OFFICE OF TECHNOLOGY LICENSING

INTELLECTUAL PROPERTY NEWSLETTER

2014 Issue

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OFFICE OF TECHNOLOGY LICENSING- "HOW WE FIT IN"

With new ideas and groundbreaking research being generated at St. Jude each day, it is the job of the Office of Technology Licensing (OTL) to help turn some of these new ideas into products that will benefit the public and generate income for the hospital. Through the process of patenting and licensing, this six-member department promotes the development of research discoveries into products such as new drugs or diagnostic assays. Some of the products arising from St. Jude inventions directly benefit children at St. Jude, like an assay that helps physicians determine the appropriate dose of mercaptopurine to give children with leukemia based on the child's genetic makeup. Other inventions, such as new and improved methods for generating influenza vaccines, benefit everyone.

"Since some patent rights are lost if an invention is disclosed to the public before an application is filed, we encourage researchers to let us know beforehand if they are going to publish an article or give a presentation disclosing a new invention. We will work with them to determine if an application should be filed and then oversee the patenting process."

- Scott Elmer, OTL director

In addition to patenting and licensing new inventions, the OTL also licenses biological materials as research reagents-antibodies are the most common. This generates income for St. Jude and relieves researchers from the burden of packaging and shipping their materials to individual requestors. The OTL also assists with the sharing of research materials between other academic institutions and companies. Esther Allay, licensing associate, drafts and negotiates hundreds of Material Transfer Agreements each year. Other OTL activities include helping to establish formal collaborations and sponsored research relationships, processing CDAs, reviewing consulting agreements, and addressing other intellectual property issues.

"We encourage anyone who comes up with a new and useful idea as a result of his or her employment at St. Jude to contact us to discuss whether it may be a patentable invention."

- Shawn Hawkins, OTL associate director

Income received from licensing reagents and inventions is shared with the participating researchers. Regina McKinney, the OTL's finance coordinator, invoices outside parties and distributes inventor allocations. The department receives administrative support from Sheila Wilson, senior administrative assistant.

The OTL also receives calls and e-mails concerning new ideas, and OTL members attend seminars to look for patentable inventions or licensable materials. If you would like more information, explore the OTL website at http://www.stjude.org/technology-licensing; or contact Chad Riggs, OTL marketing associate, directly at either 901-595-3866 or chad.riggs@stjude.org. For more general information about the technology licensing process, the Association of University Technology Managers (AUTM) has produced an informative video available on YouTube.

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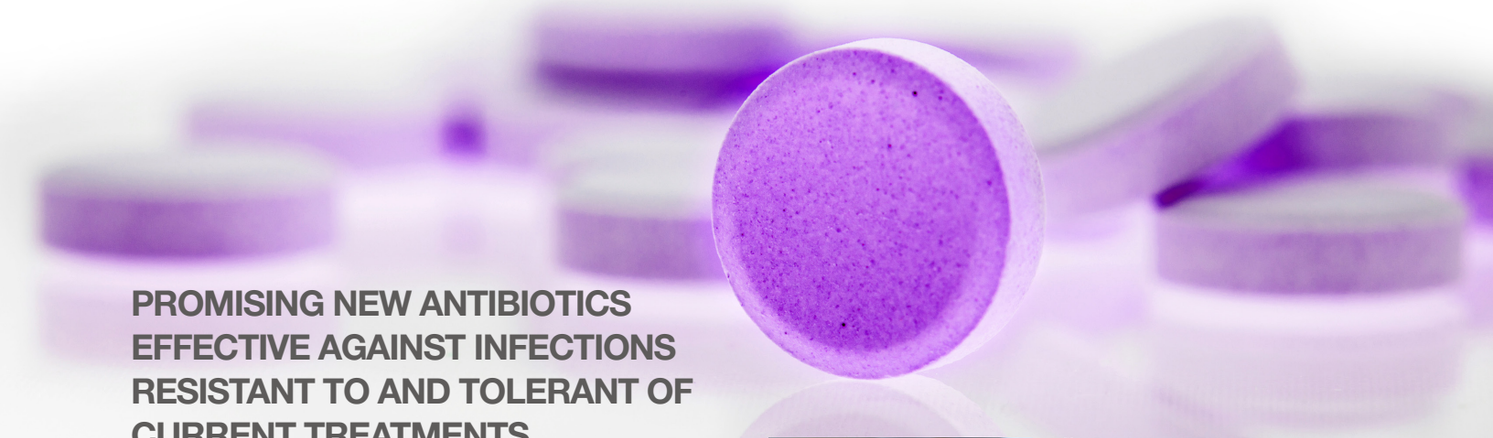
MID-SOUTH LIFE SCIENCE TENNESSEE (LIFESCITN) ACADEMIC ALLIANCE UNITES RESEARCHERS IN NETWORKING

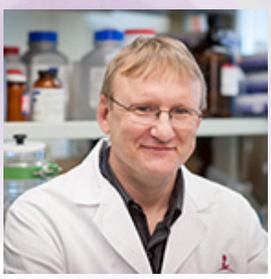
Supported by Life Science Tennessee, Memphis Bioworks, LaunchTN, St. Jude, UTHSC and University of Memphis, the Mid-South LifeSciTN Academic Alliance is made up of graduate students and post-doctoral researchers interested in creating opportunities for entrepreneurship, career development and knowledge sharing with the goal of creating a more robust life science industry network. Since forming, the organization has hosted 7 speakers at monthly networking events, and a leadership group has been created to lay out a path for continued success. Speakers give advice in clinical, research, policy, and biotechnology business areas, and share personal experiences and perceptions from their various paths that often differ from the academic world, providing members a unique insight into professional growth. Check the Life Science Tennessee website for upcoming monthly Memphis events, or email Chad Riggs.



PROMISING NEW ANTIBIOTICS EFFECTIVE AGAINST INFECTIONS RESISTANT TO AND TOLERANT OF CURRENT TREATMENTS

For over 100 years, antibiotics have been used to fight bacterial infection and disease. However, bacteria are increasingly developing resistance to front line antibiotics, and new therapies are needed to treat these bacterial strains. Dr. Richard Lee, Ph.D., a member of the St. Jude Department of Chemical Biology and Therapeutics, is developing two new classes of compounds to be effective in treating strains that are no longer effectively treated with current therapies. One compound is an adaptation of an old antibiotic- Spectinomycin, which is modified using structure based drug design. The other compound is designed to treat chronic infections and biofilms caused by persister cells that have become tolerant of existing antibiotics. Both compound classes are described below:

Treating resistant bacteria: Dr. Lee's laboratory designed a promising new class of antibiotics, called aminomethyl spectinomycins, which follows his work on Spectinomycin analogs for treating tuberculosis. In this case a new series of spectinomycin analogs has been developed for treating a broad spectrum of respiratory tract infections including S. pnuemoniae, the most common pathogenic bacteria associated with this type of infection. The aminomethyl spectinomycins are active against drug resistant strains. In collaboration with Dr. Jason Rosch in the Infectious Diseases department, the robust efficacy of this compound series has been demonstrated at low compound dosing levels, further validating this series. These compounds have been licensed by Microbiotix, a privately-held, clinical stage biopharmaceutical company engaged in the discovery and development of novel small molecule anti-infectives



"This study demonstrates how classic antibiotics derived from natural products can be redesigned to create semi-synthetic compounds to overcome drug resistance." *- Richard Lee, Ph.D.*

Treating tolerant bacteria: Dr. Lee and his collaborators developed another set of compounds designed to treat bacteria, fungi and parasites that develop multidrug tolerance by becoming dormant. Small subpopulations of tolerant microbial cells are called persister cells, because they can survive the antimicrobial treatments that kill their genetically identical siblings. When persister cells are left behind, they become a reservoir from which an infection can recur. Examples of chronic infections include endocarditis, urinary tract infections, gingivitis, middle ear infections, fatal lung disease (cystic fibrosis) and infections produced by biofilms. These infections are often associated with implanted medical devices, such as catheters and artificial joints. Multidrug tolerant infections account for more than 60% of all microbial infections, are hard to treat and subject to infection relapse. Traditional antibiotics kill active cells via inhibition; however, this new set of compounds acts to kill dormant cells. They could be used to treat infections caused by biofilms; and other infections caused by chronic bacteria persister cells. These compounds have been licensed to Arietis, a Boston-based biotechnology company focused on the discovery and development of novel antimicrobial agents.

IT PAYS TO WORK WITH THE OTL

The last fiscal year was a good one financially for St. Jude's technology licensing operation, where revenue is produced by licensed inventions and reagents. That success trickles down to inventors through allocations of between 30-50% of net income according to a formula set out in the faculty handbook. Total allocations for FY 2014 exceeded $6 million distributed among more than 80 current and former St. Jude inventors. The remaining license income retained by St. Jude is used to further our research mission. Keep in mind that patience is a virtue when it comes to generating revenue from inventions; the vast majority of allocations this year were based on invention disclosures submitted more than 10 years ago. Below is a list of the ten disclosures that generated the most revenue during FY2014, followed by their priority date (i.e. the date of their original patent filing or disclosure).

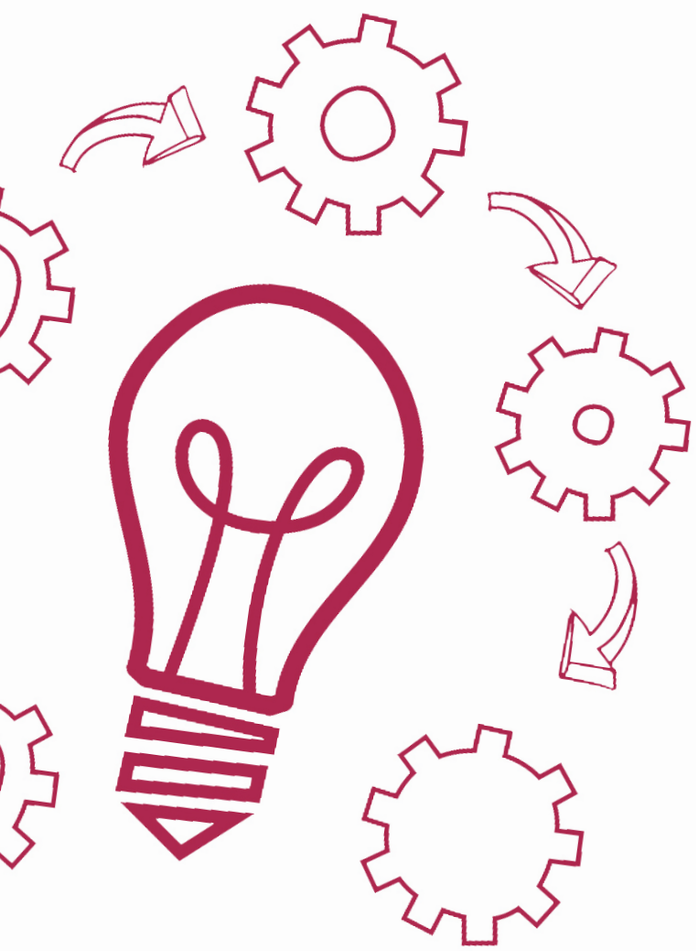
Rank	Subject Matter	Priority Date
1	Chimeric Receptors w/4-1BB stimulatory signaling domain	Nov-03
2	Anaplastic Lymphoma Kinase (ALK)	Dec-93
3	CD- i i lonal anti ı	Jan-86
4	Reverse genetics plasmid rescue syste m	Apr-01
5	Factor IX gene therapy vectors for hemophilia	Sep-04
6	TPMT Assay	Aug-95
7	Regulating T-cells with LAG-3 Monoclonal Antibody	Feb-03
8	JAK kinases and regulation of cytokine signal transduction	Jul-93
9	CD- i i lonal anti ı	Jan-89
10	Activation of Ataxia Telangiectasia-Mutated (ATM) kinase	Nov-02

While there is no guarantee that your idea will be pursued and end up being granted a patent, or being developed into a financially successful product, the only way to have the chance is to contact the OTL. Any employee can fill out and submit the simple disclosure form available on the OTL intranet site to have their idea considered. We are also happy to meet with you if you are not sure if your idea qualifies as an invention or need help with the form.

Inventors listed on new patents filed in FY2014 include Dario Campana, Phillip Cherian, Victor Amador Diaz, Barthelemy Diouf, Michael Dyer, William Evans, Paolo Fagone, Kip Guy, Julian Hurdle, Kudo Ko, Richard Lee, Wai-Hany Leung, Wing Leung, Steven Paugh, Asha Pillai, Eleanor Pritchard, Fatima Rivas, David Shook, David Sobczak, Erin Sullivan, and Xiaoqian Wu.

Of the multiple patents filed every year, only some are granted, often years later.
Here is a list of patents granted in 2014:

Patent #	Subject Matter	Inventor
8,529,912	Group B streptococcus polypeptides nucleic acids and therapeutics compositions and vaccines thereof	Elisabeth Adderson, John Bohnsack
8,551,481	Regulating T-cell homeostasis	Dario Vignali, Creg Workman
8,637,506	Compositions and Methods for Bone Formation and Remodeling	Jufang Shan, Jie Zheng
8,574,592	Modified Influenza Virus for Monitoring Vaccine Efficiency	Elena Govorkova, Erich Hoffmann, Aleksandr Lipatov, Richard Webby, Robert Webster
8,722,055	Synthetic Streptococcus pneumonia vaccine	Richard Kriwacki, Elaine Tuomanen, Beth Mann, Brad Jordan, Karim El Kasmi
8,614,192	Treatment of Retinoblastoma with p53 modulators	Michael Dyer, Kip Guy, Fangyi Zhu
8,716,243	Methods of Effecting WNT Signaling Through DKK structural analysis.	Jie Zheng
8,722,641	Targeted Modulations of p53 Translation	Michael Kastan, Jing Chen



If you are interested in learning about past inventions that have been developed into products and contributed to our licensing success, you can click the "Success Stories" link on our internet site. These stories may help you envision what is possible when you work with the OTL to turn your idea into an actual product that can benefit the public and perhaps even our own patients.

"Speaking of Success Stories, 2015 promises the addition of some new wall art in the 505 building, in the hallway near our offices. This will make our location more noticeable, and encourage visitors to submit disclosures that can become commercial products by better understanding the process."

- Chad Riggs, Marketing Associate

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