

CMU 2010 FY07 Annual Report

Project Title: The CMU DNA Sequencing and Analysis Core Facility (DNA-SACF)
 Project Leader: Drs. Gregory Colores and Jennifer Schisa
 Project Number: 200725 Date of Report: June 29, 2007

Refer to your *Outcome Evaluation Worksheet* to complete the information below. Insert additional rows if needed. Rows will automatically expand as you type. You are welcome to attach additional documents to supplement – but **not** substitute for - the information provided below.

	Outcome/Milestone	Status (Complete, in Progress, or Not started)	Date Measured	What are the next steps to achieving this outcome?
1	Advertise and interview for facility supervisor position.	Complete	October 2006	Received 14 applications and interviewed 4 candidates, offer was made to top choice. Offer was accepted by Dr. Janet Miller.
2	Purchase major and supporting equipment.	Complete	December 2006	Bids were solicited and preferred providers were asked to demonstrate equipment on campus. After the demonstrations, the following equipment was deemed necessary and far superior to the competitors: Gel Logic 2200 imaging system (Kodak), GenePix 4000B (Molecular Devices),.
3	Technician begins work and is trained on equipment; facility accepts samples from limited investigators for training purposes.	Complete	November 2006	Dr. Miller began working in October, In November she started accepting samples from investigators.
4	Announce opening of facility to CMU researchers and local institutions.	Complete	November 17, 2006	An open house was scheduled and held on November 17, 2006. An informational pamphlet and invitation to visit the facilities was distributed via e-mail to over 60 colleges across Michigan.
5	Biotechnology course utilizes facility by analyzing Western blots and by learning DNA sequencing and analysis.	Complete	May 2007	The four sections of Biotechnology (BIO 325) during Fall 2006 and Spring 2007 (72 undergraduate students), utilized the DNA-SACF in multiple ways. They used the Kodak GelLogic 2200 imaging system several times for

				<p>chemiluminescent detection of Western blots and UV detection of ethidium bromide gels. They also performed sequencing reactions and analyzed their results using sequence analysis software.</p> <p>Two additional courses also utilized the facility for it's DNA sequencing capabilities: Bio 544 (Developmental Biology, Fall 2006, Dr. Phil Hertzler) and BIO 597 (Microbial Diversity, Spring 2007, Dr. Peter Kourtev)</p>
6	Molecular Genetics course uses facility by doing microarray experiment.	In Progress	April 2007	<p>Dr. Jennifer Schisa has made contact with the Genome Consortium for Active Teaching (GCAT) that will facilitate implementation of microarray technology into courses and initiate the use of our microarray scanner. The GCAT Summer Microarray Workshops have a wait list, and therefore we were not able to get arrays for this year, but we plan to attend the Workshop in 2008 and incorporate microarray experiments in Molecular Genetics following the workshop. We did implement a paper-based exercise in Spring 2007, in Molecular Genetics, to illustrate the concept of microarrays to students.</p>
7	Evaluate effectiveness for 4 measures at 1-year mark to provide baseline data. These measures include: 1) Grant funding by facility users; 2) Alumni giving in support of molecular biology teaching and research; 3) student participation in molecular-based research, student presentations, and students as coauthors on publications; and 4) incorporation of cutting edge techniques in student coursework.	In Progress	June 2007	<p>1) Since the establishment of the DNA-SACF two recent grant proposals (NIH) were submitted by faculty members Michelle Steinhilb and Steven Juris. These grants are currently pending and additional ones will be submitted.</p> <p>2) Alumni support has not been directly solicited at this point. However, a research project involving a CST Outstanding Alumnus awardee (Curtis White of AEGIS Environments) is currently making use of the facility.</p> <p>3) To date, a large number of undergraduate and graduate students are using the DNA-SACF. This includes at least 17 graduate/undergraduate students from seven faculty laboratories that have used the DNA sequencing services alone. The numbers increase when considering routine users of the imaging equipment. Students and faculty have presented results obtained from facility at several national meetings within the past few months. Currently, much of this work is in preparation for publication in peer-reviewed</p>

				journals with students as coauthors. 4) See 5 and 6 above.
8	Consider purchasing additional equipment for DNA-SACF based on investigators' needs; write NSF MRI grant to fund additional equipment as needed.	Complete	February 2007	The original DNA sequencer was a single capillary ABI 310. With CST support we replaced this instrument with an ABI 3130 four capillary machine to allow greater quality of results and a higher throughput of samples. If our sequencing needs increase this instrument can be easily upgraded from 4 to 16 capillaries.
9	Evaluate effectiveness for 4 measures described above at 3-year mark to evaluate impact of facility.	In Progress		This will be evaluated in 2 years.

What are your plans for sustaining support for your project beyond the CMU 2010 funding period?

We have already taken one step towards sustaining support by expanding our DNA sequencing capacity. We acquired a DNA sequencer that has 4 times the throughput of our previous model, through generous funding from the Dean of the College of Science and Technology (see milestone 8). This makes our facility a more attractive option to on-campus users as we can process samples very rapidly. One option we briefly considered was to develop a fee structure that would bring in enough revenue to support the technician's salary. However, this would entail roughly doubling our fees and result in our users submitting samples to off-campus facilities where throughput is significantly greater, and in turn, less expensive than ours. We have begun the process of looking into grant programs that would support a core facility technician. Thus far, we have not identified any such programs; and we are not confident such a program exists. As a result, we will continue to pursue other options in consultation with our Department Chair and Dean.