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Social Innovation Immersion Program @ KIIT-TBI

The SPARSH Social Innovation Immersion Program (SIIP) is a flagship program of the Biotechnology Industry Research Assistance Council (BIRAC), launched in 2015 with the goal of creating a pool of social innovators who identify community needs and fill the gaps with the help of mentors and knowledge partners.

KIIT-TBI is one of the oldest among the 14 SPARSH centers implementing the SIIP program under it.

SIIP, the main program under the SPARSH umbrella, is implemented in partnership with the Tata Institute of Social Science.

KIIT-TBI has implemented 3 SIIP Calls, with a focus on Maternal and Child Health, Ageing and Health, Food and Nutrition.

Impact Till Date

18

Entrepreneurs supported

220+

Capacity Building Trainings Conducted

19+

National patents granted

6.2 Cr+

Private Investment Raised

18

Registered Company

8

Women SIIP Fellows Supported

6 Cr+

Follow-on Funding Raised

56+

Employment Generated

7

Technologies Commercialized

52+

Mentors Engaged

SIIP Team @ KIIT TBI

Dr. Mrutyunjay Suar, CEO

Dr. Namrata Misra, Advisor

Ms. Riya Roy, Program Manager- Bio- Innovation

Dr. Jyoti Agarwal, Manager - Technology Development

Dr. Jayalaxmi Dash, Manager - Tech Innovation

SIIP Roadmap



The Current Call Theme: Waste to Value



Ms. Romi Kumari



Dr. Ayekpam
Chandralekha Devi



Dr. P. Balaganesh



Mr. Siraaman M



Mr. Rajnish Pratap
Singh



OUR INNOVATORS



Dr. Ayekpam Chandralekha Devi

She received her PhD in Biotechnology from CSIR-CFTRI, Mysuru. She hails from Manipur and strongly believes that she can significantly address the challenges of waste issues in the northeastern region of India.

Of the more than 20 problems identified, she has decided to focus on the three most pressing waste problems in northeast India.

Top 3 Problem Statements:

Problem Statement 1: Limited processing of food processing waste and on the other hand drastic increase in demand of animal feed

Problem Statement 2: The unsustainable way of treatment of chicken feathers in meat processing industry

Problem Statement 3: Unavailability of sustainable and value added products from tea and fruit processing waste.

Accepted Idea after Pre-Pilot Workshop by BIRAC and TISS :

Extraction of Keratin from poultry feathers by sustainable methods (Problem Statement 2)

Objectives

- Collection, pretreatment and analysis of the chicken feathers waste
- Standardization of the physical, chemical & integrated methods of extraction of keratin from the chicken feather (keeping alkaline hydrolysis mediated extraction as a control)
- Purification and concentration of the extracted keratin
- Analysis of the dried keratin powder for beauty care products

Proposed Milestones

1 Milestone: Preliminary sorting out/ Pre-treatment of the chicken feathers

Timeline (In Months): February 2023

Status: Completed

2 Milestone: Standardization of process parameters (sustainable methods) for extraction of keratin from chicken feather.

Timeline (In Months): August 2023

Status: Ongoing

3 Milestone: Purification with respect to targeted products

Timeline (In Months): August 2023

Status: Yet to start

Work Progress Summary

- The fellow is currently optimizing the experimental method for the production of keratin using chicken feathers.
- Simultaneously, she is carrying out the characterization studies to confirm the higher yield of synthesized keratins.
- In the process, she has also completed the company registration process for her proposed start-up.

Anchor Mentor

Dr. KSMS Raghavarao, Prof. of Chemical Engineering, CFTRI, Mysuru
Dr. S. Uday Kumar, Assistant Prof., Department of Chemical Engineering, IIT-Tirupati

Current Work Place:

KIIT TBI

Company Profile

NaturiTech Private Limited

Thrust Area: Waste Management

Founder: Dr. A Chandralekha Devi

Co-Founder: A Chingkheinganbi Devi

Email: puniayekpam@gmail.com

Strategic Way Forward Beyond-SIIP

- Connections to different stakeholders
- Apply for different funding agencies
- Pilot scale trials
- Marketing and sampling of the product
- Collaborating with beauty care producing industries for the formulations of hair care products using our product.

OUR INNOVATORS



Ms. Romi Kumari

A Biotechnologist with a diploma in environmental policy, holds a patent on aero plastic biodegradable pen. Her drive to find a much-needed solution in the area of waste recycling led her to become a BIRAC SIIP Fellow. During her interactions with stakeholders and professionals, she identified more than 15 areas of need that required immediate attention and narrowed down the top three problem areas.

Top 3 Problem Statements:

Problem Statement 1: No Effective Process for Utilisation of Mustard Oilcakes in the Country

Problem Statement 2: Non Effective Utilisation of Empty Fruit Bunches & Kernel Shell from Palm Oil Waste

Problem Statement 3: Open Dumping of Post Harvest Potato Waste (Spoiled Potato and Potato Shoots)

Accepted Idea after Pre-Pilot Workshop by BIRAC and TISS :

Development of Antiseptic Lotion Utilizing Mustard Oilkakes (Problem Statement 1)

Objectives

- Use of mustard oil cake for the development of an antiseptic lotion by obtaining and characterizing the raw material
- Extraction of bioactive compounds following green extraction method and their identification
- Development of antiseptic lotion formulation for cosmetic application

Proposed Milestones

- 1 Milestone:** Sourcing of Raw Materials & Reagents
Timeline (In Months): January 2023
Status: Completed
- 2 Milestone:** Standardization of Extraction and Purification of bioactive compounds
Timeline (In Months): June 2023
Status: Ongoing
- 3 Milestone:** Characterization by GC-MS analysis of all solvent extraction
Timeline (In Months): June 2023
Status: Ongoing
- 4 Milestone:** Anti-microbial activity studies with methanol, ethanol, and aqueous extracts
Timeline (In Months): June 2023
Status: Ongoing
- 5 Milestone:** Company Formation and IP Filings
Timeline (In Months): Aug 2023
Status: Formulated company

Work Progress Summary

- The project is currently in the stage of validating the antimicrobial potential of the extracts after including ultrasonic-assisted method of extraction of bioactive components from the mustard oil-cake.
- The fellow has characterized the extracts using GC-MS for both aqueous and methanol solvents and the experiments need to be repeated with the other solvents.

Anchor Mentor

Dr. P Balasubramanian, Associate Professor, National Institute of Technology, Rourkela

Current Work Place:

KIIT TBI

- 6 Milestone:** Formulation of the Product (Checking Lotion & Ointment properties, antimicrobial base for the product)
Timeline (In Months): August 2023
Status: Yet to Start
- 7 Milestone:** Standardization of the Product & Product Validation Studies (Cytotoxicity Test)
Timeline (In Months): October 2023
Status: Yet to Start

Company Profile

Romisure Nature Pvt Ltd.
Thrust Area: Waste Management
Founder: Ms. Romi Kumari
Co-Founder: Mr. Rohit Kumar
Email: meromikumari@gmail.com

Strategic Way Forward Beyond-SIIP

- Follow-up Fundings
- Production in GMP Facility
- Regulatory Approvals
- Product Labelling, Branding Packaging
- Entry in Market & GeM portal

OUR INNOVATORS



Mr. Rajnish Pratap Singh

A post graduate in computer science (EECS) and has been developing simple innovative products from readily available resources His interest of solving real-life problems led him to choose entrepreneurship as a serious career option

Top 3 Problem Statements:

Problem Statement 1: Wastes with high carbon content like rubber generally end up being burnt without any proper treatment

Problem Statement 2: Red mud waste is a global problem and there is no good use for it till now.

Problem Statement 3: Wastes with high starch and sugars generally end up in landfill or as a compost material.

Accepted Idea after Pre-Pilot Workshop by BIRAC and TISS :

Development of Novel apparatus for efficiently converting carbon black from discarded rubber tyres (Problem Statement 1)

Objectives

- Development of a flash Joule heating device capable of generating graphene molecules from waste having long polymer chains of carbon.
- Increase the yield and quality of graphene produced by the device and its optimization

Proposed Milestones

1 Milestone: Design and development of flash joule heating apparatus

Timeline (In Months): February 2023

Status: Completed

2 Milestone: Design iterations of the apparatus to increase graphene yield

Timeline (In Months): May 2023

Status: Completed

3 Milestone: Characterization and lab analysis of graphene

Timeline (In Months): July 2023

Status: Ongoing

4 Milestone: Company Formation and IP Filings

Timeline (In Months): July 2023

Status: Formulated company

Anchor Mentor

Dr. Debasish Manna, Assistant Prof, Dept. of Chemistry, IISER Bhopal

Technical Mentor from KIIT-TBI:

Dr. Sagar kumar Nayak, Asst. Manager, NETZSCH Technologies India Private Ltd.

Dr. Sukanya pradhan, Research Associate, LARPM, CIPET, Bhubaneswar

Current Work Place:

IISER Bhopal

5 Milestone: Design and development of a scaled up system for continuous production

Timeline (In Months): September 2023

Status: Yet to start

6 Milestone: Cost Analysis

Timeline (In Months): October 2023

Status: Yet to start

Company Profile

AGNITECH FORGE PRIVATE LIMITED

Thrust Area : Waste Management

FOUNDER: RAJNISH PRATAP SINGH

Email: rajnish17@iiserb.ac.in

Work Progress Summary

- He has completed the lab scale design of the device proposed in his milestones for the production of graphene
- Currently, he is trying to optimize the high-frequency oscillating magnetic field and temperature of the reaction chamber to assist graphene formation for better crystal size and yield.

Strategic Way Forward Beyond-SIIP

- Tie-up with B2B marketplace
- Exploring partnerships/collaborations with research institutions & industry experts
- Follow on fundraising
- Find long term buyers - composite industries and cement industry to collaborate for product development
- Listing of products in the GeM portal

OUR INNOVATORS



Dr. P. Balaganesh

Dr. P. Balaganesh is an environmental engineer who is passionate about protecting the environment and promoting waste-free products. With the motto of making affordable products and protecting the environment, he has embarked on the path of entrepreneurship with SIIP.

Top 3 Problem Statements:

Problem Statement 1: Unscientific way of Jack fruit peel dumping by fruit markets and fruit processing industry

Problem Statement 2: Improper disposal of polystyrene (Thermocol)

Problem Statement 3: Lack of systematic utilization of crop residues

Accepted Idea after Pre-Pilot Workshop by BIRAC and TISS :

Synthesis of Green Cushion Packaging Material and Cellulose Extraction from Crop Residue. (Problem Statement 3)

Objectives

- Collection of the Rice Bran, preliminary treatment and extraction of cellulose using alkaline hydrolysis.
- Preparation of cushion packaging using filtrate obtained from the alkali hydrolysis process.
- Fabrication of the cushions using Extrusion Foaming process

Anchor Mentor

Dr. Kiran Babu Uppuluri, Associate professor through Bioprospecting Lab, SASTRA Deemed University

Current Work Place:

SASTRA Deemed University, Tamil Nadu

Proposed Milestones

1

Milestone: Detailed Planning
Timeline (In Months): December 2022
Status: Completed

2

Milestone: Raw material Characterization
Timeline (In Months): January 2023
Status: Completed

3

Milestone: Cellulose preparation
Timeline (In Months): March 2023
Status: Completed

4

Milestone: Cushion Packaging through extrusion
Timeline (In Months): September 2023
Status: Ongoing

5

Milestone: Complete prototype Development
Timeline (In Months): October 2023
Status: Yet to start

Company Profile

Envkith Ventures Pvt Ltd
Thrust Area : Waste Management
Founder: P. Balaganesh
Email: balaganesh@bitsathy.ac.in

Work Progress Summary

- Dr. Balaganesh is currently working on the prototype development as proposed in the field of cushion packaging.
- He has optimized the production of cellulose through the alkaline hydrolysis method which could be used as a secondary product for different applications.
- He has already registered his company in the name of Envkith Ventures. It was derived to mitigate environmental pollution and waste management.

Strategic Way Forward Beyond-SIIP

- Apply to follow up funding for scale up
- Industry collaborations for commercialization
- Setting up the manufacturing unit for the production of the cushions
- Product listing in GEM portal.



Mr. Sriraaman M

A Chemical Engineering graduate with a strong interest in sustainable research, innovation, and businesses intends to address the social difficulties encountered in the waste management arena through innovative solutions

Top 3 Problem Statements:

Problem Statement 1: The invasion of the Juliflora Prosopsis sp. significantly increases soil pH (1.5%) thereby can be considered in the category of non-economical weed waste.

Problem Statement 2: Water Hyacinth (Eichhornia crassipes sp.) Weed Waste

Problem Statement 3: One-third of food produced for human consumption is lost or wasted globally as on 2020. This amounts to about 1.3 billion tons per year, worth approximately US\$1 trillion.

Accepted Idea after Pre-Pilot Workshop by BIRAC and TISS :

Enhancing the value cycle of Juliflora weed waste by pyrolyzing it for biochar briquette and bio-crude oil-based chemicals production (Problem Statement 1)

Objectives

- Collection of juliflora weeds from barren arid and semi-arid villages.
- Pyrolysis of rigid Juliflora stems and roots above 500 °C for biochar and biocrude oil production under optimum conditions.
- Extraction and characterization of high value chemicals present in bio-crude oil & subsequent functional test.
- Infusing excess oil with activated biochar for briquette production to increase the calorific value.

Proposed Milestones

1 Milestone: Basic research methodology and Materials/Method identification
Timeline (In Months): January 2023
Status: Completed

2 Milestone: Process optimization of production of bio oil from Julifloraweed waste
Timeline (In Months): May 2023
Status: Completed

3 Milestone: Characterization & antibacterial application of the bio oil
Timeline (In Months): September 2023
Status: Ongoing

Work Progress Summary

- Mr. Sriraaman is currently working on optimizing the parameters for the production of the bio-oil through Pyrolysis.
- He is currently working on evaluating the antibacterial activity of bio-oil using bacterial strains produced at 450°C; 6 minutes from 1 kg of Juliflora procured from Tamil Nadu Agricultural University
- He performed the GC-MS spectral analysis for the same, the results of which were consistent with existing standards for phenol, furfural, and toluene.

Anchor Mentor

Mr.R.Karthick, Founder & CEO, BP Man Machine School, Proprietor, RK Enterprises
Mentor-in-Residence
Annamalai Innovation and Incubation Research Foundation, Annamalai University

Technical Mentor from KIIT-TBI:

Dr. Smruti Ranjan Mohanty
Assistant Manager, Application Development [FP] [FCB], SRF Limited

Current Work Place:

Annamalai University

4 Milestone: Company Formation and IP Filings
Timeline (In Months): September 2023
Status: Formulated Company

5 Milestone: Pilot scale design of the reactor
Timeline (In Months): October 2023
Status: Yet to start

Company Profile

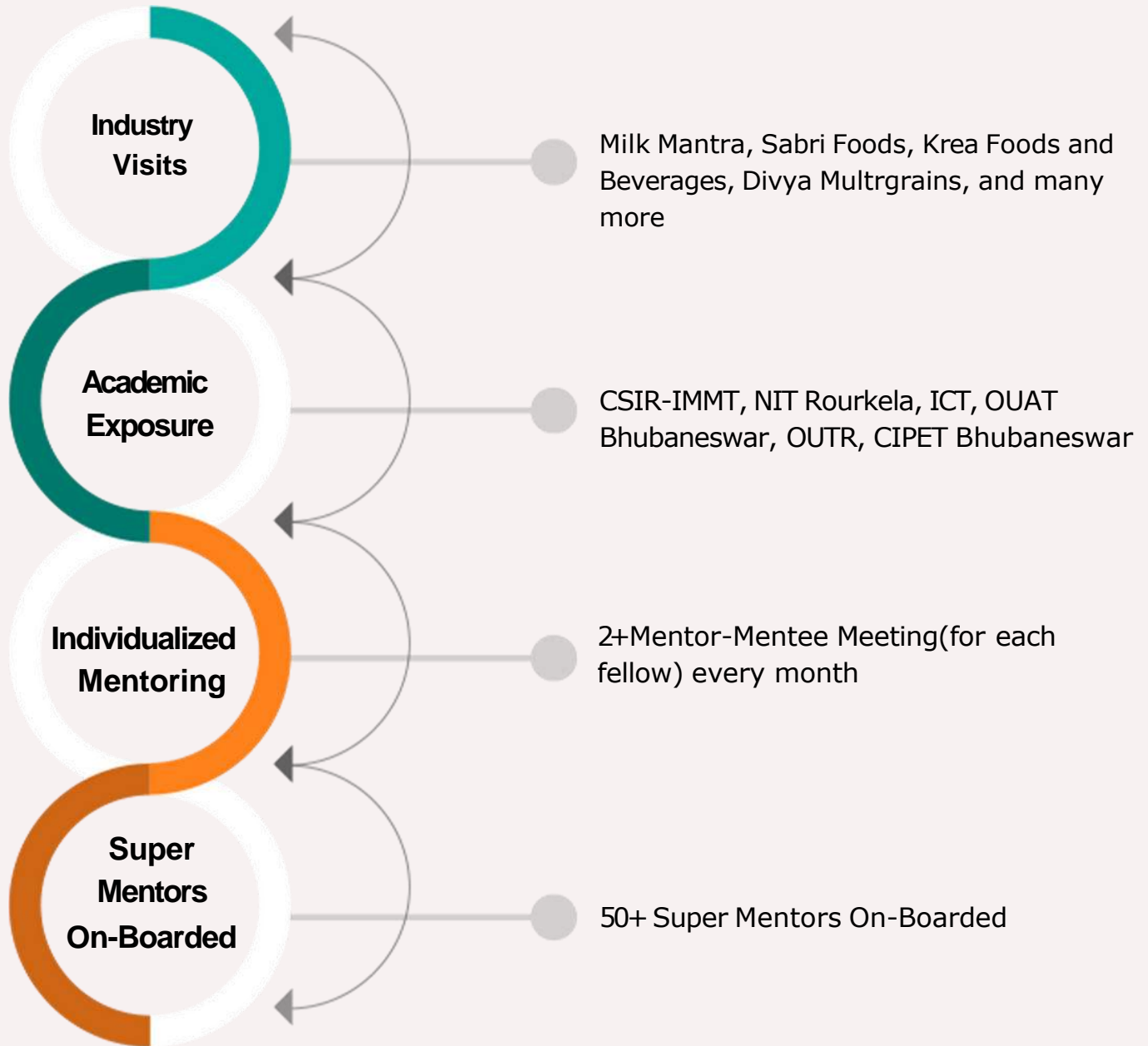
IAMUSAP Ventures
Thrust Area : Waste Management
FOUNDER: Sriraaman M
Email: sriraamanmeyyappan@gmail.com

Strategic Way Forward Beyond-SIIP

- Listing of products in the GeM portal
- Tie-up with B2B marketplace
- Follow on fundraising
- Planning for scaling up the production
- Networking with ecosystem enablers

KIT-TBI SPARSH Centre as Enabler in Building the Ecosystem

- Company Registration
- Intellectual Property Support
- Legal Compliances and Valuation
- Analytical Testing, QA/QC analysis in NABL Certified Testing Labs
- Industry-Academia collaboration



BIRAC SPARSH-SIIP Fellows Graduated

Theme: Maternal and Child Health

Innovator: Dr. Sumona Karjee Mishra
Company: Prantae Solutions

Innovator: Mr. Kiran Vuppala
Company: Cerelia Nutritech

Innovator: Mr Ashfaq Ashraf
Company: Bagmo

Innovator: Mr Anurag Kyal
Company: Rewoke

Theme: Aeging and Health

Innovator: Ms Pooja Jha
Company: Swayogya Rehab

Innovator: Dr Steward Gracian
Company: Sociodent

Innovator: Ms Sruthi Babu
Company: Dhanvantri Biomedical

Innovator: Mr. Rishi Agarwal
Company: Ayusla Healthcare

Theme: Food and Nutrition

Innovator: Dr Mahesh Patil
Company: Aves Food Tech

Innovator: Ms. Harini R.
Company: Nutrigenetics Life Science

Innovator: Ms Amrita Suhasini
Company: Amritattava Nutrition

Innovator: Ms Asha Rani E
Company: Dhithi Nutrition

Innovator: Mr Swapnil Muley
Company: Renaissance Superfoods

Trailblazers of SIIP

Healthcare: Diagnostics

Manufacturing and Commercialization of Urine Microalbumin Measurement System Proflo-U®

APPLICATION

The kit can be used for urine microalbumin measurement for early diagnosis of CKD in diabetic patients, hypertension patients, geriatric people, etc.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Prantae Solutions Pvt Ltd (OPC)	TRL: 7 (The final MVP is ready and currently the product is under extensive field trials)	Patent Number: 308432 & 360496 Design Registration: 316100-001 324401-001, 322092-001 Trademark: Proflo-U®, PregaMo®
FOUNDER'S NAME		
Sumona Karjee Mishra		

PROBLEM ADDRESSED

Chronic Kidney Disorder (CKD) one of the major non-communicable disorder with global prevalence of 10%. Unfortunately, it has been reported the kidney damage can progress upto 70% without any clinical symptom manifestation. At this stage reversal of damage is very difficult and patient eventually progresses to end stage renal disorder. However, early diagnosis can save lives and even reverse kidney damage. At present, the early diagnosis can happen only in centralized diagnostic laboratories. They are expensive and cumbersome. Proflo-U® with its innovative technology enables early diagnosis with convenience and cost effectiveness

ABOUT THE TECHNOLOGY

It is an inventive and innovative technology. It is non-invasive method where an early biomarker for CKD from the urine specimen. The process has lab in cuvette where the sensing mechanism is fluorescence. The fluorescence is analyzed by a palm size reader with optimized optical and electronic system. The optical intensity is converted into concentration of the biomarker (urine albumin) through a smart phone interface based on the standard curve fed in the backend, generated through 1000+ data points collected with the system.

FUNDS RAISED/ACHIEVEMENTS

- Founder Sumona Karjee Mishra has received BIRAC SIIP Fellowship
- INR 1.2 Cr from BPCL Ankur
- INR 30 lakhs from Millenium Alliance
- BIRAC GCE India worth INR 35 lakhs
- MeiTY SASACT Fund worth INR 20 lakhs
- BIRAC TiE WinER Award worth INR 5 lakhs
- Swayam Siddha Samman worth INR 1 lakh
- TATA Trust Harvard SAI worth INR 5 lakhs
- BIRAC – Ignite Award 2019
- Pride of Odisha Award (Make in Odisha Conclave 2018)

PRODUCT IMAGE



USP

- No requirement of cold chain logistics
- Simple to operate test result in 3 steps
- Rapid time from sample preparation to Result 3mins
- Simple interactive interface of the App
- Bluetooth enabled
- Internet connectivity not required for its operation
- Can operate with simple 9 V alkaline battery
- Portable system with the palm size reader device

END USERS/CUSTOMERS

B2C: Diabetic Patients, Hypertension Patients, Geriatric People, Genetic Disposition, Preeclampsia survivors, etc.

B2G: PHC, Screening Camp, Asha Workers

B2B: Tier II & III city and rural area diagnostic labs

Healthcare: Devices

Sahayatha a smart defecation cleansing assistive device for immobile population

APPLICATION

The smart defecation assistive device is a great boon to immobile population, the device can be used in old age homes, hospitals for bedridden patients to assist themselves in cleaning their body after defecation.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Dhanvantri Biomedical Pvt Ltd	TRL: 8 (Early Revenue Generation Phase)	SMART LOCOMOTORY ASSISTIVE DEVICE App No: 201941015140 US Patent : 17420525 Trade mark:5023260 Design patent : 355538-001 & 355539-001
FOUNDER'S NAME		
Sruthi Babu		

PROBLEM ADDRESSED

- In India 30.8 million are mobility impaired out of which 10 million requires defecation assistance.
- About 4% death results each year during the transfer of patients to the toilets

ABOUT THE TECHNOLOGY

- Product Utility: Sahayatha a smart defecation cleansing assistive device for immobile population
- Sahayatha assists the patients in defecation cleansing with inbuilt defecation and cleansing assembly.
- Helps the patients to maintain their dignity with hygiene
- Reduces the patient transfer which occurs to perform their defecation process.

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 5 Lakhs from Social innovation immersion program by BIRAC
- INR 49.75 lakhs grant-in-aid from BIRAC BIG scheme
- Raised INR 48 lakhs fund from DST NIDHI4COVID
- Received INR 1 Cr from All Sharks in Shark Tank

END USERS/CUSTOMERS

- End Users: Elderly, Physically challenged and immobile population
- Customers: Hospitals, Retirement Villas and NGOs

PRODUCT IMAGE



USP

- Inbuilt defecation cleaning assistance
- Maintains hygiene with dignity
- Reduces the patient transfer
- Reduces the negligence associated with repeated manual care
- Nurses /care giver can be more productive and effective
- Hassel free experience
- Independent defecation cleaning and locomotion

ProMor: Moringa based high protein supergrain mix for targeting malnutrition and protein deficiency.

APPLICATION

Easy and quick to prepare one bowl meal option for patients recovering from chronic ailments at home, helping them fulfill their specific nutritional requirements with interesting taste variations.

COMPANY NAME

Renaissance Superfoods Pvt. Ltd.

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (Product commercialized, minor refinement in process)

INTELLECTUAL PROPERTY

Patent No: 202221005643
Patent pending

FOUNDERS' NAME

Swapnil S Muley

PROBLEM ADDRESSED

Disease related malnutrition (DRM) is prevalent in 60% of the patients who recover from chronic ailments. For addressing DRM, there is lack of Indian palate friendly & affordable protein rich food options. Clinical nutrition products available in the market are usually expensive for middle class population and come in the form flavored drink options. Also, patients suffer from malabsorption and hence find it difficult to maintain optimum nutritional status leading to delay in recovery and increased healthcare costs.

ABOUT THE TECHNOLOGY

ProMor, an innovative Moringa based functional food mix for fulfilling specific nutritional needs in convalescent patients and health conscious individuals. The present invention is a novel Moringa based instant cereal mix with pre-processed Moringa leaves and pods which have been subjected to a combination of steam blanching and hot air drying for making powder. The innovation lies in the specific processing technique used for improving the nutrient retention from Moringa leaves and pods in combination for improving relative bioavailability. Other ingredients which include 3 types of millets have been subjected to pre-processing methods to ensure inhibition of anti-nutrients in them and optimal balance of nutrients.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC SIIP grant-in-aid: INR 5 Lakhs
- RKVY-RAFTAR scheme of IARI: INR 25 Lakhs.
- Winner at India Start up Fest 2023.

PRODUCT IMAGE



USP

- Easy to make meal option with improved nutrient absorption.
- High protein supplement with interesting taste variations
- Affordable protein supplement for patients.

END USERS/CUSTOMERS

Patients recovering from chronic ailments at home, all fitness conscious individuals.

Healthcare: Devices

Miknee: A chondroprotective knee health monitoring orthosis for Osteoarthritis Elderly

APPLICATION

A portable Biophysically stimulated Therapeutic device for persons with knee osteoarthritis

COMPANY NAME

Swayogya Rehab Solution Pvt. Ltd.

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Currently under the field trials)

INTELLECTUAL PROPERTY

Patent No: 202011055694

A Granted Design patent on Magnetic Knee brace

FOUNDERS' NAME

Pooja Jha & Vikash Jha

PROBLEM ADDRESSED

Knee Osteoarthritis KOA is a degenerative joint disease that affects 40-50 million adults in India over the age group of 50 or above. The major complaints of persons with KOA disease are joint pain and mobility impairment. Despite of availability of numerous treatment modalities, a large proportion of KOA population suffers from chronic pain and in more severe cases undergoes joint replacement surgeries.

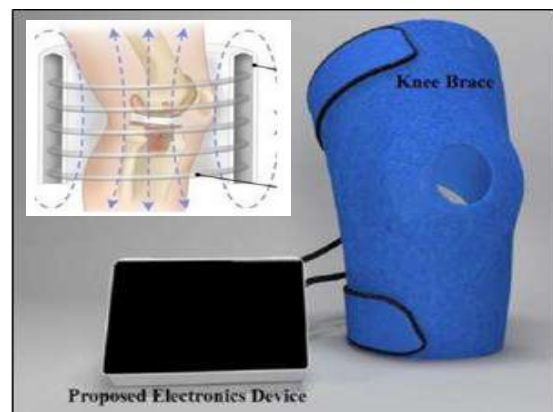
ABOUT THE TECHNOLOGY

This novel technology focused upon a portable, non - invasive medical device with knee orthosis to slow down and monitor the rate of cartilage degeneration in persons with osteoarthritis. To over comes the lacunae by providing a multidimensional approach that consists of a novel knee orthosis coupled with an extremely portable PEMF stimulation technology which will generate chondroprotective effect at knee joint. Additionally, the orthosis is added with knee health monitoring features to quantify pain and mobility parameters. This work also proposes the quantification of the magnetic field intensity for different grades of KOA disease. Consequently, this work aims to design and develop a cost effective, extremely portable and novel knee orthosis for KOA population.

FUNDS RAISED/ACHIEVEMENTS

- Startup Odisha Product development fund-15 Lakhs
- INR 49.8 lakhs grant-in-aid from BIRAC BIG scheme.
- DST Nidhi Prayas Grant of INR 6 Lakhs
- BIRAC BIPP of INR 50 Lakhs

PRODUCT IMAGE



USP

- Lower costs compared to existing players in global market scenario.
- Wireless real time monitoring of the patient's pain using IoT based sensors.
- It's a Non-invasive device which improve functionality with added features to monitor health digitally compare to available treatments.

END USERS/CUSTOMERS

Adults with Knee Orthosis, Patient with Patellofemoral Injuries.

Industrial Biotechnology

Phytofit: a novel functional fermented food concentrate to reduce abdominal obesity

APPLICATION

- Overweight and Obesity
- Nutritional imbalance
- Unaddressed Indian obesity

COMPANY NAME

Aves Foodtech Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Currently under the initial field trials)

INTELLECTUAL PROPERTY

- Provisional Patent filed (App No. TEMP/E-1/64402/2021-MUM)
- Complete patent is ready to file in December 2022.

FOUNDER'S NAME

Mahesh Mansing Patil

PROBLEM ADDRESSED

Lack of scientifically validated food intervention on abdominal obesity in India

PRODUCT IMAGE



ABOUT THE TECHNOLOGY

- Technology developed to reduce existing fat deposited in body as well as to minimize the new fat synthesis due no extra energy consumption.
- Low cost product development technique.
- Food efficiency reducing technology.
- Fermentation technique for higher yield of bio-active compounds.
- Processing technology for more than 1 year shelf-life and free from chemical or preservatives.
- Reduced inactivity of natural compounds problem which exists in currently marked products.
- Cumulative effect of 100 % natural ingredients on fat deposition and gut microbiome.

USP

- 7-10 times affordable than existing solutions.
- Scientifically validated.
- Easy to serve.
- With India's favorite taste.
- Natural and free from side effects

FUNDS RAISED/ACHIEVEMENTS

- BIRAC Social Innovation Fund 2020- 5 Lakhs fund and 9 lakh fellowship
- BIRAC BIG Grant 2022- 50 Lakhs

END USERS / CUSTOMERS

PRIMARY Customer: 58 million Indians who are interested in food intervention for obesity management.

SECONDARY Market: 40-50 million Indians who intend to buy easy to serve, affordable and scientific natural product.

Food Technology

Plantegg- Plant-based Egg Protein Alternative

APPLICATION

- High protein and micronutrients plant based food products that can satisfy atleast 1/3 of RDA.
- Can target on micronutrient and protein deficiency.
- A vegan egg protein alternative that has two times more nutrition than normal egg.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Nutrigenetics Life Science Pvt. Ltd.	TRL: 7 (Pre-commercialization stage)	Trade Mark No. 5228179
FOUNDER'S NAME		
R Harini, R Saravana Kumaran & K Sujatha		

PROBLEM ADDRESSED

- 73% of the Indian population is protein deficient*
- 80% are deficient in one or more micronutrients like iron, vitamin B12, vitamin D, vitamin A and zinc **
- Every day, more than 6,000 children below the age of five die in India. More than half of these deaths are caused by malnutrition-mainly the lack of Vitamin A, iron, iodine, zinc and folic acid.
- India is being a tropical country and India ranks second worldwide in farm outputs. Then why people are nutrition deficient because lack of consumption of proper food.

ABOUT THE TECHNOLOGY

- It's a plant based egg protein alternative.
- Where we have utilised the indigenous ingredients without any preservatives or chemicals.
- Our unique technology helps us in retaining 70-80% of nutrition during our processing.
- **CLHPD Technology**
- Keep the nutrition of plant sources as rich as possible.
- An accurate control for **energy saving** and improvement of the process is presented.
- Retains, volatile, colour

FUNDS RAISED/ACHIEVEMENTS

- BIRAC SIIP Fellowship- 5 lakhs
- NABARD MABIF- 15 lakhs
- Innovation Vochure Program- 2 Lakhs
- Received award from Hon'ble Finance Minister Smt Nirmala Sitharaman as the Emerging startup
- Received FICCI AGRI STARTUP AWARD for best women agritech startup from Hon Shri Kailash Choudhary, Hon'ble Minister of State (Agriculture and Farmers Welfare), Ministry of Agriculture and Farmers Welfare
- Nutrigenetics got selected in top 5 startups in the Regional startup network organized by KIIT-TBI, US Consulate General Kolkata And American Center

PRODUCT IMAGE



USP

- No Preservatives
- No Additives
- No Stabilizers
- No Emulsifiers

END USERS / CUSTOMERS

- Protein deficiency
- Micronutrients deficiency
- Gym personals
- Children's
- Geriatric
- Armed Forces

Assistive Oral Care Device for dependent individuals in homes, hospitals, care homes

APPLICATION

The assistive oral care device is a novel patent pending mouthpiece based oral hygiene device for dependent individuals such as persons with disabilities (certain categories), patient under rehabilitation (such as post stroke care) and long term bed ridden elderly. It also has a wider scope for individuals without any visible disabilities but with increased requirement for oral hygiene (such as persons with malodour)

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
SocioDent Pvt Ltd	TRL: 5 (The fully functional prototype is ready. Initiating for lab and clinical validation for safety and efficacy)	Assistive Oral Care Device For Effective Biofilm Removal In The Oral Cavity
FOUNDER'S NAME Steward Gracian		App No: IN201941017824

PROBLEM ADDRESSED

Poor Oral hygiene/ care of dependent individuals (in homes, hospitals and care homes) leading to various complications.

Burden ~ Individuals with loco-motor disabilities & 6% of all elderly are dependent for basic activities of daily living

Pain Points: Poor oral health, general health complications, Psychological pain of dependence and poor quality of life.

Existing solution: Major Gaps Identified (Inefficient/Non- inclusive/Highly dependent/subjective experience)

ABOUT THE TECHNOLOGY

The device clears plaque/biofilms by a combination of pressurized air and pulsating liquid that is delivered on the surface of the teeth by a specially designed mouthpiece. Users can switch between low, medium high pressure modes for Oral Hygiene based on their convenience.

Key Components

- Specially Designed Mouthpiece (Customized v/s 3-4 universal sizes)
- Integrated air & water pump + Suction component + Smart Controller
- Necessary tubing and accessories with a inclusive User interface

END USERS/CUSTOMERS

- Certain Persons with disabilities (Spinal Injury, Muscular Dystrophy, developmental disorders), Patients under rehabilitation (Eg. Post stroke care), Patients in Hospitals/care homes (Long term bed ridden patients)

PRODUCT IMAGE



USP

- Our major differentiation from existing solutions is the Mouthpiece based inclusive design
- Our value proposition for end users include
- Gradual Independency in periodic oral hygiene with limited dependency on caregivers
- Efficient oral care & prevention of complications (Objective oral hygiene instead of subjective)
- Increased quality of life from optimal oral hygiene

FUNDS RAISED/ACHIEVEMENTS

- BIRAC SIIP Fellowship (2018-2019) - Mini Kick start Grant of 5 Lakh - Idea to POC
- BIRAC BIG Grant (2020-2021) of 48.95 Lakh- POC to Prototype
- IITMIC seed Grant of 10 Lakh – Prototype to Validation
- Winner of Tide 2.0 Pulse Innovation Challenge by SIIC IIT Kanpur of 10 Lakh

Healthcare: Devices

Building An Ecosystem For Mushroom Supply-chain By Increasing shelf-life and detecting the freshness using AI Technology

APPLICATION

AI & IoT led ecosystem for mushroom supply-chain from FARM to RETAIL

COMPANY NAME

Dhithi Nutrition Private Limited

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5

INTELLECTUAL PROPERTY

In progress

FOUNDERS' NAME

Asha Rani

PROBLEM ADDRESSED

Low Shelf life, lack of health awareness and lack of supply-chain technology for mushrooms is a major concern as there is increased amount of wastage when farmers don't find the ready market

ABOUT THE TECHNOLOGY

First-of its kind supply-chain ecosystem for mushrooms. It involves optimization of UV Irradiation at specific wavelength and time of exposure, combination of edible oils and organic acids will be evenly sprayed in an optimized condition inside the chamber facility and with Packaging material of 3-6 kg capacity. The current approach is to Connect with farmers and SHG to encourage them growing mushrooms by supplying spawns with buy-back option with extended shelf-life and enhanced Vitamin D of mushrooms

FUNDS RAISED/ACHIEVEMENTS

- BIRAC SPASRH-SIIP Fellowship and 5 Lakhs prototyping grant

PRODUCT IMAGE



USP

- Lower cost storage and transport without cold storage
- Involvement of farmers
- Additional income of farmers and rural women leading to socio-economic developments.

END USERS/CUSTOMERS

- Sale of mushrooms directly to local vendors without shelf-life extension
- Supply of quality spawns to farmers with buy-back option

Healthcare: Devices

BAGMO ; IOT ENABLED BLOOD BAG MONITORING SYSTEM APPLICATION

A decision making system for haemovigilance practices

COMPANY NAME

BAGMO PRIVATE LIMITED

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Beta product is launched in the market)

INTELLECTUAL PROPERTY

Patent Applied

FOUNDERS' NAME

ASHFAQ ASHRAF & ANAS D

PROBLEM ADDRESSED

In rural India, inadequate blood availability leads to critical delays in patient care, causing preventable deaths. Despite existing infrastructure and resources, two women lost their lives due to blood shortage in a Kesinga district health center during one of our visit. High maternal mortality rates, exacerbated by lack of timely blood transfusions, demand urgent solutions. Our company envisions enhancing blood accessibility in rural areas to counter maternal mortality and anemia-related complications. Addressing logistical challenges and storage reliability, we aim to establish efficient blood storage centers for improved maternal healthcare.

ABOUT THE TECHNOLOGY

Our IoT-enabled Blood Bag Monitoring System utilizes RFID technology to monitor the storage conditions of blood bags during transportation and storage. With our solution, we can track the quality of each blood bag, ensuring vein-to-vein traceability from donor to patient, and end-to-end tracking. By implementing our system, rural and remote areas will have access to a steady supply of quality-assured blood. It is designed to cater to both private hospitals and government-level blood centers. The integration of Machine Learning and other advanced technologies enables authorities and doctors to make informed decisions regarding blood donations and data analysis with ease.

FUNDS RAISED/ACHIEVEMENTS

- Biotechnology Industry Research Assistance Council (BIRAC) Biotechnology Ignition Grant (BIG) Award - 47.28 Lakhs
- BIRAC Small Business Innovation Research Initiative (SBIRI)
- Grant from Kerala Startup Mission - Rs 7 Lakhs
- Qualcomm - QDIC 2020 - 3.2 Lakhs
- Qualcomm - QDIC 2020 - Patent Incentive - 1.6 Lakhs
- GCI Medtech - 3 Lakhs
- Nidhi Prayas - 4 Lakhs
- BioCyTiH - 14 Lakhs

PRODUCT IMAGE



USP

- No unsafe blood reaches the patient.
- Increase availability and reduction in wastage.
- Traceability & accountability
- Quality Assurance & Hemovigilance

END USERS/CUSTOMERS

Public & Private Hospitals, Blood Banks/Storage Centres

Products Commercialized



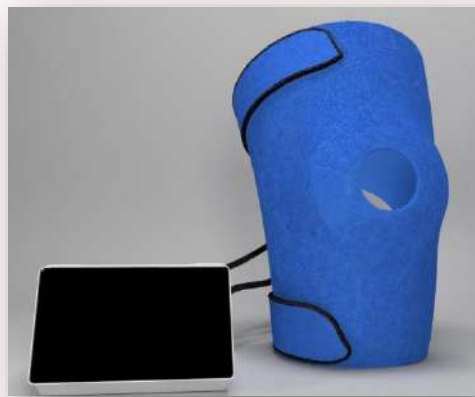
Prantae: Proflo-U (Self-Health Monitoring Kit)



Dhanvantri Biomedical: Sahayatha (Smart Defecation Cleansing Assistive Wheelchair For Immobile Population)



Amritattava: Nutrient enhanced Cashew Apple Powder



Swayogya Rehab: Miknee: A chondroprotective knee health monitoring orthosis



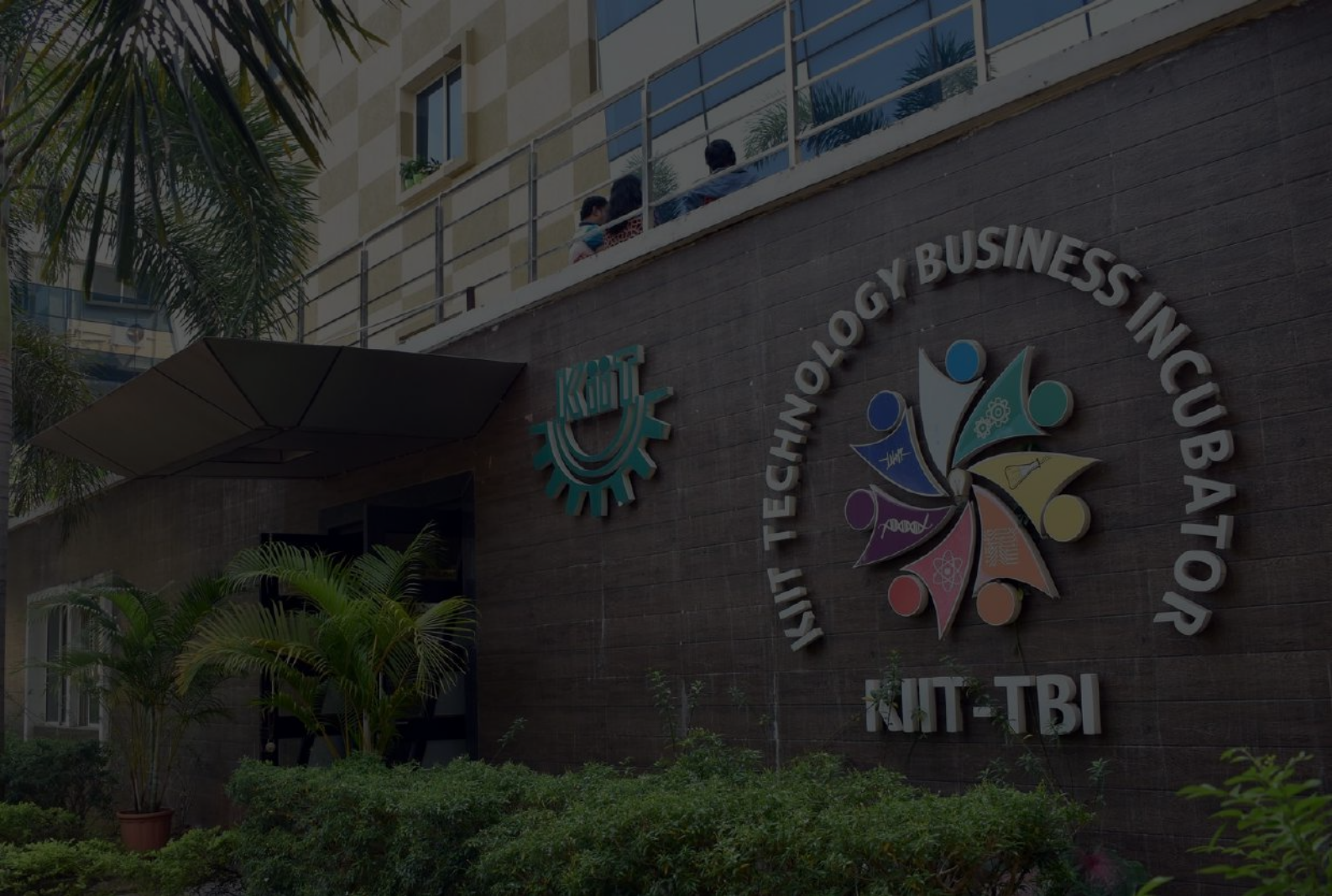
Renaissance Superfoods: Contemporary breakfast options for the health deprived from traditional plant based superfoods



Sociodent: Assistive Oral Care Device



Nutrigenetics Lifescience: Plant-based Egg Protein Alternative



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