BioCatalyst Final Program Report

BioCatalyst Team

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Date: January 19, 2016

Executive Summary

In 2013, the Oregon Bioscience Association (Oregon Bio) approached the Oregon Legislature to request funds for a workforce training pilot program to address an issue being conveyed by an increasing number of businesses in the bioscience industry. The businesses, while desiring to hire Oregonians for new positions, were being pressed into conducting their recruitment efforts outside of Oregon in order to find qualified employees. The program, initially referred to as an Applied STEM program, specifically targeted dislocated workers hoping to make a career change into the bioscience or advanced manufacturing industries. Once approved, the pilot was rebranded as BioCatalyst Advanced Training and designed to recruit one hundred unemployed (or drastically under-employed) management professionals, engineers, and project managers attempting to make a career transition and provide the skilled employees required by Oregon businesses.

Oregon Bio brought to the project a proven track record, over the past six years, of developing a bioscience workforce curriculum (in coordination with major local employers), providing advanced "applied STEM training" to 2,100 Oregonians and providing the skilled employees required by Oregon businesses.

To initiate this program Oregon Bio requested $250,000 from the Legislature to fund the training of 100 students in five cohorts of approximately 20 students apiece. This money would support efforts to improve each person's job search and interview skills in addition to the in-class training of accepted applicants. Oregon Bio recruited qualified Oregonians from all areas of the state with bioscience or advanced manufacturing concentrations, using a combination of direct networking, social media announcements and input from organizations like WorkSource, Inc.

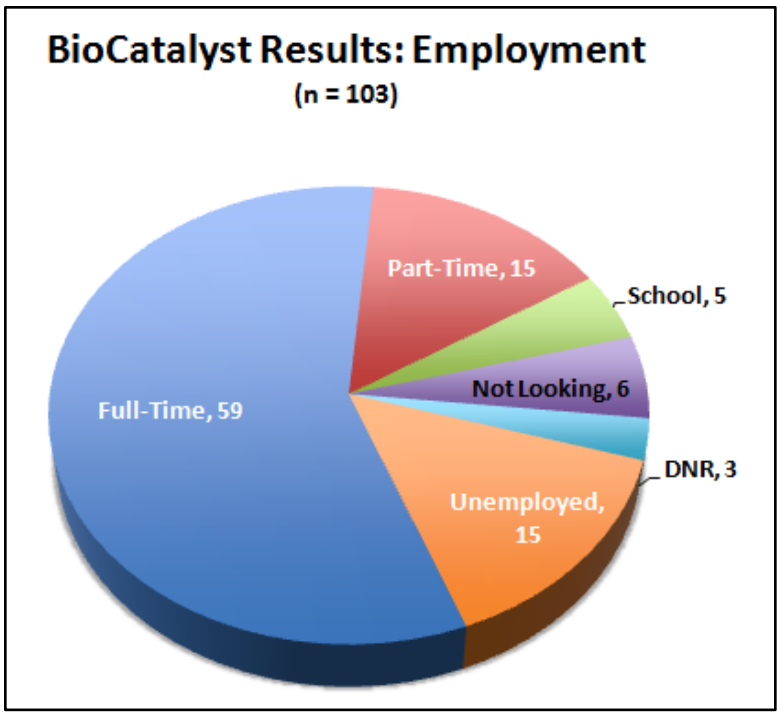
The resulting frame was a two-week BioCatalyst immersion training program built around a well-established set of regulatory, quality, manufacturing and professional training classes designed directly with Oregon businesses. Equipped with updated skills, exposure to industry hiring managers, and more refined job seeking skills (developed through ancillary workshops), BioCatalyst participants were made capable of competing for Oregon jobs that might otherwise be filled with out-of-state candidates.

Program Goals

From inception, Oregon Bio was committed to providing businesses with the proficient employees they need and, simultaneously, creating a program that could eventually provide a positive net return to the state and evolve into a renewable program. To meet the financial test for viability, our goal was to generate an increase in state payroll taxes from successful placements that exceeded the cost of the program.

Based on very rough initial estimates, we felt the state would receive a net budgetary gain if we could eventually place 25% of Biocatalyst graduates in new jobs. This was deemed by policy makers and employment experts at the time as being a very ambitious goal. To help consistently measure our success, the state included several mechanisms related to measuring our performance as profiled in the charts below.

Conclusion

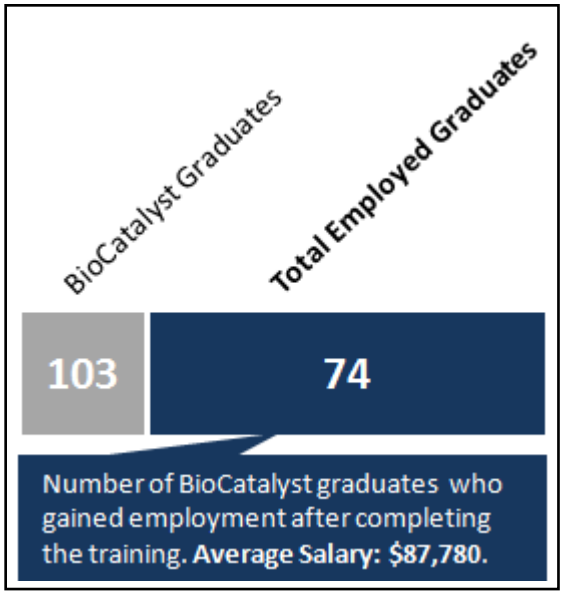


Oregon Bio is proud of the success the first BioCatalyst graduates have had in becoming employed Oregonians. With a placement rate of 72% (74 employed graduates), under the parameters laid out for evaluation, the program has dramatically out-performed its original employment placement goal. If we used the $250,000 appropriated to fund the actual training, the cost for the education and placement of each successful graduate is $3,378.This cost will likely decline as we are able to leverage the state's investment in curriculum and program design ($75,000) for future training.

Based on the average salary of just the 59 graduates who are now employed in a full-time job ($87,779 per year), the state's cost of developing and deploying the Biocatalyst training program ($325,000) will be recouped after fourteen months of employment. The salaries of the graduates who are now employed in part-time jobs would reduce the number of months to recoup the cost. These calculations, of course, also do not include the enormous social benefit of more employed Oregonians and the other related social costs (unemployment, preventing skill workers from relocating to other states, satisfying existing need for skilled workers, etc.) BioCatalyst helps mitigate.

Equally important are the valuable lessons we have learned in deploying a program that is first-of-its kind in the United States. Oregon Bio uncovered several new significant breakthroughs related to the curriculum, structure and organization of the program that could yield even better results in the future with refinements based on these preliminary results.

The BioCatalyst program deployment has also conclusively demonstrated the importance of leveraging direct industry involvement. Unlike the indirect involvement community colleges or universities might receive from a board of industry advisors, BioCatalyst was able with connect through an industry association to business leaders in a position to influence hiring decisions and provide real time feedback on candidate recruitment, curriculum design and graduate placement opportunities.



Perhaps the greatest validation of the program has come from leaders outside the bioscience industry (e.g. Clean Technology) who see the potential to expand this program into new industry sectors. If properly funded in the future, we are certain Oregon Bio can build off our BioCatalyst

experience to help more businesses find the skilled employees they need to operate and grow within Oregon and simultaneously help Oregonians make the transition to better, more stable employment.

We strongly recommend Oregon be given a chance to leverage this experience and are requesting the state establish a more permanent funding source to continue and/or expand the BioCatalyst program to include targeted industry sectors such as food processing, clean technology, and other manufacturing-dependent industries.

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Background

In 2013, the Oregon Bioscience Association (Oregon Bio) approached the Oregon Legislature to request funds for a workforce training pilot program to address an issue being conveyed by an increasing number of businesses in the bioscience industry. The businesses, while desiring to hire Oregonians for new positions, were being pressed into conducting their recruitment efforts outside of Oregon in order to find qualified employees. The program, initially referred to as an Applied STEM program, specifically targeted dislocated workers hoping to make a career change into the bioscience or advanced manufacturing industries. Once approved, the pilot was rebranded as BioCatalyst Advanced Training and designed to recruit one hundred unemployed (or drastically under-employed) management professionals, engineers, and project managers attempting to make a career transition and provide the skilled employees required by Oregon businesses.

The BioCatalyst development effort built on Oregon Bio's proven track record over the past six years of deploying a bioscience workforce curriculum (in coordination with major local employers) and providing advanced “applied STEM training” to over 2,100 Oregonians.

Equipped with updated skills, exposure to industry hiring managers, and more refined job seeking skills (developed through ancillary workshops), these previously unemployed Oregonians were made capable to compete for Oregon jobs that might otherwise be filled with out-of-state candidates.

Legislative History

In an effort gain Legislative support for the funding of this pilot, we partnered with Business Oregon to help shape the legislative proposal. Initially proposed as HB 1527, the legislation moved smoothly through both the House and the Senate on March 5, 2014. The final legislation authorized Oregon Bio to utilize a $250,000 appropriation granted to Business Oregon to fund the training of five cohorts of students (100) as part of this new pilot program. This money would not only support the in-class training of accepted applicants, but also help improve each person’s job search and interview skills.

Once the legislation became effective, Oregon Bio worked with its BioPro Steering Committee to validate Oregon’s bioscience and manufacturing businesses’ needs and initiate the process of developing the pilot program’s curriculum.

In addition, Oregon Bio interviewed economic development professionals, recruited qualified Oregonians and researched potential bioscience or advanced manufacturing employers in all areas of the state. This effort was intended to not only launch the BioCatalyst program, but also stimulate an open discussion on how programs like BioCatalyst might serve the broadest possible cross-section of Oregon’s potential workforce. From employers in Bend to specialty university graduate programs, the concept of matching professional immersion programs with other training or educational opportunities were explored.

Program Evolution

The program evolved through three stage of development; Program Organization, Deployment/Support and Measure/Report. In total the program existed for over eighteen months and resulted in the training of 103 graduates. Figure 1 documents the milestones for each stage of the BioCatalyst program.

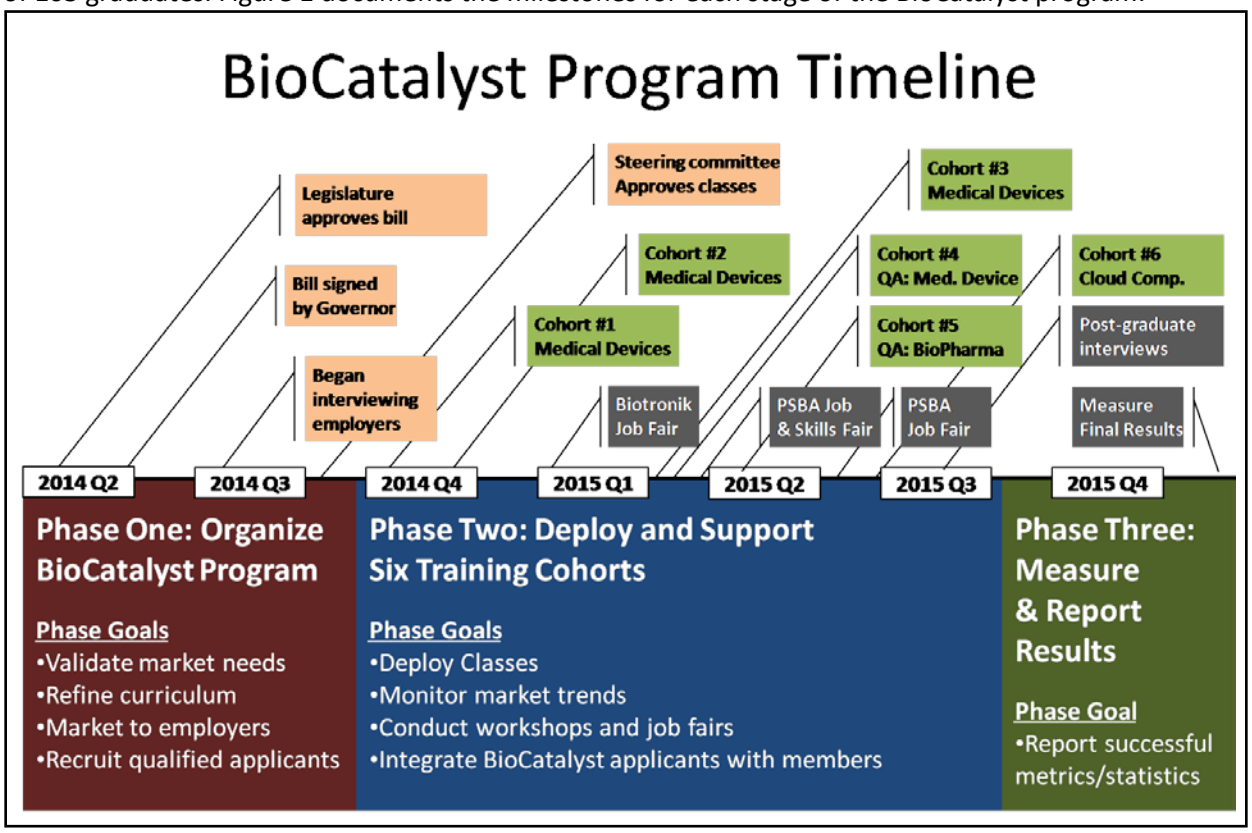

Figure 1: BioCatalyst timeline of milestones, cohorts and significant events.

Organizing the BioCatalyst Program

Our research indicated that market demand was spread between several important sectors of the bioscience industry. Though the BioCatalyst curriculum leveraged some elements of the existing BioPro workforce training program, each BioCatalyst cohort's curriculum was carefully shaped into a certification that matched the known needs of various industry sectors. This was designed to produce a set of job skills that employers told us they were looking for, and had experienced difficulty finding when evaluating Oregon employee candidates.

It was essential that each class be individually reviewed for relevancy before its inclusion as a BioCatalyst immersion class. This included discussions with the instructors on how the classes might be adapted to account for the targeted composition of the class: the mid-career profile of the students and their status as dislocated workers.

As a result of creating a curriculum that was specifically designed to meet the needs of prospective employers, one of our long-term training clients actually changed their internal, BioPro certificate curriculum to include classes from the newly created BioCatalyst program.

In an effort to meet the unique needs of students who had less experience or were returning to the industry, courses were specifically chosen to ensure a solid foundation of knowledge (e.g. all students took the Practical Data Analysis class). Recognizing the students in the first three cohorts would benefit from further instruction, Oregon Bio offered BioCatalyst students free admission to our Design of Experiments class, on a space available basis. This accommodation ensured students would have the proper preparation (Practical Data Analysis) to ensure they gained maximum benefit from the more advanced class.

This process included discussions at all levels of Oregon Bio leadership and organizational structure. From Board of Directors meetings to major networking events, from annual conference breakout sessions to national best practice symposiums, Oregon Bio solicited feedback from bioscience and workforce experts to make sure the classes and graduates would have the best possible chance for meaningful employment.

Cohort Deployment and Support

As mentioned earlier, Oregon Bio actively revised our cohort curriculum and sequencing strategy to match the needs of the market. The intent was to address the most pressing market demands with the early cohorts. At the time (Q3 2014), several companies indicated they would be increasing their staffs in the short-term. Two specific companies (Biotronik and TE Connectivity Healthcare) actively participated in the development of the first two medical device focused cohorts and even provided access to their on-site training facilities.

Figure 2: Sample BioCatalyst curriculum cover page.

As stated earlier, each cohort provided up to eighty hours of classroom instruction as well as site tours of actual bioscience facilities. Biotronik provided the opportunity to tour their Lake Oswego manufacturing facility which provided valuable context for students who had never been exposed to such a sophisticated production environment. It is one thing to learn about the quality control standards expected by the Federal Drug Administration, but quite another to actually tour an automated, class-three, implantable medical device assembly line.

Based on the applicant recruitment process, and some economies we were able to achieve, Oregon Bio managed to deliver the training program to 103 students spread across six cohorts. This allowed the program to achieve slightly lower class sizes while simultaneously incorporating a few incumbent workers into some of the general classes. This led to an important discovery—mixing dislocated workers

with currently employed bioscience workers allows the students to benefit from a richer discussion of the relevant subject matter and provides a subtle and unobtrusive form of built-in job networking.

Curriculum Development. An essential element of our success was our ability to leverage the BioPro steering committee. Composed largely of bioscience hiring executives, the steering committee was well positioned to help our BioCatalyst team to "course correct" our curriculum as necessary (see Figure 2).

We continue to be impressed by the level of interest and commitment from our member organizations. Genentech demonstrated their support for and commitment to the program by providing both an engineering manager and validation consultant to assist in design of the curriculum for the Quality Assurance cohort. Following completion of this cohort, Genentech hired several students to work in their Hillsboro, OR location.

The first three cohorts focused on the state's leading bioscience sector—Medical Devices and Manufacturing. Based on industry demand, the medical device cohort was followed by two Quality Assurance cohorts, one focused on medical devices and the other on pharmacology and chemistry. The final cohort was dedicated to the new frontier of bioscience technology—technologies driving Big Data and Cloud Computing innovation that are reshaping how companies are conducting genomic, consumer driven healthcare and outcomes research. These high-level technology topics had not been traditionally addressed in the existing BioPro program, so this cohort relied heavily on industry data and technology experts to act as instructors. Even though graduates have had less time to find employment, this final cohort has the highest percentage of graduates finding full time work within six months as compared to previous cohorts.

A potential benefit, in addition to networking opportunities, should this program be renewed, is the unique opportunity for prospective employees to demonstrate their skills. A clean technology company recently expressed an interest in setting up a future training program designed to mingle current employees and prospective employees in the same classes. Within the BioCatalyst model, this company would bring real projects to the classroom, with the express purpose of using these projects for in-class breakout sessions. In this way, current employees and managers would get a first-hand look at how prospective employees react to these real world scenarios. A further potential benefit for companies interested in hiring is the opportunity to participate in the interview process. In this way, all parties (e.g. employers, students and the state) win.

Application/Selection Process = Marketing/Recruitment Efforts

Applicants for the cohorts were solicited through public announcements on Oregon Bio's website, social media sites (e.g. LinkedIn and Craigslist), direct networking with agencies such as Worksystems, Inc., at industry networking meetings, university job boards, with member companies and through word of mouth. The response was outstanding; we received many more applicants than could be admitted due to the constraints of the funding.

Applications were evaluated for technical expertise, fit with the employer needs we had determined through research, and general employability. Each applicant who met the preliminary criteria had an in-person interview prior to selection for the program. The top applicants were then further evaluated for positive attitude, ability to learn, and job search skills. We made a strong effort to encourage ethnic, racial, and gender diversity. We succeeded in recruiting an ethnically diverse set of participants—with 43% being women.

Soft Skills Development

The educational goal of the BioCatalyst program was always intended to balance specific industry technical skills with broader technical gap training. Our cohorts each included rigorous instruction in manufacturing, data management, quality assurance and statistical techniques, but were enriched with practical education in project management, presentation/communication skills and other topics specifically requested by employers. Oregon Bio further recognized that with a population of more mature and unemployed participants, additional training in modern job search and personal marketing skills would be required to insure that they were able to hold their own in a competitive job market.

Additional opportunities for successful job search and procurement were provided through both workshops and job fairs (see appendices). In addition to bringing in human resource specialists from our member companies to offer insights seldom made available to job seekers, our workshops also provided students the opportunity to work one-on-one to prepare them interview and selection processes. Properly prepped, we created job fairs that brought together hiring companies and recent graduates.

As applicants were hired and proved the value of the training and certifications we provided, the reputation of the program developed a momentum of its own and resulted in several additional participants being hired at those employers as they gained greater confidence in the program. The early successes built the brand of the program and encouraged those employers to add their input to our marketing and job needs research, as well as making them more open to future BioCatalyst graduates for later job openings.

This nearly viral success culminated in a company outside of the bioscience sector (clean technology) partnering with Oregon Bio and Worksystems to create three additional cohorts of BioCatalyst funding with entirely separate funding, under the moniker BioCatalyst Advanced Manufacturing.

California-based Genentech has shared plans for expansion of their Hillsboro, OR, workforce in Q2 2016. In the past, job searches have focused on their base of operations in California. Following the success of the BioCatalyst program and Genentech's key involvement, the company's human resource staff has indicated an evolving interest in continuing to hire in Oregon, provided they could draw from a BioCatalyst-like program.

Placement and Employment

We have been able to provide precise figures for employment, time range of employment, industry sector and location of new jobs. Salary information, however, has been difficult to obtain retrospectively from participants who have hired. Most people have been reluctant to share salary information (most claiming company employment policy restrictions). However, in the future we will work to emphasize their obligation to provide the necessary salary data to ensure the future availability of the program.

Based on our final calculations, 103 participants received BioCatalyst training in six cohorts, which were concluded on dates ranging from October 17, 2014 to June 25, 2015. Of these graduates, 59% of our BioCatalyst participants found new, full-time jobs after completing their formal training. It's also noteworthy that less than 15% of applicants were unable to find employment. The remaining graduates are attending school or are not seeking work for reasons such as caring for an ailing, elderly parent. One participant passed away, and three did not respond to repeated attempts at contact.

Geographic Profile of BioCatalyst Employment

Nearly all of the hired participants (88%) found work in Oregon (65), with an additional five placed in Washington and two in Idaho, and two in Texas and New York. Three of the Washington jobs were in the broader Portland area, and the other two were in Seattle, WA.

We believe the high ratio of in-state hiring can be correlated to the aggressive placement strategy put in place to promote and incorporate BioCatalyst graduates into the industry networking events and overall promotion of the BioCatalyst Program.

However, it is important to note that newly trained workers (like newly graduated college students) can be drawn to other states if the placement efforts are not timed to ensure the candidates are exposed aggressively to in-state employers.

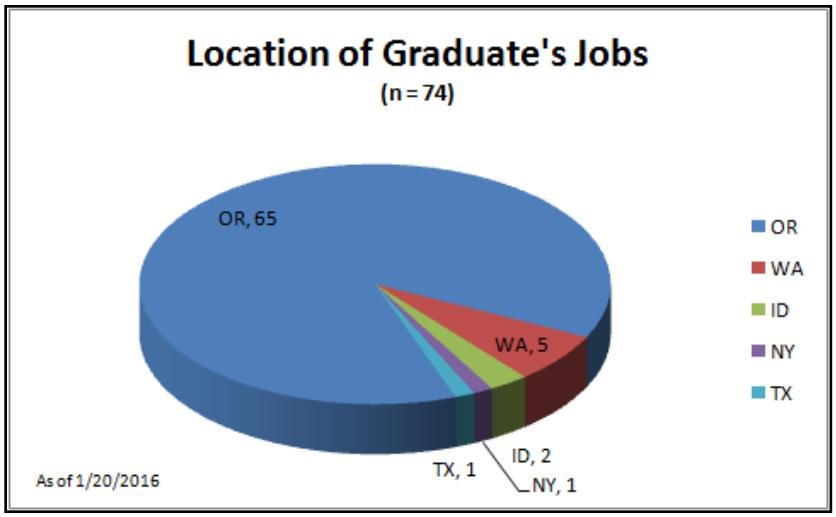

Figure 3: Chart profiling the states where BioCatalyst graduates were hired after graduation.

Industry of Employment

About half of those who found work did so in bioscience (Figure 4); the majority of the remainder secured employment in other high tech industries. One firm, BiAmp, hired several participants as a result of their satisfying experience hiring an early graduate of the BioCatalyst program.

It is interesting to note that employees who have been working for a company for an extended period of time may discover that their skills have not kept up with the market. This realization can be particularly distressful when layoffs occur. This was precisely the case recently, when Welch Allyn moved the lion's share of their Oregon-based staff back to New York, resulting in the loss of several hundred jobs. Fortunately, through a strategic agreement with Business Oregon, a hand-selected group of these employees were given the opportunity to refresh their skills through the BioCatalyst program. As a result, these high wage earners found gainful employment and saved the state thousands of dollars in unemployment benefits.

Employment Categories

The BioCatalyst program was designed for unemployed technical and managerial workers, and the types of jobs that graduates received reflect that. 55% of the placements were in technical jobs, and almost 15% were managerial. In an encouraging sign, over 12% of graduates were placed in executive jobs (C level or vice president positions).

In total, more than 82% of graduates were placed in executive, managerial or technical positions.

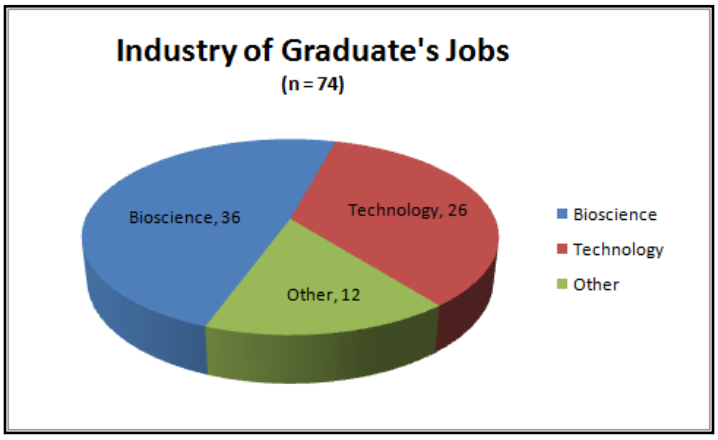

Figure 4: Job placement by industry classification.

Budget Assessment

Due to Oregon Bio's extensive background in workforce training our budget estimates for the cost of the curriculum development and training were very close to the original estimates. However, the follow-on placement services that extended six months beyond the close of the contract were not anticipated. In the future, Oregon Bio would hope to structure training contracts that allow the training to end earlier and for these placement and monitoring expenses to be covered under the overall contract.

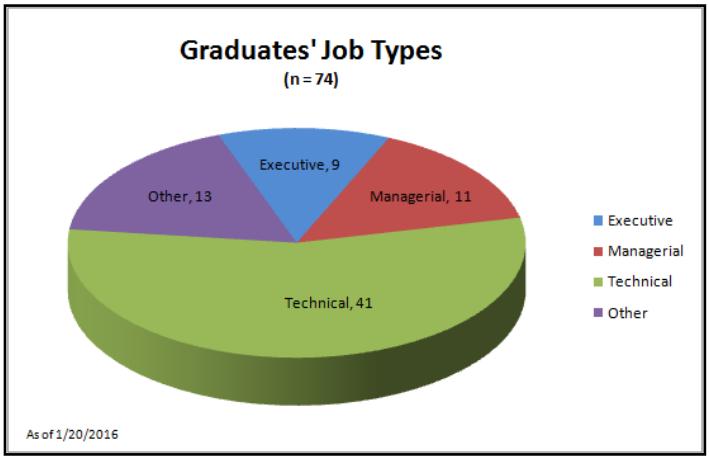

Figure 5: Job placement by worker type.

Conclusion

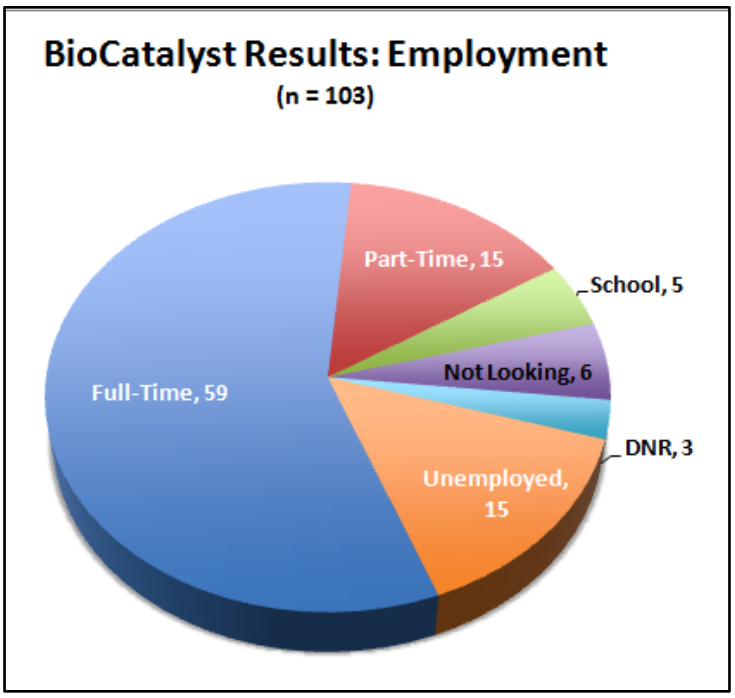

Figure 6: Employment status breakdown.

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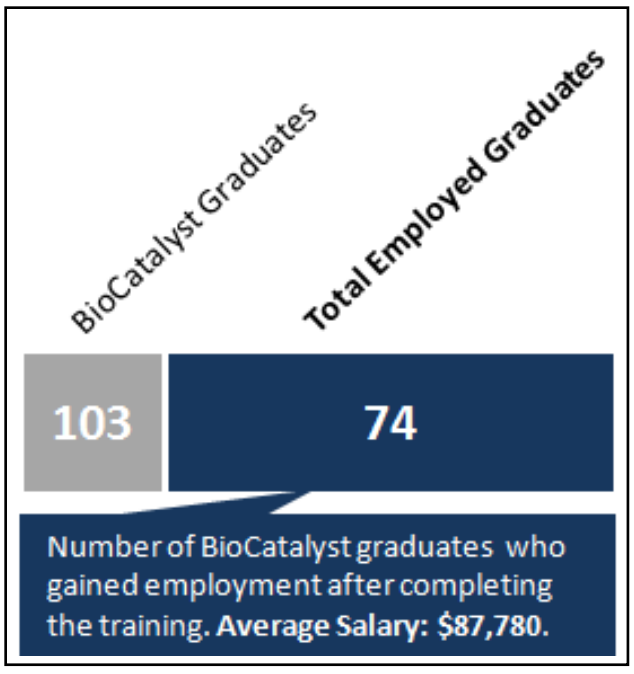

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Perhaps the greatest endorsement of the program has come from leaders outside the bioscience industry (e.g. Clean Technology) who see the potential to expand this program into new industry sectors. If properly funded in the future, we are certain Oregon Bio can build off our BioCatalyst experience to help more businesses find the skilled employees they need to operate and grow within Oregon and simultaneously help Oregonians make the transition to better, more stable employment.

Oregon Bio's goal was to prove to the state of Oregon that our organization could be trusted to provide high quality workforce training services that could have a meaningful impact on placing dislocated workers. We believe the placement rates achieve through the BioCatalyst program are reflective of potential future result and warrant renewed funding to broaden the program to support other industries.

We strongly recommend Oregon be given a chance to leverage this experience and are requesting the state establish a more permanent funding source to continue and/or expand the BioCatalyst program to include targeted industry sectors such as food processing, clean technology, and other manufacturing-dependent industries.

Partial List of Participating Companies

BiAmp
Biologic Resources
Genentech
Biotronik
Biztek
Cambia
Catalyst DevWorks
CONX Partners, Lmtd.
Country Malt Group
DesignMedix
Emerald Kalama Chemical
FiberSenSys
Flir
Garylord Ventilation
Genentech
GreCon
Hemcon
Hunot Fire Retardant
InFocus Systems
Ingeniux, Seattle
Intel
Meridian Hospital
Moda Health
Molecular MD
Nike
OHSU
OMIC USA
Purity Labs/ Kelly Scientific
Qorvo, Inc.
Qualis Health
REI
RevMedx
Romtec Inc.
Siemens
Solarworld
St Jude Medical
Steviva Ingredients
SureScripts
UbiVac
Vanguard EMS
VATA, Inc.
Vision28
Welch Allyn
Yieldbot