KIIT Technology Business Incubator

KIIT-TBI

Portfolio Spotlight

www.kiitincubator.in

Content

Industrial Biotechnology: Process/Product

Industrial Biotechnology: Water & Sanitation

Industrial Biotechnology: Waste Management

AI & Electronics

Clean Tech

COVID

Defence

NE Innovators

Technology Readiness Level

Proof of Concept Established (TRL: 3-4)

Prototype/ Process Developed (TRL: 5-6)

Validation/Testing (TRL: 6-7)

Commercialization (TRL: 8)

Sector
Agriculture

Agriculture

Portable Cold Storages with Proprietary Phase Change Material for Cold Supply Chain

APPLICATION

The eutectic solution has a lifespan of 500 cycles. From the business model point of view, it would replace the thermal batteries after the specified time at a minimal cost. This technology has applications in field of logistic solution for agricultural products, food products and beverages, drugs and vaccine supply.

COMPANY NAME

TAN90 THERMAL SOLUTIONS PVT LTD

FOUNDER'S NAME

Soumalya Mukherjee

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The product Is in commercialization stage)

INTELLECTUAL PROPERTY

Fast freezing of PCM Aat -4 degrees centigrade

Patent No: 201941028298

PROBLEM ADDRESSED

Given the COVID19 scenario, the demand for refrigerated transport and storage exploded globally, with customers preferring retail food to restaurants. Hence, it is important for building infrastructure that can limit the food wastage along the supply chain and cold storage is one of the solutions. However, in most cases, a centralized cold storage model is followed where farmers and aggregators have to come to local cold storage. This model leaves out a majority of the small scale and marginal farmers.

ABOUT THE TECHNOLOGY

This invention focused on portable cold storage capacity of 58 liters that are run by proprietary thermal batteries. As compared to other solutions available in the market, the proposed thermal batteries can be charged twice as fast, resulting in giving our users a faster turnaround time. Since, each of the boxes have self-standing cooling solutions, they can be stacked on top of each other and any logistics services can be used for transporting temperature-sensitive perishables. It can be a two-wheeler, three-wheelers or even scaled up in trucks. This negates the need for refrigerated trucks and reduces the operational costs by 32. In order to further increase the shelf life of the perishables, Tan 90 is introducing a hydantoin based anti-microbial polymers that can increase the lifetime of the perishables without a cold solution. This will further decrease the operational costs involved.

END USERS/CUSTOMERS

- Agricultural practitioners, Food industries, Govt. agencies

PRODUCT IMAGE

USP

- Portable storage capacity.
- Gets frozen thrice as fast as compared to existing product.
- Portable cold storages can extend the shelf life of greens to 2.5 to 3 days in transit.
-
- Being modular, users can stack these boxes and convert any room or vehicle to cold storage infrastructure.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Equity fund from INVENT Program and Social Alpha worth INR 90 lakhs
- Received CSR funds worth 60 lakhs from CISCO and CINI (IAIN)
- Raised INR 5 Cr from Blue Ashva Capital and 3i Partners

Agriculture

Intelligent waterbody management system for water body rejuvenation and inland shrimp aquaculture

APPLICATION

The project have huge application in rejuvenating the water bodies, brackish water inland aquaculture, urban water body rejuvenation.

COMPANY NAME

Bariflo Labs Pvt Ltd

FOUNDER'S NAME

Mrutyunjaya Sahu

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The MVP is ready and deployed at various sites in association with Govt. of Telangana)

INTELLECTUAL PROPERTY

PCT Application No.
PCT/IN2021/050611

Indian Patent Application No.
202031026797, 202031026796, 201831031000, 34443-(1-6)

PROBLEM ADDRESSED

The approach of novel invention focused on farmers who are unable to produce a profitable output because of hypoxic circumstances caused by excess feed and excreta accumulation in the sediment in moderate density shrimp farming. Also, traditional farmers use a time-consuming manual procedure of tying a rope in the middle of a pond and spraying feed by traveling around it in a dinghy, which prevents farmers from providing feed precisely in the habitable space. To address the issue, an intelligent mobile multipurpose feed spraying dispenser AIMSD for feeding shrimps and probiotic administration in a livable space has been developed.

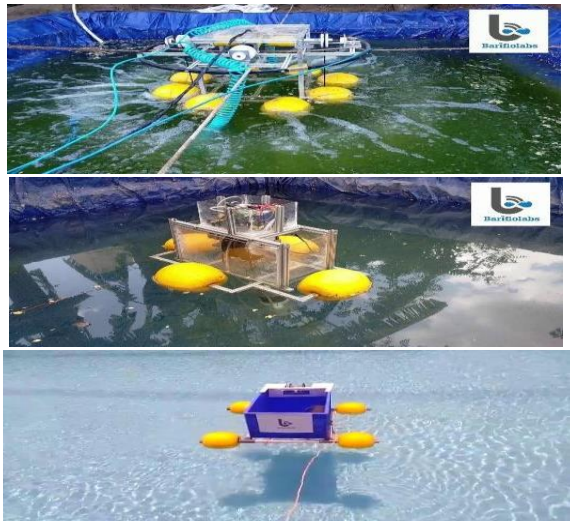
ABOUT THE TECHNOLOGY

The invention discloses an intelligent maneuvering hypolimnetic aerator with an internet of things monitoring system that can autonomously navigate to different coordinates and aerate the hypolimnetic region of a water body to improve dissolved oxygen demand (DO) and thus maintain water quality standards.. The data so transmitted can be used to rebuild a 3D image of the bathymetry, temperature distribution, DO distribution, and ORP distribution of the waterbody. Furthermore, the aeration system oscillates vertically in a sinusoidal way, resulting in the generation of standing waves horizontally, resulting in wave propagation to transmit DO farther from the device position and It also improves mixing at the sediment-water interface, allowing DO to penetrate into the sediment.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG worth INR 50 Lakhs
- Raised BIRAC SEED fund worth INR 25 lakhs
- Received DST NIDHI PRAYAS worth INR 7 lakhs
- Received MeitY TIDE 2.0 Grant worth INR 7 lakhs
- Received MeitY SASACT worth INR 20 lakhs
- Received Startup Odisha Fund worth INR 15 lakhs
- Received RKVY RAFTAAR Grant worth INR 20 lakhs
- Recognised as top 10 Agri-startup in Agri-Udaan

PRODUCT IMAGE



USP

- Intelligent Sediment aeration system
- Intelligent weather and water quality monitoring system
- Intelligent nutrient control module
- Auto-corrected dissolved oxygen, Un-ionized ammonia, phosphate sensors, carbon dioxide, methane sensors
- Disease and water quality prediction DSS

END USERS/CUSTOMERS

- Brackish water farmers
- Freshwater aqua farmers
- FPOs
- Contractors

Agriculture

CHMS: Cattle Health Monitoring Solution

APPLICATION

Flixdrop Technology is progressive startup based in Bangalore, working in dairy digitization technology and looking for eco-system support to impact Indian farmers increasing farm yield.

COMPANY NAME

Flixdrop Technology Pvt Ltd

FOUNDERS' NAME

Dharmendra Kumar
Uttiya Mukherjee

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The MVP is ready and is in commercialization phase)

INTELLECTUAL PROPERTY

Cattle Health Monitoring System
App No: 2021201IN-CS

PROBLEM ADDRESSED

Breeders face huge amount of loss every year due to rising health problems and diseases in their cattle. India has the largest cow population with lowest milk productivity due to lack of heat data and ineffective breeding. Lack of technology identifying disease leads to many problems like – lesser cow reproductivity, lack of cow health information, very low lifespan of cows, etc. Hence, constant cattle health monitoring is an important step towards better productivity of the cattle breeders.

ABOUT THE TECHNOLOGY

Smart collar – IOT based cattle health tracking and insight generation regarding cattle health. Thereby taking right decision like on time insemination, Vet consultation to increase milk yield per animal. The ecosystem platform enables smoother communication of marginal farmers with Insemination Specialist, Doctors, Nutritionist etc. A highly affordable device matching global accuracy of Precision Cattle Farming domain. CHMS uses a multi-metric analysis on each individual cows behaviour enabling more accurate and timely heat detection.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC LEAP fund worth INR 50 lakhs
- Seed Round: 1.02 Cr on Jan-2021
- Bridge Round 1 Cr on Feb 2022

END USERS/CUSTOMERS

B2B: Private large & small dairy farms, Agricultural universities, NGOs, etc.

B2G: Govt Gaushalas, Govt Undertaken bodies, etc.

PRODUCT IMAGE

USP

- Pre-breeding, CHMS identifies both cystic and non-cycling cows enabling early intervention and treatment.
- CHMS monitors a cows feeding and nutrition/feed behaviour, compares this to her usual behaviour and to that of the rest of the herd.
- The CHMS application runs on your smart phone, desktop or tablet 24/7 from anywhere
- Friendly User Interface built with Native Indian languages
- Interactive performance Dashboard

Agriculture

Innovative Multi-crop seed drill for sowing during the cultivation for small & Marginal Farmer

APPLICATION

The innovative seed sowing farm machinery can be used for seed sowing of pulses like – ground nut, black gram, Bengal gram, white gram, etc. It is also very effective for maize and dal related crops.

COMPANY NAME

Balasore Agro Pvt Ltd

FOUNDER'S NAME

Manoranjan Das Adhikari

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The final MVP is ready and currently the product is under extensive field trials)

INTELLECTUAL PROPERTY

An Indian Patent has been filed on Single row Multicrop seed drill (App No: TEMP/E1-5608/2019-KOL)

PROBLEM ADDRESSED

At present the marginal farmers and cultivators sow the seed by hand scattering the seeds as a result no line and space is maintained between the trees and crop plants leading to reduced oxygen and nutrient level in the soil and hence lead to low yield and huge financial loss. Furthermore, the small marginal farmers are sowing groundnut by bullock drawn plough which is a tedious, expensive and more time consuming activity. Big seed drill is utilize for the sowing of pulses where the people should have large area to operate by the tractor drawn seed drill.

ABOUT THE TECHNOLOGY

Balasore agro private limited is developing a Single row multicrop seed drill (a seed sowing machine) for groundnuts, maize & dal seeds to sow in crop field. This Single row multicrop seed drill machine helps to keep seeds in a line & proper space which leads to higher yield. This machine will help those farmers who sow seeds by hand scattering resulting improper space between seeds ultimately leads to lower yield & financial loss. The user friendly seed drill costs INR 6000 – 7000 which perfectly targets the marginal farmers.

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 49.48 lakhs grant-in-aid from BIRAC BIG scheme.
- Raised INR 15 lakhs grant-in-aid from startup Odisha Product Development and Marketing fund.

PRODUCT IMAGE

USP

- Breakage and (Pilling of the skin of the groundnut) is very less upto 0.5%
- One acre of land can be sown by two person within 4 -5 h. Hence, less time consuming.
- Affordable to farmers and user friendly operations
- Seed to seed space & depth is adjustable
- Can be utilized by both manual (hand) and bullock

END USERS/CUSTOMERS

Small and marginal farmers, NGOs, Govt agencies

Agriculture

Krishi PS-1925® - Drone for Climate-Smart Agriculture and Precision Spraying

APPLICATION

The drone can be used for Climate-Smart Agriculture Procedures and Precision Spraying.

COMPANY NAME

Droaerody Pvt Ltd

FOUNDER'S NAME

Paawan Kumar

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Currently working on Standardization of Drone Sprayer (Aerial Applicator) for Optimization of Spraying Parameters. Prototype is ready)

INTELLECTUAL PROPERTY

Indian Patent has been filed
App No: 202111018129

PROBLEM ADDRESSED

Around 36,000 million US Dollars of annual crop yield loss is witnessed in India due to pest attacks. Farmers do not get labor on time due to which the crop productivity is significantly affected. Farmers also face health issues due to prolonged exposure to crop protection chemicals. Also, due to uninformed decisions, farmers over-utilize tons of crop protection chemicals and water. For these 4 problems, we have 1 solution – "Krishi PS-1925" – Drone for climate-smart agriculture and precision spraying.

ABOUT THE TECHNOLOGY

Our objective is to develop a standardized drone (aerial applicator) based on optimal pesticide dispersal system parameters (based on experimentation and calibration of the designed aerial application equipment) capable of precision spraying and which can reduce drift and off-target drift movement, incorporating the effects induced by dynamic surface tension, extensional viscosity, shear viscosity, temperature inversion, optimum time to make an aerial application, optimum airspeed combined with pump output pressure for larger droplet diameter, and external factors that affect spray droplet size and drift based on American Society of Agricultural and Biological Engineers standard. We will incorporate variable-rate pesticide application via aerial applicator for precision spraying that will incorporate ICT technologies based on AI. Calibration of the designed aerial application equipment) capable of precision spraying and which can reduce drift and off-target drift movement.

FUNDS RAISED/ACHIEVEMENTS

- Boeing University Innovation Leadership Development (BUILD) Program 2019 - $10,000 USD
- Cisco Global Problem Solver (GPS) Challenge 2020 - $10,000 USD
- Funded PoC for Filaha Innovation Program, powered by AgriEdge & the OCP Group, in Morocco.
- BIRAC BIG Call 19 Grant Awardee – 50,00,000 INR (approx. 70,000 USD), powered by DBT, BIG partner – a-idea NAARM
- NIDHI EIR Fellowship Awardee, supported by KIIT-TBI
- Facebook Small Business Grant – 1,00,000 INR
- Canada-India Acceleration Program 2018 – Top 10

PRODUCT IMAGE

USP

- Modular Drone for Multi-Crop Application and Multi-purpose application (nutrients, fertilizers, seeds, and pesticides).
- Modular Drone with lightweight structure.
- Sturdy drone tested with High Altitude Drop Test (HADT)
- IP67 Protection

END USERS/CUSTOMERS

- Large (>10 ha), Medium (5-10 ha), Semi-Medium (1-5 ha) Landholding Farmers – Direct Sales (B2C)
- Govt. agencies/agriculture institutes/stakeholders – Tenders (B2G)
- Agri Inputs Manufacturing Companies (B2B)

Agriculture

krishiBOT- A smart Agriculture robot

APPLICATION

Precision agriculture to revolutionize the pre harvest operations by reducing the farmer's dependency on Manual labour and Optimize resources. krishiBOT can be used for sowing seeds, fertilizer application and weeding.

COMPANY NAME

Terracroft Agritech Pvt Ltd

FOUNDER'S NAME

Vaibhav Thacker

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (krishiBOT is being tested in farm for groundnut crop at University of Agri Sciences, Bangalore. Next step is to complete the testing and fabricate 5 krishi BOTs that will be deployed in different parts of the country as a soft launch.)

INTELLECTUAL PROPERTY

Patent for Integrated device in process

PROBLEM ADDRESSED

Growers worldwide face serious challenges of workforce shortage, increasing production costs, and reducing crop yields, preventing them from meeting their full farm potential.
As confirmed by our on-site research with 1000+ growers, factors that contribute to the drastic reduction in the Agri-outcome are:
1. Lack of mechanization.
2. Unavailability of labor during peak requirement.
3. Higher input costs due to wastage of seeds, fertilizers, etc during sowing/input on field.
Due to unavailability of machinery during peak requirement, growers rely heavily on labour. This results in unscientific practices.

ABOUT THE TECHNOLOGY

We are developing krishiBOT, a battery-operated, Intelligent workforce for efficient farming. It features precision mechanisms for 1. Seed Sowing, 2. Fertilizer application, 3. De-weeding. Krishi BOT will reduce the dependency on labour and make farms efficient by optimizing resources and improving crop productivity. Krishi BOT sows and covers every single seed at the targeted position, allowing uniform and optimal sowing densities. After the seed is sown, krishiBOT will also cover the seed and compact the seed as this is a crucial task. It applies optimized amount of fertiliser and protection to every crop. Using CV and ML, krishiBOT enables weed identification, isolation and apply corrective measures.

FUNDS RAISED/ACHIEVEMENTS

- INR 25 Lakhs as equity investment
- INR 21.25 Lakhs from HDFC grant
- INR 6 lakhs as grant (NIDHI Prayas)
- INR 25 Lakhs as loan (converted to equity at later stage)

PRODUCT IMAGE

USP

- Cost effective
- Optimizes resources.
- Singulation and optimization of inputs (seeds, Fertilizers, etc).
- Automated applications using Machine Learning that works close to zero error.
- Modular attachments that increase usability of krishiBOT.

END USERS/CUSTOMERS

- Small and Marginal farmers
- Large farmers
- Farming community where labour is not sufficiently available

Agriculture

Blockchain Technologies based Farm Management System

APPLICATION

End-To-End traceability of Livestock Product, Secure, simple & trusted way to share Livestock records among parties/participants, Breed records for productive litter size, Feed records for proper calculation of Feed Conversion Ratio, Vaccination records for disease control, Biosensor to monitor health and behavior, Training and Vet support to promote entrepreneurship, Better monitoring of implementation of public polices (Livestock Insurance) by the Government.

COMPANY

Jal Jaivik Pvt Ltd

FOUNDER'S NAME

Papan Das

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (IoT & Block chain implementation in progress)

INTELLECTUAL PROPERTY

IP filing process under progress

PROBLEM ADDRESSED

Pork industry is worth $399 Bn & is expected to reach $ 464 Bn by 2027 globally. India could only contribute less than one percent of total consumption. Moreover India has been importing pork to meet internal demand. Due to a weak farm management system, weak supply chain, unorganised market facilities, lack of traceability of the animal & meat product, lack of training & vet support to the farmers and social stigma, the piggery sector is facing severe problems.

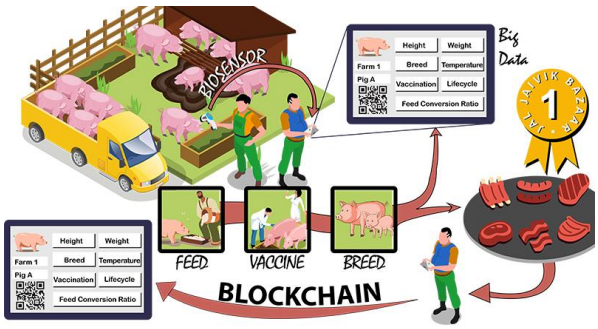
ABOUT THE TECHNOLOGY

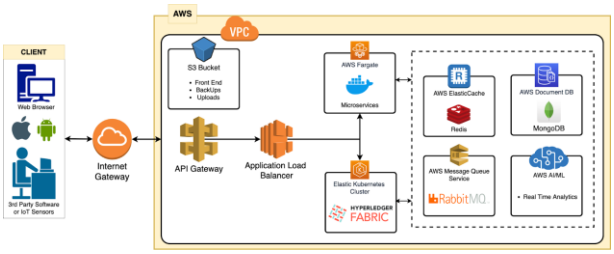
Our purpose is to transform traditional animal farming into 'state of the art' digitising animal agriculture with Precision Livestock Farming (PLF) technologies, specifically biometric sensors, big data, and blockchain technology. Biometric sensors include either noninvasive or invasive sensors that monitor an individual animal's health and behaviour in real time, allowing farmers to integrate this data for population-level analyses. Real-time information from biometric sensors is processed and integrated using big data analytics systems that rely on statistical algorithms to sort through large, complex data sets to provide farmers with relevant trending patterns and decision-making tools. Sensors enabled blockchain technology affords secure and guaranteed traceability of animal products from farm to table, a key advantage in monitoring disease outbreaks and preventing related economic losses and food-related health pandemics.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 15 lakhs in grant from Startup India Seed Fund Scheme.
- Awarded the Best Blockchain Startup by STPI, under MeitY, GoI, at Convergence India Expo held at Pragati Maidan, New Delhi from 23- 25 March 2022

PROCESS FLOW





USP

- Monetarily Benefits to Livestock Farmers.
- Improved Efficiency.
- Mental Peace.
- Social Benefit.

END USERS/CUSTOMERS

Animal husbandry Industry in India, particularly the Piggery Sector: Pig Farmers, Traders, Shop Owners

Agriculture

Rhizosphere Microbiome Engineering of Chickpea for Drought Tolerance: Development of Seed Priming Delivery System

APPLICATION

The unique strategy of optimizing the rhizosphere to limit crop productivity can help overcome productivity limits in drought-prone areas and can be aid in other crops & soil health management.

COMPANY NAME

SRI BIOAESTHETICS PVT LTD

FOUNDER'S NAME

KRK Reddy

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **4 (Currently optimizing the fermentation process for selected strains)**

INTELLECTUAL PROPERTY

IP filing is under progress

PROBLEM ADDRESSED

Indians rely heavily on chickpea (Cicer arietinum) as a protein source. Chickpea yields are reduced by more than half due to terminal drought stress. It interferes with critical physiological and biochemical activities such as photosynthesis, CO2 availability, cell development, respiration, stomatal conductance, and other cellular metabolisms. Furthermore, drought stress in chickpea causes the plant to become physiologically weak and sensitive to disease assault, resulting in either plant mortality or yield loss. As a result, it is proposed to create a seed priming microbial delivery system based on local isolates with specialized activities for reducing drought stress in chickpea.

ABOUT THE TECHNOLOGY

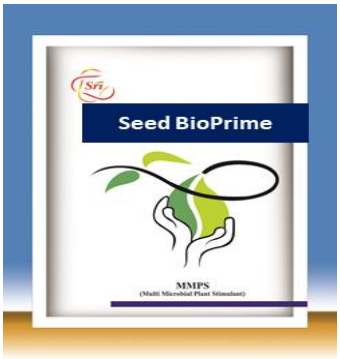
The unique approach centered on designing (assembly) well-characterized bacterial strains as a delivery system to prime the seeds in order to optimize the rhizosphere microbiome to endure drought stress conditions throughout the chickpea life cycle. Because the suggested seed priming delivery system has the potential to significantly increase chickpea crop productivity under severe climatic circumstances, the technology platform can be applied to other crops.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 49.25 lakhs

PRODUCT IMAGE

Seed BioPrime



USP

- Rhizosphere optimization through microbiome engineering
- The essential microbial components in delivery system used for seed priming
- Approach is novel, user-friendly, and prophylactic
- The technology platform can be applied for other crops too

END USERS/CUSTOMERS

- Agri-input dealers or distributors.
- B2B with seed companies & other corporates

Agriculture

Affordable sexed semen technology for successful dairy farming

APPLICATION

Adit Bioscience Pvt. Ltd. are developing an alternate technology that aims to attain higher conception rate with better quality enriched sexed sperms separated through a non-invasive and with greater accuracy procedure to deal with low productivity & poor breeding management faced by diary industry now-a-days.

COMPANY NAME

Adit Bioscience Pvt Ltd

COMPANY NAME

Anuja Patnaik

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Potential biomarkers are identified and tested for selecting high fertile indigenous bulls)

INTELLECTUAL PROPERTY

Indian Patent has been filed
Application no. 202021016176

PROBLEM ADDRESSED

Though India is the world's largest milk producer, our dairy sector faces two major problems: low productivity and poor breeding management. Acceptance of artificial insemination is still 30-40% due to the uncertainty of getting an unwanted male calf. Sexed semen straws holds promise to address this issue. However, the current form of technology is highly patented in the developed countries. It involves fluorescence activated cell sorting (FACS) of sperm DNA to separate X-sperm from Y-sperm, where the difference in DNA content is only 3 to 4%. The technology is invasive, highly expensive, requires high skilled labor, and time consuming. Thus, the cost of the imported sexed semen is highly expensive for small and marginal farmers even after government subsidy. So there is a need to develop next generation affordable sexed semen technology that can separate X or Y sperm non-invasively.

ABOUT THE TECHNOLOGY

We are developing an alternate technology that aims to attain higher conception rate with better quality enriched sexed sperms separated through a non-invasive and with greater accuracy procedure. We plan to make use of sex specific maker proteins expressed in sperms and tag them with a nanoparticle-conjugated antibody. Subsequently, the desired population (X or Y) will be physically enriched based on the affinity purification technique suitable for the nanoparticle used. Our technique will not require any expensive equipment and can be added to already existing semen collection centers and frozen semen bank at a fraction of the cost compared to current practice

END USERS/CUSTOMERS

Farmers using artificial insemination breeding technology. Dairy fertility screening centers, etc

PRODUCT

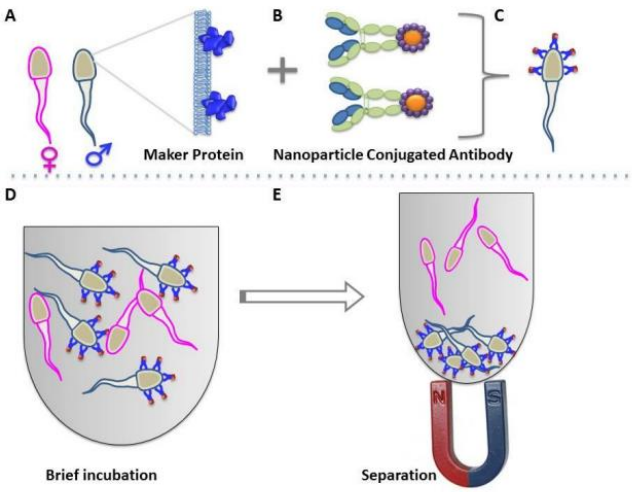


Fig.1 Schematic presentation of affinity separation technique for mass enrichment of sexed spermatozoa: (A) First step involves identification of marker protein expressed exclusively in X or Y sperms. (B) Identification/development of high affinity antibody with Fc region tagged to a magnetically active nanoparticle. (C-D) Incubation of raw semen with sex specific antibodies (E) Separation/ mass enrichment of desired sperms.

USP

- Faster & more efficient process than FACs
- Non-invasive method
- Does not require highly skilled manpower
- Cost efficient process with INR 200/dose
- Purity of ~99%
- Indigenous Technology

FUNDS RAISED/ACHIEVEMENTS

- BIRAC BIG-08 Call. Funds received: 50.00 Lakhs
- External Funding: 1.37 Cr
- Emerging Woman Entrepreneur of Odisha recognized by Startup India, Startup Odisha & KIIT-TBI 2020
- Selected for GES Summit 2018
- Media coverage by SPAN, New Indian Express, News7 and DDOdia

Agriculture

A Novel Eco-friendly process to induce the silkworm to produce naturally colored silk fiber of desired choice with increased yield

APPLICATION

This project mainly thrives to reduce the usage of carcinogenic synthetic colors that are being used during reeling and dyeing process. A novel technique of forced induction of planar silk is developed which can be exported where there is a requirement of virgin silk and for aesthetic applications.

COMPANY NAME

Krimmi Biotech LLP

FOUNDER'S NAME

Deepak Bajantri

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (Designed and Developed a novel planar silk spinning device. Standardization is in process)

INTELLECTUAL PROPERTY

Complete Patent Application
App No:202041055270

Provisional Patent Application
App No: 202041055312

PROBLEM ADDRESSED

There is a heavy usage of carcinogenic synthetic colours in reeling and dyeing processes in Sericulture industries which is having a detrimental effect in the environment. Moreover a lot of water is being wasted in the traditional dyeing processes. There is a need of new and advanced processes for silk production and dyeing.

ABOUT THE TECHNOLOGY

The current invention relates to the process of obtaining a naturally colored silk by incorporating natural pigments from plant origin which also acts as a plant silkworm growth promoter. The intended product is provided in a vial which can be mixed with water and spread on the mulberry leaves. These leaves are fed the silkworms during last three days of spinning. The source of pigment, molecular weight and the size are identified for two colors. Through this project we intend to develop various other colors of silk which can be produced by farmers. Through this technique we are also able to increase the larval duration of the silkworm which in turn increases the cocoon yield, cocoon shell ration and higher filament length. In addition to this, it is also observed that the current the cocoons fed with natural colours like lutein, curcumin can be used in various sector like biomedicals, wound healing, undergarments etc. This process can save more than 60 percent of water being used in the conventional dyeing processes. This technology also eliminates the usage of synthetic dyes which leads to environmental pollution. As a remedy to the current downfall in the cocoon prices, the proposed product increases the larval duration of the silkworm which in turn increases the cocoon yield, cocoon shell ratio and higher filament length.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received BIRAC SBIRI Scheme
- Received KBITS, GoK-Idea2Poc scheme

PRODUCT IMAGE

Pomogranate Peel

Rhodamine

Rubiya tinctorum

Turmeric

USP

- The cocoons of desired choice spinned on spot without any artificial ingredient.
- The silk is forced spun into a planar structure thereby reducing the process of reeling, dyeing and spinning.
- The proposed silk can be value enriched for biomedical applications, undergarments, sports wears etc through this technique.
- The technique can be implemented at the farmers site with minimal labour and without any high tech or high cost equipment.

END USERS/CUSTOMERS

- Farmers involved in sericulture, Reeling and textile industries. Revenue Model: Contract Farming, Bulk marketing, FPO's, Retail chain supply, Export

Agriculture

Management of Crop Diseases via Drone Assisted Detection of Pheromones and Kairomones in a Cotton Farming Land

APPLICATION

This project mainly focuses on the development of a drone based crop disease management technology consisting of highly sensitive and specific nanosensors (attached to the drone) for the detection of Pheromones and Kairomones in air during pest infestation and spraying the right amount of pesticide in accordance with level of infestation at the affected area of the cotton farm.

COMPANY NAME

GR Agritek Labs Pvt Ltd

FOUDNER'S NAME

Raghu Burli N

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **5 (Crude MVP generated with integration of nanosensors which depicts wind velocity, sensitivity and height of drone)**

INTELLECTUAL PROPERTY

Indian Patents applied:
IN 2014CH05166 A 20160701
IN 2014CH05201 A 20160701
IN 2015CH03696 A 20170120
International Patents :
WO 2016/059641 A1 (Europe)
WO 2018/134832 A1 (Europe)

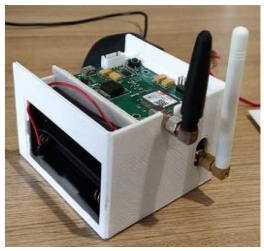
PROBLEM ADDRESSED

India is world`s one of the largest producer of cotton which is approximately 25% of the total worlds cotton production. In recent years pest infestation has emerged as a major concern for the cotton farmers resulting in damage of crops yield around 15-20 % every year. Lack of timely and appropriate management initiatives has led to continuous proliferation of these disease mediated by fungi, bacteria, aphid, armyworm and pests. Besides, farmers have no other way other than relaying on the physical labour of pesticide spray to keep the pests in control to protect their cotton crop. Similarly the fungicides/bactericides are also harmful for the farmers. Hence there is definitely a pressing need for technology to address this application of pesticides/fungicides/bactericides by totally avoiding the use of human labour & thereby protecting the life of our valuable farmers.

ABOUT THE TECHNOLOGY

The proposed technology focuses on the development of a crop disease management system using a drone assisted simple, selective yet quantitative detection of various Pheromones and Kairomones during pest infestation in cotton farms. Further the drones with nanosensors are capable of detecting the level of infestation based on the collected data analysis and software mapping. Based on the data and infestation level, the drone could apply the exact required amount of pesticide/fungicide/bactericide to the infected area of the infested cotton farm by spraying method. This technology is also targeted to eliminate the use of human labour and therefore the dangers of exposure to harmful pesticides/fungicides/bactericides is totally prevented saving lives of farmer community.

PRODUCT IMAGE



USP

- There is no such technology available in the entire world giving such simple and technology based solution for the selective and quantitative detection of pheromones and Kairomones, which will ultimately lead to the controlled application of harmful pesticides/fungicides/bactericides.
- The technological combination of different pheromone, Kairomone detection, data collection, analysis, mapping and application of required amount of pesticide is an unique and novel concept.
- The possible exposure to the hazardous chemicals could be eliminated

FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG worth INR 49.96 Lakhs
- BIRAC NIDHI PRAYAS Scheme, Funds received: 6 lakhs

END USERS/CUSTOMERS

- Farmers, various NGOs, cooperative societies, farmer communities, local governments

Agriculture

Soilscope: Point-of-Use rapid nutrients testing and soil health analyser

APPLICATION

The device will help rural farmers, urban farmers, urban gardeners, domestic gardeners, research labs, university students to know the exact quantity of their nutrients in the soil. The device not only measures the amount of nutrients but also analyses all the measured quantity which provided an overall soil health condition.

COMPANY NAME

Upsoil Technologies (OPC) Pvt Ltd

FOUNDER'S NAME

A. Soumya Rao

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The prototype is ready and the Testing and analysis of the prototype; Refining the design by comparing to the existing methods and reiterating the prototyping has been achieved)

INTELLECTUAL PROPERTY

IP Filing process is under progress

PROBLEM ADDRESSED

There is an absence of reliable and affordable soil testing solution. There is a market gap in prolonged lab testing and simple soil nutrient measurement in the fields. Also there is no such device for a quick estimation of nutrients in the soil accurately and making that soil testing data understandable to the farmer in a way so that he can take the necessary steps to improve production.

ABOUT THE TECHNOLOGY

The objective of Soilscope is to measure nutrient content a range of chemical elements such as N, P, K, Ca, S, Mg as well as other properties such as pH, Conductivity, Moisture content, Temperature of soil. Most of the chemical elements and pH can be detected from the microfluidic sensor through spectroscopy. While conductivity, moisture content can be measured using a dual metal oxide conductive probe. Soil pen improves productivity, minimizes cost incurred on land preparation and nutrient substitute which directly improves the profitability of each farmer.

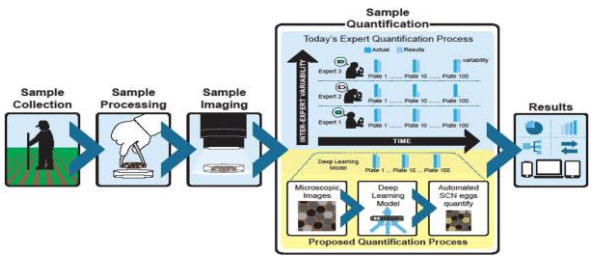
FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG - 49.45 Lakhs
- Millenium Alliance Award, Agritech – 30.00 Lakhs
- Social Alpha Agritech winner – 30.00 Lakhs
- CIIE-IIM Ahmedabad – 5.00 Lakhs (SEED Fund)
- Millenium Alliance - 5 Lakhs
- Seed fund empoWer 2018 Impact Track - 5 Lakhs
- Startup Oasis & Villgro - 5 Lakhs

END USERS/CUSTOMERS

- Individual farmers, agricultural agents who will personally go test in the fields, agricultural NGOs, Common Service Centres CSCs, organised farms, Horticulturists and agricultural labs/institutes.

PRODUCT IMAGE



USP

We have made the technology portable and accessible to people with only reading or listening capability and requires no scientific background keeping in mind the user is mostly of the other kind without any educational or scientific background. The use of microfluidics ensures accurate measurements of a number of parameters without adding much of cost to our products. Each testing takes an average time of 5-10 minutes including sample preparation. For an acre, a user can do 10-15 tests to get an average optimized data of the field. The device then uses data from all the tests and predicts the best measures to be taken.

Agriculture

Latinno - latex Carry Knapsack

APPLICATION

Knapsack to collect and carry natural rubber latex easily and safely. The sack can be used for transportation of food materials as well.

COMPANY NAME

Aptinnov Labs Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (The initial prototype is being developed)

INTELLECTUAL PROPERTY

Indian Patent has been filed
App No: 201841009171

FOUNDER'S NAME

Ajin Omanakuttan

PROBLEM ADDRESSED

The present traditional method to collect latex requires much strain and causes body imbalance and it is very uncomfortable that we need to bend frequently for collecting the latex. In addition to that, the traditional method requires more time. This could also lead to health issues, Chance for causing accident, Need high physical effort, Lacking availability of enough labour force and Affect quality reduces value of latex

ABOUT THE TECHNOLOGY

In the case of our project, latex is collected in a specially designed container that meets the needs of ergonomics which lies on the back of our body which facilitates to carry more latex conveniently and efficiently using a unique method we developed, but not using an external power source. It is an economically feasible product that offers better body stability and ease of carry. By using the latex carry knapsack, we can reduce the chance of causing an accident and there is no need to bend frequently, moreover the time required to collect latex is reduced to a great extent. Moreover, latex carry knapsack is a novel idea in the field of natural rubber cultivation industry. We are developing a 16 Litre knapsack connected with a collection duct attached using flexible hose to collect & carry natural rubber latex easily and safely in which Bucket replaced by a knapsack container with Latex duct Infront for collection

FUNDS RAISED/ACHIEVEMENTS

- Funding by IFCI Ventures Ltd through ASIIM by Ministry of Social Welfare & Justice - Rs. 30 Lakhs for 3 years
- Selected for RKVY RAAFTAR Funding 2021
- NIF SRISTI GYTI Socially Relevant Innovation Awards 2016

END USERS/CUSTOMERS

- Rubber and latex industries
- Rubber plantations
- Rubber farmers

PRODUCT IMAGE

USP

- Increases profit & productivity
- Increased capacity – 16 litre
- Covered knapsack ensures quality & safety of collected latex
- Reduce time consumption
- Better user experience to all
- Ladies also can use comfortably
- Simple method of operation
- Left & right handers can use easily
- No expertise needed
- No health issues – Comfortable & safe
- Simple and manual operation
- Ergonomic design
- Ensures quality & safety of collected latex

Agriculture

AZEEDO: Crop-defender

APPLICATION

The product can be used as pesticide, insecticide and fungicide to increase productivity of any crop lands

COMPANY NAME

Azeedo Agritech Pvt Ltd

FOUNDER'S NAME

Koushik Bose

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (The prototype has been demonstrated in a relevant environment)

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

India loses 50,000 to 60,000 crores worth of crop annually due to pest attacks. There exist solutions based on biotechnology but they have their own limitation. Chemical pesticides can be used too but repeated use of chemical pesticide cause long term detrimental effect on our environment. Then there are biopesticides, but due to its high cost and poor efficacy, these aren't popular either. We can also develop pest resistant crops with the help of biotechnology but that looks like a distant dream. Also, under current levels of climate change, 65 percent of Indian agricultural land has been taken over by a highly invasive weed species.

ABOUT THE TECHNOLOGY

We have identified a locally growing weed that is of zero economic value and grows extensively in every part of our country and covers around 60 per cent of agricultural land. This weed is a waste and the Government of India and farmers spend a huge sum of money on the eradication of this weed. We have been able to find a way to convert this waste weed into a product that can protect crops from pests, insects and fungal infections and increase crop productivity. We have extracted phytochemicals from the weed and developed a liquid-based bio formulation that when sprayed on crops protects crops from all kinds of infections and when mixed with soil increases the crop productivity by 50 per cent.

FUNDS RAISED/ACHIEVEMENTS

- IIT Mandi Catalyst grant of 1.5 lakhs
- NIDHI EIR fellowship of 3 lakhs
- Government of Gujarat SSIP grant of 1.7 lakhs
- Startup India prototype development grant of 11.6 lakhs
- AICTE grant of 7.35 lakhs
- IIM Ahmedabad grant of 50 thousand

PRODUCT IMAGE

USP

• We are converting waste to value by preparing a product from the raw material of zero economic value
• Our product works on multiple pests, insects and fungus. It also enhances crop productivity by adding micro-nutrients to the soil.
• Our product works across different geographical locations and is a better alternative to existing chemical and biological-based agro products in terms of cost and efficacy.
• Another key differentiating factor is the use of agricultural weed to manufacture the product, weeds reduce farm and forest productivity, invade crops, smother pastures and in some cases can harm livestock. They aggressively compete for water, nutrients and sunlight, resulting in reduced crop yield and poor crop quality.
• Our raw material is a weed of zero economic value, our start-up will help farmers eradicate the weed from their agricultural land, therefore they will have better crop yield.

END USERS/CUSTOMERS

For farmers and gardeners, who suffer losses due to pest, insect and fungal infection, Crop-defender, a product of Azeedo, addresses all their farming and gardening needs by protecting crops from pests, insects and fungal infection and by increasing productivity.

Agriculture

Smart Farming :IoT based Integrated Crop Management System to ensure Food Security.

APPLICATION

Single IoT device for precision farming, Mathematical models, Cloud hosted software platform and Farmer's social media

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Kheti Key Edaphon Pvt Ltd	**TRL: 4 (The Hydroponics test bed setup is being done)**	Design Patent for Integrated device in process

FOUNDER'S NAME

Rahul Raj

PROBLEM ADDRESSED

In order to meet the growing demands of increasing population, agriculture sector is pressured to produce more crop from less land usage. Farmers in conventional agriculture, aquaculture, hydroponic and horticulture have limited access to technology (Conditional). Most are willing but find it too difficult to adopt.

ABOUT THE TECHNOLOGY

An Integrated crop Management system is proposed here, which will help identify the : (a.) Composition of Soil (b.) Determine the Nutrients and pH value (c.) Determine temperature, pH and nutrient value of water (d.) Combined effect of weather , and (e.) Market value of crops in recent past; and hence will provide the following recommendations: (i) For best suitable crop on the basis of crop yield and market value (ii) For proper nutrient enriching (iii) All the round monitoring of all the parameters, as per selected crop" Soil serves as a medium of prime importance for the sustained growth of plants and the overall quality of the crop. This fact necessitates the need for periodic and accurate monitoring of soil quality. It can be done in various ways including knowledge about standing crops on the land, analyzing the nutrients, the composition of the soil, etc. Quality assessment regarding the presence of essential nutrients viz., N, P, K, Ca, Mg and S (macronutrients) and Fe, Zn, Cu, Mo, Mn, and B (micronutrients) is done through standard lab testing facilities, available in portable as well as elaborative form. Apart from this, there is an immense need to assess the capacity of soil to supply nutrients in plant-available form as well, for the carrying out exact study to check the correlation of nutrients extracted and their plant availability.

END USERS/CUSTOMERS

- Aligning with different programs of Agriculture and Fisheries council of India
- Creating tie-ups with local Farm Samities (Agriculture Groups), and contract farming
- Creating an ecosystem with drone service providers, local transport providers and recruitment of manpower as BHOO SAMPADA MITRA, will work as influencers and advisors to the nearby farmers
- The software platform will help farmers meet the buyers and connect those who want to initiate contract farming

PRODUCT IMAGE

USP

- Measured Nutrient's in media and crop.
- Mathematical Model to estimate diffusion of nutrients.
- Customized Precision Farming.
- Assurance tool for Corporate Farming.
- Easy to use and accessible services even to small farmers.
- Creating jobs in Soil/Water testing domain.
- IoT based platform to assist soil testing, nutrient diffusion, check efficient use of water resources.
- Helps to assist water quality monitoring, nutrient diffusion, increase yield and quality.
- IoT based platform to assist water quality monitoring, nutrient diffusion, automate dosing, develop organic nutrient streams, increase yield and quality.
- IoT based platform to assist soil/water quality monitoring, nutrient diffusion, develop precision nutrient supply, increase yield and quality.

FUNDS RAISED/ACHIEVEMENTS

- Recipient of Nidhi Prayas Grant – Rs 7 Lakhs
- Selected for Udgam Grant – ABI, SKUAST Jammu

Sector

Healthcare: Drugs

Healthcare: Drugs

StopBleed: A commercially viable and easily applicable fast acting haemostatic agent

APPLICATION

The novel formulation can be used as a rapid and instant hemostatic agent to control hemorrhage or excessive blood loss during any kind of accidents or traumas including ballistic injuries.

COMPANY NAME

Miraqules Medsolutions Pvt Ltd

FOUNDER'S NAME

Sabir Hossain

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The final product formulation is ready and has received CDSCO approval. Currently the product is under US FDA trials)

INTELLECTUAL PROPERTY

1. PCT Patent Application filed, Application No: PCT/IN2019/050965, PCT/IN2020/050364

PROBLEM ADDRESSED

About 5.8 million people bleed to death each year as a result of injuries. According to the doctors, about 80 of soldiers die within 30 minutes after the injury due to massive blood loss. This accounts for 10% of the world's deaths and is greater than the number of deaths due to HIV, tuberculosis, and malaria combined (Reported by WHO). And reports also say that, almost 90% of these deaths could be prevented if bleeding is stopped early. Several blood clotting agents are already available in the market, but they have their own drawbacks in terms of cost, effectivity, stability, etc.

ABOUT THE TECHNOLOGY

To address the above problem, Miraqules have developed a compound, StopBleed, that can stop post-trauma bleedings in 40 seconds. The powder form makes it flexible to use in any severity, size, and shape of the wounds. It also has healing properties. For major injuries, it act as a pre-hospital treatment allowing the injured person to reach the nearest point of care without losing a fatal amount of blood. StopBleed also works with people having blood clotting disorders.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received Y Combinator Sprint Grant worth $ 10K
- Received BIRAC SEED fund worth INR 25 lakhs
- Received Startup Odisha Product Development Grant worth INR 15 lakhs
- Winner of Birla Global Innovation Challenge in 2020
- Won the Dare to Dream contest organized by DRDO in 2019
- Received ISO 13485 certification and CDSCO approval

PRODUCT IMAGE

USP

- High efficacy and instantly stops the bleeding
- The formulation has anti-bacterial and anti-inflammatory property
- No dosage information or training is required to apply on the wounds
- Safe to use and heals the wound faster
- The product is 50 times lighter than cotton. Hence, can be transported easily
- 5 times cost lesser than the existing solutions

END USERS/CUSTOMERS

Indian Army and Para Military Forces, NDRF and Police Forces, Hospitals, Clinics, and Pharmacies

Healthcare: Drugs

Up-scaling and commercialization of 24-desmethyl rifampicin effective against major first line drug (rifampicin) resistant strains of *Mycobacterium tuberculosis*

APPLICATION

The novel analogue (24 desmethyl rifamycin) is 50 times more effective than the existing drug in the market and can be further modified chemically to generate more analogues that can be used as a first line of defense against various MDR strains of *Mycobacterium*

COMPANY NAME

PhiXGen Pvt Ltd

FOUNDERS' NAME

Rup Lal
Utkarsh Sood

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (The PoC is established and initial efficacy and safety has been demonstrated)

INTELLECTUAL PROPERTY

Antibacterial compounds against drug resistant bacteria
Patent No: PCT/IB2014/059989
Russian Patent No: 2015144539

PROBLEM ADDRESSED

Rifamycin was widely used and helped conquer the issue of drug-resistant tuberculosis in 1960s. But with time Mycobacterium strains acquired resistance. So, there is global search for new antibiotics to combat the developing resistance in the pathogens causing tuberculosis, leprosy etc.

ABOUT THE TECHNOLOGY

To counter the problem of antimicrobial resistance rifamycin against Mycobacterium tuberculosis, Phixgen has developed an analogue of rifamycin (24-desmethyl rifamycin) using the combinatorial biosynthesis approach in the producer strain of Amycolatopsis mediterranei. The main aim of this proposal comprises of large-scale production of 24-desmethyl-rifamycin so that they can act as a replacement of rifamycin in infections caused by rifampicin resistant RR and multi-drug resistant MDR strain.

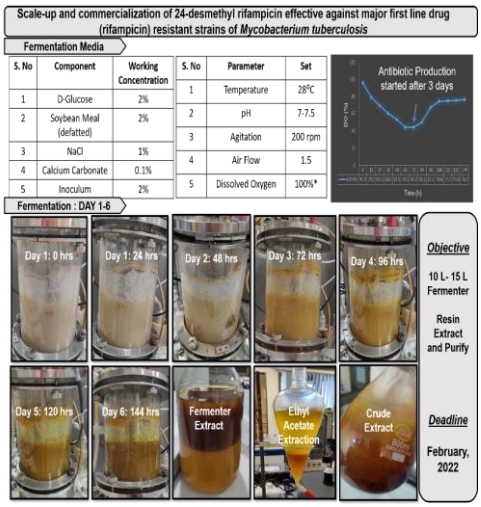
FUNDS RAISED/ACHIEVEMENTS

- Raised INR 49.05 lakhs grant-in-aid from BIRAC BIG scheme

END USERS/CUSTOMERS

- Pharmaceutical industries, manufacturers and companies

PRODUCT IMAGE



USP

- The produced analogue is 50 times more effective against the MDR strains of M tuberculosis.

M. tuberculosis strain		Rifampicin (HiMedia) µg/ml	24-desmethyl-Rifamycin S µg/ml	24-desmethyl-Rifampicin µg/ml
OSDD 55 (H526T)	Resistant	>50	0.1	<0.01
OSDD 206 (S531L)		>50	0.05	0.05
OSDD 321 (S531L)		>50	0.1	0.05
OSDD 209*	Sensitive	0.1	<0.01	<0.01
H37Rv*		0.05	<0.01	0.05

Healthcare: Drugs

Matricaria chamomilla L. Chamomile nanospheres in the treatment of Skin Hyperpigmentation- A novel approach with stem cell extracts

APPLICATION

The present invention is directed to therapeutic & dermaceutical compositions containing chamomile stem cell culture extract preparation together with nanosphere formed lecithin. These components can be used in development of skin care product.

COMPANY NAME

LOSJOVENES CLINILOGIC PVT LTD

FOUNDER'S NAME

Lita Mohapatra

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The final formulation is ready and currently the formulation is under phase-1 trial)

INTELLECTUAL PROPERTY

Composition comprising a plant stem-cell extracts coated with nanospheres, & A production method therefore for treatment of skin.
App No: 202031044426

PROBLEM ADDRESSED

Hyperpigmentation is a serious lifestyle disorder, which has gained much importance in recent times. . It is one of the most strikingly variable phenotypes in humans, therefore making cutaneous pigmentation disorders symptoms manifesting frequently in multitude of forms. topical and other medical approaches have been adopted by dermatologists to mitigate these disorders. However, no concrete solution is yet available in the Indian market scenario.

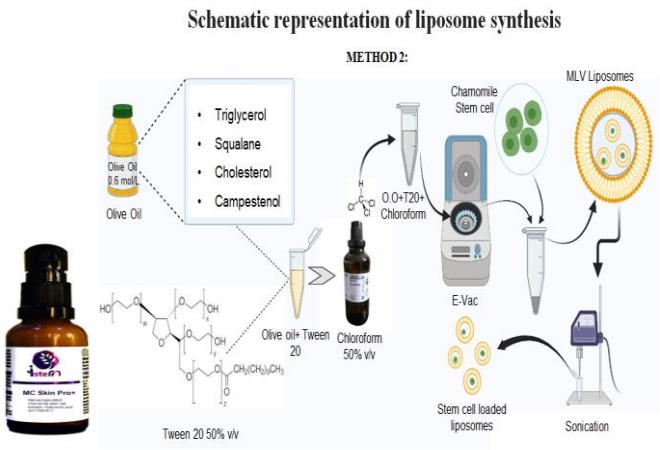
ABOUT THE TECHNOLOGY

This proposed novel technology focused to regenerate the stem cells extracts of *Matricaria chamomilla*, followed by extraction and encapsulating them with lecithin based nanospheres. These nanospheres would be used for serum formulation, which will be ultimately used for hyperpigmentation treatments. For callus regeneration stem and/or upper tip of pedicel will be used. The regenerated calli will be transferred to liquid MS medium to prepare cell suspension culture. The liquid culture will be subjected to mild pressure followed by enzymatic digestion to break open and release the cellular content. This will be followed by filtration to get the stem cell extract.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 49.86 lakhs grant-in-aid from BIRAC BIG scheme.
- Received Startup Odisha Product Development Grant-15 Lakhs
- Selected as Top 10 startups in Odisha into the HALL of Fame
- Awarded Best Health care Startup by Global Triumph Foundation in 2021

PROCESS FLOW



USP

- 1st chamomile based stem cell serum for treatment of skin hyperpigmentation.
- Using nanotechnology for encapsulation of the stem cell extracts.
- Lower costs compared to existing players in global market scenario.
- Product will majorly cater needs of Indian population.

END USERS/CUSTOMERS

- Above 16 years old Patient having skin hyperpigmentation (Both male & female)

Sector

Healthcare: Diagnostic

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

Prantae Solutions Pvt Ltd (OPC)

FOUNDER'S NAME

Sumona Karjee Mishra

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The final MVP is ready and currently the product is under extensive field trials)

INTELLECTUAL PROPERTY

Patent Number: 308432 & 360496
Design Registration: 316100-001 324401-001, 322092-001
Trademark: Proflo-U ® , PregaMo ®

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
- Raised INR 1.2 Cr from BPCL Ankur
- Raised INR 30 lakhs from Millenium Alliance
- Received BIRAC GCE India worth INR 35 lakhs
- Received MeiTY SASACT Fund worth INR 20 lakhs
- Received BIRAC TiE WinER Award worth INR 5 lakhs
- Received Swayam Siddha Samman worth INR 1 lakh
- Received TATA Trust Harvard SAI worth INR 5 lakhs
- Received 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: Drugs

Development of a solid-phase multiplex assay for the identification of antibodies against most frequent and unique Indian HLA antigens.

APPLICATION

Indigenous HLA kits that can be used in a solid phase multiplex assay for the identification of antibodies against most frequent and unique Indian HLA antigens.

COMPANY NAME

Chimera Translational Research Fraternity Pvt Ltd

FOUNDERS' NAME

Vimarsh Raina
Vikash C Mishra

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Recombinant Protein Expression Design, QC Analysis of protein expression and structural integrity done. Preliminary Validation of the Algorithm)

INTELLECTUAL PROPERTY

Patent Published:
PCT/IN2019/050327

Got Drug Wholesale license 20B/21B required for dealing with diagnostic assays in India.

PROBLEM ADDRESSED

At present, all available SAB kits do not represent antigen frequency found predominantly in Indian population. This has a tendency to miss picking up HLA alloantibodies in some of the Indian patients with lethal consequences. Hence, rate of graft failure in India is much higher than the western world. Further, currently available SAB based kits are very costly and un-affordable. Since the productiveness /efficacy /efficiency /sensitivity of the immunological test would be different in different genetic ethnicity populations, there is an unmet need /void.

ABOUT THE TECHNOLOGY

Chimera is working to create Human Leucocytes Antigen HLA antigen coated micro-particle bead assays. The coatings would be done using common indigenous and unique HLA Antigens which are lacking in the currently imported kits used by majority of the diagnostic Laboratories and Transplant centers. An Antibody detection Kit with under-representation of indigenous antigens, currently being imported have an inherent probability of missing significant antibodies and hence dangerous ramifications including inability to diagnose Antibody Mediated rejection AMR or predict possible graft failure in case of solid organ as well as bone marrow transplants .

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG worth INR 49.44 Lakhs
- Received DST-CAWACH worth INR 90 lakhs
- NABL ISO:17043:2010 Accreditation achieved for proficiency testing service in Transplant Immunology and Histocompatibility started with the aim to develop a strong customer base in India.

PRODUCT IMAGE

USP

- Personalized Diagnostic Assay Driven By Computational Algorithms
- To Detect Compatibility Between Transplant Recipient & Organ Donor
- Ensuring Optimal and Specific Utilization Of Resources & Precision
- Affordable and low-cost compared to exported kits

END USERS/CUSTOMERS

R&D Companies, Research Laboratories & Academic Institutes, Diagnostic laboratories (public & private), Healthcare service providers (hospital & Transplant centers, Clinical Research Organizations (CROs)

Healthcare: Diagnostics

Patient Stratification For Transoral Robotic Surgery In Oropharyngeal Cancers Through Development Of A Non-invasive HPV Detection Panel

APPLICATION

The HPV detection panel will detect the HPV status in the Indian population and stratify the patients based on tumour biomarkers towards optimal treatment and follow up protocols.

COMPANY NAME

Sephirah Innovations Pvt Ltd

FOUNDER'S NAME

Devjani Ghosh Shrestha

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Establishment of quality control workflow for saliva and serum exosomes along with development of E6 and E7 using exosome platform)

INTELLECTUAL PROPERTY

PCT Application No.
PCT/IN2020/050715

Indian Patent Application No.
201931019425

PROBLEM ADDRESSED

Human papilloma virus or HPV, in particular HPV-16, is recognized to be responsible, with different epidemiological, clinical, anatomical, radiological, behavioural, biological and prognostic characteristics from HPV negative OPSCC. The only head and neck site with a definite etiological association between persistent high-risk, HR HPV infection and development of SCC is the oropharynx. Treatment selection in these patients is now becoming a critical issue and current strategies may represent an over treatment.

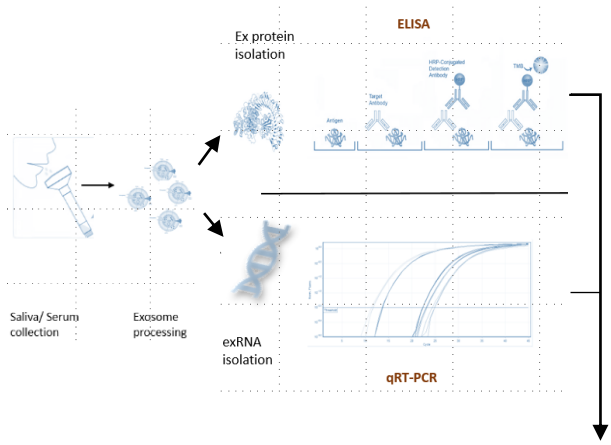
ABOUT THE TECHNOLOGY

The strategy behind the proposed project is to introduce a first of its kind diagnostic panel for diagnosing HPV status in all newly diagnosed cases of OPSCC, thereby stratifying the patients towards optimal minimally invasive surgical treatment and follow up protocol through non invasive serum and saliva tests. This panel would be vital in the clinical decision-making processes, to select patients for less aggressive, single modality treatment and follow up regimens. This would in turn lead to improved overall and disease-free survival compared to patients with HPV negative oropharyngeal cancers. Patient stratification for transoral robotic surgery in oropharyngeal cancers through development of a non-invasive HPV detection is the aim of this project.

FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG: 49.00 Lakhs
- AHERF seed fund Faculty Development program. Funds received: 5.00 lakhs
- Selected and participated in the BIRAC-IGNITE 2020 Cambridge Judge Business School Fellowship Programme
- Selected till the pre-final round of the National Bio-entrepreneurship Competition 2020

PROCESS WORKFLOW



HPV-16-E6,E7 level Quantification for Diagnosis, prognosis And monitoring

USP

This study is the first of its kind in India, not only by introducing the first comprehensive HPV diagnostic panel but by determining the prevalence of HPV positive OPSCC disease burden in India, stratifying these prognostically favourable subgroup of patients towards optimal treatment and establishing a non invasive follow up protocol based on viral biomarkers in body fluids to detect early recurrences. This would further help to standardize the management protocol and also provide the patient with the most cost-effective treatment possible.

END USERS/CUSTOMERS

The proposed commercialization strategy will be an establishment of the test panel and generation of clinical data for regulatory filing at DCGI, CE and FDA through AHERF infrastructure

Healthcare: Diagnostics

Accurate Point-of-Care Quantification of Serum Creatine Kinase, Human Serum Albumin and KIM-1 for Easy and Rapid Diagnosis of Acute Kidney Injury

APPLICATION

The device can be used for point – of – care testing and diagnosis of Kidney function test including Serum Creatine Kinase, Human Serum Albumin and KIM – 1. However, the device can be used for monitoring other physiological parameters

COMPANY NAME

Heilen Medtech Pvt Ltd

FOUNDER'S NAME

Shashank Ranebennur

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (The beta version of the prototype has been fabricated and currently under the field testing and clinical trials)

INTELLECTUAL PROPERTY

DIAGNOSTIC PROBE, ITS PREPARATION PROCESS, METHOD AND KIT FOR QUANTIFICATION OF SERUM ALBUMIN IN BIO-FLUIDS

(App No: 201931023454, Indian Patent)

PROBLEM ADDRESSED

Acute kidney injury AKI is the foremost origin of nephrology consultation and is associated with high mortality rates. AKI has largely become a nosocomial disease in the developed world with the incidence rate of 8 – 10 in the hospitalized patients. The etiology of AKI differs depending on the inception of AKI occurs in the hospital hospital-acquired or prior to hospital admission community-acquired. Conventional diagnostic practices are time consuming, labor-intensive and often inaccurate. These also require elaborate infrastructure and on-field pathologists. Hence the development of a portable, inexpensive point-of-care POC diagnostic device is of high relevance in clinical diagnostics field.

ABOUT THE TECHNOLOGY

Heilen Meditech is developing an accurate Point-of-Care Quantification of Serum Creatine Kinase, Human Serum Albumin and KIM-1 for Easy and Rapid Diagnosis of AKI. The team has already developed two different sensors for easy, rapid, selective and quantitative detection of CK and HSA. These probes can accurately detect and quantify CK and HSA levels from a minimum amount of body fluids, like serum and urine etc. within a short interval of time. Further, the team is developing a small-molecular sensor specific for KIM- 1. The sensing device provides the quantification of CK within a short interval of time within no clinical expertise requirement.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 48.55 lakhs grant-in-aid from BIRAC BIG scheme

PRODUCT IMAGE

Nephrite Uno

USP

- Non-invasive and safe operations
- Highly level of accuracy, sensitivity and specificity
- Affordable and less time consuming
- Point-of-care diagnosis and requires no clinical expertise
- The kits can be stored at room temperature
- Version 2 is being planned with Bluetooth Interface to readily share the data with concerned healthcare and family members

END USERS/CUSTOMERS

- Kidney disease patients, clinics, diagnostic centre, hospitals

Healthcare: Diagnostics

A Non-Invasive POC Device and Respiratory Diseases Diagnostic Platform

APPLICATION

The unique innovation offers applications in screening for a wide range of respiratory illness problems, telehealth, point-of-care diagnostics, and standard respiratory disease diagnosis.

COMPANY NAME

Krakel Healthcare Pvt Ltd

FOUNDER'S NAME

Vijaya kumar Dadi

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Integrated system tested in-house with optimized core components)

INTELLECTUAL PROPERTY

A Novel Machine learning based point of care device for diagnosis for multiple respiratory disorders
App No: 202041026167

PROBLEM ADDRESSED

Many respiratory disorders, such as pneumonia, are the biggest cause of death worldwide. Pneumonia kills one child every 39 seconds. Every year, about 800,000 children under the age of five are killed. According to UNICEF, India had the second-highest incidence of child pneumonia deaths in 2018. Only one in every five front-line health personnel can effectively recognize the indications of pneumonia, resulting in misdiagnosis and delay. There is no medical device on the market that can automate diagnosis. Another example of a COVID with symptoms similar to Pneumonia is the current COVID. This necessitates the development of — PRODUCT to REAL-TIME DIAGNOSE. Pneumonia and Asthma are respiratory disorders. To address the issue Krakel healthcare developing a Non-Invasive POC Device and respiratory diseases diagnostic platform which can effectively diagnose various respiratory diseases.

ABOUT THE TECHNOLOGY

The focused approach of this unique invention is to create a non-invasive portable gadget that could record lung sounds and send them over Bluetooth to a PC or tablet. The data collected Log scaled Mel-Frequency Spectral LMFS and delta characteristics are fed into Convoluted neural networks and Deep neural networks models to categorize Abnormal or Normal Lung sounds. Different models with multiple extracted features are explored and iterated until they perform at the level of a pulmonologist. The Model classifies a Lung sound Input as Crackles, Wheezes, or Normal lung sounds that suggest the existence of Pneumonia, Asthma, or another respiratory condition.

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 49.96 Lacs under BIRAC BIG
- Raised INR 6 Lacs under DST Nidhi Prayas Grant

PRODUCT IMAGE

USP

- **Mobility**: In contrast to the current diagnosis device, which is exclusively available in hospitals and diagnostic centers, this portable diagnostic device can be utilized anywhere.
- **Radiation exposure**: There is no radiation risk when using this device for diagnosis.
- **Ease of use:** Healthcare personnel can function with with a little training.
- **Price & Operational cost:** When compared to existing devices, it has a reduced margin of operational cost and will be offered at a reasonable price.

END USERS/CUSTOMERS

- **B2C**: Healthcare Professionals associated with the diagnostics field.
- **B2B:**
  i) Telehealth, Health-tech Companies
  ii)Universities & Research Institutes
  iii) Private & Govt. Hospitals
  iv) NGO Organisations

Sector
Healthcare: Device

Healthcare: Devices

An augmented reality based robotic device to access kidney for PCNL surgery

APPLICATION

Globally 50% patients suffering from kidney stone issue go through surgery where failure rate to get correct access to the stones is 70-80% and radiation exposure to the surgeon is 100%. Complication related to puncture access, puncture angle and bleeding is reported in 30% cases. Comofi has developed “nGuide”, a robotics surgical intervention platform to provide critical access in the kidney in one attempt with ionic radiation safety to healthcare practitioners.

COMPANY NAME

Comofi Medtech Pvt Ltd

FOUNDER’S NAME

Satish Kalme

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (Pre-Clinical testing of the device along with in vitro testing using the cadavers are completed)

INTELLECTUAL PROPERTY

PCT Patent has been filed
App No: PCT/IB2019/059685

PROBLEM ADDRESSED

The first critical step in PCNL is accessing desired calyx, which remains a challenging problem. Currently, the renal access is gained by free hand technique, manual puncture, using image guidance from fluoroscopy and ultra sound in PCNL surgery. Free hand technique to access renal system is highly dependent on the trained and experienced operator and involves steeper learning curve. Prior studies estimate that it takes a minimum of 60 cases to achieve competence in obtaining access and 115 procedures prior to achieving excellence1. This technique has high chances of needle deflection from predefined path due to different tissue consistencies and changes in the pressure applied leading to puncturing iterations causing micro traumatization of parenchyma.

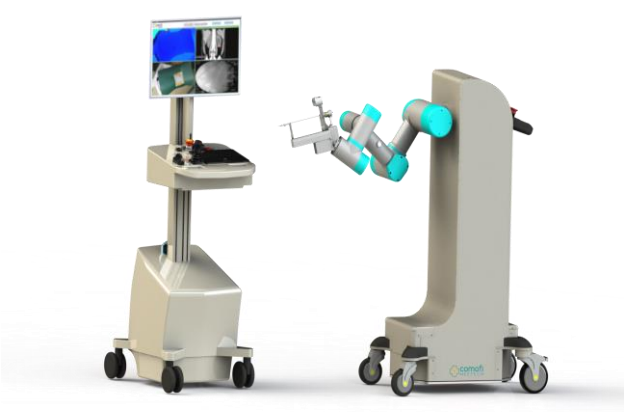
ABOUT THE TECHNOLOGY

Our surgery intervention platform uses pre-operative and intra-operative data for better intervention planning. Surgeons are benefited from increased cognitive performance and work efficiency. The powerful image processing tools and robotic accuracy provides intervention at critical steps during surgery to improve the surgical outcome. nGuide intervention platform helps surgeons to visualize target area during surgery in great details and increase surgical efficiency and safety for surgeons and patients both.

END USERS/CUSTOMERS

Well-established urology centers, kidney care centers and hospital with Urology departments with more than 10 bed size, Medical Colleges, etc

PRODUCT IMAGE



Robot Surgical Intervention: nGuide-PCNL

USP

- Intra-operative puncture path planning
- 100% PCNL puncture accuracy
- 100% safety from ionic radiation exposure
- Increase cognitive performance
- Improve Work efficiency
- Safety from Ionic radiation exposure
- Improved surgical outcome

FUNDS RAISED/ACHIEVEMENTS

- BIRAC BIG-12 Call. Funds received: 47.91 lakhs.
- BIRAC SBIRI. Funds Received: 25.00 lakhs.
- Seed Funding (Open round). Funds: 1.5 Cr
- DST CAWACH. Funds received: 65 Lakhs
- Awards: Top 10 startups selected for AIT-Swissnex program, 2018

Healthcare: Devices

iLAB & iRPM: Remote Patient Monitoring System

APPLICATION

The tele-health platform can be used for remote health monitoring of patients in hospitals, remote locations, etc.

COMPANY NAME

MedTel Healthcare Pvt Ltd

FOUNDERS' NAME

Lalit Manik
Soumyakant Das

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The MVP is ready and is in commercialization phase)

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

Increasing burden of chronic diseases like – diabetes, hypertension, heart diseases, etc. have resulted in 70% deaths world wide. The major gap is in the constant real time health monitoring of chronic diseases which results in delay in the treatment procedures and eventually leads to death. Only 25% of hospitals are equipped with remote health monitoring system. Furthermore, the rural PHCs are not at all equipped with any health monitoring system through which the doctors can remotely treat the patients.

ABOUT THE TECHNOLOGY

MedTel's RPM platform incorporates connected diagnostic devices, a smartphone app, and a web-based dashboard for hospital access and review. These devices include the digital blood pressure machine, body composition monitor, glucometer, pulse oximeter and many more. Our advanced solutions manage diseases like diabetes, hypertension & obesity and endeavor timely interventions. We also provide remote pregnancy care which reduces physical clinic visits and monitors complication parameters In the COVID-19 pandemic, connected healthcare and remote patient monitoring are important tools for hospitals, poly-clinics and individual practitioners.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC LEAP fund worth INR 50 lakhs
- Pre Series A: 5 Cr INR raised already. 2.5 Cr INR to be raised
- Singapore based institutional funding
- HNIs and Angels from Australia, USA and Europe
- Majority of funds to be utilized in Business Development & Product Improvement

PRODUCT IMAGE

USP

- 15+ Point of Care Devices
- Personalized Tele Health App
- Automated Prescription & Reports
- Emergency Management Module
- Integrated Payment Gateway

END USERS/CUSTOMERS

B2B & B2B2C model

1, Devices one time buy and Platform on Subscription
2. Devices + Platform on rental subscription

Sell to hospitals, polyclinics, healthcare organizations and others

Healthcare: Devices

Development of Advanced 3D Bioprinter

APPLICATION

Avay manufactures and customizes 3D printers which can be used for biomedical, pharmaceutical and biotechnology research

COMPANY NAME

Avay Biosciences Pvt Ltd

FOUNDERS' NAME

Adithya VS
Suhridh Sundaram

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The final market ready product is ready and has been deployed at various centres)

INTELLECTUAL PROPERTY

Filed for a trademark of "MITO"

Patent filing process under progress

PROBLEM ADDRESSED

The 3D Bioprinters available in the market are non-customizable and often do not provide required delivery of Low Volume customized parts to the patients. Also, long supply chains don't allow quick manufacturer-to-patient solutions and reduces the affordability of the device for printing of implants, tissues and pharmaceutical tablets. Moreover, the centrally managed supply chain of 3D bioprinters leads to frequent disruption, especially during natural calamities

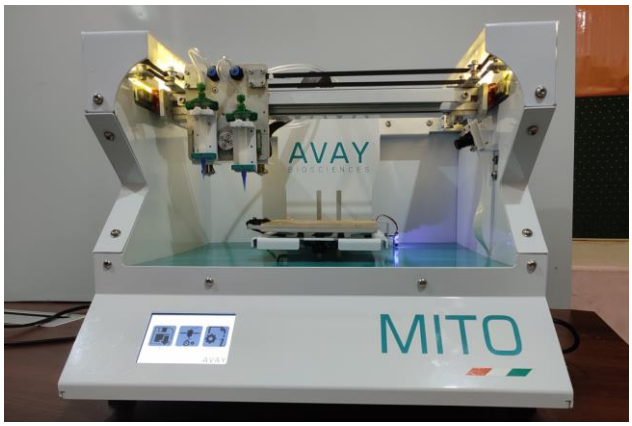
ABOUT THE TECHNOLOGY/PRODUCT

Avay provides bioprinters to researchers in Tissue Engineering, Cell Culture and Material Science projects, and also works on biomaterial formulations that can be used on our printers. The focus of research is to be able to replicate tissues and organs artificially, thereby solving a large problem for the medical/healthcare sector, as well as pharmaceutical testing.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Private Capital of $288,000 raised as Seed Round

PRODUCT IMAGE



USP

- Hardware design capabilities for customizations often required for research
- In house software development team of print strategy
- Formulation of proprietary printing biomaterials to suit particular research applications for recurring revenue
- Strong after-sales service model serving as brand building

END USERS/CUSTOMERS

Research and Medical Institutes, Biomedical and 3D Printing companies, Prototyping and Fabrication labs

Healthcare: Devices

Mobilab - Affordable IOT Enabled Smart Multi Diagnostic device for chronic diseases detection

APPLICATION

The device can be used as a point of use device for Kidney Function Tests, Liver Function Tests, Heart Function tests, and Pancreatic Function Tests.

COMPANY NAME

Primary Healthtech Pvt Ltd

FOUNDER'S NAME

Sahil Jagnani

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **8 (Final prototype is ready and completed the clinical trials)**

INTELLECTUAL PROPERTY

Portable Cuvette based Reagent Mixer (Application No – 202131038898)

Portable low powered optical system for colorimetric analysis and characterization (Application no – 202231004664)

PROBLEM ADDRESSED

70% of people are dying because of Non-communicable diseases which are disease related to kidney, liver, heart, pancreas etc. There are rare symptoms of these disease and if detected early can be treated at primary care with proper medicine. But more than 50% of diagnosis happens only at later stage. Establishing laboratory set up in Rural and Semi-urban area is not economically viable for diagnostic companies. The solution in this case is the point of care diagnostic solution which can provide affordable, portable, accessible instant diagnosis.

ABOUT THE TECHNOLOGY

Nanotechnology principles have been used for antibody conjugation to improve Sensitivity of detection for better accuracy, Reduced steps of detection and improved Kinetics to reduce testing time. Detection of biomarkers have been done using colorimetry principles using Beer Lambert's Law where concentration is correlated to absorbance. We are also working on a microfluidics system to simultaneously detect various biomarkers with a drop of blood. Reader device internal arrangement and optical detection part has been patented which not only gives the compact size but also significantly reduces the cost of the device. Electronics part is optimized such that reader device requires ultra-low power and is driven using proprietary firmware. As internet and mobile phone usage is on rise, we have moved our entire system on cloud and all the tests and calculations are using processing power of mobile phones.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 50 lakhs from BIRAC BIG Grant
- Raised INR 25 lakhs from BIRAC SEED fund
- Raised INR 25 lakhs from Pontaq Venture & STPI
- Received INR 33 lakhs from MeiTY SASACT
- Raised INR 25 lakhs from Villgro

END USERS/CUSTOMERS

In house patients, Govt agencies, Hospitals, Insurance providers, Local Medical Centers

PRODUCT IMAGE

USP

- Affordability - Device will be priced in sub-15k range and it will bring down the cost of tests by 1/10th using economic raw material.
- Portability - Smartphone-sized device, needs no heavy set-up & can be used in home conditions while to set up a diagnostic lab a lot of space & infrastructure is required.
- Easy to Operate - Anyone who understands how to use a phone can use it without difficulty, and testing simply takes four simple steps.
- Vernacular Language - Our smartphone application is multilingual, with a goal to help technicians comprehend and use our device with ease.
- Battery operated - Device is robust for low resource setups, it has a power backup of 4-6 hours.
- Modularity - Modular architecture with specified modules, this makes the device future proof.
- Instant results with Few drops of Blood/Urine
- Smart Clinical/ Technician App - A dedicated Mobile application has been developed for clinician/ technician with data processing using our algorithms and data analysis to predict health parameters.

Healthcare: Devices

Neukelp Posture: Intelligent body posture monitoring device

APPLICATION

The project is intended to develop a body posture monitoring device to keep humans free from Back and Neck Pain naturally. Moreover, an extension of this product would also help in curing Back Pain in the body. The developed device would help user to build a good habit of maintaining right body posture and keep themselves away from excruciating pain and a lot of other health issues.

COMPANY NAME

Neukelp Innovation Technology Pvt Ltd

FOUNDER'S NAME

Saurabh Agarwal

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (System test and launch has been done, the product is commercialized and available in online medium)

INTELLECTUAL PROPERTY

Indian Patent has been applied
Application no : 202031015928

PROBLEM ADDRESSED

Bad body posture is responsible for Back, Shoulder and Neck Pain. But there are several critical consequences of bad posture, like Cervical Spondylitis, Trapezius Muscle Pain, Herniated Disc, Poor breathing, Varicose Veins, Change in Spinal Curve, Carpal Tunnel Syndrome, Fatigue and so on. According to statistics, Back Pain itself is the second most common reason to doctor visit after upper respiratory infections. In addition sitting in a slouched position at desk for an extended period of time puts a great deal of stress on our upper body, especially if our body is not properly supported. The most common pain areas include: Lower back: 63 % Neck: 53 % Shoulder: 38 % Wrist: 33 %. Besides Poor posture can also cause a misalignment in the spine and lead to even more pain along with the degradation of the tissues surrounding our joints. Thus there is a need to a device which can help us to maintain a suitable body poster to prevent critical consequences of bad posture.

ABOUT THE TECHNOLOGY

The proposed device is able to assists in maintaining ergonomically desired upper body posture by tracking lumbopelvic motion and detecting pelvis orientation. Lumbo-pelvic motion and pelvis orientation data can be continuously monitored and analyzed to assist the user to maintain ergonomically desirable body posture. It is able to track lumbopelvic rhythm and pelvis tilt and uses advance algorithm to detect unwanted bad posture from the data collected from sensors and gives feedback to the user either through vibrotactile feedback in the device or some other method of notification. User specific Algorithm are being used for posture detection and generated using advanced machine learning techniques. Device can be connected to a mobile application through wireless communication. Device itself has the capability to store data which can be shared with the mobile application.

FUNDS RAISED/ACHIEVEMENTS

- Supported Under BIRAC BIG: 49.54 Lakhs
- Startup Odisha: 2.40 Lakhs for 1 year
- Startup Odisha: 12.50 Lakhs for 1 year
- BIRAC SEED fund : 25 lakhs

PRODUCT IMAGE

USP

- The function of the device is novel as it assists in maintaining ergonomically desired upper body posture by tracking lumbopelvic motion and detecting pelvis orientation and power efficient design to miniaturize it's size.
- This device is very power efficient and small in size and it can be worn on the lower back very comfortably.
- The sensor based devices can be connected to a mobile app for the constant monitoring and feed back notification using a wireless technology thus making them suitable for carrying.

END USERS/CUSTOMERS

Physiotherapist, Physician or Orthopaedician, Employees of corporate offices/Govt. offices.

Healthcare: Devices

A frugal multi therapeutic wound care solution for resource constraint healthcare settings

APPLICATION

The device can be used for venous leg ulcers, ischemic wounds, diabetic foot ulcers, pressure wounds, traumatic wounds, post surgical wounds and burns.

COMPANY NAME

Inochi Care Pvt Ltd

FOUNDER'S NAME

Shivani Gupta

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The functional prototype of the smart patch is ready. Currently the biocompatibility studies are under progress)

INTELLECTUAL PROPERTY

A wound dressing for combined negative pressure and fluid delivery system
(App No: 202011056144, Indian Patent)

PROBLEM ADDRESSED

Non healing wounds are those which do not heal in the expected time frame, usually within thirty days. Wounds impact patients' physical, mental, and social well being, and adversely affect families and care providers. Complications to non healing wounds are vast, including severe pain, septicemia, hospitalization, and amputations. In India and other developing countries, the problem of wounds is compounded by other factors such as poor access to health care, inadequate health infrastructure, imported medical equipment, and affordability. Dependency on the imported products It will take at least another 10 or more years to make them available at community level healthcare settings

ABOUT THE TECHNOLOGY

Inochi Care is working on a frugal multi therapeutic wound care solution for resource constraint healthcare settings. They have developed an innovative smart plug and patch system which facilitates delivering multiple therapies at the wound site utilizing the existing resources and infrastructure to provide advance wound care modalities similar to imported technologies. The system can reduce the timeline of availability of advance wound care modalities at community healthcare settings from 10 years to 2 years. It will be one frugal solution to replace four different expensive products. This indigenous technology is expected to cost not more than 1/10th of the cost of existing devices for one or other kind of advance wound care therapy.

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 49.07 lakhs grant-in-aid from BIRAC BIG scheme
- Raised INR 3 lakhs grant-in-aid from DST NIDHI PRAYAS
- Winner for ASME 2022 and received cash prize worth 10,000 USD.

PRODUCT IMAGE

USP

- Portable and light weight point-of-care device
- Comes with multiple therapy modes and inbuilt data storage
- Affordable and user friendly operations
- The device comes with hypoxia and infection control systems
- Highly efficient compared to other existing technologies
- Battery powered operations

END USERS/CUSTOMERS

- Hospitals with wards and ICUs, Tertiary care and Secondary care facilities, Nursing homes

Healthcare: Diagnostics

ASSURED: Single diagnostic device for early stage detection of malaria, chikungunya & dengue from a single drop of blood

APPLICATION

The test kit can be used to detect malaria, chikungunya and dengue at the early symptomatic stages. This platform technology can be further used to detect other communicable and infectious diseases.

COMPANY NAME

Ameliorate Biotech Pvt Ltd

FOUNDERS' NAME

Rashbehari Tunga
Binita Shrivastava Tunga

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The final version of the diagnostic kit is ready and it is currently under the final stages of clinical trials)

INTELLECTUAL PROPERTY

Single device for rapid diagnosis for malaria, dengue and chickungunya , Application No: 201941016557

PROBLEM ADDRESSED

Malaria, Dengue and Chikungunya are important public health problems in India and pose an enormous burden to the health system. Controlling the vector remains the most effective method of preventing the diseases. Early detection of the disease is a key to prevent spread of the disease. However, current testing kits and procedure consumes a longer running time and at the same time is costly to detect these diseases. Furthermore, these kits are not capable of detecting the diseases at the early stages of development.

ABOUT THE TECHNOLOGY

Ameliorate's Product ASSURED which detects the three infection on the first day of symptom is unique as it will detect Co-infection by which patient gets to know if he is infected with any one of 3 diseases or multiple diseases and that too in the early stages of infection. This reduces the time to treat and cost drastically. This is the most drastic advantage gained. The problem of coinfection is something that has not been addressed well in the past, ASSURED aims to change that and save multiple people and families from the morbidity and mortality of these diseases. ASSURED will be very helpful for pathologists as this would save at least 20 mins everytime for the above three tests not only that, they will be able to get more accurate results.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received KBITS for Idea to PoC grant woth INR 50 lakhs
- Received PRISM funding from DSIR worth INR 20 lakhs
- Raised equity funding from LV foundation, DERBI, SINE, and Villgro
- Received Infosys Aarohon Award in 2019
- Received NIDHI4COVID fund worth INR 10 lakhs

PRODUCT IMAGE

USP

- First of its kind COMBO kit
- The antigens are indigenously made and are recombinant
- First antigen based kit for chikungunya
- Completely equipment free RDT
- Able to detect Co-infection
- Device is eco friendly

END USERS/CUSTOMERS

Pathology labs, Govt & Private Hospitals, Primary Health Care Centres, Pat Clinics

Healthcare: Devices

Negative Pressure Wound Therapy System

APPLICATION

The device can be used to treat any kind of complex wounds like – infected wounds, diabetic foot ulcers, pressure ulcers, ballistic wounds, etc.

COMPANY NAME

Rmmedi Innovations Pvt Ltd

FOUNDERS' NAME

Joseph Thomas
Stephen George

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The final version of the prototype is ready and the multicentric clinical trials has been completed)

INTELLECTUAL PROPERTY

IP filing is under progress

PROBLEM ADDRESSED

Wound care is one of the most common problems causing a heavy disease related economic burden on our society. It also forms a lifeline in management of wounds in critically ill patients where surgical interventions are dangerous. Complex wounds such as the ones following Accidents, burns and diabetes ca be debilitating and often life-threatening. Moreover, complex wound are debilitating and costly. Resulting disability and treatment costs further burden patients considerably. An effective yet low cost solution is the need of the hour

ABOUT THE TECHNOLOGY

Negative pressure wound (NPWT) is the best wound care modality for complex wounds available today. Using controlled negative pressure onto wounds using specialized dressings, it enhances wound healing considerably, while preventing infections and decreasing wound size and optimizing wound characteristics. The currently available modalities are expensive and not readiliy available. Hence, Rmmedi has developed an indigenous system which is based on negative pressure wound therapy which has been tested by over 25 surgeons across multiple hospitals in South India. This system is built for quality, high clinical efficacy, and cost effectiveness. They are also developing a device related integrated ecosystem by developing related consumables and accessories.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received KSUM Statup Grant worth INR 30 lakhs
- Winner of 14th Day IDEA by KSUM

PRODUCT IMAGE

USP

- Highly efficient in wound healing as well as prevention of bacterial infection
- Comes with 3 models: HUG, PICO, SYMBIO
- Portable and safe to use
- User friendly operations and extended battery backup
- Safe for home based care and ambulation during therapy

END USERS/CUSTOMERS

B2B: Healthcare practitioners in hospitals and clinics, Pharmacies, etc.
B2C: Individuals suffering from complex wounds

Healthcare: Devices

Real-Time Object Recognition in Ultrasound Video for Detection And Censoring of Foetal Genitals

APPLICATION

Purplas IT services is working on “Real-Time Object Recognition In Ultrasound Video For Detection And Censoring Of Foetal Genitals” where the system prevents clandestine use of ultrasound machines for prenatal sex determine of foetus through Real-Time Censoring of Foetal Sex Selective Physiologies through proprietary Image Processing Software for Ultrasound Video Output.

COMPANY NAME

Purplas IT Services Pvt Ltd

FOUNDER’S NAME

Abhishek Biswas

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The software is developed and validated. It is currently undergoing standardization and necessary due diligence for technology transfer & partnership for market entry)

INTELLECTUAL PROPERTY

US PN: US2017/0161629A1
US Patent Number: US 9819711
US Patent Number: US 9830423
PCT AN: PCT/US2014/013215
India AN: 3598/CHENP/2015

PROBLEM ADDRESSED

India is a country with falling sex ratio and clandestine application of ultra-sonography machines leading to sex determination and female foeticide. One of the measures to discourage sex determination through ultrasonography machines is the enactment of PCPNDT. And through this act restriction were put on the usage and sale of USG machines. This has in-turn restricted the growth of application and accessibility of USG machines across the country and more so in rural India. Hence PCPNDT significantly reduces and adoption USG accessibility not only for Obstetrics but also Non-Obstetric diagnostics. To address this problem, our solution is using AI for censoring critical portion of the image which can be used for sex determination.

ABOUT THE TECHNOLOGY

The entire project aims to develop a market ready Artificial Intelligence based object recognition software capable of working real-time on live USG video hardware prototype s capable of running the software. The AI software will be developed to detect and blur foetal genitalia and other features if any to render any USG machine embedded with the same incapable of use for pre-natal sex determination. This tech is referred as “SecureSound”

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG grant worth INR 49.99 Lakhs
- Second runners up in the “Tata Social Enterprise Challenge hosted” at IIM Calcutta.
- Awarded with the "Outstanding Innovation Award" for the business plan at the Dell Social Innovation Challenge among 2600 entries.
- Global Runners Up in Dell Empowering Women Challenge held at New York for solution/business model "Ultrasafe Ultrasound“.

PRODUCT

USP

- “SecureSound” is an affordable handheld ultrasound machine providing accessibility to universal point-of-care diagnostics services in Rural and Urban India.
- These machines embedded with proprietary image processing technology, censor foetal physiologies which cannot be used for pre-natal sex determination.
- Being incapable of use for sex determination, these fall outside regulatory restrictions on sale and use of ultrasound machines through PC-PNDT Act. Enabling un-restricted sale in an otherwise restricted and untapped market.
- Enabling pre-emptive response for PC-PNDT through AI and data analytics

END USERS/CUSTOMERS

Diagnostic Modalities like MRI, CT, PET etc. Non-obstetric USG clinics, Doctors/Radiologists providing basic diagnostic services in rural villages.

Healthcare: Device

A wrist wearable medical device with a software platform to continuously and non-invasively monitor [Vital Signs, Cardiac Output, Stroke Volume, Systemic Vascular Resistance, and Arterial Stiffness], detect and predict inpatient health deterioration.

APPLICATION

This novel invention along with patient monitoring, may detect Cardiac Output, Stroke Volume, Stroke Volume Variability, Systemic Vascular Resistance, Cardiac Index, Arterial Stiffness, and Galvanic Skin Response [GSR] as well.

COMPANY NAME

Pareto Tree Pvt Ltd

FOUNDER'S NAME

Thalansh Batra

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **5 (Functional Prototype has been developed)**

INTELLECTUAL PROPERTY

An information processing apparatus & Method for continuous estimation of arterial blood pressure.
Application No: 202111038774

PROBLEM ADDRESSED

More than 6,00,000 inpatients in India die each year as a result of delayed detection of health deterioration. Human-related monitoring failures are to blame for 46% of these deaths. Human-related monitoring failures are responsible for an estimated 20 million deaths worldwide due to delayed detection of inpatient health deterioration. Due to frequent spot checks, patients are left unmonitored for 96 percent of their hospital stay. Sixty percent of hospitalized patients are not continuously monitored. The general ward is responsible for 40% of all unexpected hospital deaths. To address this issue, Pareto Tree developed a wrist-worn medical device that continually and non-invasively monitors inpatients 24 hours a day, seven day

ABOUT THE TECHNOLOGY

This unique innovation centered on a wrist-worn medical device coupled with a web application that continuously (beat-to-beat) analyses 20 different physiological parameters of inpatients. The hospitals of the future, where inpatients are free of wires and plugins, provide them with the comfort and convenience of mobility without the risk of not being monitored. Utilizing wealth of data, they are not only automating the detection of health decline but also using machine learning to forecast certain crucial events a few hours before they occur.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs

PRODUCT IMAGE

USP

- **Predictive algorithm** for a device that would anticipate cardiac arrest incidents a few hours in advance.
- **Affordable Devices** that can be purchased and utilized not only by private tertiary care hospitals, but also by public hospitals, all primary, secondary, and tertiary care hospitals.
- **Medical Device as a Service is a business model** in which a hospital pays a monthly subscription fee for a bundle of services in order to shorten the time it takes hospitals to repair malfunctioning devices.

END USERS/CUSTOMERS

- Private tertiary care hospitals.
- Public Care hospitals

Healthcare: Devices

Portable all-in-one Dynamometer

APPLICATION

Portable all-in-one dynamometer that can measure handgrip strength, finger strength, back strength, neck strength, leg strength, foot strength and arm strength.

COMPANY NAME

Assistaid Healthcare Pvt Ltd

FOUNDERS' NAME

Siddharth Goel
Paurvi Kedia

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 3 (Development of device at Lab scale)

INTELLECTUAL PROPERTY

Patent filing process under progress

PROBLEM ADDRESSED

Human bodies are designed to move, perform our day-to-day activities and push them to limits of fitness. With so much to accomplish our muscles are under tremendous amount of workload. This can lead to fatigue or injuries. Most sports/activities require higher than average muscle performance. With standards of sports in India increasing continuously and medical sciences progressing we need objective method to quantify muscle strength instead of make-away methods to measure muscle strength. This will lead to better training for sportsperson, so they have better understanding of their own bodies, status of their recovery and strength and better and faster rehabilitation of injured/unwell patients. The current technology available in the market comes from US which is expensive and lacks in after-sales service. Currently, one would need to spend a minimum of 2 Lakh INR to procure 2 SKUs to measure strength which clearly indicates how underserved the market is.

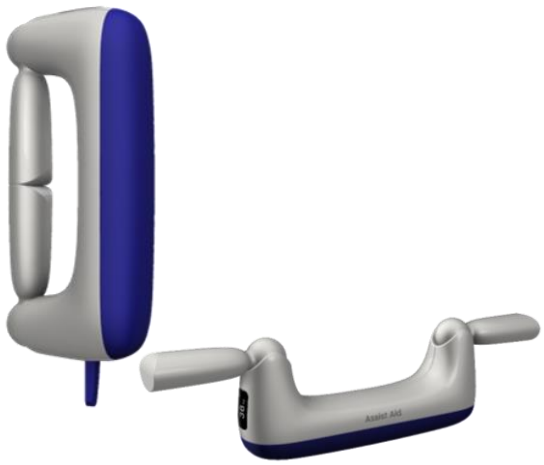
ABOUT THE TECHNOLOGY

- Two 70 kg half bridge load cells provide accurate readings for measurement of 120 kgs
- Rechargeable li-polymer battery for an expected charging time of 1-1.5 hours for about 3-4 hours of usage.
- ESP32 Wrover allows for quick connectivity to your smartphone for further features such as holistic reports and progress reports.
- An iOS/Android app designed on Flutter for a smoother experience

FUNDS RAISED/ACHIEVEMENTS

- Supported under NIDHI PRAYAS: INR 7 lakhs
- Received INR 15 lakhs in grant from Startup India Seed Fund Scheme.

PRODUCT IMAGE



USP

- Reduces the need to buy multiple devices
- More accurate than it's counterparts
- Quicker After-sales services
- Affordable prices

END USERS / CUSTOMERS

Physiotherapists, established Gyms, Orthopedic Surgeons, Occupational Therapist, Physiatrists plastic surgeons, Neurosurgeons, Neurologists, Medical Colleges, Paramedical Colleges, and many more sport academies and training centers. Target market is Rehab professionals of India as well as the Sport professionals. End users are the clinic owners and sport coaches and owners of academies.

Healthcare: Devices

Development Of Advance Ventilator

APPLICATION

Mediklik is developing advance medical devices like – ventilators which can be used for respiratory and life support for patients in ICU & ITU

COMPANY NAME

Mediklik Webhealth Pvt Ltd

FOUNDER'S NAME

Vikramaditya Tirthani

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The Industrial prototype has been fabricated and currently initiating the clinical validation and trials)

INTELLECTUAL PROPERTY

Indian Patent has been filed
(App. No: 202121037769, A347994-001, 347995-001, 347993-001)

PROBLEM ADDRESSED

Over 3.6 million people die each year from respiratory illness in India alone. Over 46 percent of these patients die due to lack of Mechanical Ventilator. Per WHO standards, India itself currently needs an additional 1 Million Ventilators. Currently 95% Advance ventilators used in India are imported and they are not only unreasonably expensive but they have high running cost due to monopoly on consumables. Most of the ventilators are application and environment specific and apart from this ventilation modes, safety certificates and advance tools are other clinical needs contributing to high price factors.

ABOUT THE TECHNOLOGY

Ventilators use different technologies to cater various needs and all technologies have their advantages and disadvantages. Like Pneumatic Ventilators are compact but have limited functionality. Compressor based ventilator are sturdy but are bulky in size. Plastic turbine blowers are smaller but have Low life span. Ceramic turbines have fantastic performance but they can only be used with an Expensive flow sensor, which needs to be changed after every patient. Our Breathing Cassette system, enables us to use ceramic turbine technology without dependency on expensive flow sensors and other disposables. It also integrates UVC filter, so no exhalation filters are required, and above all this complete breathing cassette is autoclavable, with integrated sterilization monitoring system, with this way we are ensuring Safe, Precise and Universal Ventilation at affordable cost.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 21 lakhs from 36 INC against CCPS
- Received BIRAC BIG Grant worth INR 50 lakhs

PRODUCT IMAGE

USP

- Adult Paediatric and Neonatal Ventilation (Ventilation from 2ml tidal volume)
- No flow sensor needed (Integrated reusable flow sensor)
- No bacteria filter needed (Integrated UV filter)
- Smart Sterilization monitoring
- 20000 hours guaranteed lifetime
- Precise Flow from 2ml to 2000ml
- 100% Leakage compensation
- Smart Ventilation - Intelligent ventilation mode
- Smart Pulmo-sight - Lung Graphics for better assessment
- Smart Weaning Tools for faster and easier weaning

END USERS/CUSTOMERS

- Government Hospitals
- Private Hospitals
- Doctors / Nurses / Other Medical Staff

Healthcare: Devices

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

SocioDent Pvt Ltd

FOUNDER'S NAME

Steward Gracian

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The fully functional prototype is ready. Initiating for lab and clinical validation for safety and efficacy)

INTELLECTUAL PROPERTY

Assistive Oral Care Device For Effective Biofilm Removal In The Oral Cavity

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

A portable Biophysically stimulated Therapeutic device for persons with knee osteoarthritis

APPLICATION

The Novel technology has it's application in orthosis along with knee health monitoring features to quantify pain and mobility parameters. Also this invention proposes the quantification of the magnetic field intensity for different grades of KOA disease

COMPANY NAME

Swayogya Rehab Solutions Pvt Ltd

FOUNDER'S NAME

Pooja Jha & Vikas Kumar

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Final version of the prototype is ready & pre-clinical trials are under progress)

INTELLECTUAL PROPERTY

Portable, Non invasive system and Method for healing and monitoring of joint cartilage.
Patent No: 202011055694 A

Design patent on Magnetic Knee brace
Patent No:345739-001

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.

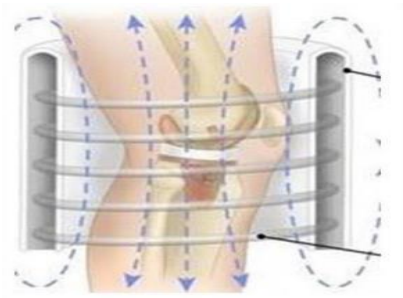
ABOUT THE TECHNOLOGY

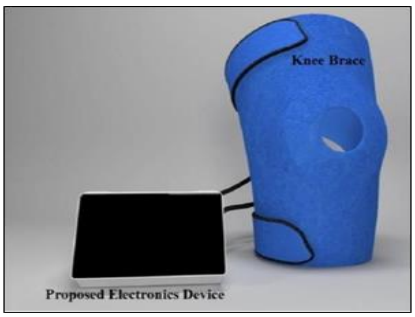
This novel technology focused upon a portable, non - invasive medical device with knee orthosis to slow down and monitor the rate of cartilage degeneration in persons with osteoarthritis. To over comes the lacunae by providing a multidimensional approach that consists of a novel knee orthosis coupled 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 worth INR 15 Lakhs
- Received INR 49.8 lakhs grant-in-aid from BIRAC BIG scheme.
- NIDHI Prayas Grant worth INR 6 Lakhs
- Supported under AMTZ Medivalley Incubation Council

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

Healthcare: Devices

SANJIVANI: Compression Only Life Support Assist Gadget for Resuscitation of Cardiac Arrest victim by Common men

APPLICATION

The device can be used for victims of cardiac arrest due to Heart attack, Electrocution, Lightening injury, Drowning, Choking / food& drug allergies, Suffocation by fire / Chemical smoke

COMPANY NAME

Inofinity Research and Development Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (commercial grade PCB made. Proceeding for injection molding)

INTELLECTUAL PROPERTY

Indian Provisional Patent No. 202031023218; 202031023219; 202032016212

FOUNDER'S NAME

Ashok Kumar Badamali

PROBLEM ADDRESSED

There have been many cases with Sudden cardiac arrest (SCA) – Sudden cessation of cardiac mechanical activity with hemodynamic collapse across the world. 88% of SCA is at home and the survival rate is less than10 % which doubles or triples if cardiopulmonary resuscitation (CPR) is initiated early by a bystander or EMS. The EMS service density, traffic congestion and large population in India are the hindrance for early CPR. Due to which the Victims brain suffers irreversible damage after 6 minutes of cardiac arrest precisely.

ABOUT THE TECHNOLOGY

Our device is an ergonomically designed hand held gadget with audio visual feedback in regional Indian language facilitating common men in providing high quality chest compression to victims of cardiac arrest before arrival of emergency medical team, to save a life. The audio effects of the device includes " Good Job, Low rate & No recoil" considering the rate of compression 100/ min, depth 5 cm and complete recoil according to American Heart Association Basic Life Support Guidelines-(BLS- 2020). The metronome of 100/min rate facilitates in giving compressions at desire rate. Ergonomically design makes hand-bone and arm bones parallel instead of 90 degree and Triceps muscle comes into action unlike manual CPR.

FUNDS RAISED/ACHIEVEMENTS

- Received DST NIDHI PRAYAS worth INR 7 Lakhs
- Received Start Up Odisha Product Development Grant worth INR 16 Lakhs

PRODUCT IMAGE

USP

• Hand held gadget for assisting in CPR with audio visual feedback in multiple regional Indian language option
• Ergonomic design for high quality chest compressions
• Wider diameter of upper circle prevents bending of elbow & loss of vector force.
• Audio Visual feedback by 3 LED (Good Job, Low rate, No Recoil).
• Metronome at 100/min to guide the rate of compression.
• Intermittent audio feedback in selected Indian language.
• Cost-effective. Future communication Ecosystem Component.

END USERS/CUSTOMERS

The end users includes Common men (2%) Indians, Apartments – (65000), Ambulances – (24000), Hotels/malls/Community Centers, Bus Stop/railway station/ airport (3000 +8000 +449), Hospitals, School, college, university

Healthcare: Devices

Smart Socks for early warning and management of diabetes and related complications

APPLICATION

Useful for every diabetics and especially neuropathic patients who wants to prevent diabetic complications to affect their quality of life

COMPANY NAME

FEETWINGS PVT LTD

FOUNDERS' NAME

Siddhant Bhargava
Animesh Kumar
Hrithik Jaiswal

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The initial version of the prototype is ready and is currently initiating the clinical validation studies)

INTELLECTUAL PROPERTY

Foot Ulcer Monitoring system, Non invasive Blood glucose monitoring system
Patent Number:202111025785, 202211005994

PROBLEM ADDRESSED

Patients with lifestyle diseases like diabetes deal with the constant risk of developing life-threatening complications like neuropathy, hypertension, and blindness. This happens because of the lack of continuous and consistent monitoring of critical parameters of the patient. India has close to about 77 million diabetic patients second to China.

ABOUT THE TECHNOLOGY

FeetWings has developed an IoT based smart sock that is powered by our very own SmartYarn which allows it to be an early warning and management tool for diabetics and pre-diabetics by monitoring patients vitals like blood glucose , temperature of multiple ulceration prone regions of a patient's feet and pressure non-invasively at an affordable price.

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 1.1 Cr from SucSEED Indovation
- Raised INR 25 lakhs from BIRAC SEED Fund scheme.
- Winner of Nasscom & Ciena Spaces worth INR 5 lakhs grant.

PRODUCT IMAGE

USP

- 24 x 7 monitoring of patients critical vitals for foot ulcer prevention and blood glucose monitoring
- Smart Yarn, our specialised sensing fabric that is embedded in our sock.
- Helps in early warning and management of blood glucose and foot related complications
- Affordable and accurate monitoring of vitals like blood glucose

END USERS/CUSTOMERS

B2C: Diabetic patients, Patients with Congenital Heart Diseases, Clinicians, and Doctors

B2B: Hospitals, Clinics, Pharmaceutical chains, Wellness Industries

Healthcare: Devices

An effective device to detect and prevent pressure ulcers in bedridden patients.

APPLICATION

The novel device can be used for detecting and preventing ulcers and bedsores in bedridden patients.

COMPANY NAME

CUREOUS Labs Pvt Ltd

FOUNDER'S NAME

Asish Mohandas

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **5 (More than 15 different prototypes made and iterated. Developed individual PCBs. System Integration complete and currently in Volunteer Testing and iteration)**

INTELLECTUAL PROPERTY

Patent: Multiside Tilt Device
Indian Patent: 201811044949
PCT: PCT/IN2019/050869

PROBLEM ADDRESSED

We are developing solutions which addresses the problem of pressure ulcers and falls occurring to bedridden patients in hospitals as well as at homes. Pressure ulcers are one of the costliest and physically debilitating medical condition occurring to bedridden patients. If not prevented early it leads to very high treatment cost, affects quality of life, increases length of stay in hospitals and burden to caretakers in terms of money and time. Every year more than 5 million people are prone to bedsores in India and approximately 1.3 million population die because of the same. The second problem being patient falls from bed which are common and leads to secondary injuries and complications. The caretakers does not know when the patient exits from the bed. More than 7 lakh people die annually due to accidents caused by falls.

ABOUT THE TECHNOLOGY

Sensepod is a sensor based contactless remote patient monitoring system which is capable of continuously understanding the pressure points and the mobility of the patient. Through continuous mobility monitoring and intelligent algorithms, the device can differentiate between various patient movements and provide real-time warnings if there are possibilities for patient fall. Similarly reposition alerts are provided when high pressure points exceeds the specific set thresholds values. The integrated assistance device provides the opportunity to call the caretakers in case of any need. All the data is sent to cloud, where the analysis occurs, and information is sorted and displayed on the Nursing station dashboard / personal mobile devices.

FUNDS RAISED/ACHIEVEMENTS

- INR 49.3 L - Grant-in-aid from BIRAC BIG scheme.
- INR 15 L - Selected under the Social Alpha tectonic Challenge – Innovations in Assistive Technology.

PRODUCT IMAGE

USP

- **Reduces treatment cost and Length** of stay (LOS) and Burden of care substantially by preventing pressure ulcers and bed falls through timely repositioning and fall alerts.
- Nurse calling facility in case of any patient need.
- Reduces number of manual repositioning's and thereby reduces MSD for caretakers.
- More ROI for Private hospitals + KPI dashboard
- Tracks the nurses' adherence to bedsore and fall prevention, and provides better accountability

END USERS/CUSTOMERS

- Private hospitals
- Old Age homes & Nursing Homes
- At home bedridden patients

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

Dhanvantri Biomedical Pvt Ltd

FOUNDER'S NAME

Sruthi Babu

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Market ready for deployment, have just started the sales)

INTELLECTUAL PROPERTY

SMART LOCOMOTORY ASSISTIVE DEVICE
App No: 201941015140
US Patent : 17420525
Trade mark:5023260
Design patent : 355538-001 & 355539-001

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 defection 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

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

Healthcare: Devices

The Save Appliance – An Innovative Device for Correcting Skeletal Class III Malocclusion

APPLICATION

The maxillary protraction device can be used for correction of skeletal class III malocclusion. The proposed appliance has a good social impact as it improves facial appearance and speech of the patient. Furthermore, it can also be used for cleft lip and palate congenital anomaly.

COMPANY NAME

Eishita Healthtech Pvt Ltd

FOUNDER'S NAME

Sandeep Shetty

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The CAD – CAM model of the prototype is ready and tested. Currently undergoing the prototype validation stage)

INTELLECTUAL PROPERTY

A provisional Indian patent application has been filed

App No: 201941006367

PROBLEM ADDRESSED

The prevalence of class III malocclusion is 3.4 – 6 in India with the number as high as 26 among certain population globally. The cleft lip and palate ranks second in the number of all congenital anomaly globally, with about 30,000 births per year seen in India alone. The affected patient has difficulty in speech and chewing efficiency along with esthetic, which affects lifestyle and leads to psychological disturbance. If not corrected at earliest, the patient might need to undergo a surgical procedure which is a much more complicated procedure.

ABOUT THE TECHNOLOGY

Class III malocclusion with deficient and backwardly placed maxilla is seen in greater proportion of population which has negative impact on speech, mastication and esthetics. Eishita Healthtech is working on "The SAVE appliance", which is an innovative intraoral device for correcting skeletal class III malocclusion more efficiently and in a shorter duration. There is no such intraoral appliance available in the market. The Proposed Appliance is expected to have advantages in terms of bulkiness, comfort, patient compliance, and reduced treatment duration. The existing appliance requires a high degree of patient compliance as it is extraoral and bulky. The proposed appliance overcomes these drawbacks.

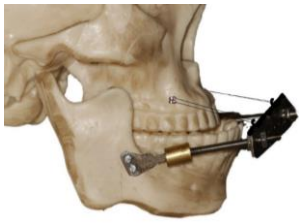
FUNDS RAISED/ACHIEVEMENTS

- Raised INR 49.56 lakhs grant-in-aid from BIRAC BIG scheme.

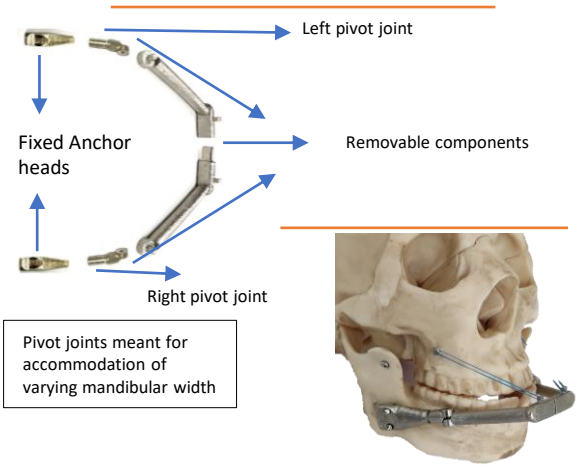
END USERS/CUSTOMERS

- In house orthodontic patients, Dental Hospitals and Clinics, Rehabilitation Centre and Research Centres

PRODUCT IMAGE



First prototype



Final optimized device with force module in place for maxillary protraction

USP

- The device is intra-oral semi-fixed appliance, the anterior part can be easily removed and placed by the patient.
- High force level reduces the treatment time with effective results thus eliminating the need for major surgical procedures
- Skeletal and dentoalveolar changes can be achieved
- less bulkier and more comfortable
- Reduced patient attrition
- Cost-effective and user friendly treatment process

Healthcare: Devices

ALBOGEL: Highly Biocompatible and Injectable hydrogel for prevention of post-surgical adhesions

APPLICATION

The hydrogel formulation is effective against surgical wounds and cuts, ballistic wounds, accidental wounds, burn injuries, etc.

COMPANY NAME

Envisage Medtech Pvt Ltd

FOUNDER'S NAME

Pijush Giri

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The hydrogel formulation and the applicator has been designed and ready. In vitro testing is over and currently under In vivo testing)

INTELLECTUAL PROPERTY

HIGHLY BIOCOMPATIBLE AND INJECTABLE HYDROGEL
(App No: 202131036067, Indian Patent)

PROBLEM ADDRESSED

According to a report 232 million surgeries were done. Studies shows that 85 out of 90 patients suffer from adhesion i.e. the chances of getting adhesion after surgery is 94 percent. Post-operative adhesion of the tissue with the other tissue or organ because of the injury or cut made by the medical procedure to the patients. The adhesion not only cause body complication but also increases the therapeutic cost. Interceed ® and Seprafilm ® are are two FDA approved anti-adhesive solutions. Interceed ® is effective only in absence of blood contamination and Seprafilm ® Â® has low mechanical properties, is brittle and difficult to handle.

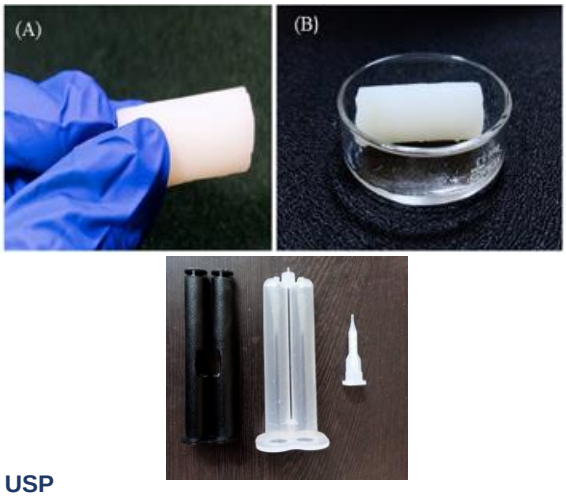
ABOUT THE TECHNOLOGY

Envisage Medtech has ve built up a hydrogel to prevent adhesion. With time the surgical wounds heals and the hydrogel degrade reducing the possibilities of any post toxic effect. ur product is in liquid form which can without much of a stretch be infused through a syringe no more injuries and wounds to the patient. The liquid moves toward becoming gel simply after around 10-20 minutes which likewise that a specialist surgeon can motivate enough time to apply it in the patients body. The hydrogel product is consist of a protein and polysaccharide. Both are biocompatible and degradable material. The residues of the degraded hydrogel can be used for the metabolic process by the body itself and hence cause no harm to the body.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 49.66 lakhs grant-in-aid from BIRAC BIG scheme.

PRODUCT IMAGE



USP

- The hydrogel is highly biocompatible.
- The hydrogel is injectable, so it can be used for laparoscopic surgeries.
- The hydrogel is stable in aqueous condition up to 11 days
- Tissue adhesive strength of modified albumin-based hydrogel is 4.4 kPa
- Self healing properties of modified albumin-based hydrogel is within 4 hours

END USERS/CUSTOMERS

- Private and Govt Hospitals and Clinics, Pharmaceutical Retailers

Healthcare: Devices

ThoraCare: A non-invasive easy to use early stage heart and lung abnormalities screening device

APPLICATION

The device can be used as non-invasive portable device for advance screening of Heart and Lung disease using two step detection procedure.

COMPANY NAME

Larkai Innovations Pvt Ltd

FOUNDER'S NAME

Pritam Dhalla

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (Product is fully developed, ready for commercialization is in process)

INTELLECTUAL PROPERTY

PCT Application No.
L-92172/2020

Indian Patent Application No.
202031010803

PROBLEM ADDRESSED

Cardiovascular diseases (CVDs) and Lung diseases are the leading cause of deaths globally with an estimated 17.3 million and 3.2 million annual deaths respectively. CVDs are expected to reach over 23 million by 2030 and COPD has grown at 11.6 % in the last 25 years. India contributes to 20 – 35 % of the global mortality rate for the cardiovascular and pulmonary diseases. To further add to the issues of high mortality rate, a recent study published in British Medical Journal found that the doctor to patient ratio in India is 1:1278 with about 70% of the rural population having minimal access to healthcare professionals. The number of villages that doesn't have presence of doctors is reported to be around 43.5 %. Physicians are responsible for the treatment, it is often the nurses who are the primary users of such medical devices. In these environments, devices should be designed in a way that they can be used by untrained and low-skilled users.

ABOUT THE TECHNOLOGY

ThoraCare is a portable device that replaces several distinct elements of a traditional ECG and Stethoscope setup. A novel AI algorithm which diagnose early stage real-time heart impulse and valvular disease for futuristic predictive analysis. The device provides comprehensive heart and lung condition screening report within 30 seconds and this report can also be examined by a low skilled person. The Model Available is a Desktop model.

FUNDS RAISED/ACHIEVEMENTS

- DST-NIDHI EIR: INR 3.6Lakhs.
- MeitY- TIDE 2.0 Grant : INR 7 lakhs
- Received Startup Odisha Product Development Grant worth INR 15 lakhs
- Received The Best Young Entrepreneur" in The BENGAL PRIDE AWARDS 2021

PRODUCT IMAGE

USP

- Screens Heart and Lungs at one Point of Care, providing a comprehensive test
- Real time AI powered impulse and auscultation waveform and data on screen
- Real time noise reduced sound of Heart and Lungs with recording feature
- Standalone device, requires no external power or accessories to function
- Our device's working principle is based on bio signal acquisition and their analysis -
- For the screening of the Heart- beat-to-beat Heart signal acquisition done by recording ECG (Electrocardiogram) and PCG (Phonocardiogram) and analyzing them using AI based system for detection of any abnormal impulse or heart auscultation related abnormalities.
- For screening of the Lungs- respiratory signal acquisition by recording Bronchial and Vesicular breath sounds and comparing them using the AI based system for detection of any abnormal lung conditions in a few seconds.

END USERS/CUSTOMERS

Healthcare centers, Hospitals, Physicians

Healthcare - Devices

PrisTINE: A technology for fabricating wound healing matrices from mammalian tissues for rapid wound healing.

APPLICATION

Commercialization of a wound healing matrix fabricated out of mammalian tissue for treating a wide varieties of non-healing wounds including incision wounds, diabetic ulcers, burn wounds etc.

COMPANY NAME

Alicorn Medical Pvt Ltd

FOUNDER'S NAME

Visakh S Kumar

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 **(Late-stage validation – Pre-clinical safety studies include Sterilization Validation Study (completed), Stability Study, Packaging Validation and Bio-compatibility Studies – On-going)**

INTELLECTUAL PROPERTY

IP filing is under progress

PROBLEM ADDRESSED

The pressing need for an advanced wound care product which is affordable to common patients is a major concern to the clinicians working in the Indian healthcare sector who are importing advanced wound products. Hospitals are importing such advanced wound care products from Western multinational companies which is prohibitively expensive for common patients in India.

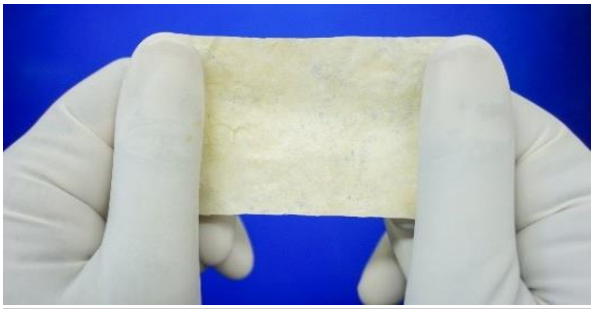
ABOUT THE TECHNOLOGY

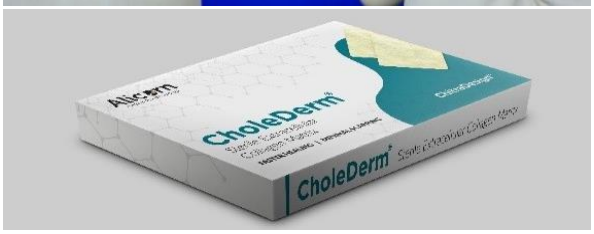
We propose to use porcine cholecyst gallbladder as the main raw material, which has not been used by any commercial firm for preparing biomedical devices, as the source organ for the animal derived extracellular matrix. Current day procedures use enzymes and detergents for effective de-cellularization of these organs or tissue. The usage of detergents or enzymes would destroy the essential bio-molecules that are needed for effective wound healing of our body. In contrast, we are using a unique non-detergent or non-enzymatic technology called PrisTINE for the processing of extra cellular matrices. By not using detergents or enzymes this technology can preserve bio-molecules that facilitate wound healing and can induce faster healing of superficial wounds.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- NIDHI SEED Support. Funds received: 10.00 lakhs
- Trademark Registration of names "CholeDerm" and "ChitraDesign" are completed and approved for Alicorn Medical Private limited.

PRODUCT IMAGE





USP

- First and only cholecyst derived product in India which has not only superior wound healing potential but also 1/10th of the cost imported products.
- PrisTINE technology has the capability to preserve all biomolecules because it is a non-enzymatic or non-detergent process.
- MAKE IN INDIA product with superior quality.
- Published papers conform efficient wound healing in animals like dog, rabbit, rats. Studies also revealed that cholecyst derived scaffold is a promising animal derived xenograft for bio-medical applications.

END USERS/CUSTOMERS

Hospitals, Clinics, Medical facilities, Medical practitioners, General Surgeon, etc.

Healthcare: Devices

Electrically Active Anti-Microbial Bandage for Wound Healing

APPLICATION

The novel wound care product can be used as a bandage to be applied on the wound surface for accelerated wound healing and eliminating the biofilm formation. The product can be used for accidental wounds, ballistic wounds, surgery wounds, etc.

COMPANY NAME

iHeal Innovations LLP

FOUNDER'S NAME

Madusudhan Bhat

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The final prototype is ready and its ready to go for pre clinical validation)

INTELLECTUAL PROPERTY

Patent: SYSTEM AND METHOD FOR PREVENTING BIOFILM FORMATION

Application No: 201811034718

PROBLEM ADDRESSED

All open wounds are susceptible to the growth of microorganisms which gets attached to the surface and proliferate to form biofilm. These biofilms are resistant to defense mechanisms of the body and even to antibiotics leading to treatment failure and infection recurrence.

ABOUT THE TECHNOLOGY

Inducing a physiologically safe current weak electric fields is one possible strategy for altering bacterial movement, thereby providing enough and strong evidence of anti-biofilm strategies. iHeal Innovations is working on a unique silver thread woven on silk fabric, which can be used as bandage ElectraS® Bandage. This can be applied on the wound surface and a micro-/milli-volt current can be passed through the silver thread by a small portable battery 6 volts battery. This can generate silver ion on the wound surface with antimicrobial activity. The bandage is for external use with least potential of toxicity. Moreover by using the basis of weak electric fields, it would succeed in accelerated wound healing process and also reduce the cost incurred in wound management.

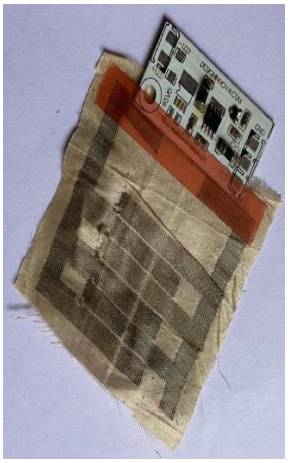
FUNDS RAISED/ACHIEVEMENTS

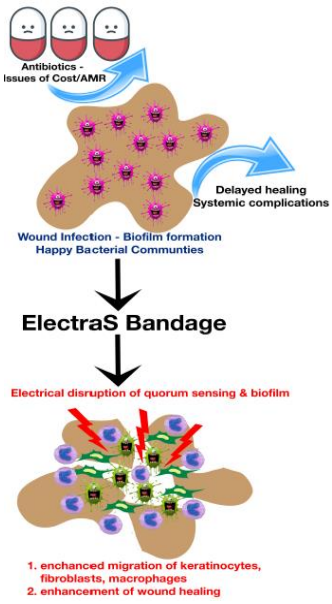
- Received INR 48.37 lakhs grant-in-aid from BIRAC BIG scheme

END USERS/CUSTOMERS

- Hospitals, Clinics, Medical Centres including PHCs and UPHCs

PROCESS FLOW





USP

- **ElectraS®** Bandage targets the phenomenon of quorum sensing, an important aspect of pathogenesis of biofilm
- Weak electric fields have anti-biofilm property
- The product may enhance the migration of lymphocytes, fibroblasts, macrophages, and keratinocytes
- Bandage for external use with least potential of toxicity and is like to be in Class I category, which poses no risk

Healthcare: Devices

A more acceptable and effective way to prevent hip fractures in the elderly due to falls.

APPLICATION

An IoT-enabled smart device with protective cushions that inflate and retracts based on postural characteristics.

COMPANY NAME

Ripple Healthcare Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Alpha prototype semi-functional prototype is ready)

INTELLECTUAL PROPERTY

Indian Patent has been filed
App No: 202111037084

FOUNDER'S NAME

Kaushal Kothari

PROBLEM ADDRESSED

Hip fractures due to falls are a major public health concern for the elderly. Existing products are either prohibitively expensive or have poor acceptability. We are building an affordable, highly acceptable, and effective product to protect millions of patients from disability and death. Over 12 LAKH elderly are treated in emergencies for fall-related hip fractures in India annually. Hip-fractures lead TO IMMOBILITY AND PERMANENT DEPENDENCE, negatively impacting patients' Quality of Life.

ABOUT THE TECHNOLOGY

A wearable SMART device with protective cushions covering hip bones. The cushion is inflated in less than 2 seconds from the time of detection of CHANGE IN POSTURE. Hip Pro+ consists of a combination of electronic hardware, including gyroscopes and accelerometers, to identify posture based upon a carefully developed algorithm having AI application. The system analyses movements up to 1,000 times per second. Once a postural change has been detected the cushion are inflated. Artificial Intelligence is able to achieve the accurate prediction of the user's activities with the passage of time. Therefore, the deployment of the cushion becomes more effective with time.

FUNDS RAISED/ACHIEVEMENTS

- Funds raised from Angel Investors 18 Lakhs.
- Received DST Nidhi Prayas Grant - 8 Lakhs.
- 1st Prize in KHOJ 1.0 Social Hackathon Innovation challenge IIITDM-Jabalpur- 5 Lakhs.
- 2nd Runner up out of 450 teams in Social Innovation competition, Action Plan of IIT Bombay- 50K Rs.

PRODUCT IMAGE

USP

- Smart preemptive deployment. Effective protection only during high risks.
- 10X cost-effective and 3X lightweight.
- No recurring cost.
- Comfortable and Ergonomic design. Can be worn during sleep.
- Addressing "Fear of Falls"
- Waterproof, thus recommended being used in the bathroom.

END USERS/CUSTOMERS

Hip Fracture patients, Cognitively impaired patients, Osteoporosis elderly, Frail elderly, Arthritis patients, etc

Healthcare: Devices

Adjustable Postural Correction Chair : Cerebral Palsy

APPLICATION

This invention is multifunctional therapeutic and rehabilitative device which facilitates correction of posture and maintains neutral skeletal alignment. This novel device has application in following aspect such as

- Neutral skeletal alignment
- Maximum function with minimum pathology
- Hand function and rehabilitation

COMPANY NAME

Halder Rehab Pvt Ltd

FOUDNER'S NAME

Subrata Halder

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **5 (Advanced version of the prototype is ready & ready for user validation)**

INTELLECTUAL PROPERTY

Adjustable posture correction chair

Patent No: PCT/IN2018/000013

PROBLEM ADDRESSED

Cerebral Palsy is a non-progressive lesion of the immature brain that results delay in developmental milestones due to abnormal muscle tone, impairment of movement and postural control in childhood. An estimated 2.3-3.6 per 1000 live birth are cerebral palsy in India. Children with multiple handicaps, especially Cerebral Palsy, have difficulty to maintaining the posture and are not able to sit without support.

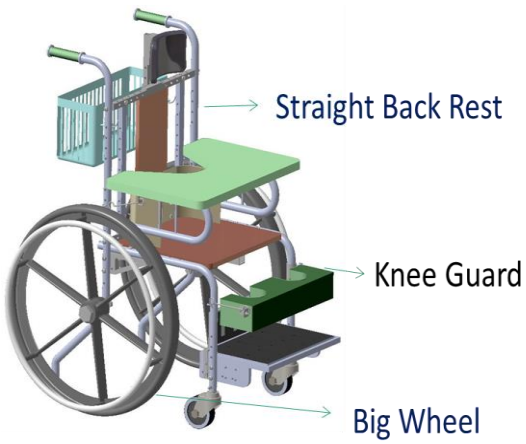
ABOUT THE TECHNOLOGY

This technology offers an Assistive Device, Adjustable Postural Correction Chair: Cerebral Palsy which will enable a person with locomotor disability to improve the posture and function. This invention is multifunctional therapeutic and rehabilitative device which facilitates correction of posture and maintains neutral skeletal alignment. Base of the seat along with adjustable back rest and foot rest maintains the child to seat properly with trunk straight or inclined keeping foot in desired angle with/without detachable pommel/knee blocker. Child sits securely with U shaped detachable side guard on which detachable cut-out tray always maintains horizontal position even in back rest in tilting placed to perform hand functional activity. Children from 2-12 years can be fitted properly by adjusting height and breadth of back rest, changing of width and depth of the seat and adjustable height of footrest with adjustable footplate. Detachable head rest and straps to be used as required. Small or big wheel can be attached for indoor/ outdoor mobility along with basket.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 49.75 lakhs grant-in-aid from BIRAC BIG scheme

PRODUCT IMAGE



USP

- Customizable according to the child's measurement.
- Foldable and detachable for easy transportation.
- Various types of required adjustments possible from 2-12 years child in a single unit for sitting.
- Affordable price as compare existing market player.

END USERS/CUSTOMERS

- Children suffering from cerebral Palsy, Childcare clinics & hospitals, NGOs, Special schools, Rehabilitation care units.

Healthcare: Devices

Novel Endodontic File Viewing Box (EVA)

APPLICATION

The proposal is designed to manufacture Endodontic (Root canal therapy) File Viewing Apparatus or device which will help the clinician to better understand the condition of the files used in the therapy and make them aware to discard the file before it undergoes separation in the patients root canal. The device aids in distinguishing between intact or unused files from used and distorted files which have high tendency to separate in the root canal.

COMPANY NAME

Whatnot Dental Solutions Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **6 (Clinical validation of the developed product is under progress)**

INTELLECTUAL PROPERTY

Indian Patent has been filed
Application no : 202031024226

FOUNDER'S NAME

Lora Mishra

PROBLEM ADDRESSED

Dental Caries is the most prevalent disease affecting ages of all group. Pain is the most common symptom associated with it which can be treated by Root canal therapy(RCT). Endodontics, or root canal therapy, consists of the removal of infected blood and nerve supply using files, followed by the filling of the space with biocompatible material. These files are either made up of Stainless steel or Nickel Titanium. Within the confined space of root canal these files undergo torsional and cyclic fatigue. These files are meant for single use but for economic reasons these files are used multiple times to make the root canal therapy affordable to all class and masses. This leads to common complication, separation of the file within the root canal space can lead to foreign body reaction in the patient and which can cause discomfort. Thus there is a need of a device which can help the clinicians to distinguish between used and unused files and discard distorted files so that they do not break while performing RCT.

ABOUT THE TECHNOLOGY

This device that is Endodontic File Viewing Appratus or box make a clinician aware of distortion of file. This enables clinician to discard them prior to use in RCT. The device not only magnifies the file and enables the clinician to look at the distortion of the file or any pre-existing manufacturing defect present. Also AI bases device gives indication if the file is good to use further.

FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG: 49.07 Lakhs
- Startup Odisha : 16 Lakhs

PRODUCT IMAGE

USP

- The product has tough hardware and AI integrated software which distinguishes between intact and distorted files.
- The device provides distortion-free viewing and therefore a clear image of the viewing object.
- The device is light in weight and can be easily transported from one place to another and economical.
- This product is affordable and easy to use, making it an essential part of every dental clinic.

END USERS/CUSTOMERS

- Dentists, Dental clinics, Hospitals

Healthcare: Devices

Aerosolized toluidine blue sprayer for early diagnosis of oral potentially malignant and malignant disorders

APPLICATION

This device will help in early diagnosis of oral potentially malignant and malignant disorders and prevent delay in diagnosis. This invention also relates to detection of dysplasia in apparently normal looking oral mucosa which will be providing information during follow up visit of the patient who have already undergone surgery for oral cancer.

COMPANY NAME

Quickblue Oral Care Pvt Ltd

FOUNDER'S NAME

Swagatika Panda

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (MVP of delivery method is ready and currently under initiation of the clinical trials and validation studies)

INTELLECTUAL PROPERTY

Aerosolized toluidine blue sprayer for early diagnosis of oral potentially malignant and malignant disorders

Application No. 202131053258

PROBLEM ADDRESSED

Presently Oral cancer burdens the entire world, developing countries in particular by the high mortality rate. This is mostly attributed to delayed diagnosis followed by delayed treatment. Inaccessibility to an efficient cost effective screening tool limits the clinician to diagnose oral cancer at an early stage thereby leading to increased mortality in our country. There is a dire need of a device which may help in early diagnosis of oral potentially malignant and malignant disorders and prevent delay in diagnosis.

ABOUT THE TECHNOLOGY

This invention relates to aerosolization of toluidine blue solution and acetic acid which when applied through a pressurized sprayer may aid in identification of appropriate site of biopsy. This device will help in early diagnosis of oral potentially malignant and malignant disorders and prevent delay in diagnosis. This invention also relates to detection of dysplasia in apparently normal looking oral mucosa which will be providing information during follow up visit of the patient who have already undergone surgery for oral cancer. This invention relates to aerosolized toluidine blue sprayer for early diagnosis of oral potentially malignant and malignant disorders wherein two separate disposable aerosol canisters one large containing 1 acetic acid and one small containing 1 Toluidine blue shall push the liquid product as paint into the oral mucosa and turn it into an aerosol cloud leading to effective absorption of said chemicals by mucosal cells which thus facilitates increased sensitivity of such tests. Furthermore, this invention in particular facilitates easy handling efficient, user friendly and cost effective.

PRODUCT IMAGE

USP

- Effective absorption
- Appropriate biopsy site determination
- No need of any applicator thereby controls infection
- Cost effective and less time consuming. Ready to use nature acceptable by surgeons.
- Most valuable during MASS SCREENING of oral pre-cancer and cancer to educate/motivate patients

FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG worth INR 49.45 Lakhs
- Received the new drug status from DCGI, CDSCO

END USERS/CUSTOMERS

- Head & Neck Onco-surgeons, ENT specialists, Dental surgeons, Hospitals, rural health centers, Clinics, etc

Healthcare: Devices

Development of TiO2 Nanoparticles Impregnated Surgical Silk Suture - A Novel Approach

APPLICATION

This proposal aims to develop a new method to enhance the performance of surgical silk sutures by coating the silk threads with nano films of titanium dioxide (TiO2). Further the developed TiO2 coated silk suture with excellent antibacterial activity and biocompatibility could be used for different surgical operations.

COMPANY NAME

Kodigerao Innoventures Pvt Ltd

FOUNDER'S NAME

Vidya KC

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The proof of concept of the product has been developed and Biocompatibility Testing & In-Vitro Preclinical Safety Tests of Coated Suture is currently being carried out)

INTELLECTUAL PROPERTY

Indian Patent Filed:
Application no: 202031005561

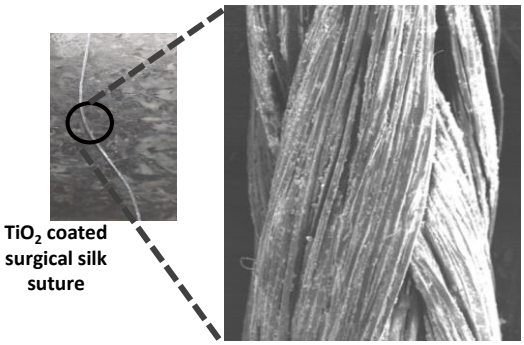
PROBLEM ADDRESSED

There is a growing demand of economical methods of wound healing in the filed of surgery and health care where application of surgical suture plays an important role. Conventionally used surgical silk sutures are braided and multifilament which leads to the formation of bacterial colonisation (biofilm) resulting in in tissue reaction and Surgical Site Infection SS and less susceptibility for antibiotics and antiseptics. Due to increase in number of surgeries and burn cases, there had been a high growth of the suture market. Nevertheless due to the high fabrication cost of non-absorbable sutures manufacturers have been encouraging hospitals to switch to absorbable sutures as they are time saving and are more efficient clinically. However, there is a concern lies for the braided and multifilament nature of the suture which can cause sever infection to the surgery site. Thus there is a urgent need of absorbable sutures which will be cost effective, biocompatible in nature, with excellent antibacterial activity.

ABOUT THE TECHNOLOGY

The project majorly focuses on enlarging the performance of the surgical silk suture by using nano films of titanium dioxide coating on the silk threads. The deposition of the thin layer of TiO2 nanoparticles on surgical silk suture has been done with the help of (atomic layer deposition) ALD. The TiO2 coated silk sutures would not have the capillarity property of the suture, hence no bacterial colonisation and no biofilm formation resulting in decrease in the rate of Surgical Site Infection SSI , due to the antibacterial property. In addition TiO2 impregnated silk would be a widely available novel suture material in the market due to its antibacterial property, biocompatibility, self cleaning property (due to photocatalytic ativity) good physical and handling properties of surgical silk and in addition is cost effective to the patients.

PRODUCT IMAGE



USP

- TiO2 coated surgical silk suture would not have the capillarity property of the suture, hence no bacterial colonisation and no biofilm formation.
- Antibacterial property leads to the decrease the chances of Surgical Site Infection SSI.
- Biocompatible in nature along with self-cleansing and UV protective properties
- Low fabrication cost on comparison to the commercialized sutures available in the market.

FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG worth INR 44.83 Lakhs

END USERS/CUSTOMERS

- PHCs, Private practioners, Patients, Tertiary care hospitals,, dental clinics

Healthcare: Devices

Impregnated Disposable Infant & Baby Tooth Cleaning Device

APPLICATION

The infants and babies will be benefitted as their mothers will have an affordable and effective tool for massaging their gum and cleaning teeth.

COMPANY NAME

K First Biotech Pvt Ltd

FOUNDER'S NAME

Kanika Singh Dhull

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (The POC has been established. Initial version of the prototyping is under progress)

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

Early childhood caries ECC is a serious public health problem in both developing and industrialized countries. The consequences are alarming and can affect the immediate and long-term quality of life of the child's family and can have significant social and economic consequences beyond the immediate family as well.

ABOUT THE TECHNOLOGY

Early childhood caries(ECC) is Caries occurring in children of age 6 years or younger. Caries process starts as withdrawal of inorganic constituents Calcium & Phosphorus from the enamel, with production of weak acids lactic acid by the cariogenic bacteria S.mutans followed by dissolution of organic constituents. This process can be halted during infancy with the cleaning of teeth, thereby removing bio-film(cariogenic bacteria) adhered to the enamel surfaces. Additionally, application containing remineralising agents would enhance the redeposition of Calcium & Phosphorus, thus reversing the condition if treated in its incipient stage. So this device will help in effective cleaning of teeth and prevention of caries.

FUNDS RAISED/ACHIEVEMENTS

- DST NIDHI PRAYAS- INR 7.8 Lakhs

END USERS/CUSTOMERS

This project is targeted at infants and babies by providing their mothers with an affordable and effective tool for massaging their gum and cleaning their teeth. End users will be mothers of infants and babies.

PRODUCT IMAGE

Schematic diagram showing Disposable infant and baby tooth Cleaning device

USP

- This is a disposable baby tooth cleaning and gum massaging device which will be impregnated with medicament for effective cleaning of newly erupted teeth and thereby preventing early childhood caries during infancy.
- The proposed medicament incorporated will not only prevent the early childhood caries but also reverse the initial lesion created by dental caries. Therefore it will have a dual benefit.
- The gum massaging device will provide soothing and anti inflammatory effect to the gums during eruption of new teeth.
- There are no such disposable device available in Indian market.

Healthcare: Devices

CRANIO MANDIBULAR BRACE: A Novel Device for Myo-Facial Pain Dysfunction Syndrome

APPLICATION

The moto of the proposed work is to design and produce a cranio-mandibular brace which will treat patients suffering from MPDS.

COMPANY NAME

RN BIOMEDICAL Pvt Ltd

FOUNDER'S NAME

Nivedita Sahoo

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 3 (The POC has been established. Currently working on prototyping of the device)

INTELLECTUAL PROPERTY

IP filing under progress

PROBLEM ADDRESSED

Myo facial pain dysfunction syndrome (MPDS) is one of the most common non- tooth related oral-facial pain condition that is generally encountered by dental patients in their day to day life. The product will be a cranio-mandibular brace which will treat patients suffering from MPDS. The brace will be reducing the patient's burden of going through the clinical procedures with drugs to splint therapy. It will negate the chance of a patient's planning for surgery.

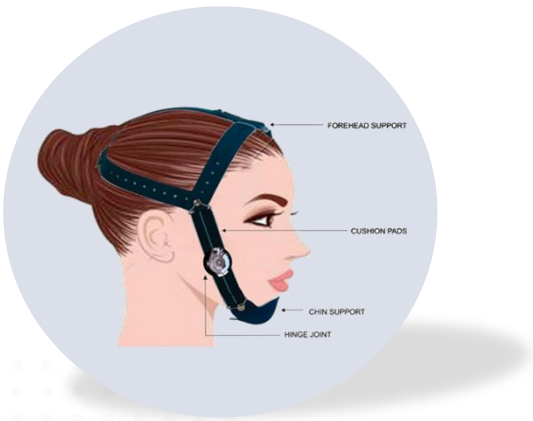
ABOUT THE TECHNOLOGY

Our device is based on **patentable ultrasonic deep palpitation Technology.** It will be using a 3 MHZ band of programmable ultrasonic palpitations to heal the facial pain. MPDS has a lifetime prevalence of 85% in general population. The moto of the proposed work is to design and produce a cranio-mandibular brace which will treat patients suffering from MPDS. It will be a patient friendly appliance available to the patient at low cost. The cranio-mandibular brace will be reducing the patient's burden of going through the procedures of pharamacological management with drugs to splint therapy. In severe cases, the brace will negate the chance of a patient planned for surgery. The cranio- mandibular braces will be first of its kind in dentistry. In orthodontics, we have many orthopedic and myofunctional appliances to redirect the growth of the jaws. With the background of growth modulation in orthodontics we plan to design a brace which will solve the problem of MPDS based on their etiology.

FUNDS RAISED / ACHIEVEMENTS

- DST NIDHI PRAYAS-4.8 Lakhs

PRODUCT IMAGE



USP

- The C-Ranio will be first of its kind in dentistry with **ultrasonic deep palpitation technology.**
- **Portable wearable device** for relieving muscle tensions associated with MPDS.
- Clinicians will get **Real time control status** of patients.

END USERS / CUSTOMERS

The patients suffering from MPDS (Myofascial Pain Dysfunction Syndrome)

Sector

Industrial Biotechnology: Process / Product

Industrial Biotechnology

Printed Smart Label for detection of packaged food status

APPLICATION

The novel invention has applications in a variety of industries, including the food industry, packaging industry, food waste management, and supply chain management.

COMPANY NAME

Elvikon India Pvt Ltd

FOUNDER'S NAME

Rambabu Atluri

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **4 (Sensing ink is under optimization and SOP development)**

INTELLECTUAL PROPERTY

Sensing materials, method for making functional devices and applications thereof,
Patent No: PCT/SE2018/050236

PROBLEM ADDRESSED

Inaccuracy in the date labeling procedure (best before date) is regarded as a major cause of food waste. Every year, about one-third of all meat is thrown away. Furthermore, while determining a product's shelf life, meat producers utilize an unfavorable risk margin. This is primarily due to a lack of access to technologies that can monitor the status of food across the value chain. Furthermore, food containers are now labeled with best before or use by dates that are determined with a margin based on assumptions about distribution. To address this issue Elvikon India invented a digitalized version of the best before the date of the packaged meats, thereby addressing the global waste of meat as well as increasing food safety.

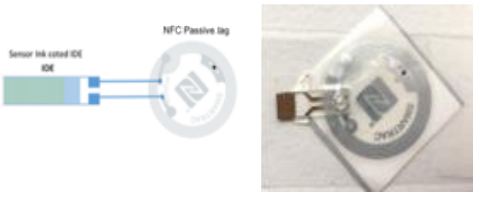
ABOUT THE TECHNOLOGY

The unique idea takes a different method to generate a smart label, relying on sensor ink deposited on an interdigitated electrode (IDE). The sensor ink monitors the extent of meat rotting by reacting to biogenic vapors (VOCs), which are direct indicators of increasing bacteria in food spoiling. The conductivity is converted into a frequency that can be read by a digital reader, allowing consumers to easily comprehend the meat quality.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs

PRODUCT IMAGE



Elvikon sensor platform: A simple configuration of the label with counterparts IDE - NFC tag and its reality.

With the aid of a reader, consumers can read digitally the freshness of packaged food.

USP

- **Digitalisation** of printing date for more exact measurement.
- Tracing the source of food-borne illnesses and enabling authorities to locate the source of an **outbreak** in hours rather than weeks.
- **Printable** for industrial implementation.
- Sensor for **bacterial activity**.

END USERS/CUSTOMERS

- Meat Producing vendors
- Food & Packaging suppliers

Industrial Biotechnology

Development of marine polysaccharides mediated nano products for shrimp disease management

APPLICATION

The developed polysaccharide based nanocomposite feed supplements will be commercialized as a potential feed additive for shrimp aquaculture in order to prevent diseases and protect the industry from huge economical losses.

COMPANY NAME

Suveshika Bi Products Pvt Ltd

FOUNDER'S NAME

B. Vaseeharan

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The BIONAN COMPO feed supplement were now available in 1, 2.5 and 5 L packs. The feed supplement can be mixed with shrimp feed by the aqua farmers.)

INTELLECTUAL PROPERTY

Method for production of carbohydrate from seaweed and applications thereof.

Application No. 201941035845

PROBLEM ADDRESSED

Aquaculture being a multi-billion dollar industry is occasionally facing setbacks, due to infectious diseases, which are major impediment to the development of aquaculture, particularly shrimp culture. Among the diseases, Early Mortality Syndrome EMS or more technically known as Acute Hepatopancreatic Necrosis Disease AHPND and Running Mortality Syndrome RMS are the common disease in shrimp culture cause huge economic losses to the industry. It has been reported that the pathogenic Vibrio belonging to Vibrio harveyi and V. parahaemolyticus are the causative agent for the EMS/AHPND and RMS. Likewise, White Spot Syndrome Virus WSSV is a highly contagious viral pathogen infecting all crustaceans.

ABOUT THE TECHNOLOGY

The technology is focused on production of the polysaccharides mediated nanoproducts to enhance the immune activity and disease resistant effect against the major shrimp aquaculture pathogens V. parahaemolyticus, V. harveyi and WSSV in shrimp Litopenaeus vannamei to conserve the aquaculture industry. At this point, diet plays a major role which significantly contributes growth and immune status of fishes. The technology would help to explore a novel mechanism of formulating nano feed supplements using marine polysaccharides fucoidan and alginate from marine sources for enhancing the disease resistance in shrimp against V. harveyi, V. parahaemolyticus and WSSV. The experimental animal, i.e. shrimps were fed with commercial feed incorporating formulated marine polysaccharides coated zinc oxide nano products with different concentration. They were experimentally infected with WSSV and its immune response were analyzed by immunological parameters following standard methodologies.

PRODUCT

BIONAN COMPO feed supplement were now available in 1L to 5 L packs

USP

- Enhance both physiogical & immunological response.
- Increase disease resistant capacity
- Yield high quality aquatic animals with in stipulated time frame
- Vibriosis and WSSV control by potential BIONAN COMPO feed additive for aquaculture.

FUNDS RAISED/ACHIEVEMENTS

- Supported Under BIRAC BIG Grant worth INR 50 Lakhs
- The BIONAN COMPO feed supplement are now available in 1, 2.5 and 5 L packs.

END USERS/CUSTOMERS

- Shrimp Farmers, Aqua consultants, Aqua Dealers, Aquaculture feed supplements manufacturing companies.

Industrial Biotechnology

A novel, cost-effective material with enhanced activity and thermostability: a new generation protease inhibitor for biotech industry

APPLICATION

The novel formulation of protease inhibitor can be used for isolation of different proteins from the cell line, plant, microbes, tissue, nematodes etc. and impacts on the quality protein for better R&D outcome.

COMPANY

Biopioneer Pvt Ltd

FOUNDER'S NAME

Dr Bijayananda Panigrahi

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (The protease inhibitor formulation is ready and early stage validation is completed)

INTELLECTUAL PROPERTY

Patent: Metal based hybrid protease inhibitor for multiple protease
(Application No: 202131010934)

PROBLEM ADDRESSED

Processing of clinical sample/ any protein sample, the presence of undesired proteases during the isolation and purification of intact peptides/proteins usually leads to the reduction of pure protein yield and active protein. Protease inhibitors available in the market are expensive, sensitive to temperature, less effective and limited inhibition activity. Additionally, commercially available protease inhibitors are composed of a number of different ingredients and each ingredient is responsible for inhibitory activity against specific protease

ABOUT THE TECHNOLOGY

Biopioneer is developing a NexGen HM Protease Inhibitor which can be used as an efficient protease inhibitor for a wide range of protease enzyme. The newly developed material is a single component, stable at room temperature, non-toxic, water soluble and efficient formulation which can inhibit serine protease significantly around 97. It also exhibits inhibitory action against strong protease such as proteinase K, which is rarely seen in case of traditional protease inhibitor. Apart from these, the hybrid material is around 10-15 times less expensive than traditional protease inhibitors.

FUNDS RAISED/ACHIEVEMENTS

- Received INR 49.38 lakhs grant-in-aid from BIRAC BIG scheme.
- Received INR 15 lakhs grant-in-aid from Startup Odisha Product Development Fund

PRODUCT

USP

- The formulation is highly efficient to inhibits against a broad spectrum of protease enzymes and thermally stable at room temperature.
- The formulation is water soluble and exhibits pH stability
- EDTA free and less toxic product
- Compatible with buffer and surfactants
- No interference in fluorescence based quantification of proteins
- Low competitive pricing (5 – 10 times)

END USERS/CUSTOMERS

Academic and Research labs, Cosmetic industry, Food and Agriculture industry, and Diagnostic labs

Industrial Biotechnology

HABBITS: Redefining Oral Care, Promising Smiles

APPLICATION

Technology-enabled Oral care service and product ecosystem which will help users to foster timely and good oral care habits.
ORAL CARE PRODUCT RANGE + ORAL HABBIT TRACKING PLATFORM = HABBITS.
All products are Premium, Natural, Vegan, NO SLS, No Artificial Sweetener, No Artificial Flavours, No Parabens, No Triclosan, No Gluten, Free from All Toxin

COMPANY NAME

Fresabbit Hygiene Pvt Ltd

FOUNDER'S NAME

Mr Prashant Chourasia &
Mr Ravi Gupta

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Product Validation and marketing in progress)

INTELLECTUAL PROPERTY

Patent filing under process

PROBLEM ADDRESSED

1. Motivation - Total lack of motivation to follow basic oral care habits.
2. Awareness - Total lack of awareness on the kind of product and service to be taken at the right time.
3. Accessibility - Total lack of Products and services to cater to the modern lifestyle of new India.

ABOUT THE TECHNOLOGY

By tracking and rewarding through App and brushing activity tracking device (later stage)

- Track oral care habits: Get insights on oral care habit
- Rewarding/Incentivizing mechanism to never lose the motivation: Habit tracking App and toothbrush device

By providing

- Relevant content to understand the benefit of following oral care habits
- Relevant content to understand what has been going into your bodies for so many years and what one should take and should avoid.

Accessibility to natural and toxin-free products in sustainable packaging which matches the current modern lifestyle

FUNDS RAISED/ACHIEVEMENTS

Supported under Startup India Seed Fund Scheme with 30 lakhs as Debt.

PRODUCT IMAGE

USP

1. Affordability with no compromises in quality to better compete with present competitors.
2. Unique formulation for effective solution for Oral hygiene. Key Ingredients(All Natural & Plant derived): Kaolin Clay, Shea Butter, Calcium Powder, Xylitol, Activated Charcoal, Sorbitol, coconut oil, Vit E.
3. Key Products: Premium Natural Fluoride Free Toothpaste, Natural Mouthwash, Biodegradable Toothbrush & Dental Floss, Natural Toothpaste Tablets, etc
4. Unique AM-PM Flavour of Toothpaste: Tea Tree & Charcoal, Vanilla Extract & Lavender, Hemp Seed Oil, Aloe Vera & Peppermint, Watermelon, etc.

END USERS/CUSTOMERS

People of all age groups except children under 7.

Industrial Biotechnology

A Novel Food Fortification Technology addressing Trace Metal Malnutrition (Hidden Hunger)

APPLICATION

This a platform technology to develop metal enriched fortified biomass or food products. Currently the technology is used for Zn fortification. However, the technology can be used to develop other trace metal enriched fortified foods.

COMPANY NAME

Utopia Nutraceuticals India Pvt Ltd

FOUNDER'S NAME

Sudhamani Mudadda

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The batch scale process development has been optimized. Currently, the startup is optimizing the scale-up process)

INTELLECTUAL PROPERTY

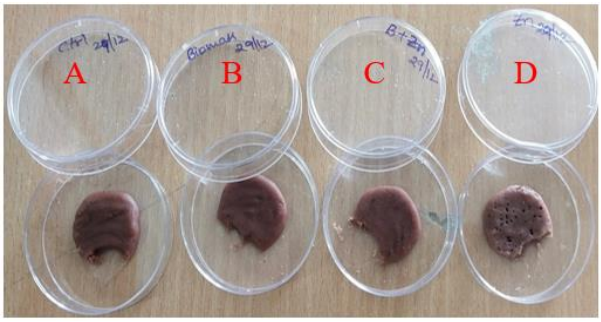
Application of biomass as carriers for food fortification of trace minerals/metals

(App No: 201641033703, Indian Patent)

PROBLEM ADDRESSED

Lack or shortage of trace metal Fe, Cu, Zn, Se etc intake through food can lead to malnutrition called Hidden Hunger. Nutritional loss loss of iodine, vitamin A Lower consumer acceptability chief cause of failure of all fortification strategies including community health programme. It leads to health impairments like stunted growth, reduced physical and mental capabilities, lower immunity and early death. The existing fortification technologies involve the use of inorganic salts of trace metals. The metal reacts with the food components and causes oxidative and nutritional deterioration and unacceptable organoleptic rancidity, off flavor, darkening, discoloration changes of the fortified food which is a loss both for manufacturer & consumer.

PRODUCT IMAGE



Appearance of chocolate as a result of zinc fortification. A– Control chocolate without any fortificant; **B –** Chocolate fortified with 0.9 g of *Bacillus subtilis* biomass; **C** – Chocolate fortified with 0.9 g of biomass bound with 1.275 mg of Zn; **D** – Chocolate fortified with 5.6 mg of $ZnSO_4.7H_2O$ (1.27 mg Zn).

ABOUT THE TECHNOLOGY

Utopia Nutraceuticals India private limited working on a Novel food fortification technology which is developed with the use of food grade microorganisms as carriers for metals. The metal is bound to the microorganism by means of biosorption and making it unavailable to react with the food components. It will address the persistent cause of failure of trace metal fortification technologies. The technology is simple, versatile, without any additives and economical. The technology is novel and has potential to be a game changer. The metal enriched biomass is used to fortify the food products chocolate and yoghurt.

USP

- The technology is simple and versatile in nature to be used for other trace metals as well
- No additives are used. Hence, it is a natural product
- The technology is affordable and have a product shelf life of 9 months
- Value additions like – natural vitamins, enzymes, probiotics, etc are present in the food product

FUNDS RAISED/ACHIEVEMENTS

- Received INR 49.53 lakhs grant-in-aid from BIRAC BIG scheme

END USERS/CUSTOMERS

- Food manufacturing industries, women, children, and sports persons

Industrial Biotechnology

Development of QPCR product components for detection of DNA impurity in biologics drug production and for clinical diagnostics application.

APPLICATION

The product is used for monitoring DNA impurity during bioprocessing of bio-similar drugs for assuring safety and purity of the biologic drugs manufactured in *E. coli* and CHO hosts specifically. Product is also applicable in clinical set up for detection of sepsis and UTI and monitoring of disease progression/ reduction.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
KAS Institute of Research Pvt Ltd	TRL: **8 (The final version of the kit has been developed and validated)**	IP filing is under process

FOUNDER'S NAME

Krishna Prasad G

PROBLEM ADDRESSED

Clinical diagnostic are leaning towards rapid diagnostics especially in identification 0f microbial infections in rapid time. There are no commercial kits manufactured in India for sensitive detection of microbial infections by PCR methods. Currently imported cost of the kit is 100 times more than the indigenously manufactured product assembly. Also, the Lead time for delivery is longer and the technical support provided are more virtual.

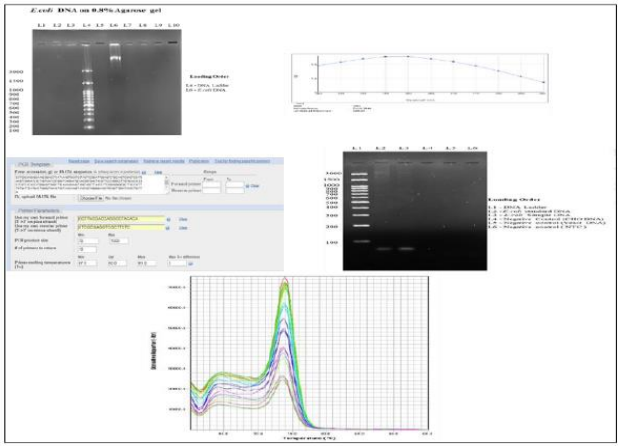
ABOUT THE TECHNOLOGY

We are generating unique primers, novel probe labelling chemistry and proprietary DNA extraction reagent components and intend to develop quantitative PCR for monitoring residual host cell DNA in the biologics manufactured in prokaryotic E.coli and Eukaryotic hosts CHO. This product not only provides assurance on the quality and purity of the drug to the manufacturers but also contributes to societal concern on reliable method to assure the quality of the drugs consumed. Additionally, this product is first of its kind by Indian company which has the potential to disrupt the monopoly of imported products with the considerable business turnover almost equivalent to any medical drug in the market. Proposed Product development have high commercial value and market demand both with respect to process of sample preparation and for unique reagent combination.

FUNDS RAISED/ACHIEVEMENTS

- Supported under BIRAC BIG: 50.00 Lakhs

PROCESS WORKFLOW



USP

- Delivery time is reduced as less logistic procedures to supply within country .
- Improved shelf life of expensive critical reagents .
- One product application for both industrial requirement and clinical diagnostics requirement.
- Leads to creating employment opportunity to budding Life science graduates and post graduates.
- Proposed research friendly , rapid , simple method economical product that has longer shelf life will make any biopharma industry scientist or Clinical diagnostic person to incline for reliable and consistent performance of our product.

END USERS/CUSTOMERS

- Bio-pharma industries, Clinical diagnostics, forensic labs, gene therapy developers and Academic laboratories.

Industrial Biotechnology

Development of Micro-emulsified salts to enhance starch gelatinization in animal feed pellets

APPLICATION

Animal feed producers face many problems like increase fines, more crumbles in pellet feed & post-processing, uncooked raw material, and performance nutrient loss because of poor starch gelatinization. To overcome this problem, F3 Biotechnology is developing a technology-based product which will provide adequate gelatinization to increase the binding of animal feed pellets.

COMPANY NAME

F3 Biotechnology Pvt Ltd

FOUNDER'S NAME

Amarendra Kumar

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Validation & field trials of the MVP is in process)

INTELLECTUAL PROPERTY

Title: "Micro emulsified salts composition for starch gelatinization"

Application No. 202021039566A

PROBLEM ADDRESSED

An animal feed mainly contains 36 to 40 Percent high protein by including Fish and Soya bean meals majorly, 20 Percent starch from Wheat and Maize, and 6-8 lipid from fish/vegetable oil. Animal Feed qualities are lowering due to high protein content and feed pelleting process and Manufactures are compromising. Animal feed producers face many problems like increase fines, more crumbles in pellet feed & post-processing, uncooked raw material, and performance nutrient loss because of poor starch gelatinization. During the feed pelleting process, it is tough to introduce the required moisture and heat to form substantial gelatinization in the feed because of pre-defined equipment OR Feed mill Process

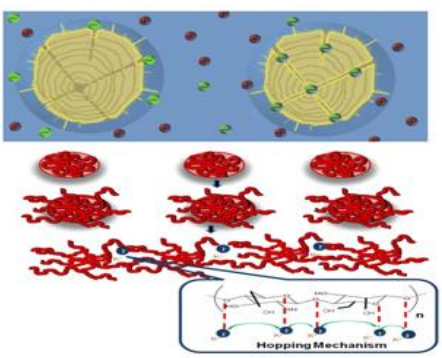
ABOUT THE TECHNOLOGY

Our technology-based product will provide adequate gelatinization which helps to increase the binding of pellet feed. Herewith, we are the first one using MEWSS techniques in animal feed production. Moreover, the formulation of the unique salt combination will provide micro emulsified water-soluble salt, and easily absorbable in crushed raw material Size in Micron of feed because of high atmospheric pressure & rise in temperature. Anions forms inclusion complexes with starch and penetration of existing ions increases the gelatinization of feed. Organic acid will be produced by using SCOBY a fermented tea seed method. The organic acid compound will be checked by HPLC system. Type of feed problems will be studied, and formulation salt percentage will be adjusted. Micro emulsification will be carried out and the process will be optimized with different oil, water, and emulsifier ratio.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC BIG-17 Call. Funds received: 50.00 Lakhs

PRODUCT IMAGE



USP

- Provide a scientifically calculated formulation for feed starch gelatinization
- Increase binding among feed molecules
- Decreased fines/dust and avoid mold growth.
- Unique formulations of salts
- Highly Purified, Enriched in active ingredient
- Indigenous production
- Reliable supply

END USERS/CUSTOMERS

- Feed Manufacturer
- Feed Mills

Industrial Biotechnology

Developing recombinant protein expression system for large scale production of dairy proteins and therapeutic proteins

APPLICATION

We are working on introducing milk-producing instructions to the cells in the form of DNA. Essentially we are giving the yeast cells an instruction manual to make Casein and whey proteins. The goal of this R&D is to be able to produce casein and whey proteins directly instead of extracting them from bovine dairy.

COMPANY NAME

IUVA LABS Pvt Ltd

FOUNDERS' NAME

Sourav Padhee, Shama Bhatt

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 3 (The PoC has been established)

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

Producing 1kg of dairy proteins requires 8300 liters of water, 120 SqMt of land, and emits 40 kgs of CO2.So the toll on environment is very heavy. Some dairy proteins like A1-Beta Casein are immunogenic for humans Even though India is the worlds largest producer of dairy proteins, 80% of Indians are protein deficient. India consumes 99.95% of the dairy it produces and only exports 0.05% of its produce. So there is room for dairy proteins in the Indian export market. There are not enough animal free dairy options in India.

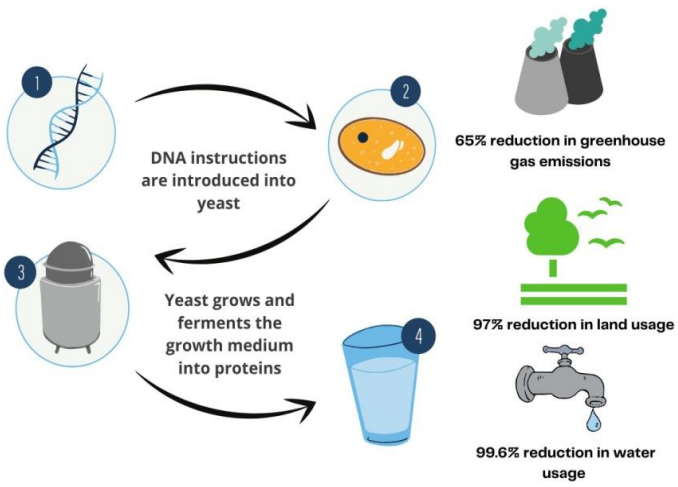
ABOUT THE TECHNOLOGY

Cellular Agriculture : We are working on introducing milk-producing instructions to the cells in the form of DNA. Essentially we are giving the yeast cells an instruction manual to make milk. The yeast cells then feed on the growth medium in the bioreactor and give out dairy proteins which is then used to make milk.

FUNDS RAISED/ACHIEVEMENTS

- Received the NIDHI EIR Fellowship of Rs. 3.6 Lakhs
- Got Selected for AIM PRIME 2021 cohort
- Received the NIDHI PRAYAS Grant of Rs. 6 Lakhs
- Received the Startup India Seed Fund Scheme funding of Rs. 20 Lakhs
- We won Good Food Institute India Smart Protein Innovation Challenge 2021

PROCESS WORKFLOW



USP.

- Recombinant caesinexpressed in yeast cells
- BETA-AzCASEIN Type (Non Immunogenic) and KAPPA Casein.
- Casein protein derived from PICHIA Pastoris cells.

END USERS/CUSTOMERS

- Our B2B Clients will involve nutraceutical, supplements and cheese manufacturers.
- We plan to launch D2C Products using our proteins like vegan Ice Cream, mozarella cheese and vegan whey protein supplements

Sector

Industrial Biotechnology:
Water & Sanitation

Water & Sanitation

e-Jal Mini

APPLICATION

Elico Ltd. has developed an integrated water testing solution that has pre-programmed water methods for a range of parameters with built-in battery. The e-Jal mini is segregated into three models: e-Jal mini (PE-145) tests color, total hardness, free residual chlorine, turbidity and TSS. e- Jal mini (PE-148) detects Ammonia, Nitrate, Chromium and Phosphate. The last model is to test pH and TDS.

COMPANY NAME

Elico Ltd.

FOUNDER'S NAME

KVSN Raju

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Currently laboratory testing of integrated system is going on)

INTELLECTUAL PROPERTY

1. Trademark Registration,
Application No: 5358974, 5358974, 5358976

2. Design Registration,
Application No: 359319-001

PROBLEM ADDRESSED

In many parts of the world, water is not safe enough to drink. There are basic qualitative observations that quickly determine if water is not safe to consume. However, there are also many "invisible" substances that must be tested for professionally to identify the contaminants and to figure out how the specific polluted water can be purified. Depending on the manufacturer and funding, portable tool kits can be very pricey for local organizations or NGO's. However, Elico Ltd. Has developed this affordable and portable water testing device that can be carried to fields or used in a laboratory setting.

ABOUT THE TECHNOLOGY

This unique innovation uses 4 different measurement techniques that are Potentiometric, Electrical Conductivity, Colorimetric & Nephelometric. Their devices are IoT & Cloud enabled systems that "Bringing Lab to Field" instead "Sample going to Lab". The mobile application connected to the devices make the testing easier and provides instant reports to the users.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 20 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

END USERS/CUSTOMERS

- Government agencies to monitor water quality (state level & panchayat level requirements).
- Water purifiers company
- Domestic Households
- CSR Activities

PRODUCT IMAGE

USP

- Pre-calibrated for water parameters..
- Supports ready to use liquid, powder and tablet reagents.
- Online data transfer and cloud storage.
- Step by step guidance to user provided in mobile app.
- Mobile app supports local languages.

Water & Sanitation

EyeNetAqua Solutions Private Limited

Digital Field Test Kit Reader

APPLICATION

This new portable water quality testing device may be used to test a variety of parameters such as Fluoride, Iron, Nitrate, Alkalinity, Phosphate, Nitrite, Lead, Mercury, Copper, Ammonia, Sulphate, pH, Turbidity, color, Total hardness, Free residual chlorine, Chloride.

COMPANY NAME

EyeNetAqua Solutions Pvt Ltd

FOUNDER'S NAME

Kamalesh Chaudhari

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Currently laboratory testing of integrated system is going on)

INTELLECTUAL PROPERTY

Patent filing is under progress

PROBLEM ADDRESSED

Many individuals in our country are currently suffering due to severe extreme water stress and contamination. This is due to a variety of factors, including regional variances and seasonal fluctuations. Water quality testing for drinking purposes is now quite expensive and time demanding, as are many lab testing methods. There are still manual entry issues and data entries with existing field test kits. To address that issue EyeNetAqua Solutions has developed a novel portable water quality testing device that can test several factors linked with water quality and determine whether particular water is safe for drinking or not.

ABOUT THE TECHNOLOGY

EyeNetAqua Solutions has developed a smartphone-based portable device. The device detects water quality properly and provides information on whether the water quality is acceptable, allowable, or unsafe to consume. It can produce data in digital format and aids in on-site calibration. EyeNetAqua's device strikes a mix between quality and price. It also aids in data storage and transfer to a cloud mechanism for real-time data analysis.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 24.50 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

PRODUCT IMAGE

USP

- Value of water quality parameters are in digital format output.
- Low operation and maintenance requirements.
- Has a provision for data transfer and online data storage.

END USERS/CUSTOMERS

- Government agencies to monitor water quality (state level & panchayat level requirements).
- Water purifiers company.
- Domestic Households

Water & Sanitation

HD Flip- Water testing device

APPLICATION

This new portable water quality testing device may be used to test a variety of parameters related to drinking water and can determine whether water from a given source is suitable for consumption or not. It can test various parameters such as turbidity, color, conductivity, temperature, TDS, nitrate, fluoride, free residual chlorine, iron, pH, total hardness, and alkalinity.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Hueristic Devices Pvt Ltd	**TRL: 7 (The final product is ready and is about to initiate on-site field trials)**	Patent filling is in process

FOUNDER'S NAME

Samuel Rajkumar

PROBLEM ADDRESSED

Water quality is a critical problem in the country today, affecting everyone from rural to urban areas. Small amounts of hazardous pollutants can cause major health concerns. Fluorosis and arsenicosis are two well-known cases. Field test kits, on the other hand, are frequently difficult to use and are only semiquantitative. Testing labs are scarce and difficult to access. Our current inability to conduct credible field testing and properly utilize that data is costing us a lot in terms of poor health and lost livelihoods.

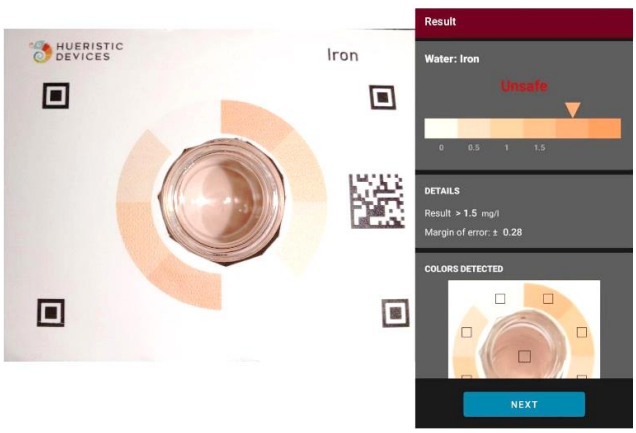
ABOUT THE TECHNOLOGY

Hueristic Devices Private Limited suggested a revolutionary technology in which the camera of a calibrated smartphone is used to match the intensity of color of the sample + reagent with the parameter concentration. The smartphone correlates this and displays the result in parts per million (ppm) or milligrams per liter (mg/L). The camera of a calibrated smartphone is used to match the intensity of sample reagent color with parameter concentration. The smartphone correlates this and displays the result in parts per million (ppm) or milligrams per liter (mg/L). Spectrophotometers, which are very expensive instruments, are used in lab testing for the same purpose.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 24.50 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

PRODUCT IMAGE



USP

- Light weight device with in-built battery.
- The device can be easily calibrated with low maintenance.
- It has built-in power supply for testing which makes it more user friendly than other FTKs.
- Automatic data transfer to smartphone app, and onto cloud helps in data analysis.
- Testing is done using color cards and light box, the mobile application provides accurate values for all testing parameters

END USERS/CUSTOMERS

- Domestic Household customers
- Government agencies to monitor water quality
- Industrial Consumers with inline water quality monitoring and customized filtering.

Water & Sanitation

Padmavati and Padma Bio (*E.coli* Test Kit)

APPLICATION

Padmavati is a strip-based testing device that also comes along with a probe and an *E.coli* test kit. The entire testing kit would be able to test 11 different inorganic and organic water testing parameters such as Color, Turbidity, TDS, pH, Total hardness, Ammonia, Free residual chlorine, Chloride, Fluoride, Nitrate, *E. coli*. without involving any reagents. The Padmavati set of devices is designed so as to give reliable results at a very short span of time.

COMPANY NAME

Earthface Annalytics Pvt Ltd

FOUNDER'S NAME

Soumya Bikash Sen

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The final product is ready and is about to initiate on-site field trials)

INTELLECTUAL PROPERTY

Indian Patent Granted (Patent No: 360251)

Title of Patent : Liquid Quality Measurement System

PROBLEM ADDRESSED

Unavailability of cost effective and eco-friendly water quality and the current devices unable to consistently generate comparable and accurate results based on the test. Padmavati colorimetric, probe and PadmaBio have increases the reliability and accuracy of the water test results without any human intervention.

ABOUT THE TECHNOLOGY

The device is segregated into three segments- Strip and probe-based testing and E.Coli test. Test-strips containing colorimetric detection pads, detection of the colorimetric assay using color sensors (photodiodes). The color data is then transmitted to the Calibration Engine using a native app (android/iOS). The calibration engine applies AI/ML techniques to analyze and produce results. Display parametric results using set benchmarks in the app in less than one minute

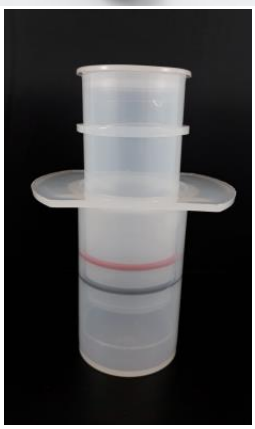
FUNDS RAISED/ACHIEVEMENTS

- Raised INR 24.5 lakhs grant-in-aid from National Jal Jeevan Mission under the program "Innovation Challenge".
- Received "President's Award"
- PMO Acknowledgment for the Padmavati device.

END USERS/CUSTOMERS

Small and marginal water testing labs, Block & Panchayat level organizations

PRODUCT IMAGE



USP

- The device is pre-calibrated
- Does not involve any reagent while testing.
- The device is tamper proof and modular.
- Extremely low cost testing.

Water & Sanitation

Jalavimalata – A Water Quality Testing Device

APPLICATION

This new portable water quality testing device may be used to test a variety of parameters related to drinking water and can determine whether water from a given source is suitable for consumption or not. . It can test various parameters such as Color, Turbidity, pH, Total hardness, Iron, chloride, Residual free chlorine, Total dissolved solids, Copper, Manganese, Nitrate, Fluoride, Arsenic.

COMPANY NAME

Padmaseetha Technologies Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Currently laboratory testing of integrated system is going on)

INTELLECTUAL PROPERTY

Patent filing is under progress

FOUNDER'S NAME

Gowrishankar Uppuluru

PROBLEM ADDRESSED

According to the survey, 600+ million people in our country are subjected to high to extreme water stress. 75% of families do not have drinking water on the premises, while 84% of rural households do not have piped water access. 70% of our water is contaminated; India ranks 120th out of 122 countries in the water quality index. It is currently a major issue in distant places of India.

ABOUT THE TECHNOLOGY

Padmaseetha Technologies presented a revolutionary portable battery-powered IoT monitoring water quality testing gadget that can transfer data to the internet cloud via a smartphone app. The data is uploaded to a cloud-based site along with the device ID, a unique smart phone app, and GPS information for further analysis with this legitimate field data. As a functional innovation, the combination of quality monitoring and a customized filter improves testing accuracy and consistency

FUNDS RAISED/ACHIEVEMENTS

Raised INR 23.70 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

PRODUCT IMAGE

USP

- Device has both purifiers & monitoring solutions helps reducing the cost.
- The device can be easily calibrated with low maintenance.
- It has built-in power supply for testing which makes it more user friendly than other FTKs.
- Automatic data transfer to smartphone app, and onto cloud helps in data analysis.

END USERS/CUSTOMERS

- Domestic Household customers
- Government agencies to monitor water quality
- Industrial Consumers with inline water quality monitoring and customized filtering.

Water & Sanitation

NEELA TARAL: Portable Water Quality Tester

APPLICATION

NEELA TARAL is a portable water quality tester that tests the levels of 6 different contaminants/factors that make water unfit for drinking. It is a hand held battery operated model that can read the Total Dissolved Solids, pH, Turbidity, Color, Electrical Conductivity and Total Hardness of water. The user can access the report/results of these tests via the mobile phone application linked to this device.

COMPANY NAME

Biomimicry Technologies Pvt Ltd

FOUNDER'S NAME

Bhim Pandey

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Stability of the product and repeatability of the testing to obtain consistent results)

INTELLECTUAL PROPERTY

Trademark Applied

Temp. Ref. No: 5323729
Name: NEELA TARAL

PROBLEM ADDRESSED

Water Quality is a concern in Indian villages, semi urban and urban areas because of depleting ground water and over use of surface water and draining drinkable water to sea in the sewer system. There are no portable devices which could check more than 3 different water quality parameter. Quality of water is under increased threat of contamination. While water contains natural contaminants, it is becoming more and more polluted by human activities.

ABOUT THE TECHNOLOGY

All the sensors (PH, TDS, TURBIDITY, etc.) sensors are connected to their respective electronics to boost the signal level. The Boosted Signal level is fed to a Microcontroller which compares and analyses the values. The analyzed values are properly Displayed on LCD (Liquid Crystal Display) in human understandable language

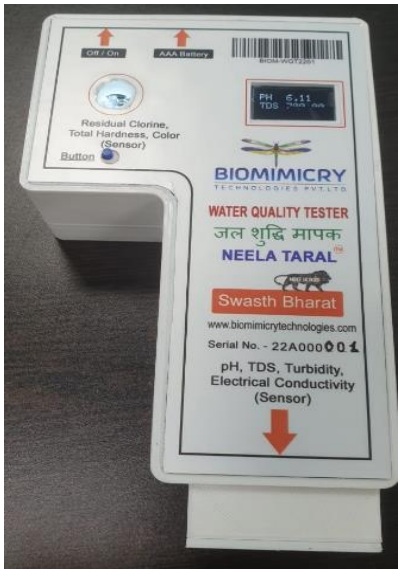
FUNDS RAISED/ACHIEVEMENTS

Raised INR 19.05 lakhs grant-in-aid from National Jal Jeevan Mission under the program "Innovation Challenge".

END USERS/CUSTOMERS

Small and marginal water testing labs, Block & Panchayat level organizations

PRODUCT IMAGE



USP

- One single device tests up to 7 parameters
- Bluetooth enabled device
- Results displayed on the device as well as on mobile application
- Actual Value now and Permissible Range value will be displayed
- AI Algorithm powered

Water & Sanitation

Cluix- Strip based water quality testing device

APPLICATION

This new portable water quality testing device may be used to test a variety of parameters related to drinking water and can determine whether water from a given source is suitable for consumption or not. It can test various parameters such as pH, turbidity, color, total hardness, free residual chlorine, TDS, lead, chromium, and copper.

COMPANY NAME

Cluix LLP

FOUNDERS' NAME

Mr Robin Singh
Mr Chitaranjan Singh

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Laboratory testing of prototype component is in process)

INTELLECTUAL PROPERTY

Patent filling is under progress

PROBLEM ADDRESSED

Due to the limited drinking water resources, intensive money requirements, growing population, urban change in rural areas, and the excessive use of sea resources for salt extraction has significantly worsened the water quality available to people. The high use of chemicals in manufacturing, construction and other industries, fertilizers in farms and also directly leaving the polluted water from industries into nearby water bodies have made a huge contribution to the global water quality reduction, which has become an important problem Even due to containment water various water born are increasing day by day, due to which many human beings are losing their lives.

ABOUT THE TECHNOLOGY

This innovative technology entails the reader circuit can measure the change in conductivity and excess charge caused when a drop of sample and an oxidase are mixed on the strip. The reaction on the strip is recorded and shown on the screen by a reader similar to a glucose meter. The meter also indicates if the test sample is permitted or not. They evaluated the known levels of lead by mixing *Dimethyl Sulphoxide* water with the test sample, and the oxidation reaction was recorded by the reader, which precisely displayed the quantities.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 24.45 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

PRODUCT IMAGE

USP

- Multiple parameter testing with no reagent which makes it more user friendly.
- Easy to use device with one step method.
- AI Analysis of result with permissible levels.
- Portable hand held device- Can be carried across the field.
- IoT based data storage transfer.
- Low cost device for mass adoption of technology.

END USERS/CUSTOMERS

- Domestic Household customers
- Government agencies to monitor water quality

Water & Sanitation

PIVA - A Water Quality Testing Device

APPLICATION

This new portable water quality testing device may be used to test a variety of parameters related to drinking water and can determine whether water from a given source is suitable for consumption or not. It can test various parameters such as pH, Turbidity, color, Total hardness, Free residual chlorine, TDS, microbial count, alkalinity, preservative, starch.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Fabetto Ecotech Pvt Ltd	**TRL: 4 (Laboratory testing of prototype component is in process)**	Patent filing is under progress

FOUNDER'S NAME

Anil Sharma

PROBLEM ADDRESSED

Each month, 20 million bubble top water bottles are sold in Bangalore, according to data. Waterborne diseases are expected to cost India approximately USD 600 million per year. In India, only around half of the population has access to safe drinking water. Water pollution from chemicals is a problem in 1.96 million houses. So, in order to address the issue, Fabetto Ecotech developed a low-cost water quality testing system that will contribute to substantial advances in the field of water testing by detecting numerous contaminants and will check various parameters.

ABOUT THE TECHNOLOGY

Fabetto Ecotech has suggested a unique water quality monitoring system based on colorimetric analysis of water samples. To offer precise data, the technology is based on basic titration and photo sensing reaction. The solution basic must react with water and be tested for chromogenic effects before being collected. This reaction entails taking a solution and mixing it with a predetermined amount of water drop by drop, counting the drops exactly, and comparing the results to a pre-pared data sheet. It must now be connected in order to be visualized by capturing chromogenic effects. These readings must now be uploaded to a computer or mobile device, or manually written down, and compared to the generated data sheet.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 12.10 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

PRODUCT IMAGE

USP

- Device is easy to carry & operate.
- The kit is for quantitative analysis using minimum reagents against various parameters
- Automatic data transfer to smartphone app, and onto cloud helps in data analysis.

END USERS/CUSTOMERS

- Domestic Household customers
- Government agencies to monitor water quality
- Residential Area, Private Organizations
- Food & agricultural industries.

Water & Sanitation

Jal Prayogshala

APPLICATION

This new portable water quality testing device may be used to test a variety of parameters related to drinking water and can determine whether water from a given source is suitable for consumption or not. It can test various parameters such as Color, Turbidity, Ph, Chlorine, hardness, TDS, Fluoride, Iron, Nitrate, Nitrite, Ammonia, Phosphate, Copper, Manganese, Potassium, Sulphate, Boron, Zinc, Alkalinity, Chloride.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Plasti surge industries Pvt Ltd	TRL: 5 (Currently laboratory testing of integrated system is going on)	Patent filing is under progress

FOUNDER'S NAME

Kamalesh Daga

PROBLEM ADDRESSED

Access to safe drinking water is a fundamental human right. More than 80% of India's surface water is filthy, according to a research by WaterAid, an international organization that works to improve water sanitation and hygiene. Also Agricultural run-off including pesticides and fertilizers, road run-off, industrial breaches, and, worst of all, untreated sewage pour into bodies of water. According to WaterAid's Water Quality Index, India ranks 120th out of 122 countries. So address this serious issue A digital handheld water quality testing instrument is an absolute necessity.

ABOUT THE TECHNOLOGY

This unique innovation uses Colorimeter technology to determine the concentration of a material in a solution based on the intensity of the color in the solution. If the solution to be tested is a colorless liquid, a reagent is added, which reacts with the liquid and produces a color. The colorimeter then determines the range contained in the water using Beer-law. Lambert's The current prototype supports VNC over Wi-Fi, however it is relatively simple to develop data transmission protocols to meet specific needs. They are now attempting to develop a method that will allow them to geolocate the gadget.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 12.50 lakhs grant-in-aid from National Jal Jeevan Mission challenge.

PRODUCT IMAGE

USP

- Compact device with high battery back –up which makes it more reliable for field users.
- Easy to use – Can be connected to mobile app for smoother operations and data entry.
- Fast Charging & in-built battery.
- Lightweight & Easy to carry across the field .

END USERS/CUSTOMERS

- Government agencies to monitor water quality (state level & panchayat level requirements).
- Water purifiers company
- Domestic Households
- CSR Activities

Sector

Industrial Biotechnology: Waste Management

Waste Management

Value added products (Cellulose and Amorphous Silica) from rice husk

APPLICATION

The synthesized silica powder can be used in healthcare, petrochemical, plastic, food processing and brewery industries. The cellulose powder can be used as Processed food texturizer, Instant Beverages gelling agent, Cosmetics fat substitute, Tablet manufacturing binder, etc.

COMPANY NAME

Pro-Biokem India Pvt Ltd

FOUNDERS' NAME

Mahhamad Gulebahar Sheikh
Baisun Nesha

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The products are currently under commercialization stage)

INTELLECTUAL PROPERTY

A process for cellulose or silica extraction/isolation from raw rice husk, Application No: 201831027208

PROBLEM ADDRESSED

India is the second largest rice growing country in the world. A large quantity of rice husk is generated as a by-product in Rice mills during the milling process, which is used as solid fuel, which leading to wastage of naturally produced valuable Biochemical/ fine chemical products like cellulose and amorphous silica. Burning rice husk has a greater environmental footprint. Currently available cellulose powder is largely produced from wood pulp, using KRAFT Process, which is highly polluting and utilizes wood as a feed stock leading to deforestation. Currently available synthetic amorphous silica is manufactured from sand (crystalline silica). Sand in crystalline powder form is a well-known health hazard (Silicosis) for operating personnel and poses health hazard to the nearby localities

ABOUT THE TECHNOLOGY

Pro-biokem has developed a process to extract cellulose and silica from raw rice husk. The proposed process has already been developed in pilot scale, to isolate Cellulose and amorphous Silica in homogenous form with high purity and yield. The feed stock was processed to generate cellulose pulp. The cellulose pulp was further processed Bio/chemically to generate Microcrystalline cellulose. Silica was isolated from the pulp filtrate liquor. The proposed process will also be effective if rice stubble is used as a feed stock since the composition (qualitative and quantitative) of rice husk and rice stubble are very similar. The proposed process shall resolve majority of the above issues, while also generating local employment, minimizing energy use, reducing stubble burning and better management of agricultural and agro-Industrial waste.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received BIRAC SEED fund worth INR 25 lakhs
- Received Startup Odisha Product Development Fund worth INR 12.5 lakhs

PRODUCT IMAGE

USP

- Multi-product Isolation from single feedstock with wider applications
- Non-Wood/ Non-Cotton derived products
- Low pollution compared to currently used process technology
- Products derived from Agro residue/waste
- Offer better margin to supply chain
- Lower cost of feedstock and Production cost

END USERS/CUSTOMERS

Processed food industries, Pharmaceutical industries, Feed industries, Construction and paint industries, Breweries, etc.

Waste Management

Pyrolysis Oil Purification Technology

APPLICATION

The applications for PUROIL are Advanced/Chemical recycling of plastic waste, Production of 2nd generation biofuels from plastic waste, Production of circular economy plastics and sustainable chemicals, Landfill plastic waste management, Multilayer packaging plastic waste management, Recycling of postconsumer plastic waste & Plastic to fuel and chemicals.

COMPANY NAME

APChemi Pvt Ltd

FOUNDER'S NAME

Suhas Dixit

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (In process of constructing a pilot plant for upscaling the process)

INTELLECTUAL PROPERTY

- **Granted Indian Patent (374847)**
- **Other Indian patent applications numbers:** 1727/MUM/2014, 201921018856, 201921023312, 201921034161, 202022024823, 202021044836, 202021047134, 202021055299, 202021055940, 202121000068, 202121000628, 202121020957, 202121021166, 202121024040, 202121034264, 202121053114

PROBLEM ADDRESSED

Globally 300 million metric tons per annum of plastic waste generated and less than 9% of plastic waste is currently recycled. Most of the plastic waste generated today is mechanically non-recyclable. Hence needs to be recycled chemically by converting this plastic waste into circular economy plastics and sustainable chemicals via pyrolysis technology. The key problem in pyrolysis of plastic waste is production of oil with very high impurities of oxygen, chlorine, asphalt, silica, nitrogen and Sulphur. APChemi's PUREMAX™ technology drastically reduces these impurities from pyrolysis oil to manufacturing PUROIL™. PUROIL™ can replace petroleum naphtha and crude oil for production of circular economy plastics and sustainable chemicals.

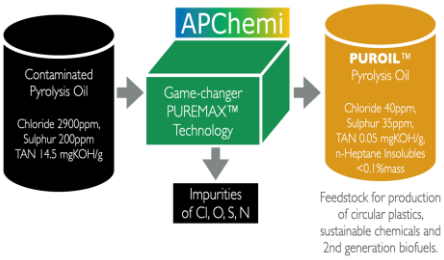
ABOUT THE TECHNOLOGY

APChemi's pyrolysis oil purification technology, PUREMAX, removes organic as well as inorganic impurities of Chlorine, Nitrogen, Oxygen, and Sulphur from pyrolysis oil. Patent-granted PUREMAX™ technology has a very unique novel and inventive step. APChemi is actively looking for partners to synergistically exploit this technology. Pyrolysis oil, produced from Mumbai's post-consumer laminate (Packaging + Carry bags) waste, had a Chlorine content of 2900ppm, Sulphur of 200ppm and Total Acid Number (TAN) of 14.5 mgKOH/gm. After application of APChemi's PUREMAX™ technology, the oil quality was improved to Chlorine < 50ppm, Sulphur < 50ppm, TAN mgKOH/gm, n-Heptane Insolubles <0.1%mass. Thus, PUREMAX™ technology truly unlocks pyrolysis based chemical recycling of plastic waste.

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 30 lakhs in CCD from Startup India Seed Fund Scheme at KIITTBI.
- Winner of Clean Air India Challenge hosted by Smart Cities Procurement, ACT Grants and Social Alpha (April 2022)

PRODUCT IMAGE



USP

- Drastically reduce oil impurities due to PVC/ PVDC/ PET/ Nylon/ PUR/ Acrylates contaminated polyolefin feedstock'
- Enable use of landfill and post-consumer plastics waste for plastic pyrolysis

END USERS / CUSTOMERS

Petrochemical Companies, FMCG Companies, Packaging Companies & Industries, Biofuels, Carbon Transition, Plastic circularity and Material Recovery facilities

Waste Management

Polyhydroxy alkanoate based bioplastics from agro wastewater

APPLICATION

PHA is the greatest biodegradable plastic with a wide range of applications that is fully non-toxic to the human body. In uncontrolled settings, PHA bioplastic is fully biodegradable. This can replace traditional plastic while also adding value to agricultural trash.

COMPANY NAME

Rigel Bioenviron Solutions Pvt Ltd

FOUNDER'S NAME

Subhendu Sekhar Satpathy

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Concept proven from lab scale to Bioreactor level experiments under optimized conditions)

INTELLECTUAL PROPERTY

Patent No: 288502
Process for production of PHA from industrial waste water in continuous mode reactor system.

PROBLEM ADDRESSED

This novel technology addresses the issues by reducing plastic waste pollution by substituting PHB-based bioplastics in various applications, particularly single-use/short-life applications, which retains the sustainable character over other materials while decoupling the negative impact of conventional plastics on the environment through complete biodegradation into simple molecules at the end of their useful life. Furthermore, PHB polymer will be produced by valorizing a renewable agro-waste stream with a nil/ insignificant or even negative value due to the disposal costs involved. In addition, Bioplastic market prices are 1.5 – 2 times more than conventional plastics.

ABOUT THE TECHNOLOGY

The invention focused upon the continuous operation of PHA manufacturing in a comprehensive multi reactor train, where raw industrial wastewater is fed as substrate and PHA is an output from the process, with inbuilt biomass production for PHA manufacture within the system. There are no numerous input points or a side-stream reactor/reactor system to complement the primary process. continuous bio-processing improves production while reducing operating costs, but it necessitates extra innovation and standardization to overcome the limits of the existing batch mode of operation procedures.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 49.95 Lacs under BIRAC BIG

PRODUCT IMAGE

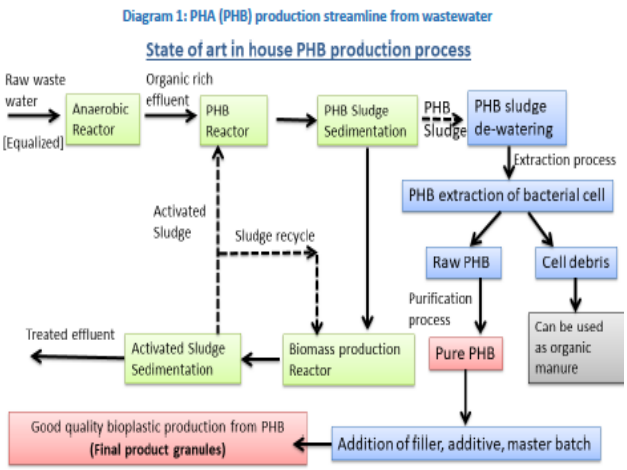


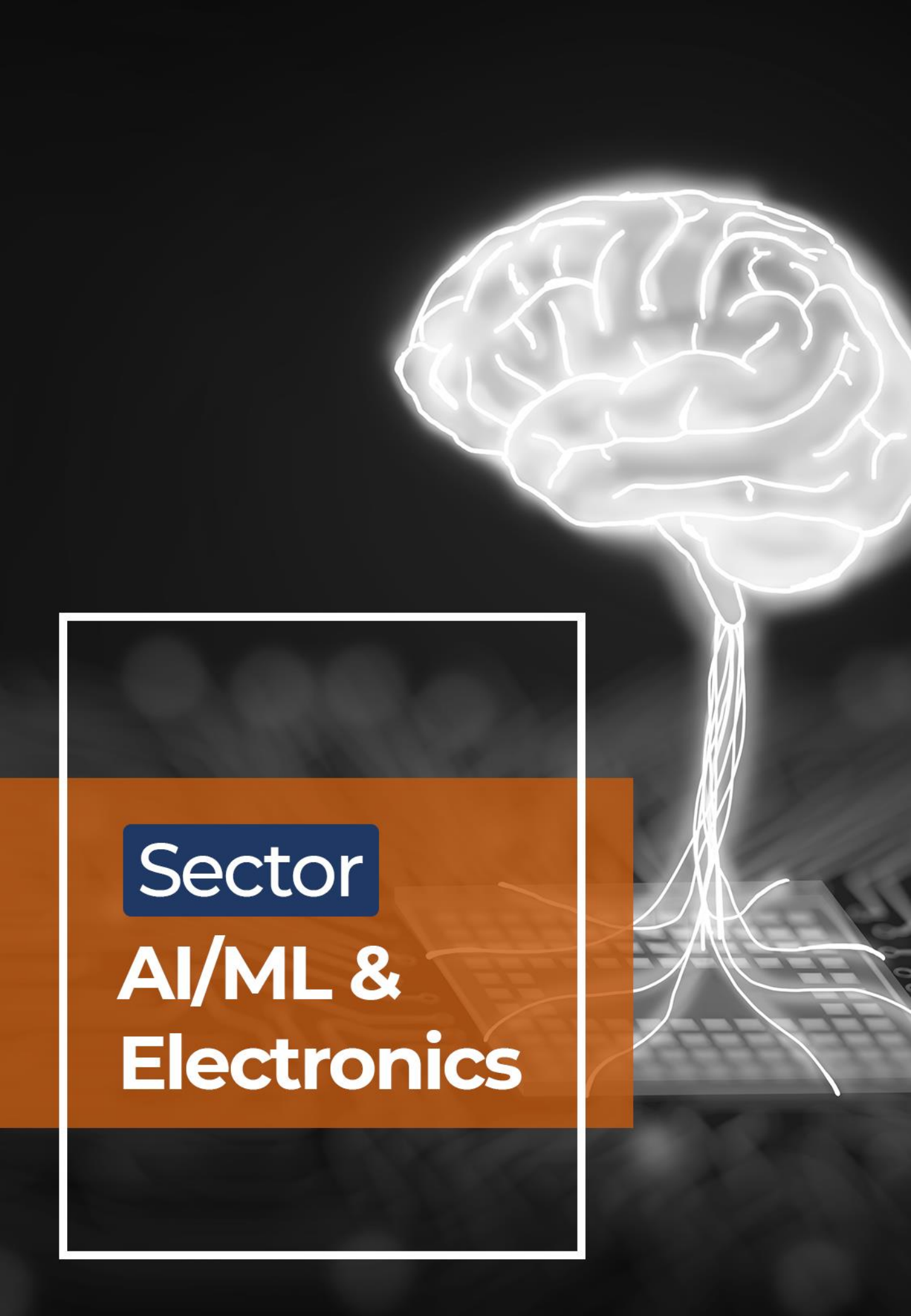
Figure: Flow sheet for unique comprehensive process for PHB production from waste water

USP

- **Efficient-** PHA yield is min 40% to nearly 65-70% of biomass.
- **Affordable-** bring down PHA market price to half of today's price.
- **Easy to operate-** Biomass to PHA generation can be executed by same ETP operation staff, except extraction process.
- **Can be integrated with any Agro Effluent Treatment-** Fully Configurable, customizable.

END USERS/CUSTOMERS

- Primary: Polymer Producers
- Secondary: Agro-Industry operators.



Sector

AI/ML & Electronics

Electronics

65W GaN USB Multiport Power Adaptor

APPLICATION

A consumer durable product which can simultaneously charge a USB Type-C connector notebook, mobile phone, tablet and wearable making it “One Charger Powers all” device. An ultracompact size(half the size of credit card) with foldable AC plug makes it convenient to carry and charge any USB Type-C and Type-A charging connector portable device. Supports fast-charging technology like USB Type-C PD3.0, Qualcomm QC4, Samsung AFC, Huawei SCP/FCP, Apple 2.4

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
MokkoMotto Pvt Ltd	TRL: **5 (Galium Nitrate mix is in testing phase)**	IP filing process is under progress

FOUNDER’S NAME

Subhendu Sekhar Satpathy

PROBLEM ADDRESSED

Every individual carry one or more charger to charge their devices like phone, laptops, wearables making it cumbersome and difficult to carry in your bag and ultimately adds to the global e-waste. MokkoMotto offers a charger that power all devices at once. It is a Gallium Nitride (GaN) based multiport USB charger. The need of the hour is a pocket-sized fast charger supported feature that can refuel laptops, phones and wearables all at one go.

ABOUT THE TECHNOLOGY

Use of 3rd Gen Power electronics switching device (MOSFET) with GaN (Gallium Nitride) technology to make the power adaptor highly efficient, reduce heat losses and Ultracompact. Proprietary design with Intelligent Power sharing topology powered by a 32-bit ARM MCU detects the load, distributes power amongst the ports using real-time active feedback circuit. Product architecture is quite simple, with the scalable and modular approach it is easy to widen the product portfolio with minimal R&D efforts making it faster time to market.

FUNDS RAISED/ACHIEVEMENTS

Raised INR 17 lakhs grant-in-aid from Startup India Seed Fund Scheme.

PRODUCT IMAGE

USP

- One Charger powers all portable devices
- More Efficient
- Less Heat Loss
- Wide compatibility with Industry std Fast charging technology support
- Ultracompact with foldable AC plug makes it convenient to carry

END USERS / CUSTOMERS

Consumer electronics - accessories - Chargers

IT & Fintech

Numbr – A micro-investing app

APPLICATION

- Numbr automatically rounds up everyday purchases and invest the spare change
- Spare change is invested through an RBI approved e-Mandate
- Users can choose to invest in different mutual funds according to their risk appetite
- AI-based financial product recommendation to help users meet their financial goals
- A 360-degree financial view to help users to stay on top of their financial health

COMPANY NAME

Ovest Technologies Pvt Ltd

FOUNDERS' NAME

Asish Das, Sudhakar Pradhan & Sazzad Hussain

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (App Development is under progress)

INTELLECTUAL PROPERTY

AMFI registered MF distributor with ARN – 178038

PROBLEM ADDRESSED

- Indian millennials do not save or invest until their late 20s or early 30s
- More than 60% of the 450 Crore Indian millennials do not have emergency funds
- Investment is considered to be complex, time-consuming, risky and requires a large capital

ABOUT THE TECHNOLOGY

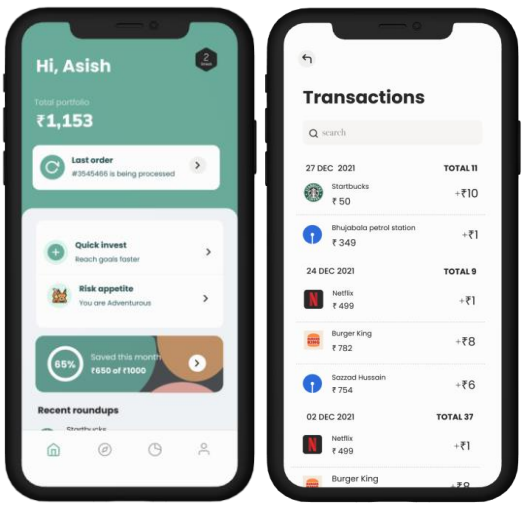
Numbr is a micro-investing app for millennials that automatically rounds up everyday transactions and invests the spare change. Users can choose the funds they want to invest in according to their risk appetite. Numbr also recommends financial products to the users using artificial intelligence to help them reach mee financial goals.

The product has been developed including the following technologies:
- Flutter
- Python
- Laravel
- MySQL
- Named Entity Recognition (NER)
- Artificial Intelligence & Machine Learning
- JWT Authentication
- SOAP API
- REST API

FUNDS RAISED/ACHIEVEMENTS

- Received INR 15 lakhs in grant from Startup India Seed Fund Scheme.

PRODUCT



USP

- Start investing with as low as INR Rs. 1
- AI based financial product recommendation to help meet financial goals
- In-house MF reporting engine
- 360-degree financial health overview

END USERS / CUSTOMERS

Indian millennials aged between 18 to 32. They might be students, getting started with their careers or 3-4 years into their career and have not explored investing yet.

IT & IoT

MessageMe™ - A NextGen Enterprise Messaging platform for Sensitive Communications using Quantum Technology

APPLICATION

MessageMe™ is a first of its kind Enterprise Messaging platform for critical communications. With its Forensic and Investigation capabilities, the platform can be truly used for critical communications.

COMPANY NAME

Arishti CyberTech Pvt. Ltd.

FOUNDER'S NAME

Kanak K Kawadiwale

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **8 (The beta version of the product is ready and it is early market traction stage)**

INTELLECTUAL PROPERTY

Indian Patent Application No: 202121015792
Trademark No: 5373435

PROBLEM ADDRESSED

The problem of Insecure & Uncontrolled communications in the enterprises is increasing day by day due to increased use of consumer messaging platforms which:

- Uses traditional encryption technology
- No control over sensitive data
- No Audit & Forensics of communications Enterprises need Secure Messaging platforms, but the existing consumer messaging platforms are not reliable enough that make up around $3 Billion industry

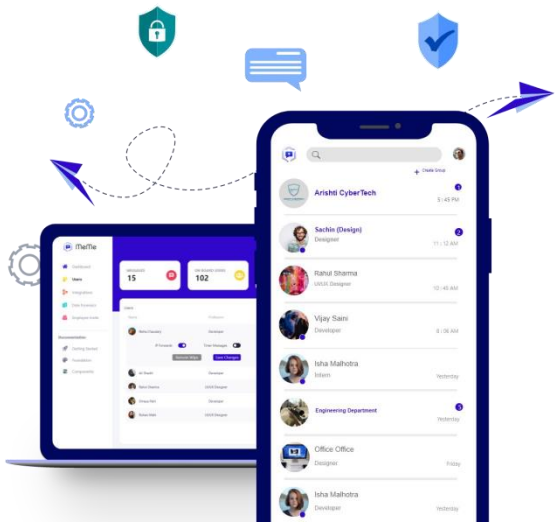
ABOUT THE TECHNOLOGY

MessageMe™ is a first of its kind Enterprise Messaging platform for critical communications. It focuses on Consent based messaging with Data Privacy at its heart. The platform uses cloud based Quantum cryptography which makes the application secure and unique in itself. It also works on the principle of Consent based messaging, in sense the ownership of the critical data remains with the creator of data. The platform uses Zero Trust Network architecture which believes "Never Trust, Always Verify" principle. Centralized control and administration of the internal communications become easy due to Admin Panel dashboard.

FUNDS RAISED/ACHIEVEMENTS

- Around 25 Lakhs raised in form of Grants and awards
- Awarded Persistent Inspiration Award
- Recognized by Ministry of Defence & MeitY
- Innovative Product by AICTE National startup committee.
- Top 30 startups under 5G hackathon organized by Department of Telecom
- Supported under NIDHI-EIR by SINE IIT-Bombay
- Finalist at Aegis Graham Bell Awards under Enterprise Solution category

PRODUCT IMAGE



USP

1. Patent Pending Hybrid Encryption using **Quantum Technology** reducing the attack chances by 80%
2. **Consent** based critical Messaging
3. **Admin Controlled** Communications
4. Messaging **Forensics & Monitoring** capabilities
5. **Data Loss prevention** over the Sensitive Data being shared

END USERS/CUSTOMERS

1. Banking & Financial Markets (BFSI)
2. BPO/BPM
3. Large Pharmaceutical Enterprises
4. Government Embassies, Ministries & Law Enforcement Agencies

Electronics

Altor – The Smart Helmet

APPLICATION

The smart helmet can not only be used for bikers and riders, it can be used for various Industry applications in the delivery, logistics, sporting, firefighting, bike-sharing sector as well as military purposes.

COMPANY NAME

Praesus Technologies Pvt Ltd

FOUNDERS' NAME

Shamik Guha

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (The final product is ready and has been deployed in the market)

INTELLECTUAL PROPERTY

Indian Patent Application No. 201931008960A

PROBLEM ADDRESSED

Road accidents contribute to nearly 1.3 million deaths, and over 30 million hospitalizations every year, globally, with the impact more pronounced in Asian countries. This invention addresses the problem with a smart helmet with lightweight, modular technology that fits inside regular motorcycle helmets. It significantly increases the ease of locating an administering medical aid to an accident victim right after a crash, and also gamifies safe driving to make the rider drive better. This invention has broad consumer and business applications to ensure road safety.

ABOUT THE TECHNOLOGY

The inventors of this technology developed a smart helmet to collect real-time data and help to reduce operational and personal risk while providing and encouraging enhanced road safety.

Features:

- Capacitive Impact Sensing to detect helmet worn or unworn conditions.
- Wireless connectivity to allow the helmet to communicate with a computing device (Smart Phone).
- Swipe-enabled interface and audio navigation
- Summarized ride statistics - like location, wear statistics, speed, and impact
- Emergency SOS alerts with ride details are shared with trusted contacts, as is relevant medical history incase of an impact

FUNDS RAISED/ACHIEVEMENTS

- Venture Catalysts -INR 95 lakhs
- Featured in Shark Tank India with a massive positive response with a funding of 50 lakhs.
- Coverage in INC42 as one of the most promising start-ups.

PRODUCT IMAGE

USP

- Gradual betterment in rider behavior through reward-based incentivization and gamification.
- Compact analytics/audio module
- Swipe-enabled User Interface
- Smaller & Lighter than only-audio modules
- High durability
- Cost Effective, most inexpensive among similar products around the world

END USERS/CUSTOMERS

- The emergent two-wheeler EV sector is likely to accelerate demand for smarter wearable headgear alongside smarter vehicles.
- Government mandates for road safety are an important driving factor, as the product is designed to reward safety.
- Direct customers with two wheeler vehicles.

Sector
Clean Tech

Clean Energy

Minion Energy Management Solution

APPLICATION

MinionLabs helps businesses & Consumers to reduce their electricity costs and improve their productivity by providing real-time device-level electricity consumption insights using a smart energy management solution by leveraging on data & 5 Ai practices. Thus, making energy-efficient, sustainable and less climate risk.

COMPANY NAME

MinionLabs India Pvt Ltd

FOUNDER'S NAME

Gokul Shrinivas

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Early Revenue Generation Stage)

INTELLECTUAL PROPERTY

PCT Application No.
PCT/IB2020/055564

Indian Patent Granted No.
363286

PROBLEM ADDRESSED

In order to save energy costs in any buildings and facilities, the MEP engineer or the facility maintenance should have each and every equipment level energy consumption data, then only the client can able to find out the problems and make necessary timely actions for energy savings. At current scenario, to get equipment level energy consumption data, Businesses has a choice of using traditional / smart energy meters for which there is a requirement of dedicated meters/sensors to be installed for every equipment which is high capital investment along with operational and implementation costs involved making no Return on Investment anywhere near to 5 years.

ABOUT THE TECHNOLOGY

Minion uses state-of-the-art Machine Learning and AI-Based EDGE Computing approach to detect energy signatures of individual electrical assets and study patterns of their energy consumption used inside the facility at single point of connect and also to generate real-time notifications of various events and reports on predictive analytics, enabling the users to save up to 30% of their energy consumption along with CAPEX & OPEX savings over traditional & smart metering solutions.

FUNDS RAISED/ACHIEVEMENTS

- Currently Raising INR 11.25 Crores in Seed Round at INR 63.75 Crores Pre-Money Valuation.
- March 2020 – INR 96 Lakhs INR Pre-Seed raised at INR 7.5 Crores Pre-Money Valuation from Indian Angel Network.
- Received MeiTY SASACT Grant worth INR 7 lakhs
- Raised investment of INR 40 lakhs from TIDE2.0 Investment Scheme
- Received DST NIDHI4COVID Fund worth INR 30 lakhs
- Winner of Top Industry 4.0 - Internet of Things (IoT) award at the National Startup Awards 2020 ceremony

PRODUCT IMAGE

USP

- There is no need of device level sensors to get device level electricity consumption.
- Three steps Install – A Layman can install it as minion device is plug & play.
- No Plugins or Software needed, just login with a browser & start tracking.
- Personalised energy efficiency recommendations via WhatsApp at real-time.

END USERS/CUSTOMERS

Energy Contractors, Energy Consultants, Real Estate Players, Facility Maintenance Companies, EMS/BMS Resellers, Green Energy Source / Clean Tech Companies, HVAC Solution Providers, System Integrators, ESCO's (Energy Service Company), Energy Auditing Companies, etc.

Electric Vehicles

Trueno EV Ecosystem

APPLICATION

Electric vehicle are the future of 2W mobility. With increasing adoption of 2 wheeler electric vehicles the need for a full service provider to address all the needs of owning an electric vehicle are immense. The current industry is unorganized and In its infancy. Currently three broad areas where applications are posed to transform electric vehicles are: Battery Swapping Stations, Charging Stations, Local Mechanics Network

COMPANY NAME

Electride Technologies Pvt Ltd (Trueno)

FOUNDER'S NAME

Somil Jain, Manan Garg & Adit Purohit

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (Prototyping and Development stage)

INTELLECTUAL PROPERTY

Proprietary algorithms to suggest riders nearest charging, swapping or mechanics

PROBLEM ADDRESSED

The application will address the concerns of electric vehicle ownership and will provide a one stop shop solution to all your electric vehicles needs. Trueno's EV ecosystem shall provide the user with swapping, charging and mechanics network in one roof.

ABOUT THE TECHNOLOGY

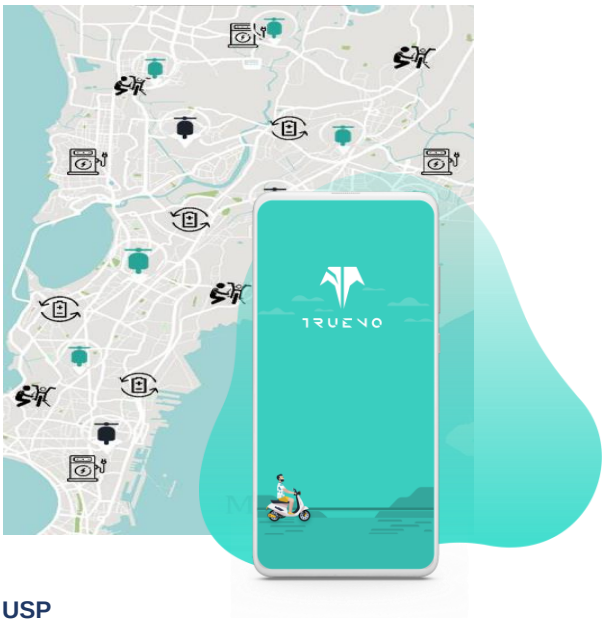
It is a one stop solution for businesses related to electric two wheelers. The IOT and ML driven data analytics platform selects the product that is right for their operations, takes care through servicing network and PAN India scale. Analytics also helps in streamlining the last mile operations for the businesses. Further, the businesses already have their riders for deliveries. Trueno focuses more on giving EV related ecosystem to the former.

Widgets: Font Awesome; WhatsApp
Content Delivery Network: CloudFlare's CDN; jQuery Amazon S3 Content Delivery Network; jsDelivr
Content Management System: Netlify
JavaScript Libraries and Functions; core-js
Web Hosting Providers: Amazon AWS EC2 Infrastructure

FUNDS RAISED/ACHIEVEMENTS

- Raised INR 40 lakhs debt funding from Startup India Seed Fund Scheme.
- API Holdings, in partnership with Trueno has introduced electric vehicles for its brand, PharmEasy to deliver medicines and healthcare products in Jaipur.

PRODUCT IMAGE



USP

Having a existing fleet of B2B subscriptions we can use to deploy a proof of concept charging, swapping and mechanics network. This network that than be opened to existing EV users and B2B EV fleets from other platforms

END USERS / CUSTOMERS

Businesses which are into first mile, last mile, hyper local deliveries are our businesses. To list a few - courier businesses, e-pharmacy businesses, restaurant chains, pharmacy stores, super markets are already part of our growing business.

Clean Energy

Bio-degradable fast charge EV batteries out of agricultural wastes such as crop residue.

APPLICATION

At Nexus we're building a sustainable EV Future with our bio-degradable, non-toxic fast charge electric vehicle batteries from crop residue. These batteries are made out of earth abundant materials with higher energy density & better performance.

COMPANY NAME

Felis Leo Widgets Pvt Ltd

FOUNDERS' NAME

Nikita Baliarsingh
Nishita Baliarsingh

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The Initial Product has been developed. Currently under the field trials)

INTELLECTUAL PROPERTY

Indian Patent Application No. 202031022846

PROBLEM ADDRESSED

Li-ion batteries are toxic and non-recyclable, posing a huge threat to sustainability, besides these batteries take about 4-6 hours to charge, making it nearly impossible to adapt to the EV industry as a daily home commodity. The vehicles powered by these batteries do not have a huge accommodating range either. They hardly give about 70 - 100 kms range for 2W EVs. Since these batteries are mostly imported / assembled, it leads to increase in the costs in turn increasing cost of the Electric Vehicles.

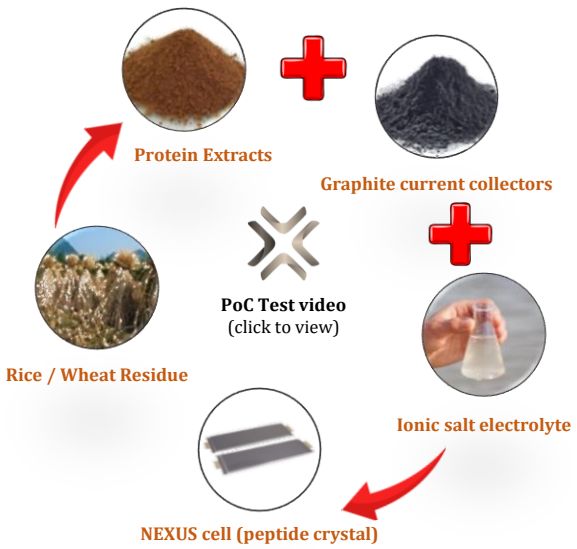
ABOUT THE TECHNOLOGY

Proteins in the living organisms possess properties of electron transfer and energy storage just like the batteries made from li – ions. The proteins are also good conductors of electricity and facilitate the flow of electrons. In the initial research work of the company, it was found that crude protein is found in crop residue. Considering that this part of the agriculture waste is usually burnt as there is no good way of disposing them, the company opted to use the residue as a raw material to extract protein. The extracted proteins are further broken into smaller particles known as peptides, which are doped with Carbon Nanotubes to build a composite / crosslinked material to achieve the desired electrodes for the flow of electrons in the battery.

FUNDS RAISED/ACHIEVEMENTS

- Received MeitY TIDE 2.0 EIR worth INR 4 Lakhs
- Received DST NIDHI PRAYAS worth INR 7 Lakhs
- Received HDFC Smart up grant worth INR11 Lakhs
- Listed under Forbes 30 Under 30 both Asia and India for the year 2021.
- Appreciated and highlighted in MG Changemakers, Vogue India, Entrepreneurs – women to watch etc.
- Raised INR 2 Cr from JITO Angel Network

PRODUCT IMAGE



USP

- Lithium-ion free and build from bio-organic compounds crop residue.
- Batteries tune to faster charging as compared to a Lithium-ion battery .
- Batteries have a higher energy density and hence last longer
- Acting as a substitute to lithium ion batteries in the EV market, it is cost effective.
- Bio-degradable and has fast charging with higher energy density and longer life cycle.

END USERS/CUSTOMERS

While our target segment is B2B, where we supply our batteries to the EV OEMs to fit them in their vehicles,

Clean Tech

An affordable smart energy meter solution

APPLICATION

The device can be used in Government DISCOM's, Government Institutes, Private Apartments, IEEE Smart Village Projects, etc.

COMPANY NAME

HFIL Technologies Pvt Ltd

FOUNDER'S NAME

Dinesh Patiyal

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Product is developed and commercialized and deployed in Himachal Govt. Office)

INTELLECTUAL PROPERTY

Indian Patent Application No. 201911022037

PROBLEM ADDRESSED

Manual meter reading & billing, Incorrect & provisional billing, Meter tampering & power thefts, Manual connection and disconnection, postpaid plans causes revenue losses, meter jumping & payment disputes and, inefficient power & resource management.

ABOUT THE TECHNOLOGY

A smart energy meter communicating with cloud server to send & receive data and instructions in real-time. User can see real-time consumption using the mobile app . By getting real-time data of user consumptions and other parameter, DISCOM's can do better power management using HFIL analytical dashboard. A Cost effective, accurate and efficient IOT based solution to convert existing post-paid energy meters into pre-paid/smart energy meters. Our Pre-paid meter converter has a unique functionality of recharging the meter using both hardware and software keys rather than existing costly pre-paid meter in the market which are more prone to software hacking.

FUNDS RAISED/ACHIEVEMENTS

- Received DST NIDHI PRAYAS grant worth INR 7 lakhs
- Won First prize in Innovate Technology Category in Himachal Startup Yatra Competition Held in IIT Mandi.
- Got first prize in Himachal Startup Yatra Competition .
- IIT Mandi Catalyst-1500000

PRODUCT IMAGE

USP

- A Complete end to end solution for energy reading, monitoring, and billing.
- Low Capital and maintenance cost.
- A machine learning enabled dashboard for forecasting the demand of energy.
- Easy to implement.
- Seamless integration with existing systems.
- Transform meter reading and billing month long process to minutes.
- Increases revenue and profits of DISCOM's
- Brings transparency and accuracy.

END USERS/CUSTOMERS

Government DISCOM's, Government Institutes, Private Apartments, IEEE Smart Village Projects, Open market.


Sector
COVID

Healthcare: Devices

RespirAID: Automated Respiratory Assisting Device

APPLICATION

The advanced ventilator support device can be used for respiratory diseases like – COPD, ARDS, Asthma, etc. Additionally, it can be used for patients with brain injury, cardiac arrests, pneumonia, stroke, etc.

COMPANY NAME

Biodeisgn Innovation Labs Pvt Ltd

FOUNDER'S NAME

Gautham Pasupuleti

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Final MVP is ready and clinically validated. The product has been launched and deployed across 10+ hospitals in the country)

INTELLECTUAL PROPERTY

An Indian Utility and Design Patent granted (App No: 355517)

PROBLEM ADDRESSED

Our country with a population of 1.3 billion people, has an unmet clinical need in the critical care segment during emergencies to provide mechanical ventilation support. In India, more than 5000 people die everyday due to respiratory illnesses. About 45-60 percent of patients who are critically ill, require ventilatory support. Prolonged manual ventilation, during shortage of sophisticated ventilators is exhaustive, inconsistent and unreliable.

ABOUT THE TECHNOLOGY

RespirAID is a safe, reliable, affordable alternative prolonged manual ventilation and can be used in emergency care, post operative and transport ventilation. It is a safe, reliable, affordable alternative prolonged manual ventilation and can be used in emergency care, post operative and transport ventilation. During shortage of sophisticated ventilators, RespirAID will help in managing patients and can replace manual ventilation. Compliance testing has been done at AMTZ, TUV and intratrek labs for safety, performance according to the ventilator standards.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received KITS Govt of Karnataka Funding worth INR 25 lakhs
- Received DST NIDHI4COVID fund worth INR 30 lakhs

END USERS/CUSTOMERS

Govt and private hospitals, clinics, PHCs and SHCs

PRODUCT IMAGE

USP

- Mode of ventilation VCV (Volume Control Ventilation)
- Peak Inspiratory Pressure (PIP) 10-80 cm of H2O
- End Expiratory Pressure (PEEP) 5-20 cm of H2O
- Tidal Volume: 200 – 600 ml and Respiratory Rate: 10-30 BPM
- High Circuit Leakage Alarm
- Electric supply failure – UPS alarm
- Portable and user friendly operations

Healthcare: Diagnostics

InstaCOVID Ag: Easy home antigen test for COVID-19 Detection

APPLICATION

The device can be used as a point of use diagnostic tool to detect various viral and microbial infections.

COMPANY NAME

QAWaCh Bio Pvt Ltd

FOUNDER'S NAME

Rashmi Tambe Shukla

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **7 (Final product is ready and the multicentric clinical trails and validation studies has been initiated)**

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

As the COVID 19 pandemic hit the nation, RT-PCR is taking more than two to five days, for getting test results. This is essentially because of multiple reasons like, requirement of laboratory infrastructure, trained manpower for the testing of the patient samples, sample transport, stability and storage of the kit. The other alternative is use of lateral flow assay-based (LFA) test kits. However, principal problem with LFA kits is their low sensitivity that is around 50-60%.

ABOUT THE TECHNOLOGY

InstaCOVID-Home is a gold nanoshell-based highly sensitive rapid antigen test kit for detection of COVID-19 infection. he InstaCOVID-Home test uses novel gold nanoshell-like particles that can give clear visible signal even when the viral load is at sub femtogram level. The InstaCOVID-Home test gives the maximum sensitivity (Limit of Detection) of 0.1 femtogram or 100 attogram of NCP protein. The very high sensitivity of InstaCOVID-Home makes it a best candidate for over-the-counter COVID-19 antigen test for home use, giving results within 15 mins when someone is in doubt of infection. This test can also serve as confirmatory test with sensitivity that could be similar to RT-PCR. Hence, decreasing the high dependency of our medical system on RT-PCR testing for confirmation of COVID-19 and making at-home testing possible.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 46.95 lakhs
- Received BIRAC BIPP Fund worth INR 19.4 lakhs
- Received DST NIDHI PRAYAS Grant worth INR 9 lakhs
- Raised investment worth INR 10 lakhs from SINE IIT Bombay SEED funding
- Received DST NIDHI4COVID fund worth INR 40 lakhs

PRODUCT IMAGE

USP

- **Higher Sensitivity**
  106 X Higher Sensitivity novel nanoshells
- **Higher Specificity**
  Sub-femtogram detection limit
- **Quick and User-friendly operations**
  Instant results with smartphone application
- **Scalable platform**
  Can be used for mass testing purpose
- **Affordable and accessible**
  Cost effective and No Laboratory/Electric power required

END USERS/CUSTOMERS

Medical device distributors, Diagnostics lab, Hospitals and clinics, In house patients

Portable Solutions

MinionLabs UV Saaph: A portable UV – C disinfection unit

APPLICATION

The device can be used as a plug & play disinfection unit for fruits, vegetables, personal belongings. Additionally, it can be retrofitted in ATM rooms, Elevators, Waiting rooms, etc.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
MinionLabs India Pvt Ltd	TRL: **8 (Final MVP is ready and the product is at commercialization stage)**	IP filing process is under progress

FOUNDER'S NAME

Gokul Shrinivas

PROBLEM ADDRESSED

Traditional sterilization methods have been in use for centuries now. However, these chemical processes use harsh and potent chemicals that are potentially unsafe for the health concerns as it may leave behind residue on the surfaces they cleanse which may be toxic especially for young infants and pets. Furthermore, Enclosed UV disinfectants which has a UVC lamp installed in an enclosure type device for disinfecting are not portable and hence not applicable in many daily life scenarios where it is essentially required.

ABOUT THE TECHNOLOGY

MinionLabs UV Saaph (MUVS) – Mobile Variation is aim to be a plug & play cost-effective UV-C based disinfecting product which can be retrofitted in ATM Rooms, Elevators, Waiting Rooms, Disinfection on the go applications, etc which is based on scientific principle of Ultraviolet Germicidal Irradiation that can disinfect surfaces of objects from pathogens like bacteria, fungicides and other microorganisms. MinionLabs UV Saaph brings this technology to disinfect your rooms and to step up your sanitization to next level. MUVS Mobile is the perfect solution for disinfecting your surroundings and objects as well, as it provides you an easy to install plug and play device which can be retrofitted easily and is portable which makes it the best solution and offers 4 minute disinfection and can be power supplied by ac and dc as well making it flexible for any scenario.

FUNDS RAISED/ACHIEVEMENTS

- Received MeiTY SASACT Grant worth INR 7 lakhs
- Raised investment of INR 90 lakhs from IAN
- Raised investment of INR 40 lakhs from TIDE Investment scheme
- Received DST NIDHI4COVID Fund worth INR 30 lakhs
- Winner of Top Industry 4.0 - Internet of Things (IoT) award at the National Startup Awards 2020 ceremony

PRODUCT IMAGE

USP

- Portable device and easy to use operations
- Ozone free and 100% safe for plants and animals
- Lifetime of lamps of 9000 hours (~4 years)
- Easy installation and low maintenance cost
- Suitable for continuous operation in the presence of people
- Designed & Made in India solution

END USERS/CUSTOMERS

Apartments and Housing complexes, Corporates, Hospitals, Clinics, Govt and Private Bodies like – Railway stations, Airports, Malls, Banks, etc.

Healthcare: Devices

ARIA – A Smart Oxygen Concentrator

APPLICATION

The oxygen concentrator can be used for treatment of patients suffering from Respiratory disorders like COVID 19, Asthma and COPD. Furthermore, it can be used for patients suffering Tuberculosis

COMPANY NAME

Medcuore Medical Solutions Pvt Ltd

FOUNDER'S NAME

Paul Pradeep J

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Final prototype is ready and under the final stages of clinical trials and validations)

INTELLECTUAL PROPERTY

An Indian Patent has been filed
(App No: 202141015495)

PROBLEM ADDRESSED

Oxygen supply has been a great demand in this Pandemic. The hospitals and clinics have run out of the medical grade oxygen to face the crisis. More than 95% of Oxygen concentrators are imported and hence the treatment process becomes costlier. Moreover, the imported oxygen concentrators are not readily accessible across the rural areas of India. Hence, it is now time for Indian Manufacturers to a giant leap in this sector. This will eventually reduce the cost of treatment as well as make oxygen accessible to remote locations.

ABOUT THE TECHNOLOGY

ARIA is a portable oxygen concentrator device which has the highest known concentration of about 96% with a flow rate of 0 to 10 LPM which can heal the patient fast enough. This Oxygen Concentrator are being made with smart feature such as IoT Connectivity using Web App and Mobile App. Oxygen Concentrator can be switched on-off remotely Air Quality monitor is integrated to give regular alerts on PM2.5 PM1.0 PM10 Humidity AQI and Temperature. Vital signs such as SpO2 Level and Pulse rate can be monitored remotely. These features help in preventing the interaction between Healthcare workers and Covid Patients as well as with attenders and Respiratory disorder patients.

FUNDS RAISED/ACHIEVEMENTS

- Received DST NIDHI4COVID fund worth INR 35 lakhs
- Received calibration certification from NHHID, GoI

END USERS/CUSTOMERS

Hospitals and Clinics, Patients suffering from Asthma, Tuberculosis & COPD

PRODUCT IMAGE

USP

- Low cost and high oxygen purity of 96%
- High flow rate (0 – 10 LPM)
- IoT based remote patient monitoring system to avoid cross infection
- Integrated Air quality monitor and environment purifier for clearing dust particles
- Web app and Mobile app controlled device
- Battery backup makes this unique for PHC and SHC

Healthcare: Devices

iLive: 10L/min High Pressure Oxygen Concentrator

APPLICATION

The oxygen concentrator can be used for treatment of patients suffering from Respiratory disorders like COVID 19, Asthma and COPD. Furthermore, it can be used for patients suffering Tuberculosis

COMPANY NAME

Symbiorph Medical Innovation Pvt Ltd

FOUNDER'S NAME

Siddharth Jain

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (Final prototype is ready and under the initial stages of clinical trials and validations)

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

Oxygen supply has been a great demand in this Pandemic. The hospitals and clinics have run out of the medical grade oxygen to face the crisis. More than 95% of Oxygen concentrators are imported and hence the treatment process becomes costlier. Moreover, the imported oxygen concentrators are not readily accessible across the rural areas of India. Hence, it is now time for Indian Manufacturers to a giant leap in this sector. This will eventually reduce the cost of treatment as well as make oxygen accessible to remote locations.

ABOUT THE TECHNOLOGY

Symbiorph Medical Innovation is currently developing India's most robust, clinically validated and regulatory compliant 10L/min High-Pressure Oxygen Concentrator. iLive is a high pressure oxygen concentrator system with a flow rate of 10 lpm and oxygen purity 93% to 96%. The indigenously developed concentrator has a novel packing of molecular sieve to achieve higher efficiency.

FUNDS RAISED/ACHIEVEMENTS

- Received DST NIDHI4COVID fund worth INR 30 lakhs
- Received DST NIDHI PRAYAS Grant worth INR 7 lakhs

END USERS/CUSTOMERS

Hospitals and Clinics, Patients suffering from Asthma, Tuberculosis & COPD

PRODUCT IMAGE

USP

- 10 lpm flow rate with 93-96% purity
- Comes with auditory alarms
- Integrated with cooling system to reduce the heat of the compressor
- Novel molecular sieve technology for higher and better efficiency
- Works within desirable noise level (≤ 50 Db)

Healthcare: Devices

Impilo Vista: Contactless health screen (HSMM)

APPLICATION

The remote health monitoring system can be used for early pre symptomatic detection of Flu, Covid 19, infection, injury, or trauma. Monitoring and management of an individual (remote location) and ICU patients.

COMPANY NAME

Impilo Sensys Pvt Ltd

FOUNDER'S NAME

K Ravindra Shetty

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **6 (Final Prototype is ready and field testing and validation is under progress)**

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

Manual identification and tracing of Flu or Pandemic COVID-19 in public places is a tedious, dangerous and time consuming. There is a need for monitoring and management of few vital parameters of a patient in the ICU or a patient in the remote location. Remote health monitoring system can ensure continuous monitoring of patient vitals inorder to make the treatment process more effective and less time consuming.

ABOUT THE TECHNOLOGY

Contactless care at a distance: Live wireless health screening, monitoring and management (HSMM). Prognostic and diagnostic; Screening; Monitoring and Management HSMM: provide an early and actionable health information on; Screening for potential pre symptomatic detection of any type Flu and Covid19 symptoms in humans. Monitoring and management of ICU or remotely located patients. The device comes with loaded features like - Portable (size of an iPad), running on rechargeable 9V battery. Wireless (contact less) sensors with more than 10 human vital parameters. AI (Deep learning) enabled tool AI based Prognostic and diagnostic.

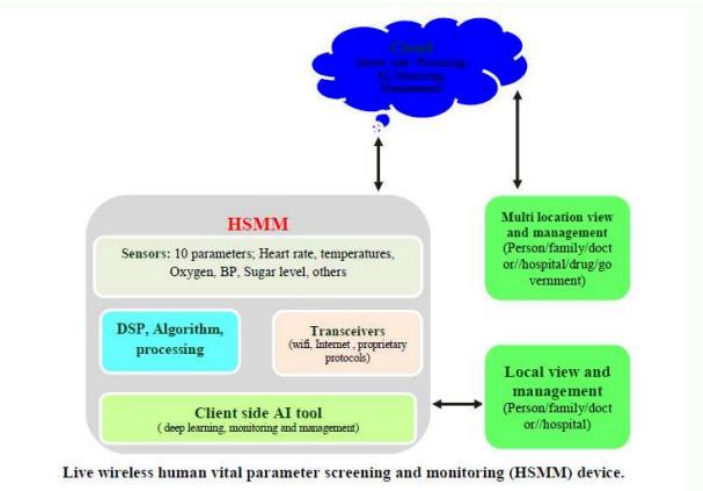
FUNDS RAISED/ACHIEVEMENTS

- Received DST NIDHI4COVID fund worth INR 30 lakhs

END USERS/CUSTOMERS

Inhouse patients, Doctors, Hospitals, Clinics, Medical colleges, and NGOs

PROCESS FLOW



Live wireless human vital parameter screening and monitoring (HSMM) device.

USP

- Portable (size of an iPad), running on rechargeable 9V battery
- Wireless (contactless) sensors with more than 10 human vital parameters
- AI (Deep learning) enabled tool
- AI based Prognostic and diagnostic
- Application runs on any mobile device in standalone or PaaS, SaaS model.

Sector Defence

Defence

ArchEON® Wearable Health and Trauma Monitor

APPLICATION

The device can be used for on-field critical health & injury monitoring in high risk environment. AP-MAS which is one of the components of the device can be used as hearable aid device for geriatric and auditory challenged population.

COMPANY NAME

lvl Alpha Pvt Ltd

FOUNDER'S NAME

Aditya Mishra

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 6 (The initial version of the product is ready and has received the ISO 13485 certification)

INTELLECTUAL PROPERTY

Indian Patent Application No.
202121028172

PROBLEM ADDRESSED

Lack of Real-time Critical Health and Injury data for active duty personnel in high risk work environments leads to operational failures and fatalities in the current Casualty Management System. This causes misidentification of other friendly units, failure of operations due to delays, miscommunication or human errors and difficulty for command and support operations.

ABOUT THE TECHNOLOGY

ArchEON® is a wearable computing devices that provide critical health monitoring including impact head trauma, heat stress, hypothermia and hypoxia for saving their lives in high risk environments. Equipped with complete on-Field Health and Trauma Monitoring system with Ear-free wireless system, bone-conduction based audio communication, even in no-network/GPS environment for industry and defence personnel.

AP-MAS is a behind the ear customized hearable device for moderate to severe auditory challenged people with 7-day battery charge, noise cancelling and bluetooth streaming (Premium Version), Off grid location tracking, operational information and friendly unit identification.

FUNDS RAISED/ACHIEVEMENTS

- Received IOCL Startup Fund worth INR 60.00 Lakhs
- Received MeitY, TIDE 2.0 EIR worth INR 4.00 Lakhs
- Received MeitY, India Grant worth INR 24.00 Lakhs
- Top 50 Startups Globally Selected to Startup Visa Program Canada 2020.
- Received ISO 13485 Medical Device QMS Certification
- Exhibitor at Def Expo '22, Def ExpoTN '22, IIME 2021.

PRODUCT IMAGE

ARCHEON®

AP-MAS Hearables

USP

ArchEON®

- Reduces Casualty Management Time from Field-to-Hospital
- TWO Folds for Industry and Defence Personnel
- The devices that provide Critical Health Monitoring including Impact Head Trauma Heat Stress, Hypothermia and Hypoxia for saving their lives in high risk environments.
- End-User also gets Real Time Two-Way Communication

AP-MAS

- Disrupting Entry-level and Premium Level Hearing Aid Market with Democratised Hearable Platform.
- For saving their lives in high risk environments.
- Off Grid Location Tracking.

END USERS/CUSTOMERS

- The primary clients are in the Defence sector which includes Indian Army, Navy, BSF, SSB, NDRF
- The Industries - IOCL (PoC Order Placed), ONG Companies
- B2B industries includes- Central Government Health schemes, State Government Health Scheme, Hospitals, MedTech companies.

Defence

Platyrhynchous Vehicle

APPLICATION

The device can be used to detect all the land mines and bombs, fire at enemies during war, tracking and follow the object or person, carry weight up to 40 kg, extinguish fire and measure the carbon dioxide gas.

COMPANY NAME

Darubrahma Automation Robotics Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Currently under the initial prototype development stage)

INTELLECTUAL PROPERTY

IP filing process is under progress

FOUNDER'S NAME

Rajendra Prasad Das

PROBLEM ADDRESSED

There has been challenges in Defence for the detection of mines, friend and foe technology and deployment. Medical: Transportation of goods like medical equipment, medicines and kits. And Material delivery in various sectors like agriculture.

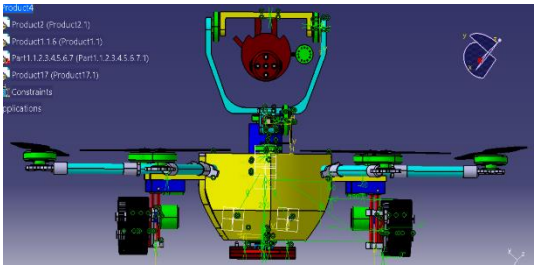
ABOUT THE TECHNOLOGY

Platyrhynchos vehicle is the combination of the aerial and amphibious vehicle which uses a control driving functional unit with novel features of wireless control using a radiofrequency module with activation or deactivation of returning home. The main technology is used to detect the bombs and land mines and it installs the new land mines where we require to install. Without the use of our vehicles, the lives of our soldiers remain at great risk. The vehicle can plant six bombs simultaneously. The vehicle is also capable of recording and transmitting the coordinates of the planted area to the receiver monitor. This vehicle with an intense mixture of electronics, mechanical, and mainly based on the principle of aviation. The vehicle can record and transmit the coordinates of the detected bombs to the receiver monitor. The vehicle comes equipped with a machine gun that can rotate 360 degrees in the horizontal axis and it can rotate 210 degrees on the vertical axis. The vehicle also provides the feature of locking a target and following it and we can attack the target at any instant within a particular range. The camera comes with the facility to capture images and videos by rotating 360 degrees on both the horizontal and vertical axes.

FUNDS RAISED/ACHIEVEMENTS

- Youth innovation award from startup Odisha.
- Grant received from startup Odisha.
- DST Nidhi Eir worth INR 3.6 Lakhs from DST.
- DST NIDHI PRAYAS worth INR 6 Lakhjs

PRODUCT IMAGE



USP

- Combination of aerial and amphibious vehicle.
- Main utility: detect bombs & land mines. Also installs new land mines as required.
- Can plant six bombs simultaneously. Also capable of recording and transmitting the coordinates of the planted area to the receiver monitor
- Equipped with a machine gun that can rotate 360 degrees in horizontal & 210 degrees on vertical axis.
- Locking and attacking the target at any instant within a particular range. Continuous monitoring of the movements of suspect.
- Hybrid generators: flight time is approximately 2 to 3 hours.
- Automatic foldable arm, Tank track system foldable when we use in water channel.
- Weight lifting capacity: up to 40 kg. Can be increased up to 80-100 Kg

END USERS/CUSTOMERS

- Healthcare - deliver medicines, medical equipment and kits. Evacuation of medical casualties from difficult areas
- Agriculture: crop monitoring, pesticide spray, forest monitoring, reforesting
- Livestock monitoring
- Warehouse management
- Natural disasters (Floods, fire, earthquake etc.)
- Transportation of men & material
- Infrastructure sector: road map, GPS, surveillance

Defence

3-Axis Stabilized Bipod Mount for Mortar Weapon System

APPLICATION

Upgradation of existing Ordnance Factory built 81mm Mortar systems of Indian Army and Border Security Force by replacing the manually operated bipod mount and optical device with the 3-axis stabilized bipod mount to increase accuracy and efficiency.

COMPANY NAME

Shyama Projection Engineering Research Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 5 (The initial version of the prototype has been developed)

INTELLECTUAL PROPERTY

Indian Patent Application No. 202231001989

FOUNDER'S NAME

Sudipta Pathak

PROBLEM ADDRESSED

The present invention relates in general to the field of mortar weapon systems. Specifically, the present invention relates to a 3-axis stabilized bipod mount which provides automatic mechanical alignment & stabilization to the barrel of the mortar weapon system in azimuth & elevation during firing and realign after the firing according to the location of the target. This will increase efficiency and accuracy which will lead to reduction in number of ammunition required to neutralize a target, reduction in collateral damages and reduction in crew fatigue due to less workload.

ABOUT THE TECHNOLOGY

The 3-axis stabilized bipod mount which interfaces with the Ordnance Factory Board built 81mm mortar barrel, provides automatic mechanical alignment in azimuth and elevation according to the location of the target. MEMs based Inertia Measurement Unit and digital compass is used to determine the elevation & azimuth and required alignment is achieved using three linear actuators. The mount is also equipped with barometric sensor & satellite navigation sensor to measure the location and altitude of each individual weapon system. A digital fire control computer receives the target position data i.e. location and altitude of the target from a digital electro-optic observation device or through manual input and calculate the optimum firing solution i.e. the azimuth and elevation of the weapon system and forward the same to the weapon system which then automatically aligns itself as per requirement and realigns after each shot to negate the displacement caused by firing shock.

FUNDS RAISED/ACHIEVEMENTS

- DST NIDHI PRAYAS prototype development fund of Rs. 7 Lakh.

PRODUCT IMAGE

USP

- **1st of its kind**, all portable mortar systems in service worldwide are manually operated.
- **Modular design**, damaged parts can be replaced in field condition.
- **Failure Backup**, can be operated manually in case of automation failure and standard operating procedure will be same as of now.
- **High Accuracy**, automated gun laying negating the human errors and auto relaying capability so higher rate of fire with accuracy.
- **Digital Connectivity in battlefield**, negating the human errors in verbal communication and capable of working stand alone or can operate as an integrated system.
- **Lowest cost** indigenous solution.

END USERS/CUSTOMERS

Indian Army, Border Security Force & other Govt. Agencies

Northeast Innovators

Waste Management

Microbial consortium based biofertilizer for increased Ramie Fiber yield

APPLICATION

The innovative process can be deployed as a part of effluent treatment process in various industrial ETPs like – dairy ETPs, fertilizer ETPs, etc.

COMPANY NAME

Waste to Wealth Innovative Technologies LLP

FOUNDERS' NAME

Shaon Ray Chaydhuri
Ashoke Ranjan Thakur

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 7 (The process is currently under the pilot scale operations)

INTELLECTUAL PROPERTY

1. **Bio-fertilizer production from bacterial consortium,** Application No: 201731003023
2. **Microbial consortium and process for degumming of Ramie fiber,** Application No: 201931048663

PROBLEM ADDRESSED

The small and medium scale dairy installation can afford to treat their effluent with the current technology (generating valuable resources) which was not possible using the existing elaborate technologies in the market. The fresh water could be used for potable purposes instead of wasting for non-potable applications like agriculture. The environment could be protected from the adverse effect of chemical fertilizer leaching while providing nearly free fertilizer (INR 7/1000lit) for the land owners in the vicinity of the dairy ETP, ensuring round the year fodder and economic crop production in those lands. Adequate agricultural practice will ensure manpower involvement and hence livelihood generation.

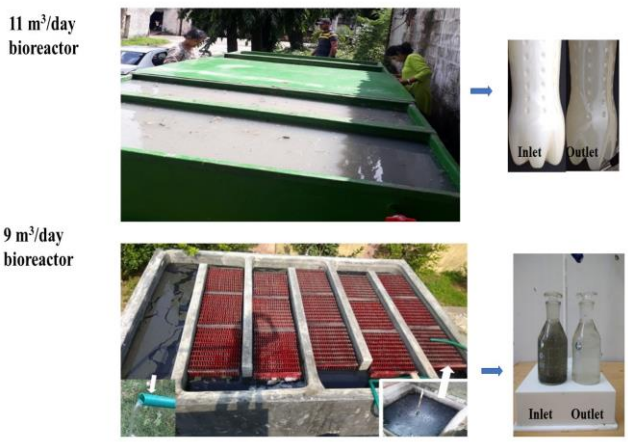
ABOUT THE TECHNOLOGY

Waste to Wealth has developed a process to convert milk processing plant wastewater into liquid biofertilizer within 16 hours using 70% less space (for effluent treatment plant installation), 89% less energy (for system operation) and about 90% less CO_2 equivalent gas emission. The effluent is converted into a value added product which can replace the use of fresh water and chemical fertilizer for agriculture, hence preserving fresh water for drinking purpose. In addition, the investment on effluent treatment by the ETP operators can be converted into a revenue earning proposition during long term operation. The developed biofertilizer is effective in growth enhancement for 17 types of economic crop ensuring environmental protection

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Received MSME Startup Fund worth INR 15 lakhs
- Received Regional Climate Launchpad winner in 2019
- Received Visitor's award in Technology Category 2019
- Received NASI Reliance Industries Platinum Jubilee Award 2020

PRODUCT IMAGE



USP

- Effluent is converted into liquid biofertlizer
- Developed biofertilizer is effective in growth enhancement for 17 types of economic crop
- High efficiency and low running time
- Requires 70% less space for installation
- 89% less energy consumption and about 90% less CO2 equivalent gas emission
- Low capital and operational cost

END USERS/CUSTOMERS

Effluent treatment plants, Dairy industries, Fertlizer industries, etc.

Healthcare: Drugs

Development and field test of AI – guided software for detection cervix cancer using Pap smear images - PAPSCANNER

APPLICATION

An automated cervical dysplasia scanner for early detection and diagnosis. Laterr on the platform technology can be used to detect other types of cancer

COMPANY NAME

RogNidaan Technologies Pvt Ltd

FOUNDERS' NAME

Lipi B Mahanta, Kangkana Bora
Manish Chowdhury & Anup K Das

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 3 (Software(s)/Systems developed and tested)

INTELLECTUAL PROPERTY

IP filing is under progress

PROBLEM ADDRESSED

Cervical cancer is one of the most prevalent cancers among women in North-East India. We construe several reasons, among many, for this high incidence: i) low awareness about the early diagnostic techniques, ii) lack of easy access to the nearest clinic or pathology laboratory, iii) apathy to spend the substantial cost involved for only a screening test, iv) unwillingness for repeated visits to the center as the diagnosis cannot be given on the same day and lastly v) lack of automated software available. Healthcare costs will need to be reduced if we are to treat more people and overcome the reasons mentioned above. Further, accurate and timely diagnosis is the major strategy, as well as a challenge for lowering the incidence of the disease

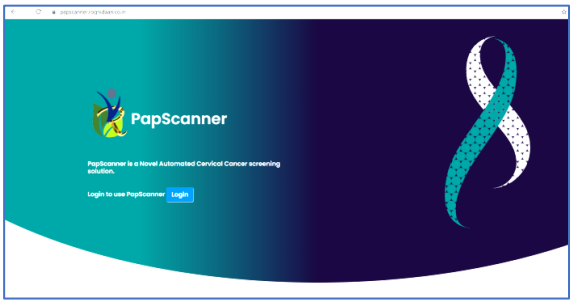
ABOUT THE TECHNOLOGY

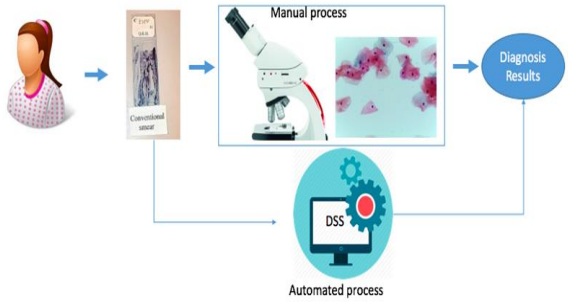
An automated screening solution for early detection of cervical dysplasia from Pap smear images, which we coined "PapScanner". This software device is robust, accurate, and low-cost solution that can be operated even by a simple technician or laboratory assistant. The service of the product is remotely accessible, which makes it more efficient. The algorithm for product development mainly uses current trends of Artificial Intelligence techniques, namely machine learning and deep learning. This unique solution can be used as an early cervical cancer diagnosis test in hospitals, used for regular preventive health check-ups, and large-scale screening in rural and semi-urban areas.

FUNDS RAISED/ACHIEVEMENTS

BIRAC BIG NE for INR 25 Lakhs

PROCESS FLOW





USP

- Automated, fast and user friendly.
- No high-end infrastructure required.
- Reduces the workload of the pathologist
- Cost effective screening tool
- Easy and secure access from remote locations
- Offers binary (suitable for Mass screening) as well as Multi-class classification (for Specialized observation)
- Offers conventional as well as Liquid-based Cytology image analysis

END USERS/CUSTOMERS

Pathologist of Hospitals and Diagnostic Centres

Healthcare: Devices

Development of a market ready multi-articulating adaptive myoelectric hand using sensory feedback

APPLICATION

Functional myoelectric Prosthetic hand for transradial amputees that generates a sense of embodiment towards the user

COMPANY NAME

Symbica Pvt Ltd

FOUNDER'S NAME

Nilotpal Baruah

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Functional Prototype developed by integration of different modules)

INTELLECTUAL PROPERTY

Indian Patent has been filed
App No: 202131002483

PROBLEM ADDRESSED

Most of the current prosthetic hand manufacturers rely only on the functional aspects of a prosthetic hand like the number of grasps it can make and the number of degrees of freedom it has, etc. and not on generating a sense of ownership towards the amputee.

ABOUT THE TECHNOLOGY

1. A hybrid underactuated mechanism helps to grab any size object with just a single motor.
2. Self adapting socket ensures perfect socket fit with respect to any change in stump geometry/size.

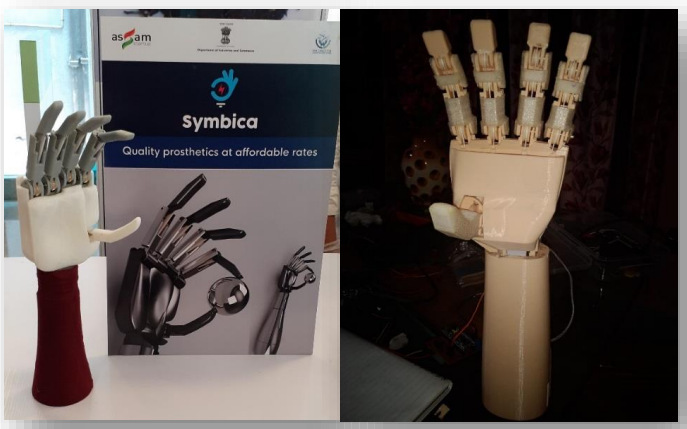
FUNDS RAISED/ACHIEVEMENTS

1. BIRAC BIG NE Call for INR 25 Lakhs
2. Selected for Assam Startup- COHORT 1.0

END USERS/CUSTOMERS

Hospitals, Clinics, Government and Amputees

PRODUCT IMAGE



USP

1. Affordability with no compromise in grasping configurations generally available in the market.
2. Self adapting socket for stress-free operation of the hand irrespective of any changes in weather and stump geometry.

Healthcare: Diagnostics

A Paper Based Point of Care Test Kit for Detection of Pan Malaria and Plasmodium Falciparum Species in Human Blood Serum

APPLICATION

Bio-Dtect is working on formulating a paper-based malaria biomarker detection kit based on an enzyme catalyzed reaction. The custom made dedicated smartphone based application helps to analyze the data obtained in the test and provides the results in a easily interpretable format to the user.

COMPANY NAME	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
Bio-Dtect Pvt Ltd	**TRL: 4 (Proof-of-Concept has been established and currently working on prototyping)**	IP filing is under progress
FOUNDER'S NAME		
Sudarshan Gogoi		

PROBLEM ADDRESSED

Current *Pf*HRP-II based RDTs available in the market may sometimes show false negative test because of the deletion/mutation of this particular gene in some of the plasmodium species. To address this issue we have developed a test kit based on *P. falciparum* glutamate dehydrogenase (*Pf*GDH) and plasmodium lactate dehydrogenase (*P*LDH) specific to plasmodium falciparum and other pan malaria species. The test kit can detect the biomarkers up to picomolar level in the laboratory settings. Soon, we are going to test kit with real malaria samples for validation.

ABOUT THE TECHNOLOGY

The developed test kit is based on a dye based reaction catalysed by specific malaria biomarkers. The biomarkers are captured from the blood serum using specific aptamers immobilized on gold coated magnetic beads. On positive test the blue coloured reaction mixture containing *resazurin* is converted into a pink coloured solution (corresponding to *resorufin*). The dye is than captured on a specially modified paper and the colour intensity is determined by a smartphone based application.

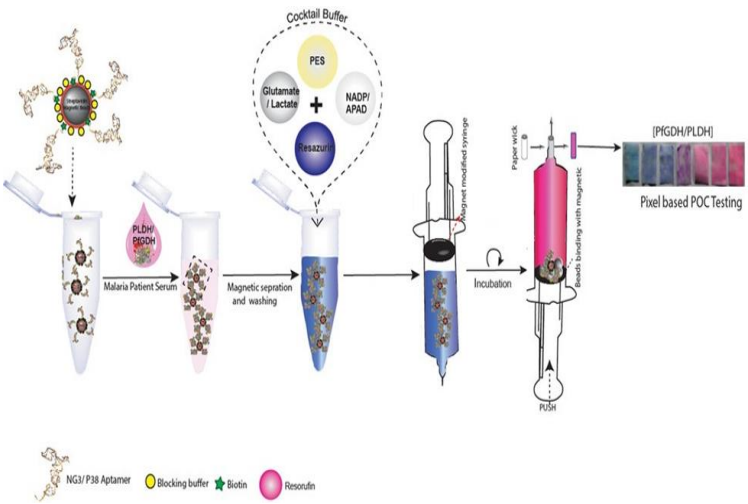
FUNDS RAISED/ACHIEVEMENTS

BIRAC BIG NE Call of INR 25 lakhs

END USERS/CUSTOMERS

Public and Private health workers/Asha Karmi/NGOs

PROCESS FLOW



USP

- The developed test kit does not give false negative result like RDTs.
- Can simultaneously detect plasmodium and other pan malaria species.
- The cost is less than 75 Rupees per kit.

Agriculture

INDUSTRY SCALE DEVELOPMENT OF PROBIOTIC FORMULATION FOR LIVESTOCKS MANAGEMENT

APPLICATION

Probiotic formulation that can improve animal gut health, growth rate ,feed efficiency and food safety. The probiotics also helps to increases the resistance or immune system of animal/ poultry from diseases thus lowers regular requirements of antibiotics, medicines

COMPANY NAME

Green Biotech Ecosolutions Pvt. Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL:**4 (Proof of Concept Established)**

INTELLECTUAL PROPERTY

IP filing is under progress

FOUNDERS' NAME

Geetashori Yumnam
Asem Sundari

PROBLEM ADDRESSED

The rapid growth in population has increased the demand for nutritious food. In NER states of India a large number of the population's livelihood are based on livestock. Major issues with animal farming were related to disease and the highest number of death of animals is due to diarrhoea caused by toxigenic of E-coli . The other zoonotic pathogens, such as Salmonella, can also cause health problems and loss of farmers income. To overcome the problem a huge quantity of Antibiotics usually given to live stocks which bio-accumulate in the body of animal and enter the human body while consuming and increase the expenditure to the farmers.

ABOUT THE TECHNOLOGY

Probiotic formulation would play an important role in Livestock management. It can solve multiple problems of livestock management – diseases, health, foul odor, immune system. It helps to increases the resistance or immune system of animal/ poultry from diseases, so it lowers regular requirements of antibiotics, medicines and others and keep animal/poultry healthy. The probiotic also improves animal/ poultry health and reduce mortality rate.

FUNDS RAISED/ACHIEVEMENTS

- Winner of the northeast MANAGE Samunati AgriStartup Award 2021
- Selected and visited to show case at Dubai Expo in Indian Pavilion as a startup by Planning Department, Govt. Of Manipur
- Received ABI Women Power Award 2022

PRODUCT IMAGE

USP:-

- Sources is from our indigenous black rice and milk.
- An organic and eco friendly product
- Product will boost the immune system and will decrease the mortality rate of the livestocks.

END USERS/CUSTOMERS

- Ground level farmers
- Livestock producers
- Large suppliers of Food processing industry

Waste Management

Protein hydrolysate from bio-waste of Indian silk industry to fight malnutrition

APPLICATION

Low cost protein hydrolysate developed from the edible silkworm pupa which is rich in nutrients particularly quality protein and lipid.

COMPANY NAME

Innotech LLP

FOUNDERS' NAME

Prachurjya Dutta

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Concept proven from lab scale)

INTELLECTUAL PROPERTY

IP filing process is under progress

PROBLEM ADDRESSED

Malnutrition in all its forms remains a global concern, particularly affecting highly vulnerable populations in several regions of the world. The Global Nutrition Report, 2016 confirms the urgency of collective action to combat malnutrition cascading. NE India, being extensive grower of silkworms, our startup is focused on the following aspects:

- Sustainable technology for silkworm pupae processing and value addition as food products.
- Novel pharmaceutical and nutraceutical products (protein hydrolysates; lipids and bioactive compound).
- Process development for inhibiting/eliminating allergens.

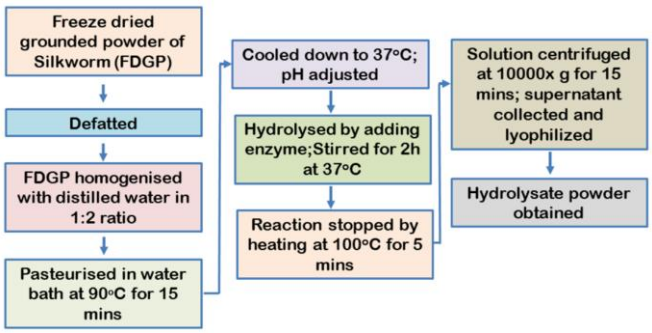
ABOUT THE TECHNOLOGY

Waste silkworm pupae of Indian silk industry are the primary source for the development of safe processed foods. The functional components are extracted and isolated from waste silkworm pupae for the development of functional food and health supplements. 8 variations of the ready to eat food products from waste silk pupae would be available after extensive in-depth analysis of the shelf-life, packaging and nutrient content of the protein extract.

FUNDS RAISED/ACHIEVEMENTS

BIRAC Ignition Grant-NER of INR 25 lakhs

PROCESS FLOW



USP

- Low cost alternative to conventional meat or other protein source
- Rich in protein and other micro nutrients
- Apart from nutritional benefits it also have medicinal values

END USERS/CUSTOMERS

1. Consumers
2. Sports Nutrition
3. Raw material for other products such as protein bar
4. Use of by products in other industries

Industrial Biotechnology

Biomolecular Surface Disinfectant for Households and Commercial Establishments

APPLICATION

Biomolecules as active and participating ingredients for Disinfectants, Pharmaceuticals, Cosmetics, Processed Foods and Personal Hygiene Products

COMPANY NAME

Pepthera Laboratories Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 4 (Proof-of Principle established)

INTELLECTUAL PROPERTY

IP filing process is under progress

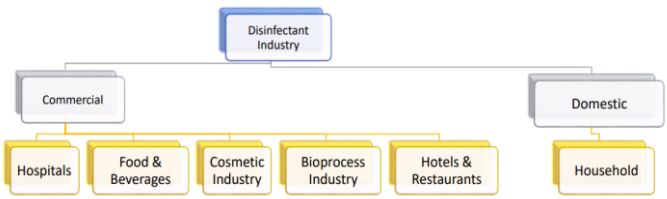
FOUNDERS' NAME

Gaurav Jerath

PROBLEM ADDRESSED

Antimicrobial Resistance (AMR) is a phenomenon responsible for over 1 million annual deaths globally at present. This number is predicted to increase to over 10 Million annual deaths in the next 20 years. The use of antimicrobial chemicals in daily use products adds to the further development of AMR. Additionally, the chemicals have a high ecological half-life of over 150 years along with high toxicity. Therefore, these chemicals have been either banned or highly regulated in western countries.

PRODUCT USES



ABOUT THE TECHNOLOGY

- Our technology has two components:
  1. Membrane destabilizing Molecules as Antimicrobials.
  2. Membrane Penetrating Molecules for carrier functions in cosmetic and pharmaceutical sectors.
- We have our proprietary biomolecule design platform, which has been validated to design biomolecules with tailored antimicrobial and carrier activity.

USP

1. Biomolecular Formulation
2. Non-toxic
3. Non-hazardous
4. Low ecological half-life
5. Programmable Technology for developing new formulations within 5 years (antimicrobials).
6. Designed Molecules, therefore, Patentable

FUNDS RAISED/ACHIEVEMENTS

- Winner of BRTC Changemaker of North East (Startup category)
- National-level Antimicrobial Resistance Quest 2021
- BIRAC Biotechnology Ignition Grant (BIG-18) INR 50L

END USERS/CUSTOMERS

1. Surface Disinfection Industry
2. Cosmetic Industry
3. Personal Hygiene Industry
4. Pharmaceutical Industry
5. Food Processing Industry
6. Other industries requiring the use of antimicrobials (e.g. healthcare, hospitality, bioprocess, etc.)

Agriculture

To Prototype the utility of LoRaWAN based IoT Protocol and Smart-Contract based Blockchain Technology for quality tea production and systematic supply-chain traceability and Transparency Solution.

APPLICATION

IoT enabled Precision Agriculture Solution

COMPANY NAME

Nibiaa Devices Pvt Ltd

TECHNOLOGY READINESS LEVEL (TRL)

TRL: **4 (Prototype in development)**

INTELLECTUAL PROPERTY

IP filing process is under progress

FOUNDERS' NAME

Aeroshil Nameirakpam

PROBLEM ADDRESSED

- Existing IoT-based agriculture systems have a centralized format and operate in isolation, leaving room for unresolved issues and major concerns, including data security, manipulation, and single failure points.
- This solution proposes a futuristic IoT with a blockchain model to meet these challenges which can not only transform tea industry but any food industry supply chain traceability and transparency in general.
- The project will try to solve some of the above stated problems with the following innovative solution

ABOUT THE TECHNOLOGY

- Intervention on tea Industry by bringing in Complete traceability and transparency in raw material sourcing, manufacturing and distribution related data through IoT, Blockchain and AI Hardware and Software Solution.
- To Utilize smart-contracts based Blockchain Technology to track & trace the workflow of Tea supply chains, Implement traceability and shareability of Data among various key stakeholders.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG grant worth INR 50 lakhs

PRODUCT

USP

To build an IoT, AI and Blockchain based Data driven decision support System to increase the quality and yield of produced tea and provide necessary data to the buyers for export purposes.

Our solution will be able to transforming the Package food industry supply-chain by bringing in Complete traceability and transparency in raw material sourcing, manufacturing and distribution related data through IoT, Blockchain and AI Technology

END USERS/CUSTOMERS

Tea industry and consumers

KIIT-Technology Business Incubator
Campus-11, KIIT Deemed to be University
Bhubaneswar, Odisha IN 751024

tbi@kiitincubator.in
www.kiitincubator.in