



सत्यमेव जयते
DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE & TECHNOLOGY
GOVERNMENT OF INDIA



75 BIO TECH STARTUP PRODUCTS

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विज्ञान एवं प्रौद्योगिकी मंत्रालय,
राज्य मंत्री (स्वतंत्र प्रभार) पृथ्वी विज्ञान मंत्रालय,
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भारत सरकार



सत्यमेव जयते



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MESSAGE

Biotechnology has been playing a pivotal role in addressing problems/challenges in the field of healthcare, agriculture & secondary agriculture, food & nutrition, clean energy & environment, etc. The relevance, contribution and impact of Biotechnology was amply illustrated during the recent pandemic. Ranked among the top 12 bioeconomies globally, India strives to become a major global player of this sunrise industry. Adopting a well-crafted National Biotech Policy formulated by Department of Biotechnology, and a vibrant entrepreneurial ecosystem created through Biotechnology Industry Research Assistance Council (BIRAC), Indian bioeconomy is poised to cross US\$ 150 Billion by 2025.

BIRAC has closely aligned its activities with the different national programmes and initiatives towards an Aatmanirbhar Bharat. During its 10 years of existence, the network created by BIRAC across the country through its various programmes has given a significant impetus to biotechnology development. It is heartening to note that many products have been developed under these programmes, several of which are in domestic market as well as international markets. This booklet highlighting 75 products by startups in the 75th year of independence also signifies the achievements of the biotechnology sector in India.

I congratulate DBT and BIRAC and all startups for their dedicated efforts and contribution, and wish all the stakeholders' success in their ventures.

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FOREWORD



Department of Biotechnology, Ministry of Science and Technology, Government of India had set up Biotechnology Industry Research Assistance Council (BIRAC), a not-for-profit, section 8, public sector enterprise in 2012. BIRAC is mandated to act as an interface agency to strengthen and empower the emerging Biotech enterprises to undertake strategic research & innovation, translating knowledge into technology led affordable and globally competent product development, addressing unmet needs.

In the last 10 years, BIRAC has taken rapid strides in building the biotech innovation ecosystem in the country especially providing funding to all stages of innovation and product development, supporting startups, SMEs, establishing bio incubators and creating several platforms for startups and SMEs to interface. BIRAC has also forged collaborations with different stakeholders including venture capital.

The booklet featuring exemplar list of product and technologies is a testimony of the unconditional support and handholding provided to different stakeholders eventually converting the efforts of innovators and entrepreneurs into tangible products.

Many startups covered in this catalogue and several more which are under various stages of development have potential to scale and establish themselves at national and international markets. My heartiest congratulations to the wonderful effort made by these startups. Onus is on the stakeholders including Industry, Investors, Agencies, Public procurement bodies to help them nurture and grow. I hope the event "Biotech Startup Expo - 10 years of BIRAC" would bring newer opportunities for everyone.

Dr. Rajesh S Gokhale

Secretary, Department of Biotechnology & Chairman, BIRAC

PREFACE



During the last few years, Indian Biotech Sector has shown exponential growth. The extraordinary contribution of Biotechnology Industry Research Assistance Council (BIRAC) in this regard, is exemplary & transformational. Several customized and uniquely positioned initiatives of BIRAC have helped recognising the Biotech Entrepreneurship as a career option.

BIRAC has been able to contribute to the rapid positive changes that have taken place in the Indian Biotechnology Landscape-spurring a growth of innovation driven R&D, through its pioneering programmes, at every level of the ecosystem including biotech startups, SMEs and research institutes.

This booklet features few of the innovative products and technologies developed by BIRAC supported/ nurtured startups. This book is also a reflection of the fact that the Indian Biotech Industry backed by strong commitment of the Department of Biotechnology and BIRAC is ready to make a global presence.

I sincerely complement the dedicated efforts of all the stakeholders and thank them for their distinct support and commitment towards fostering and nurturing the biotech innovation ecosystem.

I am sure that the mega event “Biotech Startup Expo - 10 years of BIRAC” would bring newer opportunities for everyone.

Dr. Alka Sharma

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and Managing Director, BIRAC

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4baseCare Genomics Private Limited

TarGT™ INDIEGENE

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ TarGT™ Indiegene is one of the largest cancer gene panel in the world developed by comprehensively profiling the whole exome and transcriptome.
- ♦ It is a pan cancer panel constituting a unique set of 1212 genes.
- ♦ The panel includes 1064 genes for SNVs/Indels, 570 genes for Copy Number Alterations CNAs, 299 genes associated with Gene-Fusions, which includes common, rare as well as novel fusion partners along with Immunotherapy Biomarkers TMB, MSI by NGS, and PD-L1 by IHC
- ♦ Used by oncologists in cancer hospitals

National/Societal Relevance:

With more than 1.5 million new cases of cancer being diagnosed every year, and high mortality due to limited access to advanced technology, the developed technology is intended for a majority of cancer patients, who cannot afford personalized approach for treatment. The objective is to make in India, personalized cancer testing solutions which are accessible to millions of cancer patients at affordable price

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Aindra Systems

CervASTRA : AI-based Point-of-Care Cervical Cancer Detection System

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ The Artificial Intelligence (AI) based computational pathology platform involves a combination of state-of-the-art medical hardware devices and software algorithms for disease diagnosis.
- ♦ The first of such products leveraging this computational pathology platform is CervASTRA, a point of care screening system for cervical cancer, that is quick, affordable and accessible.

National/Societal Relevance:

India is the world capital for cervical cancer, which kills one woman every 7 minutes in India. Elimination of cervical cancer is now a priority, as set by WHO and this innovation aims to address this priority.

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Area: Industrial Biotechnology

Product Description:

- ♦ The device with anti-microbial air purification technology protects long-term effects of air pollution and infection spread/ disease transmission.
- ♦ The device with HEPA filter covers an area upto 500 sq. ft., and offers real-time air quality detection on LED Monitor (Wifi Enabled).
- ♦ The device has been demonstrated to deactivate SARS-CoV-2 sized particles, pathogens from the air and aerosolized black fungus.

National/Societal Relevance:

More than 7 million deaths are reported globally due to air pollution in the year 2018. More than 6.1 million people lost their lives due to COVID-19 as on end of March 2022. The present innovation addresses air purification requirements in different settings such as offices, hospitals, food processing industry, diagnostic labs, etc.

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Alfaleus Technology Private Limited

INTELLIGENT VISION ANALYSER (iVA)

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Intelligent Vision Analyser iVA, is a clinically validated headset to evaluate visual fields for a person which can be used in diagnosis and monitoring Glaucoma.
- ♦ This portable, compact and cost-effective device overcomes multiple drawbacks of traditional field analyses (such as need for eye-patch, dark room and uncomfortable seating arrangements).
- ♦ It comes with an adjustable head-gear, fits everyone and is comfortable to wear. The device has a bluetooth controller and audio instructions for smooth diagnosis.
- ♦ There is instant report generation with easy printing options and cloud sharing for telemedicine.

National/Societal Relevance:

Glaucoma is the leading cause of irreversible blindness globally. Overwhelming majority of glaucoma goes undiagnosed until severe loss of eye-sight in developing nations. State of the art devices for eye testing are huge and cumbersome (such as OCT- Optical Coherence Tomography). The current innovation is towards making the glaucoma diagnosis accessible and simpler.

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Aspartika Biotech Private Limited



A ZERO WASTE DISCHARGE TECHNOLOGY

Area: Industrial Biotechnology (Industrial Products and Process and Secondary Agriculture)

Product Description:

- ♦ The technology is completely reclaiming and utilizing silkworm pupa which is an untapped cheapest and richest source of Omega 3 fatty acids and low value high volume poultry feed.
- ♦ The designer eggs and protein supplement are also being developed from discarded Silkworm pupa waste.
- ♦ The product completely utilizes green technology without any inorganic chemicals.
- ♦ The innovation is utilizing novel supercritical fluid technology for selective extraction of Omega 3 fatty acids from silkworm pupa as an alternative to expensive marine sources.

National/Societal Relevance:

India is the second largest producer of silk with an annual raw silk production of 26,480 MT per annum. This silkworm pupa comprises 80 % of the silk produced, however, it is mainly discarded due to its bad odour. The silkworm pupa is 50% cheaper and richest source of Omega 3 Fatty acids. Considering the enormity of silkworm pupa waste being discarded, if this waste is effectively utilized, it can completely meet the Omega-3-fatty acid requirement RDA children and pregnant women/lactating mothers. The de-oiled cake is a rich source of protein and can be used as a raw-material as an alternative to soya protein in poultry and aqua industries.

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Ayati Devices Private Limited



VIBRASENSE

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ VibraSense is a quick and portable tool for detection and monitoring of peripheral neuropathy in diabetic patients
- ♦ It produces a controlled stimulus at the tip and helps in quantifying the vibration perception threshold (VPT)
- ♦ The device is portable, hand-held, battery-powered, and can screen up to 70+ patients with a single charge
- ♦ Product has an onboard display to show the severity of the foot on the go and has an option of wireless connectivity to connect it with the application for generating the reports that can be shared with the patients

National/Societal Relevance:

Diabetes leads to sensory nerve damage at the extremities which is known as neuropathy. The patient feels no pain even if the foot is injured. These injuries lead to ulcers, gangrene, and eventually amputations. The device offers advanced algorithms for early diagnosing the patients based on multiple parameters and has been developed especially for limited-resource settings.

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Ayu Devices Private Limited

AyuSynk : Stethoscope for telemedicine applications

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ The product has been developed by Ayu Devices in collaboration with SINE and BETIC IIT Bombay.
- ♦ The stethoscope with novel hardware and software developed enables real-time transfer of heart and lung sounds a remote location to anywhere with basic internet infrastructure.
- ♦ Generally, identification of abnormal heart and lung sounds is part of physical examination. The present innovation provides a telemedicine approach for this activity in real time.

National/Societal Relevance:

Currently, this stethoscope with the capability of live transmission of heart and lung sounds is used in telemedicine applications to connect the health centers in villages and state civil hospital telemedicine hubs.



Balasore Agro Private Limited

SINGLE ROW MULTI-CROP SEED DRILL

Area: Agriculture

Product Description:

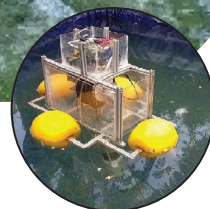
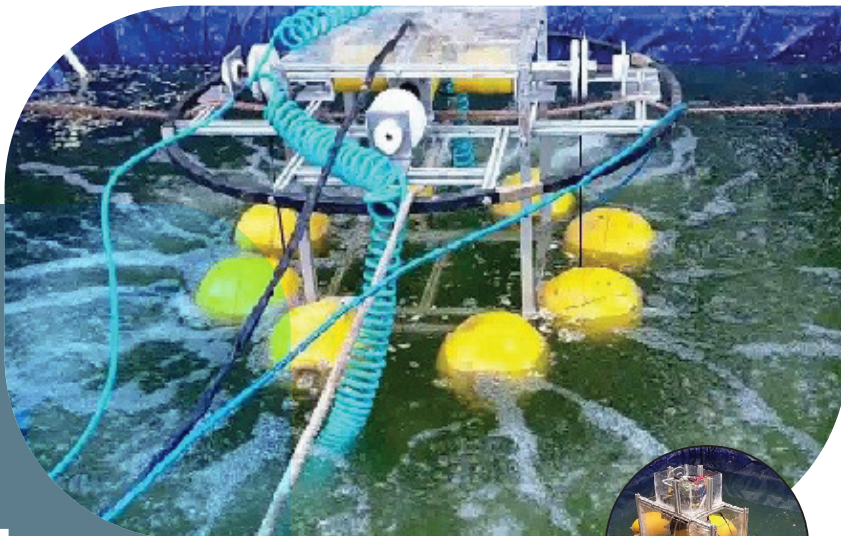
- ♦ Seed sowing machine innovated for crops such as groundnut, maize, black gram and other lentils.
- ♦ Low-cost machine designed for small and marginal farmers.
- ♦ It reduces seed sowing cost up to 80% as compared to conventional methods.

National/Societal Relevance:

Generally, farmers sow seeds by hand scattering without maintaining proper distance between plant and row to row leading to lower yield and financial losses. Some of the small marginal farmers sow groundnut by bullock drawn plough; this demands several field workers adding to the cost of the farmer. The innovation aims at increasing the livelihood of small and marginal farmers by saving their cultivation cost.

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Bariflo Labs Private Limited



INTELLIGENT SEDIMENT AERATION SYSTEM CUM MONITORING

Area: Industrial Biotechnology

Product Description:

- ♦ The product is an intelligent water body management system.
- ♦ Technology is based on robotics, AI, IoT, and core fundamentals of fluid mechanics.
- ♦ Helps aquaculture farmers to increase their profitability by increasing the yield and reducing the OPEX and CAPEX for urban and tourism waterbody management.

National/Societal Relevance:

Poor feed management and poor water quality, and disease interventions, mainly White Spot Syndrome (WSS), drastically reduce the profitability of aquaculture in India. A direct relationship has been observed between WSSV disease and dissolved oxygen. High levels of dissolved oxygen (DO) prevents spread of WSS virus, a serious threat to the shrimp industry. The present innovation offers a solution for the above-mentioned issues in aquaculture and addresses the problems of critical water stress on urban and rural habitats.

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BioPrime Agri Solutions Private Limited



SNIPR TECHNOLOGY - Smart Nanomolecules-Induced Physiology Response

Area: Agriculture

Product Description:

- ♦ SNIPR is a platform technology consisting of specific biomolecules that form a part of plant communication system for modulating targeted plant processes for plant health and protection.
- ♦ It makes use of the chemical signaling in the physiological responses manifested by the plants as a mechanism of adaptation in due course of evolution.
- ♦ It helps in developing next generation biologicals that make crops climate-resilient using targeted physiology modulating biomolecules.
- ♦ The technology leads to development of ultra-low volume formulations as Bio Stimulants for drone-based spraying.

National/Societal Relevance:

Climate change is the main cause of biotic and abiotic stresses, which have adverse effects on the agriculture of a region. SNIPR biologicals make crops climate-resilient and give farmers assured yields despite fluctuating climatic conditions. SNIPR biologicals are residue free and organic.

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Bioscan Research Private Limited

CEREBO : Instant Intracranial Bleed Detector

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Fully automatic point-of-care screening device for early detection of intracranial bleed in traumatic injury patients.
- ♦ On site assessment tool to screen trauma patients for referring to immediate medical attention in absence of any symptoms.
- ♦ The product is easy to use, does not emit harmful radiations and gives results in 2 minutes.
- ♦ It has minimal recurring cost as just a disposable cap needs to be replaced after each patient scan in order to prevent cross contamination.

National/Societal Relevance:

Traumatic brain injuries are a silent epidemic, affecting millions every year in India alone due to road traffic accidents, falls in homes and battlefield blasts. The present innovation is aimed to address this issue.

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Biotherm Flavors and Fragrances LLP



VETIVER OIL : Novel approach for secondary metabolite extraction

Area: Secondary Agriculture

Product Description:

- ♦ The technology uses low temperature based biotechnological tools towards extraction of essential oil which provide better yield as well as preserve the bioactive form of the oil.
- ♦ Vetiver oil extracted through this approach yields better yield and GC profile.
- ♦ Low temperature-based extracts preserve the bioactive form of the molecules and helps in medicinal applications.

National/Societal Relevance:

Vetiver oil is used in all high-end perfumes as base molecule and acts as a slow-release molecule. It also has many medicinal applications particularly for nervousness/anxiety related issues. More than 70% of Vetiver oil is imported by India. The usage of novel technology will increase oil production capacity and fulfil the local requirements. This will also help generate revenues for farmers.

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Bramhansh Technologies Private Limited

MIGRAINE PAIN RELIEVING DEVICE BASED ON VIBROACOUSTICS

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ The technology uses special vibroacoustic phenomenon in a wearable and portable form for relieving pain in different disease indications
- ♦ The device is based on vibroacoustic therapy wherein different set of frequencies are used for different mental health conditions like PTSD, Migraine pain, Insomnia, Parkinson, anxiety disorder and depression
- ♦ Studies conducted with large number of users with promising results for migraine pain.

National/Societal Relevance:

Migraine is one of the most common types of headaches that is responsible for ill-health amongst people. This device is meant to address this problem.

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BYNASE ENDONUCLEASE

Area: Healthcare - Biotherapeutics

Product Description:

- ♦ Innovative efficacious enzyme for removal of nucleic acids from biopharmaceuticals.
- ♦ Intended to be used by all leading biotech manufacturing and R&D companies involved in protein and vaccine preparations and nucleic acid-based therapeutics.

National/Societal Relevance:

India's dominance in vaccine manufacturing and its preparedness was evident during COVID 19 pandemic. This development is aligned with country's increasing relevance in vaccine manufacturing in the coming years.

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Cardiac Design Labs



PADMA[®] VITALS+ : Telemetric Patient Monitoring System

Area: Healthcare-Devices and Diagnostics

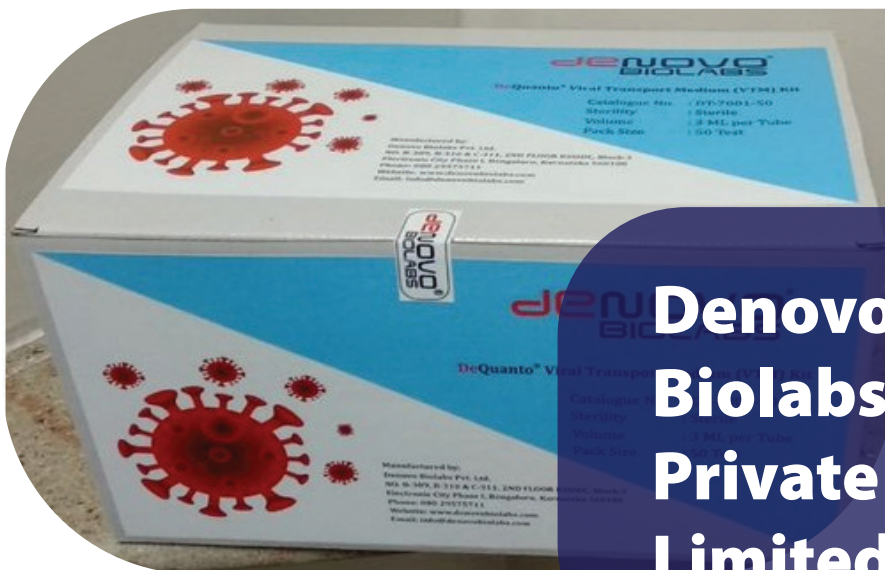
Product Description:

- ♦ Padma Vitals+ is a centralized monitoring system with vitals being measured continuously for analysis and monitoring enabled through telemetry.
- ♦ The device allows simultaneous monitoring of multiple patients from a central location - a nursing desk in a ward or a remote monitoring centre in the hospital.
- ♦ The AI based algorithms provides alerts, in case a patient needs attention.

National/Societal Relevance:

The Telemetric Patient Monitoring system is a solution that could potentially redefine patient care, it consists of a wearable device that collects data from the patient, algorithms that analyse the data and an interface for the healthcare providers to access the data and the analysis of multiple patients. It can be used for diagnostics, home care, in ambulance, in wards, in clinics and OPDs.

Anand Madan Gopal | anandm@cardiacdesignlabs.com



Denovo Biolabs Private Limited

DeQuanto : Viral Transport Medium

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Viral Transport Medium (VTM) is a specially designed transport system to collect and transport viruses in an active form to the testing laboratory.
- ♦ It maintains the viability and virulence of the virus sample.
- ♦ The medium contains a protective protein, antibiotics to control microbial and fungal contamination and buffer to control pH.
- ♦ The flock nylon swab has a short perpendicular ultra-flexible plastic shaft that is designed for better comfort.
- ♦ This is patented and is developed completely indigenously obviating the needs for imports.

National/Societal Relevance:

The product is intended towards meeting research and development challenges of the pharmaceutical and biotechnology industries.

Manjunath Devaramani | manjunath@denovobiolabs.com

Dextroware Devices Private Limited



MOUSEWARE : Head Movement-based Mouse for Upper Limb-disabled

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Mouseware is a head-wearable device that enables hands-free control of computers & smartphones with simple head movements. User wears the headgear with tracking sensors and rotates head to the direction the mouse cursor has to be moved.
- ♦ Mouse clicks can be performed with assistive switches like foot tap switch, finger switch & microswitch.
- ♦ Typing is performed with speech-to-text engine that includes an Indian-English accent and most of the Indian regional languages.

National/Societal Relevance:

As computer jobs are being highly pursued, the objective is to develop a solution to enhance the lives of upper limb disabled people, by providing them an aid to seek better job opportunities.

Pravin Kumar | hola@dextrowaredevices.com

Dhanvantri Biomedical Private Limited



SAHAYATHA a smart defecation cleansing assistive device

Area: Healthcare - Devices and Diagnostics

Product Description:

- ♦ Smart defecation cleansing assistive device for immobile population
- ♦ Assists patients in defecation cleansing with inbuilt defecation and cleansing assembly.
- ♦ Sahayatha makes defecation process easier by self-cleaning technology, improves independence with hygiene and dignity.
- ♦ Device for geriatric population, bedridden and differently-abled individuals

National/Societal Relevance:

In India, 30.8 million people are mobility impaired, out of which 10 million require defecation assistance. A few deaths occur every year during the transfer of patients to the toilets. Sahayatha proposes to create an impact on the target segments of the population.

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Evelabs Technologies Private Limited



DRIPO : Smart Infusion Monitor

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ DripO is a portable wireless electronic monitor to measure and display the flow rate in gravity infusions and share the data wirelessly.
- ♦ It detects the time between drops, displays the drop rate and helps the nurse to set the infusion rate precisely.
- ♦ It monitors the infusion and alerts for any rate changes or variations.
- ♦ Infusion pumps are the available option to reduce rate errors, however, requirement for accurate infusions is higher in clinical settings and cannot be sufficed with infusion pumps.

National/Societal Relevance:

The device aims to improve the quality of care in a country like India where nurse to patient ratio is very high. Further, remote infusion monitoring would reduce frequency of close contact with patients and ensure accurate delivery of fluid. Portable infusion controllers will see an increase in demand as home healthcare and telemedicine practice flourishes in the post pandemic world.



Fibroheal Woundcare Private Limited

D – FIBROHEAL

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ D-Fibroheal Suture Dress is an adhesive non-woven wound dressing with absorbent pad having proprietary silk protein & nano-silver technology for effective management of post-operative surgical wounds or sutured sites.
- ♦ This non-adherent dressing sheet promotes faster wound healing by promoting fibroblast proliferation and collagen deposition.
- ♦ It is non-adherent to wound surface, prevents surgical site infections, facilitates cell proliferation, and optimizes wound healing.
- ♦ Ease of application and removal ensures patient comfort and pain relief.

National/Societal Relevance:

Silk as a biomaterial has potential to be used in tissue engineering and reconstructive surgery. Being a versatile biomaterial, non-toxic, non-allergenic and biodegradable, further non-textile uses of silk would generate secondary income from silk waste for reelers and farmers. The company is working on non-textile application of silk, utilizing the waste and by-products of silk product.

Vivek Mishra | fibroheal@gmail.com

Genetico Research and Diagnostics Private Limited



SPECIALIZED ELECTRONIC HEALTH RECORD SYSTEM FOR RARE AND GENETIC DISEASES

Area: Bioinformatics

Product Description:

- ♦ A specialized Electronic Health Record System for rare and genetic diseases with unique tools such as a graphical pedigree editor, anthropometric data analysis, report generator and patient matching
- ♦ Software is useful for clinicians and genetic counsellors with comprehensive and customizable clinical genetics workflow
- ♦ The iOS and Android mobile app have been developed
- ♦ The product is built with strong security and patient privacy measures

National/Societal Relevance:

India has a high burden of genetic diseases and Indian clinics do not have access to a specialized electronic health record system. As a consequence, sensitive clinical genetics data is stored on excel sheets or paper. Given that the field of genetics is growing rapidly, the present innovation addresses it through an electronic health record system.

Arjun Gupta, Saurabh Verma | arjun@genetico.in, desaurabh@genetico



Giftolexia Solutions Private Limited

GAZE PATTERN-BASED SCREENING TO IDENTIFY DYSLEXIA IN CHILDREN

Area: Healthcare-Devices and Diagnostics

Product Description:

- ◆ State-of-the-art technology enabled solution for early identification of Dyslexia.
- ◆ With predictive modelling and machine learning algorithms, the technology assesses the risk at an early age of the disease.
- ◆ It can be used as a universal screening tool at an early age, and reduces screening time to 5 minutes from 30 minutes.
- ◆ It also reduces screening age to 7 / 8 years from 11-13 at present and enables early intervention and higher chances of success for children.

National/Societal Relevance:

About 10% children of school going age face challenges due to Dyslexia. Early identification and intervention are crucial for such children. The present innovation aims to help in scaling up screening with the future objective of setting up screening centres.

Teena Paul, Ajit G Paul | teena@giftolexia.com, ajit@giftolexia.com

GreenPod Labs



ACTIVE PACKAGING SACHETS

Area: Agriculture

Product Description:

- ♦ The product comes in sachet form to extend the shelf life of fruits and vegetables at ambient temperature.
- ♦ A proprietary formulation and delivery model made from natural bio-active compounds to activate the defense mechanism.
- ♦ A cost-effective solution with easy adoption throughout the supply chain and can be customized based on volume, days, fruit/vegetable, and variety.

National/Societal Relevance:

The product can potentially increase the annual income of smallholder farmers and distributors.

CLINICAL SUMMARY

1. Gender: Male, Age: 35, Date of Birth: 10/10/1980, Date of Admission: 10/10/2020, Date of Discharge: 10/10/2020

DRUG RESISTANCE PROFILE

First Line

Drug	Interpretation
Isoniazid	Susceptible
Rifampin	Susceptible
Pyrazinamide	Susceptible
Ethambutol	Susceptible

Group B

Drug	Interpretation
Fluoroquinolones	Susceptible

Group C

Drug	Interpretation
Linezolid	Susceptible

Others

Drug	Interpretation
Bedaquiline	Susceptible

QaTB GENOME ANALYSIS REPORT

1. Patient ID: 123456, Date of Report: 10/10/2020

MUTATION TABLE

Gene	Position	Reference	Variant	Interpretation
ISN1	1000	A	G	Resistant
ISN1	1001	A	A	Susceptible
ISN1	1002	A	A	Susceptible
ISN1	1003	A	A	Susceptible
ISN1	1004	A	A	Susceptible
ISN1	1005	A	A	Susceptible
ISN1	1006	A	A	Susceptible
ISN1	1007	A	A	Susceptible
ISN1	1008	A	A	Susceptible
ISN1	1009	A	A	Susceptible
ISN1	1010	A	A	Susceptible
ISN1	1011	A	A	Susceptible
ISN1	1012	A	A	Susceptible
ISN1	1013	A	A	Susceptible
ISN1	1014	A	A	Susceptible
ISN1	1015	A	A	Susceptible
ISN1	1016	A	A	Susceptible
ISN1	1017	A	A	Susceptible
ISN1	1018	A	A	Susceptible
ISN1	1019	A	A	Susceptible
ISN1	1020	A	A	Susceptible

GENOME SEQUENCES SUMMARY

Gene	Position	Reference	Variant	Interpretation
ISN1	1000	A	G	Resistant
ISN1	1001	A	A	Susceptible
ISN1	1002	A	A	Susceptible
ISN1	1003	A	A	Susceptible
ISN1	1004	A	A	Susceptible
ISN1	1005	A	A	Susceptible
ISN1	1006	A	A	Susceptible
ISN1	1007	A	A	Susceptible
ISN1	1008	A	A	Susceptible
ISN1	1009	A	A	Susceptible
ISN1	1010	A	A	Susceptible
ISN1	1011	A	A	Susceptible
ISN1	1012	A	A	Susceptible
ISN1	1013	A	A	Susceptible
ISN1	1014	A	A	Susceptible
ISN1	1015	A	A	Susceptible
ISN1	1016	A	A	Susceptible
ISN1	1017	A	A	Susceptible
ISN1	1018	A	A	Susceptible
ISN1	1019	A	A	Susceptible
ISN1	1020	A	A	Susceptible

Haystack Analytics Private Limited

QaTB : Fully automated, Ultra-Rapid, Low-Cost Detection Test for Tuberculosis

Area: Healthcare-Devices and Diagnostics, Bioinformatics

Product Description:

- ♦ QaTB provides a single test for determining drug resistance to 18 anti-TB drugs, along with detection of non-tuberculous mycobacteria.
- ♦ It is a Software as a Service (SaaS) that is fully automated and can be deployed nationwide.
- ♦ QaTB uses Whole Genome Sequencing data for carrying out the test.
- ♦ QaTB has been validated for software QA/QC by global IT giants.

National/Societal Relevance:

Currently, the National TB Elimination Program (NTEP) mandates the need for Universal Drug Susceptibility Testing (UDST) for all TB patients to stop the spread of Multi Drug-Resistant (MDR), Extensively Drug-Resistant (XDR) and Extra Extensively Drug Resistant (XXDR). which can take up to 11 different tests and more than 3 months to assess the information. The present innovation addresses this issue.

Anirvan Chatterjee | anirvan@haystackanalytics.in



Heka Medicals India Private Limited

HekaFlo : IoT enabled High Flow Nasal Oxygen Therapy Device

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ HekaFlo is a respiratory support system for treating hypoxemia in spontaneously breathing patients with warmed and humidified oxygen up to 60L/mt.
- ♦ HekaFlo is an IoT enabled High-Flow Nasal Oxygen (HFNO) device with remote monitoring capabilities using iOS and Android App.
- ♦ HekaFlo blends, warms up and humidifies air and oxygen to be administered to the patients through Nasal cannula.

National/Societal Relevance:

High-flow oxygen therapy has emerged as a new method to provide respiratory support for treating hypoxia in neonates, infants, children, and adults and also for Covid 19 and post Covid 19 patients. HFNO provides humidified and heated air blended with oxygen and delivered through nasal cannula to the patients. It is the preferred support system to treat hypoxemia in infants, children, and adults.

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Icaltech Innovations Private Limited



ANTLIA™ Pulmonary Function Test Device

Area: Healthcare - Devices and Diagnostics

Product Description:

- ♦ Antlia is a Pulmonary Function Test (also known as Lung Function Test Device). It is a diagnostic tool to screen and diagnose pulmonary diseases such as Asthma, COPD, ILD, Emphysema, Bronchitis. It is simple to use with minimum patient efforts.
- ♦ Antlia uses oscillometry-based technology for early diagnosis of pulmonary diseases.
- ♦ Device with Indian population as reference values and configurable to any visualisation device such as laptop, tablet and smart phone.
- ♦ Being a simple breathing tool, it can be used across pediatric to geriatric population.
- ♦ Used as a primary diagnostic tool in Primary Health Centres (PHCs).
- ♦ Patient data and report can be transferred over cloud making remote diagnosis possible.

National/Societal Relevance:

With factors like air pollution on the rise, the world needs technology that makes diagnosis and management of respiratory diseases more efficient. Lung related diseases most often get undiagnosed due to limitations of currently available tool - spirometer. Antlia makes pulmonary function tests easier and simpler for patients by eliminating the need for forced complex breathing maneuvers.

Jayavanth Kamath; Rajeshri Kamath | jay@icaltech.com

InnoDx Solutions Private Limited



InnoDetect CL COVID-19 iso-PCR kit

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Inno Detect CL COVID-19 iso-PCR kit is a point of need molecular test for rapid detection of SARS-COV-2 RNA in human nasopharyngeal and oropharyngeal specimen using loop mediated Isothermal amplification (LAMP) technique.
- ♦ It allows for complete SARS CoV-2 detection in under 50 minutes without the use of any high-end instrumentation.

National/Societal Relevance:

The product would be useful for rural areas such as Primary Healthcare Centres (PHCs), collection centres as well as district hospitals.

Sandeep Verma | sci.m@innodx.com



**Intech
Harness
Private
Limited**

IoT ENABLED FARMER OBEDIENT PUMP CONTROLLER

Area: Agriculture

Product Description:

- ♦ The device is a controller that automates farm irrigation with the ability to respond to power and water disruptions without human intervention, unlike GSM-based controllers. This device would be particularly useful for the farmers facing erratic power and water conditions.
- ♦ Precise operation brings relief to the farmer from the rigorous, intense, and daily activity of pump operation, increases the crop yield, reduces water consumption and conserves soil.
- ♦ The device is a technology solution that addresses the current challenges in farm irrigation and also handholds the farmer into the future through the modular offering of Data-Driven Irrigation through the IoT platform.

National/Societal Relevance:

The device has been developed to comply with Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) and Atal Bhujal Yojana of the Government of India. The technology is aligned with UN-SDGs as well.

Tarang Patel | tarang@intechharness.com

Intessence Solutions Private Limited



Refirm: Endosseous Dental Implant System

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ 'Refirm' is an endosseous dental implant system with accompanying prosthetics and provides twin benefits of 'Easy placement' and 'Good stability'.
- ♦ The implant system incorporates proven advances in the field such as 'Conical connection', 'Platform switch', 'Crestal Micro-threads' and 'Abrasive blasted and etched surface'.
- ♦ The prosthetic connections are provided on a single platform making it convenient for dentists to choose from a variety of prosthetic options.
- ♦ The novel external macro form makes the implant easier to place, provide stability and resolve loads optimally.

National/Societal Relevance:

In India, 70% of the population aged above 25 has at least one tooth loss and 16% aged over 50 have complete edentulism. Complete loss of teeth is a serious problem affecting the health and quality of life. The present dental implant system is making an effort to address the issue.

Hariprasad Rao | hariprasad.rao@gmail.com

Janitri Innovations Private Limited



DAKSH AND KEYAR : Intrapartum Devices

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ KEYAR is an affordable, easy-to-use, and wearable intrapartum Fetal Heart Rate (FHR) & uterine contraction monitoring device which communicates with DAKSH.
- ♦ DAKSH is an intrapartum monitoring mobile application for an automated partograph generation.
- ♦ The device is affordable, easy to use, portable, modular and offers remote monitoring.

National/Societal Relevance:

With more than 1.5 million new cases of cancer being diagnosed every year, and high mortality due to limited access to advanced technology, the developed technology is intended for a majority of cancer patients, who cannot afford personalized approach for treatment. The objective is to make in India, personalized cancer testing solutions which are accessible to millions of cancer patients at affordable price.

Arun Agarwal | arun@janitri.in



Kcat Enzymatic Private Limited

7D GRID TECHNOLOGY AND ARTIFICIAL INTELLIGENCE - BASED ENZYME ENGINEERING FRAMEWORK

Area: Healthcare-Devices and Diagnostics

Product Description:

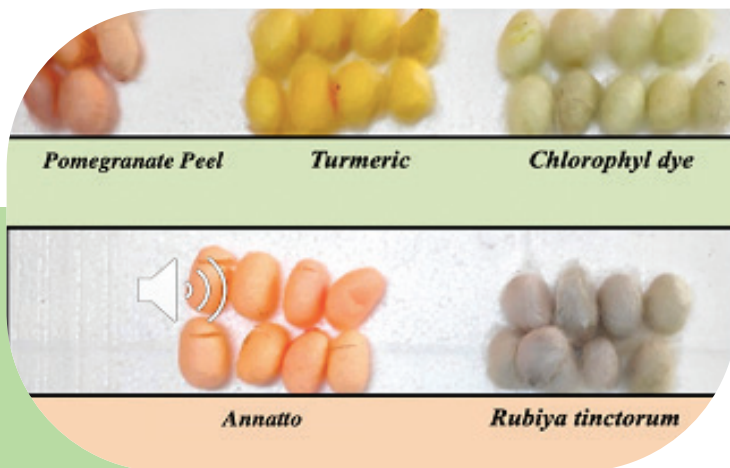
- ♦ Kcat Enzymatic brings enzyme engineering and biocatalysis revolution by using upfront in-silico in-house developed methods and algorithms using 7D Grid Technology for enzyme engineering.
- ♦ 7D Grid Technology uses quantum mechanics probes to capture information across the enzymatic reaction and across the enzyme substrate system.
- ♦ This information is used by AI methods, Convolutional Neural Networks, Support Vector Machines, to predict kinetic properties of the enzyme.
- ♦ The method is highly efficient to differentiate enzymes with high activity and enzymes with low activity, a precursor for making focused enzyme libraries.

National/Societal Relevance:

The innovative Enzyme Engineering Framework (EEF) is composed of algorithms and screening protocols of core Quantum Mechanics, QM/MM and QSAR techniques. The framework can predict hot spots and enzyme variants with better activity. The technology is used as a partial de-novo designer and has shown promising results in projects to predict substitutions and come up with enzyme variants that show promiscuous activity (gram scale) to kilogram scale substrate conversion.

Pravin Kumar | pravin.k@kcat.co.in

Krimmi Biotech LLP



ECO-FRIENDLY PROCESS TO INDUCE SILKWORM FOR NATURALLY COLOURED SILK FIBRE

Area: Agriculture/ Environment

Product Description:

- ♦ The current innovation is process of obtaining a naturally coloured silk by incorporating natural pigments from plant origin which also acts as a plant silkworm growth promoter.
- ♦ Production of naturally coloured cocoons (for non-woven silk fabric), proposed through a novel technique of forced induction of planar silk.
- ♦ The planar silk produced is pre-owned and enriched for biomedical applications, undergarments, sportswear's etc through this process.
- ♦ The process helps to increase the yield with desired choice of colour.

National/Societal Relevance:

This technology eliminates the usage of synthetic dyes which leads to environmental pollution. Further, as a remedy to the current downfall in the cocoon prices, the product increases the larval duration of the silkworm which in turn increases the cocoon yield, cocoon shell ratio and higher filament length. This will increase the value of the cocoon further and increase the revenue for sericulture farmers. The technique can be implemented at the farmers site with minimal labour and without any high tech or high-cost equipment.

Deepak Banjantri | deepak.bajantri@gmail.com



Kwaklei and Khonggunmelei Orchids Private Limited

HYBRID ORCHIDS (INDIAN ORIGIN)

Area: Agriculture

Product Description:

- ♦ New hybrid orchids developed using promising Indian parents, particularly from the north-eastern states.
- ♦ Elite clones of the primary hybrids are being micropropagated for commercialization and further use in genetic improvement.
- ♦ More than 50 primary as well as secondary orchid hybrids have been developed.

National/Societal Relevance:

India, despite having rich orchid resources, has not been able to translate the resource into economy. There is a potential for a flourishing orchid industry in India and this would require dedicated orchid breeders to feed the requirement of new varieties and planting material from time to time. India can also be an exporter of good quality orchids. Many orchid cultivators, hobbyists as well as tissue culture commercials labs will be benefited by the product.

Rajkumar Kishor | rajkumarkishor@rediffmail.com

Lab Iconics Technologies LLP



LAB ICONICS LIMS : Laboratory Information Management System

Area: Bioinformatics

Product Description:

- ♦ Lab Iconics LIMS is digital backbone of laboratories designed to improve lab productivity and efficiency.
- ♦ Platform enhances effectiveness of biotechnology and pharmaceutical laboratory operations, maintaining a digital trail of samples, experiments, lab workflow and instruments.
- ♦ Ease of use is through deployment on-premises with Cloud and SaaS based implementation.
- ♦ Comprehensive, multifunctional, economical user license and multi-site access.
- ♦ Accuracy in results, digital trail of each transaction maintained.
- ♦ Automated workflows and standard tasks eliminate need for paper records, reduces margin of human errors.
- ♦ Useful for biotechnology and pharmaceutical industries, CROs, testing labs, research institutes, food industries, cosmetics, cement, polymer, and petroleum industry.

National/Societal Relevance:

LIMS has a great potential for biopharmaceutical market as it augments or improves upon human intelligence, increases the speed and quality of decision making. LIMS improves transparency, traceability and auditability; and product quality is improved by automating critical quality.

Raveendranath Govindaraj, Jayashree Raveendranath | raveendranath@labiconics.com



Mallipathra Neutraceuticals Private Limited

PRODUCTION OF IMMUNITY BOOSTER TEA FROM MEDICINAL MUSHROOM - CORDYCEPS

Area: Industrial Biotechnology (Industrial Products and Process and Secondary Agriculture)

Product Description:

- ♦ Mallipathra has envisioned producing the costly, endangered medicinal mushroom Cordyceps for nutraceutical and cosmeceutical products. Cordycepin, an active ingredient is known to have anti-viral properties.
- ♦ The wide range of products developed includes: health drinks, cordyceps tea, cordyceps capsules, and cordyceps powder.
- ♦ The cost-effective method to rear high quality Cordyceps with adequate active ingredients is at par with the naturally growth mushrooms and in time sensitive manner.

National/Societal Relevance:

Mallipathra through has developed a technique in which Cordyceps grows much faster than naturally available cordyceps. Mushrooms are grown on both vegetarian and non-vegetarian substrate. The technology is addressing the unmet need to match demand and supply and faster cultivation of the mushrooms. The product is found to have several medicinal benefits for various nutraceutical ailments.

Moushmi Mondal | moumons@gmail.com

MediAsha Technologies Private Limited



Fracto Aid : READY-TO-USE ORTHOPAEDIC SPLINT

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ FractoAid is a ready-to-use orthopaedic splint for early and instant immobilization of fractured limbs within 5 minutes.
- ♦ It restricts the movement of the injured limb and allows the injured area to heal properly, accommodates muscle swelling and prevents further limb-threatening, thus reducing the risk of permanent disabilities.
- ♦ It is an integrated pack of hybrid composite materials with built-in hook-loop fastener straps for better securement. It adapts to the specific areas of the patient's extremities.
- ♦ The outer layer in contact with skin is biocompatible, breathable and provides cushioning to patient.
- ♦ The 3-step application process DIP-SQUEEZE-WRAP makes it user-friendly.

National/Societal Relevance:

In India, every minute, one person is injured in a road accident, accounting for 10-30% of hospital registrations. This splint is a useful intervention for such injuries.

Mayur Sanas, Komal Sanas | mayur@mediasha.com



Mylab Discovery Solutions Private Limited

COVISWIFT : Covid 19S Plus Rapid PCR Kit

Area: Healthcare-Devices and Diagnostics

Product Description:

- ◆ CoviSwift is a high throughput POC testing solution for Covid 19 based on real time PCR.
- ◆ The detection system is based on three gene targets and an internal control in a single tube reaction.
- ◆ The solution covers all the Covid 19 variants including Omicron.
- ◆ It is a pipette free solution, stable at room temperature and gives results in 40 minutes.
- ◆ It is a compact PCR system within built AI analysis software and does not require skilled personnel.

National/Societal Relevance:

CoviSwift is a world's first POC solution for Covid 19 based on real time PCR. This is a rapid, sensitive and specific test for Covid 19, useful at airports, hospitals and remote areas/ field.

Natura Crop Care



NATURACTIV+ : Biomimetic Fruit Fly Trap (Add +)

Area: Agriculture

Product Description:

- ♦ NaturActiv+ is a fruitfly trap that controls fruit fly damage in fruits and vegetables by innovative smart gravity-controlled release mechanism with high energy efficiency and high target specificity.
- ♦ It is a green pest control technique suitable for integrated pest management.
- ♦ One trap and lure can be used for one full crop season without lure replacement.
- ♦ It reduces chemical insecticide usage by farmers and is eco-friendly.

National/Societal Relevance:

The product offers increased profitability to small holder farmers by reducing cost of cultivation. It leads to increase in rural/ women employment as technology promoting village level entrepreneurs; and also increases income in terms of extra yield. It also results in residue free produce, a key requirement for food processing industries to increase export volumes.

Manoj Kumar R, Chandini | rupamanoj@naturacropcare.com



Navariti Innovation

HELIO-T AND SMART PADDY : Automatic Irrigation System

Area: Agriculture

Product Description:

- ♦ The solar powered systems developed with sensor-based technology will automatically provide optimum irrigation when a plant is hungry thereby, increase the productivity and income.
- ♦ It is an IOT based technology, particularly useful for small scale farmers.

National/Societal Relevance:

A large number of farmers in India grow paddy and it is one of the low value crops from which farmers do not get enough profit. It also consumes lot of water for irrigation. Present innovation would make farming easier for small scale farmers.



Neerx Technovation Private Limited

SHOOL : Smart Sensing for Crop Intelligence

Area: Agriculture

Product Description:

- ♦ SHOOL is a soil sensor for hydrology and land application; validated by ISRO.
- ♦ The sensor is dielectric based, completely wireless, compact and sturdy for field conditions.
- ♦ The system is an internet free tool and provides a faster way to know about soil and crop related stresses.
- ♦ The product is targeted at saving water and increasing the productivity.
- ♦ Sensor can be connected to a mobile app to generate actionable insights for farmers and agri-businesses.

National/Societal Relevance:

SHOOL is first of its kind soil sensor for farmers. Without the requirement of internet, the present sensor can help farmers in saving large amounts of water used for irrigation and also lead to significant increase in productivity.

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Nemocare Wellness Private Limited



NEMOCARE RAKSHA

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Nemocare Raksha comprises an IoT enabled smart wearable with proprietary AI engine that continuously and remotely monitor the necessary vital parameters and is connected wirelessly to a central platform where data is processed using cloud computing.
- ♦ The wearable along with an intelligent decision support system augments non-invasive clinical hemodynamic monitoring to predict and identify early digital biomarkers for sepsis in neonates.
- ♦ The device and the software together aim to be a septic shock identification/trigger tool that consists of combinations of clinical diagnoses and findings eg, high-risk patient conditions, vital signs, and/or physical findings which prompt further evaluation.

National/Societal Relevance:

In India, approximately 3.6 million premature babies are born every year and are at great risk of sepsis. Late onset neonatal sepsis (LONS) is responsible for most of the long-term morbidity and 45 of deaths in the Neonatal Intensive Care Unit (NICU).

Manoj Sanker | info@nemo.care, manoj@nemo.care

Neukelp Innovation Technology Private Limited



NEUKELP : Smart Posture Trainer

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Neukelp is an AI-based IoT device that helps people in building a habit of sitting or standing in a correct posture. The device vibrates every time a person slouches reminding them of their bad posture.
- ♦ The algorithm used in the device is optimized to give a good battery backup (18-20 hrs of usage) even with a small battery of 50mAH.
- ♦ The device is light-weight, small in size and portable.

National/Societal Relevance:

The product is expected to be impactful to society by making people proactive about their posture during work and other activities. The user is notified by the device with light gentle vibration.

Saurabh Agrawal, Swaraj Jena | saurabh@neukelp.com, swaraj@neukelp.com



Newndra Innovations Private Limited

JAIPUR BELT : Solution for back and spine support

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ JaipurBelt is an exoskeleton support for back and spine useful during a range of activities such as leaning forward, lifting, loading-unloading, working in continuous or frequent bending forward task, sitting and standing for long hours.
- ♦ The proposed innovation is efficient (reduce up to 80% strain from the back), affordable and lightweight (helmet weight, 1.8 kg) making it highly adjustable. The device does not use batteries, motors and cuts carbon release.

National/Societal Relevance:

According to the World Health Organization (WHO), one in six people and one in three families suffer from arthritis in India. In view of this escalating problem, especially in younger population, the proposed solution offers affordable, light weight back support.

Ganesh Ram Jangir | ganesh@newndra.com

Nutrigenetics Life Science Private Limited



PLANTEGG : Plant based egg protein alternative

Area: Secondary Agriculture

Product Description:

- ♦ Plantegg is a plant based egg protein alternative without any synthetic agents and additives
- ♦ It is a blend with selective Indian pulses and spices together which retains 80-90% of nutrition making it highly versatile and user friendly
- ♦ It is cut, blended with luke warm water, toasted and served like a regular egg.

National/Societal Relevance:

Plantegg is on a mission giving nutrition rich food products to youngsters and elderly based on the nutritional need, making it more personalized as 73% of Indian population is deficient in protein and 80% in micronutrients.

Harini R | hello@nutrigenetics.in



OCT Therapies and Research Private Limited

HAIR REGENERATION SERUM

Area: Healthcare- Stem Cells

Product Description:

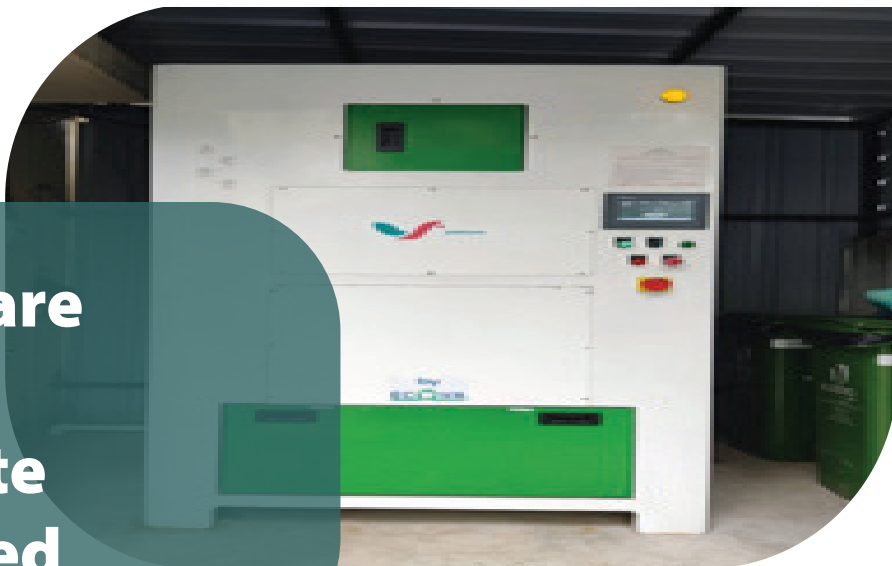
- ♦ The technology uses stem cell-derived proteins and growth factors as active ingredients, incorporated into a user-friendly topical formulation, which helps combat hair loss and reverses scalp damage.
- ♦ The product contains no drugs, steroids, parabens or alcohol, is highly biocompatible with no side effects as source of the active ingredient is human stem cell proteins
- ♦ It is suitable for all hair types.

National/Societal Relevance:

Hair loss is a universal issue and there are limited alternatives tackling hair loss apart from drug-based solutions like minoxidil and finasteride which have a lot of side effects.

Caroline Mathen, Mathen Mathew | caroline@octtherapies.com, mathen@octtherapies.com

PadCare Labs Private Limited



SANITARY NAPKIN DISPOSAL AND RECYCLING SYSTEM

Area: Industrial Biotechnology (Industrial Products and Processes)

Product Description:

- ♦ The technology is a smokeless sanitary napkin recycling solution with harmless and sterilized output out of used sanitary pads.
- ♦ The outputs of recycling solution are used to make plant pots, paver blocks, and tabletops.
- ♦ The company provides at-source sanitary pad disposal bins and vending machines for female-first organizations
- ♦ The pads in the bins are collected by trained professionals in protective gear and are brought to the nearest recycling unit.

National/Societal Relevance:

Solving the issue around absorbent hygiene product disposal and recycling while creative positive impact on society.

Ajinkya Dhariya | ajinkya.dhariya@padcarelabs.com



PiChem Chemicals Private Limited

LONG TERM EFFECTIVE GERM AND WATER REPELLENT NANO SOLUTION

Area: Industrial Biotechnology

Product Description:

- ♦ A multi-surface applicable transparent coating with anti-microbial properties, stainresistance, self-cleaning, corrosion resistance and water-repellence properties for a long period of 7 days with asingle application.
- ♦ This single hassle-free coating would be able to prevent development and spread of moss, fungus, bacteria etc. on virtually any surface and could be used to treat them without bearing heavy costs and time.

National/Societal Relevance:

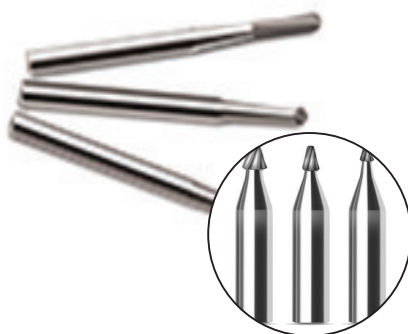
Sanitization of all surfaces is an essential need today to keep the pathogens and stains away. A robust device would greatly reduce the maintenance and sanitization costs, and such device should not cause any damage to the user and the surface.

Prajjwal Gupta | prajjwalg2000@gmail.com, info.pichem@gmail.com

Piscium Health Sciences Private Limited



alpha NANO
DIAMOND
BUR



ALPHA: Nano Diamond Dental Burs

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Carbide dental burs semi-embedded with a thin film of nano sized diamonds.
- ♦ The device delivers longer life, steady procedural control, accurate and 7X smoother tooth surfaces.

National/Societal Relevance:

Most of the Indians suffers from a dental ailment at any given time. However, less than 45% of the population has ever visited a dentist. Driven by a huge diabetic population and increasing rural incomes, apathy towards dental health is changing fast and for better. The present innovation is an important step in this direction.

Malay Dikshit | malay.dikshit@piscium.in



Prantae Solutions Private Limited

PROFLO-U MICROALBUMIN MEASUREMENT SYSTEM

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ ProfloU is an innovative platform that detects microalbumin from urine specimen with its patented biosensor to determine the kidney health status.

National/Societal Relevance:

Chronic kidney disease is one of the major non-communicable disorders that is highly impacting the healthcare system, creating huge economic burden for the country and suffering individual. The present innovation is intended to address this issue.

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Ramja Genosensor Private Limited



PRATHAM - NOVEL PAPER GENOSENSOR

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ A novel paper genosensor electrochemical DNA microfabrication technology to detect infection and antimicrobial resistance in just 90 minutes.
- ♦ The device is sensitive, specific, portable and user-friendly. Our Genosensor, will not only reduce time of infection detection, but will also reduce the cost.

National/Societal Relevance:

Infection is a critical issue, especially in the ICU where almost 60-80% of patients develop infections, such as catheter-related bloodstream infections, ventilator-associated pneumonia and catheter-associated urinary tract infections. This technology aims to reduce the antimicrobial resistance rate, saving patients' lives and economic burden of customer and consumer both.

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**Reinste
Nano
Ventures
Pvt Ltd**

WARRIOR : Long-Acting Antimicrobial Coatings

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ 'Warrior' coatings are nanotechnology-based coatings, which are highly effective against a wide variety of pathogenic microorganisms including viruses.
- ♦ The coatings are able to self-sanitize the surfaces, and are long lasting (active for upto one year).
- ♦ Their application protects and enhance the life of surfaces.
- ♦ These coatings are useful for different types of surfaces and are available in customized compositions.
- ♦ The product is tested by organizations such as National Forensic Science University and Sree Chitra Thirunal Institute.

National/Societal Relevance:

The coatings developed are of national/ societal relevance due to cost savings, as an import substitution for products currently imported, and effectiveness in reduction of secondary infection in hospitals.

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REVY Environmental Solutions Private Limited

ECONOMICAL AND SUSTAINABLE SOLUTIONS FOR WASTE MANAGEMENT AND WASTE WATER TREATMENT

Area: Industrial Biotechnology

Product Description:

- ♦ A cost-effective process of making anaerobic granulated sludge optimized for quick start-up and easy operation of UASB in WWTP while making the process energy efficient, achieving higher COD removal rate, high yield of CH₄ at higher loading rates.
- ♦ REVYanaerobic granulated sludge is a microbial consortia in form of granules 1.5 -3.0mm size containing all microbes required for biogas production from organic wastes. Of these Archaea bacteria, 35 are hydrogenotrophic, 17 acetogenic and 48 are mixed function methanogens. These granules can effectively reduce COD waste water by 90- 95% along with higher yield of methane gas.
- ♦ The technology develops “Designer Bio-culture” using combinations of bacteria/other microorganisms in the form of Anaerobic Granulated Sludge, Aerobic Biomass and Biomass Growth Enhancement Formulations BGEF that treats hard effluents like petroleum, chemicals, dye etc. converting waste into re-usable products such as Bio-methane and Bio-Energy.

National/Societal Relevance:

About 80% of used water worldwide and up to 90% in developing countries is neither collected nor treated, threatening human & environmental health. Problem can be mitigated by adoption of eco-friendly technologies for waste water treatment.

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Rymo Technologies Private Limited

MOBI-L : Robotic and Virtual Rehab Device

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ 'Mobi-L' is a compact physical rehabilitation device powered by robotics, virtual reality and games, which helps neurological, orthopaedic and paediatric patients undergoing physiotherapy improve mobility and strength of upper & lower limbs.
- ♦ It can objectively assess and facilitate training to improve range of motion, strength, speed, reaction time.
- ♦ It assists the patient initially to facilitate movements and increases the difficulty gradually as the patient progresses to increase strength and make them independent.
- ♦ 30+ games and real-world simulations not only make rehabilitation fun but also improves cognition, control and memory which are equally important for complete recovery.

National/Societal Relevance:

The objective of Rymo is to make technology aided physical rehabilitation accessible to millions of individuals who visit physiotherapy clinics and cannot afford bigger hospitals with imported solutions.

Chirag Shah | chirag@rymo.in

Salcit Technologies Private Limited



SWAASA : AI Platform for Respiratory Assessment

Area: Industrial Biotechnology

Product Description:

- ♦ The product functions as PoC Software as a Medical Device (SaMD) for instant evaluation of respiratory health as an equivalent of home monitoring for blood glucose and blood pressure.
- ♦ Swaasa is the Google Photos for cough sounds; and can identify underlying respiratory lung conditions by analyzing a 10 second solicited cough sound recording.
- ♦ Swaasa's cost-effectiveness, ubiquity and immense scalability make it the perfect tool to screen, diagnose and monitor for respiratory diseases.

National/Societal Relevance:

The Big Five respiratory diseases (Pneumonia, Asthma, COPD, Tuberculosis and Lung cancer) as identified by the WHO and the Forum of the International Respiratory Society affect nearly 500 million people worldwide. They are also the cause of nearly 10 million deaths worldwide each year. Screening for respiratory diseases is an unmet need since, due to limited human expertise and lab facilities, pulmonary function tests are not possible at primary care level centres.

Narayana Rao Sripada, Venkat Yechuri, Manmohan Jain | svn@salcit.in



Sascan Meditech Private Limited

ORALSCAN

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Oral Scan is an intraoral multimodal imaging camera for screening of oral cancers and biopsy guidance. The device uses a cloud-based machine learning algorithm for providing real time user feedback on tissue status.
- ♦ Multispectral camera is integrated into a hand-held device for oral cancer screening. The platform technology developed can be adapted for screening of other organs.
- ♦ Biopsy guidance is possible with improved accuracy.
- ♦ Health workers can be easily trained to operate the device.

National/Societal Relevance:

Around 90,000 new cases of oral cancer are detected in the country and more than half of this population ends in death owing to the late stage of its detection and lack of accurate/objective devices to screening and detect the disease early.

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Savemom Private Limited



SAVEMOM : IoT based Maternal Healthcare Solution

Area: Healthcare-Devices and Diagnostics

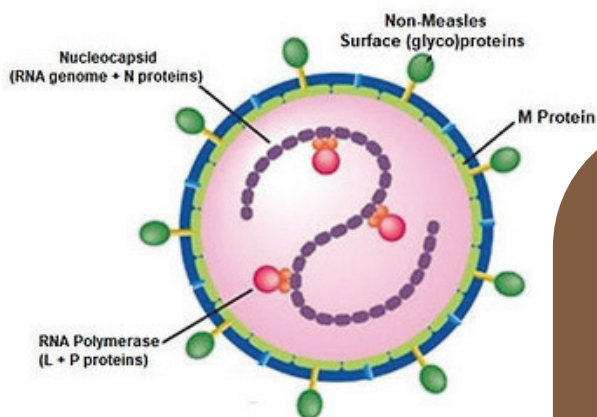
Product Description:

- ♦ The product provides personalized and predictive maternal care using AI, IoT and wearable technology.
- ♦ The innovation ensures the availability of high-quality maternal care for mothers in remote places.
- ♦ The product can be connected to a mobile application through which all the collected data can be stored and used for providing home-based antenatal care, screening of high-risk pregnancy as well sharing of the data with healthcare providers.
- ♦ The data can be collected digitally with minimal resources without the requirement of skilled manpower.

National/Societal Relevance:

The objective of this innovation is to reduce the maternal and infant mortality rate using door step antenatal visit. The products are suited for the rural atmosphere wherein they can be deployed with minimal resources.

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Seagull BioSolutions Private Limited

ACTIVE VIROSOME TECHNOLOGY (AVT) PLATFORM

Area: Healthcare-Vaccines

Product Description:

- ♦ Versatile technology platform useful for producing highly customized, inherently safe, non-replicating measles virus vectored vaccines, immunotherapies & reagent systems required for biopharmaceuticals R&D.
- ♦ AVT platform has been used to produce vaccine agents for prevention of Dengue, Chikungunya, Zika, Ebola & COVID-19 and shown to be effective in small animals.
- ♦ AVT has also been used to produce Oncolytic Virotherapy SBPL-0600 effective against Lung, Breast & Prostate cancer; and it also stimulates anti-cancer immunity.
- ♦ Reagents shown to be useful in detection of neutralizing antibodies; and in antibody drug discovery programs targeting human membrane proteins.

National/Societal Relevance:

The technology platform has applicability in development of vaccines for other diseases.

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Sensivision Health Technologies Private Limited

REVIVE

Area: Healthcare -Devices and Diagnostics

Product Description:

- ♦ The Company is addressing one of the most critical conditions impacting Newborns, i.e. Hypoxic Ischemic Encephalopathy or HIE which is a complication of Birth Asphyxia.
- ♦ Comprehensive device platform that can diagnose, treat and prognosticate Birth Asphyxia complications that result in HIE.
- ♦ While complying with all the global safety standards, the device is tailored for use in diverse situations as inside an Ambulance and a Neonatal Intensive Care Unit.
- ♦ The product is servo-controlled, to ensure effective temperature control, fully automated with Cerebral Function Monitoring enabled for early diagnosis of HIE for monitoring of the treatment.
- ♦ Device can diagnose and treat HIE in any setting - including during transport.

National/Societal Relevance:

Birth asphyxia is one of the top causes of neonatal death in India and encountered by hospitals in India on a daily basis. Birth Asphyxia complication take a heavy toll not just on the newborn but also on the immediate family. The babies that survive the impact of HIE, end up with lifelong debilitating complications that makes them dependent on the family for life. The diagnosis and effective treatment of this condition is exorbitantly expensive. Company intends to substantially bring down the price of the device to hospitals and cost of care to patients.

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Shankaranarayana Life Sciences LLP

SN RT-AMP FLUORESCENCE DETECTION DEVICE

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ SN RT-AMP Fluorescence Detection Device is a highly sensitive, specific, reliable, affordable and field deployable fluorescence detection device.
- ♦ The device functions through DNA amplification, similar to the available RT-PCR Machine, Thermocycler and Isothermal PCR machine.
- ♦ It is low cost, offers faster detection and provides reliable results.

National/Societal Relevance:

The product has high impact for molecular diagnostics as an alternative of commercially available PCR for various diseases. It can be used as an amplification platform for disease diagnosis in hospital and clinical setups.

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Shankaranarayana Life Sciences LLP



ROBAC : Biomolecule & Cell separator

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ The device separates bio-molecules like protein, RNA, DNA; and different kinds of cells such as microbial and mammalian cells.
- ♦ It works on the principle of attaching specific ligands to magnetic particles/ beads with high affinity binding to the molecule or cell of choice.
- ♦ The robotic magnetic probes capture magnetic particles or beads, bound to molecules or cells of choice and perform the functions of washing, concentrating and delivering to the required vials in purified concentrated form.
- ♦ The device has additional flexibility to adjust the experiment conditions based upon the custom requirements of the user.

National/Societal Relevance:

The device would be very useful in hospitals and diagnostic settings.

Bhairab Mondal | drmondal@snlifesciences.com

Shilps Sciences Private Limited



LUCENT : Atomic Force Microscope

Area: Healthcare-Devices and Diagnostics

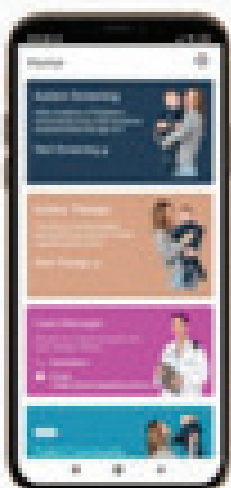
Product Description:

- ♦ A comprehensive Atomic Force Microscope (AFM) which combines AFM with Laser Scanning Microscopy for correlational imaging, newer insights, and faster results.
- ♦ LSM can quickly identify minute sample details in millimeter scans for AFM to map at the nanometer scale.
- ♦ In liquid imaging, spectroscopy and fluorescence modules make it a powerful tool for biopharma applications.

National/Societal Relevance:

In drug development and production processes, micro and nanoscale characterization is critically important. National Bio-Pharma industries competitiveness depends on the enabling tools and technologies. This device is an important innovation in that direction.

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SM Learning Skills Academy for Special Needs

COGNIALE – AI-DRIVEN DIGITAL PLATFORM FOR EARLY DETECTION OF DEVELOPMENTAL DISORDERS

Area: Bioinformatics

Product Description:

- ♦ CogniAble is an AI-driven digital platform for early detection and intervention for children with developmental disorders.
- ♦ Affordable Machine Learning platform used remotely by expert and non-experts for screening and treatment of Autism Spectrum Disorder.
- ♦ CogniAble brings affordability, accessibility and high-quality management of autism patients.

National/Societal Relevance:

CogniAble's digital screening and therapy services promote inclusivity in society for special needs children; enabling timely and high levels of IQ development, skill acquisition in multiple areas like social skills, academic skills, speech skills, and language development to advance skills.

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**Solaire
Initiative
Private
Limited**

OM REDOX OXYGEN MAKER

Area: Healthcare-Devices and Diagnostics

Product Description:

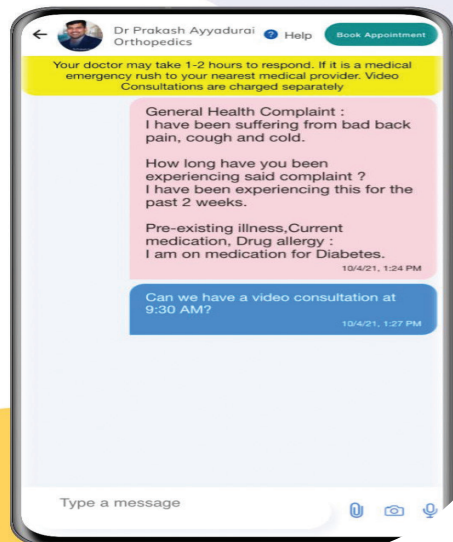
- ♦ OM Redox is a sleek white pine-wood box, weighing 8 kgs., and gives hydrated oxygen 3.5 times purer than a concentrator, just by pressing a switch and runs with direct electricity and a battery backup of 3.5 hours.
- ♦ OM Redox REDOX is CE, WHO, ISO 900 and 13485 certified Deep Innovation Product, made, designed, and conceptualized in India.

National/Societal Relevance:

The product caters to the mobile as well as domestic oxygen demand market nationally and internationally and the innovation aims to achieve that no life should be lost because of oxygen.

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Swasthchain Private Limited



SWASTH CIRCLE - YOUR POCKET HOSPITAL

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Using the Swasth Circle app, patients can subscribe to trusted Pocket Hospitals for a small subscription fee.
- ♦ Each pocket hospital has 1 dedicated family physician who can be contacted anytime from anywhere for any queries. It also includes 17 doctors across all specializations who can be contacted through one click.
- ♦ The app focuses on building a relationship and health dialogue between patient and doctor. Patients feel the comfort of knowing they have a known network of doctors who understand and care for them always on their mobile phones.

National/Societal Relevance:

In India, one of the biggest problems in healthcare is the lack of easy access to doctors and as a result, many patients search for health information on internet, which gives them unnecessary anxiety and makes their problems worse. The present innovation addresses this issue through a personalized pocket hospital-based app.

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SynerSense Private Limited

GAITSENSE : AI-based Gait Analysis Technology

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ GaitSense is a 3D Motion Capture IMU technology and AI-Based Gait Analysis edge computing system for people with locomotion disability, orthopedic and neurological chronic disorders.
- ♦ It is a wearable proprietary technology that leverages data science analytics software platform to make decisions faster, saves time, is affordable with high accuracy (98% accuracy).
- ♦ The product analyses customized clinical reports and can identify more than 100 key parameters including metrics of lower limb joints range of motions, speed, step movements, balance and body-posture analysis.

National/Societal Relevance:

There is an unmet clinical need for 80 million people with locomotor disability. Innovative solutions for rehabilitation are required for accurate diagnosis, early and timely treatment of affected patients.

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Tan90 Thermal Solutions Private Limited



PORTABLE COLD STORAGES

Area: Agriculture

Product Description:

- ♦ The innovation comprises proprietary fast-freezing cooling solution/ phase change material in portable cold storages curated to the need of the users.
- ♦ With a specific range of phase change temperatures, the device can extend the shelf life of green leafy vegetables, fruits by about 2.5 to 3 days (with 6.5 hours of electricity), milk and dairy products by 12 hours, frozen meat, and fish for 10 hours.
- ♦ The portable cold storage units can be stacked at the back of any two-wheeler, electric bikes, normal trucks, or any room, thereby extending the shelf life of perishables with minimal capital investment.
- ♦ The boxes being standalone refrigerated units, can be made mobile by any means of transportation.

National/Societal Relevance:

The solution reduces post-harvest losses significantly and also reduces air pollution caused due to transportation as the portable device can be stacked with any other vehicle.

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Thanmatra Life Private Limited

HERBA NURIEL : An “Invisible Liquid Glove”

Area: Healthcare-Drugs

Product Description:

- ♦ ‘Herba-Nuriel’ is centred around the concept of Invisible Liquid-Glove, which on application on hands, forms an invisible thin layer of a biopolymer loaded anti-bacterial/anti-viral agents, herbs and moisturizers, effectively protecting hands for up to 08-12 hrs.
- ♦ Sanitizers provide instant sterilization effect with little prolonged protection which lasts only a few minutes. The present innovation gives long lasting protection.

National/Societal Relevance:

80% of common infectious diseases are spread by hands. Proper hand sanitation is one of the prime solutions to avoid infectious diseases. The COVID19 pandemic has accentuated the need for good hand sanitation practices. Frequent use of alcohol-based sanitizers results in skin allergies.

Tishyas Medical Device Development Solutions Private Limited



IXANNER®

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ IXanner® is a 3D imaging device that can be utilized for clinical diagnostics and pre-clinical research applications.
- ♦ IXanner® Argus is a portable eye screening device that allows comprehensive screening from anywhere.
- ♦ IXanner® AEAR is the preclinical version of Argus that serves life science and pharmaceutical researchers to get a quick analysis of disease progression in an animal and effects of the drug noninvasively.
- ♦ The product has been used in dry eye research, oral cancer research and micro needle drug delivery research and more applications are being explored.

National/Societal Relevance:

For ethical treatment of animals, PETA states that at least 52% of the animals are wasted during the studies, which adds to more cost and time to complete an animal study. The innovation will reduce the cost of animal research.

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Translead Medtech Private Limited

STAND AT EASE : An assistive chair with transducers for elderly

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ The product – Stand at Ease - an Assistive chair with transducers for elderly - utilizes a novel compliant hinge mechanism to enable STS (sit to stand) assistance towards people with reduced muscular capabilities in the lower extremities of the human body, such as in the elderly.
- ♦ The design allows for user customizable torque profiles to minimize effort required to sit down and stand up from the chair seat. The same is achieved without any electronics/power requirements therefore enabling versatility of usage environments and durations.

National/Societal Relevance:

With the wear and tear associated with age, musculoskeletal issues make it increasingly difficult for the elderly to live a dignified, independent lifestyle. A major contributor to economic dependence of elderly is the lack of functional independence to carry out basic everyday tasks. By addressing this problem, with a simplified, non-powered, mass-customizable, retrofittable mechanism, the product provides assistance to people with musculoskeletal issues.

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Transpacks Technologies Private Limited

3D LABEL
PUF
CRYPTOCODE



ANTI-COUNTERFEITING SOLUTION : Copy-proof labels

Area: Agriculture

Product Description:

- ♦ The product is an anti-counterfeiting label that seeks to provide a clear, easy to use tool to the least savvy user, who can unambiguously verify whether a product is fake or genuine.
- ♦ These copy proof labels use augmented/virtually reality technology and can be scanned by 5MP camera without requiring any form of communication.
- ♦ Verification process is similar to QR Code scan eliminating the need of consumer education.
- ♦ The average scanning time of labels is 4seconds.
- ♦ Automated one step verification without even clicking on any button.
- ♦ The technology has application in assessing counterfeiting in seeds, pesticides, medicines and medical equipment.

National/Societal Relevance:

Counterfeiting is a serious threat to health, life and business in sectors such as pharmaceuticals and Agro-products. Companies can lose brand value, sales and enterprise value due to counterfeiting. Consumers struggle to identify genuine products from close look-alikes or fake products. The present innovation provides a solution for identification of genuine products.

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Weinnovate Biosolutions Private Limited

SILVO GUARD : Antimicrobial Foley Catheter Medical Device

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ Silvo Guard antimicrobial foley catheters is designed to reduce the infections due to catheterization.
- ♦ The catheter is made entirely antimicrobial using a patented NanoAgCide technology, comprising active colloidal silver nanoparticles
- ♦ It is intended to reduce Hospital Acquired Infections (HAIs) and resolving the issue of antimicrobial resistance, saving costs across the healthcare chain.
- ♦ It is cost-effective and the product design is aligned with patient safety and comfort.

National/Societal Relevance:

The impact of HAIs and AMR on people's lives is immeasurable. It is one of the major reasons for huge morbidity and mortality as well as revenue loss in hospital sectors. The product is intended for reducing the incidences of HAIs to improve health outcomes.

Milind Choudhari; Prasad Bhagat | milind@wibpl.com

Flic Farm Private Limited



X100 - AI BASED MULTIPURPOSE ROBOT FOR AGRICULTURE

Area: Agriculture

Product Description:

- ♦ The Robot X100 performs every farm operation beginning with seeding till harvesting with the help of various smart attachments. It is designed ground up to be crop agnostic and to suit both small and large farms alike.
- ♦ The intelligent AI driven attachments take precise care of each individual plant as required by fusing data points from several on-board sensors in-order to achieve optimum yields.
- ♦ X100 not only allows for agriculture to be done the way it should but also solves the pressing labor shortage problems in the agri industry.

National/Societal Relevance:

This product can generate rural micro-entrepreneurs and encourage youth to take up agriculture as a business opportunity.

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Yaathum Biotech Private Limited

REAL-TIME RT-PCR DIAGNOSTIC KIT FOR COVID-19

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ A low-cost indigenous multiplex real-time RT-PCR based molecular diagnostic test to detect the SARS-CoV-2 virus in upper and lower respiratory specimens naso/oropharyngeal swabs of COVID-19 suspected individuals.
- ♦ Test targets three independent regions E, N, orf1ab genes in SARS-Co-V 2 genome plus primer and probe for internal positive control RNaseP within the same PCR reaction.

National/Societal Relevance:

The assay is designed for detection of nucleic acid from SARS-CoV-2 in 2 hours at a highly affordable price. Useful for Government testing centres for COVID-19, private and Government hospitals, private testing labs, airport authority, etc.

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Yostra Labs Private Limited



VELOX CARE : Wound Care Device

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ VELOX Care is an advanced wound care device based on Topical Warm Oxygen Therapy; is battery-powered and can be charged via micro-USB.
- ♦ The innovation is an affordable and cutting-edge point of care screening device to help in the diagnosis of peripheral neuropathy in patients with diabetes.
- ♦ It is Bluetooth-enabled, which helps doctors generate reports in real-time.
- ♦ It comes with a cloud storage application to let users transfer, store and print test results remotely, which makes it portable.
- ♦ It can be used in a variety of settings, from homes to hospitals and even in primary health centres or outreach camps.

National/Societal Relevance:

The proposed diabetic foot ulcer treatment method and the medical equipment will substantially impact diabetic foot ulcer in India. Besides reducing the hospital admissions of patients with diabetic foot ulcer, the device reduces the need for lower leg amputation due to aggravated disease. The device offers better access to diabetic foot ulcer treatment at low upfront investment.

Vinayaka Nandalike Padmanabha | vinayak@yostra.com



Yuvitel Technologies Private Limited

ALL-IN-ONE REMOTELY MONITORED HEALTH KIOSK

Area: Healthcare-Devices and Diagnostics

Product Description:

- ♦ An affordable All-In-One Remotely Monitored Health Kiosk to bridge out the health service barriers has been developed.
- ♦ The system is mainly intended at bridging out the health service barriers for the patients in the rural areas.
- ♦ The customised products, services and processes helps the patients to get the treatment at their doorsteps.

National/Societal Relevance:

The innovation provides basic diagnostic services and treatment to the rural population of India. It also aids in collating and organising data; and creating health locker and other facilities with Ayushman Bharat Digital Mission.



Biotechnology Industry Research Assistance Council (BIRAC)

(A Govt. of India Enterprise)

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