

Center for Biomedical Research  
Annual Report 2015-2016  
Bradley J. Roth, Director  
June 30, 2016

*Introduction*

The mission of the Center for Biomedical Research is to vigorously promote and support biomedical research and education at Oakland University. The CBR is generously funded, and my goal is to make sure those funds are used strategically to strengthen OU's biomedical research effort. Researchers at OU compete head-to-head with scientists from throughout the nation for scarce funding. Their success is primarily a result of their skill and diligence, but also reflects OU's decision to invest in this vitally important effort.

A vibrant biomedical research enterprise provides extraordinary opportunities for undergraduate and graduate students. Oakland faculty members and their students are studying devastating illnesses including Alzheimer's disease, cancer, heart disease, stroke, and blindness. I am proud of their accomplishments.

*Budget*

Below I list how the CBR spent its funds this year.

• REF awards	175,592
• Graduate student stipends	61,994
• Director stipend	26,019
• SUPER	18,000
• MRI probe	9,768
• Microinjector	9,320
• Graduate student tuition	7,215
• Spectrograph	5,000
• Gasses/Biosafety cabinet	4,037
• Electron microscope maintenance	3,500
• Ice machine	3,300
• Psychology conference	2,000
• Student publication costs	1,000
• Sigma Xi student travel	874
• WISE@OU/CBR events	687
• CBR festival	411
• Microscopy meeting student registration	350
• Biology grad event	229
• Philosophy seminar	100
Total	\$329,396

The source of these funds is the \$270,183 Research Excellence Fund plus the \$58,309 CBR operating account (total of \$328,492). I thank Assistant Dean Laura Culbert of the College

of Arts and Sciences and Sally Daniel from the Department of Physics for helping me keep track of all this money.

The CBR gift fund contains \$33,212. The increase from last year reflects donations of over \$4500. Anyone wishing to support biomedical research at OU is welcome to donate to the CBR. If the gift is through OU's All University Fund Drive, it will be matched by the president's office 50 cents to the dollar.

#### *REF Research Awards*

By far the largest item in the CBR budget is the Research Excellence Fund awards. The awards for 2016-2017 are:

Andrew Goldberg	ERI	12,785
Amy Banes-Berceli	Biol	15,000
Fabia Battistuzzi	Biol	7,500
Sara Blumer-Schuetz	Biol	12,000
Sheldon Gordon	Biol	6,959
Chhabi Govind	Biol	18,000
Lan Jiang	Biol	18,000
Shailesh Lal	Biol	12,000
Doug Wendell	Biol	3,000
Randy Westrick	Biol	18,048
Roman Dembinski	Chem	18,300
Xiangqun Zeng	Chem	13,000
Yang Xia	Phys	14,000
Sumi Dinda	SHS	7,000
Total		175,592

The goal of making these awards is to catalyze external grant proposals, especially to the National Institutes of Health. In some cases bridge funding goes to established researchers between NIH grants, and in other cases seed money supports young researchers aiming for their first NIH grant. Biomedical research is expensive and NIH grant proposals that lack preliminary data are rarely funded. Without this money, OU researchers would be handicapped in the hypercompetitive world of NIH funding.

#### *Graduate Student Support*

The CBR supports graduate students in the PhD programs in Biological and Biomedical Sciences, in Health and Environmental Chemistry, and in Medical Physics. This year, the Research Excellence Fund paid \$56,000 in stipends plus fringe benefits to support four students in the Departments of Physics and Chemistry (see table on next page). The Department of Biology chose to not use CBR support for its students during the academic year, but did use CBR funds to partially support two students in the summer of 2016, bringing the total stipend cost to \$61,994. The tuition cost was ultra low this year, \$7215, because biology charged no tuition expenses, the two medical physics students each

needed only 1 credit per semester, and the chemistry students were covered by the Graduate Research Assistant Tuition (GReAT) program administered by the Office of Research Administration. I thank Vice Provost for Research Arik Dvir and Business Manager Jean Miao for the GReAT support. The low tuition costs allowed the CBR to divert funds to address other critical needs.

Student	Department	Mentor	Publications
Daniel Mittelstaedt	Physics	Yang Xia	Mittelstaedt D, Xia Y (2015) Depth-dependent glycosaminoglycan concentration in articular cartilage by quantitative contrast-enhanced micro-computed tomography. <i>Cartilage</i> , <b>6</b> :216-225.
Nicholas Charteris	Physics	Evgeniy Khain	
Lu Lin	Chemistry	Xiangqun Zeng	Lin L, Rehman A, Chi XW, Zeng XQ (2016) 2,4-toluene diisocyanate detection in liquid and gas environments through electrochemical oxidation in an ionic liquid. <i>Analyst</i> , <b>141</b> :1519-1529.
Nicholas Peraino	Chemistry	Nessan Kerrigan	

#### *Shared Resources*

Spending on infrastructure is rarely exciting, but is essential for creating an environment in which our researchers can flourish. The shared resources include

- \$9768 for a magnetic resonance imaging probe to be used in the Bennett NMR facility.
- \$9320 for microinjection equipment for CRISPR/CAS mutagenesis.
- \$5000 for a Cary 100 UV-Visible spectrophotometer.
- \$4037 for the annual biosafety cabinet recertification and for gasses, such as carbon dioxide, used in experiments.
- \$3500 toward the maintenance contract for the electron microscope in the Ocular Structure and Imaging Facility.
- \$3300 for a new ice machine to replace one that broke down.
- \$1000 to cover publication costs for a paper with several student authors.

#### *Other Budget Items*

The CBR provided \$18,000 to support the Eye Research Institute's Summer Undergraduate Program in Eye Research (SUPER). The 2015 cohort included Caroline Cencer, Jonathan Cheon, Naveena Daram, Joshua Hohlbein, Nicole Rousey, Quentin Thompkins, and Natalie Wardia.

As part of the Department of Psychology's biennial Evolutionary Psychology Interdisciplinary Conference Series, a conference on the Evolution of Psychopathology was held April 18-19 at Meadow Brook Hall. The CBR provided \$2000.

The OU chapter of Sigma Xi, the Scientific Research Society, sent eight students to the Sigma Xi Student Research Conference in Kansas City, Missouri in October. The CBR supported the travel costs of one (\$874). Two students won awards:

- Megan Kabara, an undergraduate biology major studying *C. elegans* casein kinase II KIN-3 as a regulator of centrosome assembly.
- Marie Smirman, a physics graduate student performing simulations of strained grapheme films on triangular and honeycomb substrates.

The CBR continues to work closely with the Women in Science and Engineering at Oakland University (WISE@OU) program, supported by an ADVANCE grant from the National Science Foundation (now in its final year operating on a no-cost extension). The CBR paid for one of WISE@OU's fall faculty luncheons (\$312), and a webinar about applying to the National Science Foundation's Faculty Early Career Development Program (CAREER award), NSF's most prestigious award in support of junior faculty (\$375).

The CBR, jointly with the OU chapter of Sigma Xi, organized its annual research festival, held March 28 in the banquet room of Oakland Center. Winners of the best student poster contest were Megan Kaster, Naveena Daram/Omar Bukhsh, Anna Jahshan, Megan Kabara, and Christian Brigolin. As always, the event depended on the willingness of CBR members and other faculty to volunteer as judges for the poster competition. The festival was followed by the Sigma Xi lecture, delivered by Distinguished Professor Michael Chopp, and the Sigma Xi induction dinner held at Meadow Brook Hall that evening. The CBR paid \$318 for refreshments at the festival, and \$93 for five copies of *The Double Helix*, awarded to the winning posters.

The Michigan Microscopy & Microanalysis Society 2015 Annual Meeting was held November 6 in the Oakland Center. The CBR was a sponsor for the meeting and paid the registration fee for seven students and one faculty member (\$350). The Eye Research Institute, and in particular the Laboratory Manager of the Ocular Structure and Imaging Facility Vickie Kimler, worked hard to make this meeting a success.

The Department of Biological Sciences organized a Graduate Research Day and Workshop on August 28, providing an opportunity for graduate students to present their work as a talk or poster. The event included a workshop on professional skills conducted by Dr. Stephanie Watts of Michigan State University. Thanks goes to CBR member Amy Banes-Berceli, Kathie Lesich, and Catherine Starnes for organizing it. The CBR provided funds for the morning refreshments (\$80) and paid for the rental and moving of portable walls for the poster session (\$149).

The Philosophy Department hosted a talk on January 22 by Robyn Bluhm of Michigan State University about "what can feminist philosophy of science offer feminist criticisms of neuroscience?" The CBR provided \$100 to help support this talk.

### *CBR Activities*

One way the CBR supports biomedical research and education is to maintain the CBR webpage ([www.oakland.edu/cbr](http://www.oakland.edu/cbr)) and Facebook page ("Oakland University Center for Biomedical Research"). Over the last few years, I have shifted emphasis from the website to the Facebook page, which now highlights faculty and student accomplishments, announces events, and publicizes student research opportunities. The page currently has over 220

likes and my goal is to reach 250 likes by this time next year. Should the CBR start tweeting on Twitter?

This year Sanela Martic (Department of Chemistry) was appointed as a CBR member, based on a series of important publications and an aggressive program of applying for grants. She quickly justified her membership by obtaining a grant from the National Institutes of Health.

I am both director of the CBR and a member of the leadership team for WISE@OU. Many activities of these two groups overlap. A few examples are:

- WISE@OU hosted a viewing of a webinar about the NSF CAREER award on April 8. Five faculty members attended, and others took advantage of online access.
- The CBR and WISE@OU collaborated with Vice Provost for Research Arik Dvir and Kosta Patsarikas in the Office of Research Administration to prepare a list of young investigator awards.
- WISE@OU and the Office of Research Administration presented a workshop on March 4 about how to include “broader impacts” into grant proposals, particularly proposals to the National Science Foundation.

All these activities were possible because of outstanding support from the WISE@OU Program Assistant Leanne DeVreugd. All of us at WISE@OU hope that some way will be found to sustain this program now that the NSF funding is coming to an end.

Last year’s annual report described how I participated in the interviews for a new Pre-Professional Advisor. We hired Donna Pikula, who established many workshops, such as the multiple mini interview (MMI) preparation event. I participated in these mock interviews aimed at readying students for this unique interview format used by many medical schools. Unfortunately, Donna left OU during the winter semester. I was on the search committee for her replacement and after interviewing four candidates we hired Carmen Gamlin, who started in June.

As in previous years, the CBR was in charge of selecting winners of the Michael P. and Elizabeth A. Kenny Merit Scholarship. This year the available funds increased, so we could award three \$7000 scholarships to undergraduates in the sciences.

Oakland University is currently searching for a new Associate Vice President for Research (formerly known as the Vice Provost for Research). Four candidates had on-campus interviews, during which I led tours of research facilities. We visited the Biomedical Research Support Facility (Janet Schofding), the Eye Research Institute (CBR member Frank Giblin), and the laboratories of CBR members Xiangqun Zeng and Yang Xia. Arik Dvir ably led the Office of Research Administration over the past year as interim Vice Provost for Research.

I wrote two grant proposals seeking support for students. One was a pre-proposal submitted to a Howard Hughes Medical Institute program to promote inclusive excellence. Our aim was to support transfer students from local community colleges, ensuring a smooth transition from community college to our four-year institution. The other was to the Beckman Foundation to support undergraduates studying biology or chemistry as part of the Beckman Scholars Program. The Beckman proposal described ten outstanding undergraduate researchers from OU, which I include at the end of this report as Appendix A. Read it; you will be proud of these amazing students. The HHMI pre-proposal was not selected for a full proposal, and the Beckman proposal is pending.

## Biomedical Research at Oakland University

Biomedical researchers and students had many accomplishments this year. Here I list a few. More can be found at the CBR News website and the OU CBR Facebook page.

- Three members of the CBR were highlighted in the Fall 2015 issue of the Oakland University Research Magazine. Dao-Qi Zhang appeared on the cover, and an article described his research on the role of dopamine in the retina. A four-page article about athlete deaths from overhydration explained the research of Tamara Hew-Butler of the School of Health Sciences. Jing Tang, of the School of Engineering and Computer Science, was highlighted in an article about improving medical imaging scans for better patient care.
- Two Biological Sciences students working for Assistant Professor Randy Westrick presented their research at the International Mammalian Genome Conference in Yokohama, Japan. The research of Marisa Brake, a senior majoring in Biological Sciences, and Amy Siebert-McKenzie, a Biological and Biomedical Sciences doctoral student, focuses on the genetics of blood clotting.
- Congratulations to Biomedical Sciences: Health and Environmental Chemistry graduate student Jia Li for winning OU's 2015 Outstanding Dissertation Award. He worked with CBR member Ferman Chavez. Margo Stanfa, who studied with CBR member Tamara Hew-Butler, won the Outstanding Masters Thesis Award.
- Two Honors College students represented OU at the National Conference on Undergraduate Research at the University of North Carolina-Ashville. Rita Kassab presented on "Genome Complexity in the Exportome of *Plasmodium falciparum*." She has worked under the mentorship of Assistant Professor Fabia Battistuzzi in the Department of Biological Sciences. Katie Aleck presented "The Effects of Bisphenol-S (BPS) on Estrogen Receptor Alpha in T-47D Breast Cancer Cells." She is a research assistant in Associate Professor Sumit Dinda's biochemistry/endocrinology laboratory in the School of Health Sciences.
- Distinguished Professor Michael Chopp, of the Department of Physics, achieved a career landmark; his h-index reached 100. The h-index is a measure of how often a researcher's papers are cited in the scientific literature. An h-index of 100 means that Chopp has one hundred publications that each has at least 100 citations.
- Crain's Business Detroit ranked OU among the 25 most innovative companies in Southeast Michigan. In particular, CBR member Xiangqun Zeng's patents for innovative sensors that detect environmental gases were highlighted. Zeng's work was also selected as one of five finalists in the Methane Detectors Challenge, an initiative of the Environmental Defense Fund.
- Dean Claudia Petrescu arrived in August to lead OU's effort in graduate education. One of her accomplishments in her first year was to initiate a Graduate Student Research Conference, held May 27 in the Oakland Center.
- The Oakland University-Beaumont Masters Program of Nurse Anesthesia was ranked 18<sup>th</sup> out of 115 such programs in the United States, according to U.S. News & World Report.

- At the spring commencement, 12 students made up the first graduating class of OU's new Biomedical Sciences undergraduate major. The program began in 2012 and is led by CBR member Amy Banes-Berceli.
- The new PhD program in Psychology, coordinated by Prof. Virgil Zeigler-Hill, graduated its first doctorates this year.
- CBR member Amy Banes-Berceli, WISE@OU Principal Investigator Kathy Moore, pre-professional advisor Donna Pikula, and School of Medicine Assistant Professor Amy DeBaets served on a panel to discuss professional development for women in STEM and Healthcare.

One goal of the CBR is to provide the infrastructure and seed money needed for external grant proposals, particularly proposals to the National Institutes of Health. This year, several new biomedical grants were awarded, including:

- Assistant Professor Randy Westrick, of the Department of Biological Sciences, received a \$231,000 grant from the American Heart Association to support his research on vascular biology and blood clotting.
- CBR member Nessian Kerrigan, of the Department of Chemistry, received \$299,997 from the National Science Foundation to develop new methods to synthesize gamma-lactones, which are medicinally relevant constituents of many biologically active molecules
- CBR member Ferman Chavez, of the Department of Chemistry, was awarded a three-year, \$334,168 grant from the National Institutes of Health for mechanistic studies on bioremediation metalloenzymes.
- CBR member Sanela Martic, of the Department of Chemistry, obtained a three-year, \$433,433 award from the National Institutes of Health to study anti-tau antibodies, with relevance to Alzheimer's disease.
- CBR member and Eye Research Institute scientist Ken Mitton got a three-year, \$448,500 grant from the National Institutes of Health to study the retina and its vasculature.
- CBR member Andrew Goldberg, of the Eye Research Institute, was awarded a four-year, \$1.5 million grant from the National Institutes of Health to study the molecular basis of rod and cone structure.
- CBR member Yang Xia, of the Department of Physics, is studying how to monitor the onset of osteoarthritis using a \$2.2 million grant from the National Institutes of Health.

Many of these researchers obtained support from the Research Excellence Fund when preparing their grant proposals. Appendix B contains a full list of all active NIH grants.

*Brad Roth*

Appendix A  
Ten Undergraduate Research Success Stories  
From a Proposal to the Beckman Foundation

**1. Hanna Trzeciakiewicz.** Hanna graduated in 2014 with a major in biochemistry (jointly offered by the Departments of Biological Sciences and Chemistry). She worked with Assistant Professor Sanela Martic investigating the tau protein associated with Alzheimer's disease. She was awarded a Kenny Scholarship, was one of OU's Goldwater Scholarship nominees, participated in the Summer Research Program, obtained a Provost's Undergraduate Research Award, was a member of the Honors College, and received OU's Undergraduate Distinguished Achievement Award at the December 2014 commencement. She is first author on two publications, one in *Sensors* (15:19429-19442, 2015) and another in *Electrochimica Acta* (162:24-30, 2015), and also coauthored two other papers. She is now a graduate student in the Biological and Biomedical Sciences Program at the University of North Carolina at Chapel Hill.

**2. Megan Kaster.** Megan is a biochemistry major and member of the Honors College currently doing research with Assistant Professor Evan Trivedi. She was a Goldwater Scholarship nominee, was awarded the Dershwitz Summer Research Fellowship (the most prestigious award offered by the Department of Chemistry), obtained a Provost's Undergraduate Research Award, presented an award-winning poster at the last CBR Research Festival, and recently received a Kenny Scholarship. She is studying soluble fluorinated phthalocyanines for molecular imaging, and is currently preparing a manuscript for submission to a journal.

**3. Marisa Brake.** Marisa began performing research with Assistant Professor Randy Westrick as part of the Summer Research Program to study the identification of thrombosis modifier genes in ENU mutagenized mice. The following summer, her research was supported by the American Heart Association Midwest Affiliate Undergraduate Student Research Program. She presented her results at the 2014 Sigma Xi International Research Conference, and more recently at a Mammalian Genome Conference in Yokohama, Japan. In April, 2016 she graduated with a BS in biology. After considering offers from several graduate programs, she chose to remain at OU in the Biological and Biomedical Sciences PhD Program. Westrick and Brake have several manuscripts about to be submitted.

**4. Nathan Spix.** Nathan is a biochemistry major who participated in the Eye Research Institute's SUPER program in 2014. He continues to work in the ERI, supported by a faculty member's R01 grant from the National Institutes of Health, and has a first-author paper accepted in *Investigative Ophthalmology and Visual Science*. Nathan was featured in a video about undergraduate research at OU prepared by the Michigan Center for Undergraduate Research and the Honors College ([www.youtube.com/watch?v=XUXYA9orG2I](http://www.youtube.com/watch?v=XUXYA9orG2I)). He plans to attend medical school.



**5. Alexandra Zetye.** Alexandra is a triple major in piano performance, French literature, and engineering biology (a joint program between the College of Arts and Sciences and the School of Engineering and Computer Science). Zetye performed research with Assistant Professor Gerard Madlambayan, and also coauthored two papers with faculty from the Department of Mathematics and Statistics about a model for the transmission of Chagas disease (*PLoS ONE*, 8:e67267, 2013; *BIOMATH*, 3:1411071, 2014). She participated in the SUPER program and was awarded an honorable mention in the Goldwater Scholarship competition. At her graduation in April 2016 she was awarded the Meritorious Achievement Award by the College of Arts and Sciences, and spoke at the commencement.

**6. Mark English.** Mark graduated in December 2015 with a BS in biology. He participated in the SUPER program in the summer of 2013, studying photoreceptors in the retina. Mark was one of three students in the Honors College to attend the 28<sup>th</sup> National Conference on Undergraduate Research at the University of Kentucky in April 2014. He also presented his research at the Michigan Academy of Science, Arts, and Letters conference.


































**7. Naveena Daram.** Naveena is majoring in biomedical sciences, a new undergraduate program aimed specifically at premed students. In 2015 she worked with in the Eye Research Institute as part of the SUPER program. Her research focuses on the death of retinal ganglion cells leading to blindness in glaucoma. She presented her research at the Michigan Academy Conference held at Saginaw Valley University, and is a member of the Honors College. She was recently awarded a Kenny Scholarship.

**8. Jonathon Young.** As a chemistry major, Jon worked in the laboratory of Professor Roman Dembinski studying the synthesis of organic compounds. He was supported by the Summer Research Program in 2015. He coauthored two papers (*Green Chemistry*, 16:1120-1124, 2014; *Current Organic Chemistry*, 19:469-474, 2015) and presented at the 2015 American Chemical Society Meeting in Boston. At graduation in April 2016 he received the Undergraduate Distinguished Achievement Award.

**9. Julianne Boyle.** Julianne is an engineering biology major who graduated in December 2015. She was awarded a summer internship at the National Institutes of Health in Bethesda, Maryland, focusing on studying cartilage degradation. You can hear an interview with Julianne at [www.youtube.com/watch?v=LUNeGZb01Cs](http://www.youtube.com/watch?v=LUNeGZb01Cs).

**10. Elizabeth Jankulovski.** Elizabeth is currently an engineering biology major who analyzes a human ortholog of a maize RNA binding motif protein 48 gene associated with leukemia. She presented her research at two Maize Genetics Conferences, one in St Charles, IL and the other in Jacksonville, FL. She received a Provost Undergraduate Research Award and a Kenny Scholarship.

Appendix B  
Active Grants Listed on the National Institutes of Health Reporter Website  
(<http://projectreporter.nih.gov/reporter.cfm>), June 30, 2016.

	T	Act	Project	Year	Sub #	Project Title	Contact PI/ Project Leader	Organization	FY	Admin IC	Funding IC	FY Total Cost by IC	Similar Projects
	1	R15	GM112395	01A1		<a href="#">MECHANISTIC STUDIES ON BIOREMEDIATION METALLOENZYMES</a>	<a href="#">CHAVEZ, FERMAN ALBERT</a>	OAKLAND UNIVERSITY	2015	NIGMS	NIGMS	\$334,168	
	7	R15	CA169994	02		<a href="#">A PILOT STUDY OF YOGA FOR BREATHING AND QUALITY OF LIFE OF LUNG CANCER PATIENTS</a>	<a href="#">FOULADBAKSH, JUDITH MARIE</a>	OAKLAND UNIVERSITY	2013	NCI	NCI	\$213,003	
	5	R01	EY002027	37		<a href="#">PROTEINS OF NORMAL AND CATARACTOUS LENSES</a>	<a href="#">GIBLIN, FRANK JOSEPH</a>	OAKLAND UNIVERSITY	2015	NEI	NEI	\$372,948	
	2	R01	EY013246	11A1		<a href="#">MOLECULAR SCAFFOLDING IN PHOTORECEPTOR RENEWAL AND RETINAL DISEASE</a>	<a href="#">GOLDBERG, ANDREW FX</a>	OAKLAND UNIVERSITY	2014	NEI	NEI	\$354,125	
	1	R01	EY025291	01A1		<a href="#">INVESTIGATION OF THE MOLECULAR BASIS OF ROD AND CONE PHOTORECEPTOR STRUCTURE</a>	<a href="#">GOLDBERG, ANDREW FX</a>	OAKLAND UNIVERSITY	2016	NEI	NEI	\$388,320	
	5	R01	GM095514	05		<a href="#">MECHANISMS OF RSC RECRUITMENT AND ITS ROLE IN TRANSCRIPTION</a>	<a href="#">GOVIND, CHHABI KUMAR</a>	OAKLAND UNIVERSITY	2015	NIGMS	NIGMS	\$275,656	
	1	R15	GM100369	01A1		<a href="#">THE DROSOPHILA EXPANSION GENE CONTROLS TRACHEAL TUBE DIAMETER</a>	<a href="#">JIANG, LAN</a>	OAKLAND UNIVERSITY	2013	NIGMS	NIGMS	\$324,338	
	1	R15	GM107800	01A1		<a href="#">CATALYTIC ASYMMETRIC SYNTHESIS OF DEOXYPROPIONATES FROM KETENES</a>	<a href="#">KERRIGAN, NESSAN JOSEPH</a>	OAKLAND UNIVERSITY	2014	NIGMS	NIGMS	\$333,587	
	3	R15	ES022800	01S2		<a href="#">ROLE OF SLC39A8 (ZIP8) IN SELENITE TRANSPORT</a>	<a href="#">LIU, ZIJUAN</a>	OAKLAND UNIVERSITY	2015	NIEHS	NIEHS	\$11,187	
	3	R15	ES022800	01S1		<a href="#">ROLE OF SLC39A8 (ZIP8) IN SELENITE TRANSPORT</a>	<a href="#">LIU, ZIJUAN</a>	OAKLAND UNIVERSITY	2014	NIEHS	NIEHS	\$11,147	
	1	R15	ES022800	01		<a href="#">ROLE OF SLC39A8 (ZIP8) IN SELENITE TRANSPORT</a>	<a href="#">LIU, ZIJUAN</a>	OAKLAND UNIVERSITY	2013	NIEHS	NIEHS	\$422,803	
	1	R15	CA182889	01		<a href="#">ENDOTHELIAL CELL ACTIVATION REGULATES AML GROWTH AND RELAPSE</a>	<a href="#">MADLAMBAYAN, GERARD JAMES</a>	OAKLAND UNIVERSITY	2014	NCI	NCI	\$429,874	
	1	R15	GM119053	01		<a href="#">MECHANISTIC STUDIES OF ANTI-TAU ANTIBODIES EFFECTS ON TAU BIOCHEMISTRY</a>	<a href="#">MARTIC, SANELA</a>	OAKLAND UNIVERSITY	2016	NIGMS	NIGMS	\$433,433	
	1	R15	EY025089	01A1		<a href="#">VEGF'S LONGITUDINAL EFFECT ON THE RETINA AND RETINAL VASCULATURE IN VIVO</a>	<a href="#">MITTON, KENNETH PATRICK</a>	OAKLAND UNIVERSITY	2016	NEI	NEI	\$448,500	
	4	R01	CA045424	29		<a href="#">MECHANISMS FOR RADIATION DAMAGE TO DNA: LET EFFECTS</a>	<a href="#">SEVILLA, MICHAEL DOUGLAS</a>	OAKLAND UNIVERSITY	2016	NCI	NCI	\$203,672	
	1	R01	AR069047	01		<a href="#">ACL DEFICIENCY MODIFIES TOPOGRAPHICAL DEGRADATION IN POSTTRAUMATIC OSTEOARTHRITIS</a>	<a href="#">XIA, YANG</a>	OAKLAND UNIVERSITY	2016	NIAMS	NIAMS	\$500,170	
	5	R01	EY022640	03		<a href="#">FUNCTIONAL ORGANIZATION OF THE RETINAL DOPAMINERGIC NETWORK</a>	<a href="#">ZHANG, DAO-QI</a>	OAKLAND UNIVERSITY	2016	NEI	NEI	\$369,322	