



INNOVATEUPSTATE

A NEWSLETTER FROM THE OFFICE OF INDUSTRY RESEARCH



FALL 2022

UPSTATE
MEDICAL UNIVERSITY

WELCOME TO INNOVATE UPSTATE

Quarterly, the Office of Industry Research will include updates, highlights, and current activities happening between SUNY Upstate Medical University and our industry partners.

Upstate Medical University's Office of Industry Research (typically known as technology transfer) supports Upstate's Research mission; "to create a world-class research enterprise that supports biomedical research innovation, development, and entrepreneurship." We provide personal and hands-on support to industry and Upstate faculty to advance innovation. The resources of the SUNY Research Foundation (RF) help guide Intellectual Property (IP) and commercialization activities.

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industry*



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Christopher Neville, PhD, PT
Director of Industry Research
nevillec@upstate.edu

Kayla Richmond
Communications & Marketing
richmoka@upstate.edu

STARTUP SPOTLIGHT

DUB Biologics

New therapy for corneal scarring could revolutionize treatment

DUB Biologics is developing an siRNA therapeutic that prevents scarring and inflammation, initially in corneal opacification applications.

Dr. Audrey Bernstein founded the lead anti-scarring target and produced the supporting data that enabled the submission of 2 patent applications. Together with Tere Williams' expertise in immunology and marketing and strategic planning, Bernstein and Williams co-founded DUB Biologics to develop their anti-scarring therapeutic.

"One dose of sdRNA lasts 2-3 months to reduce inflammation and prevent scarring"

They're hoping to change how corneal injuries and scarring that can lead to vision loss are treated. As inflammation is a major part of the scarring response, a mix of antibiotics and corticosteroids are often currently prescribed. Steroids produce inconsistent results and well-established adverse events that include cataracts and glaucoma. The available treatments are also time-consuming; the current dosage for some prescriptions can be required as frequently 4 times/day for over a month.

DUB Biologics' product is made of self-delivery siRNA (sdRNA) that can penetrate cells without additional reagents. One dose of sdRNA lasts 2-3 months to reduce inflammation and prevent scarring.

sdRNAs circumvent the most difficult issues surrounding ocular drugs, the need for frequent dosing, and patient compliance. They plan to create an eyedrop a physician can administer to a patient when they are treating a corneal injury, either due to infection or physical injury that is likely to lead to scarring and vision loss.

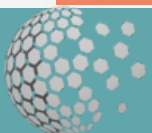
They currently hold a method use patent and a pending composition of matter patent on the technology. DUB Biologics has submitted a Direct to Phase II NIH SBIR grant to fund studies on persistent epithelial defects in the cornea, sdRNA manufacturing and toxicology studies needed before a Phase I clinical trial in humans. They've already shown anti-scarring and anti-inflammatory effects in several different types of lab models during testing.

DUB Biologics is also exploring applications and formulations of the same active pharmaceutical ingredient (API) in dermal scarring and other scarring indication in the eye.



Co-Founders of DUB Biologics Dr. Audrey Berstein and Tere Williams

Interested in learning more? Email info@dubbiologics.com to connect with DUB Biologics.



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AS INDUSTRY FACES NEW FDA REQUIREMENTS, SUNY UPSTATE LEADING THE CHARGE TO DIVERSIFY RESEARCH

Helping others incorporate diversity into research from the jump



Dr. Sharon Brangman speaking at a community outreach event

This year, the FDA has issued new guidance to US industry about increasing diversity in clinical trials. "Going forward, achieving greater diversity will be a key focus throughout the FDA to facilitate the development of better treatments and better ways to fight diseases that often disproportionately impact diverse communities," said FDA Commissioner Robert M. Califf, M.D. The draft guidance released by the FDA in April recommends that sponsors of medical products develop and submit a Race and Ethnicity Diversity Plan to the agency early in clinical development.

Upstate researchers are already making strides in increasing racial diversity in medical research. Just over a year ago Kathy Royal was hired as the community research liaison; her job is to be the "boots on the ground" in historically underrepresented research communities, educating them on how research works.

"It takes time," explained Royal on "The Informed Patient" podcast this summer. "You just can't go out on the street... we've got to get out there and show them who we are, through research."

Royal's efforts are a key part of Dr. Sharon Brangman's efforts to diversify research, specifically geriatric research. A grant from the National Institute of Aging is allowing Dr. Brangman to study and develop ways to increase black and brown representation in clinical trials. Their efforts are already showing progress; just this summer at the Alzheimer's Association 2022 Conference, Dr. Brangman presented a case study showing a 19% improvement in African American recruitment in just six months.

Dr. Brangman's efforts aren't ending here; she and her team have created a research accelerator for diversity here Upstate, which they call the Community Research Recruitment Accelerator (CRRRA). The goal is to provide a place for researchers to present their plans to community members and fellow researchers who can help them implement plans to increase diversity ideally while their studies are still in development; to find ways to incorporate the community into every facet of their research prior to actual recruitment. The group can also advise on projects that need to pivot their current recruitment efforts for in underrepresented communities, though this can prove somewhat more difficult.

"It's no longer acceptable to just drop in and drop out of a community," says Dr. Brangman. "When you have a particular question that you want to have answered, you have to have community buy-in and community participation. And that's what our research accelerator is doing, along with the efforts of Kathy as our community research liaison." They want to emphasize the fact that established trust is everything.



Kathy Royal, right, Community Research Liaison greets the public at outreach event

Email Sarah McNamara: McNamaSa@upstate.edu for information on utilizing Upstate's CRRRA for recruitment feedback and/or the Community Research Liaison for recruitment efforts in the field.

FIRST-OF-ITS-KIND DEVICE, FORMER CNYBAC INNOVATION CHALLENGE GRAD RECEIVES OVER \$250K TO CONTINUE DEVELOPMENT

*WeeBot provides mobility to infants with motor impairment,
critical to physical and social development*

It began with a wish; while occupational therapy professor Carole Dennis and computer science professor Dr. Sharon Stansfield were working on another project, they had a bit of grant money left over.

"I shared how I wished it would be possible to provide infants and toddlers with motor impairment with a way to explore their physical (and social) environment independently," says Dennis. "Sharon had an idea for using weight-shift to control the movement of a mobility device. Using Sharon's knowledge of robotics and software expertise and my knowledge of very young children with disabilities, we used off-the-shelf components and developed the software to put together the alpha version of the WeeBot."

The project was then selected for the CNY Biotech Accelerator 2020 Medical Device Innovation Challenge because of its "impressive team and impactful technology responding to an unmet need and potential for commercialization."

That prototype showed astounding results; they found that infants as young as 6 months were able to utilize the hands-free controls; this allowed them to use their hands to interact with objects and people more freely. They studied 60 typically-developing infants with the device; they found infants using the WeeBot demonstrated significantly better scores on measures of executive function, mental skills that influence attention, goal-directed action, working memory, flexible thinking, and self-control. Executive function is an area of cognition that has been found to be decreased in children with several conditions that limit independent mobility.

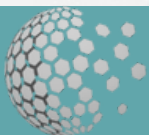
The WeeBot is a first-of-its-kind device, right now there is currently no device that provides independent movement to infants with motor limitations. It has the potential to help the over 40,000 children born every year in the US with conditions like cerebral palsy, spina bifida, and Down syndrome, that often result in motor impairment. Children learn a great deal about their physical and social environments when they begin to crawl and walk, so conditions that deny or delay independent movement can impact cognitive, language, and social development. Providing infants with a device to allow them freedom could not only allow them to integrate into society easier, it could save children tens of thousands of dollars in therapy and healthcare needs. The potential savings to health and education systems is estimated at over \$200,000,000 a year.



The WeeBot in action during testing

Now that they have been granted over \$250,000 as a Small Business Innovation Research (SBIR) Program Phase I project, they plan to use that money to build a less-expensive, integrated beta prototype and continue tests for safety and functionality. "We hope that this work will result in a device that can move us closer to producing the device commercially."

For more on the WeeBot, visit <http://www.totsonbots.com>



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AVAILABLE NOW NEW AND INNOVATIVE FOREIGN- BASED PRODUCTS AND COMPANIES

Capnia

Capnia is the only manufacturer of ETCO monitoring in the world.

Now doctors have a way to actively measure the production of carbon monoxide in the exhaled breath of a newborn, which may be used to detect the rate of hemolysis as well as hyperbilirubinemia. The test is faster, more accurate and less invasive than a blood test which means treatment options can be implemented quicker, avoiding the risk of developing any neurodevelopment problems.

The company has 18 peer reviewed clinical studies that have been published, registered over 50 patents and is currently being used by top hospitals in the USA including Lucile Packard's Children Hospital Stanford.

*For more info, reach out to:
Mark Lesselroth, BioPort USA
Mark@BioPortUSA.com, C: +1 315.569.0642*

Spectra Plasmonics

Spectra offers rapid, portable drug-checking technology and software for frontline healthcare organizations.

Their Amplifi ID system allows lab-grade testing in 10 minutes in the field that anyone can perform; checking samples for a variety of drugs including Fentanyl. Amplifi ID can be adapted to identify virtually any organic molecule through remote software updates.



*For more info, reach out to:
Ben McIlquham, Kingston Economic Development
mcilquham@investkingston.ca*

LATEST IN UPSTATE TECH AVAILABLE FOR LICENSING

Customized Telodendrimer Nanocarriers for Targeted Drug Delivery for Disease Treatments

Juntao Luo, Dandan Guo, Changying Shi

- A suite of nanocarrier technologies that provide targeted drug delivery of hydrophobic and hydrophilic drugs to specific disease sites.
- Provides multiple chemical formulations of telodendrimer nanoparticles made from biocompatible polyethylene glycol, amino acids, and natural compounds. The resulting nanoparticles results in the biocompatible and effective delivery of various therapeutic drugs for targeted disease treatments.

*For more info, reach out to:
Andrew Scheinman, SUNY Research Foundation
andrew.scheinman@rfsuny.org*

Novel Suturing Device Kit

Dmitriy Nikolavsky, Gennady Bratslavsky

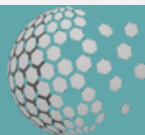
- Grafts are commonly employed in urologic reconstructive surgery, but anchoring them in less accessible areas can be difficult. A novel surgical "sewing machine" capable of quilting and suturing in tight spaces was developed to help solve this problem.

ADVANTAGES:

- Higher rate of graft success with no recurrence of disease
- One-handed suturing avoids alternating movements to reposition the needle and is more efficient
- Can be used in a variety of complex reconstructive surgeries, including those involving radiated tissue, where graft fixation and suturing are challenging
- Future applications in endoscopic and laparoscopic surgery are possible.

*For more info, reach out to:
Tanya Waite, SUNY Research Foundation
Tanya.Waite@rfsuny.org*

Visit suny.technologypublisher.com to see all available tech from SUNY Upstate



NEW: UPSTATE INNOVATION CLUB



Founding members of the Upstate Innovation Club, from left to right: Avishek Sanjel Chhetri, Jack Sedaka, Shervin Razavi, Allen Luo

Several SUNY Upstate Medical University students have taken the initiative to help bridge the gap between medicine and industry. The newly-formed “Upstate Innovation and Entrepreneurship Group” was created to help students enhance their knowledge of business-related ventures in medicine.

The club's mission is to connect students with resources around the CNY area to accelerate innovative initiatives at Upstate through:

- Inviting faculty/alumni/experts to give guest talks.
- offering making teams of students willing to offer pro bono consulting services to startups/companies in the biotech sphere.

“We envision this initiative to be an open environment where motivated students and professionals from all colleges at SUNY Upstate, regardless of prior experience and background, can work directly with interested companies and create innovative solutions and products,” says co-founder Ali Razavi. They want to emphasize that anybody at Upstate, whether a student in any of the colleges or a Professor or attending physician, can be part of our initiative and is welcome and encouraged to collaborate on innovative projects.

The group is hosting an interest meeting on 9/23 @ 12pm in Setnor Hall, Room 2507-2508. For more information on the meeting or with any questions about the group, email upstateinnovationgroup@gmail.com.



CNYBAC has been hosting high school student groups taking biotech-related courses at Syracuse University. We provide an overview of CNYBAC and have some of our clients provide a discussion about their technology, the types of jobs they fill – such as lab technicians, and what a startup company does.

UPCOMING EVENTS @ THE CNY BIOTECH ACCELERATOR

Sept. 22th

Risk-Based Planning: The Science of Figuring out Done

Oct. 14th

NYS SOCR Chapter Clinical Research Program

Dec. 8th

Medical Device Research, Regulations, and Path to Market

More info on events @
<https://cnybac.com/education>

Looking to explore partnering with us?

Contact Christopher Neville, PhD, PT
Director of Industry Research
nevillec@upstate.edu
315-464-6888

Want to be featured in the next edition?

Contact Kayla Richmond
Marketing & Communications
richmoka@upstate.edu

