

Center for Biomedical Research
Annual Report 2009-2010
Bradley J. Roth, Director, CBR
June 30, 2010

Biomedical Research is active and growing at Oakland University. In the last year, stimulus funds from the National Institutes of Health resulted in several new grants and grant supplements to OU faculty. The Oakland University Beaumont Hospital School of Medicine received preliminary accreditation from the Liaison Committee on Medical Education, and began taking applications from prospective students. Ground was broken for a new \$62-million Human Health Building. Several outstanding young faculty members were recruited and bring their biomedical research expertise to OU. The Engineering Biology undergraduate major, in its second year, has grown beyond expectations. The Center for Biomedical Research (CBR) continues to play a role in promoting and supporting biomedical research at OU. In this annual report, I describe CBR activities for the fiscal year 2009-2010.

Much of what the CBR accomplishes is reflected in its budget. Below lists how the CBR money (including the Research Excellence Fund) was spent.

• REF research awards	124,000
• Graduate student stipends	74,000
• Shared resources	64,187
• Graduate student tuition	37,303
• Director stipend and fringe benefits	18,624
• ERI SUPER program	18,000
• Quantitative biology search	9,790
• CO ₂ , liquid N ₂ , and biosafety cabinets	2,900
• CBR festival	336
• Other	
Total	349,140

The source of these funds is the 250,000 REF funding, the CBR operating account (approximately 55,000), and the CBR gift fund (57,200), plus a small carryover from last year.

Graduate student support (stipend and tuition) for the Biomedical Sciences graduate programs represented about one third of the total budget (\$111,303). This was a significantly smaller percentage than last year, when about half the budget was for grad student support, in part because the tuition of two PhD students was paid by the Research Office through their Graduate Research Assistant Tuition (GReAT) program. Graduate students supported by the CBR are:

- Joyothi Digamaranath, Health and Environmental Chemistry
- Scott Hopkins, Medical Physics

- Yan Li, Health and Environmental Chemistry
- Daniel Mittelstaedt, Medical Physics
- Two MS students, Department of Biological Sciences

The largest single expense arose from the competition for REF funds that was held in the winter. Funding decisions were made by an ad hoc committee consisting of myself plus Arik Dvir, Art Bull, and Shravan Chintala. Faculty who were supported are:

• Ferman Chavez (Dept Chemistry)	10,000
• John Finke (Dept Chemistry)	18,000
• Chhabi Govind (Dept Biological Sciences)	18,000
• Lan Jiang (Dept Biological Sciences)	15,000
• Ken Mitton (Eye Research Institute)	18,000
• Mike Sevilla (Dept Chemistry)	15,000
• Susmit Suvas (Dept Biological Sciences)	15,000
• Doug Wendell (Dept Biological Sciences)	15,000
Total	124,000

These funds were awarded to help these faculty members perform their research, with the goal of stimulating external research grant proposals. One of my greatest regrets as CBR director last year was the slowness of getting REF funds distributed to researchers, caused by issues related to moving funds in and out of general funds accounts. Some researchers did not have access to funds until late summer. With help from CAS Assistant Dean Steven Meyer, I think we have these problems resolved this year.

The CBR also held a competition for funding of shared resources, with the goal of improving the infrastructure for biomedical research at OU. Funded shared resources were

• TEM Service Contract (Eye Research Institute)	15,000
• Cell Culture Incubators (Dept Chemistry)	9,360
• Purified Water Systems (Dept Biological Sciences)	39,827
Total	64,187

Because these resources are purchased by the CBR, they are available (within reason) to biomedical researchers throughout OU. Paying for these shared resources required a significant fraction of the CBR Gift Fund. This use of these funds had the advantage of improving OU's research environment. However, money in the gift fund is difficult to replace, and it reduces the emergency backup funds available in the future. I do not expect the CBR will be able to maintain this year's level of support in future years, because the Gift fund will be depleted.

Let me provide a few comments on the remaining expenses. Traditionally, the ERI's Summer Undergraduate Program in Eye Research (SUPER) is supported by 15,000 from the CBR. Because the SUPER student stipend had not been increased for many years and was below other similar undergraduate research programs, I decided to increase this support to 18,000. I continued the past practice of paying for liquid nitrogen, carbon dioxide, and recertification of biosafety cabinets in the Departments of Biological Sciences and Chemistry. The CBR Research festival was supported jointly with the OU chapter of Sigma Xi this year, so it was relatively inexpensive for the CBR. The expenses for the Quantitative Biology faculty search are discussed below.

One of the most noteworthy accomplishments of the CBR was the awarding of a P30 grant by the National Institutes of Health to establish a Core Center in Quantitative Biology (5P30EB011339, 9/30/2009-8/31/2011, 722,226, PI: Roth). In the fall, we conducted a search for a new faculty member. The search committee consisted of myself as chairperson, Arik Dvir (Dept Biological Sciences), Meir Shillor (Dept Mathematics and Statistics), Fatma Mili (Dept Computer Science and Engineering) and Darrin Hanna (Dept Electrical and Computer Engineering), with a representative from the College of Arts and Sciences Dean's Office (Assoc Dean Kathy Moore) and from the School of Engineering Dean's Office (Assoc Dean Bhushan Bhatt). The search committee reviewed over 65 applicants, and in November conducted phone interviews of the top ten candidates. Five candidates were then chosen for on-site interviews in late November and early December. After completing the interviews, the committee selected its top candidate: Dr. Libin Rong of the Los Alamos National Laboratory. In late December, Rong accepted OU's offer, and he began work in the Department of Mathematics and Statistics on January 1, 2010. Rong is an expert in theoretical immunology, with particular expertise in studying HIV infection. The Core Center also funded three lectures on Quantitative Biology during the 2010 winter semester:

- Igor Aronson (Northwestern Univ) discussed the Viscosity of a Suspension of Swimming Bacteria
- Shyamal Peddada (NIEHS) described Constrained Inference in Gene Expression Analysis
- Wolfgang Losert (Univ Maryland) talked about the Collective Dynamics of Cell Groups.

The CBR incurred several expenses related to the Quantitative Biology faculty search. Unexpectedly, recruitment costs were not allowed to be taken off the NIH grant budget, and these costs were paid by the CBR, including 1180 for meals with candidates and OU faculty during the on-campus interviews, 4444 for interview travel expenses (mainly airfare, lodging, and limo service to the airport), 3227 for advertizing of the position (most of this cost was for an ad in Science magazine), and 306 for refreshments during the interview talks. The CBR also paid

633 for a second visit by Rong in January to complete his paperwork and initiate his employment (as required by his offer letter). I expect to recover some of these expenses by using a share of the indirect costs from the P30 award to pay for CBR expenses, once they are available.

I maintain the News section of the CBR website (www.oakland.edu/cbr), which highlights the many accomplishments of OU biomedical researchers. My goal is to make the CBR News a way that people both in and out of OU can keep track of research accomplishments. Over the year, an average of one to two news items were posted each week. You can get an RSS feed of the CBR News to your news aggregator (I follow it on my iGoogle page). Also, the CBR now has a facebook page where you can keep up with the latest events and announcements. As always, contact me if you wish to be put on (or taken off) the CBR email list.

The requirements for membership in the CBR are 1) at least an average of one biomedical publication per year over the last three years, 2) either current external support for research or at least one biomedical grant proposal per year over the last three years, and 3) at least one year working at OU. The full list of members can be found at the CBR website (www.oakland.edu/cbr). Two faculty members were added as members this year:

- Lakshmi Raman (Dept Psychology)
- Evgeniy Khain (Dept Physics)

The CBR will nominate new members at any time, so please feel free to nominate faculty members who qualify.

The CBR and the OU chapter of Sigma Xi jointly sponsored a Biomedical Research Festival on April 5, 3-4 pm in the Banquet room of the OC, just before the Sigma Xi Annual Lecture. Winners of the student poster competition were first place (tie): Brandon Twady and Rudragouda Channapanavar, third place: Dina Elhout. The poster competition was a success, largely because of the generous assistance of our judges. However, the one hour allotted for judging the posters proved insufficient for a complete and thorough questioning of every student, and next year I will either provide more time or recruit more judges.

Numerous other activities during the 2009-2010 academic year are listed below. The CBR

- Published a brochure, paid for and prepared by the Provost's Office and the Research Office, describing the CBR and featuring one-page articles about 21 CBR members. Special thanks to Sue Willner of the Research Office for her assistance.

- Submitted a proposal to the NSF to support “Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences” (Solicitation 08-510). Arik Dvir and Meir Shillor assisted me in preparing the proposal.
- Gave the opening remarks at the SIBHI (Summer Institute for Bioengineering and Health Bioinformatics) Diversity in Bioengineering Day, at Meadow Brook Hall.
- Participated--along with David Felton, TC Yih, and Robert Folberg--in the research part of the LCME site visit for accreditation of the Oakland University William Beaumont School of Medicine.
- Provided pre-peer review for two external proposals.
- Met with three candidates for the Chair of the Psychology Department.
- Led a tour of OU Biomedical Facilities for State Legislatures following a meeting of the Biosciences Sub-Committee of the New Economy and Quality of Life Committee of the Michigan House of Representatives held at Meadow Brook Hall.
- Met with five candidates for the Engineering Biology faculty position in the Department of Biological Sciences.
- Participated in the preparation of a NSF proposal “IGERT: Integrative Graduate Training in Biomedical Engineering and Bio-inspired Systems” to get funding for graduate research (PI: Nilesh Patel of the Dept Computer Science and Engineering)
- Attended the MichBio 2010 Annual Business Meeting and Showcase in Grand Rapids with Arik Dvir.

Finally, and most importantly, OU biomedical researchers had a number of noteworthy accomplishments this year. An extensive (but by no means complete) list can be found in the News section of the CBR website. One goal of the CBR is to promote and support external funding of research, particularly from the National Institutes of Health. The NIH budget was increased in 2009-2010 because of the stimulus money. While this led to a spike in NIH funding at OU and across the nation, I fear funding will become much more difficult to obtain once the stimulus ends. We must prepare for difficult times. Funding statistics are published by NIH on their RePORT website (<http://projectreporter.nih.gov/reporter.cfm>). A list of current NIH grants to OU faculty is shown at the end of this report.

Future goals for the CBR include 1) establishing an internal executive board, so OU faculty members can play a more active role in directing CBR activities (and providing me in invaluable advice), 2) finding external funds to support graduate student education at OU, and 3) updating the research equipment list on the CBR website (I have been procrastinating on this chore for over a year now). Faculty members should feel free to contact me with ideas and requests at any time. I cannot promise that I can fulfill all requests, but I will do my best. Finally, I would like to thank OU biomedical researchers for their support and encouragement during my first full year on the job as director of the CBR.

Brad Roth

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Project Number	Sub #	Project Title	Contact Principal Investigator	Organization	FY	Admin IC	Funding IC	FY Total Cost by IC
4R00HL091177-02		PHYSIOLOGICAL ROLE OF ACTIVATION OF THE JAK/STAT PATHWAY IN HYPERTENSION	BANES-BERCELLI, AMY	OAKLAND UNIVERSITY	2009	NHLBI	NHLBI	\$242,943
1R01EY017853-01A2		PROTEASES IN IOP-MEDIATED GLAUCOMATOUS DAMAGE	CHINTALA, SHRAVAN K	OAKLAND UNIVERSITY	2009	NEI	NEI	\$370,000
5R01EY002027-33		PROTEINS OF NORMAL AND CATARACTOUS LENSES	GIBLIN, FRANK JOSEPH	OAKLAND UNIVERSITY	2010	NEI	NEI	\$393,563
3R01EY002027-32S1		PROTEINS OF NORMAL AND CATARACTOUS LENSES	GIBLIN, FRANK JOSEPH	OAKLAND UNIVERSITY	2009	NEI	OD	\$28,937
5R01EY013246-08		MOLECULAR SCAFFOLDING FOR PHOTORECEPTOR OUTER SEGMENT STRUCTURE AND RENEWAL	GOLDBERG, ANDREW FX	OAKLAND UNIVERSITY	2009	NEI	NEI	\$360,138
3R01EY013246-07S1		MOLECULAR SCAFFOLDING FOR PHOTORECEPTOR OUTER SEGMENT STRUCTURE AND RENEWAL	GOLDBERG, ANDREW FX	OAKLAND UNIVERSITY	2009	NEI	NEI	\$21,161
1R15ES016856-01A1		ARSENIC ACCUMULATION BY AQUAGLYCEROPORINS AND PHOSPHATE TRANSPORTERS IN ZEBRAFISH	LIU, ZIJUAN	OAKLAND UNIVERSITY	2009	NIEHS	NIEHS	\$222,000
3R15ES016856-01A1S2		ARSENIC ACCUMULATION BY AQUAGLYCEROPORINS AND PHOSPHATE TRANSPORTERS IN ZEBRAFISH	LIU, ZIJUAN	OAKLAND UNIVERSITY	2009	NIEHS	NIEHS	\$15,700
3R01EY014626-04S1		COORDINATION OF GENE EXPRESSION IN RETINAL DEVELOPMENT	MITTON, KENNETH PATRICK	OAKLAND UNIVERSITY	2009	NEI	NEI	\$15,700
1R15HD058303-01A1		BELIEFS ABOUT THE ROLE OF NUTRITION ON MIND-BODY INTERACTIONS	RAMAN, LAKSHMI	OAKLAND UNIVERSITY	2009	NICHD	NICHD	\$222,000
1P30EB011339-01		CORE CENTER FOR QUANTITATIVE BIOLOGY	ROTH, BRADLEY JOHN	OAKLAND UNIVERSITY	2009	NIBIB	NIBIB	\$386,113
5R01EB008421-03		MAGNETO-ACOUSTIC EFFECTS IN IMAGING	ROTH, BRADLEY JOHN	OAKLAND UNIVERSITY	2010	NIBIB	NIBIB	\$96,562
3R01EB008421-02S1		MAGNETO-ACOUSTIC EFFECTS IN IMAGING	ROTH, BRADLEY JOHN	OAKLAND UNIVERSITY	2009	NIBIB	NIBIB OD	\$7,850 \$7,850
3R01EB008421-02S2		MAGNETO-ACOUSTIC EFFECTS IN IMAGING	ROTH, BRADLEY JOHN	OAKLAND UNIVERSITY	2009	NIBIB	NIBIB	\$154,277
5R01CA045424-23		MECHANISMS FOR RADIATION DAMAGE TO DNA: LET EFFECTS	SEVILLA, MICHAEL DOUGLAS	OAKLAND UNIVERSITY	2010	NCI	NCI	\$209,971
1R21EY020625-01		ROLE OF CORNEAL NEUROPEPTIDES IN THE PATHOGENESIS OF HERPETIC STROMAL KERATITIS	SUVAS, SUSMIT	OAKLAND UNIVERSITY	2010	NEI	NEI	\$217,962
1RC1RR030293-01		DNA MARKERS FOR FAST PLANTS TO TEACH SCIENTIFIC THINKING	WENDELL, DOUGLAS L et al.	OAKLAND UNIVERSITY	2009	NCRR	OD	\$136,838
1R01EY018568-01A2		PHOTORECEPTOR CELL VULNERABILITY AND GLUTATHIONE STATUS	WINKLER, BARRY S.	OAKLAND UNIVERSITY	2009	NEI	NEI	\$359,920
5R01AR045172-10		QUANTITATIVE MOLECULAR IMAGING IN ARTICULAR CARTILAGE	XIA, YANG	OAKLAND UNIVERSITY	2009	NIAMS	NIAMS	\$381,880
5R01AR052353-03		ADAPTABILITY OF ARTICULAR CARTILAGE TO EXTERNAL LOADING BY MICROSCOPIC IMAGING	XIA, YANG	OAKLAND UNIVERSITY	2010	NIAMS	NIAMS	\$446,742
1R21EB0009513-01A1		SCFV PIEZOIMMUNOSENSOR DETECTION OF THERAPEUTIC ANTIBODIES IN HUMAN SERUM	ZENG, XIANGQUN	OAKLAND UNIVERSITY	2010	NIBIB	NIBIB	\$231,627
1R21OH009099-01A2		IONIC LIQUID GAS SENSORS FOR DETECTION OF FLAMMABLE GASES IN WORKPLACE	ZENG, XIANGQUN	OAKLAND UNIVERSITY	2009	NIOSH		

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