

INDIANA CENTER FOR BIOMEDICAL INNOVATION



ANNUAL
REPORT
2023



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BENCH TO BEDSIDE INNOVATION



AARON VIGIL-MARTINEZ
Director

As we embark on a new year, we carry forward the energized momentum and accomplishments of 2023 and embrace the excitement surrounding the transformational opportunities on the horizon. In 2023, the ICBI accelerated its outreach activities across our internal and external partners to enhance their connectivity to our facilities, resources, and capabilities. This increased awareness has also led to a robust pipeline of future life science startups and translational research opportunities, first and foremost, from the IU academic and research settings and secondarily across the state and beyond to other academic institutions, entrepreneurs, and innovation partners.



KEVIN HARVEY
Facility Manager

The ICBI facilitated meaningful and intentional engagements across our institution's research community, commercialization partners, and the state's life science ecosystem. Proudly serving as a convener in the ecosystem, the ICBI hosted and led discussions that served to drive new institutional advancements in the life sciences sector, not only among our foundational partners, but also statewide.



ELAINE BAMMERLIN
Communications Consultant

The ICBI provided exceptional support to our member companies, all while maintaining a steady balance of services and space to support our existing members as well as those searching for resources, capabilities, and connectivity to support and grow their future endeavors. The ICBI has increased its role as a go-to resource for those looking to explore the startup path across the research and university communities.

Resources like the ICBI are crucial in supporting and growing a life science startup ecosystem that have direct economic benefits. In addition to the economic impacts, supporting and fostering startups in this space has an immense societal impact—as the nature of their work is to develop and deploy cutting-edge medical breakthroughs with the sole purpose of improving health and curing disease.

Collectively and collaboratively, we are excited about the opportunities of the future and share in IU's 2030 bold and ambitious future of supporting transformational research and creativity while providing service to our state and beyond.

The ICBI Team

THE MISSION

Serve the Indiana life science's ecosystem by incubating high potential bioscience companies and entrepreneurial researchers as they move their discoveries from bench to bedside.

SUPPORT FOR ENTREPRENEURS

Fills a Critical Gap – The ICBI fills a critical gap in the ecosystem by providing a comprehensive life science incubation platform—one that supplies affordable laboratory facilities with access to shared equipment, clinical resources and expertise coupled with startup acceleration services and entrepreneurial business support programs to create new startup companies, drive innovation and foster talent in today's economy.

Animal Facilities – Availability of small and large animal facilities conveniently located close to ICBI laboratories and offices.

Clinical Trial Support – IU Health Enterprise Clinical Research Operations (ECRO) certified staff, expertise, and administrative functions leveraged to ensure proper and effective clinical trial execution

Facilities – Offices, collaborative space, and conference facilities on the same main floor as the laboratories.

Access to Network – Access to expertise across the IU School of Medicine, IU Health, the greater Indiana life sciences and entrepreneurial communities as well as industry leaders that provide a “whole of ecosystem” approach to take innovations quickly and efficiently from bench to bedside.

TESTIMONIALS

From our academic & research partners



Steve Johnson, PhD
Associate Professor
IU School of Medicine
Co-Founder of BioEL Inc.

“As an Associate Professor at the IU School of Medicine, my academic research in developing a new class of antibiotics effective against drug-resistant bacteria has thrived in an environment rich with resources and support. As transitioning from academic research to industrial application presents unique challenges, startup incubator facilities, like the Indiana Center for Biomedical Innovation (ICBI), are essential in bridging this gap. The ICBI has been crucial in the efforts of BioEL Inc., a biotech startup I co-founded, in this regard. Their comprehensive support makes possible the transformation of BioEL from a theoretical concept in academic research into a practical venture with substantial potential in the field.

Our journey with BioEL reached a promising milestone last year when the National Institute of Allergy and Infectious Diseases (NIAID) expressed the possibility to fund our Small Business Innovation Research (SBIR) application. Although our application had initially missed the funding level, the NIAID indicated to us that their budget could support funding of a few more “near-miss” applications, and that our proposal was still under consideration if we could submit our Just In Time documentation by their fast approaching fiscal year end. At this critical juncture, the expertise and support of the ICBI, especially from team members Aaron Vigil-Martinez and Kevin Harvey, were invaluable. Their guidance in navigating the complexities of establishing the necessary protocols and paperwork to obtain such federal funding enabled us to efficiently meet the requirements in the short time frame set by the NIAID. While our application was not selected for final year end funding, the experience was far from being in vain. Working with the ICBI has provided us with a thorough set of documents in place and an improved understanding of the processes of the ICBI, IUSM, IU Health, and NIAID, greatly enhancing our potential for future funding success. The pragmatic and strategic support from the ICBI has been instrumental in navigating these complex processes, and their commitment to supporting biomedical startups is exemplary.

In summary, my experience with the Indiana Center for Biomedical Innovation has been exceptionally positive. The ICBI not only provides an extensive facility with an array of equipment, allowing us to conduct our research without the need for significant personal investment in infrastructure, but also offers personalized expertise and support to tackle any hurdles that may arise. This is a major advantage for startups like BioEL Inc., facilitating our research endeavors and contributing significantly to our development. I wholeheartedly recommend the ICBI for their invaluable assistance and unwavering dedication to advancing the biomedical industry.”



Arupratan Das, PhD
Assistant Professor
IU School of Medicine

“ I had an opportunity to discuss a potential startup route with Aaron Vigil-Martinez, Director of Entrepreneurial Research at the ICBI. The meeting was based on our scientific discovery, unmet medical need that it will address, potential market size and steps forward for a startup. Aaron and his colleagues were very informative about the startup process and covered a lot of ground. This included, potential funding sources such as SBIR, STTR grants from the NIH, angel investor, registering the company with the state of Indiana, having a business attorney or CPA, forming a strong scientific advisory board, how to get exclusivity on our discovered compound for FDA approval, and access to ICBI lab and office spaces for the startup. Overall, it was a good first step and guided me in the right direction. As for the ICBI office is concerned, areas I hope they can assist me further with is to study the market size, how to obtain exclusivity and continue to help the principal investigator (PI) in the startup initiative. This is important as PIs from academic environment often lack these skills. ”



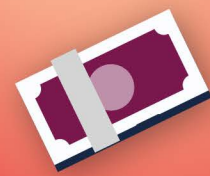
Andrei Molosh, PhD
Asst. Research Professor
IU School of Medicine

“ Our search for a suitable space for a newly established CRO had a need for affordable, scalable laboratory space with access to a vivarium. As a faculty member at IUSM, I had some limited familiarity with the ICBI and was interested in learning more. During my tour of the ICBI, I realized that it offers all of that plus access to variety of necessary core equipment. Aaron, director of the ICBI, has also offered an invaluable assistance in providing us with relevant information about the available resources from local and state government and helping us with strategic development for our company. The personalized support and comprehensive resources that the ICBI offers were instrumental in the success of our journey. I am convinced that for new biomedical startups in Indianapolis, the ICBI is unparalleled in its offerings. ”

2023 IMPACT

Highlights / Comparisons

ICBI COMPANIES RAISED AN ADDITIONAL



2.9 Million
FROM THE PREVIOUS YEAR

20% NON-FEDERAL (GRANT) SOURCES	37% PRIVATE (VC) SOURCES	43% FEDERAL (SBIR) SOURCES
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50%

OF ICBI COMPANIES
ARE IU AFFILIATED

(Founded and/or led by
IU Faculty, Researchers,
Licensed IU IP, etc.)

60%



ASIAN FOUNDED
AND/OR LED

1 NEW COMPANY:
SIMMARON RESEARCH

+ **1**

50%

FEMALE FOUNDED
AND/OR LED

1 NEW GRADUATE:
EARLY IS GOOD

7 ADDITIONAL JOBS

Created by ICBI Companies
(Researchers & Technicians)



5 INTERNS

Hosted by ICBI Companies

JOBS FROM

Inside IN 28%	Outside IN 72%
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INTERNS FROM

Inside IN 40%	Outside IN 60%
-------------------------	--------------------------

2023 RECAP

Events at a Glance

INNOVATION SERIES MARK HEIMAN / SCIOTO BIOSCIENCES

researcher
SPOTLIGHT



Mark Heiman and his team are developing treatments for patients with autism and other GI disorders by tapping into the gut-brain axis. He credits the ICBI for providing an environment that enhances research in ways that go beyond capital-efficient lab space.

LUNCH & LEARNS

TakaRa

May 9, 2023

illumina

September 11, 2023

Lilly

October 5, 2023

ROUNDTABLES: Hosted Research, Commercialization, & Entrepreneurship Discussions



JUNE 22

Russell Mumper
IU Vice President for Research



JULY 31

Phaedra Corso, PhD
IU Associate VP
Vice Chancellor for Research, Indianapolis

MEMBER COMPANIES

And their focus

ACERAND THERAPEUTICS

Drug Discovery & Development



Acerand Therapeutics

Focusing on the discovery and development of novel best-in-class and /or first-in-class drug candidates for clinical development with operations both in Shanghai, China and Indianapolis, US, reflecting its overall global strategy and business intents.

ANAGIN

Drug Discovery & Development



Focusing on the discovery and development of novel best-in-class and /or first-in-class drug candidates for clinical development with operations both in Shanghai, China and Indianapolis, US, reflecting its overall global strategy and business intents.

SIMMARON RESEARCH

Therapeutics



Simmaron Research

Driving treatment discovery for ME/CFS and Long-Covid

Simmaron Research is working to improve the diagnosis, treatment and medical understanding of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) and other neurimmune diseases.

GENERAL OPTICS

Medical Device



Research and Development in Optical Devices, Medical Imaging and Nanofabrication.

HB THERAPEUTICS

Drug Discovery & Development



Discovery and development of small molecule protein degraders as new anticancer drugs.

SCIOTO BIOSCIENCES

Therapeutics



Developing innovative therapies devoted to having a significant impact on the delivery of microbiome therapeutics.

GENEZEN

Contract Development & Manufacturing



Offers contract viral vector production, transduced cell manufacturing, and clinical trial testing services by leveraging the expertise of the nation's leading academic vector production and research laboratories.

HEALTH SMART TECHNOLOGIES

Medical Device



An Indiana University based company that merges Engineering and Rehabilitation expertise to develop Smart technology advancing manual therapy.

MONON BIOVENTURES

Drug Discovery & Development



Monon Bioventures, LLC

Assisting world-class investigators to navigate the early-stage challenges of translating their research into the clinic.

VASCULONICS

Therapeutics



Developing therapeutics to treat vascular complications

FEMTERA

Drug Discovery & Development



"Leading Discovery & Clinical Diagnostic Applications of Novel Metabolite Biomarkers for the Detection of Catastrophic Diseases"

GRADUATE COMPANIES

Continuing Success

EARLY IS GOOD

Diagnostic



Early is Good is a cancer diagnostic company taking aim at first creating a simple urine test (BCDx - biomarker detection) for bladder cancer.

IN THE NEWS

The IBCI and its member companies

ICBI

BIOFUTURES

MARCH 17, 2023

“The ICBI fosters a vibrant entrepreneurial ecosystem that supports the translation of life science research and discoveries into commercial startup opportunities, said Aaron Vigil-Martinez, director of the ICBI.”



Lab space is in demand as biotech research hits its stride

Life sciences research is ramping up at warp speed, driven largely by advancements in DNA sequencing and synthesis and a resulting explosion in the number of biotech businesses. According to Entrepreneur magazine, the life sciences sector reported a record \$10 billion in public and private capital investment in 2020, a 93 percent increase from 2019 numbers. The spike in research activity means increasing—and often urgent—demand for lab space and equipment nationwide. Among those in the Indiana Center for Biomedical Innovation, a life sciences incubator created in 2016 as a partnership between the Indiana University School of Medicine, the Indiana Clinical and Translational Sciences Institute and IU Health, the state's largest health care system. The ICBI offers approximately 15,000 square feet of private wet lab space, private offices, and conference rooms. It also provides specialized lab equipment that can be shared among the 11 companies now operating at the facility, which is in opposite space within IU Health Methodist Hospital in downtown Indianapolis. “The ICBI fosters a vibrant entrepreneurial ecosystem that supports the translation of



In Fort Wayne, the Mirro Center for Research and Innovation, part of Parkview Health, offers a variety of services to life sciences entrepreneurs. Its Health Services and Informatics Research Division is available to partner with outside researchers on traditional research, clinical trials, program evaluation, and user experience research. The Mirro Center's Simulation Lab features advanced medical simulation technology, including surgical simulations and advanced virtual reality systems.

HEALTH SMART TECHNOLOGIES

IU BLOG POST

AUGUST 22, 2023

“Health Smart Technologies, a startup company formed by Terry Loghmani, PT, Ph.D., an associate professor of physical therapy at the IU School of Health and Human Sciences at IUPUI, with co-founders Sohel Anwar, PE, Ph.D., and Stanley Chien ECE, Ph.D., of the Purdue School of Engineering and Technology at IUPUI, has been acquired by BVS Muscle. With the acquisition, BVS Muscle, a new portfolio company from Indianapolis-headquartered Boomerang Ventures, will exclusively license the researchers' quantifiable soft tissue manipulation (QSTM) device system developed at IU.”

IU researchers' quantifiable soft tissue manipulation device moves closer to helping patients

https://blogs.iu.edu/impact/2023/08/22/iu-researchers-quantifiable-soft-tissue-manipulation-device-moves-closer-to-helping-patients/ August 22, 2023 by Ryan Plunk

New technology aims to revolutionize the orthopedic manual therapy industry

A new device that would allow physical therapists to monitor the level of pressure they apply to the soft tissue of patients seeking greater mobility and pain relief, developed by Indiana University researchers, is one step closer to the healthcare market.

Health Smart Technologies, a startup company formed by Terry Loghmani, PT, Ph.D., an associate professor of physical therapy at the IU School of Health and Human Sciences at IUPUI, with co-founders Sohel Anwar, PE, Ph.D., and Stanley Chien ECE, Ph.D., of the Purdue School of Engineering and Technology at IUPUI, has been acquired by BVS Muscle. With the acquisition, BVS Muscle, a new portfolio company from Indianapolis-headquartered Boomerang Ventures, will exclusively license the researchers' quantifiable soft



Watch Video At: https://youtu.be/6D7vHjXNAxE

SCIOTO BIOSCIENCES

SCIENTIFIC REPORTS

MARCH 30, 2023

“Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by core impairments in social communication as well as restricted, repetitive patterns of behavior and/or interests. Individuals with ASD, which includes about 2% of the US population, have challenges with activities of daily living and suffer from comorbid medical and mental health concerns. There are no drugs indicated for the core impairments of ASD. . . . This first-in-human placebo-controlled, double-blind, cross-over study investigated the safety (primary objective) and efficacy of oral SB-121, a combination of L. reuteri, Sephadex® (dextran microparticles), and maltose administered once daily for 28 days in 15 autistic participants. SB-121 was safe and well tolerated.”



Scioto Biosciences, Inc. Announces First Patient Dosed in Phase Ib Study in Patients Diagnosed with Autistic Disorder

August 18, 2021 03:50 PM Eastern Daylight Time

INDIANAPOLIS—(BUSINESS WIRE)—Scioto Biosciences, Inc. announced the investigational product SB-121 for the treatment of Autistic Disorder (AD). The August, Scioto is an innovation-driven biotechnology company focused on de Bacterial Therapeutics (ABT). SB-121 is the first ever ABT to be tested in the

“We think SB-121 can potentially make a big impact in the lives of patients diagnosed with AD. We look forward to reviewing the data and further exploring the possibilities of SB-121 and Scioto's ABT platform.”

Post this

with AD by providing critical safety data in this patient population,” said Joe T

Scioto announced in August 2020 the raising of a Series B financing from Ge trading on the KOSDAQ, the Korean counterpart to the US NASDAQ. In Dec: the world. The clinical trial is being performed at Cincinnati Children's Hospital

“We are very excited to achieve this milestone with our partners at Scioto,” said SB-121 can potentially make a big impact in the lives of patients diagnosed with AD, exploring the possibilities of SB-121 and Scioto's ABT platform.”

“GBC has been the ideal partner in helping us take Scioto from a pre-clinical have been working collaboratively, and we are looking forward to developing

with AD by providing critical safety data in this patient population,” said Joe T

scientific reports

OPEN Results of a phase Ib study of SB-121, an investigational probiotic formulation, a randomized controlled trial in participants with autism spectrum disorder

Lauren M. Schmitt^{1,2}, Elizabeth G. Smith^{1,2}, Ernest V. Pedapati^{1,2,3,4}, Paul S. Horn^{1,2}, Meredith Will¹, Martina Lamy¹, Lillian Barber¹, Joe Trebley¹, Kevin Meyer¹, Mark Herman¹, Robin H. J. West¹, Phoenix Hughes¹, Janey Abate¹, Craig A. Erickson^{1,2,3} Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by core impairments in social communication as well as restricted, repetitive patterns of behavior and/or interests. Individuals with ASD, which includes about 2% of the US population, have challenges with activities of daily living and suffer from comorbid medical and mental health concerns. There are no drugs indicated for the core impairments of ASD. In fact, there is a significant need for the development of new medication strategies for individuals with ASD. This first-in-human placebo-controlled, double-blind, crossover study investigated the safety (primary objective) and efficacy of oral SB-121, a combination of L. reuteri, Sephadex® (dextran microparticles), and maltose administered daily for 28 days in 15 autistic participants. SB-121 was safe and well tolerated. SB-121 was associated with improvements in adaptive behavior, measured by Vineland 3, and social performance as measured with eye tracking were noted. These results provide support for further clinical evaluation of SB-121 as a treatment for autistic patients. To evaluate the safety and tolerability of multiple doses of SB-121 in subjects with autism spectrum disorder. Single-center, randomized, placebo-controlled, double-blind, crossover trial. 15 patients with autism spectrum disorder were randomized and analyzed. Daily dosing of SB-121 or placebo for 28 days, followed by approximately a 14 day washout, then 28 days of dosing with either treatment. Incidence and severity of adverse events, presence of L. reuteri in stool, and incidence of bacteremia with positive L. reuteri-identification. Additional outcomes include changes from baseline on cognitive and behavior tests as well as biomarker levels. Adverse event rates were similar between SB-121 and placebo, with most reported as mild. There were no severe or serious adverse events. No participants had history of suspected bacteremia or notable changes in vital signs, safety laboratory, or ECG parameters from baseline. There was a statistically significant increase from baseline in the Vineland 3 Adaptive Behavior Composite score (p = 0.03) during SB-121 treatment. There was a trend for increased social/generic viewing time following SB-121 treatment compared to placebo. SB-121 was safe and well

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To Our Partners

Your continued support has uniquely positioned the Indiana Center for Biomedical Innovation to fill a critical gap within the ecosystem by providing a comprehensive life science incubation platform to support a flourishing life science environment.



Indiana University Health



Thank You

2023

INDIANA CENTER FOR BIOMEDICAL INNOVATION

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