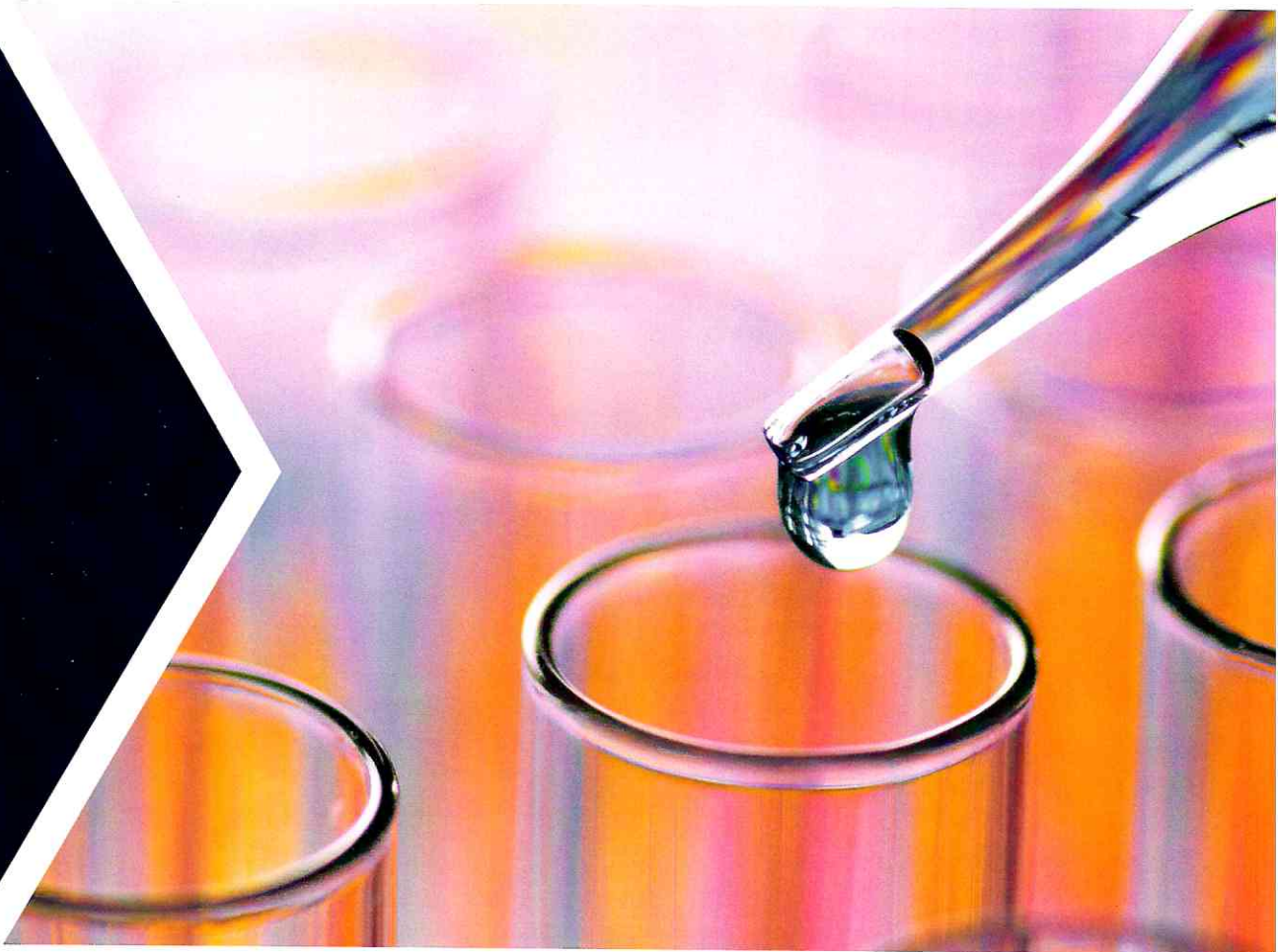


# BIOSCIENCE INNOVATION GRANT (BIG) PROGRAM

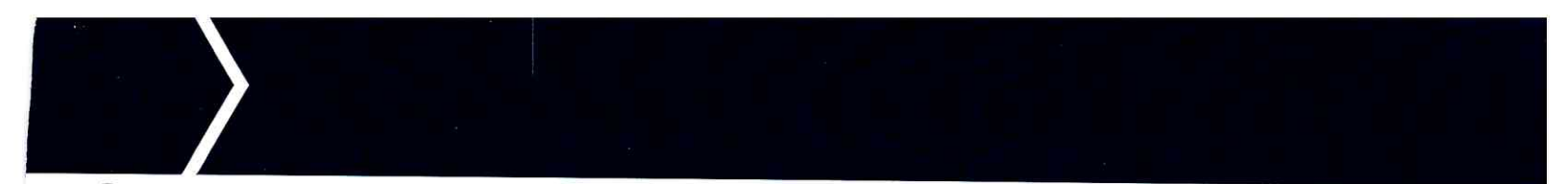
GRANT REPORT 2023-2024



Agriculture Commissioner  
Doug Goehring

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# ADMINISTRATION

The purpose of the BIG program is to foster the growth of the bioscience industry in the state. Grants focus on one or more of the following areas:

- Supporting biotechnology innovation and commercialization in areas including:
  - Crop genetics
  - Biofuels;
  - Biomaterials;
  - Biosensors and biotechnology in relation to food, nutrition, animals, humans, equipment, medical and health products and services;
  - Medical diagnostics;
  - Medical therapeutics; and
  - Farm-based pharmaceuticals;
- Promoting the creation of bioscience jobs in the state to be filled by graduates from institutions under the control of the state board of higher education;
- Encouraging the development of new bioscience technologies and bioscience startup companies in the state;
- Leveraging the agriculture industry in the state to support the development of bioscience technologies impacting livestock operations and crop production;
- Promoting bioscience research and development at institutions under the control of the state board of higher education;
- Encouraging coordination and collaboration among other entities and programs in the state to promote bioscience innovation goals.

## BIOSCIENCE INNOVATION GRANT PROGRAM STAFF



JOHN F. SCHNEIDER  
Business, Marketing  
& Information Division  
Director



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Ag Business Development  
Coordinator



TALEY DAVIS  
Ag Development Specialist

# 2023-24 PROJECTS



*North Dakota bees and honey*

## **EXPANSION OF ETHICAL GENETIC MEDICINES**

Agathos Biologics, LLC  
James Brown, Fargo

Grant Amount: \$300,000

The project aims to develop products and services for expanded access to genetic medicines to help patients with unmet medical needs. A pre-clinical gene therapy treatment is set to enter clinical trials with additional research to be completed on other cells for identification of potentially useful candidates. Successful trials will allow Agathos Biologics to commercialize, expand the biotechnology industry and have a positive impact on patients, providers, and pharmaceutical developers.

## **DEVELOPMENT OF MEDICAL GRADE HONEY PRODUCTS**

Biomed Protection North Dakota, LLC  
Michelle Berg, West Fargo

Grant Amount: \$100,000

Research will be conducted to investigate the

therapeutic potential of antioxidant-rich honey from North Dakota for medical use in improving health and well-being. Commercialization efforts will include marketing honey-based nutritional supplements and specialty honey products.

## **ADVANCEMENT OF SIGNATURE: AI POWERED BIOMETRICS SYSTEM FOR NEURONAL HEALTH DIAGNOSIS**

BraLN, Inc. DBA BrainTX  
Robert Konopacz, Bismarck

Grant Amount: \$310,000

Artificial Intelligence Powered Theranostic Technology is a significant innovation in medicine. The project will design proprietary platforms to provide novel drug discovery, rapid development of genetically engineered neurons, and precise biometric endpoints to accelerate clinical approvals. With Artificial Intelligence Deep Learning Powered Technology, BrainTX's Theranostics could provide life-changing or life-saving benefits for patients with severe disease. Future therapies represent a shift in approach to treating brain disorders with less

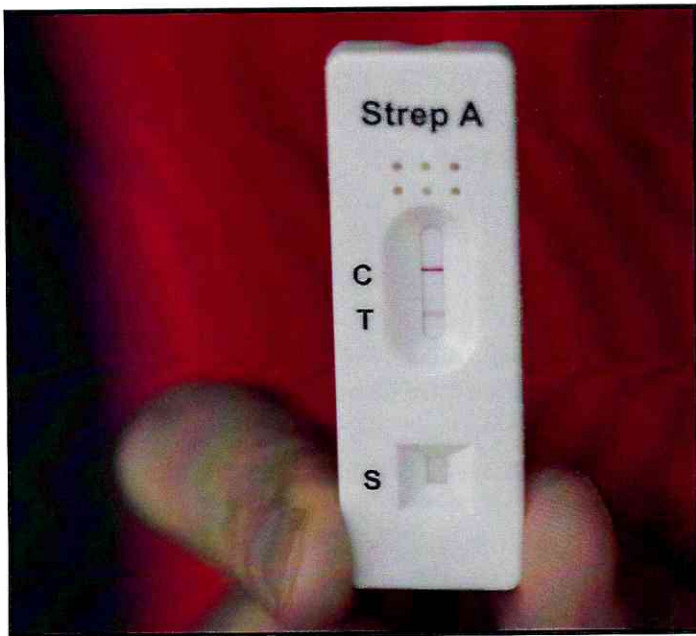
focus on rectifying “chemical imbalances” and more emphasis on selective modulation of neural circuits.

### **AT-HOME STREP TEST ANALYSIS**

Checkable Medical Incorporated  
Patty Post, West Fargo

Grant Amount: \$232,300

An analysis of the Checkable at-home strep test and its mobile application will be completed with serial testing in an attempt to pinpoint the optimal time to perform an at-home rapid strep test when symptoms occur. Application features such as routine implementation, reminders, and telehealth follow-ups will be reviewed. Information gathered will allow improvement of the technology and further education for consumers as pertaining to at-home testings and the ability for access to healthcare services from the comfort of home.



*A sample at-home strep test*

### **RESPOND II VENTILATOR COMMERCIALIZATION**

CorVent Medical, Inc  
Travis Murphy, Fargo

Grant Amount: \$50,000

The RESPOND II Ventilator is anticipated to be a revolutionary ICU quality ventilator that offers greater reliability, no maintenance, and lower cost. Design and software configuration have been completed and work will move to a necessary verification and validation process for FDA 510(k) clearance. CorVent Medical will be moving operations from California to Fargo, North Dakota.

### **BUILDING AN END-TO-END TRANSPORTATION SOLUTION**

Cotasys Inc.  
Jeremy Vrchota, Fargo

Grant Amount: \$123,000

The bioscience and biotechnology industries are subject to challenges when transportation of goods is delayed. The project aims to reduce those challenges by bringing customs, warehouses, and real-time tracking all into one user interface for ground, air, and water transportation. Users will be able to view end-to-end transit times and all associated costs from shipping, port usage, customs, and warehousing.

### **ELEVATING THE FAMGENIX DIGITAL PLATFORM**

FamHis, Inc. DBA FamGenix  
Michael Brammer, Delray Beach, FL

Grant Amount: \$240,000

The FamGenix digital platform strives for a preventative approach to medicine, commonly

referred to as Precision Medicine, through storing networks of family health history. Population screening will be utilized to identify individuals with high risk of hereditary health complications. Integration with genetic testing companies will be sought to store genetic data on patients within the platform.

### **ACCELERATING SINGLE CELL DISCOVERY AND ANTIBODY ENGINEERING**

Genovac Antibody Discovery LLC  
Brian Walters, Fargo

Grant Amount: \$642,667

In collaboration with The Massachusetts Institute of Technology, North Dakota State University, PhenomeX, and Enpicom, aims to develop machine learning (ML) tools for antibody engineering. The project focuses on engineering antibodies and nanobodies with improved properties for research, diagnostics, and potential therapeutics. By leveraging ML techniques, Genovac aims to design antibodies that are cost-effective, stable, and exhibit enhanced biological functionality compared to parental antibodies.

### **HIGH QUALITY SYNTHETIC TARGETED VECTORS**

Lilium Therapeutics Inc.  
Yonatan Lipsitz, Fargo

Grant Amount: \$200,000

Lilium Therapeutics is building synthetic targeted (STAR) vectors for specific, safer, higher capacity, and efficient delivery vehicles to make gene therapies. The STAR vectors are planned to bring genetic medicines to the masses by unlocking new diseases and new patient populations for these curative therapies. Development will target cancer and cardiac diseases.

### **INTEGRATED BATTLEFIELD ANALGESIA TOOLKIT (I-BAT)**

Lincoln Therapeutics, LLC  
Michael Burke, Fargo

Grant Amount: \$136,000

Currently, opioids are the standard treatment for battlefield injury pain management. They can cause death due to respiratory depression or result in addiction of wounded military personnel. The goal is to develop intranasal ketamine as a safer, fast acting, non-addicting far forward battlefield pharmaceutical. Three registration quality intranasal multi-dose ketamine product batches will be manufactured and packaged. Product produced will be utilized by Department of Defense clinical researchers conducting a PK/BA study at the Uniformed Services University in Bethesda. The study is necessary in obtaining FDA approval. Final release of the products will be at the Fargo GMP pharmaceutical packaging and finishing facility.

### **VARIETY IDENTIFICATION SYSTEM OF DURUM: THE DURUMFILER**

National Agricultural Genotyping Center, Inc. (NAGC)  
Megan O'Neil, Fargo

Grant Amount: \$109,065

Variety identification for many crops relies on professional inspections of visual traits defined for each variety. However, varieties are increasingly complex with traits that may not be obvious while looking at the crop in the field or kernel characteristics. For wheat, further discrimination of specific crops into market classes, such as durum, requires genetic-based biotechnology with fine-scale resolution. The National Agricultural Genotyping Center will increase its testing capacity and create an innovated variety identification system,

DurumFiler, to assist the U.S. durum industry in monitoring the varietal purity of seed within the market.

### **A NOVEL SOLUTION FOR TINNITUS**

Peacenoise, Inc.  
Kurtis Goos, Minnetonka, MN

Grant Amount: \$250,000

Pnq Health was created to fill a market gap in the treatment of tinnitus. It strives to provide patients access to effective treatment support that is easily accessible and safe with a clinical care model driven by an intelligent treatment mobile application. An individualized acoustic solution involving pattern recording will automatically determine the optimal treatment for each patient.

### **DUETTE™ DUAL BALLOON INDWELLING CATHETER**

Poiesis Medical LLC  
Charlene Johnson, Jupiter

Grant Amount: \$480,000

Poiesis Medical will establish operational facilities in North Dakota to support the "Made in the USA" movement. This project will utilize allocated funds to relocate operations and manufacture procedural trays locally, which will create employment opportunities and stimulate population growth, all while ensuring a U.S.-controlled supply chain for critical medical innovations. Poiesis aims to provide advanced technology to U.S. veterans and governments contracted facilities, while fostering collaboration with already existing North Dakota biotech companies to enhance the state's biosciences ecosystem.

### **PRESSURE INJURY PREVENTION ASSESSMENT: PILOT STUDY**

SafetySpect Inc.  
Kenneth E. Barton, Grand Forks

Grant Amount: \$70,000

SafetySpects innovative project, the Pressure Injury Prevention Assessment (PIPA), is an advanced medical device that employs multimodal spectroscopy and artificial intelligence for non invasive early detection of pressure injuries across all skin tones. Key objectives include developing user interface software, securing IRB approval, collecting and analyzing data from high-risk subjects, and creating a risk scoring system for timely interventions. By standardizing skin assessments and increasing monitoring frequency, PIPA aims to improve patient outcomes and quality of life, while also paving the way for successful commercialization of the technology.



*Durum*



## **PINGOO - AI-POWERED PATIENT EDUCATION COACH**

Silverberry Group, LLC  
Shayan Mashatian, Grand Forks

Grant Amount: \$25,000

Pingoo is an AI-driven health coaching platform that provides users with personalized health evaluations and advice aimed at enhancing health outcomes and preventing complications. Utilizing machine learning and advanced technology, including ChatGPT engine, Pingoo delivers an exceptional experience for patients undergoing surgery or managing chronic diseases. The platform has garnered positive feedback and successfully signed its first enterprise client. Silverberry is looking to further develop the product, expand market research while growing its team through sales professionals, business developers, and customer support services.

## **BIOFUEL AND BIOMATERIAL PRODUCTION FROM NORTH DAKOTA BIOMASS USING THE SANDWICH GASIFIER**

Singularity Energy Technologies, LLC  
Dr. Nikhil Patel, Grand Forks

Grant Amount: \$150,000

SET's project leverages patented sandwich gasifier technology to revolutionize agricultural and municipal waste management and renewable energy production. This technology converts waste into clean syngas for biofuel and biomaterial synthesis, offering a sustainable alternative to fossil fuels with high efficiency and near-complete carbon conversion. The goal is to optimize feedstock and equipment, enhance the existing gasification system, and assess scaling up to a 25 TPD capacity. A marketing plan will identify potential markets and partnerships, supporting a circular economy in North Dakota's

agricultural and biotech industries while fostering job creation and environmental solutions.

## **MIST - U.S. DESIGNED AND MANUFACTURED MEDICAL GRADE NEBULIZER**

TailWind MedTech Inc.  
Richard Walsh, Fargo

Grant Amount: \$170,000

TailWind MedTech aims to address the reliance on foreign manufacturing by designing and producing a cost-effective high-quality vibrating mesh nebulizer in the United States. Objectives will be to support the nebulizer's design, testing, mold development for manufacturing, and marketing efforts.

## **THERATEC NEXT GENERATION PLATFORM**

TheraTec, Inc.  
Tony Hyk, Horace

Grant Amount: \$100,000

TheraTec's next generation platform project aims



*A mesh nebulizer*

to enhance remote care for physical therapists, particularly in rural and underserved areas, while relocating the production of its sensor from China to North Dakota. The new platform will enable rapid feature updates and incorporate advanced security measures to protect patient data. The engineering team and external software partners will be supported in developing software, as well as the design and production set-up for the new wearable sensor and assisting marketing efforts to educate and gather feedback from existing and potential customers.

### **THERMASOLUTIONS STERILIZATION**

ThermaSolutions Sterilization, LLC  
Steven Davis, White Bear Lake, MN

Grant Amount:       \$700,000

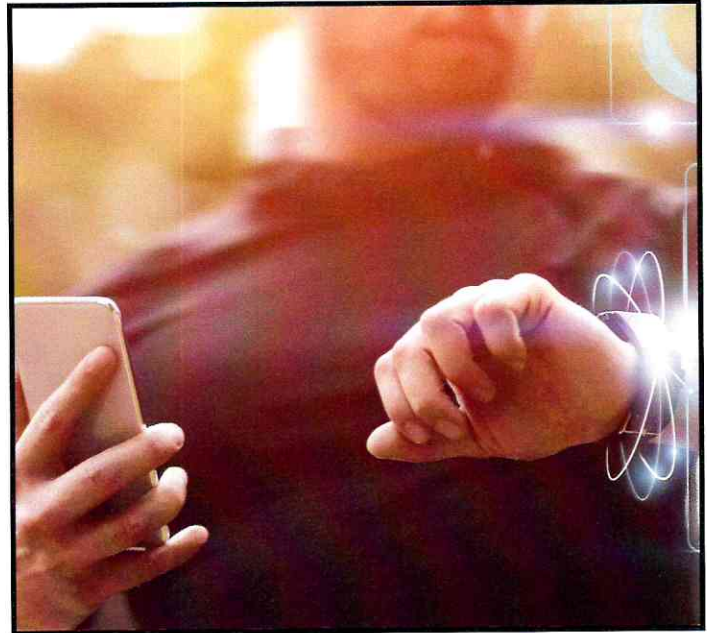
ThermaSolutions aims to establish the world's most environmentally friendly medical device sterilization plant. The project aims to utilize sterilization equipment, sterilization chambers, and catalytic abators, ensuring sustainable practices in the sterilization process.

### **THINAIR EXPANDS PRODUCT PORTFOLIO**

Thin Air Surfaces, LLC  
Jim Albrecht, Wahpeton

Grant Amount:       \$300,000

ThinAir, a medical device start-up based in North Dakota, is expanding its product portfolio to include portable stretcher/gurney utilizing patented small cell pressure redistribution technology. This innovation aims to address the 12-20% prevalence of pressure injuries in emergency departments, where 40% of admitted patients initially receive care, averaging 6.5 to 15.4 hours. ThinAir plans to be positioned as a leading supplier of support surfaces, enhancing national recognition through collaboration with



*A wearable health sensor and app*

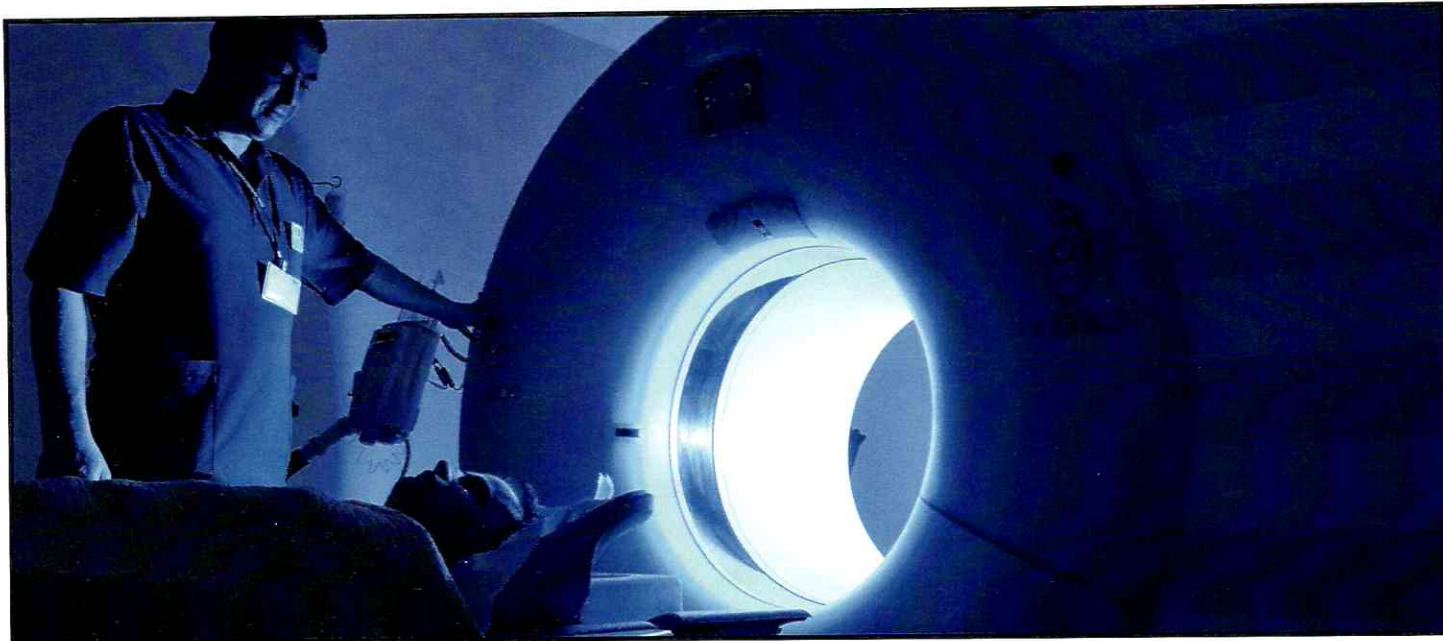
key stakeholders. The project is supported by the National Science Foundation and UND's nursing and biomedical engineering programs, will establish evidence-based practices for widespread adoption, significantly improving patient outcomes and creating high-quality job opportunities for graduates in North Dakota.

### **RAPID MULTIPLEX POINT-OF-CARE PATHOGEN TESTING TO SUPPORT FAR FORWARD MILITARY NEEDS**

Thrixen LLC  
Ben Boedeker, Fargo

Grant Amount:       \$180,000

Thrixen aims to achieve several key goals including onshore novel thrice biotechnology from Singapore to Fargo, enhancing U.S. - based research, development, and production. Developing compact, lightweight point of care infectious disease testing capabilities for forward deployed combat teams, will enable advanced care during prolonged evacuation times typical in peer-to-peer conflicts. By utilizing Thrice platform



*MRI machine*

technology to address testing gaps in military medicine, ensuring 100% transference to civilian healthcare applications. Establishing innovative educational systems that bring together Department of Defense, industrial and academic scientists will assist in training students in real world problem solving integrating them into the company's leadership upon graduation.

### **TWL PHARMAPAC GMP PHARMACEUTICAL BLISTER PACKAGING OPERATIONS START-UP AND QUALIFICATION**

TWL Pharma Pac, LLC  
Michael Burke, Fargo

Grant Amount: \$110,000

The primary objective of this project is to ensure that the Fargo pharmaceutical packaging facility meets the standards for final packaging and product release in accordance with Good Manufacturing Practices (GMP). This will involve conducting both an internal quality review and a third-party evaluation by a major Contract Development and Manufacturing Organization (CDMO), Catalent. The registration batch of

pharmaceutical products will be packaged in unit-dose intranasal delivery devices and will undergo GMP blister packaging at the new Fargo facility. This operation will validate the site and the established GMP Standard Operating Procedures (SOPs), enabling TWL Pharma Pac to offer pharmaceutical packaging services to third-party pharmaceutical companies and CDMOs. This initiative represents a significant step in establishing North Dakota's first GMP pharmaceutical product packaging operation.

### **WHEELWISE AND WALKWISE FOR CANES VALIDATION, INTEGRATION, AND COMMERCIALIZATION**

WalkWise, Inc.  
Peter Chamberlain, Fargo

Grant Amount: \$175,000

The grants will be utilized to commercialize this patented technology, enabling healthcare providers nationwide to enhance senior health and safety while reducing overall care costs. The new devices will undergo comprehensive testing, and the resulting data will be fully

integrated into the existing WalkWise system. To educate the market about this groundbreaking device for senior care, WalkWise will engage in various outreach efforts, including participation in numerous conferences and content marketing initiatives. Additionally, they will provide robust support for healthcare professionals using this new technology, offering customer support materials, training resources, how-to videos, and other content focused on best practices with the new system.

### **REAL-TIME MRI-GUIDED CARDIAC ABLATIONS**

Imricor Medical Systems, Inc.  
Steve Wedan, Burnsville, MN

Grant Amount: \$1,158,000

The project titled “Real-time MRI-guided Cardiac Ablations” represents the final steps in commercializing a groundbreaking technology for cardiac ablation procedures in the United States. Cardiac ablation is a minimally invasive procedure in which a catheter is guided into the heart to deliver energy that modifies heart tissues responsible for irregular heartbeats, thereby restoring normal rhythm. Common conditions treated with ablation include atrial fibrillation, atrial flutter, and ventricular tachycardia. Traditional ablation procedures rely on x-ray guidance, which provides limited visibility of the heart. Imricor’s patented technology enables cardiac ablations to be performed under real-time MRI guidance, offering a clear view of the heart. This innovative approach aims to achieve higher first-time success rates, reduce procedure times, and lower treatment costs per patient, all while eliminating radiation exposure for patients, physicians, and medical staff. Having been under development for 16 years, Imricor’s technology is already approved and commercially available in Europe. This project will facilitate a pivotal clinical trial, with the intention of submitting the results and necessary design and testing data to obtain

FDA approval for the technology in the U.S.

### **EXPLORATION INTO PHARMACEUTICAL APPLICATIONS FOR BILLIE’S SOAP FORMULATIONS**

Billie’s Soap & Spa Products, Inc. DBA Billie’s Soap

Billie Kellar, Grand Forks

Grant Amount: \$260,000

Billie’s Soap is a certified primary sector manufacturing and sales company that specializes in value-added, agriculturally derived skincare products. Founded in 2007, the company has primarily focused on developing formulas in the cosmetic skincare sector. The success of three of these formulations has paved the way for Billie’s Soap to expand into the pharmaceutical skincare product space, as any product making claims in the U.S. must be registered as a drug and undergo proven clinical testing. This project aims to explore initial pharmaceutical applications for the three current formulations, advancing them toward Investigational New Drug (IND) application pathways. Additionally, the project will establish an FDA-qualified pharmaceutical research and production facility that will be accessible to all North Dakota companies in need of these services.

### **PROJECT SPIRITWOOD**

Chapul Farms ND One LLC

Todd Severson, McMinnville, OR

Grant Amount: \$90,000

Chapul, LLC (Chapul Farms) is in the process of developing an insect bioconversion facility designed to transform agricultural byproducts into high-value animal feed (insect larvae) and soil health products (insect frass), exemplifying

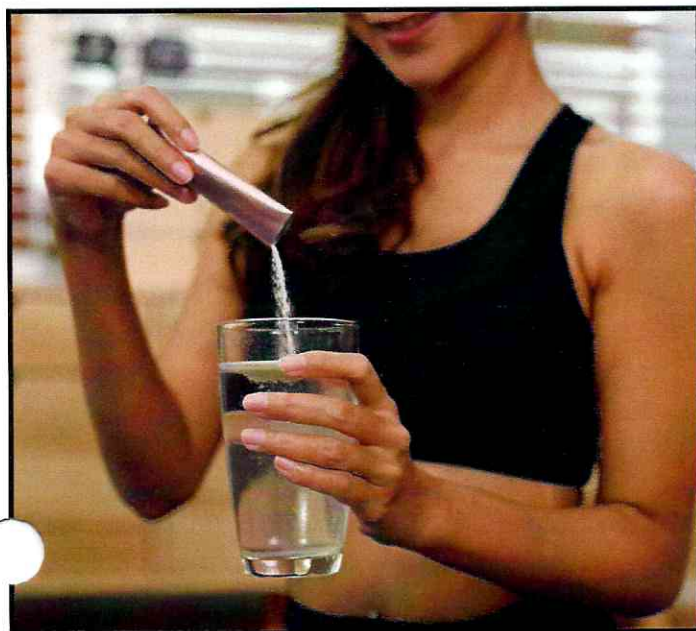
a model of future circular food systems. The industrial-scale insect agriculture facility will be situated near Jamestown, ND, within the Spiritwood Energy Park (Project Spiritwood). This location is strategically co-located with its primary feedstock, spent wet distillers grains from Dakota Spirit Ag Energy, a corn bioethanol facility owned by HarvestOne. Currently, the project is in the final Front End Loading Phase 3 (FEL3), with development efforts supported by the North Dakota Department of Agriculture, the North Dakota Department of Economic Development, Nexus PMG, and Chapul.

### **FRONTIER BIOFORGE BESPOKE GENETIC ENGINEERING PLATFORM**

Frontier Bioforge LLC  
Wyatt Warkenthien, Horace

Grant Amount: \$180,000

Frontier Bioforge's project seeks to reduce the barriers to genetically modifying non-model organisms. They aim to establish a genetic screening and engineering service line that enables researchers to send non-model microbes



*Electrolyte powder*

for genetic engineering. Traditionally, this process involves hiring a research assistant and spending a year developing methods in the lab; however, this service can return an engineered microbe within approximately one month. This initiative will empower researchers across the U.S. and around the world to efficiently and effectively make edits to organisms that are typically difficult to modify, thereby accelerating advancements in their respective fields.

### **CLINICAL STUDY AND KRAMPADE ORIGINAL ZERO, AND KRAMPADE 2.0 ZERO**

Krampade, LLC  
Eric Murphy, Grand Forks

Grant Amount: \$25,000

This project marks the initiation of the first clinical study aimed at documenting the effectiveness of Krampade 2K in alleviating menstrual cramps. Utilizing a double-blinded, crossover study design, they intend to provide the gold standard of clinical evidence that Krampade can mitigate menstrual pain by assessing its effectiveness across the pain spectrum. The second component of this project involves expanding zero-sugar selections within the Krampade Original and Krampade 2.0 product families. These products are among the top sellers, and customer feedback indicates a strong demand for additional flavors. The introduction of new flavors, such as orange and fruit punch, will enhance our product offerings and help us attract new customers. Their products are widely used by individuals following a keto diet and serve as a key source of potassium, helping to prevent what is commonly referred to as "keto flu." The marketing efforts will be implemented on a nationwide scale, with a strong international presence primarily through our Amazon store.

**ACCURATE CONTINUOUS AMBULATORY BLOOD PRESSURE MEASUREMENT**

Krisara Engineering LLC  
Dave Jorgenson, Fargo

Grant Amount: \$110,000

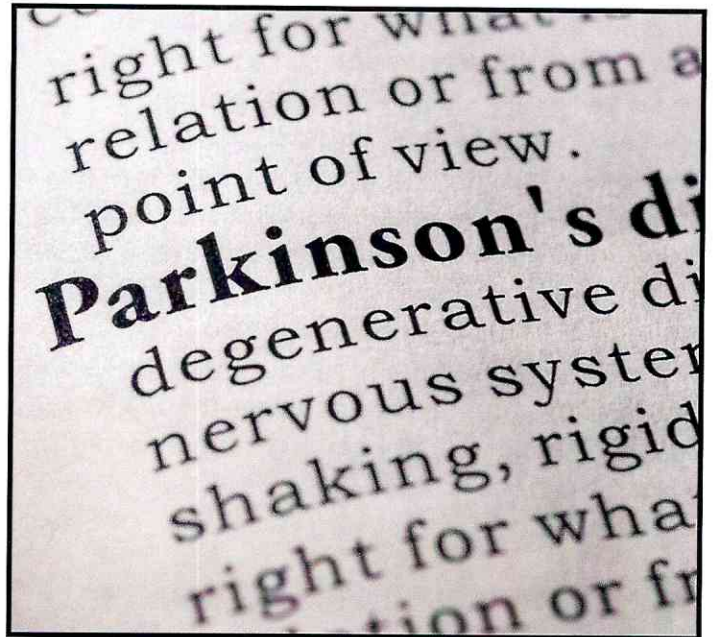
It is widely recognized that blood pressure is a critical indicator of cardiovascular health and disease. However, relying solely on traditional blood pressure measurements during clinical visits, or even on home monitoring, is insufficient due to the infrequent measurements and discomfort associated with cuff inflation. What is needed is a system that enables continuous blood pressure measurement during movement. The primary challenge in achieving ambulatory continuous blood pressure monitoring is the discomfort and noise generated by cuff inflation. Currently, there is no clinically relevant solution available for comfortable ambulatory continuous blood pressure measurement. While this is a complex problem to solve, the market potential is significant, with an estimated value of \$4.7 billion in 2023 and continuing to grow.

**MINDMEND BIOTECH LLC**

MindMend BioTech LLC  
Mercedes Terry, Hobbs, NM

Grant Amount: \$60,000

MindMend Biotech LLC is dedicated to developing innovative technology for the treatment of Parkinson's disease, aiming to address current gaps and limitations in PD management and therapy by seeking to slow the progression of the disease. This project will involve rigorous research, prototyping, and testing to ensure the technology's efficacy and safety. They plan to secure intellectual property protection and share research findings while maintaining transparent communication with stakeholders. MindMend Biotech LLC intends



to commercialize this technology through collaborations with healthcare professionals and institutions, following regulatory approval. Through these efforts, they aim to enhance Parkinson's disease treatment and improve the quality of life for the millions of individuals affected by this condition. In pursuit of this mission, MindMend Biotech plans to collaborate with the University of North Dakota's Biomedical Engineering Innovations-Based Learning program, offering employment opportunities to UND BME students and providing them with real-world experience in biomedical engineering.

**TERSA SAVA**

Modern Hygiene, Inc. DBA Tersa  
Ray Kelly, Fargo

Grant Amount: \$17,000

The project is focused on the development and commercialization of a cutting-edge therapeutic solution aimed at enhancing sports recovery, mental health, and trauma therapy outcomes. Utilizing advanced technology, the therapy pod is designed to provide non-invasive and culturally

sensitive therapeutic interventions for a diverse range of users. Proposed commercialization efforts include partnering with academic institutions, Indigenous communities, and high-profile stakeholders to conduct research, refine the product, and effectively market it to target audiences. Through comprehensive marketing strategies, strategic partnerships, and a commitment to quality and efficacy, the project seeks to achieve widespread adoption and impact, ultimately improving the well-being of individuals across various demographics and communities.

#### **NEXT GENERATION OPTICAL NAVIGATION FOR SPINAL SURGERY**

PathKeeper, Inc. DBA Pathkeeper Surgical  
Erez Lampert, Norwich, CT

Grant Amount: \$600,000

The Pathkeeper System is a proprietary 3D optical navigation system that leverages AI algorithms and optical imaging to provide real-time, high-resolution imaging. This technology assists spine surgeons in navigating complex anatomical structures with enhanced precision during the placement of spinal devices. The combination of precise navigation, efficient workflow, and radiation-free imaging contributes to superior surgical outcomes. The Pathkeeper project proposed for this grant aims to create a high-quality toolkit to complement the navigation system. The steps to achieve this goal include ideation, safety and efficacy testing, accuracy assessments, acquisition of FDA clearance for the new kits, and a full market release of these enhanced tools.



*Model of a spine*

#### **CORVENT RESPOND II VENTILATOR COMMERCIALIZATION AND NEXT GENERATION PRODUCT FEASIBILITY**

CorVent Medical, Inc.  
Travis Murphy, Fargo

Grant Amount: \$750,000

The project is focused on obtaining FDA 510k clearance for the RESPOND II Ventilator, with submission targeted for late 2023. Corvent has completed design and software configuration and will begin verification and validation in mid-June. The company is also negotiating a move to a new headquarters in Fargo, transferring manufacturing and warehousing from California, with plans to be operational by early fall. Manufacturing will comply with FDA Good Manufacturing Practices and the company's Quality Management System.



*NAGC equipment*

**UPGRADING THE GENOTYPING TECHNOLOGY AT THE NATIONAL AGRICULTURAL GENOTYPING CENTER (NAGC)**

National Agricultural Genotyping Center, Inc.  
Megan O'Neil, Fargo

Grant Amount: \$135,000

NAGC aims to address the growing demand for large-scale genotyping projects in agriculture by acquiring new high-throughput genotyping instrumentation. The upgrade will enhance capacity, reduce turnaround times, and expand service offerings, meeting the needs of clients across North Dakota and the U.S. The proposed commercialization efforts include partnering with agricultural stakeholders, offering advanced genotyping tests, and actively disseminating project outcomes through various media channels.

**MULTIMODE SPECTROSCOPY FOR ENHANCED COMMERCIALIZATION IN FOOD AND AGRICULTURAL PRODUCT QUALITY AND TRACEABILITY**

SafetySpect Inc.  
Kenneth E. Barton, Grand Forks

Grant Amount: \$600,000

SafetySpect, a Grand Forks-based company specializing in multimode optical sensors with AI capabilities, is advancing technology to address key challenges in agricultural, food, and environmental safety. The company's current project focuses on the development of Quality, Adulteration, and Traceability (QAT) technology, which combines three modes of spectroscopy enhanced by fusion AI. This technology enables non-invasive, real-time analysis of food and agricultural products throughout the supply chain, improving product quality, traceability, and safety.


**BELLA BLOOD AND FLUID WARMER**

TailWind MedTech Inc.  
Richard Walsh, Fargo

Grant Amount: \$750,000

This project aims to test the feasibility of a chemically energized blood and fluid warmer, a critical technology currently unavailable to U.S. warfighters and first responders. In addition to military applications, the technology has numerous civilian uses, expanding the total addressable market (TAM) to over \$1 billion in the U.S. alone. The commercialization process will include both U.S. government and military contracts, as well as commercial partnerships with multiple distribution channels. As a veteran-owned company, Tailwind will receive prioritization in government contracting opportunities. The Tailwind commercial sales team, with over 30 years of medical device experience, will also pursue large purchasing





groups like Premier, Vizient, and HealthTrust, which contract with major health systems such as Sanford Health, Altru, Essentia, and Mayo Clinic, among others.

**THINAIR MEDICAL DEVICE  
COMMERCIALIZATION**

Thin Air Surfaces, LLC  
Jim Albrecht, Wahpeton

Grant Amount:       \$500,000

Thin Air Surfaces LLC (thinAIR), a North Dakota-based medical device start-up, is preparing to introduce its patented small-cell pressure redistribution technology to the medical device market. The immediate application focuses on improving patient safety and comfort on operating room tables, particularly for long procedures that put patients at risk for pressure injuries. Pressure injuries affect 2.5 million patients annually and are the second most common diagnosis in U.S. health system billing records (NPIAP, 2021 Fact Sheet).

Grant funding will support the company's commercialization efforts through collaboration with key partners, including the College of Nursing and Professional Disciplines, the Biomedical Engineering Department at the University of North Dakota, and medical device manufacturer ComDel Innovation. These efforts will validate the efficacy of the technology and ensure the delivery of a commercially viable, FDA-registered medical device. This work positions thinAIR for rapid expansion beyond the operating room, allowing for the development of a diverse product portfolio in additional markets.

# FUNDING SOURCES

The appropriation for the Bioscience Innovation Grant Program for the 2023-2025 biennium totaled \$12 million and was provided from the following sources:

- Strategic Investment & Improvements Fund (SIIF) \$5,500,000
- General Fund \$6,500,000