Mission/Purpose

To provide a high quality educational experience for students majoring in chemistry in preparation for industrial or government positions, for graduate study, for entry into medical or dental schools, or for teaching chemistry at the 8-12 level and to support the chemistry requirements of other programs.

Student Learning Outcomes, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

O 0: Analyzing & interpret variety of chemical data
Students will be able to analyze and interpret a variety of chemical data

Associations:

General Education or Core Curriculum:

2  Writing
5  Critical Thinking
7  Establish broad & multiple perspectives
10  Understand how science & technology affect lives

Strategic Plans:

Texas A&M-Corpus Christi

1.1 Provide excellent academic programs & instruction.
1.5 Increase research and creative activity.

Related Measures:

M 0: Student access to modern chemical instrumentation
Proper training of students on modern chemical instrumentation is critical to their potential success in obtaining entry level positions in industry as well as admission to graduate schools.

Source of Evidence: Academic Direct Measure

Achievement Target:

- Almost all chemical data generated today are obtained from the one or more analytical/instrumental techniques. Thus it is critical that our students are properly trained and have experience with the most commonly used analytical/instrumental techniques. Therefore, one of the measures of student success should be their ability to obtain, analyze and interpret data derived from such techniques. To that end, all chemistry majors should have experience and training one all of the chemical instrumentation available to them here at TAMUCC. A direct measure of that
would be student access to such instrument. Student’s should be able to obtain, analyze and interpret data derived from direct experience and training on the following analytical instrumentation:

- High performance liquid chromatography utilizing at least two different types of detectors
- Gas chromatography utilizing at least two different types of detectors with one of those two being a mass spectrometer
- Nuclear Magnetic Resonance Spectrometry – the student should be able to obtain routine carbon and proton data and be able to interpret the results.
- Elemental analysis techniques such as Flame Atomic Absorption, Inductively Coupled Plasma, and Graphite Furnace Atomic Absorption Spectroscopy.
- Common spectroscopic techniques such as UV/VIS and Infrared absorption techniques as well as spectrofluorometric methods.

Findings (2007-2008) - Achievement Target: Not Met

Student access and training on these techniques is very limited due to the lack of instrumentation support. Most of these instruments are not properly maintained and therefore are either inoperative a significant amount of time or not properly tuned thus making it difficult or impossible to obtain useful data. In addition, none of the instruments have standard operating procedure documents written up to facilitate training and use of the instruments.

Related Action Plans:

Hire a full time instrument tech for chemistry

A full time instrument technician is needed for chemistry and a brief outline of their job responsibilities is described below.

Instrument Tech Job Responsibilities (for chemistry)

Daily

- Check pressure in all gas tank cylinders and replace tanks as necessary
- Develop and update as necessary standard operating procedures for all instruments
- Ensure that all faculty, staff and students are properly trained on instruments before they are allowed to operate them. (VERY Important!!!!!!)
- Analyze samples as needed to help support research faculty and students in S&T (possibly with fee associated with analysis)

[NOTE: such activities are routine at research institutions where personnel in analytical core facilities perform routine analysis for researchers (for a fee) within the college as well as externally. It should also be pointed out that many faculty, including Harte Chairs have approached me for analytical support in terms of]
analyzing samples for various organic or inorganic species and are willing to pay for the analysis but I have to tell them that while we have the analytical capability we do not have the resources in terms of personnel to do that at this time. So I tell them they or their students are welcome to use the instruments but I do not have time to do anything other than give them very basic training on the instrument.]

Weekly
- Ensure that all instruments that will be utilized for teaching labs that week (and the upcoming week) are tuned and working properly
- Check fluid levels in all vacuum pumps
- Fill nitrogen in NMR instrument (CRITICAL!!!!!!!!!!!!!!) and check helium level. Refill helium as needed (~ 2-3 times a year).
- Tune NMR for all routine solvents once a week

Regular Scheduled Activities
- Perform routine maintenance all instruments according to manufacturers suggestions
- Perform system check on all instruments to ensure instruments are performing properly

Other Responsibilities/Activities
- Maintain instrument log books for maintenance, repair, use, etc.
- Repair instruments as needed
- Work with faculty, teaching assistants, etc to ensure that all instruments needed for upcoming experiments are working properly and that all personnel who will be operating the instruments are properly trained
- Assist faculty, TAs, etc in the development or improvement of experiments utilizing analytical instrumentation.
- Assist as needed in teaching laboratory courses utilizing analytical instrumentation

For more information, see the Action Plan Details section of this report.

**M 0: Lab scores in CHEM 4420 or 4423**
Lab scores will be averaged in PChem and Physical Biochem Lab sections

Source of Evidence: Academic Direct Measure

**Achievement Target:**
80% of students will score a grade of B or better.
Findings (2007-2008) - Achievement Target: Met
In Fall 2007, 7 of 8 students enrolled in CHEM 4423 achieved 80% or better on their lab work. In Spring 2008, 9 of 9 students achieved 80% or better on their lab work. The total is 16 of 17 or 94% of students. The goal of 80% of students was met.

O 0: Effective oral & written communication
Communicate chemical information effectively at the undergraduate level in oral and written form with appropriate use of technology.

Associations:

General Education or Core Curriculum:
- 2 Writing
- 3 Speaking
- 10 Understand how science & technology affect lives

Strategic Plans:
- Texas A&M-Corpus Christi
  - 1.1 Provide excellent academic programs & instruction.
  - 1.5 Increase research and creative activity.

Related Measures:

M 0: Presentation in CHEM 4292
Students will make a presentation on a current topic in science and be graded on their presentation.

Achievement Target:
80% of students will achieve a grade of B or better.

Findings (2007-2008) - Achievement Target: Met
In Fall 2007, 100% of students enrolled scored a B or better on their presentation in this capstone course.

M 0: Paper in CHEM 4292
The capstone course in Chemistry (CHEM 4292) will use essays on current research and problems in science to critically evaluate data from published sources.

Source of Evidence: Capstone course assignments measuring mastery

Achievement Target:
We expect 80% of students to achieve a grade of B or better on their papers

Findings (2007-2008) - Achievement Target: Met
Each student submits five papers in CHEM 4292. After averaging the scores on the five papers, 100% of students enrolled in the course averaged a B or better on their work.

O 0: Demonstrate broad understanding of Chemistry
Demonstrate a broad understanding of Chemical concepts

Associations:

General Education or Core Curriculum:
- 5 Critical Thinking

Strategic Plans:
- Texas A&M-Corpus Christi
1.1 Provide excellent academic programs & instruction.

Related Measures:

**M 5: Achievement on Major Field Exam**
The Major Field Exam will be given in spring in conjunction with courses in Physical Chemistry II and Physical Biochemistry.

Source of Evidence: Comprehensive/end-of-program subject matter exam

**Achievement Target:**
Students will score at the 20th percentile nationally.

**Findings (2007-2008) - Achievement Target: Partially Met**
Four of fourteen students taking the MFT achieved 20th percentile or greater. The highest percentile achieved was the 85th percentile. The average score was in the 15th percentile.

**Related Action Plans:**

**Increase weighting of MFT in class grade**
On a trial basis, the MFT will be counted as 5% of the students’ grade in Physical Biochemistry (CHEM 4420). The outcome will be assessed in May, 2009 to see if there was a significant increase in scores for this sub-population of students. The assessment of the results will include discussion of whether the MFT should constitute a credit-bearing course.

For more information, see the *Action Plan Details* section of this report.

Other Outcomes/Objectives, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

**O 1: Provide quality instruction to majors**
Instruction provided to chemistry majors will prepare them for either employment or further study.

**Associations:**

**General Education or Core Curriculum:**

- 5 Critical Thinking
- 10 Understand how science & technology affect lives
- 13 Use logical reasoning in problem solving

**Related Measures:**

**M 0: Student access to modern chemical instrumentation**
Proper training of students on modern chemical instrumentation is critical to their potential success in obtaining entry level positions in industry as well as admission to graduate schools.

Source of Evidence: Academic Direct Measure

**Achievement Target:**
Almost all chemical data generated today are obtained from the one or more analytical/instrumental techniques. Thus it is critical that our students are properly trained and have experience with the most commonly used analytical/instrumental techniques. Therefore, one of the measures of student success should be their ability to obtain, analyze and interpret data derived from such techniques. To that end, all chemistry majors should have experience and training one all of the chemical instrumentation.
available to them here at TAMUCC. A direct measure of that would be student access to such instrument. Students should be able to obtain, analyze and interpret data derived from direct experience and training on all of the analytical instruments described in the previous section.

**Findings (2007-2008) - Achievement Target: Not Met**

The major impediment the chemistry program faces in providing quality instruction to majors in terms of chemical instrumentation was described in the previous section (lack of sufficient personnel – full time instrument tech and an adequate M&O budget to maintain and repair instruments as needed.

**Related Action Plans:**

**Increase M&O and hire instrument tech**

As described previously, in order to adequate address this issue additional resources are needed to hire an instrument tech ($45,000 plus benefits = ~$60,000). In addition, and increase in the M&O budget of at least $15,000 per year is required to properly repair and maintain chemical instrumentation.

For more information, see the *Action Plan Details* section of this report.

**M 6: Number of students admitted to graduate school**

It is assumed that graduate schools in chemistry will admit quality students. The number of students admitted or rejected from graduate school is a measure of quality of instruction.

Source of Evidence: Job placement data, esp. for career/tech areas

**Achievement Target:**

There should be three students per year admitted to high-ranking graduate schools.

**Findings (2007-2008) - Achievement Target: Met**

At least three students have started or are in the process of starting graduate school.

**Findings (2006-2007) - Achievement Target: Met**

There are at least three that I can think of that started graduate school in chemistry. In addition, at least two graduating chemistry majors were admitted to pharmacy school.

**O 2: Provide support courses for other programs**

Other programs, both within and outside the College of Science and Technology, will utilize chemistry courses as a required part of their program.

**Strategic Plans:**

Texas A&M-Corpus Christi

1.1 Provide excellent academic programs & instruction.

**Related Measures:**

**M 0: Number of students in General Chemistry**

General Chemistry, especially the first-semester courses CHEM 1311 and CHEM 1305 are almost entirely non-majors. The effectiveness of this course is reflected in the number of students taking CHEM 1311 and CHEM 1305.

Source of Evidence: Activity volume
Achievement Target:
There should be 500 students enrolled in CHEM 1311 in the fall semester

Findings (2007-2008) - Achievement Target: Met
There were 533 students enrolled in CHEM 1311 in Fall 2007.

O 3: Faculty will perform research with undergraduates
Faculty members will sustain a research program that promotes inclusion of undergraduate students in research

Strategic Plans:
Texas A&M-Corpus Christi
1.5 Increase research and creative activity.

Related Measures:

M 0: Undergraduate students involved in research
The number of undergrad students involved in faculty research in an academic year from annual self-assessment, funded positions, DIS

Achievement Target:
A total of 10 undergrad students should be engaged in research

Findings (2007-2008) - Achievement Target: Met
Faculty involved undergraduates as follows:

Billiots (5)
Causgrove (5)
Larkin (2)
Silliman (2)
Southard (2)

For a total of 16 undergrads involved in research.

M 0: Number of faculty engaged in research
Annual self-assessments by faculty members will indicate research activities

Source of Evidence: Activity volume

Achievement Target:
85% of tenure track faculty will perform research.

Findings (2007-2008) - Achievement Target: Met
All but one of the seven tenured or tenure track faculty members were involved in research.

O 4: Continue Web presence in General Chemistry
All faculty members teaching General Chemistry will use an online course management system.

Strategic Plans:
Texas A&M-Corpus Christi
1.1 Provide excellent academic programs & instruction.

Related Measures:

M 0: Percent of faculty providing online resources
Online resources that faculty members teaching General Chemistry choose include WebCT and commercial packages such as OWL (Online Web-based Learning).
Achievement Target:  
All faculty members will use the OWL system in General Chemistry for all sections by the end of academic year.

Findings (2007-2008) - Achievement Target: Met  
Most faculty member used the OWL system for online learning, while one faculty member substituted WebCT for their online learning needs.

Details for Action Plans Established This Cycle

**Hire a full time instrument tech for chemistry**

A full time instrument technician is needed for chemistry and a brief outline of their job responsibilities is described below.

**Instrument Tech Job Responsibilities (for chemistry)**

**Daily**

- Check pressure in all gas tank cylinders and replace tanks as necessary
- Develop and update as necessary standard operating procedures for all instruments
- Ensure that all faculty, staff and students are properly trained on instruments before they are allowed to operate them. *(VERY Important!!!!!!)*
- Analyze samples as needed to help support research faculty and students in S&T *(possibly with fee associated with analysis)*   
  [NOTE: such activities are routine at research institutions where personnel in analytical core facilities perform routine analysis for researchers (for a fee) within the college as well as externally. It should also be pointed out that many faculty, including Harte Chairs have approached me for analytical support in terms of analyzing samples for various organic or inorganic species and are willing to pay for the analysis but I have to tell them that while we have the analytical capability we do not have the resources in terms of personnel to do that at this time. So I tell them they or their students are welcome to use the instruments but I do not have time to do anything other than give them very basic training on the instrument.]

**Weekly**

- Ensure that all instruments that will be utilized for teaching labs that week (and the upcoming week) are tuned and working properly
- Check fluid levels in all vacuum pumps
- Fill nitrogen in NMR instrument *(CRITICAL!!!!!!!!!!!!!!)* and check helium level. Refill helium as needed (~ 2-3 times a year).
- Tune NMR for all routine solvents once a week
Regular Scheduled Activities

- Perform routine maintenance all instruments according to manufacturers suggestions
- Perform system check on all instruments to ensure instruments are performing properly

Other Responsibilities/Activities

- Maintain instrument log books for maintenance, repair, use, etc.
- Repair instruments as needed
- Work with faculty, teaching assistants, etc to ensure that all instruments needed for upcoming experiments are working properly and that all personnel who will be operating the instruments are properly trained
- Assist faculty, TAs, etc in the development or improvement of experiments utilizing analytical instrumentation.
- Assist as needed in teaching laboratory courses utilizing analytical instrumentation

Priority: High
Target Date: 09/2009
Additional Resources Needed: Additional resources are needed to hire an instrument tech ($45,000 plus benefits = ~$60,000). In addition, an increase in the M&O budget of at least $15,000 per year is required to properly repair and maintain chemical instrumentation.
Budget Amount Requested: $75000

Increase M&O and hire instrument tech

As described previously, in order to adequately address this issue additional resources are needed to hire an instrument tech ($45,000 plus benefits = ~$60,000). In addition, an increase in the M&O budget of at least $15,000 per year is required to properly repair and maintain chemical instrumentation.

Priority: High
Target Date: 09/2009
Additional Resources Needed: Additional resources are needed for M&O and to hire an instrument tech
Budget Amount Requested: $75000

Increase weighting of MFT in class grade

On a trial basis, the MFT will be counted as 5% of the students' grade in Physical Biochemistry (CHEM 4420). The outcome will be assessed in May, 2009 to see if there was a significant increase in scores for this sub-population of students. The assessment of the results will include discussion of whether the MFT should constitute a credit-bearing course.

Priority: Medium
Target Date: 05/2009
Complete assessment of results
Responsible Person/Group: Tim Causgrove
**Analysis Answers**

**What specifically did your assessments show regarding proven strengths or progress you made on outcomes/objectives?**

The assessment indicated that the strengths of the chemistry program are in its serving as a support for other disciplines, (as evidenced by the number of students enrolled in introductory chemistry courses as well as Organic Chemistry) and in the research experiences we provide for our majors. The chemistry faculty mentored/provided formal research for 16 chemistry majors in 2007-2008. This represents ~50% of our major’s juniors and seniors. In addition, many of our pursue post baccalaureate degrees in chemistry or chemistry related degrees. This is in large part due to their research experiences while at TAMUCC.

**What specifically did your assessments show regarding any outcomes/objectives that will require continued attention?**

As the assessment report indicates, all but two of our objectives were fully met. The two objectives not fully met were: 1) Analyzing & interpret variety of chemical data; 2) Providing quality instruction to majors. The deficiencies in these areas stem from two sources. One of those stems from our use of the Major Field Test in chemistry as a means to measure student understanding of broad chemistry concepts and the other major weakness is in our ability to adequately train our students in the use of modern analytical techniques.

The Major Field Test (MFT) in chemistry administered by the American Chemical Society has been used as a measure of success for this objective. The major flaw in using this test is that there is currently little incentive for the students to do well on this test. The test is given as part of the course requirements for students enrolled in Physical Chemistry II and Physical Biochemistry. However, the results do not significantly effect the overall grade in these courses so the students put very little to no effort into preparing for this test. On a trial basis, the MFT will be counted as 5% of the students' grade in Physical Biochemistry. The outcome will be assessed in May, 2009 to see if there was a significant increase in scores for this sub-population of students. The assessment of the results will include discussion of whether the MFT should constitute a credit-bearing course.

The other major weakness stems for the inability of our chemistry program to adequately train our students on the use of modern chemical instrumentation. This knowledge is critical to their potential success in obtaining entry level positions in industry as well as admission to graduate schools. As described elsewhere in this document, in order to adequate address this issue additional resources are needed to hire an instrument tech ($45,000 plus benefits = ~$60,000). In addition, an increase in the M&O budget of at least $15,000 per year is required to properly repair and maintain chemical instrumentation.

**Annual Reports**

**Public/Community Service**

**Service/Outreach Activities for 2007-08:**

Jim Silliman
• Finished up the Cabeza de Vaca Earthmobile Program on May 31, 2008. This program provided geoscience outreach activities to fifth and sixth graders in the following South Texas ISDs: Aransas County ISD, Premont ISD, Riviera ISD and San Diego ISD.

• Served as an instructor for the NSF STEP program on campus during the Fall 08 semester. STEP links mathematics to chemistry and biology and serves as a valuable resource for participating students.

• Co-chair the Teaching Excellence Committee on campus that assists faculty with teaching issues.

• Chair the CMSS Recruitment Committee that is currently developing an electronic brochure that will be emailed to prospective students/departments around the nation.

- Eugene Billiot

  ➢ Served on the Texas College Readiness Standards vertical team from 2006-2008

  ➢ Sponsored and organized a visit for students enrolled in chemistry (~300 students) at Ray High School to our campus for a day of events focused on learning more about the Gulf of Mexico and being a college student

  ➢ Currently serving as Coordinator for the Chemistry Program

  ➢ Has been serving as Director of the Faculty Renaissance Center since January 2008

  ➢ Has been serving as a member of an NSF Research Experiences for Undergraduates Leadership Group for the last two years

  ➢ Gave a Grant Writing Presentation Texas A&M International in Laredo in October 2008
- Served as a presenter for the TAMU system NSF TTVN video conference in April 2008

- Served on several Advisory Panels for NSF and NASA for the evaluation of submitted proposals to various programs
  
  - NASA Science and Technology Institute for Minority Institutions (NSTI) (March 2008)
  
  - Collaborative Research at Undergraduate Institutions (Biology Division) (October 2008)
  
  - Math Science Partnerships (MSP) (Division of Undergraduate Education) (April 2008)
  
  - Scholarships Science, Technology, Engineering and Math (S-STEM) (Division of Undergraduate Education) (January 2008)
  
  - Undergraduate Research Collaborative (Chemistry Division)

- **2003-present:** Has been serving as a "Measurement Technologies Expert" on the Advisory Board of a Corpus Christi Air Monitoring Project that is overseeing the implementation of a court-mandated program to monitor air quality in Corpus Christi since 2003.

**Tim Causgrove**

- Member, TAMU-CC Faculty Senate
- Member, Faculty Senate Executive Committee
- Member, Faculty Senate Academic Affairs Committee
- Member, College of Science & Technology Awards Committee

JACK SOUTHDARD
- Chairman of South Texas Local Section of the American Chemical Society (ACS)
- Island Days “Touch of Class” presentations
- Advisor of Corpus Christi Chemistry Club (C4)
- Coastal Bend Science Fair (Judge & Award Presenter for ACS)

Anticipated Challenges
As previously mentioned, the chemistry faculty, in general, are very excited about the idea of having a separate chemistry department. It is the general consensus that we will then have more autonomy and thus control of issues directly affecting our program growth and development. However, with change always comes challenges. Thus, formation of a separate chemistry department will present certain unforeseen challenges which I am confident the chemistry faculty can handle. The other major challenge still remains adequate support for analytical instrumentation repair, maintenance and training support.

Closing the Loop / Planned Actions
The major changes planned to help address past deficiencies are the issues related to administration of the Major Field Test in chemistry and the issues regarding instrumentation support.

Summary of Requested Resources
Resources are being requested by the college for the formation of a separate chemistry department. In addition, the college is also requesting an additional tenure track faculty line to accommodate the growth of the chemistry program and to support the formation of a chemistry master’s program. Other resources that are being requested specifically by the chemistry program are an increase in the M&O of $15,000 to support repair and maintenance of chemistry instrumentation. In addition, the program would like consideration given to the hiring of a full time instrument technician (~$60,000) to assist in repair, maintenance and training on all chemistry instrumentation.

Administrative Unit Accomplishments
The chemistry faculty have continued their efforts to improve teaching and provide more research opportunities for our students. In addition they have gone above and beyond the call of duty in seeking out service opportunities. From a research/scholarly activity perspective, 6 of the 7 chemistry faculty are research active. Last year, they had 10 funded grants, in which 6 of those ten were externally federally funded (NSF and NOAA). Collectively the chemistry faculty have had three peer reviewed publications, and 15 local regional and national presentations.
Teaching Results / Accomplishments
The faculty have continued their efforts to improve their own teaching as well as assist others. Jim Silliman was Co-chair of a Teaching Excellence Committee and Eugene Billiot is serving as Director of the Faculty Renaissance Center. In addition, two of the faculty (Fereshteh Billiot and Jim Silliman) were very active in an NSF funded grant to help improve science education. Eugene Billiot also wrote a $600,000 NSF science scholarship proposal that was recommended for funding.

Research/Scholar Activity Accomplishment
The chemistry faculty were very productive in 2007-2008. Last year, they had 10 funded grants, in which 6 of those ten were externally federally funded (NSF and NOAA). Collectively the chemistry faculty have had three peer reviewed publications, and 15 local regional and national presentations. Below is a list of their accomplishments.

SCHOLARLY ACTIVITIES PUBLICATIONS
I. Peer Reviewed Published Manuscripts


II. Peer Reviewed Manuscripts, submitted and awaiting reviews

III. Presentations


6. “Synthesis of Two Phenolic Bioactive Compounds from Lindera fruticosa” Jack M. Southard, Billyjack Melchor; Texas A&M University-Corpus Christi; Poster Session, 2008 Texas Academy of Science 111th Annual Meeting.


13. Larkin, PD, Storey, KL, and Parker, J. Genetic structure of Halodule wrightii populations from a hypersaline lagoon region in the Western Gulf of Mexico. 111th Annual Meeting of the Texas Academy of Science. Texas A&M University - Corpus Christi, Corpus Christi, TX. March 6-8, 2008. p.81. (Regional)


15. Thompson, ML and Larkin, PD. Molecular Genetic Variation in the Native Plant Species Desmanthus virgatus. 7th Annual Texas A&M University-Corpus Christi Undergraduate Research Symposium, Texas A&M University - Corpus Christi, November 17, 2007. (Local)

16. Bean, DS, Thompson, ML, and Larkin, PD. Development of a Microsatellite Assay for use with the Invasive Species Dichanthium annulatum. 7th Annual Texas A&M University-Corpus Christi Undergraduate Research Symposium, Texas A&M University - Corpus Christi, November
17, 2007. (Local)

**CURRENTLY FUNDED GRANTS:**

1. Eugene Billiot, (CoPI: $615,976) NSF - UMEB: Building Undergraduate ENvironmental Opportunities (BUENO), Awarded by the National Science Foundation

2. Eugene Billiot, (CoPI: $220,862) NSF-REU Site: Summer Undergraduate Research Focus: Anthropogenic Impacts on the Environment: Awarded by the National Science Foundation

3. Eugene Billiot, (PI: $400,000) NSF - CAREER: An Integrated Program of Research Focused on Understanding Chiral Recognition of Branched Amino Acid Based Molecular Micelles, Mentorship, Outreach, and Faculty Development: Awarded by the National Science Foundation

4. Eugene Billiot, (PI: $599,993) Scholarships to Enhance Physical Sciences (STEPS) – recommended for funding

5. Jack Southard, Faculty Research Enhancement Award during the spring of 2008. Research funds ($7000) were approved to pay for undergraduate stipends, supplies, and travel.


8. Jim Silliman, Characteristics of Hispanic Women Influencing STEM Careers (CHIC), PI (CMAR, $6200)

9. Tim Casugrove, (PI, $171,035) NSF-RUI: Application of Temperature Derivative Spectroscopy to Protein Folding
10. Fereshteh Billiot (CoPI: $794,885) NSF-STEP Phase 1: Recruitment, Retention, and Success in Science