Tracking Biotechnology Graduates in the Piedmont Triad, North Carolina

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**Detailed listing of Biotechnology Graduates Tracking Study Consortium Members on Page 11 of this report.*

Introduction: This project was aimed at developing a model for the voluntary tracking of graduates from the Forsyth Tech and Alamance Community College biotechnology programs. The North Carolina Communty College System(NCCCS) has invested heavily into workforce training with the result of producing excellent biotechnology graduates of credit or non-credit programs, thus creating a large pool of potential workers. Data from a 2006 study on the large Biotechnology programs at Forsyth Technical Community College (Forsyth Tech) and Alamance Community College (Alamance), both members of the NCCCS, suggests that losing track of graduating students happens very quickly and that follow-up is a very difficult process. Economic developers, who frequently promote North Carolina to biotechnology companies seeking to relocate, are continuously looking for workforce availability. This project worked with students, faculty, regional economic developers, and college experts in tracking graduates to design a model that tracks graduates. The model is primarily driven by the graduate's input to help the colleges understand the continuing education needs for biotech graduates and, in addition, help the region understand the availbility of a highly skilled and trained biotechnology workforce.

Objectives: The objectives of this project were as follows: 1) Create a model that allows for follow-up with Biotechnology graduates on a voluntary basis. 2) Test and validate the model with one or two community colleges that have large biotech programs. 3) Write-up the grant findings, turn over the finished model, and "test" results to BioNetwork for statewide consideration and implementation.

Background: The NCCCS BioNetwork trains Biotechnology workers for the state. It has, in its short history, set up a system of workforce training that is internationally recognized. For the most part, the people who take NCCCS courses are either new to the biotechnology arena and are pursuing entry-level job training, or they are incumbent workers taking training upgrades, or they are pursuing an academic degree, such as an Associates. Forsyth Technical Community College in the Piedmont Triad, has strong ties to BioNetwork and is a leader in NC Biotechnology training. It currently offers an Associate of Applied Science Degree in Biotechnology. The program is one of the largest in North Carolina. Over 300 students have at some point entered the program over its short history dating back to 2003. It has already graduated 100 students and averages about 90-100 students per semester. It presently offers the second year of training to 9 surrounding community colleges through a one-plus-one agreement. In 2006 the college was awarded a grant by the North Carolina Biotechnology Center to track student outcomes from its Biotechnology Program. This also included following up on graduates of Alamance Community College, which has the most established biotechnology program in the state, having delivered programs for twenty-four years. In this study's final report, it was noted that traditionally, community college students are difficult to track once they have graduated. A recommendation was to start the process early. Students who take Biotech training at the Associates level are job-oriented and are older. The data from

the Forsyth Tech Biotech program points to an average age of 35. Two-thirds of the students are female. We believe for economic reasons, pertaining to return on investment, following up with our graduates is a college and possibly a statewide priority. Currently, what happens to our Biotechnology students is functionally "hear say". We envisoned through this grant, a process of determining a procedure for following up with students and graduates in a consistent and professional manner. The procedure would become a model. Biotechology students and graduates are assumed to go into the biotechnology workforce. Data from our recent tracking study suggests that after graduation (at least for Forsyth Tech), employment into biotechnology positions is not always immediate. While we know that biotechnology graduates may change employers, we also know that community college graduates have a desire to work within or adjacent to their home counties. If a plant or commercial enterprise is being built in an area, a surge in demand for local biotech workers occurs. It would be ideal to have in place a model for tracking our community college trained biotechnology workforce and, furthermore, a statewide volunteer tracking system of this cohort would be an invaluable asset to economic developers and the NCCCS BioNetwork.

To the best of our knowledge there is no voluntary tracking system of NCCCS Biotech students and graduates. A tracking model, if done well, will help the college keep track of students and graduates. At the same time, this would provide active status of biotechnology professionals within North Carolina (and perhaps out of North Carolina). The model could be implemented statewide. The completed process would fill a present void of a follow-up tool for Biotechnology students and graduates. We would have a consistent way of tracking student's outcomes into the workforce.

Methodology: We used a process of focus groups and interviews primarily with biotechnology students, recent graduates, faculty and local community advisors to develop a model that motivates the students to be tracked in their graduation process and followed up post graduation.

Part A - The project carried out the focus group's objectives, conducted interviews and recommended the best model for follow-up.

Part B - The grant project team delivered a pilot model - a working prototype that has been tested at Forsyth Technical Community College.

Several phases of the grant were implemented in series.

- *Research and Development Phase*, November 2008-February 2009:

  A series of qualitative research focus groups were conducted to learn more about what might motivate students, graduates, educators and community advisors to help build a tracking mechanism. Participants shared their thoughts on the specifics (variables) of what should be included in an ideal tracking system. A short survey using SURVEY MONKEY™ was sent to identified graduates from both colleges. An initial meeting was held with graduates at the Piedmont Triad Partnership, a neutral facility. A subsequent meeting was held with graduates at the Alamance Communty College's new biotech department facility and another at the Wake Forest Institute for Regenerative Medicine in the Piedmont Triad Research Park which is in close proximity to Forsyth Tech. A larger

debrief meeting consisting of an advisory committee met and reviewed the data and results from all the previous meetings and surveys.

- *Analysis Phase*, March-April 2009:

  During this phase of the project, the data from the focus groups was synthesized into the needs of the various groups and the model. We worked with the advisory group to ensure we had met the needs as best we could and as expressed in the focus groups.

- *Implementation Phase*, April-May 2009:

  The formulated model was tested at the host institution with second-year students and graduates of Forsyth Tech.

- *Completion:*

  The finished model is now ready and via this report is being turned over to the BioNetwork office and a grant report is being filed as per the Request for Proposal Requirements.

Participants: The stakeholders drafted into this process from the colleges were: active second year biotechnolology students, faculty including the Chair of the ForsythTech Biotech department and the Head of the Alamance Community College Biotech program, a selection of graduates, the Director of Institutional Effectiveness and the Director of Development and Alumni Relations of Forsyth Tech. The local economic developers were represented by the NC Biotech Center and a Piedmont Triad Partnership Workforce Expert. A Wake Forest Institute for Regenerative Medicine employee and a Wake Forest University Health Sciences employee (both of whom are recent Biotechnology graduates from Forsyth Tech) were among the graduates participating in the focus and advisory groups.

Since the inception of the Forsyth Tech Biotechnology program, approximately 100 students have graduated and entered the workforce. Having the most established biotech program in the state, Alamance Community College graduated approximately 275 students over the past two decades. Together the two community colleges have had a combined total of 210 graduates with legitimate contact information, but the researchers were only able to contact 169, either by a personal phone call or email. There were numerous attempts to find and locate these graduates but many of them had married with new names and others had outdated addresses with no forwarding information. Contacting these 169 graduates became a priority with the researchers as they invited them to the initial meeting at the Piedmont Triad Partnership in Greensboro, North Carolina in November 2008. Of this total, 90 confirmations were received, by telephone and email, indicating intentions of joining fellow alums for the meeting, but only 13 actually attended the event.

Two additional events were scheduled; one at Alamance and another near the Forsyth Tech campus. Each was a roundtable discussion and a tour of working labs. All 169 graduates were offered the opportunity to participate; nine graduates attended these two roundtable events and toured the facilities.

A link to a survey was sent out by email to everyone who had email addresses and hard copies were made available to those who were in attendance at the roundtable events. A total of 21 surveys were completed and used for the initial data.

Results: Graduates and faculty from both colleges and workforce experts participated in a roundtable disscussion conducted in November 2008. The issues were primarily workforce driven and are reported at: www.biotechworkforce.org/pdf/GraduateMeetingReport4.pdf

These following points were used for subsequent surveys and focus groups:

1) Networking and learning forums would be very useful for providing graduates and alumni with key training and educational updates regarding biotech careers and trends. This would provide a catalyst for establishing, cultivating alumni contacts and relations, and provide networking for recent graduates. Contact with local employers is especially helpful for recent graduates.

2) Continuing education should be made available for graduates to diversify their skills through advanced training. Having a wide range of up-to-date skills makes one more employable. Surveys indicate great interest from graduates in short courses and hands-on training, if the community colleges are willing to provide such forums. In addition, many graduates would like to continue their formal education by pursuing bachelor's degrees and/or graduate work.

Surveys were sent to graduates via email and given by hand in a paper format in follow-up meetings with the graduates and final year students. Theses results were obtained from a low number of graduates and a high number of graduating students.

Questions:	**Graduates**	**Students**
Are you interested in a reunion for professional development?	95%	79%
Are you interested in educational updates? Yes	85%	76%

What is your preferred way of keeping in contact?

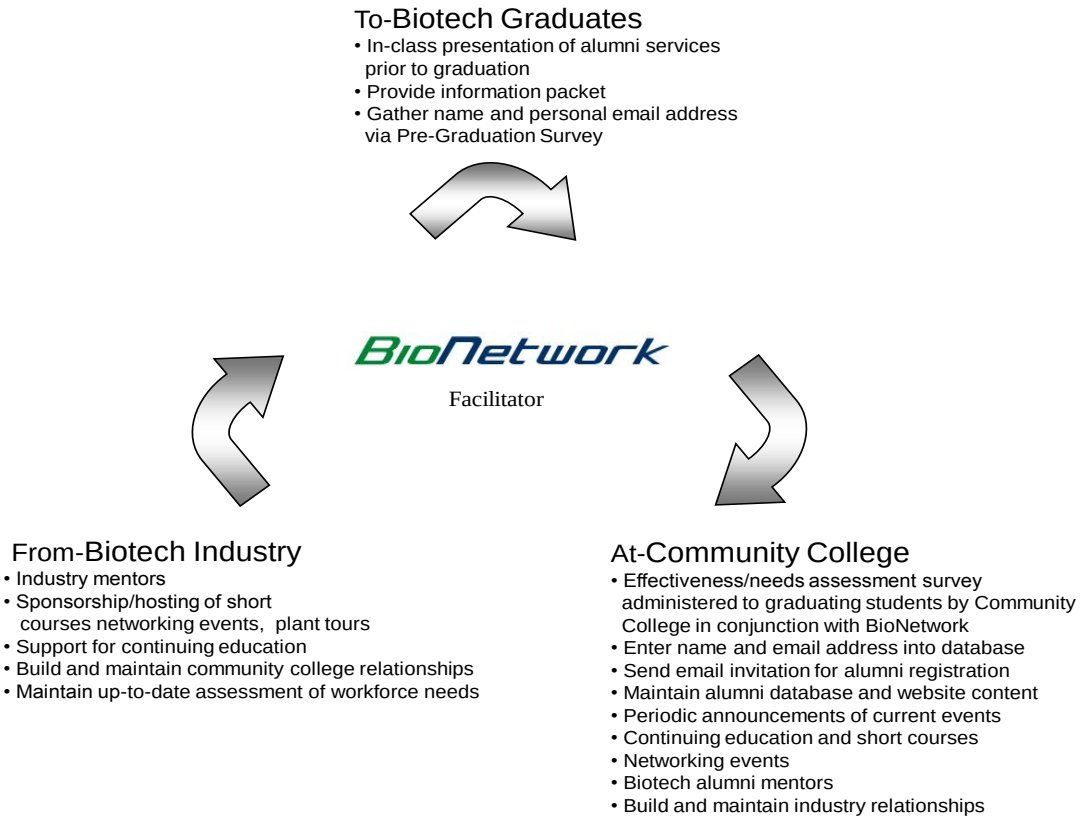
Email	95%	74%
Newsletter	57%	61%

Which type of events would interest you for updates?

Networking with Triad Biotech Companies	90%	88%
Touring Active Facilities	76%	77%
Information on Biotech Trends	71%	71%

The full results of the survey and focus groups were presented to an advisory board in March 2009. The data illustrated above gave the members a strong sense of the type of information that would be required to build a contacting model that would be of interest to graduates and students and potentially be of value to economic developers, college adminstrators and faculty.

Model: A Model for Tracking Biotech Graduates



Introduction to Pilot Model: In order to maintain contact with biotech graduates, this model has been created to provide a general framework which can be adopted by any community college biotechnology program.

Inherent in any effective tracking mechanism is compliance on the part of those being tracked, and a viable system for entering and maintaining accurate data and up-to-date information and announcements. The approach of this model includes capturing the interest of graduating students in the biotech program *before* their classroom training is completed, and suggests a web-based Alumni Information and Database Management Utility (described on page 7) which can be adopted to retain their interest upon graduating, while allowing for collection, maintenance, analysis and dissemination of valuable data and relevant information and events.

Biotech Graduates: In order for the model to be effective, the first and most important step is to obtain graduating students names and personal (not community college) email addresses within the remaining weeks *prior* to completion of their final semester of coursework. It is recognized that maintaining contact via email is the most effective method of communication as mailing addresses and telephone numbers have a greater potential of changing or becoming obsolete over time. Obtaining names and personal email addresses of graduating students would be facilitated by conducting brief in-class presentations, accompanied by an information pamphlet and a simple card with a space for the student's name and their personal email address. The presentations, lasting approximately fifteen to thirty minutes, would be administered by people the graduating students would most likely be inclined to listen to and relate to: either their instructors or biotech alumni serving as volunteer mentors. The pamphlets, emphasizing the importance of maintaining communication after graduating, would contain a guide to the alumni web site and useful information regarding available resources such as alumni services, career planning, continuing education and short courses, future events, and industry related news, trends, and opportunities featured within the web site. Upon completion of the short presentation, the registration cards would be collected before the students leave the classroom. The names and email addresses collected would then be entered into a data base, and thus form the conduit for future communication. Upon graduation the students would receive an email message, along with the appropriate hyperlink, inviting them to register for free membership to the alumni community.

The Community College: The catalyst for adopting, adapting, and maintaining the model is the role of the community college. Faculty, Information Technology, Alumni Relations, Career Planning and Placement, and Administration are all stakeholders and contributors to the ongoing process of supporting the model, providing fresh content and establishing and maintaining relationships with biotech industry commercial enterprises and economic development organizations.

Biotech Industry: Once established, in order for the model to maintain momentum, it is imperative that industry and economic development leaders and their organizations are recognized as partners and stakeholders in the process as well. Bilateral relationship building between the community college and industry is the foundation for career opportunities which biotech graduates have trained for, and the economic development that drives the need for a skilled workforce.

BioNetwork: The North Carolina Community College System BioNetwork is a dynamic and unique statewide initiative that provides specialized education and workforce training for the pharmaceutical, biomanufacturing and life science industries. It provides specialized training, curricula and equipment, including three dedicated commercial scale aseptic suites, to develop a world-class biotechnology workforce.

BioNetwork trains at all levels of this industry, upgrading the skills of incumbent workers from entry level to management. Our seven Centers are strategically and geographically positioned across the state to develop short and curriculum designed courses to meet the needs of industry. These Centers themselves are staffed with highly skilled industry trained experts who are constantly developing workforce training programs which can be delivered anywhere in North Carolina.

Alumni Information and Database Management Utility: YourMembership.com™ is an online member directory for alumni associations of colleges, universities and prep schools which keeps their alums engaged and connected with their institutions. To continue the bond developed with the alumni base, the utility delivers dynamic online communities that are branded with the institution's overall look-and-feel.

With an online member directory, integrated secure donations capability, event and reunion management systems, fully searchable career centers, class year and chapter homepages, the utility provides all the tools to keep alumni connected with each other and the organization. YourAlumni.com™ is another software tool, owned by YourMembership.com™, which also manages alumni information and is currently being used most successfully by Forsyth Tech.

Communication is the key to keeping the alumni base engaged. The utility provides powerful and intuitive tools for bulk emailing, messaging and creating e-newsletters, and its member management functionality allows for tracking interaction on a one-to-one basis and features a powerful contact management system. The built-in administrative tools include data management capability to import and export member and non-member records, monitor logins, new members, donations, and creating updating, and managing content relevant to the institution and the alumni community.

Model Test Implementation: A group of graduating students completing the biotechnology program and several graduates were asked to fill out a survey. The survey used was essentially a test of the model.

1. Contact information: **name, address, city, state, zip code, email, telephone, cell phone**

2. How active do you want to be with the Biotechnology alumni group?

	Response Percent
Very (7)	70.0%
Somewhat (3)	30.0%

3. How willing are you to mentor others who are still in school?

	Response Percent
Very (7)	70.0%
Somewhat (3)	30.0%

4. How much do you see networking as a key to your successful career?

	Response Percent
Very (10)	100%

5. How interested are you in the availability of continuing education for upgrading your skills in biotechnology?

	Response Percent
Very (10)	100%

6. How aware are you of the variety of careers you may qualify for with your biotechnology degree?

	Response Percent
Very (2)	20.0%
Somewhat (7)	70.0%
Not very (1)	10.0%

7. Do you need assistance with resume writing and interviewing skills?

	Response Percent
Yes (4)	40.0%
No (6)	60.0%

8. Are you willing to have your personal contact information shared with prospective employers?

	Response Percent
Yes(9)	90.0%
No (1)	10.0%

A test was performed using a pre-graduation survey. A total of 10 surveys were completed by seven graduating students and 3 alumni. Each student entered his or her name in the survey along with contact information, thus building the database. A series of seven questions were posed with the following results: 100% of the students responded that they were very interested in continuing education to upgrade their skills and networking for career success. Ninety percent indicated that they were willing to have their contact information shared with prospective employers. Seventy percent were very interested and 30% somewhat interested in being active in the biotechnology alumni group and in mentoring others who are still in school. The respondents were less aware of the ways to apply their degrees in the workforce and 60% did not believe they needed help with resume writing and interviewing skills. This last issue is interesting because it is unknown if they are experts in resume writing and interviewing or simply don't know they need help.

Discussion: We have developed through a process of focus groups, with input from instructors, department chairs/heads, students, graduates and workforce experts, a model for tracking biotechnology graduates. We have consulted instutitional effectiveness and alumni experts. For North Carolina community college biotechnology students, we have been able to agree on a procedure which enables the colleges, BioNetwork, and ultimately the state, a way of keeping in touch with biotechnology graduates. Furthermore, biotechnology graduates and students have been surveyed for their input about relevant needs after graduation and as they enter employement. They show a strong desire to continue to upgrade their skills through continuing education. The discussions revelaled this could be in the form of short updates or exposure to new equipment and techniques. They overwhelmingly want to keep abreast of new developments in their field and would like to network. It appears the best venue for this type of event would be at companies or biotech facilities where tours could take place. Keeping in touch with community college graduates is not easy for a variety of reasons. This study demonstrates that meeting with the students prior to graduation, providing them with an information package, and having them fill out a simple survey would be a good start to maintaining contact. In addition, if continuing education courses are made available in convenient time blocks and with flexible hours, graduates will take them. Keeping in touch with community college graduates is best done with email and not the new social media. This may change as the new social media like "LinkedIn" makes headway into everyday patterns of use with our students and graduates.

Giving our biotechnology program students, and indeed graduates, a picture of what achievements, opportunities and trends are developing across the state is very important for their understanding and development of skills to obtain jobs. It was suggested that a tool like *IMPACT* magazine* be distributed to all NCCCS Biotechnology community college students and graduates statewide, with the help and support of biotech program chairs and NCCCS staff. *IMPACT* biotech and life sciences magazine is committed to enhancing the understanding of all facets of science from a business perspective including biotechnology, life sciences, medical devices and applied technologies. BioNetwork is the main sponsor of the magazine—key BioNetwork staff sit on the editorial advisory board and write monthly articles about various Biotech and life science related subjects).

Conclusion and Recommendations: We believe North Carolina Community College biotechnology graduates are valuable assets to the economic community. North Carolina has a statewide strategy to maximize the biotechnology industry. Our graduates should be offered an opportunity to be contacted for the purpose of maintaining or upgrading their skills, networking

and keeping in touch with their colleagues and attaining a career pathway. We recommend that community college students in North Carolina have an exit counseling session prior to completion of their programs. The team, or a representative of the team, conducting this exit interview should be able to apply a model simliar to the one we have defined in this project. In our model, we believe this team should have representation from the biotechnology department, alumni affairs, institutional effectiveness and workforce preparation. We also believe that NCCCS BioNetwork has a pivotal role to play in these sessions across the state. They can provide information on continuing education courses, as well as providing a link to allow graduates to keep in touch. The BioNetwork offices most likely can work with local colleges and industry to provide networking sessions.

This model, if implemented, will provide graduates with tools to network with other alumni and biotech companies, to connect them to new biotech career lattices, and to inform them of continuing education courses for skill building.

Biotechnology Graduates Tracking Study Consortium

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