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Ohio University first in state for University research revenue

Claire Schomaker

Ohio University has once again ranked first among Ohio higher education institutions for research licensing revenue. According to the annual report released by The Association of University Technology Managers (AUTM), faculty inventions generated approximately $10.6 million during fiscal year 2014.

The report, which was released in September, also noted that Ohio University generated $60.8 million in research and sponsored program funding.

The majority of the revenue comes from an Ohio University license to the Pfizer Corporation for a growth hormone receptor antagonist discovered by Edison Biotechnology Institute scientist, John Kopchick, and former graduate student Wen Chen in 1987. The technology became the basis for the drug Somavert, a treatment for people with acromegaly, a growth hormone disorder that can cause excessive growth of organs and bones in adults and can lead to premature death.

Ohio University reinvests the licensing revenue in biomedical research initiatives, academic programs and technology commercialization efforts.

TechGROWTH Ohio

Xuan Wang

TechGROWTH Ohio was recognized as the winner of the 2015 Council of Development Finance Agencies (CDFA) Ohio Financing Roundtable Excellence Award for Program. In view of their great input in connecting entrepreneurs with assistance and offering valuable tools for growth and sources of funding to early-stage, technologically-innovative companies, TechGROWTH Ohio was awarded this statewide excellent award. TechGROWTH was best recognized by the CDFA for its impact which shows a leverage ratio of over $9 of follow-on resources acquired for client companies for every $1 of state money invested, achieving more than $218 million flowing into the Southeast Ohio region over its first seven years. (Comprised of the nation’s leading and most knowledgeable members of the development finance community representing 400+ public, private and non-profit development entities, the national association Council of Development Finance Agencies dedicates to the advancement of development finance concerns and interests. The CDFA Ohio Financing Roundtable Excellence Awards honor excellence in the use of financing tools for economic development, as well as the individuals who champion those efforts.)
Many pharmaceuticals, exemplified by the anticancer drug taxol and the anti-cholesterol statin drugs, have been derived, directly or indirectly, from natural products. Indeed, the 2015 Nobel Prize in medicine was awarded for the discovery of treatments for parasitic infections from bacterial and plant extracts. As interest in potential therapies from traditional herbal medicines grows, the National Institutes of Health is encouraging the development of centers of excellence in natural products research, and the Edison Biotechnology Institute is spearheading the creation of a new Natural Product Research Center (NPRC) at Ohio University headed by Drs. Jeff Wiseman and Shiyong Wu.

A project that has been talked about for years was implemented this summer with the help of postdocs Haotong Chen and Hyun Young Park, who have extensive previous experience in the natural products field. While the Natural Product Research Center at Edison Institute is not yet connected with other NPRCs across the country, they are working to build an international network of collaborators with the goal of establishing a center of excellence in the field.

Wiseman says that the goal is to apply the biotechnology expertise at EBI coupled with analytical capabilities in the Department of Chemistry and clinical evaluations at the Diabetes Institute and Heritage College of Medicine to develop herbal supplements with demonstrated benefit while avoiding the enormous capital investments associated with traditional drug discovery. With herbal medicines accepted as therapies in much of the world, Wiseman notes that herbal medicines drastically lower the cost of therapy for an enormous population of patients with low incomes and no health insurance compared to the cost of patented drugs developed in the US and Europe.

Currently EBI is collaborating with the Ohio University College of Medicine, specifically the Ohio Musculoskeletal and Neurological Institute, to develop a clinical evaluation of maca root to protect muscle function in aging patients. EBI is analyzing samples of maca root from multiple suppliers to identify sources with high levels of active ingredients and low levels of potential toxins such as insecticides and heavy metals. In addition, Drs. Haotong Chen and Hyun Young Park are extending previous studies in the lab of Dr. Xiaozhu Chen to identify active ingredients in the Banaba leaf from the Philippines whose leaves have been used for anti-diabetic purposes. Wiseman also notes that just because herbal supplements come from plants does not mean they are safe. Some plants have toxic components which need to be identified and separated from the desirable components, and Ms. Misako Hata and Dr. Ishrat Jahan have begun to develop tests to identify these toxic components, with the ultimate goal of removing these from the final plant preparation.
EBI ATTENDS THE ENDO RETREAT 2015

Silvana Duran-Ortiz

The Endo Retreat was held October 6th through 10th of 2015 in Rotterdam, The Netherlands. A group of 8 students and researchers from the Edison Biotechnology Institute led by Dr. John Kopchick, Distinguish Professor, Goll-Ohio Eminent Scholar at Ohio University, attended this meeting. Also attending the Endo Retreat were 8 internationally recognized research groups that work in the field of Growth hormone, Insulin Growth Factor-I, Prolactin and Adipose tissue. These research groups included the group of Dr. Vincent Goffin and Dr. Paul Kelly from the Inserm and University Paris Descartes, Dr. Teresa Wood from New Jersey Medical School and Cancer Center, Dr. Sebastian Neggers and Dr. Jenny Visser from Erasmus Medical Center, and Dr. John Kopchick and Dr. Darlene Berryman from the Edison Biotechnology Institute at Ohio University, between others.

The Endo Retreat is a meeting that started in the year 2002 and is celebrated every 18 months. Throughout the years the Endo Retreat has been sponsored by multiple members of the industry. This year the retreat was sponsored by Pfizer, IPSEN and Novartis pharmaceuticals. The Endo Retreat meeting was conceived by Dr. Kopchick, Dr. Wood and Dr. Kelly as an effort to improve and increase research collaborations, as well as to provide a setting for young trainees to showcase and present their work in a friendly, but high level academic environment. Therefore, one of the absolute requirements for trainees to attend is to present their research work in a 15 min presentation, followed by a 5-10 min discussion.

Settings as the Endo Retreat are invaluable opportunities for the students. This meeting allows trainees to give an oral presentation and discuss results and future research plans in a very intimate environment with top level scientist that are involved in similar fields. Therefore, expanding the knowledge and horizons of the research, as well as engagement in interesting discussion and forming new collaborations are just some of the experiences that the Endo Retreat provides its attendees.

Save The Date

- Big Data, Computation and Systems Biology in Cancer December 2-5, 2015 • Suzhou Dushu Lake Conference Center • Suzhou, China
- Lung Cancer Translational Science from the Bench to the Clinic January 4-7, 2016 • Hard Rock Hotel • San Diego, CA
- The Function of Tumor Microenvironment in Cancer Progression January 7-10, 2016 • Hard Rock Hotel • San Diego, CA
- Obesity and Adipose Tissue Biology February 15—19, 2016. Fairmont Banff Springs, Banff, Alberta, Canada
EVENTS

THE ENDO RETREAT 2015
Visit with Herb Medicine Partners in Japan

From Sept. 18 – Oct. 1st, Dr. Shiyong Wu, Director of EBI and Professor of Chemistry and Biochemistry, OU, along with Dr. Christopher Thompson, Department Chair of Linguistics, OU, visited Hokuriku University (HU), Chubu University, Chiba University and Iwate Prefectural University (IPU) to discuss potential collaborative projects for research and economic development. HU was funded in 1975 with a single College of Pharmacology Sciences and has 20 years of good relationship with OU. HU has a tradition in herb medicine research and a good collection of medicinal plants. During the visit, Dr. Wu met with Drs. Kobayashi, Tezuka and Nomura to discuss possible future collaboration on research of oriental medicines and education of future pharmacists; and visited their herb medicine green house and garden. Dr. Kobayashi also indicated that he will make an effort to connect EBI’s Natural Products Research Team with Kobayashi Pharmaceutics, a Japanese company that develops and markets herb medicine, in regarding potential collaboration in development, evaluation, manufacture and marketing of herb medicines in US. After visiting HU at Kanazawa, Dr. Wu headed to Chubu U., which has more than 40 years of good relationship with OU. At Chubu U, Dr. Wu discussed with Dr. Qiao, the Deputy Director of International Affairs and Professor of Biomedical Sciences, regarding further sponsored research collaboration between the two universities. Then Dr. Wu visited Dr. Ishibashi, Professor of Natural Product Research Institute (NPRI) at Chiba U. and formal supervisor of Dr. Hyun Young Park, a post-dr. fellow at EBI. The Faculty of Phama-ceutical Sciences of Chiba U. has more than 120 years of history. Dr. Ishibashi is an expert in isolation, characterization and synthesis of active ingredients of herb medicine; and he showed interests in future collaboration with the Natural Product Research Team at EBI. The final stop for Dr. Wu was IPU. Led by Dr. Thompson, OU has been working with IPU on a Tsunami Relief Volunteer Project since Sept. 2011. During this visit, Dr. Wu discussed with Dr. Chiba for a collaborative research project in studying heavy metal contamination before and after the tsunami in food consumed by local people in Iwate Prefecture. Sponsored by the Offices of VPR and Dean of A&S, the Department of Chemistry & Biochemistry and EBI are acquiring an ICP-MS for analyzing trace amounts of heavy metals in foods, plants and environment. The instrument will be used for the OU-IPU collaboration.

Photo by Dr. Shiyong Wu
Text by Dr. Shiyong Wu
Kopchick Awards provide $87,795 to OHIO student, faculty and staff researchers

Fourteen Ohio University students and faculty and staff members have received funding for their health and medical research from the John J. Kopchick Awards.

The program provided a total of $87,795 in grants and fellowships to advance research on topics such as obesity, diabetes and neurodegenerative diseases. The recipients were recognized during a ceremony Nov. 14 in Nelson Commons.

“These awards reflect the diversity of translational biomedical research conducted by our faculty and students and reinforce the significance of applying new knowledge to clinically relevant and unmet needs,” said Joseph Shields, vice president for research and creative activity and dean of the Graduate College.

Undergraduate Student Support Fund were created as a result of a $2 million gift commitment from John Kopchick, Goll-Ohio Eminent Scholar, Distinguished Professor of Molecular Biology, and EBI Principle Investigator and Char Kopchick, Assistant Dean of Students at Ohio University.

In addition, the deans of the Russ College of Engineering and Technology, College of Arts and Sciences, Heritage College of Osteopathic Medicine and College of Health Sciences and Professions, as well as the vice president for research and creative activity, are providing a total of $1.9 million in match support.

The John J. Kopchick Awards support undergraduate and graduate students and faculty affiliated with Ohio University’s Molecular and Cellular Biology program and Translational Biomedical Sciences program. Both programs take an interdisciplinary approach to solving complex research questions in the science and medical fields.
Board of the 2016 Kopchick Awards Recipients

Out of the 14 recipients of the Kopchick Awards, 3 are EBI faculty, 2 are EBI graduate students and 1 is an EBI undergraduate student.

John J. Kopchick Molecular and Cellular Biology (MCB)/Translational Biomedical Sciences (TBS) Faculty Support Fund (up to $10,000 for MCB/TBS faculty for research activities and conference travel)

Recipients: Darlene Berryman, Erin Murphy, Ronan Carroll and Ed List

Recipient: Xiao Chen

John J. Kopchick Molecular and Cellular Biology (MCB)/Translational Biomedical Sciences (TBS) Research Fellowship Award (up to $10,000 for PhD and DO/PhD students in the MCB or TBS programs to support translational biomedical research, with an additional $5,000 for an off-campus internship).

Recipients: Debra Walter, Elizabeth Jensen, Alison Brittain, Ian Ackers, and Ashley Patton

John J. Kopchick Molecular and Cellular Biology (MCB)/Translational Biomedical Sciences (TBS) Undergraduate Student Support Fund (up to $1,500 for undergraduate students working with MCB/TBS faculty and conducting translational medical research and scholarly activities)

Recipients: Caroline Wilson, Kimberly Kraus, and Emma Kessler
My name is Marcella van Hoolwerff and I am a master's student from the University of Leiden, The Netherlands. I live in Delft, which is a small city of about 100,000 habitants, where I live with 8 housemates and my rabbit. I came to Athens in June to do research in the lab of prof. Kopchick for half a year, as part of my curriculum. I arrived in the summer which started a bit wet, but the warm and sunny days were a welcome change from the Dutch (usually) grey skies and windy days. In those 5 months that I’ve been here we had a lot of lab parties, which was great. I didn’t think there could be a lab where work and fun really go hand in hand, like it does here. I respect everyone working in the Kopchick lab, where the work ethic is so high. What surprised me was how co-operative everyone is, you can ask anyone for help and you will find the person with the right knowledge. And also not only by asking questions but by discussing findings or theories we learn so much from one another. Working in this lab has showed me how to become independent thanks to the open atmosphere and it has been an inspiring experience. On the other hand the fun we had during and after work made my stay here unforgettable. Therefore I would like to thank everyone from the lab for receiving me with open arms.

My name is Rikke and I am a visiting student from Denmark. I obtained my master’s degree in Molecular Medicine in 2013 and began my PhD at the Medical Research Laboratory and Department of Endocrinology and Metabolism at Aarhus University in 2014.

Denmark is a small country and students are generally encouraged to go abroad, visit other universities and “bring home knowledge”. For my master’s project, I studied the regulation of the GH/IGF system in human adipose tissue, so when my Danish supervisor told me that he “knew this great group in Ohio, who was also interested in GH and adipose tissue”, I was set to go.

Since the end of March, I have conducted research at the Edison Biotechnology Institute at Ohio University under kind (and patient) guidance and supervision by Dr. Darlene Berryman and Dr. John Kopchick. Thanks to them and many others, my time here at EBI, at OU and in Athens has been and still is a great experience. I have the pleasure of working with talented scientists and scientists. I am learning numerous new techniques and given the opportunity to share opinions and knowledge on specific topics. Most importantly, it is a great motivation and inspiration to see established scientists that are still so driven by their curiosity.
National Postdoc Appreciation Week was the week of September 21st, 2015. In honor of that week, we’d like to highlight our Postdocs from EBI.

From left to right: Haotong Chen, Yanrong Qian, Lingying Tong, Hyun Young Park, Kentaro Oki.

### HIGHLIGHTS

### Postdocs from EBI

### Publication List

From January 1, 2014 - November 30, 2015

**Growth Hormone Safety Workshop Position Paper: a critical appraisal of recombinant human growth hormone therapy in children and adults.**


**Salicylketoximes That Target Glucose Transporter 1 Restrict Energy Supply to Lung Cancer Cells.**


**Reactive oxygen species in redox cancer therapy.**

Tong L, Chuang CC, Wu S, Zuo L.


**Transcriptome profiling reveals divergent expression shifts in brown and white adipose tissue from long-lived GHRKO mice.**


**Growth Hormone Inhibits Hepatic De Novo Lipogenesis in Adult Mice.**

**Growth Hormone Receptor Antagonist Transgenic Mice Have Increased Subcutaneous Adipose Tissue Mass, Altered Glucose Homeostasis and No Change in White Adipose Tissue Cellular Senescence.**


**From left to right: Haotong Chen, Yanrong Qian, Lingying Tong, Hyun Young Park, Kentaro Oki.**

Interventions to Slow Aging in Humans: Are We Ready?

Growth hormone modulates hypothalamic inflammation in long-lived pituitary dwarf mice.

A proteomic approach to obesity and type 2 diabetes.

Removal of growth hormone receptor (GHR) in muscle of male mice replicates some of the health benefits seen in global GHR-/- mice.

GH action influences adipogenesis of mouse adipose tissue-derived mesenchymal stem cells.

Do altered energy metabolism or spontaneous locomotion 'mediate' decelerated senescence?

Lessons learned from studies with the growth hormone receptor.

The forgotten lactogenic activity of growth hormone: important implications for rodent studies.

Male bovine GH transgenic mice have decreased adiposity with an adipose depot-specific increase in immune cell populations.

Glucose- and triglyceride-lowering dietary penta-O-galloyl-a-D-glucose reduces expression of PPARy, C/EBPα, and induces p21-mediated G1 phase cell cycle arrest and inhibits adipogenesis in 3T3-L1 preadipocytes.

Glucose and Fat Metabolism in Acromegaly: From Mice Models to Patient Care.
Excessive growth hormone expression in male GH transgenic mice adversely alters bone architecture and mechanical strength.

Growth hormone treatment for childhood short stature and risk of stroke in early adulthood.

Gene expression of key regulators of mitochondrial biogenesis is sex dependent in mice with growth hormone receptor deletion in liver.

Role of Bmi-1 in regulation of ionizing irradiation-induced epithelial-mesenchymal transition and migration of breast cancer cells.

Inflammatory and Glutamatergic Homeostasis Are Involved in Successful Aging.

Serum proteomic changes after randomized prolonged erythropoietin treatment and/or endurance training: detection of novel biomarkers.

Regulation of mTOR activity in Snell dwarf and GH receptor gene-disrupted mice.

Growth hormone receptor antagonist transgenic mice are protected from hyperinsulinemia and glucose intolerance despite obesity when placed on a HF diet.

The Warburg effect: evolving interpretations of an established concept.

Therapeutic microRNAs targeting the NF-kappa B signaling circuits of cancers.

Expression of apoptosis-related genes in liver-specific growth hormone receptor gene-disrupted mice is sex dependent.

ROS and p53 in regulation of UVB-induced HDM2 alternative splicing.