



Center for Entrepreneurship and Innovation

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO INNOVATION FUND

FUNDED COMPANIES OVERVIEW

Spring 2017

AVnovum

AVnovum works through mechanisms that specifically target only virulent microbes. AVnovum is driven by a diverse team of research scientists and advisors from the University of Chicago Medical Center with scientific, entrepreneurial, and business backgrounds, who are dedicated to improving patient outcomes in those with diabetes, immunodeficiencies, and immunosuppression. The team is led by Dr. Eugene Chang, Martin Boyer Professor of Medicine and Associate Section Chief for Research, and post-doctoral scholars Dr. Myles Minter and Dr. Katharine Harris.

ClostraBio

ClostraBio is a preclinical stage biopharmaceutical company dedicated to ending the burden and anxiety of living with food allergies. ClostraBio leverages recent discoveries in the microbiome - the trillions of bacteria and other microbes living in and on people - to create new drugs that prevent allergic reactions to food. ClostraBio is led by a world-renowned team of researchers and business experts from the University of Chicago, and has been featured in premier scientific journals. The team is led by Dr. John Colson, Dr. Cathy Nagler, Bunning Food Allergy Professor, and Dr. Jeffrey Hubbell, Barry L. MacLean Professor of Molecular Engineering Innovation.

SwitchedSource

Switched Source provides advanced hardware solutions to electrical utilities that make their operations more efficient and reliable while increasing their capability to host more renewable energy on the grid. Switched Source is led by a team that has deep domain experience in the electricity and power electronics space. The team is led by Charles Murray, CEO, and Lane Nelson, CFO.

Fall 2016

Seurat Therapeutics

Seurat Therapeutics is developing a novel migraine therapy based on a nasal spray formulation of Insuline-like Growth Factor (IGF-1). Seurat is creating a prophylactic therapy to prevent migraines in chronic patients, as well as an abortive therapy to treat acute migraines. The team is led by Dr. Yuan



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Zhang, CEO, Post-Doctoral Scholar, The University of Chicago Biological Sciences Division, Dr. Richard Kraig, William D. Mabie Professor in the Neurosciences at The University of Chicago, and Dr. Martin Sanders.

RWEDI Solutions

RWEDI Solutions is developing an energy-efficient, low cost separations technology that uses electricity to remove ions that cause scaling and corrosion in cooling towers. RWEDI's technology can be utilized with both freshwater and alternative sources such as reclaimed water, reducing operating costs by decreasing makeup water requirements, decreasing chemical use, and reducing maintenance costs. The team is led by Dr. Jessica Linville of Argonne National Laboratory.

Spring 2016

BallotReady, Inc.

BallotReady is an online voter guide to local, state, and national elections. They make it easy to vote informed in every race, in every election. BallotReady is developing innovative and proprietary ways to source content, using automated content collection that will allow rapid expansion to elections nationwide. The team is led by Alex Niemczewski, CEO, Alumna of The College and Aviva Rosman, COO, Alumna of the Harris School of Public Policy and The College.

IR-PCR

Formerly Nucleic Acid Detection, Infrared Polymerase Chain Reaction methods represent valuable and important tools for chemists, biologists, and medical scientists. IR-PCR is developing cheap, highly mobile, and low energy methods for precise detection and rapid diagnosis of new contagions, potentially changing how crises, such as the recent Ebola and Zika outbreaks, would be contained. The team is led by Yossi Weizmann, Assistant Professor, The University of Chicago Physical Sciences Division, and Postdoctoral Scholars Dr. Zoya Cheglakov and Dr. Jung-Hoon Lee.

Rzhetsky Language Science

Rzhetsky Language Science is bringing to market the powerful "Text Filter" technology created by Andrey Rzhetsky at the University of Chicago. Text Filters are sophisticated, mathematical representation of a significant body of text that captures the native relationships between words. The first product to use this technology is Articulate, a service that advises users on how to tune their writing to more accurately reflect their intentions and that helps them communicate with others more clearly.. The team is led by Dr. Andrey Rzhetsky, Professor of Medicine, Schoeller Porter, Project Lead, and Nancy Harvey, Polsky Center for Innovation and Entrepreneurship.



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Navipoint Genomics, LLC

Navipoint Genomics' innovative technology allows them to transfer and analyze full human genomes 50- to 100-times faster than competitive solutions, and speed up the time for large scale analysis from months to days. Team members (Paul Davé, Ravi Madduri, Dina Sulakhe, and Alex Rodriguez, as well as strategic advisors Ian Foster and Steve Tuecke) from the Computation Institute and Argonne plan to use the funding to build a full proof-of-concept that will be HIPAA compliant and secure for use in clinical practice. The team received \$175,000 to support the development of the team's advanced genomics analysis platform.

Praedictus Climate Solutions

Praedictus Climate Solutions has developed new software tools that provides more accurate and timely projections of crop yields than current approaches. The Innovation Fund awarded the team \$125,000 to validate their system with additional crops and in new geographies. The team is led by the Computation Institute's Joshua Elliott, Ian Foster, and David Kelly, along with colleague Robert Okabe.

RiMO Therapeutics

RiMO Therapeutics has developed high-precision cancer treatment. Their scalable solution, which uses nanotechnology to deliver low dose X-ray treatment, is highly effective in eradicating solid tumors. The team received \$250,000 to complete its pre-clinical studies and launch the first in-human study. The team is led by multidisciplinary team members from the Physical Sciences Division, the Department of Radiation and Oncology, and the Department of Medicine: Wenbin Lin, PhD, Ralph R. Weichselbaum, MD, Chunbai He, Ph.D., and Everett Vokes, MD. RiMO Therapeutics also executed the first UCGo! Startup License with the University of Chicago. The UCGo! Startup License is an optional, standardized license agreement created in 2015 to increase entrepreneurship at the University.

Spring 2015

3F4AP

The 3F4AP team has developed a PET tracer that could help reveal important targeted hallmarks of multiple sclerosis. PET tracers are radioactive molecules that when injected into a subject can reveal disease relevant features such as tumors or lesions in the brain during a PET scan. The team took a drug that is typically used to treat MS (4-aminopyridine) and converted it into a PET tracer, which they believe will help doctors visualize demyelinated lesions in the brain and provide a way to monitor response to new remyelinating therapies. The team, led by faculty and staff of the Biological Sciences



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Division at the University of Chicago, received \$225,000 from the Innovation Fund to help test this new imaging approach in non-human primates and in humans.

Therapeutic Human Exosomes

Multiple sclerosis (MS) and migraines cost the U.S. \$40 billion annually. These interrelated disorders involve myelin damage and increased oxidative stress, processes that prevent brain cells from making new myelin. Richard Kraig, MD, PhD, Aya Pusic, Kae Pusic, and Lisa Won, of the UChicago Biological Sciences Division, have developed a novel biologic – microRNA-containing exosomes from stimulated dendritic cells (SDC-Exos) – that, for the first time, remyelinates damaged brain and prevents migraine. The team received \$150,000 to help study the biologic's effect on multiple sclerosis-based myelin injury in humans and take another step toward clinical trials.

The Array of Things

The Urban Center for Computation and Data (UrbanCCD) team is launching an urban sensing project of sensor nodes, known as the Array of Things (AoT). The urban environment, infrastructure, and activity data collected by the network will be openly available and adaptable to local policies and needs, enabling researchers, residents, software developers, and governments to collaborate and make cities more livable, healthy, and efficient. The team received \$150,000 from the Innovation Fund and an additional \$150,000 in matching funds from Argonne. The team plans to use this funding to grow from pilot to proof-of-concept, continue improving node design and technology, and support the first wave of applications built for the Array of Things data. The UrbanCCD team is led by Charlie Catlett, Peter Beckman, and Kate Kusiak Galvin, of the Computation Institute.

Reliefwatch

The UChicago Innovation Fund invested \$100,000 in Reliefwatch. University of Chicago student Daniel Yu founded Reliefwatch (formerly Project SAM) in 2012 after learning about problems with expired medications and stock outages in clinics in developing countries. Yu and his team built a cloud-based system to effectively manage supply chains and give organizations the ability to track and analyze data in real-time anywhere in the world using basic mobile phones prevalent in these areas.

In 2013, Reliefwatch won second place in the John Edwardson, '72, Social New Venture Challenge, a track of the university's business launch program the Edward L. Kaplan, '71, New Venture Challenge. The UChicago Innovation Fund recognized the startup's significant recent growth and progress while incubating at the CIE and selected Reliefwatch as the first team to receive an off-cycle investment from the fund.

Fall 2014

MyPath Planning Wizard – Non Profit



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Teachers often want – and need – to make changes to the rigid structure that textbooks and other instructional materials impose on them to meet the needs of students in their classrooms and include additional activities of interest or align better with their school’s schedule or their own teaching style. A team from the Center for Elementary Mathematics and Science Education at the University of Chicago has developed a technology that will help teachers customize their curriculum to fit the needs of their classroom, while ensuring that students receive the benefits of the complex curriculum systems built on the latest research in learning science.

Becoming Effective Learns Tool Development Project – Non Profit

Led by faculty and staff from the Urban Education Institute, the Becoming Effective Learners team has developed technology to help assess students’ noncognitive factors, including the attitudes, beliefs, habits, and behaviors necessary for success in school. The technology would help educators assess these noncognitive factors, understand the contexts where they are fostered, and help students develop these traits and skills. The result would help children remain more engaged in school and improve their prospects for graduation and future success.

Peptides for the Stimulation of Lipase to Treat Hypertriglyceridemia & Companion Assay for Clinical Assessment

Hypertriglyceridemia is a condition in which triglyceride levels are elevated, often caused or exacerbated by uncontrolled diabetes mellitus, obesity, and sedentary habits. This condition is a risk factor for coronary artery disease. Researchers from the University of Chicago Medicine and the Department of Medicine have identified a lead peptide and developed a highly sensitive companion lipase assay which may help physicians diagnose and treat patients with the condition.

Parallel.Works

A finalist from the CIE + Cisco Innovation Challenge, Parallel.Works has developed technology that enables complex and compute-intensive modeling, simulation and analytic workflows to be performed rapidly, easily and economically on parallel computing systems. Led by team members from Argonne and the Computation Institute, Parallel.Works’ technology can help scientists, engineers and data analysts to perform the computations that increase their quality and speed their products to market, with greater ease, lower cost and far less distraction from their core business mission than was previously possible.

Spring 2014

Ci3’s Game Changer Chicago (GCC) Design Lab



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The Game Changer Chicago Design Lab is creating innovative, evidence-based games to empower youth regarding their health, relationships, and community. The team, led by Melissa Gilliam, professor of obstetrics & gynecology and pediatrics, and Patrick Jagoda, assistant professor of English, is currently developing an interactive narrative game to address the topic of sexual violence. The Innovation Fund awarded Ci3 \$50,000 to be used for continued development, play testing, and curriculum and distribution planning.

ExplORer Surgical Information System

The Innovation Fund awarded Alexander Langerman, assistant professor of surgery and Marko Rojnica, resident in general surgery, \$64,300 to enhance the prototype of their real-time surgical workflow software, which is designed to make teams in the operating room safer and more efficient. ExplORer is the first product to focus on the operative steps and team tasks while adapting to surgeon preference and patient factors.

Genomic Prescribing System (GPS)

GPS creates a database of how patients with particular genetic profiles react to specific drugs, and directs that information to a secure online portal for enrolled physicians to use and compare against. GPS received \$100,000 to enable the development of a more robust tool and to validate the system outside of the University of Chicago. The team is led by Mark Ratain, professor of medicine, Peter O'Donnell, assistant professor of medicine, Keith Danahey, programmer, and Ken Bradley, business lead and venture partner at ARCH Venture Partners.

Easy-to-use High-fidelity Hydrodynamic Simulation Software Package for Development of New Light-Source Technologies

The University of Chicago's Flash Center for Computational Science, led by Don Lamb, is developing software for designing new extreme ultraviolet light (EUV) sources critical to the semiconductor industry. The Flash Center has been funded by the Department of Energy for over a decade to develop simulation software for high-energy density physics, supernovae, exascale computing design, and fluid-structure interactions. With \$50,000 in Innovation Fund funding, the FLASH software will be adapted for modelling complex EUV source systems. Lamb's team will develop an easy-to-use graphical user interface and build a connection between FLASH and commercially available tools, enabling engineers to rapidly simulate the array of factors necessary to produce a new EUV source in a high-dimensional design space, rather than by physical trial-and-error alone.



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Quantitative Insights' QuantX U.S. Product Launch

Founded on the image analytics work of Maryellen Giger's lab at the University of Chicago, QuantX is a software platform that assists radiologists in making more accurate and more efficient breast cancer diagnoses through computer-aided diagnostics. Now in development at University spin-off Quantitative Insights Inc., the multi-modality platform integrates data from MRI, ultrasound, and X-ray to improve interpretation of these images and decrease missed diagnoses. With \$100,000 in funding from the Innovation Fund, Quantitative Insights seeks to complete the clinical studies and market study necessary to achieve FDA clearance and make QuantX for breast MRI available throughout the U.S. The fund previously awarded \$50,000 to the company, in May 2011, to conduct a preclinical pilot study.

Simplified Chromatin Conformation Capture

University of Chicago researchers have developed a new tool for identifying distant genomic interactions key to normal biological function as well as diseases such as cancer, diabetes, and autoimmune and inflammatory disorders. By detecting these far-away interactions, which can govern a gene's expression from a distance or even from a different chromosome, Simplified Chromatin Conformation Capture or S3C holds promise for basic science as well as drug development. S3C uses a technique known as DNA hybridization to offer increased sensitivity, accuracy and reliability over existing 3C methods, also reducing costs and making S3C suitable for a kit-based format. With \$70,000 in Innovation Fund funding, Ryan Bourgo and Geoffrey Greene will further develop the technique into a streamlined kit and work to make it available to researchers and drug developers.

Companion Diagnostic for Treatment of Estrogen Receptor Negative Breast Cancer

Dr. Suzanne Conzen is developing a companion diagnostic to identify tumors in patients likely to benefit from a new targeted breast cancer treatment. The patented treatment approach, designed by Conzen and licensed to Corcept Therapeutics Inc., involves the timed administration of a glucocorticoid receptor (GR) antagonist prior to treatment with chemotherapy and is now in Phase 1 clinical trials. While pre-clinical data suggest that the treatment will be effective against a subset of breast cancers that do not express estrogen receptor but do express GR, doctors cannot easily determine which patients fall into this group because there is currently no validated test that measures a tumor's GR status. With \$55,000 of Innovation Fund support, Conzen's group will develop a GR diagnostic that can accurately identify patients who may benefit from future clinical trials and, ultimately, inform treatment decisions.

Nanoscale Coordination Polymers (NCP) for Platinum-Resistant Ovarian Cancer

Wenbin Lin, professor in chemistry, has developed an siRNA grafted nanoscale coordination polymer that re-engineers platinum-based chemotherapeutic drugs to overcome platinum-resistance in ovarian cancer. This technology increases progression-free survival benefits, reduces side effects of platinum-



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based drugs and can be used to treat several other types of cancer. The \$100,000 Innovation Fund award will prepare the NCP for pre-clinical testing in platinum-resistant ovarian cancer.

2013

Antibody-targeted LIGHT for the treatment of primary tumors and metastatic disease in cancer

By coupling tumor targeted antibodies to LIGHT, a protein that supercharges the immune system by recruiting immune cells to tumor sites and by stimulating T cell activation, Dr. Yang-Xin Fu can specifically target the LIGHT immunological effect to the tumor site. Dr. Fu is positioned to execute tumor targeting with a single-molecule, antibody-conjugated SuperLIGHT protein. This proof-of-concept antibody conjugated with the improved LIGHT protein will be against PD-L1 (Programmed Death Ligand 1) - a transmembrane protein involved in immune suppression that is up-regulated in a variety of tumor types.

Nanocrystal "Glue" for High-Efficiency Thermoelectric Materials

Thermoelectric materials are solid-state energy converters which can be used to convert waste heat into electricity or convert electrical power directly into heating or cooling. Thermoelectrics (TEs) are currently used in niche applications such as car seat heating/cooling, delicate temperature control (laser diodes, microprocessors, etc.), and deep-space power generation. Thermoelectric devices are employed in applications where reliability (maintenance-free operation for greater than 20 years), simplicity (no moving parts), and durability (robust in extreme temperatures) are of primary importance. The Innovation Fund grant will be used by Dr. Dmitri Talapin to further improve operating efficiency and provide a viable route to commercialization of the technology.

Small Molecule Inhibitors of Copper Chaperones for the Treatment of Cancer

Dr. He and his collaborators are pursuing an alternative approach to disrupting copper trafficking and have identified a small organic molecule with in vivo anti-cancer activity that selectively inhibits copper chaperones and disrupts copper trafficking. No therapies currently exist that utilize this target in any cancer. Dr. He's proof-of-concept studies have demonstrated the strong potential of copper chaperones as a new target for the treatment of cancer. The Innovation Fund grant will be used to test lead inhibitors in in vitro and in vivo pre-clinical experiments.

Testing New Venues for Pritzker Course Content Transformation, Distribution, and Commercialization – Non Profit

The Clinical Pathophysiology and Therapeutics, or CPPT, course content developed by faculty at the University of Chicago Pritzker School of Medicine is widely recognized as a highly effective tool for training medical students. Poised to help lead the changing medical education landscape, this content has been validated by global partner institutions and is now accessible online to authorized users. With



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\$20,000 in funding from the Innovation Fund, Dr. Holly Humphrey and team will explore the commercial potential for broader distribution of these materials using technology-enabled, cloud-based platforms.