Cornell Research Funding Program: Bench to Market

Program Impact Report 2014 - 2020

CTAM
2014 - 2020

IGNITE
Launched in 2020

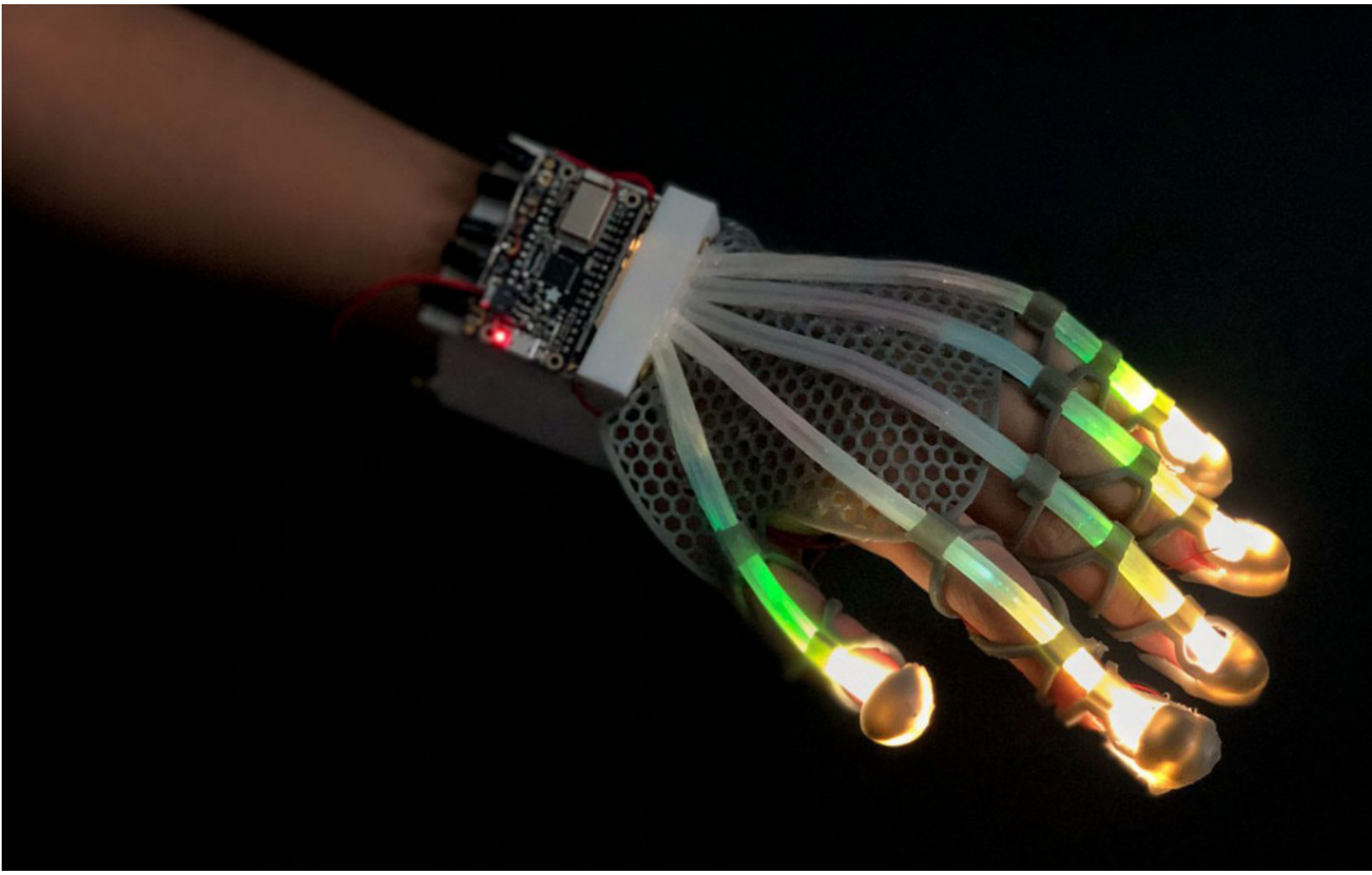


Photo of 3D-printed glove lined with stretchable fiber-optic sensors

CTL CENTER FOR TECHNOLOGY LICENSING AT CORNELL UNIVERSITY

Table of Contents

BUILDING A CULTURE OF INNOVATION:

The Cornell Research Gap Funding Program

Discoveries that often arise from Cornell research have significant commercial potential; however, they may be "too early" for licensing or investment. Cornell's gap funding program accelerates and matures such discoveries to further their development towards commercialization to benefit society.

Operating initially under the name Cornell Technology Acceleration and Maturation Fund (CTAM), and now re-launched as IGNITE, Cornell University funds the further development of select innovations with definite next steps to validate commercialization strategy, whether that be via a startup company or corporate license.

The gap funding program was initiated and funded by the Office of the Vice Provost for Research (OVPR) in 2014 and has grown through university contributions and ongoing gifts from industry partners and alumni. A generous gift from Peggy J. Koenig '78 helped launched IGNITE in 2020; and Kairos Ventures donated to CTAM in 2017.

In the first five years of the CTAM program, completed projects have gone on to raise over $30M in venture capital, corporate-sponsored research and research grants, a 34x return on investment.

Key offices under the OVPR instrumental to the IGNITE program include:

- **The Center for Technology Licensing**
  The Center for Technology Licensing (CTL) is Cornell University's technology transfer office. CTL's mission is to catalyze technology commercialization to develop products and services from university innovations for societal benefits; promote new technology ventures to foster economic development within New York State and across the nation. CTL administrates the gap funding program.

- **The McGovern Center**
  The McGovern Center was founded in 2008 as a startup incubator to help develop young Cornell life science companies. The Center is funded by Cornell's Research Division, the Institute of Biotechnology, NYSTAR and a generous gift from Kevin M. McGovern '70 and his family.

- **Praxis Center for Venture Development**
  The Praxis Center for Venture Development is Cornell's on-campus incubator for engineering, digital and physical science startups. The Center is funded by Cornell's Research Division through the Office of the Vice Provost for Research.

WHAT IS GAP FUNDING?

Overview

The CTAM Fund was Cornell's pilot program for gap funding providing pivotal funding that has proven to help technologies bridge the discovery-to-market space.

Thirty-one competitively awarded CTAM projects each received up to $50,000 to advance Cornell research innovations to the next inflection point towards commercialization, ultimately enabling higher quality licenses and startup companies.

Two types of projects were funded:

1. Cornell Technology Projects fund campus research labs to increase the likelihood of commercialization or venture creation of active disclosed Cornell technologies. They are available to faculty, research staff, and graduate students.

2. Startup Company Projects address investability gaps that deter investment or strategic partnerships. Eligible startups include Cornell licensees and select clients of Cornell incubators.

Project Focus

- Supporting commercialization activities such as prototype development, beta-testing, data generation and analysis, market research, and business plan refinement.

- Increasing value by enabling the next inflection point for engaging potential commercialization partners.

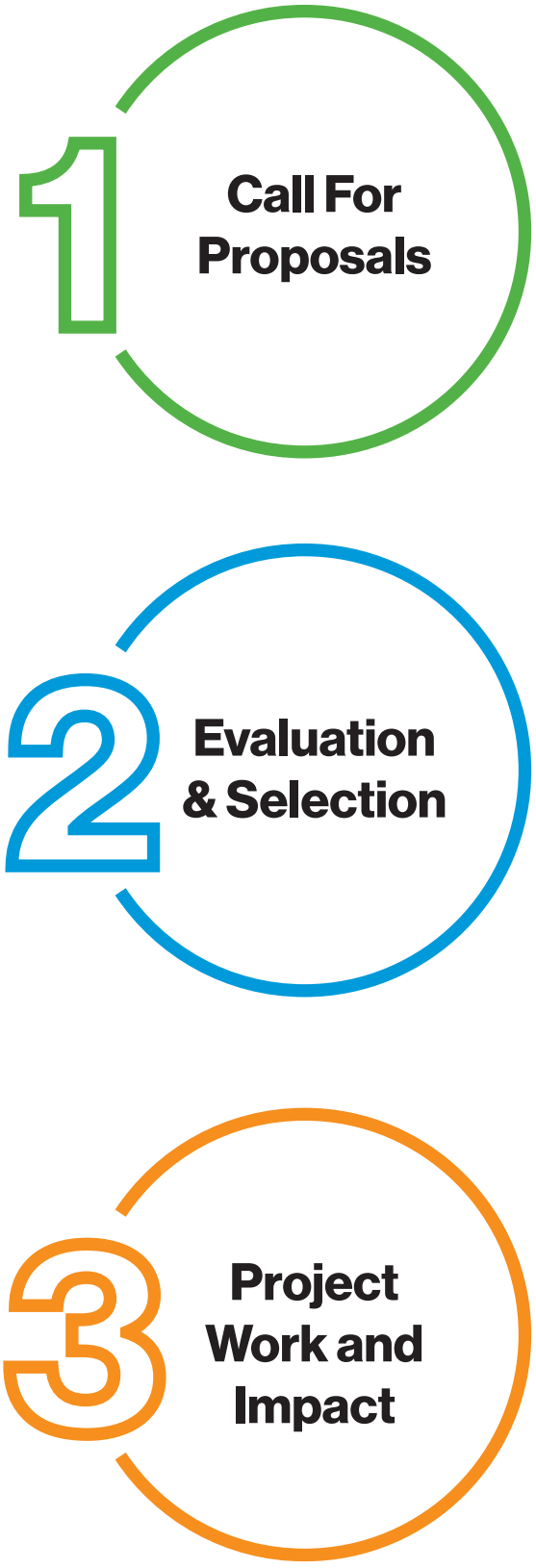
- Facilitating the acceleration of technology licensing, venture creation and corporate collaboration.

Projects were awarded twice per year in the spring and fall, with applications submitted through an online portal. When possible, CTL used external experts to review applications for commercialization potential. Finalists were invited to present to a review board who reviewed and evaluated potential project impact assessing the following points:

- Overview of the underpinning technology
- Scientific/technical merit of the project
- Target market
- Intellectual property status
- Proposed activities to be funded
- Specific deliverables stemming from the investment
- Project budget and timelines

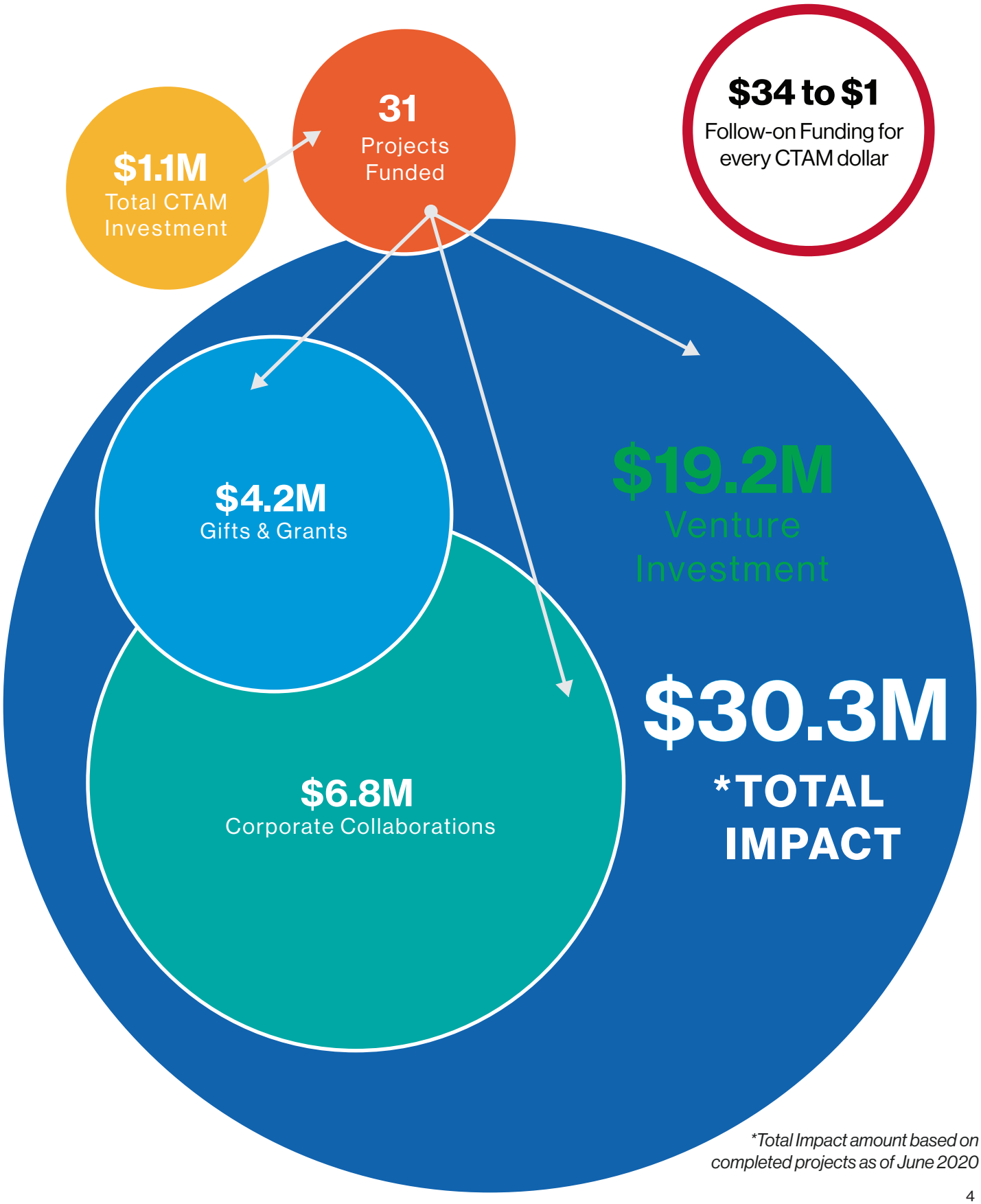
CORNELL GAP FUNDING: ROBUST PROCESS

The Three Steps in the Cornell Gap Funding Process



METRICS: MEASURING IMPACT

Projects Funded, Value of Projects and Total Follow-on Funding to Date



*Total Impact amount based on completed projects as of June 2020

CTAM IS NOW IGNITE

THE NEXT GENERATION GAP FUNDING PROGRAM

IGNITE
CornellResearch Funding Program: Bench to Market

IGNITE is Cornell Research's next-generation funding program growing out of the Cornell Technology Acceleration and Maturation (CTAM) Fund.

The IGNITE program builds on CTAM's success, both with additional support from the university and tailoring its funding options for our research labs and startups while opening up opportunities for our corporate collaborators.

IGNITE is supported by the Office of the Vice Provost for Research ("OVPR") with internal funding complemented by generous donations*.

The IGNITE program now offers three uniquely different funding options with common goals:

- Accelerate technology protection, licensing, venture creation/ investment and/or corporate research collaboration.

- Reduce risk via validation of a prototype, beta-testing, data generation and analysis, validation demonstrations, market research and business plan refinement.

- Increase value by enabling projects with clear results that lead to and justify further engagement and development from investors and corporate partners.

*The IGNITE Program is funded in part through a generous gift from Peggy J. Koenig '78.

The three IGNITE program options are:

IGNITE:Research Acceleration

Research grants up to $50,000 per project to accelerate active CTL inventions from the Ithaca, Geneva, or Cornell Tech campuses towards commercialization. Applications are received twice per year via a Spring and Fall cycle. Each application is reviewed for alignment, and those that move forward receive external reviews and present to a review board.

IGNITE:Startup Projects

Up to $50,000 in project funding via a convertible note for all active CTL Startup Licensees from Ithaca, Geneva or Cornell Tech campuses; and/or members of Praxis, McGovern, REV and the PostDoc Runway program at Cornell Tech. Applications are received via the CTL website on an open, rolling basis. Applications are reviewed for alignment, receives votes from external reviewers evaluating the project and company, those selected to move forward present to a review board.

IGNITE:Partnership Development

Project opportunities and amounts available will be defined in cooperation with corporate partners seeking to establish research relationships with Cornell. Calls for projects will be offered on an as-available basis and will likely be aligned a targeted theme or issue. Application review and awards will be completed by a committee assembled for the purpose whose structure will be communicated prior.

AWARDED PROJECTS AND HIGHLIGHTED SUMMARIES

CTAM Projects from 2014 - 2020

PROJECTS	RESEARCHER(S)	DATE FUNDED	PAGE
High frequency digital ultrasonic imaging; ArcScan, Inc.	Startup project	Jul 2014	8
Low cost portable terahertz imaging	Ehsan Afshari	Aug 2014	
Developing a translatable encapsulation device for type 1 diabetes	Minglin Ma	Sept 2015	9
Automated plate dispenser to promote value of tethered enzyme technology	Alexander Travis Roy Cohen	Sept 2015	
Apparatus for making ice cream and related products using dense gas expansion	Syed Rizvi	Jan 2016	10
High performance battery materials; Conamix, Inc.	Startup project	Jan 2017	11
Novel method to down-modulate P-glycoprotein (P-gp) incells, by targeting adenosine receptor A2A with agonists	Margaret Bynoe	Jan 2017	
Ultra-stable, low cost Alkaline Exchange Membranes (AEMs); Ecolectro, Inc.	Startup project	Aug 2017	12
New cosmetic compounds that reduce UV-induced skin damage; Repairogen Corp.	Startup project	Aug 2017	13
Animal health company; Bactana Corp.	Startup project	May 2018	15
Accurate and reliable scoring of alertness and sleep states in seats and beds	Edwin Kan	May 2018	14
Therapeutic delivery of ubiquibodies for efficient silencing of undruggable cancer targets	Matthew DeLisa	May 2018	16
Assisted reproductive technology for separation of motile sperms	Alireza Abbaspourrad	May 2018	
Methods to treat disorder dependent on GLS-1 and GLS-2	Richard Cerione	May 2018	
Developing a platform disease diagnostic that has the flexibility to detect vector borne, sexually transmitted, and neurological diseases; Ionica Sciences.	Startup project	Aug 2018	
Safe and cost-effective injectable treatment for osteoarthritis; Dynamic Boundaries, Inc.	Startup project	Aug 2018	
Reducing scan time for clinical MRI using data processing	Madhur Srivastava	Jan 2019	
Using organic chemistry of soft material composites for new capabilities in robots	Robert Shepherd	Jan 2019	
Exploring the in vivo therapeutic activity of a potent ER stress-inducing rhenium anticancer agent	Justin Wilson	Jan 2019	
A point-of-care diagnostic system for diagnosis of a variety of conditions, including: Ischemic stroke, Glioma and or PEPCK deficiency	Roy Cohen	May 2019	17
Systemic delivery of hydrophobic, free drugs using surface-functionalized, natural, fluorescent crystals with site-specific biodegradable hydrogels	Alireza Abbaspourrad	May 2019	
Microfluidic Technology for Single Cell Multi-Omic Sample Processing	Harvey Tian	May 2019	
New breeding strategy for significantly enhanced tolerance to multiple abiotic stresses in plants	Susheng Gan	May 2019	
Accelerating availability of New York malting barley	Mark Sorrells	May 2019	
A new cloud-native application container architecture; Exotanium Inc.	Startup project	May 2019	
iD3: Intelligent and Invisible Electronic ID Tags for Anti-Counterfeiting and IoT	Paul McEuen	Dec 2019	
Aluminum Nitride-based Power Amplifiers	Austin Hickman	Dec 2019	
Use of membrane inhibitors to enhance vaccine development against enveloped viruses	Hector Aguilar-Carreno	Dec 2019	
Pharmacokinetics and toxicity of Ethylboronic acid in dogs	Kenneth Simpson	Dec 2019	
Novel self-sanitizing coating for mitigating health care associated infections (HAIs) acquired from hospital high-touch surfaces; Halomine, Inc.	Startup project	Dec 2019	18
Developing a reactor platform that uses carbon dioxide and concentrated sunlight to build energy-dense hydrocarbons; Dimensional Energy Inc.	Startup project	Dec 2019	
Precision oncology diagnostic test	Server Ertem	May 2020	
Ezra-seq: rapid ribosome profiling with broad application	Shu-Bing Qian	May 2020	
Recombinant lubricin therapeutics for human and veterinary ophthalmic disease	Heidi Reesink	May 2020	
Use of membrane inhibitors to enhance vaccine development against coronaviruses	Hector Aguilar-Carreno	May 2020	
A biological approach to produce the anxiolytic herbal supplement yangonin in baker's yeast	Sijin Li	May 2020	

Note: With respect to confidentiality and privileged communication, only financial information available in the public domain is presented in the highlighted summaries in the following pages.

COMPANY PROJECT

ArcScan, Inc.

July 2014

SUMMARY

ArcScan developed Artemis3, a high frequency digital ultrasonic imaging and scanning method that maintains the ultrasound source perpendicular over the region of the eye being scanned to provide comprehensive three-dimensional images of a patient's eye with ultra-high resolution. This technology enables eye surgeons to design phakic and accommodative lenses to reduce the risk of bad outcomes in corneal surgeries and lens implants.

OPPORTUNITY

For patients prepped for refractive surgery, 10-15% are excluded from surgery due to current diagnostic imaging standards that supply inadequate imaging of the eye. Low imaging quality prevents ophthalmic surgeons from performing LASIK or related procedures in such patients with confidence. A new generation of intraocular lens (IOL) implantation procedures are being offered by refractive surgeons, but the improved correction provided can only be achieved through precision placement of the device within the eye.

OUTCOME

As a result of the initial CTAM funding, ArcScan researched the target market, resulting in data that could be used to secure significant investment. In February 2015, ArcScan received $4.9M in Series A funding to further develop Artemis, which was eventually rebranded and is now known as the ArcScan Insight® 100.

ABOUT THE COMPANY

ArcScan, Inc.

Medical imaging solutions developed with licensed Cornell technology

arcscan
Imaging ahead of the curve

ArcScan is an innovative, dynamic company that aims to globally advance and evolve medical imaging by using intelligent, very high-frequency ultrasound technology, resulting in improved diagnostic and surgical outcomes. ArcScan was a tenant of The McGovern Center when the CTAM funding was awarded. https://arcscan.com/

CORNELL TECHNOLOGY PROJECT

Developing a Translatable Encapsulation Device for Type 1 Diabetes

September 2015

SUMMARY

Minglin Ma's research group developed a cell encapsulation device called TRAFFIC (Thread-Reinforced Alginate Fiber for Islets enCapsulation). Encapsulation of porcine islets or stem cell derived beta-like cells has shown increasing clinical promise as a potential way to treat or even cure type 1 diabetes (T1D), but current encapsulation systems all have fundamental limitations. The TRAFFIC device was developed to overcome these limitations.

OPPORTUNITY

As the insulin market continues to rise, this treatment does not cure diabetes. The TRAFFIC device has the potential to revolutionize the way patients with T1D manage their disease. Further development is needed to determine if TRAFFIC can be easily implanted and retrieved laparoscopically, remain biocompatible, and maintain the survival of encapsulated cells for at least one month.

OUTCOME

As a result of the initial CTAM funding, Minglin Ma's research group collected the necessary data to be awarded a significant sponsored research effort and licensing agreement with Novo Nordisk.

PRINCIPLE INVESTIGATOR

Minglin Ma

Associate Professor, Biological and Environmental Engineering

Minglin Ma is an Associate Professor in the Department of Biological and Environmental Engineering and joined the department in July 2013 after completing his postdoctoral training in the MIT labs of Robert Langer and Daniel Anderson. His work there evolved in the fields of biomaterials and bioengineering. Professor Ma is interested in using the concept of "cell packaging" for life science and agricultural applications.

CORNELL TECHNOLOGY PROJECT

Apparatus for Making Ice Cream and Related Products using Dense Gas Expansion

January 2016

SUMMARY

When pressurized gas expands, the decrease in pressure causes the molecules to slow down, making the gas cold. In this device, developed by Professor Syed Rizvi, pressurized gas is drawn into and expanded through an ejector venturi system. Simultaneously, liquid ice cream mix is drawn into the ejector, atomized and frozen by the expanding gas, resulting in the production of ice cream with a certain volume of incorporated gas and creamy texture due to quick freezing and formation of very small ice crystals.

OPPORTUNITY

The device's flexible nature allows the creation of on-demand, self-serve frozen desserts with a creamier texture and a wide variety of flavors and colors, without the need for additives. The device has no moving parts and a smaller footprint than other ice cream machines, allowing for more portable operation. It offers energy-efficient, instantaneous freezing of liquids, which could also be used in food preservation. Further development of a prototype could lead to in-home ice cream devices, analogous to Sodastream or Keurig.

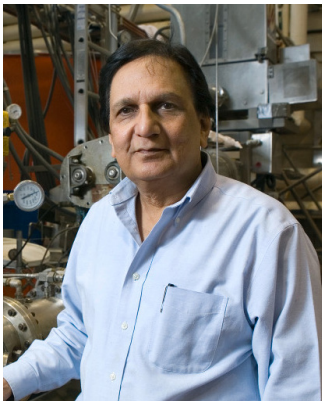
OUTCOME

As a result of the initial CTAM funding, Professor Rizvi developed a prototype of the apparatus. This action led to a sponsored research agreement and evaluation license with Nestec, Ltd.

PRINCIPLE INVESTIGATOR

Syed Rizvi

Professor, Food Process Engineering, Department of Food Science



Syed Rizvi is a food process engineering professor in the Department of Food Science and holds the title of International Professor in the college. He is interested in the engineering and processing aspects of food science and value addition for global markets. He has published over 170 technical papers, co-authored/edited six books, and holds six patents. He is also associated with the Department of State, advising the Bureau of Economics, Energy and Agricultural Affairs on the use of science in diplomacy.

COMPANY PROJECT

Conamix, Inc.

January 2017

SUMMARY

Conamix is commercializing high-performance battery materials based on proprietary Cornell technology. The company's unique battery materials allow higher energy density in existing lithium-ion architectures. Conamix manufactures the battery materials using low cost and highly commercial methods.

OPPORTUNITY

Large battery manufacturers have actively targeted silicon as a next-generation material to improve battery performance, but competing silicon material approaches lack scalability and performance. The Conamix technology addresses these issues by replacing existing lower capacity graphite as a drop-in material for the battery anode in existing commercial battery architectures and can improve the overall energy capacity of lithium-ion batteries by 30%.

OUTCOME

Within 12 months of the CTAM project's conclusion, Conamix secured $330K in seed financing. In May 2018, Conamix received $8.3M in Series A funding from Volta Energy Technologies and Hegemon Group International.

ABOUT THE COMPANY

Conamix, Inc.

High performance battery materials based on Cornell technology

Conamix

Manufacturer of nano-structured silicon intended for use in lithium-ion batteries. The company develops high energy cobalt-free battery materials for lithium-ion, providing companies with materials to improve lithium-ion batteries' performance. http://www.conamix.com/

COMPANY PROJECT

Ecolectro, Inc.

August 2017

SUMMARY

Ecolectro manufactures Alkaline Exchange Membranes (AEMs) that have high conductivity and unprecedented alkaline stability. Ecolectro's ultra-stable, low-cost AEMs are an enabling component to facilitate the widespread adoption of fuel cell systems by placing them on a lower cost curve than conventional PEM technology.

OPPORTUNITY

Hydrogen can be expensive to produce since the current Proton Exchange Membrane (PEM) technology in fuel cells uses platinum as a catalyst. Ecolectro's AEMs can be applied to the development of next-generation fuel cell technologies but require testing in the Membrane Electrode Assembly (MEA) configuration to determine the operation, durability, and efficiency. Additional funding would allow Ecolectro's AEMs to be fabricated more efficiently, tested in the MEA configuration, and produce further data.

OUTCOME

As a result of initial CTAM funding, Ecolectro provided the necessary outputs to "de-risk" their technology for investors. The company has received $4M in Series A funding to develop their polymer membranes further.

ABOUT THE COMPANY

Ecolectro, Inc.

Developer of novel polymers designed for the energy industry

ecoLECTRO

Ecolectro develops structurally robust and highly conductive polymer membranes for a range of applications, including electrolysis and fuel cell systems that improve performance and dramatically decrease costs. https://www.ecolectro.com/

COMPANY PROJECT

Repairogen Corp.

August 2017

SUMMARY

Repairogen is developing new cosmetic compounds that reduce UV-induced skin damage, reduce skin aging, and reduce skin cancer development. Repairogen's patented technology, with CUL4A Ubiquitin Ligase inhibitors, significantly enhances cells' natural DNA repair mechanism by inhibiting the CUL4A protein.

OPPORTUNITY

Current cosmetic ingredients that claim to repair DNA damage are proteins that are too large to efficiently penetrate the skin and enter skin cells where DNA damage needs to be repaired. These ingredients also do not enhance the natural cellular repair mechanism in the skin. Repairogen is developing a series of new lead compounds with well-documented solubility, developing formulations for these compounds that will penetrate the skin and enhance the well-documented CUL4A DNA repair process in skin cells.

OUTCOME

As a result of initial CTAM funding, Repairogen has received $1.5M in Series A funding to test their lead compounds further.

ABOUT THE COMPANY

Repairogen Corp.

Developer of skincare solutions based on Cornell technology

REPAIROGEN

Repairogen is a developer of skincare ingredients and products intended to commercialize advances in DNA-based skin repair. The company's products employ proprietary DNA-repair technologies that significantly reduce DNA damage in skin cells after UV exposure, enabling individuals to reduce the risk of skin cancer and improve their skin's health and appearance. https://www.repairogen.com/

CORNELL TECHNOLOGY PROJECT

Accurate and Reliable Scoring of Alertness and Sleep States in Seats and Beds

May 2018

SUMMARY

Edwin Kan and his team developed a non-invasive, low-cost method to monitor human and animal vital signs using passive and active radio frequency (RF) transmissions. Using near-field coherent sensing (NCS), researchers can measure internal body movement, such as a beating heart, in a precise, non-invasive method.

OPPORTUNITY

To further demonstrate the NCS technology, funding would allow Kan and his team to build specific prototypes and perform realistic demonstrations. The group planned to construct an automotive seat utilizing the NCS sensors to retrieve the driver's cardiopulmonary waveforms to determine alertness. They also planned to integrate a sensor into a mattress to measure sleep study scoring.

OUTCOME

As a result of the initial CTAM funding, Kan and his team built specific prototypes and performed realistic demonstrations. The development and data collected from these prototypes have led to more than **$300K** in grants and licensing opportunities.

PRINCIPLE INVESTIGATOR

Edwin Kan

Professor, Electrical and Computer Engineering

Professor Edwin Kan received his B.S. in 1984 from the National Taiwan University and received his Ph.D. from the University of Illinois at Urbana-Champaign in 1992. Professor Kan was a Senior CAD Engineer at Dawn Technology from 1992-1994. From 1994-1997 he was a Research Associate at Stanford University. He joined the faculty of Electrical Engineering at Cornell in 1997 as an assistant professor. Professor Kan is now a full professor.

COMPANY PROJECT

Bactana Corp.

May 2018

SUMMARY

Bactana Corp. is an animal health company that is identifying, culturing, and field testing naturally occurring bacteria strains that increase weight gain and reduce gastrointestinal (GI) disease when administered orally to dairy calves and potentially other animal species. Based on an exclusive global license from Cornell, their product called “FPS-4” is comprised of four strains of naturally occurring bacterium that have been found more abundantly in the microbiomes of healthier dairy calves.

OPPORTUNITY

To secure commercial license agreements with large animal health companies, Bactana needed to demonstrate a reduction in manufacturing costs by improving FPS-4’s fermentation process so that the concentration of bioactive components (density of cell colony-forming units) are greatly enhanced. Funding would also allow Bactana to provide enough pilot product material for their partners to perform FPS-4 trials.

OUTCOME

As a result of the initial CTAM funding, Bactana raised $1.4M in seed funding.

ABOUT THE COMPANY

Bactana Corp.

Animal Health Company

Bactana™ ANIMAL HEALTH

Bactana Corp. is a global development stage animal health company at the forefront of applying microbial ecology to deliver safe, effective, and sustainable alternatives to antibiotic treatments. Its product platform (FPS) is initially being developed for companion animals and food animals, where multiple trials have demonstrated increases in yield efficiency, weight gain, and improved gut health through enhancement to an animal’s microbiome. https://bactana.com/

CORNELL TECHNOLOGY PROJECT

Developing Ubiquitin Ligases for Selective Degradation of Targeted Stable Proteins

May 2018

SUMMARY

Matthew DeLisa and his team engineered ubiquitin ligases for selective degradation of targeted stable proteins through the ubiquitin-proteasome pathway (UPP).

OPPORTUNITY

The technology is a new platform for protein silencing, which can be applied to the treatment of cancer and infectious diseases.

OUTCOME

As a result of CTAM funding, Matthew's team was able to test and gather essential data in a clinical setting. Matthew and his team are currently working with venture partners on a startup to develop their technology for commercialization.

PRINCIPLE INVESTIGATOR

Matthew DeLisa

William L. Lewis Professor Smith School of Chemical and Biomolecular Engineering,
Director of the Institute of Biotechnology

Matthew DeLisa is the CSO of Swiftscale Biologics, the William L. Lewis Professor at the Smith School of Chemical and Biomolecular Engineering, and the Director of the Institute of Biotechnology. Professor DeLisa's research focuses on understanding and controlling the molecular mechanisms underlying protein biogenesis -- folding and assembly, membrane translocation, and post-translational modifications -- in a living cell's complex environment.

CORNELL TECHNOLOGY PROJECT

Developing a Point-of-Care Testing Platform for Rapid Diagnosis

May 2019

SUMMARY

Roy Cohen and his team developed a point-of-care testing platform for rapid diagnosis of various conditions utilizing biomarker detection in blood plasma or other bodily fluids.

OPPORTUNITY

The point-of-care testing platform could be used in hospitals, medical centers, doctors' offices, schools, or out in the field by paramedics or the military when they need to detect various conditions, including ischemic stroke, glioma, or PEPCK deficiency.

OUTCOME

As a result of the initial CTAM funding, Roy's team performed the necessary experiments, gathered essential data, and acquired the needed equipment to refine the technology. Roy and his team are currently waiting for their patent's approval from the USPTO and are launching a startup company.

PRINCIPLE INVESTIGATOR

Roy Cohen

Research Assistant Professor,
James A. Baker Institute Department of Veterinary Medicine

With a background in neurobiology and biochemistry, Roy first came to work with Alex Travis at the Baker Institute for Animal Health to study sperm biology. As Roy's work and research progressed, he found himself working in diagnostics developing biosensors. His diagnostics work led him to realize there is a great need for a diagnostic tool to detect biomarkers for strokes or brain injuries.

COMPANY PROJECT

Halomine, Inc.

Dec 2019

SUMMARY

Halomine is a startup company based on a Cornell discovery and founded by Mingyu Qiao. Halomine's technology is focused on the synthetic compound known as halamine and its real-world applications.

OPPORTUNITY

High-touch surfaces contribute significantly to the transmission of antibiotic-resistant (AR) pathogens and increase the rate of AR-caused Healthcare Associated Infections (HAIs) that are difficult to treat. Halomine is developing a new generation of antimicrobial coating that is cost-effective and can create "self-sanitizing" properties on hand-touch surfaces without altering surface aesthetics.

OUTCOME

As a result of the initial CTAM funding, Halomine was able to finance the retention of counsel to guide the company through the regulatory approval process and any necessary testing in anticipation of its product launch.

ABOUT THE COMPANY

Halomine, Inc.

Developer of antimicrobial technologies

halōmine

Halomine develops rechargeable antimicrobial technologies for healthcare facilities, food processing plants, and many other industries. The lead product, HaloFilm, is a unique rechargeable antimicrobial liquid spray that creates an antimicrobial film on almost any surface. HaloFilm offers continuous protection against microbes on surface materials such as stainless steel, plastics, coat of paint, or rubber. https://www.halomine.com/

Photo of optical wireless integrated circuits (OWICs)

CTL CENTER FOR TECHNOLOGY LICENSING AT CORNELL UNIVERSITY

https://ctl.cornell.edu/