

TECHNOLOGY TRANSFER

2020 Impact Report



2020 Impact Report



Peter Barr-Gillespie, Ph.D.

EXECUTIVE VICE PRESIDENT
AND CHIEF RESEARCH OFFICER
OHSU RESEARCH & INNOVATION

2020 has been a tumultuous year, to say the least. OHSU has been impacted by the global coronavirus pandemic; we largely shut down research for nearly three months, and anticipate a reduced pace for some time to come. OHSU has faced a fierce budgetary situation, as hospital activity was dramatically reduced during the shutdown months. Nevertheless, the research community came together and addressed the pandemic and how to operate during a pandemic with innovative approaches.

Despite the coronavirus, there were some notable innovation developments. First, the OHSU startup company Vir Biotechnology carried out a successful initial public offering. Second, Vico Therapeutics B.V. is the first OHSU startup company formed outside the U.S. (they are based in the

Netherlands). And third, we established the IDEA Fund (Innovation Development and Entrepreneurship Acceleration Fund) from a philanthropic gift, which is being used to support technology development, early-stage startup companies, and entrepreneurial education.

In more 2020 news, demonstrations against police violence and racial injustice broke out around the country, and that has catalyzed deep soul-searching and initial steps towards substantial change at OHSU. Our aspirational goal is to make this an anti-racist institution. In summary, despite the tumultuous year, OHSU remains committed to the innovation and commercialization efforts of its faculty.

A handwritten signature in white ink that reads "Pete Barr-Gillespie".





Andrew R.O. Watson, Ph.D., C.L.P.

SENIOR DIRECTOR,
TECHNOLOGY TRANSFER
OHSU TECHNOLOGY TRANSFER

The successful translation and commercialization of university discoveries is often fraught with obstacles, and to succeed takes persistence and dedication. This year has proven to be no exception, with new and unexpected challenges around almost every corner. The impact of the COVID-19 pandemic has been devastating to us all. The financial situation in our region, our country and the world affect the sustainability of small businesses.

The innovative efforts of OHSU faculty, staff and students over the past year are a bright note and counterpoint to the turmoil and disruption. We have celebrated with OHSU startup companies as they've hit important milestones; we have established new funding programs to support the innovation and entrepreneurial work occurring at

OHSU; we have funded innovative projects to address the pandemic head on; and, we have continued to push technology advancements forward even through new and challenging working environments.

Through teamwork, resilience and determination, we continue to play our part in the success of OHSU's mission and vision.

At OHSU Technology Transfer, our mission is to support the advancement of OHSU research, innovation, commercialization and entrepreneurship for the benefit of society.

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Innovators

Every day, OHSU community members advance health through learning, teaching, healing and discovery. We are a community of innovators, continuously devising solutions to challenges in healthcare, education and research. Certain innovations are simple and integrate easily to make important changes in the work we do to advance health. However, others require years of effort and perseverance before a solution is developed and implemented. OHSU is honored to have such dedicated innovators working hard to improve healthcare and make a real difference for the future.



Jessica Grant

Jessica Grant is a clinical entrepreneur and innovator with a passion for solving critical healthcare problems. As a pediatric speech language pathologist working in the neonatal intensive care unit at OHSU's Doernbecher Children's Hospital, she has come up with innovative solutions to address challenges with infant feeding. Earlier this year, Jessica was awarded a grant from OHSU's Biomedical Innovation Program¹ to help further develop a device that optimizes the feeding position for infants experiencing reflux. Jessica's positioner will optimize the infant's position during eating, improving both the infant's comfort and feeding outcomes, as well as decreasing unnecessary medical procedures and costs. Jessica continually searches for new and innovative ways to improve quality of care, and quality of life for infants and the people who are part of their lives.

1. www.ohsu.edu/octri/biomedical-innovation-program-academia-marketplace

INNOVATORS

The OHSU chapter of the National Academy of Inventors¹ launched in 2020 to recognize inventors, innovators, creators and others who promote and support innovation across all disciplines of the university. The local chapter aims to:

- + Elevate the visibility of technology and innovation at OHSU
- + Promote an understanding of the translational use of inventions and intellectual property at the university and beyond
- + Encourage and support entrepreneurship
- + Provide a means to advocate for university innovation in the local community
- + Recognize innovator role models for students, staff and faculty.

The inaugural class of the OHSU chapter of the NAI includes:



James Bunzow, M.S.



Yali Jia, Ph.D.



Halina Offner-Vandenbark, Ph.D.



Klaus Früh, Ph.D.



Frederick Keller, M.D.



Louis Picker, M.D.



Markus Grompe, M.D.



David Lewinsohn, M.D., Ph.D.



Michael Riscoe, Ph.D.



Andras Gruber, M.D.



Deborah Lewinsohn, M.D.



Philip Streeter, Ph.D.



Scott Hansen, Ph.D.



James Maylie, Ph.D.



Erik Tucker, Ph.D.



Michael Heinrich, M.D.



Jay Nelson, Ph.D.



Arthur Vandenbark, Ph.D.



David Huang, M.D., Ph.D.



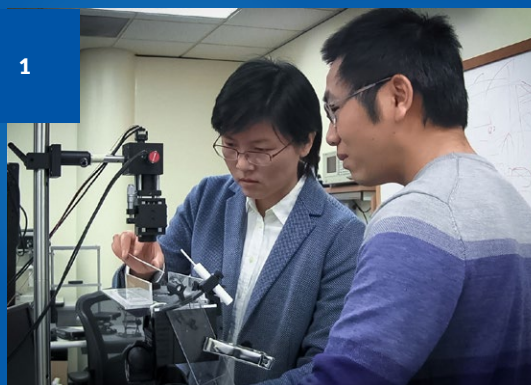
Edward Neuwelt, M.D.

1. academyofinventors.org

Technology Highlights

New technologies that eventually develop into a product or service frequently have their beginnings in universities. One of the roles of technology transfer is to help move these early-stage technologies through the development process. Some technologies fail along the way, but others succeed and provide great benefit to the university and the greater public.

1



Eye disease diagnosis improved by phase-based functional OCT software.

Yali Jia, Ph.D. and Xiang Wei

Optical coherence tomography, or OCT, is a non-invasive diagnostic instrument used for imaging the eye. It has the ability to detect problems in the eye prior to any symptoms being present in the patient. However, OCT images often require the removal of background artifacts. A novel software algorithm has been developed by Yali Jia, Ph.D., an associate professor of ophthalmology and biomedical engineering, and Xiang Wei, a Ph.D. student in biomedical engineering, that can improve the diagnostic capabilities of phase-based functional OCT by removing such artifacts while not sacrificing processing speed and image quality.

2



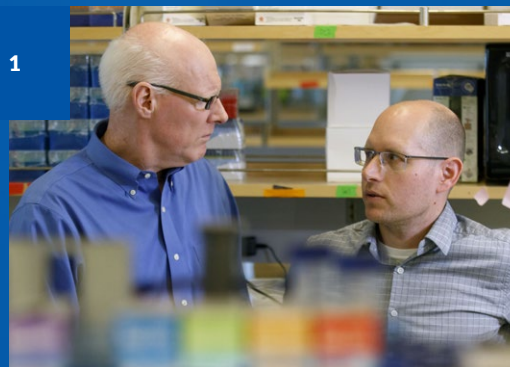
A system for accurate engineering of bone.

Luiz Bertassoni, D.D.S., Ph.D.

Bones consist of a mineralized matrix of organic and inorganic materials that together provide a 3-dimensional scaffold. Bone mineralization is a well-regulated process whereby calcium and phosphorus are deposited by bone cells onto this matrix. Current strategies to engineer bone synthetically for research and other uses rely on methods and materials that grossly fail to replicate the highly intricate structure, composition and mechanics of native bone. Luiz Bertassoni, D.D.S., Ph.D., an associate professor in the School of Dentistry, developed a system in which cells are cultured in a precise solution in conjunction with a mineralization-controlled system that allows for an accurate replication of bone.

1. (Left to right) Yali Jia, Ph.D., with postdoc Shaohua Pi, Ph.D.

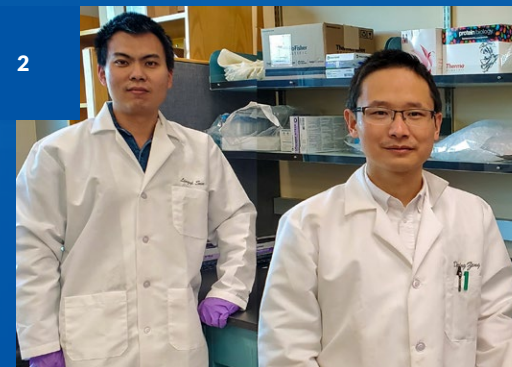
2. Luiz Bertassoni, D.D.S., Ph.D., shows an engineered material that replicates human bone tissue. The material is being used to explore disease processes such as the origin of metastatic tumors in bone, and as a treatment for large bone injuries. (OHSU/Joe Rojas-Burke)



Therapeutic management of cancer metastasis to bone and its associated bone destruction.

Raymond Bergan, M.D., Ryan Gordon, Ph.D. and Abhinandan Pattanayak, M.S.

Many cancers frequently spread to bone and destroy it, decreasing patients' quality of life and overall survival rates. Current treatments are ineffective and there is a need for pharmaceuticals that protect bone structure while inhibiting cancer metastasis to the bone. Ray Bergan, M.D., professor of medicine in the School of Medicine at OHSU, and his colleagues, Ryan Gordon, Ph.D., research assistant professor of medicine in the School of Medicine, and Abhinandan Pattanayak, M.S., senior research assistant, have developed a novel therapeutic strategy to reduce bone destruction and inhibit cancer cell motility to the bone with a single agent to improve treatment outcomes for patients.



Novel molecular delivery platform to improve treatment and diagnosis of disease.

Dexing Zeng, M.D. and Lingyi Sun, Ph.D.

The human body's ability to rapidly clear biologically active molecules remains an issue for the development of many pharmaceuticals for targeted treatment and diagnosis of disease. Many pharmaceutical strategies to overcome the human body's ability to clear foreign bodies reduce the effectiveness of the treatment or diagnostic capabilities due to poor tissue targeting and deleterious side effects from prolonged systemic circulation of the agent. To overcome these limitations, Dexing Zeng, M.D., assistant professor in the Department of Diagnostic Radiology at OHSU and his colleague Lingyi Sun, Ph.D., research associate, have designed a series of novel targeted albumin binders that reduce the body's clearance of pharmaceuticals and radioligands to improve treatment and diagnosis of disease.

1. (Left to right) Raymond Bergan, M.D., Ryan Gordon, Ph.D., in the OHSU Bergan Basic Research Laboratory. (OHSU/Kristyna Wentz-Graff)

2. (Left to right) Lingyi Sun, Ph.D. and Dexing Zeng, M.D.

Startup Company Highlights

OHSU is a place of innovation where students, faculty and staff are actively engaged in developing, testing and growing new ideas. When OHSU intellectual property is the basis for a new company, our goal is to maximize the chances of successfully developing and commercializing the technology while prioritizing OHSU's missions in healthcare, research and education. Creating a startup company can be a viable and attractive alternative as compared to working with an established company. OHSU's support of these entrepreneurial endeavors and the hard work of our faculty, staff and students is highlighted through the growing number of startup companies making an impact in Oregon and throughout the world.

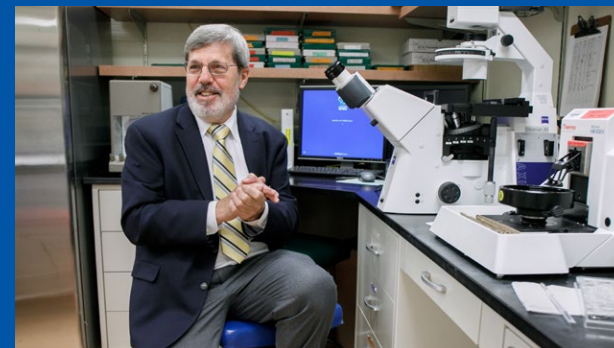
Fennec Pharmaceuticals, Inc.

NASDAQ:FENC; TSX: FRX

www.fennecpharma.com

Cisplatin and other platinum-based therapies are essential for treating pediatric malignancies. Unfortunately, these therapies cause ototoxicity, or hearing loss, which is permanent, irreversible and particularly harmful to cancer survivors. OHSU startup company Fennec Pharmaceuticals, Inc. is a specialty pharmaceutical company focused on the development of PEDMARK™ sodium thiosulfate formulation, a unique formulation of sodium thiosulfate, for the prevention of platinum-induced ototoxicity in pediatric patients. This use of PEDMARK™ sodium thiosulfate formulation was pioneered by Edward Neuwelt, M.D., professor of neurology in the OHSU School of Medicine, director of the Blood Brain Barrier Program and administrator of the Head and Spinal Cord Injury Prevention Program at OHSU.

It is estimated that over 10,000 children may receive platinum-based chemotherapy in the U.S. and Europe each year. The incidence of ototoxicity depends upon the dose and duration of chemotherapy, and many of these children require lifelong hearing aids as a result. There is currently no established preventive agent for this type of hearing loss. The current treatment of chemotherapy-induced ototoxicity consists of expensive, technically difficult and sub-optimal cochlear (inner ear) surgical implants.



Edward Neuwelt, M.D., has spent more than 20 years researching pediatric hearing loss caused by platinum-based chemotherapies. A clinical trial based on his work has found a treatment protocol that reduces hearing loss by nearly 50 percent when treating a form of pediatric liver cancer. (OHSU/Kristyna Wentz-Graff)

During the past year, Fennec achieved the following milestones:

- + Acceptance of the company's New Drug Application for PEDMARK™ sodium thiosulfate formulation by The United States Food and Drug Administration.
- + Priority Review granted by the FDA, establishment of the Prescription Drug User Fee Act (PDUFA) Target Action Date by the FDA, submission and acceptance of the Marketing Authorization Application (MAA) for ePEDMARQSI™ sodium thiosulfate formulation (EU tradename) by the European Medicines Agency.
- + Issuance of U.S. Patent 10,596,190.
- + Raised \$30M in a public offering and \$18M through Senior Debt Facility loans.

STARTUP COMPANY HIGHLIGHTS



(Left to right) Summer Gibbs, Ph.D., Connor Barth, Ph.D., and Broderick House, Ph.D., working on fluorescent nerve contrast agent development.

Inherent Targeting, LLC

Nerve damage is a common complication of surgical procedures, potentially leading to pain, loss of function and long-term physical impairment for patients. It can be challenging for surgeons to avoid damaging nerves during surgery, especially in instances where nerves resemble other tissue, the surgical field is obstructed by bodily fluids or the patient's anatomy is altered by trauma or a previous surgery.

An OHSU Startup, Inherent Targeting, LLC, is addressing these problems by advancing the clinical development of high contrast,

nerve-specific fluorescent dyes that will help surgeons visualize nerves buried within the surgical field and distinguish them from surrounding tissues.

Inherent Targeting is co-founded by the OHSU research team that developed these novel nerve-specific fluorescent dyes: Summer Gibbs, Ph.D., an associate professor of biomedical engineering, Lei Wang, Ph.D., a postdoctoral fellow, and Connor Barth, Ph.D., a research scientist. Their work on these compounds was published recently in *Science Translational Medicine*¹. The company was founded to

advance the lead compounds and bring them into the clinical setting.

The journey leading to the launch of Inherent Targeting started 12 years ago when Gibbs began work creating contrast agents for image-guided surgery clinical trials while at Harvard Medical School. In 2013, soon after coming to OHSU, Gibbs received an OHSU Biomedical Innovation Program² award.

The team has since received additional grants supporting further optimization of the compounds. Integrated into the commercialization effort by the Gibbs team is its ongoing relationship with OHSU Technology Transfer, OHSU Collaborations and Entrepreneurship and its Entrepreneur-in-Residence program, and the Oregon Clinical and Translational Research Institute.

Working closely with these groups, the Gibbs team has received guidance, support and resources to help begin the work of translating its innovation out of the lab and into the clinic. That includes guidance on appropriate patent protection of the compounds, licensing, startup formation, entrepreneurship and various commercially-focused funding opportunities.

1. stm.sciencemag.org/content/12/542/eaay0712

2. www.ohsu.edu/octri/biomedical-innovation-program-academia-marketplace

Startup Company Milestones

Starting and running a company is not an easy feat. It is fraught with several challenges along the way. The most successful entrepreneurs are motivated by these challenges and thrive on the ups and downs. Most OHSU technologies are at an early stage of development requiring significant effort and investment to reach the marketplace. However, the combination of groundbreaking ideas, dedicated entrepreneurs and a supportive startup community is a recipe for success. The following are milestones for OHSU Startup Companies from the past year.

APDM, Inc.

APDM.COM

A translational research company focused on discovering reliable and sensitive endpoints of disease progression in neurological and chronic conditions by quantifying human movement with wearable sensors, **was acquired by ERT.**

Aronora, Inc.

ARONORABIO.COM

A clinical-stage biotechnology company developing safe proprietary antithrombotic biological drugs, **successfully completed its phase 2 clinical trial of Xisomab 3G3 in end stage renal disease patients on chronic hemodialysis.**

Autobahn Therapeutics, Inc.

AUTOBAHNTX.COM

A biopharmaceutical company developing the next generation of regenerative medicines to restore hope for people affected by central nervous system disorders, **successfully raised \$76 million in Series B financing.**

BioSpeech, Inc.

BIOSPEECH.COM

A life science company that creates apps and speech technology tools for people with language, speech and hearing problems, **successfully secured a new Phase I SBIR grant from the National Institutes of Health to develop audiobooks for hearing loss.**

Najit Technologies, Inc.

NAJITTECH.COM

A biopharmaceutical company developing the HydroVax™ vaccine platform technology for treatment of infectious diseases, **successfully secured two new Phase I Small Business Innovation Research grants from the National Institutes of Health, totaling over \$500,000. The grants will support a phase 1 clinical trial of HydroVax™ -YFV vaccine platform technology as a Yellow Fever vaccine and the optimization of vaccine antigen for the development of an improved influenza vaccine.**

NeuraMedica, Inc.

NEURAMEDICA.COM

A medical device company developing a novel, bioabsorbable surgical clip for durotomy closure, **successfully secured funding through the Enhanced Innovation Grant from Business Oregon.**

STARTUP COMPANY MILESTONES

NOUS Imaging

NOUSIMAGING.COM

A software biofeedback solution startup company working to improve brain magnetic resonance exams, **raised over \$6 million in funding in venture capital and SBIR funding from the National Institutes of Health.**

PDX Pharmaceuticals, Inc.

PDXPHARM.COM

A biopharmaceutical company developing functionalized nanomaterials into drugs, successfully **secured \$4 million in financing from The Wayne D. Kuni & Joni E. Kuni Foundation for development of a targeted treatment of HER2-positive cancer.**

Quantiport, Inc.

QUANTIPORT.COM

A medical device company developing a device to provide objective blood volume information to medical providers, **secured seed investment from Ideaship and funding through the Enhanced Innovation Grant from Business Oregon.**

ServerDome

SERVERDOMES.COM

A company that designs and builds small to medium-sized data centers offering best-in-class power and water efficiency, adaptability, scalability and significantly reduced maintenance costs, **successfully secured a high-value strategic collaboration with an undisclosed clean tech company.**

Spoonbill Foundation

SPOONBILLFOUNDATION.ORG

A nonprofit research organization developing treatments for pantothenate kinase-associated neurodegeneration, or PKAN, and all neurodegeneration with brain iron accumulation, or NBIA, disorders in partnership with the NBIA community, **successfully initiated a phase 2 clinical trial of CoA-Z in patients diagnosed with PKAN.**

SurgiVance, Inc.

SURGIVANCE.COM

A medical device company developing a “pathology lab-in-a-box” imaging system for rapid point-of-care diagnosis of surgical specimens, secured **Phase I SBIR grant funding from the National Institutes of Health.**

Vir Biotechnology, Inc. (NASDAQ:VIR)

VIR.BIO

A clinical-stage immunology company focused on combining immunologic insights with cutting-edge technologies to treat and prevent serious infectious diseases, **had a successful initial public offering which raised \$143 million for the company.**

Virogenomics BioDevelopment, Inc.

VIROGENOMICS.COM

A life science company that partners with inventors of early pre-clinical stage technologies in order to evaluate and develop commercial products, was awarded a new **Phase I SBIR grant from the National Institutes of Health to develop novel fibrillin biomarkers to improve management of and mortality rates for aortic disease.**

Making an Impact



**Bory Kea, M.D.,
M.C.R., F.A.C.E.P.**



**Fikadu
Tafessee, Ph.D.**

The IDEA Fund awarded funding to **Bory Kea, M.D., M.C.R., F.A.C.E.P.**, associate professor in the Department of Emergency Medicine, for her project to study PPE sterilization techniques and to **Fikadu Tafessee, Ph.D.**, assistant professor of molecular microbiology and immunology, for his project to develop novel nanobodies as potential SARS-CoV-2 therapeutics.

IDEA Fund

As a result of a philanthropic gift received through the OHSU Foundation, in partnership with OHSU's office of Collaborations and Entrepreneurship, the Innovation Development and Entrepreneurship Acceleration, or IDEA, Fund was launched to help bridge the early-stage funding gap often experienced by innovators when moving through the commercialization process. The IDEA Fund provides support to developing technologies, entrepreneurial education and OHSU startup companies.

An example of how the IDEA Fund has benefited the innovative work at OHSU was through OHSU's Biomedical Innovation Program¹ COVID-19 Rapid Response funding opportunity. The BIP COVID-19 Rapid Response awardees addressed the pandemic through projects studying 3D-printed low-cost ventilators, sterilization techniques for reusable personal protection equipment and nanobodies as potential SARS-CoV-2 therapeutics. For these COVID-19-focused projects, projects were selected based on their abilities to make both a significant and potentially quick impact during the pandemic.

The IDEA Fund is also helping to support emerging new startup companies based on innovative OHSU discoveries. OHSU startup company Quantiport received funds from the IDEA Fund to assist with U.S. and international patent protection, support a pre-submission meeting with the U.S. FDA and to develop an FDA roadmap, as well as assist with additional engineering efforts in line with the company's overall business development and commercialization plan. Quantiport is developing a system for measuring blood volume quickly and accurately to help identify patients who have lost significant blood volume as well as to detect ongoing blood loss. OHSU startup company Auxetics is developing a novel stent design with mechanical properties unlike any other commercially available stent, specifically designed to address the unique biomechanics of veins, which will improve long-term patient outcomes. Auxetics received funds from the IDEA Fund to obtain regulatory consultation and market analysis.

1. www.ohsu.edu/octri/biomedical-innovation-program-academia-marketplace



A new ventilator prototype created with 3D-printing technology is being developed at OHSU. The design does not require electricity and operates off of a standard oxygen tank. (OHSU/Kristyna Wentz-Graff)

COVID-19 Response

The worldwide COVID-19 pandemic quickly strained healthcare systems worldwide. Shortages of mechanical ventilators were a primary concern for those treating patients in acute respiratory distress, for whom weeks or months of ventilation may be required. The need was particularly dire in austere environments with limited medical infrastructure.

Rising to the challenge, Albert Chi, M.D., associate professor of surgery at OHSU, and his core team, lab research engineers Whitney Menzel and Evan Fontaine, along with Stephanie Nonas, M.D., director of OHSU's medical intensive care unit, and respiratory therapist Dennis Child, began working around the clock on an economical and accessible ventilator design in late April. They did all work in their homes due to physical distancing measures. Within months, the team had developed the CrisisVent system, a purely mechanical unit with no electronic parts that runs on the standard oxygen supply available at hospitals and clinics worldwide.

The CrisisVent unit, the majority of which can be manufactured within a matter of hours using a 3-D selective laser sintering printer, is reusable and easily disassembled for cleaning. Its pressure ranges are also readily controlled for use with a wide range of patients from newborn children to larger adults. A request for an Emergency Use Authorization has been filed with the U.S. FDA for the CrisisVent ventilator.



OHSU Innovation and Commercialization Internship

Recognizing that entrepreneurial education is a key component of a thriving innovation ecosystem, the technology transfer office at OHSU has operated an internship program since 2004. To date, over 80 interns have participated in the program, gaining valuable knowledge about the commercialization life cycle. Most interns come to the program with a background in academic scientific research, postgraduate education and an interest in technology transfer, business development or intellectual property law. Interns spend the first month of the program in courses learning about commercialization, entrepreneurship and intellectual property. After this initial training period, they are paired with OHSU staff mentors to work on discrete projects that fit with their educational goals and career aspirations, while contributing to the mission of OHSU Technology Transfer.

While the program's focus on innovation and entrepreneurship education has remained the same, the internship program has continuously evolved over the years with some significant changes rolled out during 2020. The program has been renamed as the OHSU Innovation and Commercialization Internship and it is operated as a joint effort between OHSU Technology Transfer and OHSU Collaborations and Entrepreneurship. Eligible

interns are now provided with stipends to help cover living expenses thanks to funding from OHSU's Venture Development Fund¹. Finally, one of the biggest changes of the year was completely unexpected, with the 2020 iteration of the program successfully going fully remote due to the COVID-19 global pandemic.

The OHSU Innovation and Commercialization interns that began the program in early 2020 are already seeing the value of their efforts. Their projects have contributed to the success of OHSU in terms of commercializing technologies, protecting intellectual property, strategic decision-making and developing policies and procedures. Recent intern projects have also directly benefited OHSU startup companies and the Portland biotechnology community. In exchange for their hard work, these interns are receiving knowledge, skills and experience that will help them achieve success in their future career endeavors. Nearly one-half of past interns have gone onto careers in industry, one-fourth have obtained careers in academia and one-tenth have been hired by law firms. Others are taking on careers in healthcare and government. The OHSU Innovation and Commercialization Internship fosters a real win-win relationship among interns, OHSU and all those who benefit from a strong innovation ecosystem.

You can contribute to OHSU's efforts in innovation and commercialization through various mechanisms. The OHSU Venture Development Fund¹ provides funding for early proof-of-concept technology projects and commercialization endeavors. Qualified donors to the OHSU UVDF can receive a 60 percent tax credit towards their Oregon state taxes. The IDEA Fund² provides funding to emerging OHSU startup companies and educational efforts focused on innovation and entrepreneurship. To help support these and other programs at OHSU through a philanthropic gift, contact the OHSU Foundation³.

1. www.ohsu.edu/foundation/ohsu-venture-development-fund
2. www.ohsu.edu/tech-transfer/innovation-programs
3. www.ohsu.edu/foundation

Licensing Executives Society (LES) Deal of Distinction Award

The 2019 LES Deal of Distinction Award for the Industry-University-Government Interface Sector was awarded to Michele Gunness, Ph.D., CLP, senior technology development manager in OHSU Technology Transfer, for her role in a creative technology licensing deal for a rare pediatric disease dataset.

Melanie Gillingham, Ph.D., associate professor in OHSU's Department of Molecular and Medical Genetics, and Cary Harding, M.D., professor in the department, were awarded a grant from the FDA's Office of Orphan Product Development to conduct a randomized double-blind trial to clinically evaluate the triglyceride triheptanoin as a possible treatment for Long-Chain Fatty Acid Oxidation Disorders. These disorders are inherited defects that occur in approximately one in 9,000 births. Patients with the disorders are missing or are deficient in the enzymes required to metabolize certain fats. Common symptoms are muscle rupture, low blood sugar, muscle weakness, decreased muscle tone and disease of the heart muscle. At the time of the study, there were no approved drugs or treatments specifically for the disorders. Triheptanoin is intended to provide patients with the disorders with medium-length, odd-chain fatty acids that are

metabolized to bypass faulty pathways and provide an alternative energy source. The 32-subject study represented the largest and only double-blind randomized trial of its kind for Long-Chain Fatty Acid Oxidation Disorders. To complete enrollment for this rare disease trial, OHSU partnered with Jerry Vockley at the University of Pittsburgh, who is also an expert on inborn errors of metabolism.

OHSU Technology Transfer and the Innovation Institute at the University of Pittsburgh worked closely to maximize public benefit by ensuring access could be granted to the valuable data generated by the FDA-funded study. Shortly thereafter, Michele Gunness negotiated a Research Services and Nonexclusive License Agreement with Ultragenyx Pharmaceutical Inc. in hopes that the company's use of the limited dataset would support its new drug application with the FDA. Ultragenyx found tremendous value in the limited dataset and took a new license to an expanded field-of-use of the limited dataset for regulatory and commercial purposes. In late June 2020, Ultragenyx announced FDA approval of Dojolvi™ (triheptanoin), the first approved therapy for the treatment of Long-Chain Fatty Acid Oxidation Disorders.



**Michele
Gunness, Ph.D., C.L.P.**

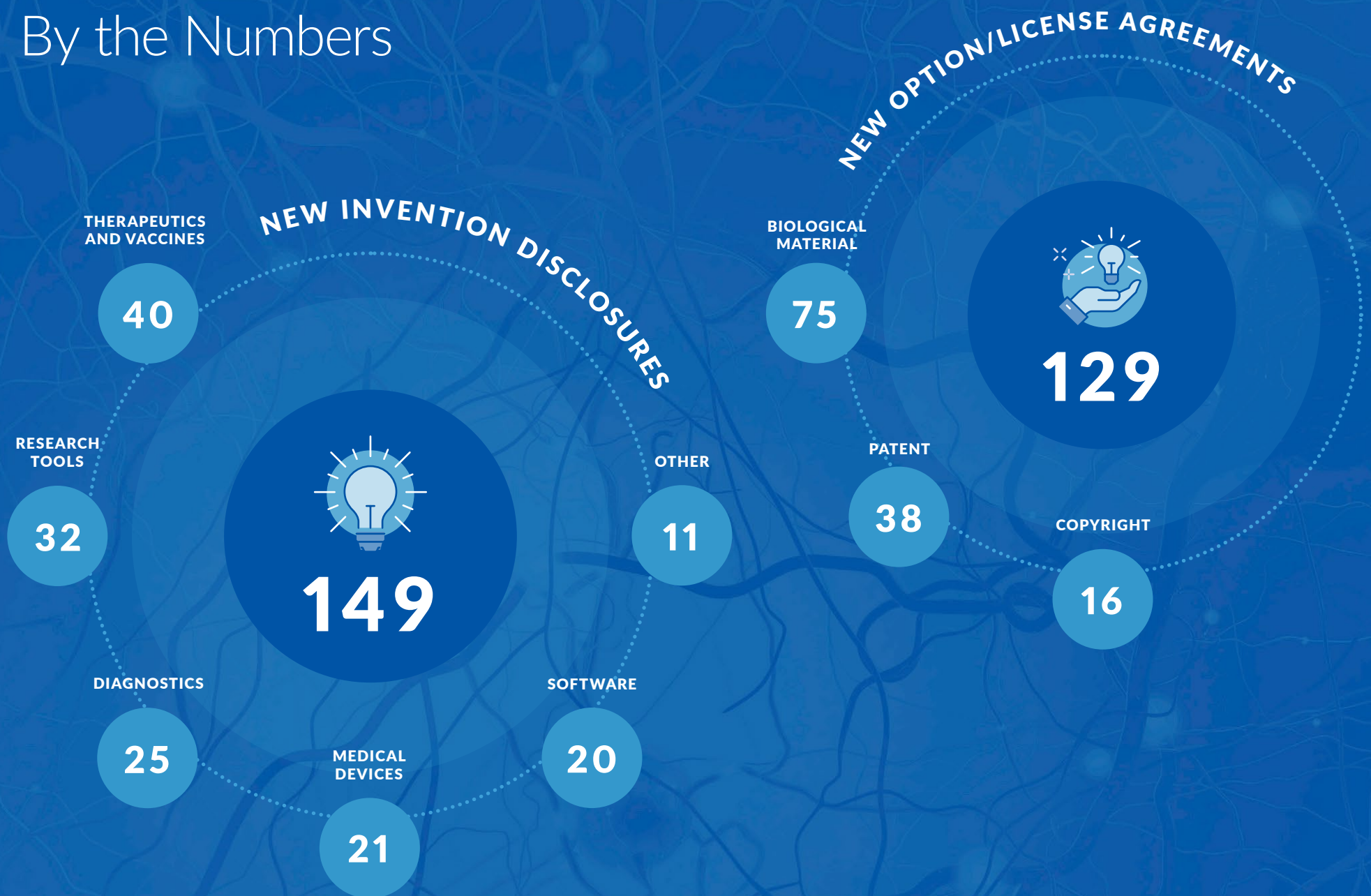


**Melanie
Gillingham, Ph.D.**



**Cary
Harding, M.D.**

By the Numbers



BY THE NUMBERS

172

TOTAL PATENT APPLICATIONS FILED

89

US PATENT APPLICATIONS FILED

56

PATENT APPLICATIONS FILED ON NEW MATTER
PROVISIONALS, US UTILITY, NON-US



7

NEW STARTUP COMPANIES



5

NEW STARTUP COMPANIES BASED IN OREGON



501

MATERIAL TRANSFER AGREEMENTS



78

INDUSTRY-SPONSORED RESEARCH AGREEMENTS



159

NON-DISCLOSURE/CONFIDENTIALITY AGREEMENTS



167

OTHER RESEARCH AGREEMENTS¹

Technology Transfer Advisory Committee

To better serve the OHSU community and provide advice and guidance to enhance the impact of OHSU discoveries, the OHSU Technology Transfer Advisory Committee was formed in 2020. This committee is charged with advising OHSU on matters pertaining to technology commercialization and the overall facilitation of knowledge and technology transfer to the commercial sector for the ultimate benefit of the public. With the assistance of these committee members, OHSU will be able to expand its reach and impact.

OHSU Technology Transfer Advisory Committee Members

Peter Barr-Gillespie, Ph.D.
EXECUTIVE VP AND CHIEF RESEARCH OFFICER
OHSU

Alice Cuprill-Comas, J.D.
EXECUTIVE VP AND GENERAL COUNSEL
OHSU

Jennifer Dyer, C.L.P.
EXECUTIVE DIRECTOR, USC CENTER FOR INNOVATION
UNIVERSITY OF SOUTHERN CALIFORNIA

Klaus Früh, Ph.D.
PROFESSOR, VACCINE AND GENE THERAPY INSTITUTE
OHSU

Kirsten Leute, M.B.A.
PARTNER, UNIVERSITY RELATIONS
OSAGE UNIVERSITY PARTNERS

John Phillips, Ph.D., M.B.A.
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FORMER CHIEF SCIENTIST, U.S. CENTRAL
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Thomas Scanlan, Ph.D.
PROFESSOR, CHEMICAL PHYSIOLOGY
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Brian Wall, M.S.
ASSOCIATE VP FOR RESEARCH, INNOVATION
& ECONOMIC IMPACT
OREGON STATE UNIVERSITY

Fiona Wills, Ph.D.
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