include name (mandatory), title (optional), phone number (optional), and email address (mandatory). Automated emails generated by CAGT when student uses the contact form would be sent to the primary contact's email address, if primary contact has been listed. If it contact is left blank, the emails would go to the T32 Program Director by default.

The following mock-up represents a proposed layout of the Program Profile Update page that includes the changes outlined above (Figure 25).

Manage Profile/Program
Search Programs
Search Students
Home Page
Logout

Community for Advanced Graduate Training

Program Director Profile, Delegate and Program

Please verify and update your profile below. If there is any incorrect pre-populated information, please correct it within the [eRA-Commons](#) system. This correction will appear here tomorrow. If you do not see this updated information tomorrow, please contact the [NIGMS Service Desk](#).

Note: If you change your Commons User ID or obtain a new Commons User ID, you must also associate your Commons profile and role to this User ID; otherwise, you will not be able to log-in to CAGT. If you have questions about associating your profile and/or role with a Commons User ID, contact [eRA Commons](#).

Personal Information

Title **Professor**

First Name **Joan**

Middle Name **Siefert**

Last Name **Brugge**

Suffix **PhD**

Institution Name **HARVARD UNIVERSITY (MEDICAL SCHOOL)**

Address **HARVARD MEDICAL SCHOOL
DEPT OF CELL BIOLOGY
240 LONGWOOD AVENUE
C1-513A
BOSTON
MASSACHUSETTS
02115**

Email Address **JOAN_BRUGGE@HMS.HARVARD.EDU**

Telephone # **(617) 432-3974**

Telephone Extension

Fax # **(617) 432-3969**

Delegate to Program Director

As a Program Director, you can designate up to three persons to support your use of CAGT. Select the appropriate name(s) in the drop-down list below (use CNTL-Select for multiple selections) and click "Save".

No CAGT Delegate

adams, nancy A (NADAMS)

Alvear, Sunny K (ALVEAR)

Andrews, Sally (SALLY_ANDREWS)

If the person(s) you wish to make your CAGT Delegate(s) does not appear on the list, then you must first establish an ASST account for them in eRA-Commons. To do so, contact your institution's eRA-Commons Account Administrator (AA) or Sponsored Research Office (SRO). When your delegate (s) has an eRA-Commons account as an "ASST," the next calendar day his/her name(s) will appear in the drop-down list above. If it does not appear in the drop-down list after one calendar day, contact your institution's AA.

CAUTION: If your delegate already has an eRA-Commons account with a role/authority other than "ASST," your institution's AA or SRO needs to add an "ASST" role to the existing account, rather than create a new account. Otherwise your delegate will not be able to log into CAGT -- see the "Note" in the introduction of this page.

Institutional Predoctoral Training Grants (T32) Program Information

NIGMS Program Name **Cellular, Biochemical, and Molecular Sciences (CMB)**

NIGMS Area(s) of Research Training **Cellular, Biochemical and Molecular Sciences**

Program URL

Inserting your program's URL web page address will enable all CAGT members to "click-through" to your website

Program Description

Primary Contact

First Name

Last Name

Title

Email

Phone

Summer Programs

Program Name	Program URL	Contact Name	Contact Email	Phone Number	
Program One	http://www.umbc.edu	John Doe	j@domain.com	410-301-0000	delete
Program Two	http://www.umbc.edu	Jane Smith	name@email.com	410-555-0000	delete

Add Summer Program

Program Name

Summer Term URL

Inserting your program's URL web page address will enable all CAGT members to "click-through" to your website

Contact Name

Contact E-mail

Contact Phone Number

Figure 25: Proposed Program Profile Update Page

5.2.5. NIGMS CAGT Program Administrator Functions

As mentioned above, there are not many functions that are currently available specifically for CAGT Program Administrators at NIGMS. It is very important, however, that NIGMS staff be able to obtain usage statistics about the Web site. A general site traffic report can be generated by either a periodic (nightly) Web server log analysis tool, or by using an embedded tracker provided by an analysis tool, such as Google Analytics™. An embedded tracker provided by Google Analytics is easier to implement and is currently an available option listed by GSA on their Apps.gov Web site. The usage statistics should include metrics such as the number of unique visitors by day and month, geographic location of site visitors, most popular pages within the site, referring Web sites, etc.

In addition to a general site traffic report, CAGT should include several specialized reports that would contain information specific to this resource that can be obtained from the underlying database. This report would include data to answer the following questions:

- From which institutions have students registered on the site?
- How many students per institution completed their profiles?
- How many contacts were initiated by students using the Contact Program form?
- What are the most popular programs that are being contacted through the site?
- How many times have students returned to the site after the initial registration?

Based on the needs of CAGT, additional data could be collected and reported from the database. Such data can be very useful for future evaluation of effectiveness of the program and analysis as to whether future enhancements should be made to the Web site or the program in general.

The evaluation team proposes one additional CAGT feature targeted at the NIGMS Program Administrators. Instead of currently having access to a small area on the front page that lists several lines of text, the Web site would benefit from a more full-featured announcements section. An administrator would be able to list news about the CAGT Web site, particularly notable information from NIGMS or NIH in general, or any other news snippets of interest to CAGT visitors. For example, a notice could be posted that new T32 program information is now available on the site or that the resource is now accessible to students from the RISE program in addition to MARC U-STAR. Each notice should be limited in size and should be contain only simple HTML formatting, but does need the ability to include hyperlinks to other pages on NIGMS Web site or elsewhere. If the section is updated relatively frequently, it would result in increased return visitor traffic to CAGT. In addition, the announcements

should be linked to an RSS feed, so that CAGT announcements would be more easily accessible to both site visitors and for news syndication purposes.

6. Conclusion

To conclude, despite several shortcomings described in this document, CAGT was judged to be a very useful resource by a large majority of the users interviewed over the course of this project. If all or most of the enhancements listed in this report are implemented, the site could become a more robust resource for the intended audience, and its capabilities could be measured more easily with a high degree of accuracy. As an improved resource, the CAGT Web site would continue to be a valuable tool in NIGMS's arsenal essential for the fulfillment of the mission of the Institute.

Appendix A. Contents of the Online Feedback Form

Profile

Please indicate whether you are a:

- MARC U-STAR (T34) Student,
- MARC U-STAR (T34) Recent Alumni
- MARC U-STAR (T34) Program Director,
- NIGMS Pre-doctoral Training Grants (T32) Program Directors
- NIGMS Pre-doctoral Training Grants (T32) Program Representative/Delegate

Questionnaire I: MARC U*Star (T34) Student and Recent Alumni

1. Did you use the CAGT website last year? (Yes/No)
2. State whether you have used the site to learn about T32 programs (100 characters, one line)
3. Please tell us if the CAGT website contained or pointed to specific information about NIGMS T32 programs you were looking for (200 characters, 2 lines)
4. Have you been contacted by a NIGMS T32 program director or representative? (Yes/No)
5. Please note if you have responded after being contacted by a NIGMS T32 program director or representative (100 characters, one line)
6. Have you contacted a NIGMS T32 program director or representative? (Yes/No)
7. Please tell us if you have received a response after contacting a NIGMS T32 program director or representative (100 characters, one line)
8. Please tell us if the site has been useful in advancing your educational or research training goals (200 characters, 2 lines)
9. State whether you are satisfied with CAGT's features (100 characters, 1 line)
10. Describe which of CAGT's features should be improved, or if you have suggestions for new features (1000 characters, 8 lines)
11. Please state if you have had any difficulties using the CAGT website (1000 characters, 8 lines)

Questionnaire II: MARC U-STAR Program Director

1. Please describe how you use/intend to use the CAGT resource (200 characters, 2 lines)
2. State whether CAGT has helped any of your MARC students to identify and initiate contact with potential graduate programs (100 characters, one line)

3. State whether any of your MARC students who used CAGT to identify potential graduate programs applied to and/or matriculated into graduate programs (100 characters, one line).
4. State whether CAGT has created a bridge from your MARC institution to NIGMS T32 institution(s) (100 characters, one line)
5. Please tell us if you are satisfied with CAGT's features (200 characters, two lines).
6. State which of CAGT's features should be improved, or if you have ideas for new features please indicate (1000 characters, 8 lines)

Questionnaire III: Pre-doctoral Training Grants (T32) Program Director or Program Delegate

1. Describe how you use/intend to use the CAGT resource (200 characters, 2 lines)
2. Please tell us if your institution uses or would like to use CAGT for purposes other than contacting potential T32 program participants (200 characters, 2 lines)
3. State whether you have used CAGT to identify and contact MARC students, and if this contact been useful for recruiting students into your program (200 characters, two lines).
4. State how often you use CAGT (100 characters, 1 line).
5. Please state if students' profiles contain all the useful information necessary for you to evaluate and initiate the contact with students, or if any additional data would be useful (200 characters, 2 lines)
6. Please state if CAGT contained accurate and timely information about your T32 program, and if you would have liked to add any additional data about your program or institution. (100 characters, 2 lines)
7. Please tell us whether CAGT has created a bridge from your institution to a MARC institution(s). (100 characters, one line).
8. State whether you are satisfied with the features in CAGT (200 characters, two lines)
9. State which of CAGT's features should be improved, or if you have ideas for new features please indicate (1000 characters, 8 lines).

Appendix B. User Phone Interview Sample Script

Overview

Similarly to the online survey, there will be three different scripts for three groups of respondents:

- 1) Script 1 – Student Users
 - a) MARC U-STAR (T34) Students,
 - b) MARC U-STAR (T34) Recent Alumni
- 2) Script 2 – MARC U-STAR (T34) Administrator Users
 - a) MARC U-STAR (T34) Program Directors
- 3) Script 3 – T32 Program Users
 - a) NIGMS Pre-doctoral Training Grants (T32) Program Directors
 - b) NIGMS Pre-doctoral Training Grants (T32) Program Representatives/Delegates

The questions meant to be mostly open-ended, we're looking for more extensive responses as compared to what is being collected and expected during the online survey. The phone conversation is expected to take about 20 minutes, but can run longer if a participant prefers that and provides useful feedback. To refresh participant's memory it is acceptable to check if they have online access during the conversation, and point them to the live Web site.

The interview scripts for all three groups are split into several specific areas that the study attempts to get more information on. Questions for each of the areas are meant to be exploratory in nature, and designed to obtain more verbose responses as compared to the online survey, for example.

Initial contact with study participants will be made via email. First, the introductory email will be send to selected participants by NIGMS, briefly describing the effort and introducing Highrise Consulting team. The Highrise team will then follow up with an additional message where we will try to coordinate phone interview and set the most convenient time for it.

Introduction: For all groups of respondents

1. Introduce yourself and the purpose of the study:

"Hello, I'm <... ..> with Highrise Consulting located in Bethesda, Maryland. . We've been hired by the National Institute of General Medical Sciences (also known as 'NIGMS') to ask <choose MARC students or MARC Program Directors or T32 Program Directors> their opinions about the CAGT Web site. The results of this study will be used to improve the Web site."

2. Review the disclaimers:

"This will take about 20 minutes of your time. Your participation is voluntary and anonymous, and all your answers will be kept confidential. Your contact information was randomly generated by a computer. "If there are any questions that you don't feel you can answer, please let me know and we'll move to the next one. (For Students) This will have no effect on your participation in the CAGT or MARC program."

3. Confirm user agreement to participate: "Do I have your permission to continue?"

Interview Script 1: MARC U*Star (T34) Student and Recent Alumni

The following general subject areas will be explored during the phone interview with student participants:

1. Understanding Community for Advanced Graduate Training (CAGT)
 - a. Please describe your understanding of the CAGT program.
 - b. Do you know what schools list graduate training opportunities on the site?
2. Usefulness of CAGT program
 - a. What have you used the CAGT Web site for?
 - b. How many times have you visited the CAGT Web site?
 - c. Have you returned to CAGT Web site after the initial registration?
 - d. Did you use CAGT Web site to learn about available graduate research programs?
 - e. Does the CAGT registration timeline match your needs?
 - f. What additional information on graduate training opportunities would be useful to you?
 - g. Has the site been useful in advancing your educational goals?
3. Linking of students with T32 research programs
 - a. Have you been contacted by an NIGMS T32 program director or representative? Have you responded?

- b. Have you contacted a NIGMS T32 program director or representative? Did you receive a response?
4. Web Site features
 - a. Profile Registration
 - i. Did you experience any difficulties during registration?
 - ii. How do you think the information you supplied will be used?
 - iii. Was there any information that you wanted to share with T32 institutions, but were not able to?
 - iv. Do you have any ideas about how to make the profile registration more useful?
 - b. T32 Programs search
 - i. What information about graduate research programs would be relevant to you?
 - ii. Did you search CAGT Web site to look for graduate research programs?
 - iii. Did the Web site contain the specific information about graduate research programs that you were looking for?
5. CAGT Web Site Usability
 - a. Did you use the Web site last year?
 - b. Did you experience any difficulties using the CAGT Web site?
 - c. Do you have any suggestions for new features that would make the Web site easier and more useful?

Interview Script 2: MARC U-STAR Program Director

The following general subject areas will be explored during the phone interview with MARC Program Directors:

1. Understanding the CAGT program
 - a. Please describe your understanding of the CAGT program.
2. Usefulness of CAGT program
 - a. What have you used the CAGT Web site for?
 - b. How many times have you visited the CAGT Web site?
 - c. What percentage of students in your MARC program have made use of CAGT?
 - d. Have you discussed the CAGT program with your students?

- e. Have you received any comments from your students about the CAGT program?
 - f. Have any of your MARC students applied to and/or matriculated into graduate programs with the help of CAGT?
 - g. Does the CAGT registration timeline match your students' educational roadmap?
 - h. How can NIGMS make the CAGT Web site more useful for you and your students?
3. Establishing bridge between MARC U*Star and T32 Programs
- a. How can the CAGT program help establish long-term relationships between your institution and T32 programs?
 - b. Have you communicated with T32 program representatives on behalf of your students or institution?
4. Web Site features
- a. Profile Approval
 - i. Did you experience any difficulties during the student profile review process?
 - ii. Have you asked your students to update any information in CAGT database?
 - b. T32 Programs search
 - i. Please describe what information about graduate research programs would be relevant to your students?
 - ii. Did you search the CAGT Web site to find information about T32 programs?
5. CAGT Web Site Usability
- a. Did you experience any difficulties using the CAGT Web site?
 - b. Do you have any suggestions for new features that would make the Web site more useful?

Interview Script 3: Pre-doctoral Training Grants (T32) Program Director or Program Representative/Delegate

The following general subject areas will be explored during the phone interviews with T32 Program Directors and Delegates:

1. Understanding the CAGT program

- Please describe your understanding of the CAGT program.
- Do you know what types of students have access to profile registration on the site?

2. Usefulness of CAGT program

- How have you used the CAGT Web site?
- How many times have you visited the CAGT Web site?
- Have you used CAGT to identify and contact MARC students, and has this contact been useful for recruiting students into your program? If not, why?
- Does the CAGT registration timeline match your needs?
- Please tell us if the site has been useful for recruiting students.

3. Linking of students with T32 research programs

- Have you been contacted by a student /or because of the CAGT Web site? Have you responded?
- Have you contacted a student based on profile information available in CAGT Web site? Did you receive a response?
- Has CAGT created a bridge from your institution to MARC institution(s)?

4. Web Site features

- Students Profile Search
 - Have you used CAGT Web site to search for potential participants in your research program?
 - Was the student information available useful?
 - What other information about students would be helpful?
 - How would you like to search for the potential applicants to your research program?
 - Did you experience any difficulties while performing the search?
 - Do you have any ideas about how to make the profiles search more useful?
- T32 Programs Information
 - Was the information about your program accurate?
 - Would you like to add additional information about your program to the site?

5. CAGT Web Site Usability

- Did you experience any difficulties using CAGT Web site?

- Do you have any suggestions for new features that would make the Web site more useful?
- Please tell us if your institution uses or would like to use CAGT for purposes other than contacting potential T32 program participants

Closing: For all groups of respondents

1. Thank respondent for participating. Results will be used to improve the Web site and will be published on the NIGMS Web site in early 2011.
2. Point them to the online feedback form <https://cagt.nigms.nih.gov/input/comments.asp> , so that they could provide additional anonymous feedback if desired.
3. Dr. Juliana Blome, Chief of the NIGMS Office of Program Analysis and Evaluation, is overseeing this study. Would you like Dr. Blome's phone number or email in case you want to contact her at any time?