

# IGEM/HERC

## Year End Report

**Proposal Name:** Molecular Skill Training for Technicians  
**Name (s):** Dr. Heather Henson-Ramsey, Chair, Natural Sciences and Mathematics  
Dr. Wendy Shuttleworth, Professor  
Dr. Jacob Hornby, Professor  
Dr. Eric Stoffregen, Assistant Professor  
**Name of Institution:** Lewis-Clark State College

### 1. Summary of Project Accomplishments

This grant allowed Lewis-Clark State College to purchase instrumentation and supplies for undergraduate laboratories to enhance the education and training of biology and chemistry students in laboratory techniques.

#### Project Objectives

To purchase additional instrumentation in order to improve student access to equipment commonly employed in research and testing laboratories thus providing our graduates with the skills they need to find employment in a laboratory setting or prepare for graduate school. In addition the equipment will be used to support independent research by students in the Biology and Chemistry programs.

To provide instrumentation to support the development of a molecular skills laboratory class.

#### Project Outcomes through December 2015

The budget included funds for two UV/Vis spectrophotometers to add to those already in house, fluorescence adapters for microscopes and additional micropipettes to provide instruments to adequately supply a laboratory class. We were able to find a more economical source of micropipettes that allowed us to increase the number purchased while staying within budget. The lab is now very well supplied with these items allowing each student to have ready access to pipets which are used in almost every laboratory session. The initial budget proposed \$2,000 for chemicals and consumables needed to support molecular biology classroom activities; this section of the budget was increased to cover more laboratory supplies when the micropipets came in below the projected cost. All of the items were purchased and made available for use by the beginning of the Fall semester 2015.

The equipment has been put to good use during the Fall semester in the Biochemistry class (CHEM 481). This class is a requirement for all graduates in both the Biology and Chemistry programs. Students now have ready access to equipment and do not have to work in large

groups to complete experiments. Experience has shown that working individually is crucial for students at this stage in their training and this can only be achieved when our teaching laboratories are well equipped. Only when faced with making their own decisions and mistakes in a controlled environment do students become confident users of the laboratory equipment. This confidence is essential if they are to move into a technical laboratory position after graduation as that will be the expectation in the work place. Several of the students in this class are hoping to find laboratory positions after graduation.

## 2. Summary of Budget Expenditures

The project budget was for equipment only there was no budget for personnel. The micropipets and UV spectrophotometers came in under the requested dollar amounts; this allowed the budget to cover the higher than requested cost of the fluorescence adapters and consumables and chemicals. The \$120.38 over budget was paid from an LCSC account.

	Awarded \$	Actual \$
Micropipets classroom set of 20 instruments	5,000.00	3316.60
Fluorescent adapters for microscopes (6)	6,000.00	7137.33
UV spectrophotometers (2)	12,000.00	9854.56
Consumables/chemicals	2,000.00	4811.89
total	25,000.00	25,120.38

## 3. Potential Economic Impact

The U.S. Bureau of Labor Statistics (BLS) reported that biology and chemistry technicians would experience a 9-10% increase in job opportunities between 2012 and 2022; this is considered to be as fast as the average among all occupations during that period. There is a steady need for trained individuals in and around the LC valley at local hospital laboratories, large companies such as Clearwater Paper, small testing labs such as Anatek Labs and research labs at the University of Idaho and Washington State University. Recent LCSC graduates from the Biology and Chemistry programs have found work with these employers. This equipment will allow our students to be trained in the skills these employers require and to potentially increase job opportunities for our graduates. These, and other organizations, have expressed an interest in our graduates and we would like to capitalize on this by increasing training in this skill area.

## 3. Numbers of Faculty & Students Involved

Number of faculty directly impacted: Currently, 3 faculty are actively involved in projects that involve the equipment purchased with this grant. This number is expected to increase as more faculty become involved in research projects with students.

Number of students directly impacted: This Fall semester the equipment has been used in Biochemistry (CHEM 481) impacting 27 students. It is anticipated that next semester this number will increase to include approximately 44 students in Cellular Mechanisms (BIOL 182) and 20 students in Genetics (BIOL 341). In addition some students will use the equipment for independent research projects.

#### **4. Future Plans for Project Continuation**

The instrumentation will be used on an ongoing basis in regularly scheduled courses, specifically BIOL 182, BIOL 341 and CHEM 481. In the upcoming semester (Spring 2016) the fluorescence adapters will be used in BIOL 182 allowing LCSC students to gain experience with fluorescence microscopy, a tool in common use in many diagnostic and research laboratories. This will be the first time that our students have had this opportunity.

The ability to offer a dedicated molecular skills class at LCSC has improved with the acquisition of this additional lab equipment. It is our intent to pilot such a class in academic year 2016/17. In addition the Biology faculty have begun a discussions regarding the support and interest in a medical technology program at the college.

#### **5. Final Expenditure Report**

See budget sheet below.

#### **6. Commercialization Revenue**

Not applicable

#### **7. Additional Metrics**

Not applicable

**FINAL EXPENDITURE REPORT**

<b>A. FACULTY AND STAFF</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>B. VISITING PROFESSORS</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>C. POST DOCTORAL ASSOCIATES/OTHER PROFESSIONALS</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>D. GRADUATE/UNDERGRADUATE STUDENTS</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>E. FRINGE BENEFITS</b>		
Rate of Fringe (%)	\$ Amount Requested	Actual \$ Spent
<b>PERSONNEL SUBTOTAL:</b>		
<b>F. EQUIPMENT: (List each item with a cost in excess of \$1000)</b>		
Item/Description	\$ Amount Requested	Actual \$ Spent
1. Micropipets	\$5000.00	\$3316.60
2. UV Spectrophotometers	\$12,000.00	\$9854.56
4. Fluorescence adapter	\$6,000.00	\$7137.33
5. Chemicals and consumables	\$2,000.00	\$4811.89
From LCSC funds		\$120.38
<b>EQUIPMENT SUBTOTAL:</b>		<b>\$25,000.00</b>
		<b>\$25120.38</b>
<b>G. TRAVEL</b>		
Description	\$ Amount Requested	Actual \$ Spent
1.		
2.		
3		
<b>TRAVEL SUBTOTAL:</b>		
<b>H. PARTICIPANT SUPPORT COSTS:</b>		
Description	\$ Amount Requested	Actual \$ Spent
1.		

2.			
3			
<b>PARTICIPANT SUPPORT COSTS SUBTOTAL:</b>			
<b>F. OTHER DIRECT COSTS:</b>			
Description		\$ Amount Requested	Actual \$ Spent
1.			
2.			
3.			
<b>OTHER DIRECT COSTS SUBTOTAL:</b>			
<b>TOTAL COSTS (Add Subtotals):</b>			
<b>TOTAL AMOUNT REQUESTED:</b>			\$25,000.00
<b>TOTAL AMOUNT SPENT:</b>			\$25,000.00