

THE UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL PRESENTS THE



UNC
innovation
SHOWCASE

2015

THURSDAY, APRIL 9

KENAN STADIUM BLUE ZONE

WELCOME TO THE 2015 UNC INNOVATION SHOWCASE.

Every year the UNC-Chapel Hill Innovation Showcase (formerly Emerging Companies Showcase) gives faculty, students, and alumni an opportunity to share their exciting work with the entrepreneurial and investment community.

This year, the Showcase highlights technologies and companies at various stages of development in three sessions:

INNOVATIONS TO WATCH

Technologies and innovations developed in UNC laboratories

EMERGING STARTUPS

Newly formed scientific, technology, and social startups seeking advice, coaching, management, funding

EARLY-STAGE COMPANIES

Established companies with management seeking partners and investments

WE HOPE YOU ENJOY THIS CHANCE
TO SEE HOW UNC FACULTY, STUDENTS,
AND ALUMNI ARE TAKING THE
JOURNEY OF IDEAS TO IMPACT!

Speakers will give short pitches followed by a casual networking session and company demos.

In addition to the presenting companies, the demo area features many more UNC student, faculty, and alumni ventures looking for connections.

We hope you enjoy this chance to see how UNC faculty, students, and alumni are taking the journey of ideas to impact!

CO-HOSTS



OFFICE OF
COMMERCIALIZATION &
ECONOMIC DEVELOPMENT



AGENDA

REGISTRATION AND GENERAL RECEPTION 5:00

WELCOME 6:00

Judith Cone
 Special Assistant to the Chancellor for Innovation and Entrepreneurship
 Interim Vice Chancellor of Commercialization and Economic Development
 Interim Director, Frank Hawkins Kenan Institute of Private Enterprise

INNOVATIONS TO WATCH

miR-29 for Neuroprotection..... 4	PhysioCam..... 5
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EMERGING STARTUPS

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EARLY-STAGE COMPANIES

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Tom & Jenny's..... 17	

RECEPTION 8:00

Networking and Company Demo Tables

CLOSE 9:00

MIR-29 FOR NEUROPROTECTION

Neurodegenerative diseases such as Alzheimer's or Parkinson's disease and brain injury affect an estimated 50 million Americans each year and cost hundreds of billions of dollars in medical care. These numbers are climbing at an alarming rate as our population ages and we live longer. Unfortunately, no cures exist for any of these conditions, and current treatments are ineffective for long-term care. While most researchers are examining the events that occur during degeneration of the brain, we have taken a different approach and have focused instead on discovering how neurons normally survive. There are close to 100 billion neurons in a healthy adult brain, and for most of our lifespan, virtually all of these neurons actually survive and function under very challenging conditions. So, the idea here is simple: If we can identify the key molecules that make neurons survive and function under normal situations, these same molecules could be used to promote neuronal survival in neurodegenerative diseases and brain injury. We have discovered one such critical molecule, a microRNA called miR-29 that is essential for maintaining a fully functional brain. Not only is miR-29 present in very high levels in a normal brain, but its levels are also found to be reduced in several neurodegenerative diseases and after brain injury. Most importantly, miR-29 alone is capable of keeping neurons alive. Thus, our patented technology is to use miR-29 for neuroprotection as a therapy for patients with neurodegenerative diseases or brain injury.

FACULTY MEMBERS

Mohanish Deshmukh,
Adam Kole, Vijay Swahari,
Scott Hammond

Assignee: UNC-Chapel Hill

PATENTED TECHNOLOGY

Use of miR-29 for
neuroprotection
(US 8618073)

LIGHT ACTIVATION OF THERAPEUTIC AGENTS

Illuminating the Path to Drug Delivery: From Surgery to Tissue Restoration

The use of light to activate therapeutic agents at diseased sites offers the advantage of aggressive treatment with exquisite spatial and temporal control, thereby reducing potential deleterious side effects at unintended sites. Although photo-activated pro-drugs have been reported, these species require short wavelengths (<450 nm) for activation. However, maximal tissue penetrance by light occurs within the "optical window of tissue" (600–900 nm), well beyond the wavelength range of existing photo-cleavable functional groups. We've developed a new technology that can transform virtually any drug into a phototherapeutic while providing the means to assign a specific wavelength for drug release from a carrier. Light-activated drugs potentially offer a noninvasive alternative to the trauma elicited by surgery, thereby eliminating the need for anesthesia, reducing recovery time, and minimizing exposure to infectious disease. A brief discussion of the application of this technology to tissue restoration, altering blood flow (enhanced or reduced), cancer, and arthritis will be presented.

FACULTY MEMBER

David Lawrence

DEPARTMENT

Chemistry

PHYSIOCAM

The PhysioCam is a standoff physiological sensor that extracts critical vital signs from a video image of a subject's face. The system operates in real-time and provides quantitative and visual feedback of the subject's current cardiovascular activity. Measurement of physiological parameters, such as arterial pulse rate, pulse wave shape, and heart rate variability have applications in measurement of health, fitness, and mental processes such as stress, attention and emotional state. The ability to measure objective markers of these processes without any direct contact with the subject, and from distances of a few feet to several meters away, opens up exciting possibilities for future development of this technology. The PhysioCam is fabricated from a commercial off-the-shelf digital color video camera, operated by custom software designed at the Brain-Body Center for Psychophysiology and Bioengineering (UNC-Chapel Hill, Dept. of Psychiatry). The non-contact technology can be applied to accurately extract human arterial pulse with sufficient precision to derive instantaneous heart rate, heart rate variability, and respiration rate in real-time. In applications that demand tracking subject movement, a Kinect sensor can be incorporated into the system to track the changing position of the subject's face. The system design is informed by an understanding of the physical properties of the arterial pulse wave propagation, enabling a robust measurement without specialized sensor development that would be costly and time consuming. The PhysioCam has been validated against traditional contact sensors in a number of laboratory controlled conditions, including: seated interviews, controlled and spontaneous breathing conditions, and walking on a treadmill. Possible applications of the technology include: fitness monitoring without attached sensors, mental health intervention through heart rate biofeedback, quantitative assessment of subject response to content (e.g., focus groups, marketing research), security checkpoint threat assessment, early identification of infection, and remote monitoring of patient health.

FACULTY MEMBERS

Gregory F. Lewis,
Maria I. Davila ,
Stephen W. Porges (PI)

DEPARTMENT

Brain-Body Center for
Psychophysiology and
Bioengineering

ENGRAVING NANOTECHNOLOGY

The continuing advancement of modern technology—including computers and smartphones—has relied on the ability to create ever smaller objects. For instance, computers that would have filled entire rooms decades ago can now fit inside the small confines of our smartphone. This remarkable advancement has primarily been enabled by the ability to make extremely “small” (nanometer-scale) silicon. However, with the push to ever smaller sizes, the difficulty and cost has also skyrocketed. Here, we present an alternative, chemistry-based method to create incredibly small silicon structures. We call this method the ENGRAVE process (Encoded Nanowire Growth and Appearance through VLS and Etching). This process allows us to chemically encode structures smaller than 10 nanometers in silicon. In the ENGRAVE method, the silicon is synthesized using a metal-catalyzed process termed “vapor-liquid-solid” (VLS) growth, which produces long filaments of silicon termed “nanowires.” We have learned how to chemically alter these nanowires as they grow, allowing us to encode specific and extremely small structures. We have demonstrated a wide range of arbitrary shapes, including gratings, nanorods, sinusoids, tapers, and nanogaps. Importantly, the chemistry-based method that we use enables the simultaneous growth of tens of millions of identical silicon structures. We envision that these structures will be the basis for a broad range of technologies. We have already demonstrated the ability to encode electronic memory within these silicon structures. In addition, we have shown that the structures can be tuned to control light on the scale of a microchip. Additional technological applications could range from renewable energy (solar cells; thermoelectric devices, etc) to new measurement techniques (e.g. sensors, AFM tips, etc). The ENGRAVE process thus represents a potentially game-changing platform for “nano”-technology.

FACULTY MEMBER

James F. Cahoon

DEPARTMENT

Chemistry

SECURE RESEARCH SPACE

The Washington Post recently declared 2015 “the year of the health-care hack.” Multiple recent high-profile data breaches highlight the pain that data security is causing for organizations in the healthcare sector—and the problem is only going to get worse.

A group of UNC-led collaborators has developed a technology called Secure Research Space (SRS) that addresses this problem. SRS is a cybersecurity technology that prevents unauthorized disclosure of sensitive data from distributed analysis projects. SRS solves the problem of how to secure data used in collaborations among institutions without relinquishing institutional data control.

Technologically SRS is a fusion of an endpoint “container” for data that prevents unauthorized data disclosure, a collaborative data sharing infrastructure, and a secure cloud networking transport. The integration of these technologies is the subject of the SRS patent (pending). Components of SRS are in production use at UNC for safeguarding patient data used in medical research, including a research partnership with SAS, Inc.

FACULTY MEMBER

Michael Shoffner

DEPARTMENT

RENCI

I&E PROGRAMS

OTD Commercialization
Grant



EMERGING STARTUPS

RIBOMETRIX

Ribometrix is a biosciences company whose vision is to be the leading provider of high quality, easy-to-use RNA structure probing tools for translational research, biomarker analysis, and therapeutic discovery.

RNA is the central information carrier in all cells and organisms. This information has traditionally been thought to be controlled simply by the RNA sequence; however, we are now also becoming increasingly aware of the role that higher order RNA structure plays with respect to its activity and function. Unfortunately, the role of RNA structure has been poorly understood in part because of technical limitations that have made it impossible or too difficult to measure RNA structure accurately.

RIBOMETRIX IS A BIOSCIENCES
COMPANY WHOSE VISION IS
TO BE THE LEADING PROVIDER
OF HIGH QUALITY, EASY-TO-USE
RNA STRUCTURE PROBING TOOLS
FOR TRANSLATIONAL RESEARCH,
BIOMARKER ANALYSIS, AND
THERAPEUTIC DISCOVERY.

Ribometrix has developed new technologies, called SHAPE, that solve this problem and allow us, for the first time, to analyze RNA higher-order structure and to understand the role that RNA structure plays in biological processes and human disease. Industry and academic research groups are eager to apply SHAPE analysis in order to understand basic biological functions as well as develop next generation biomarkers and therapeutics.

Ribometrix will manufacture and sell research kits and provide contract research services to industry and academic labs that need custom work performed. Additionally, internal research and development efforts will be undertaken to identify biomarkers for diagnostic assays and novel targets for therapeutics that can be further developed in-house or out-licensed.

Ribometrix is currently optimizing its SHAPE research kits through collaborations and strategic partnerships with industry and academia. The company has secured likely Phase I STTR funding and is seeking additional initial funding through a mixture of grant programs and sponsored research opportunities.

RIBOMETRIX

MANAGEMENT

Kevin Weeks,
Founder

Don Rose and
Jason Doherty,
Advisors

I&E PROGRAMS

Carolina KickStart

COMMUNIGIFT

CommuniGift enables anyone to turn a birthday or holiday celebration into a charitable gifting experience through online product donations, serving nonprofits, and the individuals they support. Through integration with online retailers, CommuniGift recreates the experience of donating a product offline in just a few clicks. With the online giving market totaling \$21 billion and growing 13.5 percent annually, donors are still dissatisfied, citing lack of transparency and a disconnect with the cause as central concerns. We are reinventing online and social giving by creating an experience that is convenient, transparent, and exciting for givers of all ages. CommuniGift launched a pilot test in 2014, working with one of the largest and most respected Salvation Army divisions, Salvation Army of Southern California, as well as Delaware State Social Services and several other partners. During the test, conversion rates exceeded eight percent, compared to a two percent industry average for ecommerce/online giving. Over 750 families from California, Delaware, and North Carolina were helped by donors from 18 states. While we are focused on creating impact and driving social change, the growing and evolving market points to a strong potential for returns as we scale.

CommuniGift was founded in late 2013 by Jake Bernstein, Thomas Doochin, Taylor Sharp and Jack Wohlfert. The team, which includes a *Forbes* 30 under 30 Social Entrepreneur and two Morehead-Cain Scholars, has experience forming national nonprofit relationships as well as extensive development experience. Bernstein co-founded and built VolunTEEN Nation, a national volunteer database and service project resource for youth nationwide. Sharp started Casting for Hope, a nonprofit that has raised over \$100,000 for women fighting cancers in North Carolina. Doochin, who is head of business operations, and Wohlfert, a full-stack developer with over eight years of development experience, both have knowledge in building e-commerce platforms.

COMMUNIGIFT RECREATES
THE EXPERIENCE OF DONATING
A PRODUCT OFFLINE IN JUST
A FEW CLICKS.

MANAGEMENT



Jake Bernstein,
Co-founder

Thomas Doochin,
Co-founder

Taylor Sharp,
Co-founder

Jack Wohlfert,
Co-founder

CONNECT

Communigift.com
 /CommuniGift
 @CommuniGift

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1789
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Blackstone Entrepreneurs
Network



SEAL THE SEASONS

Seal the Seasons LLC partners with North Carolina farmers to freeze, market, and distribute local fruits and vegetables. We sell these high quality products to retail and institutional customers under the Seal the Seasons brand in order to provide a consistent, year round supply of local food.

The local farmers we work with have struggled over the last decade to effectively market and distribute their produce. At the same time, retailers are unable to buy enough local products to satisfy their customers. By connecting farmers to retailers through aggregation, freezing, and distribution, Seal the Seasons solves the biggest problems that limit our globalized food system.

BY CONNECTING FARMERS TO
RETAILERS THROUGH AGGREGATION,
FREEZING, AND DISTRIBUTION,
SEAL THE SEASONS SOLVES THE
BIGGEST PROBLEMS THAT LIMIT
OUR GLOBALIZED FOOD SYSTEM.

We envision an inclusive local food system that connects healthy food to the North Carolina families who need it most. Once we have established a stable revenue stream we will use 20 percent of our earnings to promote sustainable healthy food interventions in food deserts. We will work with non-profit

partners like Grocers on Wheels or Farmer Foodshare to put affordable food directly inside food deserts, effectively eliminating the two largest barriers to healthy eating: a lack of transportation to reach the food, and the high cost of the food itself.

Currently, Seal the Seasons is launching our initial product line, which includes frozen leafy greens such as kale and spinach. These winter and spring greens will be sold to our three initial customers: Weaver Street Market, Bella Bean Organics and Farmer Foodshare's POP Market. We will expand our product offerings this spring to include blueberries, raspberries, strawberries, broccoli, and peas, and plan to reach 25 retail locations by the end of 2015.





MANAGEMENT

Patrick Mateer,
Co-founder & CEO

William Chapman,
COO

Daniella Usian,
Co-founder

CONNECT

 /sealtheseasons
 @sealtheseasons

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BLACKINKMETRICS

BlackInkMetrics is an educational software company that focuses on developing innovative solutions that better serve the needs of teachers and students. The company's lead product is GradingHelp—a more efficient grading process for writing teachers that aims to provide students with better, more useful writing feedback.

GradingHelp is a Google Docs add-on designed for educators. The software serves to (1) automate repetitive feedback to make grading faster and more efficient for teachers and, (2) generate a custom summary based on that feedback that provides more clear instructions to students on how to improve their writing.

One of the critical features of GradingHelp that differentiates this product from competitors is the sidebar of key rhetorical categories, each of which is pre-loaded with comments. The categories are based on 27 years of writing instruction.

GradingHelp leverages Google Docs comments so users can easily link between the student's text and comments that appear in the margin. Teachers can insert comments with the click of a button, greatly improving the speed of grading.

Another differentiating feature of GradingHelp is its grading summary. The app groups feedback into the rhetorical categories found in the sidebar and then weights each category according to the number of comments. This unique feature demonstrates to instructors and students the most critical opportunities for improvement while offering a quantifiable way to measure a student's improvement over time.

Future iterations will allow instructors to create their own categories and comments and will automatically export metrics to instructors' gradebooks, further improving the customer experience while making the software more efficient for teachers. GradingHelp will also develop new modules targeting a broader customer base including K-12, college writing, English composition, legal writing, technical writing, and English-as-foreign language.

...A MORE EFFICIENT GRADING
PROCESS FOR WRITING TEACHERS
THAT AIMS TO PROVIDE STUDENTS
WITH BETTER, MORE USEFUL
WRITING FEEDBACK.

MANAGEMENT

Heidi Schultz,
Founder

CONNECT

blackinkmetrics.com

I&E PROGRAMS

Carolina KickStart
New Enterprise
Opportunities



ACADEMIC BENCHMARKING CONSORTIUM

Academic Benchmarking Consortium LLC is a private company that was formed in 2014 by its three founding partners; Steve Beisser, Paul Friga, and Joe Rice. Beisser, Friga, and Rice have strong ties to academia and are deeply rooted in benchmarking, consulting, and analytics.

The company's mission is to improve decision making within universities using advanced analytics in order to understand the cost base as it is tied to key activities, compare key results to peers, and share best practices. This will result in more strategic resource allocations, better decisions based upon supporting data, and increased efficiencies.

THE LONG TERM VISION IS
FOR THE *INSIGHTS ANALYTICAL*
PLATFORM TO BECOME THE
UNIVERSITY STANDARD FOR
BENCHMARK DATA.

During the summer of 2014, they developed a benchmarking software product and populated the tool with publicly available data from universities (www.abc-insights.com/results/). They are now forming a consortium of public universities interested in benchmarking more detailed, actionable data. This will be accomplished by analyzing self-reported data from public universities using ABC's proprietary software solution: ***Insights Analytical Platform***.

The platform will create benchmarks that will effectively and efficiently identify key areas of opportunity for improvement. ABC will then lead the universities through a consultative engagement in order to translate these insights into realized improvements, enabling their clients to make well informed, strategically aligned decisions related to spending, operational improvements, and mission achievement.

The long term vision is for the ***Insights Analytical Platform*** to become the university standard for benchmark data.

The company is a participating venture in the Launch Chapel Hill business accelerator program and appreciates all of the support in terms of space, resources and advice from UNC-Chapel Hill.



MANAGEMENT

Steve Beisser,
Co-founder

Paul Friga,
Co-founder

Joe Rice,
Co-founder

CONNECT

abc-insights.com

I&E PROGRAMS

Launch Chapel Hill

SIRSVISION

SIRSVision, LLC seeks funding for the further development and Patient-Provider testing of its Intellectual Property (IP) known as the Simultaneous Image Refraction System (SIRS), which improves the refraction eye exam by making it faster, more accurate, and less confusing.

Visual impairment is one of the top five costliest health conditions in the U.S., and rework due to prescriptive error or optician error wastes hundreds of millions of dollars annually. The refraction portion of the eye exam is highly subjective, requiring the patient to view sequential images and to choose their preference. This procedure is a century old and relies heavily on the Patient's cognitive memory, which can be impaired for diverse health- and aging-related reasons. SIRS initial patient research (n=149) indicates a 45 percent patient dissatisfaction level with the current methodology and a high degree of "frustration and confusion."

SIRS will enhance the patient eye exam experience and reduce costs for providers by improving the refraction portion of the eye exam to make it faster, more accurate, and less confusing. SIRS filed its patent on March 15, 2013, PCT/US2013/065237, and published on Sept. 18, 2014. Publication Number: WO2014143180 A1.

SIRS IP can be retrofitted onto existing manual phoropters (roughly 120,000 installed in the U.S. and approximately 1 million worldwide) and incorporated into leading edge digital phoropters by Original Equipment Manufacturers like Nidek, Reichert, Zeiss, etc. UNC Kenan-Flagler MBA's Launch the Venture Program research estimates the Total Addressable Market (TAM) at \$150 million with SIRSVision revenue potential approaching \$10 million within three years from introduction and a CAGR of +5 percent annually. SIRSVision horizontal market expansion and organic vertical growth will be driven by the rapid expansion of the global healthcare market plus more and better eye care diagnostic devices around the world.

SIRSVision, LLC is a N.C. LLC formed in December 2014 with an initial investment of intellectual property and \$120,000 cash by its four member-managers.

...IMPROVES THE REFRACTION
EYE EXAM BY MAKING IT
FASTER, MORE ACCURATE,
AND LESS CONFUSING.

MANAGEMENT

M. Bruce Shields,
Chief Medical Officer

J. Bruce Hoof, Corporate
Secretary and Agent

Kurt Preble, CFO

C. Patrick Garner, CEO

CONNECT

SIRSVision.com
@SIRSVision

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Carolina KickStart
Launch the Venture
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EARLY-STAGE COMPANIES

BIVARUS

Text Bivarus was born of academic research around the patient experience, which identified it as an integral factor in understanding patient outcomes. In fact, patient experience proved to be an independent predictor of health outcomes compared with other clinical process measures. In further work, we found the power of this measure was the insight of patients into critical components of care, like communication and safety.

As clinicians we were frustrated by our inability to acquire statistically precise, actionable data around the patient experience. Paper-based surveys were burdensome to patients, plagued by low response rates, and frankly, neither timely nor actionable.

Bivarus is the response to the frustration that exists with current measurement tools and their inherent lack of precision and actionable findings to improve care delivery and monitor CQI progress.

We bring an entirely new science of measuring patient experience with its cloud-based analytics platform to hospital-based outpatient service lines, community-based clinics, and large group practices. Bivarus is at the forefront of providing a cloud-based analytics platform for transforming patient-centered data into actionable insights impacting organizational and provider performance. With Bivarus, healthcare organizations can more easily monitor CQI initiatives, as well as improve care coordination, team performance and patient safety.

BIVARUS IS AT THE FOREFRONT
OF PROVIDING A CLOUD-BASED
ANALYTICS PLATFORM FOR
TRANSFORMING PATIENT-CENTERED
DATA INTO ACTIONABLE INSIGHTS
IMPACTING ORGANIZATIONAL AND
PROVIDER PERFORMANCE.

MANAGEMENT

David Levin,
Chief Executive Officer

Seth Glickman,
Co-founder &
Chief Medical Officer

Kevin Schulman,
Co-founder &
Chief Strategy Officer

Justin Wiley,
Chief Technology Officer

Michael Hopp,
Vice President of Sales

CONNECT

bivarus.com
 @bivarus

I&E PROGRAMS

Carolina KickStart



LIKEFORCE

BUSINESS OWNERS TODAY
HAVE AN INCREDIBLE NEED
TO OUTSOURCE THEIR SOCIAL
MEDIA MARKETING BUT
REQUIRE SOMEONE WITH A
LOCAL UNDERSTANDING AND
COMMUNITY VOICE.

Likeforce was founded by UNC Kenan-Flagler alums Jed Record and Tejus Maduskar. Record, a marketing consultant for small and medium businesses, observed that due to a lack of time, resources, and skills, business owners today have an incredible need to outsource their social media marketing but require someone with a local understanding and community voice. This need is going unmet, and businesses are stuck trying to do it themselves. Knowing there is a great resource of bright college students nearby who have grown up in an age of online communication, Record and Maduskar explored the idea that these students might be able to fill this need for local businesses.

In January they started their business and joined the third cohort of Launch Chapel Hill and in the past three months they have grown to 12 accounts managed by six students.

Likeforce has a unique approach to this market in that they train students online using existing online-training software and coach them to research and introduce potential business clients from their community to Likeforce. The Likeforce sales team then follows up on the high quality leads, and the new account is assigned to the referring student. Students are paid hourly for this research and referral period with a cap-limit of 10 hours, and there is no commission or sales program needed on behalf of the student. Students use easy to follow processes and online management software to schedule daily posts to clients' Facebook and Twitter accounts. Their current cost for acquiring a new customer is less than \$300, and the fee for their service is \$299 per month. The 24-month goal for Likeforce is to have 500 students, 1,000 clients and \$300,000 monthly revenues.



MANAGEMENT

Jed Record,
Co-founder
Tejus Maduskar,
Co-founder

CONNECT

Likeforce.com
f /Likeforce
t @Likeforce

I&E PROGRAMS

Launch Chapel Hill

TOM & JENNY'S

Tom & Jenny's makes the joy surrounding candy a lot healthier. We create naturally sweetened, cavity-preventing, and diabetic-friendly candies without compromising on taste.

Founded by a dentist in her home kitchen, Tom & Jenny's developed a caramel preferred by over 60 percent of blind taste-testers. We launched online and through six local retailers.

Co-founders Dr. Sindhura ("Jenny") Citineni and Tommy Thekkekandam bring complementary skill sets. Jenny is a practicing pediatric dentist whose child oral health research recently won a national award. She also founded Nourish International, a 501(C)3 with operations at 60+ U.S. campuses and in 28 countries. Tommy spent four years as a management consultant with McKinsey & Company, working with some of the world's largest grocery chains and consumer businesses.

Consumers have a growing need for sugar-free snacking options. Over 90 percent of Americans suffer from cavities during their lifetime. Also, over 29 million Americans with diabetes cannot afford additional dietary sugar. Consumers complain that it's difficult to kick the sweet habit. However, existing sugar-free candies have a reputation for tasting bad or for harmful health effects.

Our first products are sugar-free, gluten-free caramel chews. We use natural Xylitol to achieve sweetness equal to sugar, without the increased risk of cavities. Studies have shown daily consumption of 4-8 grams of Xylitol can reduce 50-70 percent of cavity-causing bacteria. Xylitol also creates a lower insulin response and has fewer calories than sugar. Our candy tastes great and is great for health.

Within the \$24 billion U.S. candy market, we target \$6 billion in five key segments: Dental practices seeking healthy options to give away to patients, knowledgeable parents, people with diabetes, active lifestyle professionals, and premium gift purchasers.

Tom & Jenny's is currently completing channel and segment testing and raising a seed round to accelerate growth.



CONSUMERS HAVE A GROWING
NEED FOR SUGAR-FREE
SNACKING OPTIONS.

MANAGEMENT

Sindhura ("Jenny")
Citineni,
Co-founder

Tommy Thekkekandam,
Co-founder

CONNECT

 /tomandjennys
 @tomandjennys

I&E PROGRAMS

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SPYRYX BIOSCIENCES

Spyryx Biosciences is developing therapeutics for obstructive lung diseases with a particular focus on Cystic Fibrosis and COPD. We are dedicated to delivering effective, disease-modifying therapies that will make a difference in the lives of patients and their families. Spyryx's inhaled, peptide therapeutics are designed to restore the lung's natural mechanism for maintaining proper lung surface hydration and will be applicable to the entire CF patient population.

Spyryx Biosciences was formed in 2013 by our scientific founder, Dr. Robert Tarran, who discovered a previously unknown mechanism that the lung uses to regulate surface fluid. Spyryx has licensed exclusive, worldwide rights to Dr. Tarran's findings from UNC-Chapel Hill and is working to finalize its clinical lead and advance that compound into clinical testing. Discussions are ongoing with the venture capital community for funding.

SPYRYX WILL BE THE FIRST EVER
BIOLOGICALLY DRIVEN REPLACEMENT
PRODUCT IN THE LUNG.

Dr. Tarran found that the genetic mutations that result in CF cause a structural change in a regulatory protein in the lung, called SPLUNC1. This loss of function allows abnormally high absorption of sodium and water away from the lung surface via the epithelial sodium channel (ENaC).

The reduced fluid levels do not provide enough depth for the epithelial cilia to extend and beat normally, which retards the mobilization out of the lung of mucus, embedded bacteria and foreign particles.

In collaboration with Dr. Tarran, Spyryx has isolated the inhibitory domain of the SPLUNC1 protein and used it to design peptides that have the same natural action for inhibiting ENaC, but with enhanced potency and drug-like properties. These more potent compounds have excellent potential for once-daily, inhaled delivery via nebulizer. The most promising peptides are currently undergoing in vivo testing to identify the candidate for investigation in our CF clinical studies. We intend to complete preclinical development in 2015 and file our Investigational New Drug (IND) application with FDA to begin CF patients trials in 2016. This will be the first ever biologically driven replacement product in the lung.



MANAGEMENT

John Taylor
CEO & Chairman

Rob Tarran,
Co-founder, Director
& Chair SAB

Dale Christensen,
Head, Product
Development

Don Rose,
Co-founder, Director

Andrew Jordan, Director

CONNECT

spyryxbio.com

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Carolina KickStart

SYMBERIX

Our intestinal microbiome—the more than 100 trillion beneficial bacteria that reside in the lower gastrointestinal tract—contributes fundamentally to both human health and illness. Until now, the only way to therapeutically control a disease-causing component of microbiome activity was with antibiotics, but antibiotics also kill beneficial bacteria. Symberix is pioneering the discovery of a new class of bacteria-targeted drugs that selectively eliminate a harmful component of microbiome function without exhibiting antibiotic activity.

Symberix's initial focus is the discovery of novel clinical candidates to be developed as FDA-approved products indicated for the prevention of serious side effects (i.e., diarrhea, dehydration, intestinal bleeding, and anemia) associated with non-steroidal anti-inflammatory drugs (NSAIDs) and the cancer drug irinotecan. These critical, drug-induced side effects are caused by the activity of a bacterial enzyme (bGUS) that produces toxic drug by-products in the lower GI tract. Originally developed by the company's scientific founder at the University of North Carolina, Symberix's technology allows for the rational design and synthesis of novel compounds that selectively inhibit bacterial bGUS to ameliorate these NSAID- and irinotecan-induced side effects without harming the microbiome.

There are currently no FDA-approved products indicated for the prevention or treatment of chemotherapy-induced diarrhea (CID) or NSAID-induced side effects in the lower GI tract. However, there is a significant unmet medical need for such products: These side effects often require aggressive medical intervention, reduce patient quality-of-life, and in some cases, require hospitalization and result in death. CID affects ~300,000 cancer patients in the US and costs >\$500 million to treat annually. More than \$1 billion is spent each year in the US to hospitalize ~40,000 chronic NSAID users for life-threatening lower GI bleeding events. FDA-approved Symberix products could be the first new drugs to enter this underserved and untapped market.

SYMBERIX IS PIONEERING THE DISCOVERY OF A NEW CLASS OF BACTERIA-TARGETED DRUGS THAT SELECTIVELY ELIMINATE A HARMFUL COMPONENT OF MICROBIOME FUNCTION WITHOUT EXHIBITING ANTIBIOTIC ACTIVITY.

MANAGEMENT

Ward Peterson,
Co-Founder, President
& CEO

Matthew Redinbo,
Scientific Founder,
Chief Scientific Officer

CONNECT

symberix.com

I&E PROGRAMS

Carolina KickStart



UNC INNOVATION & ENTREPRENEURSHIP PROGRAMS

1789 VENTURE LAB

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BLACKSTONE ENTREPRENEURS NETWORK

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CAROLINA CHALLENGE

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