



UCLA

DRIVING INNOVATION TO MARKET

UCLA Office of Intellectual Property and Industry Sponsored Research

LETTER FROM THE ASSOCIATE VICE CHANCELLOR



Change can bring opportunity, and the UCLA Office of Intellectual Property and Industry Sponsored Research (OIP-ISR) has seen a lot of change this past year, with more to come.

I am pleased to be a part of these changes and the progress we have made to enhance the entrepreneurial culture on our campus. This year's report highlights a number of new OIP-ISR programs and activities that are helping to spur entrepreneurial activity at UCLA, as well as the new startups, product launches, licensing agreements, and industry-sponsored research agreements that have arisen from our office's efforts. Major success stories profiled in these pages include companies that have gone on to obtain millions of dollars in private capital, expanded to large R&D spaces in the Los Angeles region, completed successful clinical trials, and launched a number of new products that will benefit both the economy and society at large.

To enhance UCLA's entrepreneurial and industry-partnering activities, the coming year will see the creation of an independent board to oversee OIP-ISR. This new oversight organization was unanimously approved by The Regents, and will include industry leaders in such fields as biopharmaceuticals, engineering, and venture capital, as well as faculty from the UCLA Academic Senate. This board will bring a new level of professional capability and real world business experience to assist our campus with decisions about patenting, licensing, University investment, risk tolerance, and industry-sponsored research contracts.

I am excited to have been invited to be a part of the process to usher in this positive and forward-thinking change. In this, my first annual report for OIP-ISR, I also want to recognize the dedicated professionalism and hard work of the entire OIP-ISR staff who have embraced these entrepreneurial improvements and who will become the standard bearers for it. During this transition, they have maintained and continued to grow the office's work in commercializing UCLA inventions and forging research partnerships with industry.

With all the new challenges and opportunities facing OIP-ISR, these are, indeed, exciting times. We look forward to moving ahead with our new structure and establishing additional innovative partnerships with our campus and external stakeholders with whom we will continue to build a vigorous entrepreneurial ecosystem at UCLA.

A stylized, handwritten signature in blue ink, appearing to read 'B. Rauw'.

Brendan Rauw, MBA

Associate Vice Chancellor and Executive Director of Entrepreneurship



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Driving Innovation to Market

UCLA's mission as a public research university includes the creation, dissemination, preservation, and application of knowledge for the betterment of our global society. As such, research universities like UCLA make discoveries and create new technologies both for the sake of discovery itself, and to help solve major challenges facing our society. In this vein, a central component of our office's mission is to build bridges between the University and industry to catalyze the development and commercialization of UCLA inventions to benefit the economy and society at large.

Our approach is to be proactive in engaging with the entire UCLA campus as we recognize that one cannot predict where the next great discovery will arise from. We aggressively file and invest in patent and copyright protection for these innovations so that we can ultimately partner these technologies with industry. On the back-end we are constantly building connections with industry at all levels from solo entrepreneurs through to mid-size companies and on to large multinationals as well as with angel investors and venture capitalists in order to identify the most qualified partners to commercialize UCLA's innovations. Additionally we work with industry and faculty to identify opportunities for collaborative research and then structure these sponsored-research deals.

The chart on the next page gives a sense of the scope of our activities over the past two years and the following pages highlight some of the new companies and products that have emerged from UCLA's research enterprise. As part of our engagement with the entire UCLA campus we have the opportunity to work on projects from departments other than those in the sciences and engineering. In addition, since positively impacting society is at the core of what we do, we often spend time working on projects that may not yield a large dollar return to the University but that will nonetheless have a major societal impact. We highlight two such stories below along with examples of faculty research programs from across the campus that have the potential to transform patient care and industries throughout the economy.

We end this year's report with a look at new initiatives and programs that we recently launched to further grow and accelerate this "drive to market" of UCLA innovations in order to benefit the economy and society at large.

OIP-ISR's Major Responsibilities

- Pursuing patent and copyright protection for UCLA innovations
- Marketing & licensing inventions to industry
- Assisting UCLA researchers, faculty & entrepreneurs with startup companies
- Engaging industry in research collaborations

OIP-ISR By The Numbers

	FY2011–12	FY2012–13
Industry-Sponsored Research (ISR) awards	228	231
Total awarded research dollars from ISR awards	\$39.8M	\$39.3M
New invention disclosures	357	406
New provisional patent application filings	279	301
New utility patent filings	172	194
Newly-issued US patents	80	95
Newly-signed licenses and options	83	126
Startup launches	15	17
Product launches	7	4
Licensing Revenue distributed to UCLA	\$18.1M	\$23.7M
Licensing Revenue distributed to UCLA inventors	\$6.2M	\$7.2M

From Research to New Companies and Products

INDUSTRY-SUPPORTED RESEARCH PROJECTS AND CENTERS

UCLA engages with industry on research collaborations in a wide variety of disciplines such as engineering and medicine and thereby helps advance the University's research mission while also translating the fruits of this research into technologies and products that go on to benefit society. UCLA benefits by getting access to research partners, resources, and industrial experience for both faculty and students, and has become a key center for companies interested in engaging in research collaborations with academia. Below is an overview of two such recently-formed research centers that have a core set of industry partners, as well as examples of other industry-funded research programs at the University.

"OIP is a fantastic UCLA resource! They clearly laid out the path step by step for us to get this to the market. It is clear that the OIP has very talented people who are having a major impact on improving human health by streamlining the process of commercializing inventions."

Kalyanam Shivkumar, MD, PhD, Director
UCLA Cardiac Arrhythmia Center & EP Programs

AGENSYS

Agensys, Inc. (an Astellas affiliate) is a biotech company founded in 1997 and acquired by Astellas in 2007. Agensys recently moved into a large new R&D space in Santa Monica. The company has a long history of engagement with UCLA and in 2013 entered into a Master Sponsored Research Agreement with the University to help catalyze research collaborations between the company and the University.

Two projects have already been launched under the agreement. The first is a collaboration with UCLA's Jonsson Comprehensive Cancer Center with Dr. Richard Finn, a professor in the School of Medicine, Division of Hematology/Oncology, and JCCC's director of Clinical/Translational Research, professor Dr. Dennis Slamon. The project is focused on evaluating the safety and toxicity of antibody drugs provided by Agensys using JCCC's cancer cell lines. The second project is with Dr. Robert Reiter, a professor in the Department of Urology, and also a researcher at JCCC, and is focused on researching monoclonal antibodies to treat prostate cancer.

Additional projects are expected for 2014. These projects are expected to be the first of multiple collaborations that take advantage of both the physical proximity of the two organizations and the shared expertise in oncology research.

FAME

The Center for Function Accelerated nanoMaterial Engineering (FAME) was established in 2013 as one of six centers under the newly created Semiconductor Technology Advanced Research Network (STARnet) Program. This public-private partnership between the U.S. Department of Defense and Semiconductor Research Corporation (SRC), a consortium of the world's leading technology companies, seeks to leverage the leading experts from industry and academia through a University-managed, multi-disciplinary research center in pursuit of breakthroughs in semiconductor technology critical to U.S. security and economic competitiveness. FAME received \$6 million dollars in the first year of a five-year partnership totaling \$35 million.

FAME's research focuses on creating and investigating new, atomic-scale, engineered materials and structures of multi-function oxides, metals and semiconductors. By understanding these nonconventional materials and nanostructures and controlling their strongly correlated quantum properties, the center intends to enable novel and advanced analog, logic and memory devices that are vital to U.S. competitiveness, security, and intelligence. SRC's support of the FAME Center is just the latest in a series of innovative collaborations with UCLA dating back nearly a decade.

MAXWELL

In 2012, Maxwell Technologies Inc., a leading producer of ultracapacitor products in the field of energy storage and power delivery, entered into an agreement with UCLA to fund research in Professor Richard Kaner's lab in the UCLA Department of Chemistry and Biochemistry. The agreement builds on years of groundbreaking research by Professor Kaner into a carbon-based material known as graphene that has significant potential in energy storage, amongst other areas.


The agreement focuses on exploring the use of graphene to construct supercapacitors for high-power and high-energy density storage and builds on earlier work by Kaner who developed a simple and inexpensive method to produce graphene-based supercapacitors. Kaner, also a professor in the Department of Material Science and Engineering, and his colleagues originally published their method in *Science* and the technology has since received widespread media attention including a short documentary prepared for a video contest on "world-changing ideas".

If the technology is ultimately commercialized, it could revolutionize energy storage systems for all manner of portable electronics, and may eventually find applications in electric vehicles and other devices where batteries currently predominate. A recent publication by Kaner's group in *Nature Communication* shows how his work on graphene supercapacitors could also impact micro-scale devices such as micro-electromechanical systems (MEMS), biomedical implants (e.g. pacemakers, radio-frequency identification (RFID) tags), and embedded micro-sensors. Maxwell has recently renewed the research agreement in order to fund additional work in the Kaner lab.

SIEMENS

Siemens Healthcare, a major healthcare technology company, recently provided a number of its proprietary pre-release software systems to UCLA under an agreement between the campus and Siemens. Using these proprietary tools, researchers such as Holden Wu, an assistant professor in the Department of Radiological Sciences in the David Geffen School of Medicine are developing a number of new medical imaging technologies to better diagnose and monitor diseases such as cancer and cardiovascular disease. Similarly, Kara Chew, an assistant clinical professor in the Division of Infectious Diseases within the David Geffen School of Medicine is using the pre-release "Work-in-Progress" Siemens software in her research on cardiovascular disease in patients with HIV.

The Siemens software agreement is an example of the types of industry-University agreements that the industry-sponsored research team within our office are continuously helping to forge in order to further advance the research enterprise by gaining access to unique industry capabilities and support.



“TANMS vision is to develop a new frontier for miniature electromagnetic devices that initiate a Silicon Valley type of environment around the four associated TANMS campuses.”

Gregory P. Carman, PhD
TANMS Center Director

TANMS

The Center for Translational Applications of Nanoscale Multiferroic Systems (TANMS), funded by an \$18.5 million National Science Foundation grant, is a new engineering center headed by UCLA and created in 2012. It focuses on translating fundamental engineering research on highly efficient and powerful electromagnetic systems, roughly the size of a biological cell, into practical applications of interest to society. The revolutionary technology could conceivably transform a range of devices including super-miniaturized consumer electronics, technologies vital to national security, and as-yet unimagined machines, like nanoscale submarines that can navigate through the human blood stream. The multiferroic research program consists of five research teams distributed across four university campuses investigating multiscale material modeling and materials fabrication with a focus on memory, antennas and nanoscale motors.

The initial grant spans five years with an option for an additional five years and \$16.5 million of support. Partner universities include UC Berkeley, Cornell University, and California State University, Northridge. One of the unique aspects of this program is the two-pronged focus by the NSF to pursue cutting edge technological innovation while at the same time

creating programs and platforms to provide educational and practical opportunities for the next generation of engineers. TANMS' Industrial Affiliates Program actively engages industry leaders to support UCLA and its partners in pursuit of these goals. The companies range from small businesses to large corporations, including Maritime Applied Physics Corp. (MAPC), NextGen Aeronautics, Raytheon Company, and Lockheed Martin Corp. TANMS will provide guidance on translational activities to turn research results into new products while offering students exposure to the commercial aspects of engineering, and, at the same time, serving as a platform to foster new collaborations between these companies and UCLA.

MOVING THE TREATMENT PARADIGM

When you've had the Hollywood community provide millions of dollars to support your cancer research; helped create the life-saving and widely-used breast cancer drug, Herceptin; received dozens of national and international awards; had a book written about you; and had actor/singer Harry Connick, Jr. portray you in a movie, you find people listen to what you say.

But Dennis Slamon, director of Clinical/Translational Research at UCLA's Jonsson Comprehensive Cancer Center (JCCC), to whom all the above has happened, would rather people pay attention to the data.

That's because Slamon and his research team have recently demonstrated exciting results for a new approach to treating breast cancer. Using the JCCC laboratory's unique collection of 600 cell lines spanning 14 different types of cancer malignancies Slamon's team was able to show promising pre-clinical anti-cancer activity for a compound owned by Pfizer. They then went on to do a clinical trial with more than 170 breast cancer patients.

Describing the results of the trial, Slamon said "The effect was dramatic, as dramatic as anything I've seen in Herceptin." According to Slamon's published results, women given the new drug in combination with the standard anti-estrogen treatment, letrozole, showed no tumor growth for more than two years, compared to just 7.5 months in patients given letrozole alone. Furthermore, the drug targets a type of cancer that represents about 75% of all breast cancers.

In April, the drug was designated a "breakthrough therapy" by the U.S. Food & Drug Administration. Slamon and his team are now enrolling patients for another round of studies required for the drug to receive FDA approval.

That work and other research — such as JCCC's ongoing studies on a new drug that targets women with the BRCA gene mutations that are a risk factor for hereditary breast-ovarian cancer — is part of a new paradigm for targeted approaches to fighting cancer. The old approach is to use large doses of chemotherapy which kill cancer cells, but also normal non-cancerous cells.

"We've taken that model as far as we could take it," Slamon said. "It was the standard for 40 years, but now the approach is to identify what's broken in the cell."

Now, advances in technology permit a more finessed and safer approach to fight cancer at the molecular and cellular level while minimizing harm to normal



cells and tissues. It's an approach that little more than two decades ago was unheard of, literally, when Slamon could not find funding for his research because pharmaceutical companies and federal funding agencies would not listen to him when he urged them to simply look at the data on antibody research.

That's when Revlon and the Entertainment Industry Foundation stepped in with cash grants raised by entertainment-industry executives who had been Slamon's patients. "With so many tools and techniques in the lab, it's an exciting time in biomedical research," Slamon said. "It would be fun to be starting this all over again with all that's online now."

Growing up in New Castle, Pennsylvania, and watching his father go to work every day in a coal mine, Slamon knew he wanted to avoid the mines for himself. His inspiration to become a doctor came from the pediatrician who made house calls to his house and from a high school biology teacher. Slamon began his medical career after receiving a PhD from the University of Chicago's Pritzker School of Medicine and interning in Chicago, before coming to UCLA in 1979.

Now, in his post at JCCC, one of the largest comprehensive cancer centers in the nation with more than 240 physicians and scientists, he helps direct hundreds of clinical trials and research in experimental cancer treatments that are conducted in collaboration with pharmaceutical companies and medical institutions worldwide. The focus is on translational medicine and translating lab discoveries into clinical trials and ultimately into novel drugs for patients.

"It's a great environment," he said. "I'm taking what I can do for one patient and doing it for patients all over the world."

LICENSING AGREEMENTS

While formation of new startup companies around UCLA inventions is a strong focus of our activities, many UCLA technologies are licensed to existing companies from around the world. Often these companies are well-resourced to develop the technology and may already have the complete set of R&D capabilities needed to bring the technology to market. Below is a small set of examples of these types of license deals that OIP-ISR has completed over the past two years.



Quest PharmaTech, Inc. is a publicly-traded, Canadian pharmaceutical company focused on developing and commercializing products for the treatment of cancer. In March 2013, the company signed a licensing agreement with UCLA for technology developed by a team led by Manuel Penichet, a UCLA Department of Surgery professor and researcher focused on cancer immunology and immunotherapy, including antibody engineering and vaccine design. This novel technology was developed in collaboration with the team of Dr. Christopher Nicodemus, an expert in cancer immunotherapy, at Advanced Immune Therapeutics, Inc.

The license agreement focuses on the use of a new antibody of the IgE class specific for the prostate cancer antigen PSA. The idea supporting this strategy is to redirect the allergic response against the tumor and also elicit a secondary immune response in the patient that will further confer anti-tumor activity. Importantly, the immunotherapeutic IgE in development can be potentially used in combination with other antibodies and/or with chemotherapy, as a combinatorial therapy to maximize the anti-tumor response. IgE immunotherapy belongs to the new field of AllergoOncology, which aims to reveal the function of IgE-mediated immune responses against cancer and develop novel IgE-based cancer therapies that may significantly contribute in finding a cure for cancer.

BIOTIME

In April 2013, Biotime, Inc. announced an exclusive license agreement with UCLA for a stroke treatment technology developed by faculty researcher S. Thomas Carmichael, MD, PhD, of the Department of Neurology. The technology uses one of BioTime's HyStem® hydrogels to deliver locally-released growth factors to improve recovery from stroke. BioTime also entered into a Sponsored Research Agreement with UCLA to support on-going pre-clinical work at UCLA to develop data to support an Investigational New Drug Application (IND) for human clinical trials.

BioTime (NYSE MKT: BTX) is a publicly traded, biotechnology company headquartered in Alameda, CA, with subsidiary offices in Singapore, and Israel. Founded in 1990, it focuses on regenerative medicine and blood plasma volume expanders and manufactures a broad platform of research products including stem cell lines, hEP cells, and hydrogels.

"Using this targeted slow release delivery from the biopolymer allows direct delivery of the growth factor to the target area of the body—the injured brain after stroke. The interaction with UCLA OIP allowed the partnership from BioTime and my laboratory to progress with IP control of this concept, so that it can be developed and hopefully commercialized."

S. Thomas Carmichael, MD, PhD
Department of Neurology, UCLA

"It's not an easy job for a Japanese company like Ushio to make contact with UCLA to obtain a new licensing agreement, but with the good support of OIP, we got an agreement in 2012. We are honored and excited to commercialize this game-changing technology in the dental implant industry."

**Shinji Kameda, General Manager Business Development
Emerging Technologies, USHIO America, Inc.**

USHIO

Ushio, Inc. is a global corporation headquartered in Tokyo that develops and manufactures specialty lighting products used for semiconductor and LCD manufacturing. The company signed a licensing agreement with UCLA in 2012 for technology invented by UCLA School of Dentistry Professor Takahiro Ogawa. Dr. Ogawa, a leader in developing technologies to enhance the activity and bone integration of dental implant materials, developed a process known as "photofunctionalization," that results in nearly 100% bone-to-implant integration, compared to only 55% in untreated implants. Ushio is commercializing this technology and hopes to launch it worldwide for the dental market in the near future.



RadLogics, Inc. based in Silicon Valley, licensed a set of technologies developed by UCLA Department of Radiology Professor Matt Brown including a computer vision algorithm and software to perform tumor detection and measurements in lung cancer. RadLogics seeks to launch various medical imaging analytics apps on its AlphaPoint software platform to tap into the \$5 billion annual worldwide market. RadLogics' solution is fully compatible with any imaging equipment, and seeks to create solutions that help radiologists become more productive while at the same time improve patient outcomes. Dr. Brown's technology, a computer vision app, automatically detects and measures lung lesions in computed tomography (CT) scans. With lung cancer the leading cause of death due to cancer, the imaging analytics technology promises to help radiologists detect, measure, and diagnose lung lesions more effectively.

"I've been involved in numerous technology transfer deals from academia to industry. Usually, when it didn't work, it was not because of the technology, it was because of the licensing or legal issues. The UCLA licensing team and negotiation process were among the best experiences I've had in the last 15 years. And the collaboration between Prof. Brown & his group and the RadLogics development team has been very successful."

Moshe Becker, CEO/Co-founder, RadLogics

RESEARCHING AT THE INTERFACE OF DISCIPLINES

When Heather Maynard, a professor in UCLA's Department of Chemistry and Biochemistry, started thinking about how to keep drugs like insulin from spoiling for lack of refrigeration, she thought about Sea-Monkeys, a variety of brine shrimp whose eggs can be stored as a powder at room temperature for long periods of time.

"After you add water, the eggs hatch and become brine shrimp in a couple of days" she said. "I used to play with them when I was young."

Now, Maynard's lab is working on PolyProtek, a synthetic sugar-containing polymer that could be used to keep protein-based drugs such as interferon stable at room temperature. The key is trehalose, a disaccharide found in the brine shrimp and other organisms such as the desert resurrection plant, enabling them to live for long periods with very little or no water.

The polymer is a better stabilizer than the trehalose itself, so binding Polyprotek to protein-based drugs could solve two problems, Maynard said. More than 80% of these drugs must be refrigerated at all times, which increases shipping and storage costs. A second problem is that these protein drugs need to be injected into the bloodstream, and they are rapidly broken down by the body, requiring frequent injections. If Maynard and her team can solve both problems, it could dramatically increase the quality of life for people who use protein-based drugs, she said.

This creative approach to science characterizes Maynard, who says she spent hours as a ten-year-old growing bean sprouts and experimenting with different feeding and sunlight regimens. It was during a seventh grade science class that she fell in love with chemistry and knew instantly that she wanted to be a scientist. She went on to obtain a Ph.D. from CalTech, and after post-doctoral work in Switzerland, she joined UCLA in 2002.

"The UCLA environment fosters exciting and collaborative work," she said. "The faculty is very willing to work together. There are no barriers, you can just walk over to talk to someone, and there are phenomenal facilities, all of that really allows you to do great research."

Her past work at UCLA has been varied, and involves other methods for stabilizing proteins, for example proteins involved in wound healing. But it also includes developing an approach for directly "growing" a polymer chain onto a protein by polymerizing monomers from an initiator site engineered into protein. Researchers had previously synthesized the large polymers first and then attached them to the proteins. Maynard's method is now widely used in the scientific community since it offers a number of significant advantages including finer control over the number and placement of the polymer chains, fewer synthesis steps and easier purification of the resultant protein-polymer conjugates.

Today, she advises her students and lab researchers to let their ideas flow and be creative.

"For me, creativity is research, thinking of new ways to do things or solve a problem," Maynard said. "I tell my students don't squelch your ideas while they're coming. I don't want them to think, 'This is crazy; it will never work.' It is sometimes those ideas that are paradigm shifting."



RECENT STARTUP COMPANY LAUNCHES

Over the past five years, over 100 companies have been launched out of UCLA with 35 new startups in just the past two years. For space reasons we could profile only a small subset of these exciting new startup companies, however we invite you to learn more by contacting our office.



Research into using algae to produce clean and renewable biofuels has been underway for years in a number of corporate and academic labs, however the technology remains impractical to implement and costly. To address these shortcomings, James C. Liao, a professor in the UCLA Department of Chemical and Biomolecular Engineering and EASEL co-founder, invented a method to streamline algae-based biofuels production, and, as a result, won the prestigious 2010 Presidential Green Chemistry Challenge Award.

Typical algae-based biofuels production involves two steps: extracting lipid oil from algae that are exposed to carbon dioxide, and then combining that oil with alcohols to increase the number of carbon atoms in the produced fuel. The second step is required because algae don't naturally produce the types of energy-rich, "higher order" alcohols needed for biofuel applications, (i.e. those with more than two carbons in the molecule).

The "one-pot bioprocessing" method created by Professor Liao makes use of genetically-modified *E. coli* bacteria and cyanobacteria (algae) to produce alcohols with between three to eight carbon atoms and eliminate the second step, thereby yielding a less expensive and more energy-efficient biofuels production system.

EASEL'S work in this area, supported by an investment from founding partner, NantWorks LLC and a grant from the Department of Energy through its ARPA-E initiative, could lead to a price-competitive low-carbon footprint alternative to fossil fuels. The Culver City-based company is also working on other strategies to biosynthesize green chemicals and fuels from renewable resources such as carbon dioxide.



Thanks to the widespread and rapidly growing use of tablets, smartphones, and other touchscreen devices, the UCLA researchers behind Polyraidian had a market orientation for their inventions in mind from the very beginning. Their goal: to solve the problems with existing, transparent conductive materials that are at the core of these touchscreen devices and thereby become a mass producer of the materials that overlay the screens in these devices. Their technology draws upon decades of research and industry experience by Qibing Pei, a UCLA professor in the Department of Materials Science and Engineering who specializes in electroactive polymers, and has invented or co-invented 39 patents.

The problem addressed by Dr. Pei and his research colleague, Xiaofan Niu — Polyraidian's chief technologist — is that touchscreens are currently made from indium tin oxide (ITO). According to some estimates, the world's mining supply of this metal will be exhausted in 20 years, and the purified materials are

costly. Membranes made from ITO are also fragile, lack flexibility, and can only be applied in a vacuum. Polyraidian's solution is a membrane made from inexpensive conductive nanowires and polymers that is as flexible as a rubber sheet and also stretchable. Vacuums are not needed to produce it; and waste, energy consumption, and production costs are dramatically lower than they are for ITO-based membrane production. The Polyraidian membrane can also be made to be thinner and lighter-weight than the current technology.

The company launched in June 2011 and is currently located in UCLA's on-campus startup incubator at the CNSI building. Polyraidian has secured initial financing from founders and a downstream client, plus more than \$1 million in research and development grants including two SBIR grants. To date the company has produced sample membranes the size of a sheet of notebook paper and is working on pilot production of larger sheets and rolls.

"When I approached UCLA OIP with a new medical image analysis technology and a potential commercial partner, they guided and facilitated each step of the process, from IP filing, patenting, to licensing."

Matthew Brown, PhD
UCLA Professor of Radiology



Science Ranger was launched on April 15, 2013 based around research, patents, and concepts from UCLA's Wireless Health Institute. The Institute's Majid Sarrafzadeh and his colleagues have examined and worked on projects involving body sensors and data collection. Their work has included smart canes, body sensor networks, and systems that monitor exposure to ultraviolet radiation.

Science Ranger has licensed some of the Institute's patented, innovative embedded sensor technology and behavioral analytics software to develop products that enable parents to monitor, measure, and reward children for physically- and socially-healthy behavior and habits. Science Ranger's products work by using sensors that seamlessly and non-invasively collect physiological, behavioral, and geographic data about the children's daily activity. The data is interpreted by back-end analytics algorithms that convert it to visual and actionable information for parents. Using a console, parents can personalize and customize goals, track their children's progress, and compare results with medians and percentiles among different age groups. Meanwhile, children are engaged in games and edutainment modules that continuously reinforce healthy habits using natural play patterns and proven reward methods.

Currently, the company is in the prototype development stage while actively soliciting early stage funding to expand the development team and accelerate product development.



Research into the basis for a common parlor trick has led to development of technology that could power low-cost, miniature, ultra-portable X-ray equipment. The parlor trick involves the creation of light when chemical bonds are broken, as when Wint-O-Green Life Savers are crushed or adhesive tape is pulled away from a roll. This phenomenon is called triboluminescence, and UCLA researcher Seth Putterman demonstrated in 2008 that pulling tape from a roll in this way in a vacuum also produces X-rays.

From that experiment, Tribogenics was formed in 2009 with Putterman's research colleague, Dr. Carlos Camara, as a co-founder. The company focuses on X-ray technology, using triboelectrification, or the use of static electricity, to replace the large and expensive high-voltage transformers used in traditional X-ray technology. In September 2012, the Marina Del-Ray-based company obtained \$6.2 million in Series A financing from Founders Fund and other investors. Previously, the company had received \$2.5 million from Flywheel Ventures and angel investors.

To date the company has created a lightweight, compact, low-cost X-ray system using Tribogenic's MiniMAX (Miniature, Mobile, Agile, X-ray) camera. The five-pound system aims to replace existing bulky equipment with initial applications in the real-time inspection of sealed containers and facilities. The system was featured in July 2013 at the International Atomic Energy Agency (IAEA) International Conference on Nuclear Security: Enhancing Global Efforts, in Vienna, Austria. Besides security inspections, Tribogenics believes the technology can be used in medical imaging and industrial inspections.

"At Tribogenics, we're proud to be bringing to market the biggest breakthrough in X-ray technology in the past 100 years. Our thanks to the team at UCLA OIP who have been supportive at every step along the way."

Dale Fox, President & CEO, Tribogenics

"OIP has been critical in facilitating our relationship with NetScientific and Vortex BioSciences, and has enabled us to move from a lab project funded by the Coulter Foundation to commercial opportunity seamlessly."

Dino Di Carlo, PhD, UCLA Associate Professor, UCLA Bioengineering Department



Circulating tumor cells (CTCs) — cancer cells shed from solid tumors — travel through the bloodstream and may play a key role in the process of tumor metastasis which is widely-believed to be the cause of the majority of deaths from cancer. Isolation of these CTCs from the bloodstream, commonly called a "liquid biopsy," therefore has the potential to catch cancers early on before they metastasize and allows for new research and clinical treatment paradigms.

Towards this end, UCLA bioengineering researcher Dino Di Carlo and his research team developed a novel liquid-biopsy device in which a series of liquid reservoirs create miniature "whirlpools" that selectively trap cancer cells, which are naturally larger than normal cells. The captured cells can aid in cancer diagnosis and treatment selection, and are also expected to provide greater understanding of cancer malignancy as well as the discovery of new biomarkers and preventative measures.

The aptly named Vortex BioSciences, Inc. was founded in 2012 to commercialize this technology. Funded by NetScientific — a global company that invests in technologies to fight cancer, diabetes, and other diseases — Vortex Biosciences is collaborating with Di Carlo's team at UCLA to validate the technology in patients. Vortex's device could become an essential tool in the ongoing fight against cancer and will tap into the large and growing diagnostics market.

UPDATES ON EXISTING UCLA STARTUPS

UCLA's startup companies have achieved significant financial and product development milestones over the past two years. Below is a small sampling of these news events from our more than 100 active startup companies.



Advanced Liquid Logic, the North Carolina startup that acquired UCLA startup Core Microsolutions, was acquired by San Diego-based Illumina, a major life sciences company, in July 2013. Research into electrowetting-driven digital microfluidics — the manipulation of droplets across a surface by use of an applied electric field — initially led to the creation of UCLA start-up, Core Microsolutions, in 2002. Chang-Jin "CJ" Kim, a professor in the Department of Mechanical and Aerospace Engineering and member of the California NanoSystems Institute at UCLA, secured Small Business Innovation Research (SBIR) grants to launch the company. Advanced Liquid Logic acquired Core Microsolutions to further advance the idea of a "lab-on-a-chip." Ultimately, the technology developed by Core Microsolutions and Advanced Liquid Logic attracted the attention of Illumina a company that has 11 offices worldwide with more than 2,500 employees and had \$1.12 billion in revenues in 2012.



In August 2013, Johnson & Johnson, the global health-care products company, completed its acquisition of the UCLA startup company Aragon Pharmaceuticals Inc. The agreement includes \$650 million in cash up front and \$350 million in contingent development-related milestone payments. San Diego-based Aragon was created in 2009 to develop drugs targeting hormone dependent cancers including ARN 509, a molecule for the treatment of prostate cancer.



In January 2013, AWAK began an exclusive agreement with the global healthcare products company, Baxter International, Inc., to develop and bring to market AWAK's battery-powered and automated wearable artificial kidney. Research on this technology was begun in 1986 by researchers David B. N. Lee and Martin Roberts of the Veterans Affairs of Greater Los Angeles Healthcare System and UCLA's David Geffen School of Medicine. AWAK Technologies was launched in 2007 with offices in Singapore and Burbank to commercialize this technology. The company has been working on a lightweight (approximately one kilogram), wearable device that continuously regenerates spent dialysate, using sorbent technology to recirculate the regenerated, fresh dialysate back into the patient's peritoneal cavity. The automated wearable device frees patients from the chores and tiresome scheduled treatment sessions demanded by current dialysis therapies, and has the potential to mimic normal, round-the-clock kidney functioning. AWAK Technologies recently received a prestigious contract from the VA Center for Innovation (VACI), and its work on the wearable device was highlighted in the VA Center for Innovation 2010–2012 Stakeholder Report.

“Through Holomic and its products, we aim to impact human life by developing cutting-edge technology solutions to the hardest problems that we face today for telemedicine and its applications in the developed and developing countries.”

UCLA Professor Aydogan Ozcan, PhD



During 2012, C3-Jian obtained \$30 million in equity financing, and moved into a 35,000-square foot, GMP manufacturing, research and development building. The company also recently completed a phase 1 clinical trial of its peptide drug C16G2 and is planning to start phase 2 trials next year. C3's primary shareholders — Wyssta Investments, Inc., Renaissance Health Services Corp., and Corvesta, Inc., — participated in the additional financing in February and C3 moved into its new Marina del Rey location in May. The company focuses on oral health care and is creating a line of products derived from its STAMPS (Specifically Targeted Antimicrobial Peptides) technology. Wenyan Shi, UCLA's Chairman of Oral Biology and C3's co-founder, created the STAMP technology. C3 is also developing drugs to remineralize already decayed teeth and re-grow hair (an unexpected result of its remineralization program).



Holomic introduced its cellphone-based rapid test reader, the HRDR, at the American Association for Clinical Chemistry annual conference in July 2012. The hand-held and mobile technology includes a smart application that enables the user to enter patient data, capture an image of the test, automatically read and quantify the test results more accurately than the naked eye, record/print the results, and upload them to a secure cloud server. Holomic was formed in 2011 to commercialize advanced biophotonics technologies invented by Aydogan Ozcan, a professor in the UCLA Department of Electrical Engineering, and his lab. The company is working on several other medical devices for cellphones and other lightweight portable platforms.



Founded in 2007 by Professor Robert Reiter of the Department of Urology, Professor Anna Wu of the Department of Molecular and Medical Pharmacology, and Christian Behrenbruch, currently CEO, ImaginAb re-engineers therapeutic antibodies into diagnostic imaging agents for use with Positron Emission Tomography (PET). In March 2012, ImaginAb secured \$12.5 million in Series A financing led by Novartis Venture Funds in conjunction with Merieux Development, Nextech Invest, Cycad Group and Momentum Biosciences. The company has also been the recipient of significant funding (~\$3m) from the National Cancer Institute and has over 20 collaboration agreements with global biopharmaceutical companies to develop “companion diagnostics” for novel therapeutic drugs. ImaginAb is currently conducting clinical trials and its products have the potential to make a significant impact on cancer and autoimmune diseases. The company is headquartered in Inglewood (LA) and has an R&D subsidiary in Singapore.

“The UCLA OIP understands the practical realities of start-ups and really worked alongside the company in a flexible way in terms of licensing structure and prosecution of the technology. A great team to work with —and committed to our success.”

Christian P Behrenbruch, PhD, MBA,
CEO ImaginAb, Inc.

“For me, interacting with the OIP through this long journey, spanning over a decade, has been nothing but a pleasure! Their guidance and support through the complex process of securing our patent for the technology invented at UCLA by one of its professors and faculty members, all the way to licensing out the technology to a biotechnology company for clinical development, was invaluable.”

**UCLA Professor and Kite Founder and
Chairman Arie Belldegrun, MD, FACS**



In May 2013, Los Angeles-based Kite Pharma, Inc (Kite), which was founded by a group of senior UCLA faculty including Professors Arie Belldegrun, James Economou, Owen Witte, Antoni Ribas, and Allan Pantuck completed a \$35 million Series A Preferred Stock financing to develop its targeted cancer immunotherapies portfolio. In addition to the \$20 million in new funds, Kite converted \$15 million in outstanding promissory notes into shares. Alta Partners joined Kite’s first backers that include Michael Milken, Kite founder and Chairman Arie Belldegrun, TPG Group co-founder David Bonderman, Pontifax LTD, and Commercial Street Capital. Kite was founded in 2009 to develop cancer therapies based on immunotherapy research conducted at UCLA by Belldegrun, a UCLA professor in the Department of Urology and a former research fellow at the National Cancer Institute/NIH. Currently, Kite is focused on engineered autologous T cell therapy (eACT), designed to restore a patient’s immune system by recognizing and eradicating tumors. Patient’s blood T cells are engineered with tumor-specific T Cell Receptors

(TCR) or Chimeric Antigen Receptors (CAR), which when administrated back to the patient, directly attach to tumor cells and attack them. This cutting-edge technology offers an alternative to other cancer-fighting therapies that often have moderate clinical benefit and harsh side effects. Kite’s proprietary technologies are being co-developed through a Cooperative Research Agreement (CRADA) with the Surgery Branch at the National Cancer Institute, led by Dr. Steven A. Rosenberg, MD, PhD. The company is also commercializing a second autologous cancer immunotherapy known as DC-AdGM•CAIX which utilizes a patient’s own dendritic cells (DCs) engineered to express GM•CAIX, a fusion protein between CAIX, a tumor antigen expressed in multiple types of tumors, and the cytokine granulocyte monocyte colony stimulating factor (GM-CSF), which plays a key role in activation of the immune system. This technology was invented by UCLA researchers Arie Belldegrun, Cho Lea Tso and Zhenhua Li, and is being evaluated for the treatment of renal cell carcinoma.

Initial Public Offering (IPO)

Calabasas-based Kythera (KYTH) is a biotechnology company developing new products in the field of aesthetic medicine. The company's most advanced product is ATX-101, an injectable drug for non-invasive reduction of local fat deposits that lead to the appearance of a so called "double chin", thereby providing a pharmacological alternative to more invasive treatments such as liposuction. Kythera went public in October 2012 and raised \$72.6 million in net proceeds. With ATX-101, Kythera is pursuing FDA approval in the United States and has partnered with Bayer HealthCare for development and commercialization outside of the U.S. and Canada. The technology was co-invented by Adam M. Rotunda, MD, currently an Assistant Clinical Professor of Dermatology at UCLA's David Geffen School of Medicine, and Dr. Michael Kolodney at Los Angeles Biomedical Research Institute at Harbor-UCLA Medical Center (LA BioMed).

Open-Label Phase III Results

In April 2013 the company announced positive data from its Phase IIIb, multicenter, open-label study of ATX-101. The data came from evaluations of 165 adults at 21 sites across the United States who had received ATX-101 injections for up to six treatments at four-week intervals. Ninety-seven percent of patients reported improvement in chin and neck definition and 96% showed unchanged or improved skin laxity. Globally, Kythera has enrolled more than 2,500 patients for study and will capture up to five years of long-term follow up data on some patients who participated in early clinical studies.



Librede was formed around technology invented by UCLA bioengineer Jacob Schmidt and his team. The company is commercializing a chip that speeds up the currently laborious testing of new drugs to discover how they might interact with ion channels in cell membranes that play a key function in bodily processes, including cardiac activity. In February 2013, Librede, based in the UCLA CNSI incubator, received a large Phase II SBIR grant from the National Institutes of Health for further work on their membrane platform.

NanoH₂O, Inc., which manufactures efficient and cost effective reverse osmosis (RO) membranes for seawater desalination and advanced water purification, obtained \$40 million in equity financing and an additional \$20.5 million in credit in April 2012. BASF Venture Capital GmbH, Total Energy Ventures International, and Keystone Ventures co-lead the equity financing that also included all of NanoH₂O's existing investors including Khosla Ventures, Oak Investment Partners, CalPERS Clean Energy & Technology Fund, and PCG Clean Energy & Technology Fund. The \$20.5 million in growth capital, working capital, and equipment financing credit facilities were provided by Comerica Bank and Lighthouse Capital Partners, with a working capital line backed by the Export-Import Bank of the United States. Using nanotechnology created by Eric M.V. Hoek, a professor in the UCLA Department of Civil & Environmental Engineering, the El Segundo-based company incorporates nanomaterials and polymers into the design of its *QuantumFlux*[™] membranes, thereby increasing the efficiency and reducing the energy consumption of a typical RO system. NanoH₂O's *QuantumFlux* membranes are installed in desalination plants throughout the Caribbean, Europe, South America, Mediterranean, parts of Asia, and at local Port Hueneme in Oxnard, California.

"NanoH₂O's QuantumFlux membranes represent the first RO membrane innovation in the last 25 years. The research that began at UCLA enabled us to deliver a commercially viable and proven solution to the rising costs of energy-intensive desalinated water."

Jeff Green, CEO, NanoH₂O

CHANGING THE GRID: ONE ELECTRIC VEHICLE AT A TIME

UCLA engineering Professor Rajit Gadh, director of UCLA's Smart Grid Energy Research Center (SMERC), compares himself to a doctor who makes rounds. His "patients" are the 50-plus electric vehicle charging stations he routinely monitors on campus, in downtown Los Angeles, in the city of Santa Monica and, soon, in Pasadena.

Rajit and his team installed the stations because he realized minimal data was being collected and analyzed to determine the effect that large-scale electric vehicle charging is having on demand for electricity and on the power grid itself.

Before moving to academia, Professor Gadh worked as a software engineer, and as a UCLA faculty member he originally researched wireless technologies to monitor temperature, humidity, and energy consumption. Developing similar technologies for electric power grid management was therefore a natural extension of his earlier work.

Professor Gadh's team initially worked on a smart grid demonstration project under a grant received by the Los Angeles Department of Water and Power (LADWP) from the U.S. Department of Energy with other local institutions including USC and JPL/Caltech. Gadh secured \$10 million in funding for this work at UCLA for the project, and, with other grants and industry support, created SMERC in 2010.

He uses the UCLA campus as what he calls a "living lab," using charging stations in five campus parking lots to acquire electric vehicle charging data that is sent back to SMERC for analysis. In a similar vein, he has plans to install approximately one hundred refrigerators in UCLA dormitories with each unit sending energy data back to SMERC.

According to Professor Gadh, "it's more than a typical research project. I don't know any other university research lab that has real time sensor and control data from such a network and of this frequency and scale coming in."



The data he is generating is already being integrated into software and hardware systems that will allow power producers and consumers to plan for future demand, automatically schedule charging at low-usage times, and pull power from cars when the grid demands it. As electric vehicle adoption continues to increase, Gadh expects that these data and control systems will become even more crucial to managing power production and consumption and to his larger goal of modernizing the U.S. power grid, which, in some places, is already 100 years old.

"We're engineers; we tend to want to build things to change the way the world is operating," he said.

PRODUCT PIPELINE AND LAUNCHES

One of our office's key goals is the translation of discoveries arising from UCLA research programs into marketed products that will have a positive social and economic impact. Over the past two years a number of these new products have launched and below is a sampling of these exciting new technologies. Also, the following page contains a chart that summarizes the pipeline of products under development by licensees of UCLA technologies.



Some years ago when a patient undergoing a cardiac medical procedure suffered a stroke because air most likely entered the heart through a catheter, Dr. Kalyanam Shivkumar, Director of UCLA's Cardiac Arrhythmia Center & EP Programs, thought there had to be a way to stop what was considered an "unpreventable complication." His solution: a device that attaches to a catheter line and contains sequential valves to block air entry into the heart.

EP Dynamics licensed the technology from UCLA and the company launched its first FDA-approved product, the AirBloc™ LineBacker Transseptal System, in 2013. EP Dynamics, which has offices in Westwood and Westlake Village, plans to focus on the use of the device for cardiac catheter ablation, but it could be expanded for use in other cardiac procedures, such as implanting heart valves, and for neurological procedures.



The SonoSim® Personal Solution, a computer-based ultrasound training system that can be run on a laptop or other portable device, was introduced in April 2013 at a major ultrasound conference in New York City. SonoSim's patented technology was first used as part of a training program created for the Department of Defense. Dr. Eric Savitsky, Professor of Emergency Medicine at the David Geffen School of Medicine at UCLA and a board member of the UCLA Center for Advanced Surgical and Interventional Technology (CASIT), invented the technology and subsequently developed a program that enables anytime-anywhere ultrasound training.

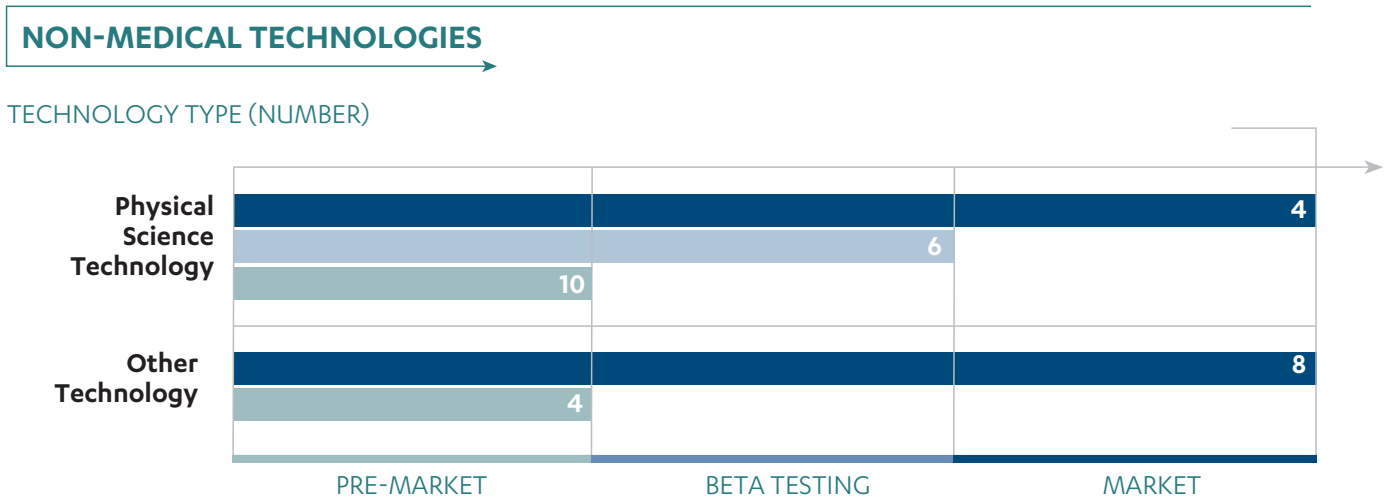
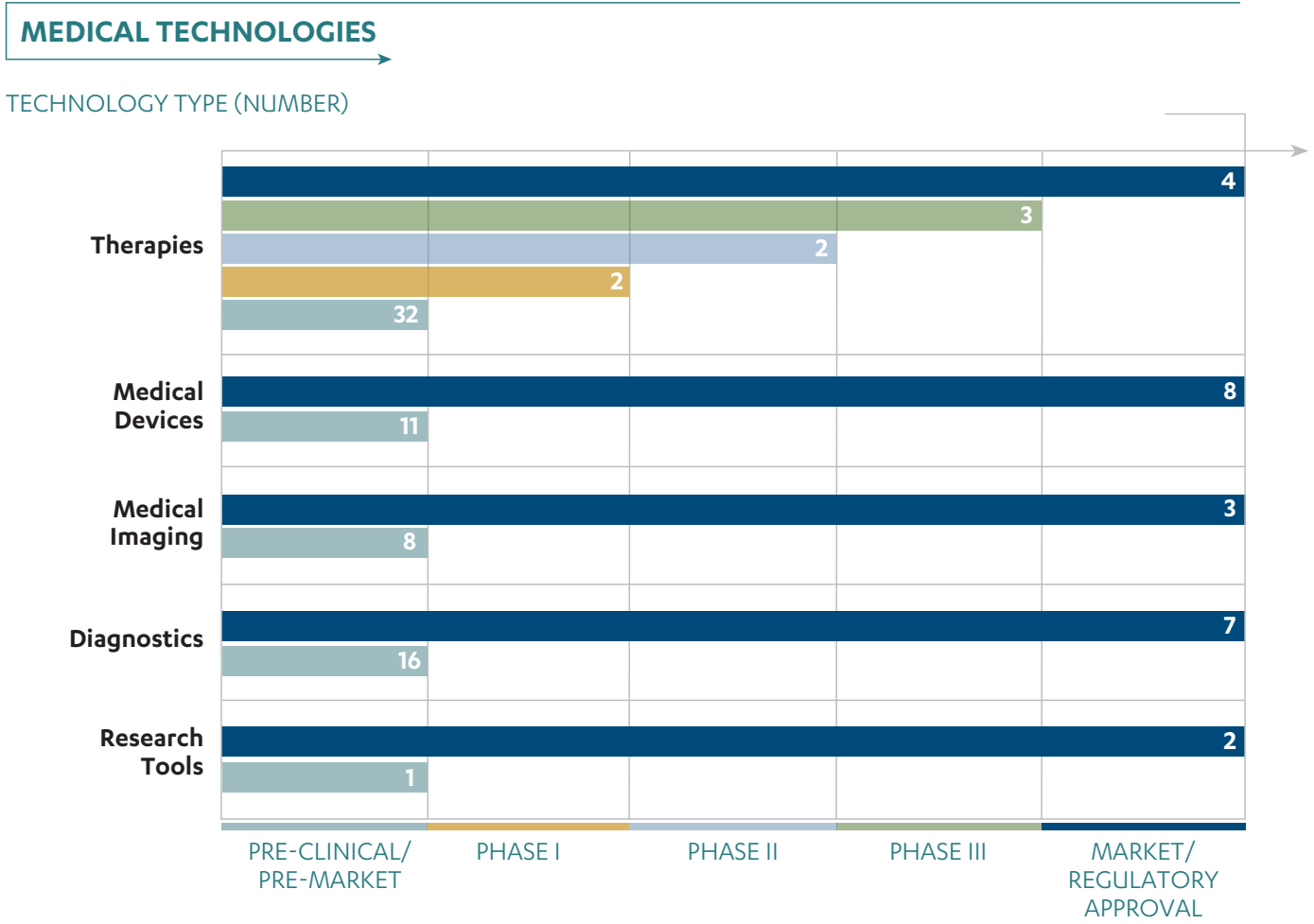
The ultrasound technology was developed as part of a research program into computer-based training for combat casualty funded by the Telemedicine and Advanced Technology Research Center and the Department of Defense. The collaborative effort involved over 35 military subject matter experts from across the Joint Services and resulted in a major military textbook, *Combat Casualty Care: Lessons Learned in OEF and OIF*, now part of standard pre-deployment training for U.S. military personnel.

SonoSim licensed the technology from UCLA in 2011, and now offers a series of ultrasound training modules through its online, SonoSim® Store. The SonoSim® Ultrasound Training Solution provides anytime-anywhere ultrasound education, knowledge assessment, and hands-on scanning opportunities via personal computer. It offers an alternative to more expensive and time-consuming one-on-one or classroom instruction and is intended for individual doctors, nurses, emergency medical providers and others in the medical field, as well as medical and nursing schools, training programs and physician group practices.

"Ultrasonography in medical diagnoses and therapies is growing rapidly, but the main barrier for adoption of this technology is education. Our mission is to make it as easy as possible for busy physicians, nurses, and students to effectively attain this high-demand skill."

Dan Katz, VP Sales & Product Development, SonoSim, Inc.

OIP-ISR PRODUCT PIPELINE



A Licensing Program to Help Children with PTSD

Thousands of children suffering from trauma nationwide, and in international locations such as Bosnia, Turkey, Japan, China, Taiwan, and Greece, have been helped over the past decade by a diagnostic tool, the UCLA PTSD Reaction Index. A questionnaire to measure posttraumatic stress reactions in children and adolescents, the Reaction Index was recently updated by Alan M. Steinberg and Robert S. Pynoos, of the UCLA Department of Psychiatry and Biobehavioral Sciences, leaders of the University's National Center for Child Traumatic Stress. The instrument assesses exposure to traumatic events and evaluates the severity of posttraumatic stress symptoms based on the newly released DSM-5 diagnostic criteria. This assessment instrument is invaluable for those working directly with traumatized children and families, from individual practitioners who may use it only ten times a year to large institutions, such as child welfare agencies, the juvenile justice system, schools, and mental health and healthcare organizations who may need it in thousands of cases. OIP licenses the UCLA PTSD Reaction Index to these end users.

Enhancing the Ecosystem for Entrepreneurship and Industry Partnerships at UCLA

UCLA leadership and OIP-ISR have launched a number of new programs and resources over the past two years to further build our capabilities and assist all members of the UCLA community in driving their innovations to the market. A number of these new initiatives and programs are focused on nurturing the ecosystem for entrepreneurship at UCLA. Additional programs are focused on creating networking venues and technology showcases that bring together companies of all sizes with our researchers to help commercialize their innovations and to attract industry funding to campus to further the research enterprise.

BUILDING THE ENTREPRENEURIAL ECOSYSTEM

Entrepreneurs-in-Residence (EIR) Program

<http://oip.ucla.edu/eir>

Launched in April 2013, the Entrepreneur-in-Residence program brought on board four experienced entrepreneurs to help UCLA faculty, post-doctoral fellows, and graduate students take their ideas from the laboratory to the marketplace. The EIRs help identify projects with market potential and aid in developing business and regulatory strategies needed to drive these projects forward. Their “Startups 101 Seminar Series” explored topics essential to creating successful startup companies, and included guest speakers who provided real-world case studies. The inaugural class of EIRs includes:

- **Debra Gessner** — former VP of regulatory affairs and quality assurance for Tocagen Inc. and seven other startup biotechnology companies
- **John Gillespie** — angel investor and former seasoned investment banker and CFO of the Mentor Network
- **Sandra Itkoff** — UCLA alumna and former VP at the Angeleno group and VP of strategy for the Americas at BYD America
- **Kevin Stark** — former Amgen executive director for research and development and biotechnology CEO and COO

We welcome entrepreneurs who are interested in participating in the program, as well as UCLA faculty and researchers interested in exploring how the program can help with their interests, to contact Thomas Lipkin in our office for more information.

“The EIR program melds the worlds of science and entrepreneurship together in a collaborative and fruitful manner. It has been very satisfying bringing my entrepreneurial know-how and business relationships to assist UCLA’s innovators in their pursuit to translate research for the benefit of society.”

Sandra Itkoff, MBA
Entrepreneur in Residence

FAQ for Entrepreneurs

www.research.ucla.edu/tech/entrepreneurFAQ.pdf

Published in November 2012, the downloadable FAQ for Entrepreneurs answers 16 essential questions ranging from how to secure a licensing agreement to conflict of interest rules to how much time a faculty member is permitted to work on entrepreneurial ventures outside of UCLA. It is intended as a guide for entrepreneurs who are interested in forming startup companies to commercialize UCLA innovations and bring these technologies to market. OIP-ISR and UCLA have long recognized that educating UCLA's academic community about entrepreneurship is critical and this guide will be updated and revised on an ongoing basis to further this mission.

FirstFridays

<http://oip.eventbrite.com/>

This networking and information event was launched in September 2012 to help inform and bring together the local innovator and entrepreneur communities. Past programs have focused on subjects such as crowd-funding, web and digital startups in Los Angeles, leveraging federal grant money for startups and product development, and product prototyping. OIP-ISR created FirstFridays to informally grow the entrepreneurial community by linking campus and local communities, providing them opportunities to connect with OIP-ISR staff and interns, and disseminating practical and useful information on intellectual property and entrepreneurship at UCLA. Speakers have included Howard Marks, founder and co-chair of the startup accelerator StartEngine; Stan Tomsic, Executive Director of PortTech Los Angeles; and Robert Jadon, Director, Startup UCLA Accelerator. We invite all members of the UCLA community as well as the business and technology communities to join us for coffee, bagels, and networking at 9:00 a.m. on the first Friday of every month.

FirstLook LA

www.oip.ucla.edu/first-look-la-lava

In conjunction with The Los Angeles Venture Capital Association (LAVA), UCLA OIP-ISR co-hosted a very successful and well-attended startup pitch and networking event called First Look LA 2013. This year the event was expanded to include seven other Southern California research institutions. The daylong, invitation-only technology showcase presented 50 vetted inventions and early-stage startup companies to an audience of investors and entrepreneurs. The showcase has grown significantly since 2007 when UCLA co-founded it with two other universities. This year, 17 UCLA technologies were presented to attendees. Additionally, several entrepreneurs and investors connected with inventors during one-on-one meetings. One UCLA startup company has already secured funding from investors who attended the event.

SBIR/STTR FAQ

www.research.ucla.edu/tech/UCLA_SBIR_STTR_FAQ.pdf

OIP-ISR worked with UCLA's Office of Research Policy and Compliance to create the downloadable, SBIR/STTR FAQ. The 13 questions and answers, published in July 2013, provide guidance to UC employees interested in obtaining SBIR and STTR grants in support of their entrepreneurial activities. The FAQ was created to help these entrepreneurs avoid pitfalls and minimize issues relating to potential conflict of interest and conflict of commitment that may arise from participation in these types of federal research grants. The grants, totaling more than \$27 billion nationwide since the programs began, are administered by the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs. Funding comes from 11 different federal agencies, including the Department of Health and Human Services, the National Science Foundation, and the Department of Defense, and can be a valuable source of non-dilutive funding.

FORGING NEW CONNECTIONS WITH INDUSTRY

Business Development

To further expand the scope and number of the University's interactions and collaborations with industry, OIP-ISR added a business development position in October 2012. The focus of this position is the creation of a coordinated campaign of business outreach and OIP-ISR presence at multiple trade and industry conferences across the country, as well as the hosting of on-campus networking events. Activities included attendance at major trade shows, such as BIO International, JP Morgan Healthcare, CES International, Semicon and BIOCOM Global Life Sciences Partnering. Staff from throughout the OIP-ISR organization also maintain a presence at these and other local events, helping to build partnering interactions and collaborations with industry.

Industry Partnering Events

Our office has embarked upon a regularly scheduled series of industry days to bring together UCLA researchers and companies across multiple industry verticals. The goal of these events is to both showcase existing UCLA research programs and technologies, as well as build a dialogue between our research community and industry on future research directions and opportunities for collaboration.

In March 2013, OIP-ISR held the 1st Annual UCLA Medical Device Partnering Conference to establish new relationships between the University

and the medical device industry. More than 100 faculty inventors, industry representatives, and members of the venture capital community participated in the daylong event of scientific seminars, product showcases, and networking at the California NanoSystems Institute (CNSI). Other UCLA organizations participated, including the Center for Advanced Surgical and Interventional Technology (CASIT), the Wireless Health Institute, the UCLA Orthopedic Hospital, and the Advanced Bioengineering Innovations (ABI) course.

CREATING EDUCATIONAL OPPORTUNITIES FOR THE UCLA COMMUNITY

School, Department and Lab Presentations and Q&A

In April of this year we created a new campus relations position to increase the amount and depth of campus outreach and education that we do on everything from technology transfer and intellectual property to industry-sponsored research and corporate collaborations. We now routinely visit laboratories and attend department meetings where our staff meet face-to-face with researchers, faculty, and students to educate them about the resources we provide for obtaining patents and copyrights, commercialization of inventions, and to provide insights on entrepreneurship,

connections to companies that license technologies and support research, and other resources. This focus on bridge building and education is central to our mission of ensuring that the latest research throughout the UCLA campus is translated into technology, products, and services that benefit society. We invite you to contact Heather Felix in our office for more information or to arrange a visit to your department or lab.

Technology Fellows

The Technology Fellows program in OIP-ISR was initiated in 2002 and established as an annual program in 2005. Since that time, the program has hosted over 60 graduate students and post-doctoral fellows from various degree-granting programs across campus. Initially tasked with supporting OIP's marketing efforts, the program has evolved and expanded to allow its fellows to play a larger role in UCLA's technology commercialization activities and intellectual property management. Tech Fellows have been involved in assisting in marketing, technology evaluation, market analysis, entrepreneurship initiatives, and education outreach. These experiences have helped program participants acquire the knowledge and skills needed for their post-graduate careers, most clearly evidenced by the positions that Tech Fellows alumni have successfully transitioned into over the years. These positions span a variety of industries and professional roles, including business development, patent law, management consulting, technology transfer, and corporate R&D. The Technology Fellows Program is a compensated position that runs year-round, and is offered to UCLA graduate students. For additional information on this program please visit: www.oip.ucla.edu/techfellows.

"Increasingly, industry is looking to partner with UCLA and other academic institutions, because they recognize the immense expertise and advanced innovation that exists on campus."

Miles Gerson, JD, MBA, Managing Officer, Business Development, OIP-ISR

Putting Tablets on Tablets at the Louvre

In May of this year, the Cuneiform Digital Library Initiative (CDLI), a UCLA-led international research collaboration now in its 15th year of operations, moved its digital facsimiles of cuneiform artifacts onto electronic tablets with the introduction of an educational iPad app, fittingly named “cdli tablet” (<http://cdli.ucla.edu/?q=cdli-tablet>). Images and expert description of the world’s oldest writing system inscribed on the various recording media of ancient Babylonia—clay, stone, metal, and bone—can now be viewed on mobile computers, thanks to programming by Sai Deep Tetali, a graduate student in UCLA’s Computer Science Department.

Also in 2013, the CDLI entered an agreement with the Louvre Museum in Paris, home to one of the world’s most significant collections of cuneiform tablets and monuments. CDLI had worked with the Louvre informally in years past, but the formal agreement, created over a period of six months by the Offices of Intellectual Property at UCLA and The Louvre—and signed by the just retired Louvre director Henri Loyrette—, spells out copyright and online access to CDLI’s growing body of digital facsimiles of the museum’s cuneiform artifacts. Under terms of the agreement, the CDLI will establish imaging workstations in the museum tasked with the digital capture of these unique historical documents.

“Without the support and guidance of the OIP, it is unthinkable that we would have achieved this breakthrough agreement; its model character will serve our project in all future negotiations with similar institutions.”

Robert K. Englund
Principal Investigator, CDLI



CONNECT

TechMatch Service

oip.ucla.edu/TechMatch

One of the best ways to keep up to date on emerging technologies available for licensing from UCLA is through our TechMatch Service. Specify your technology interest areas and receive updates on the latest UCLA technologies in these areas.

***UCLA INVENTS* Newsletter**

oip.ucla.edu/UCLAINvents

Our monthly newsletter highlights research, entrepreneurship, and technology commercialization developments and opportunities at UCLA.

For Technology Licensing or Research Collaboration Inquiries please contact us:

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