

# Fiscal Year 2019 Highlights









I am pleased to present you with Brandeis Innovation's 2019 Highlights. Brandeis Innovation houses both the Office of Technology Licensing (OTL) and our Virtual Incubator, where we serve researchers, inventors, students, faculty, entrepreneurs and industry. We provide support and infrastructure to the University's investigators and innovators for technology development, product development, and commercialization.

OTL provides a full range of services in licensing, business development and legal matters for transferring technologies created at Brandeis. We patent and license breakthrough technologies developed in our labs and through our programs.

Through our Virtual Incubator, we provide training, resources and funding for Brandeis startups and technologies. Our Sprout, Spark, and I-Corps programs help early-stage entrepreneurs and inventors within the Brandeis

community in identifying opportunities and making a greater impact in their fields.

2019 was a banner year for innovation at Brandeis. Royalties from Brandeis inventions increased by nearly \$2 million from the previous year, we were issued 13 patents, over 1,800 people attended Brandeis Innovation's sponsored events and 12 new startups formed. I invite you to explore our many other noteworthy accomplishments in the following pages.

**Rebecca Menapace**

Associate Provost for Innovation and  
Executive Director, Office of Technology Licensing



randeis University is a research leader in the natural, social, physical, and information sciences. Our unique strength is our collaborative spirit.

Brandeis is where Nobel Prize-winning biologist Michael Rosbash and Jeffrey Hall, professor emeritus of biology, cracked the genetic code of circadian rhythms, found in almost all life. It's where neurobiologist and MacArthur fellow Gina Turrigiano developed her latest theories on sleep. And where scientists at the interdisciplinary Materials Research Science and Engineering Center (MRSEC) are devising revolutionary new materials that promise to transform everything from the way we treat disease to build computers.



# A History of Innovation

Intellectual Property (IP) created by Brandeis University's research programs have powered several successful startups, including:

**Syntonix**, acquired by Biogen and spun off as Bioverativ™, later acquired by Sanofi in early 2018, developer of two FDA-approved hemophilia drugs: **Eloctate™** and **Alprolix™**; **ThermaGenix**, creator of PCR additives to enable better sequencing sample prep; **RC Analytics**, providing data analytics solutions for organizational performance optimization; **Dexela**, producer of Complementary Metal-Oxide-Semiconductor X-ray detection technologies, acquired by PerkinElmer; **ArQule®**, pioneer in small molecules for biomarker-defined oncology and rare disease therapeutics.

## Select Brandeis Products in the Market

Partnering with Brandeis University means tapping into our deep expertise in functional foods, neuroscience, research reagents, chemistry, therapeutics, materials science, AI, and data analytics. We have a wide variety of IP and technologies available for licensing. Our diverse portfolio has a strong track record in the market, with 37 active licenses, including:

- **NoCow Energy Bars**: made with coffee flour, a nutritional that preserves the caffeine and antioxidants of coffee
- **Corazonas Heartbars**: Utilizes non-esterified plant sterols to lower cholesterol and promote cardiovascular health
- **Bio-Seeq PLUS**: A portable high precision instrument for detecting trace levels of biological warfare agents through DNA replication
- **Smart Balance®**, **Earth Balance®**, **Bestlife™**: All use a Brandeis-developed 1:1 blend of saturated and polyunsaturated fats to improve cholesterol ratios

During 2019, Brandeis Innovation engaged stakeholders in record numbers:

**1,854**

Event Attendees

**1,230**

Office Hours

**8.7**  
million

Media Impressions

**790**

Training Hours

**210**

Mentorship Hours

“Brandeis Innovation provides a bridge between Brandeis innovators and the global innovation community.”

Rebecca Menapace

Associate Provost for Innovation and  
Executive Director, Office of Technology Licensing



Brandeis  
Innovation  
programs serve  
researchers,  
inventors,  
entrepreneurs  
and industry.



Brandeis Innovation  
programs support the  
University's investigators  
with a full range  
of innovation services.

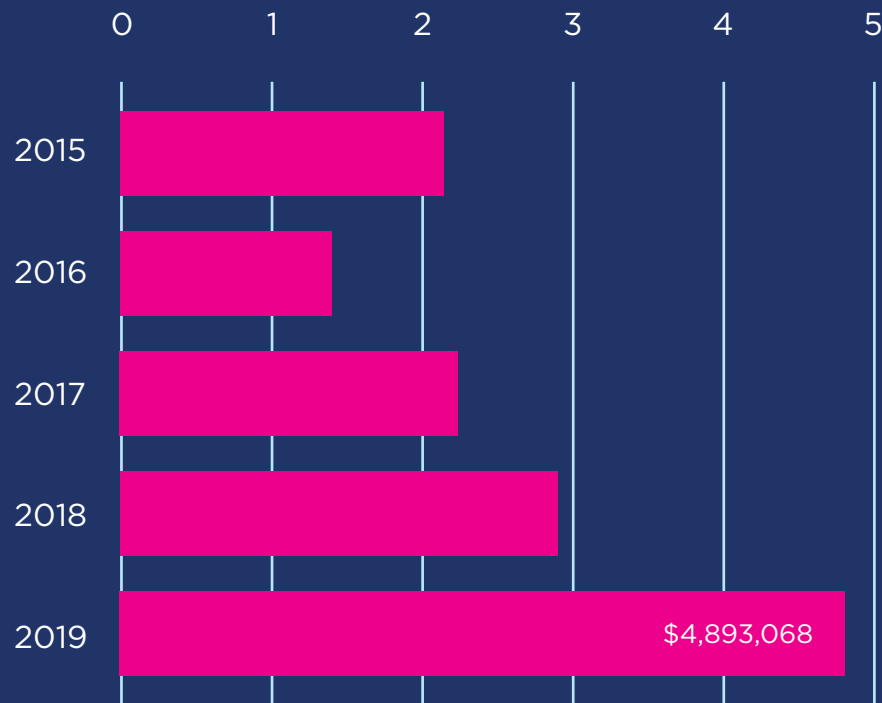
In addition, we foster new  
entrepreneurial activity  
among students, faculty and  
staff with unique programs.  
Our services to the Brandeis  
innovation community  
include:

- Evaluating new invention disclosures and managing intellectual property for those with significant market potential.
- Determining commercialization pathways, seeking qualified licensees and structuring licensing deals.
- Supporting development of industry-academic collaborations, partnerships, funding options and materials sharing.
- Maintaining long-term relationships with licensees, assuring compliance with agreement terms and distributing any income generated by licenses in accordance with the University's IP Policy.
- Funding new ventures and innovations through our Spark, Sprout, and I-Corps programs.
- Mentoring and training Brandesian entrepreneurs through our Virtual Incubator.
- Creating opportunities for visibility through our events and outreach.

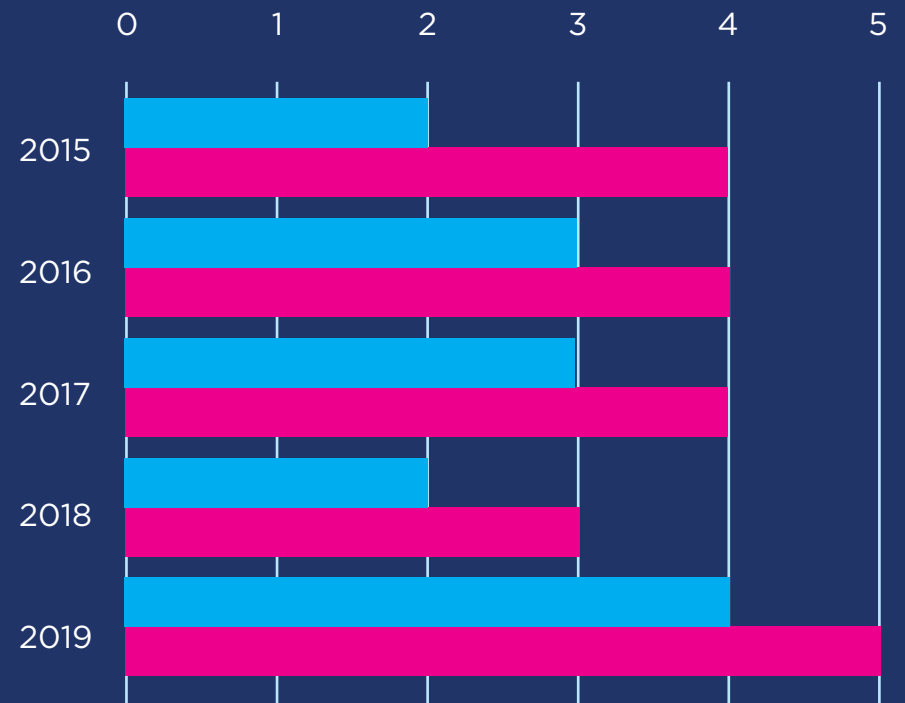
# 2019 Tech Transfer by the Numbers

## Royalties Generated

(\$ millions)



## Inventions Disclosed and Patents Filed



● Inventions Disclosed ● Patents Filed



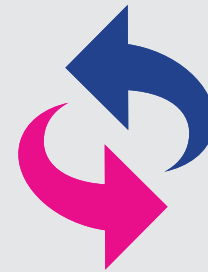
# Creating a Bridge Between University Research and Industry



**55 Invention  
Disclosures**



**13 Patents**



**261 Materials Transfer  
Agreements**



**2 Sponsored  
Research  
Agreements**



**22 Non-Disclosure  
Agreements**



**5 License  
Agreements**

# Faculty Spotlight: Olga Papaemmanouil

Making databases work to solve big problems has always been important to Olga Papaemmanouil. From her early career in finance to her current role as a Brandeis innovator, Olgas' work aimed to simplify the design and tuning of databases as well as to assist application developers in tackling the challenges of building, managing and optimizing data-driven applications. Today, the Brandeis computer science professor is working on an impressive array of Big Data analytics solutions, with a common goal of collecting insight on the complexity of the big data sets and leveraging this insight to produce solutions that improve the effectiveness and efficiency of Big Data systems.

Her work on cloud databases touches upon an economically important challenge: optimizing the costs of cloud services. Today's companies are



leveraging Big Data for everything from marketing to customer service to supply chain sustainability. What's next for Olga? Her current work focuses on leveraging deep learning theory to produce solutions that automate and customize various operations involved in big data management systems. Processing large datasets—for instance, all sales of electronics in the US—can help companies predict consumer behavior, optimize the use of raw materials to conserve resources, and create jobs by reducing friction in markets. Her work is making an impact across industries.

**“Working with OTL allowed me to highlight my research innovations and bring attention to their impact on Big Data Analytics technologies.”**

**Olga Papaemmanouil, Brandeis innovator**

## Profile in Innovation: KaabTech



KaabTech is a for-profit social enterprise that aims to finance and distribute solar-powered water pumps in rural Somalia. The vast majority of Somali farmers use inefficient engines powered by diesel for their irrigations. Diesel is too expensive for them and eats up much of their revenue. Furthermore, since there are no adequate roads connecting between villages and cities in Somalia, it takes a couple of days to bring diesel to the farm. Fortunately, the technology to solve this problem exists. It's called solar pumps. KaabTech aims to make this technology accessible and affordable to Somali farmers by introducing

flexible payment models, and utilizing an already existing distribution network used by SomLite, a solar lantern distribution enterprise currently operating in rural Somalia.

“Thanks to SPARK’s mentorship and seed-funding, KaabTech is currently piloting a solar irrigation system in Somaliland with a consumer financing mechanism. We look forward to benefiting from the resources available at SPARK as we scale our project and maximize our social impact.”

Abdishakur Ahmed, KaabTech



# Innovator Spotlight: David Waterman

David Waterman, PhD '18, has a solution for one key part of our waste stream: the millions of tons of clean plastic discarded each year by labs.

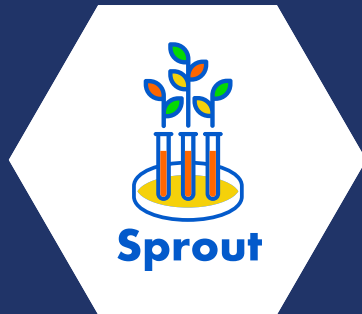
While he was pursuing his doctorate in Molecular and Cell Biology at Brandeis, David and some of his colleagues, including fellow doctoral student Brenda Lemos Waterman, MSc '16, PhD '19, noticed that lab waste is incorrectly deemed unrecyclable, even though most is completely non-hazardous. They formed a pilot program, starting in the lab of James Haber, the Abraham and Etta Goodman Professor of Biology and Director of the Rosenstiel Basic Medical Sciences Research Center. Their pilot won them a SPROUT grant, and Brandeis' newest sustainability startup,



GreenLabs Recycling, was on its way to success. Eventually, they also won an I-Corps fellowship, further accelerating their progress. Both programs gave them the business skills they needed to make their idea a reality, from honing a message to conveying value to stakeholders. Most valuable were the connections made through the program, which led to their first commercial opportunity.

From their beginnings as a single-lab pilot project, GreenLabs Recycling has grown to 17 customers with new ones added almost weekly. They recycle 3,000 lbs of plastic a week, with a goal of at least quadrupling this number by the end of the year, making a significant difference in the reduction of lab waste among Boston's biotech community.

Annually, on average, Brandeis Innovation funds:



7 Teams  
36 Participants  
Up to  
**\$100,000**



10 Teams  
35 Participants  
Up to  
**\$50,000**



17 Teams  
41 Participants  
Up to  
**\$35,000**



## Faculty Spotlight: Grace Han, Ph.D.



SPROUT winner Assistant Professor of Chemistry Grace Han and her lab are working on interdisciplinary projects at the intersection of fabrication and chemistry. Her work showcases the innovative spirit of Brandeis, where disciplinary barriers do not prevent the development of creative solutions to many of the world's practical challenges.

The Han lab has developed two novel technologies that may one day transform multiple industries: the first is a photo-switchable adhesive, with applications in both industrial and consumer uses. Grace and her team identified novel molecules that respond to light by changing structure. Another technology keeps engine oil warm in freezing conditions, without the use of electric heaters, which

are the current practice. Whether creating better adhesives or reducing vehicles' carbon footprints, Grace combines multiple disciplines – chemistry, fabrication, and business – to solve challenges. This typically Brandesian approach is winning notice nationally, and promises many more breakthroughs to come.

“We want to find a way to control phenomena that are difficult to control with conventional methods. We also want to control light, train light to do the tasks that we want to see. That’s the core value of what I do.”

Grace Han, Ph.D., Brandeis innovator



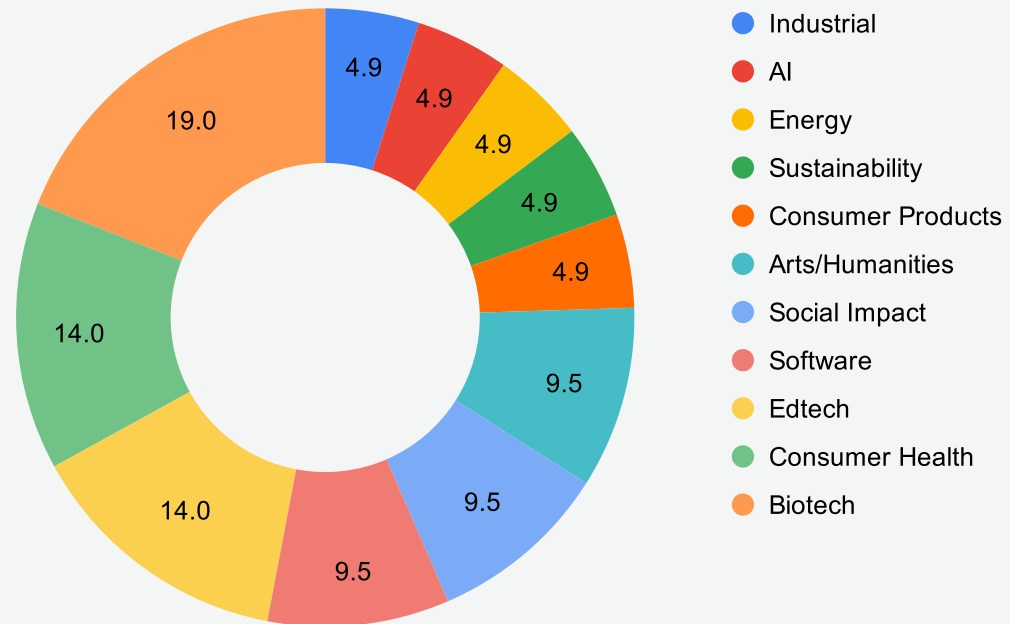
# Diverse Projects, Common Goals

“We bring  
together  
interdisciplinary  
teams because  
it is diversity,  
in all its forms,  
that sparks the  
best thinking.”

**Rebecca Menapace**

Associate Provost for  
Innovation and Executive Director,  
Office of Technology Licensing

**In FY '19, Brandeis Innovation teams represented  
the widest range of sectors to date:**





## I-CORPS

In 2017, Brandeis University received a grant from the National Science Foundation (NSF) to create an I-Corps™ site. The I-Corps program prepares scientists to extend their focus beyond the university laboratory, accelerating the economic and societal benefits of basic research. Brandeis is one of 10 I-Corps sites in New England. Working with select teams, we provide training, resources and funding for innovative startups developed by Brandeis students, faculty and staff.

# Meet the Current I-Corps Teams

## Enoch Therapeutics

Daniel Acker (Brandeis M.S. '14, Ph.D. '18),  
Domenico Bullara (Ph.D), Madhura Shringare  
(MBA, Brandeis IBS)

## SeniorTells

Gavin Shen (Brandeis B.S. '19), Mah Ebrahimi  
(Ph.D Candidate, International Economics  
and Finance), Xinyue Liu (Chemistry Ph.D.  
candidate)

## Heat-Storage Materials

Grace Han (Ph.D., Principal Investigator),  
Mihael Gerkman (Ph.D. candidate, Brandeis  
University), Timothy Wiggin (Ph.D.,  
Neuroscience), Leiming Tian (Brandeis Ph.D.  
'18), Kundan Kumar Sharma (MBA student,  
Brandeis International Business School)

## Reach into Research

Gabe Bronk (Brandeis B.S. '11, Ph.D. '18), Alicia  
Duce (High school senior, Waltham High  
School), Ariel Xie (M.A. student, Brandeis  
International Business School)

## Stryx Biotech: Biomarker Monitoring

Richard A. Roy (PhD '18, Biochemistry),  
Jacqueline L. Naffin, PhD (Brandeis Research  
Associate), Mengchun Li (MBA Student,  
Finance, IBS), Víctor Manuel Suárez (MS/MBA  
Student, Biology and Healthcare Management,  
Heller/GSAS)

## Effy: Augmented Reality for Cognitive Development

Diego Placido (Alumnus, Psychology,  
Neuroscience, and Computer Science),  
Samantha Malmberg (Graduate Student,  
Neuroscience), Xiaotong Liu (Graduate  
Student, IBS), Francis Hwang (Graduate  
Student, Heller)

## Diversitydatakids: Monitoring Inclusion in the U.S.

Clemens Noelke (Research Director, ICYFP,  
Heller), Huiyan Zhang (BS Student, Computer  
Science, Mathematics, and Economics), R  
Matthews (BS/ BA Student, Computer Science  
and African & Afro-American Studies)

## iRemember: Memory Support App

Olivia Hoy (BS Student, Biology), Ryan Xu  
(BS Student, Applied Mathematics and  
Neuroscience)

## Arca: Open-Access 3D Printing Platform

Dr. Alexandra Ratzlaff (Faculty, Department  
of Classical Studies), Yu Lu (MBA '17), Kun Qiu  
(MS Student, Business Analytics)

## **Transcriptional Enhancer Prediction (TEP) for Cancer Research**

Cherubin Manokaran (BS Student, Neuroscience and Computer Science), Ana Ward (MS/MBA Student, Biotech and Healthcare Management)

## **GreenLabs**

David Waterman (Research assistant), Brenda Lemos (Researcher), Shen Wang (PhD student, neuroscience), Yi Jin (PhD student, Biochemistry and Biophysics)

## **Flyght**

Tatevik Sarkissian (PHD student), Zachary Knecht (Graduate, Neuroscience)

## **Learn Through Technology (LTT)**

Vivekanand Pandey Vimal (TRISH Postdoctoral), David Hampton (Graduate), Pooja Chandrakar (Graduate, Physics), Zixiao Chen (Graduate, Pure Mathematics)

## **TRIBE**

Reazur Rahman (Ph.D, computational biology), Weijin Xu (PhD student, Molecular and Cell Biology)

## **Artificial Intelligence Capital Management (A.I. Capital Management)**

Marshall Chang (MBA '16, IBS), Zhengyang Zhou (MS Student, Computer Science), Joyce Yu (MA and BA '17, IBS)

## **Enzymatic Cleavage of Branched Peptides for Targeting Mitochondria**

Hongjian He (PhD Student, Chemistry), Xiaoyi Chen (MS Student, Chemistry)

## **Open Source Science Supplies**

Stephen Van Hooser (Faculty, Biology), Shen Wang (PhD Student, Neuroscience), Andrea Stacy (PhD Student, Neuroscience), Chelsea Groves-Kuhnle (PhD Student, Neuroscience), Nathan Schneider (BS Student, Neuroscience)

## **Recip Grocery Data Platform**

Benjamin Segal (BS Student, Computer & Neuroscience), Rafi Cohen (BS Student, Computer Science), Geoffry Kao (BS Student, Computer Science), Anthony Liu (BS Student, Computer Science), Dani Sim (BS Student, Computer Science), Nick Krebs (BS Student, Computer Science)

## **New Strategy to Treat Chronic Infections**

Lizbeth Hedstrom (Faculty, Chemistry & Biology), Deviprasad Gollapalli (Staff Scientist, Biology), Minjia Zhang (Staff Scientist, Biology), Ryan Cullinane (BS Student, Biochemistry), Xingyou Wang (PhD Student, Chemistry)

## **Cardiac Care Center**

Diana Bowser (Faculty, Heller)

# **I-CORPS benefits**



## **Support with Research**

The Office of Technology Licensing provides support in the form of mentor introductions and training sessions.



## **Customer Discovery Funding**

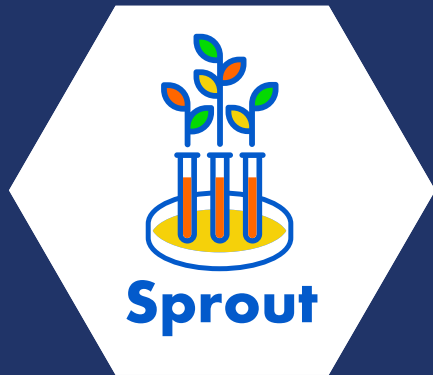
Up to \$3,000 is provided to each team for expenses related to customer discovery and equipment or materials.



## **Eligibility for Future NSF Funding**

Teams that successfully complete I-Corps training become eligible to apply to the NSF I-Corps Teams Program to receive additional support—in the form of mentoring and funding (up to \$50,000)—to accelerate the translation of knowledge derived from fundamental research into emerging products and services that can attract subsequent third-party funding.





## SPROUT

The SPROUT Program, funded by the Provost's Office and the Office of Technology Licensing (OTL), is designed to encourage and support entrepreneurial activity within the Brandeis community for students (graduate and undergraduate), postdocs, faculty and staff in the Division of Science. The awards are intended to help bring innovative research and entrepreneurial ambitions to life.

## Meet the Current SPROUT Teams

### **An Efficient and Low-cost Method for Annotation and Quantification of circRNAs**

**Sebastian Kadener, Ines Patop, Sinead Nguyen**

Circular RNAs (circRNAs) are recently re-discovered types of highly abundant RNAs which are produced by circularization of exons present in protein coding genes.

### **SciLinkR**

**Anique Olivier-Mason, Seth Fraden, Avi Rodal, Irv Epstein, Ben Rogers, Jerald Dumas**

SciLinkR is an online public engagement platform that will 1) connect scientists and engineers with educators and 2) document STEM outreach. The platform matches educators who need a scientist or engineer to come to their classrooms with STEM professionals looking to do outreach to schools and the community. It also provides STEM faculty with citable documentation of their outreach activities.

### **Photo-switchable Adhesives**

**Grace Han, Mihael Gerkman, Xiang Li, Eli Kengmana**

Adhesives, from those on bandages, tape, and BBQ grill sealants, to epoxy used in the assembly of appliances and electronics, are an essential part of modern life. Removing them when no longer needed is a challenge. This new solution offers a way to remove adhesives more effectively.

### **Functional Heat Storage Materials for Heating Engine Oil**

**Grace Han, Yuran Shi, Mihael Gerkman, Jennifer Taufan**

In areas where temperatures often drop below -20 °C (-4 °F), such as the northern US and Canada, cars have trouble starting up. At temperatures below 0 °C, the oil is thicker and denser than usual and increases friction wearing down the engine parts. Researchers in Grace Han's lab plan to replace the energy-inefficient block heaters with novel materials that store and release heat in response to changing environment.

### **Identification of Inhibitors Against Mycobacterium Tuberculosis IMPDH**

**Liz Hedstrom, Michael Pepi**

Each year there are more than 10 million new cases of TB which have lead to more than 1 million deaths. Lizbeth Hedstrom's lab has discovered two novel compounds, Q112 and Q200, with potent antibacterial activity and no cytotoxicity against mammalian cells in culture.

## Tuberculosis Drug Design

Liz Hedstrom, Xingyou Wang

The current therapy for TB typically requires 4 drugs and takes 6 months. Lizbeth Hedstrom's lab has identified a promising new target, IMPDH, for next-generation TB drugs that could reduce the number of drugs needed to treat TB and the amount of time patients require treatment.

## Sulfur-stabilized HIV Vaccine Antigens

Isaac Krauss, Leiming Tian

Many antibodies that protect against HIV bind to carbohydrates on the HIV protein. Thus, Brandeis vaccine researchers are interested in using these carbohydrates as HIV vaccines. Isaac Krauss and Leiming Tian are working on a novel vaccine platform technology that may also have applications to other infectious diseases plus certain cancers.

From global warming to infectious disease, Brandeis innovators are creating breakthroughs that have the potential to improve the lives of millions around the world.

**Rebecca Menapace**

Associate Provost for Innovation and  
Executive Director, Office of  
Technology Licensing





## SPARK

Brandeis' SPARK Program is designed to encourage and support entrepreneurial activity within the Brandeis community, including students (graduate and undergraduate), postdocs, faculty and staff. The awards are intended to help bring ideas and entrepreneurial ambitions to life.

## Meet the Current SPARK Teams

### SpeechFlow

**Kyung Hyun Kim (Undergraduate Student, Computer Science), Huaigu Lin (Undergraduate Student, Computer Science), Sam Ruditsky (Undergraduate Student, Computer Science)**

SpeechFlow is a voice app designed to improve your presentation flow, by allowing you to control the slideshow and interact with your audience using voice. It connects your phone to a local server on your computer using Google Assistant, allowing you to easily send voice requests to manage your presentation.

### Scil

**Nicole Dunn (Graduate Student, Heller), Lisa Knichols (Graduate Student, Heller), Ricki Herrera (Graduate Student, Heller)**

SCil, Student-Centered Incubator Labs, is a nonprofit organization that provides experiential learning and career pathways to low-income youth in South Chicago. We do this through the lens of the 3rd fastest growing market in Chicago, food services. SCil embeds itself within a high school for three years beginning with a cohort of sophomores. First, we teach 21st century skills and provide industry certification and training. The 2nd year, juniors will learn from and network with industry professionals while building a business plan for an in-school food venture. Through private partnerships and fundraising, SCil raises seed money to fund a student driven after-school business venture their senior year. This comprehensive approach yields multiple career and health outcome on the community level.

### Talk

**Max Brodsky (Graduate Student, Heller), Daniella Fernandes (Graduate Student, Heller), Abigail Montine (Graduate Student, Heller), Liza Korotkova (Undergraduate)**

Talk is an app-based platform that on-demand connects people or organizations with interpreters. Its video-remote-interpreting provides instant services for organizations and people when they need it and for the services they need. The app will be available via the app stores and through targeted outreach in select communities and schools.

### iRemember

**Olivia Hoy (Undergraduate Student, Biology), Ryan Xu (Undergraduate Student, Mathematics)**

iRemember is an app that helps people with memory problems caused by conditions such as dementia and TBI to remember things in their daily lives. Features include reminders to take medication, medical appointments, daily organizers, calendars, and other features that make their lives easier. The color scheme for the app is dementia-friendly and it includes visual and audio reminders for patients with sensory impairments. A confirmation system for medications and reminders allows family members and medical professionals to ensure patients have taken the correct medications and are following their daily schedules.



## KaabTech

**Abdishakur Ahmed (Graduate Student, Heller), Artdeansyah Dilaga (Graduate Student, Heller), Javaid Iqbal (Graduate Student, Heller), Qaisar Ahmed (Graduate Student, Heller)**

KaabTech is a for-profit social enterprise aims to finance and distribute solar-powered water pumps in rural Somalia. The vast majority of Somali farmers use inefficient engines powered by diesel for their irrigations. Diesel is too expensive for them and eats up a lot of their revenue. Furthermore, since there are no adequate roads connecting between villages and cities in Somalia, it takes a couple of days to bring diesel to the farm. Fortunately, the technology to solve this problem exists. It's called solar pumps. KaabTech aims to make this technology accessible and affordable to Somali farmers by introducing flexible payment models, and utilizing SomLite's existing distribution network. SomLite is a solar lantern distribution enterprise currently operating in rural Somalia.

## Roselle Cosmetics

**Arianna Arguetty (Undergraduate Student, Business and Creative Writing), Xinmiao Zhang (Undergraduate Student, IGS and Business), Sirui Yu (Undergraduate Student, Clark University)**

Roselle Cosmetics aims to create all-natural makeup, with ethically-sourced ingredients because we believe that being careful about what you put on your skin, and caring about your planet, should not be privileges reserved for the wealthy. Makeup often contains a host of ingredients that are considered toxins, both for your skin and for your environment.

As a result of low doses, these contaminants continue to be used, except for by a few companies aiming to bring natural products to the world. But these natural products are severely overpriced, taking advantage of what is now a niche market.

## Little Dove Studios

**Abdul Rehman (Undergraduate, Peace, Conflict, and Coexistence Studies), Andrew Hirsh (Undergraduate, Peace, Conflict, and Coexistence Studies)**

Little Dove Studios is a growing team of illustrators, animators, musicians, writers, comedians, actors, filmmakers, academic experts and religious leaders, and organizational partnerships, all representing a full range of perspectives on the Arab-Israeli Conflict. We are engineering the first multi-narrative epic animated musical feature film that captures the narratives of both sides of the Arab-Israeli Conflict. We are using the collective power of music, animation, storytelling, comedy/satire, language, and culture, supported by extensive research and consultation, to mitigate the cycle of hatred by exposing the humanity of the "other" for our children. Our first step is the production of a Graphic Novel as a marketable, scalable, proof-of-concept to conduct a reading campaign for libraries and schools across the Middle East.

SPARK was a life-changing experience. It's one of the best things to happen at Brandeis.

**Charlie Kim, '19**

Founder, SpeechFlow

It was a great experience for me and I actually landed my summer internship at a biomedical device company because of it.

**Yawai Soe, MBA '19**

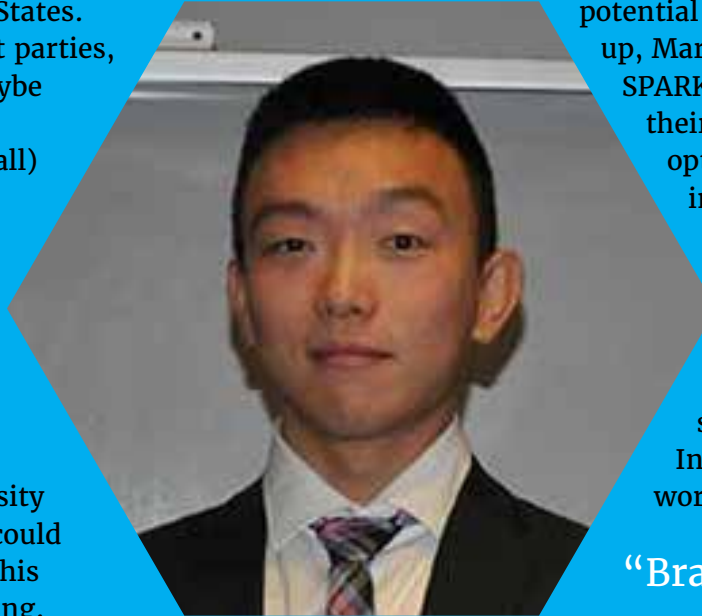
# Innovator Spotlight: Marshall Chang

Freshman year of college in the United States. What's the first thing you think of? Frat parties, perhaps? Learning to do laundry, or maybe simply getting accustomed to life away from home? For Zhuangzhuang (Marshall) Chang, BA/MA '17, it meant learning everything there is about trading complex financial instruments. This passion has allowed him, a few years later, to start his own company and win his first two innovation competitions with his sights set on starting a hedge fund.

While he was at Brandeis University during his first year of undergrad, one could often find Marshall trading, combining his passions of finance with machine learning. This gave him a leg up with his three, yes three, majors: business, economics, and American studies. It was around that same time that popularity in artificial neural networks began to increase. Artificial neural networks are, according to Marshall, "the driving force behind everything intelligent today."

This network inspired him to create a trading network that could actually learn. In total, it took Marshall around 8 months to produce a successful model. He and his team faced challenges with hardware: they needed computers strong enough to train the models efficiently, so they "basically had to become IT techs to get things running." They initially used their own hardware, but after receiving funding from winning grants from two Brandeis Innovation programs, were able to upgrade.

First, Marshall was selected for the I-Corps program at Brandeis; funding of \$3,000 helped him validate his idea with



potential customers, accelerating his progress. Next up, Marshall attended, and later won, Brandeis's SPARKTank, winning \$10,000 to further their research. From there, he and his team optimized their model, going on to participate in MassChallenge.

What's next for Marshall? He's now running his growing startup, pitching investors, and working to transform fintech. His team is growing, as is the impact of his technology. The skills, support and funding gained through Innovation programs have been critical in his work to this day.

**"Brandeis Innovation is what really what launched my venture.**

**Coming to the states as an international student, and especially a student without much experience in the startup world, the programs prepared me with the necessary knowledge and connections to make our first step, and helped me navigate the tough startup route along the way."**

**Marshall Chang, Brandeis innovator**

# Cultivating a community through Innovation

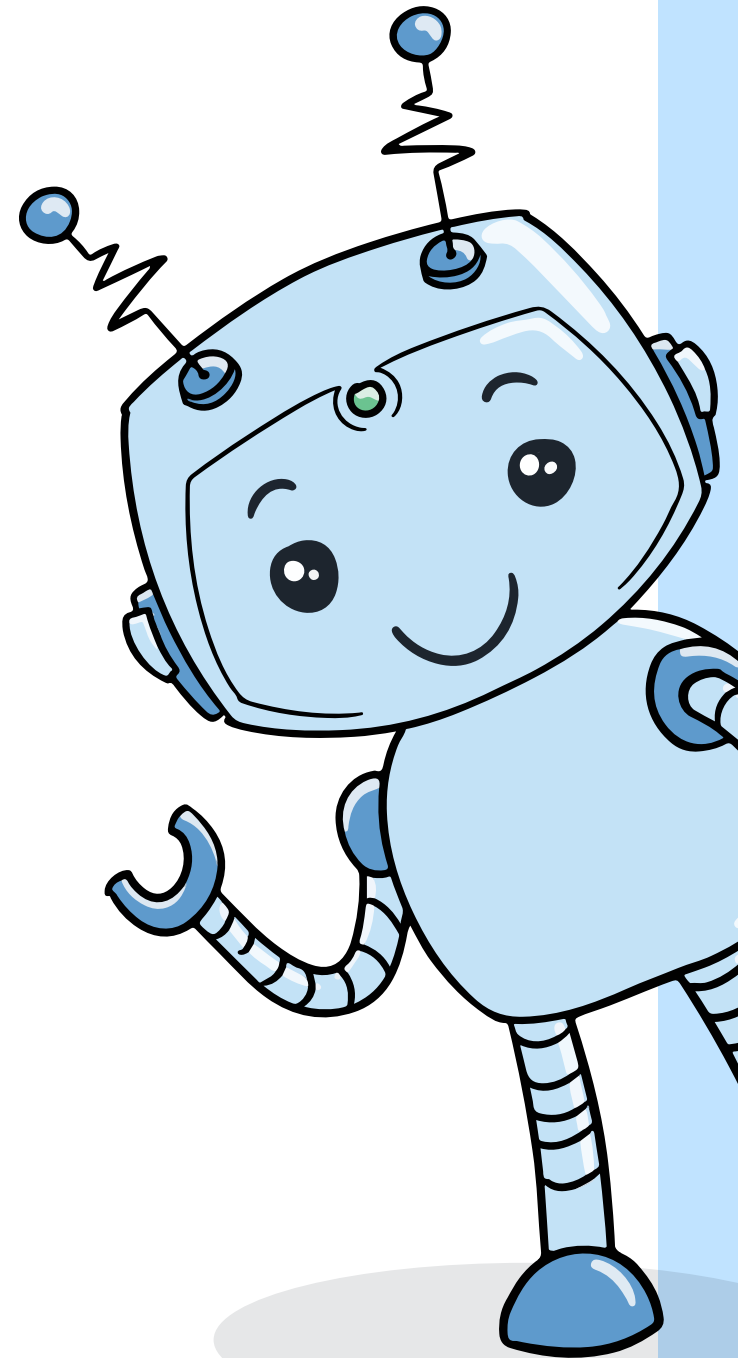


# Introducing Blinkie!

**Your Brandeis Link to Innovation and Entrepreneurship**

Do you have an idea for a startup, a new invention, or a social impact project?

Visit us at:  
[Brandeis.edu/BLINKIE](https://Brandeis.edu/BLINKIE)













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UNIVERSITY