

Center for Biomedical Research  
Annual Report 2010-2011  
Bradley J. Roth, Director, CBR  
June 30, 2011

*Introduction*

In this annual report, I describe the activities of Oakland University's Center for Biomedical Research during the fiscal year 2010-2011. This was an unusual year for me, because in addition to my role as director of the CBR, I took on the job of Interim Vice Provost for Research (effective August 16, 2010). Although the budgets for the CBR and the Research Office are separate, I found that the duties of the two positions often overlapped. As I write this report, we hope to have a new Vice Provost for Research begin at OU on August 15, 2011.

The CBR's budget is the best indicator of how it supports biomedical research. Below I list how the CBR money (including the Research Excellence Fund, REF) was spent.

• REF research awards	150,000
• Graduate student stipends	75,500
• Shared resources	38,000
• ERI SUPER program	18,000
• Graduate student tuition	17,837
• CO <sub>2</sub> , liquid N <sub>2</sub> , and biosafety cabinets	3,790
• Director stipend and fringe benefits	3,104
• 2010 Stem Cell World Summit	2,925
• Other	511
Total	\$309,667

The source of these funds is the \$258,558 REF funding, the CBR operating account with \$56,137, and the CBR gift fund. In addition, we transferred \$6000 from the overhead account of the NIH P30 Core Center grant to the CBR account, to cover some of the expenses from the quantitative biology search discussed in last year's annual report. We managed to avoid dipping into the gift fund last year--in part because some of last year's expenses were delayed until after this year's funds had arrived--but we used \$22,573 this year. The gift fund started at \$57,205 and closed with \$35,594 (included in the balance is a few hundred dollars of gifts this year). When describing these transactions, I write "we" because Assistant Dean Steven Meyer of the College of Arts and Sciences provided invaluable assistance with managing the CBR accounts. His help allowed me to avoid hiring an administrative assistant, which increased the funds available to directly support research at OU.

### *Graduate Student Support*

Graduate student support (stipend and tuition) for the Biomedical Sciences graduate program is an important item supported by the CBR. Typically six graduate students are supported (a stipend of \$7000/semester, plus tuition), two in each specialization of the Biomedical Sciences PhD program. Two PhD students were supported in both the Department of Physics and the Department of Chemistry. However, this year the Department of Biological Sciences chose to use these funds to support three masters students, which is about the same cost. This year the total tuition costs for these students amounted to \$56,753. However, the research office covered about two thirds of these costs through the Graduate Research Assistant Tuition (GReAT) program (\$38,916), so that the CBR only had to spend \$17,837 for tuition. The amount paid for stipends for the students was \$75,500, so that the total cost for graduate student support was \$93,337. Graduate students supported by the CBR were:

- Elizabeth Donovan, Health and Environmental Chemistry
- Jyothi Digambaranath, Health and Environmental Chemistry
- Daniel Mittelstaedt, Medical Physics
- Joshua Kim, Medical Physics
- Ekaterina Iordanou, Department of Biological Sciences
- Christina McKee, Department of Biological Sciences
- Joseph Nett, Department of Biological Sciences

Mittelstaedt, working with CBR member Yang Xia, published "Depth-Dependent Anisotropies of Amides and Sugar in Perpendicular and Parallel Sections of Articular Cartilage by Fourier Transform Infrared Imaging," *Microscopy Research and Technique*, vol. 74, pp. 122-132, 2011. Digambaranath, who works with CBR member John Finke, was particularly productive, with two papers this year: "An Accurate Model of Polyglutamine," *Proteins-Structure Function and Bioinformatics*, vol. 79, pp. 1427-1440, 2011; and "Effects of External Beam Radiation on In Vitro Formation of Abeta1-42 Fibrils and Preformed Fibrils," *Radiation Research*, vol. 175, pp. 375-381, 2011.

### *REF Research Awards*

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. The following faculty were supported:

- |  |        |
|--|--------|
| • Keith Williams (Dept Psychology)         | 18,000 |
| • Chhabi Govind (Dept Biological Sciences) | 18,000 |
| • Dao-Qi Zhang (Eye Research Institute)    | 18,000 |
| • John Finke (Dept Chemistry)              | 15,000 |
| • Andrew Goldberg (Eye Research Institute) | 15,000 |

• Ken Mitton (Eye Research Institute)	12,500
• Lan Jiang (Dept Biological Sciences)	12,500
• Shailesh Lal (Dept Biological Sciences)	11,000
• Sumi Dinda (School of Health Sciences)	7,500
• Nessian Kerrigan (Dept Chemistry)	7,500
Total	135,000

The award to Williams was the first CBR funds used to support the Department of Psychology. The funds were awarded to help these faculty members perform their research, with the goal of stimulating external research grant proposals. In addition, a few proposals were left by the committee to my discretion and were funded. These primarily involve joint projects between engineering faculty and faculty from other schools. For instance, the proposal listed in the table above under Shailesh Lal’s name was actually a joint project between Lal in the College of Arts and Sciences and Fatma Mili in the School of Engineering and Computer Science (SECS). In August I allocated \$5000 to support a joint project between Hongwei Qu (SECS) and Cheryl Riley-Doucet of the School of Nursing (SON). I provided these funds outside the usual review procedure because the next competition for REF funds was not for many months but the support was needed immediately, and because the SON had never obtained CBR support before and I believed their first request should be awarded if possible. At my suggestion, Qu and Riley-Doucet applied through the normal REF proposal procedure and obtained an additional \$5000 (for a total of \$10,000 to support their project). Finally, Osamah Rawashdeh (SECS) submitted a joint proposal with Marisa Ferrari (SON) and Barbara Harrison (SON). Dean Chamra (SECS) and I came up with a plan in which this project was supported with \$10,000 from SECS, \$5000 from SON, and \$5000 from the CBR. Therefore, the total REF funds used to support individual research projects was \$150,000.

#### *Shared Resources*

Two other investments were made in OU’s research infrastructure, which I will categorize as “shared resources” although this may not be the most appropriate term in these cases. First, Yang Xia’s magnetic resonance imager began burning off large quantities of helium in the fall as it neared the end of its useful life. An arrangement was crafted in which the CBR provided \$34,000 toward the purchase of a new magnet (in addition, \$34k was supplied by the Provost, \$34k by the Dept of Physics, and \$10k by the College of Arts and Sciences). I allocated these funds without going through the usual REF review procedure because the magnet was needed immediately, Yang Xia has more NIH funding than anyone else on campus (two R01 grants), and physics had not gotten any REF funds (other than graduate student support) since I became CBR director in 2008. This new magnet is now up and operational, allowing Xia and his team to continue their research.

Last year, \$15,000 of REF funds were allocated to support the service contract for the transmission electron microscope located in the Eye Research Institute. Over the last 12 months, the ERI has begun to charge for TEM imaging, thereby receiving income to cover maintenance costs. Nevertheless, the ERI still fell

short of the needed funds, so this year \$4000 was provided by the CBR to support the service contract.

Three major investments in the biomedical research infrastructure were not supported by CBR or REF funds, but are noted here because they do improve the biomedical research environment. First, the Biomedical Research Support Facility needed construction to upgrade its biocontainment suite. Between Facilities Management and the Provost's Office, approximately \$200,000 was allocated for this much-needed project (which is now complete). In the spring, the Department of Chemistry's liquid scintillation counter broke down, leaving OU with just one such radiation detector located in the Eye Research Institute. Nearly \$30,000 was provided by the Research Office to purchase a new counter. Finally, a third round of OU-Beaumont grants (approximately \$200,000) were awarded this year, for the purpose of encouraging collaborative projects between the two institutions.

#### *Other Budget Items*

The CBR was able to spend less money this year on the director's stipend. When I accepted the Interim Vice Provost for Research position, I was changed to an administrative 12-month pay plan, and the salary was adjusted to take into account my CBR director duties. Thus, the net effect was to save the CBR from having to pay for my stipend (except for July and August).

The CBR supported the Eye Research Institute's Summer Undergraduate Program in Eye Research (SUPER) again this year, allocating \$18,000. This successful program has resulted in some remarkable students, including Wojciech Gryc, who won a prestigious scholarship to the University of Michigan Medical School, and Tenira Townsend, who was awarded a Chancellor's Graduate Fellowship from Washington University in St. Louis to pursue a PhD in biochemistry.

I continued the past practice of the CBR paying for liquid nitrogen, carbon dioxide, and recertification of biosafety cabinets in the Departments of Biological Sciences and Chemistry, totaling about \$3800.

The 2010 Stem Cell World Summit was held in Detroit, Michigan on October 4-6. The CBR supported the registration fee (\$225/student) of 13 students who attended this meeting. The establishment of the Oakland University William Beaumont Institute for Stem Cell and Regenerative Medicine was announced at the summit. The goal of this sister organization to the CBR is to engage in both basic and translational stem cell research, seeking to generate knowledge and insight with the potential to change human lives for the better.

About \$500 of miscellaneous (other) expenses were related to costs of the CBR festival (see below), and some NIH P30 Core Center expenses that were not allowable on the federal grant (mostly meals) but were incurred before I had access to the overhead funds from that award.

## *CBR Activities*

I maintain the News section of the CBR website ([www.oakland.edu/cbr](http://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 our many 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 I write this, a total of 61 people have “liked” the facebook page.

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](http://www.oakland.edu/cbr)). Four faculty members were added as members this year:

- Chhabi Govind (Dept Biological Sciences)
- Jiang Lan (Dept Biological Sciences)
- Libin Rong (Dept Mathematics & Statistics)
- Mohammad-Reza Siadat (Dept Computer Science and Engineering)

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

Other CBR events include:

- On October 12, the Oakland University Student Congress held a golf benefit to support the CBR at the Katke-Cousins golf course. Student Services Director Brett McIsaac organized the event, and about 16 people showed up, including President Russi. I shared a golf cart with Associate Dean Kathy Moore, and we tore up the links (literally). The event raised \$250 to support biomedical research at OU.
- Arik Dvir and I attended the Michbio expo in Ypsilanti on Wed, October 27. The CBR was featured in the Fall 2010 issue of the Michbio magazine “BioMatters”.
- The Sigma Xi/CBR poster session was held April 8, 2:30-3:30 in the hallway outside of 190 HHS. All CBR members were asked to serve as judges this year, and the faculty/student interaction was impressive (and noisy). The student winners were: first place, Kasia Pawelek; second place tie, Cory Rice and Marla Spain. At 4 pm, Peter Basser, from the National Institutes of Health, gave the Sigma Xi annual lecture about Diffusion Tensor Imaging.
- I attempted for a second time to get OU on the list of schools that can submit nominations for the PEW and Searle new faculty awards. Unfortunately, I again was unsuccessful, despite providing a more comprehensive description of OU’s biomedical research activities this time.
- I arranged for the review of one proposal through the CBR “pre-peer review” program. I continue to encourage the use of this program, but few take advantage of it.

- I participated in the selection of the first winner of the Kenny Fellowship in Biomedical Sciences, which was awarded by the College of Arts and Sciences to a top graduate student in the Biomedical Sciences PhD program. The fellowship was awarded to Elizabeth Donovan of the Department of Chemistry, who works with Assistant Professor Greg Felton. Donovan was supported by REF funds this year, and her tenure as the Kenny Fellow will be next year. The fellowship resulted from the generosity of Michael Kenny (CAS '78) who gave the funds for this award.
- I took part in many other activities this year (including visiting with candidates in various searches, attending meetings, etc.). During these activities it was particularly difficult to separate my CBR duties from the Interim Vice Provost for Research duties.

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 remained high because of the ARRA (stimulus) funds, but the funding rate for new NIH awards is back to being low, and I worry it will go even lower as congress attempts to balance the federal budget. 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.

As I repeatedly remind people, the primary goal of the REF awards is to support researchers seeking external funding. We have had some success on this front in the last few years. CBR member Susmit Suvas, of the Department of Biological Sciences, was awarded an R21 grant from NIH after receiving REF support last year. CBR member Xiangqun Zeng, of the Department of Chemistry, also was awarded an NIH R21 grant after obtaining REF funds in 2008-2009. And I have heard recently that CBR member Chhabi Govind expects to be awarded an R01 grant from NIH this fall, after getting REF funds last year. Many other grant proposals have been submitted containing preliminary data obtained using REF support. Our plan seems to be working.

Despite concerns about the level of NIH funding nationwide, I remain optimistic about biomedical research at OU. The first class of students arrives this August for the Oakland University William Beaumont School of Medicine. My Vice Provost for Research office in Wilson Hall has a stunning view of the new Human Health Building, set to open in fall 2012, which will house the School of Nursing and the School of Health Sciences. The Engineering Biology program, now three years old, continues to grow, and state funding for a new Engineering Building has been approved. The Biomedical Research Support Facility received AAALAC accreditation a year ago, and is operating at full capacity. Our partnership with Beaumont Hospitals continues to strengthen, particularly with our joint stem cell institute. Most importantly, we have outstanding young faculty who I believe will be the future stars at OU. All this, despite a horrible economic environment and budget cuts to public universities.

I believe that serving temporarily as Interim Vice Provost for Research has taught me a lot, and will make me a better director of the CBR. I thank OU biomedical researchers for their support and encouragement during this year, and look forward to new successes in the future.

*Brad Roth*

U. S. Department of Health & Human Services

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Project Number	Sub #	Project Title	Contact Principal Investigator	Organization	FY	Admin IC	Funding IC	FY Total Cost by IC
<input type="checkbox"/> 5R00HL081177-03		<a href="#">PHYSIOLOGICAL ROLE OF ACTIVATION OF THE JAK/STAT PATHWAY IN HYPERTENSION</a>	<a href="#">BANES, BERCELL AMY</a>	OAKLAND UNIVERSITY	2010	NHLBI	NHLBI	\$242,943
<input type="checkbox"/> 5R01EY017853-02		<a href="#">PROTEASES IN IOP-MEDIATED GLAUCOMATOUS DAMAGE</a>	<a href="#">CHINTALA, SHRAVAN K</a>	OAKLAND UNIVERSITY	2010	NEI	NEI	\$370,000
<input type="checkbox"/> 1S10RR028546-01		<a href="#">FLUORESCENCE MICROSCOPE APPLICATION</a>	<a href="#">GIBLIN, FRANK JOSEPH</a>	OAKLAND UNIVERSITY	2010	NCRR	NCRR	\$107,845
<input type="checkbox"/> 5R01EY002027-34		<a href="#">PROTEINS OF NORMAL AND CATARACTOUS LENSES</a>	<a href="#">GIBLIN, FRANK JOSEPH</a>	OAKLAND UNIVERSITY	2011	NEI	NEI	\$389,032
<input type="checkbox"/> 5R01EY002027-33		<a href="#">PROTEINS OF NORMAL AND CATARACTOUS LENSES</a>	<a href="#">GIBLIN, FRANK JOSEPH</a>	OAKLAND UNIVERSITY	2010	NEI	NEI	\$393,563
<input type="checkbox"/> 5R01EY013246-09		<a href="#">MOLECULAR SCAFFOLDING FOR PHOTORECEPTOR OUTER SEGMENT STRUCTURE AND RENEWAL</a>	<a href="#">GOLDBERG, ANDREW FX</a>	OAKLAND UNIVERSITY	2010	NEI	NEI	\$356,536
<input type="checkbox"/> 5R01EB008421-04		<a href="#">MAGNETO-ACOUSTIC EFFECTS IN IMAGING</a>	<a href="#">ROTH, BRADLEY JOHN</a>	OAKLAND UNIVERSITY	2011	NIBIB	NIBIB	\$92,815
<input type="checkbox"/> 5P30EB011339-02		<a href="#">CORE CENTER FOR QUANTITATIVE BIOLOGY</a>	<a href="#">ROTH, BRADLEY JOHN</a>	OAKLAND UNIVERSITY	2010	NIBIB	NIBIB	\$336,113
<input type="checkbox"/> 5R01EB008421-03		<a href="#">MAGNETO-ACOUSTIC EFFECTS IN IMAGING</a>	<a href="#">ROTH, BRADLEY JOHN</a>	OAKLAND UNIVERSITY	2010	NIBIB	NIBIB	\$96,562
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<input type="checkbox"/> 5R01CA045424-23		<a href="#">MECHANISMS FOR RADIATION DAMAGE TO DNA: LET EFFECTS</a>	<a href="#">SEVILLA, MICHAEL DOUGLAS</a>	OAKLAND UNIVERSITY	2010	NCI	NCI	\$209,971
<input type="checkbox"/> 5R21EY020625-02		<a href="#">ROLE OF CORNEAL NEUROPEPTIDES IN THE PATHOGENESIS OF HERPETIC STROMAL KERATITIS</a>	<a href="#">SUJAS, SUSMIT</a>	OAKLAND UNIVERSITY	2011	NEI	NEI	\$177,600
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<input type="checkbox"/> 5R01RR030293-02		<a href="#">DNA MARKERS FOR FAST PLANTS TO TEACH SCIENTIFIC THINKING</a>	<a href="#">WENDELL, DOUGLAS J et al.</a>	OAKLAND UNIVERSITY	2010	NCRR	OD	\$128,217
<input type="checkbox"/> 5R01EY018568-02		<a href="#">PHOTORECEPTOR CELL VULNERABILITY AND GLUTATHIONE STATUS</a>	<a href="#">WINKLER, BARRY S.</a>	OAKLAND UNIVERSITY	2010	NEI	NEI	\$349,089
<input type="checkbox"/> 5R01AR052353-04		<a href="#">ADAPTABILITY OF ARTICULAR CARTILAGE TO EXTERNAL LOADING BY MICROSCOPIC IMAGING</a>	<a href="#">XIA, YANG</a>	OAKLAND UNIVERSITY	2011	NIAMS	NIAMS	\$412,310
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<input type="checkbox"/> 1R21EB009513-01A1		<a href="#">SCFV PIEZOIMMUNOSENSOR DETECTION OF THERAPEUTIC ANTIBODIES IN HUMAN SERUM</a>	<a href="#">ZENG, XIANGQUN</a>	OAKLAND UNIVERSITY	2010	NIBIB	NIBIB	\$231,627
<input type="checkbox"/> 5R21OH009099-02		<a href="#">IONIC LIQUID GAS SENSORS FOR DETECTION OF FLAMMABLE GASES IN WORKPLACE</a>	<a href="#">ZENG, XIANGQUN</a>	OAKLAND UNIVERSITY	2010	NIOSH	NIOSH	\$180,670

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