

LAB TO MARKET

Biotech Products/ Technologies
of Startups

Supported by
BIRAC



Disclaimer: Data provided in this publication is as claimed by respective Startups.

FOREWORD



डॉ. रेणु स्वरूप
DR. RENU SWARUP

सचिव
भारत सरकार
विज्ञान और प्रौद्योगिकी विभाग
जीव प्रौद्योगिकी विभाग
एफ-2, 7वां मंज, सी० जी० कॉम्प्लेक्स
लक्ष्मी नगर, नई दिल्ली-110002
SECRETARY
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY
Block-2, 7th Floor, C.G.O. Complex
Laxmi Nagar, New Delhi-110002

MESSAGE

Biotechnology today holds enormous potential for impacting the economic growth of the country. Globally there has been a major push towards encouraging the growth of the Start-up and Entrepreneurial ecosystem to contribute to the Biotech Industry. India over the last couple of years has contributed significantly to this sector and the potential of Biotechnology, specifically the ability of Innovators to develop affordable and accessible products addressing the needs of the society has been well recognized.

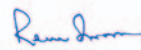
BIRAC has created a very vibrant ecosystem and has provided the required enabling policy frame work for supporting Startups and connecting the Stakeholders. With over 1000 Startups and entrepreneurs and more than 500 small companies and Industries being a part of this network, it is encouraging to see that today there are more than 130 products and technologies which have been successfully developed. Our 40 Bioincubators play a very important role in the growth of the ecosystem, providing the start-ups required technical, business, financial and regulatory mentorship.

All components of the ecosystem from mentorship to capacity building to financing and product commercialization are being supported by BIRAC. This has now resulted not only in an excellent pipeline of Startups but also in a number of successful enterprises which have made an impact both in the domestic and global arena. Many Startups have been able to attract investments which are crucial and critical for sustainability and scalability of the enterprise.

BIRAC innovations are directly aligned with the Government Missions on Swachh Bharat, Ayushman Bharat, Startup India and Make in India and along with Department of Biotechnology there has been a major effort of converting the research in the laboratory to products and technologies through the establishment of a strong effective translational ecosystem

As we move forward it is imperative that the deep engagement and partnerships with both National and International Stakeholders are developed so that we can leverage the strengths of each other.

I am confident that BIRAC will play a transformational role in nurturing the ecosystem for empowering the nation to achieve the target of a US\$100b Biotech Industry by 2025.


(Renu Swarup)



Dr. Renu Swarup
Secretary
Department of Biotechnology
& Chairperson, BIRAC

PREFACE

NURTURING INNOVATIONS: EMPOWERING INDIA

The Indian Biotech Sector has acquired global visibility and is today seen as a potential investment opportunity. BIRAC is committed to nurturing and promoting the growth of Indian Biotech Sector. BIRAC's key strategies are aligned to support Innovation, promote translational Research to develop Affordable Products and Technologies that are globally competitive addressing the unmet needs. We aim to bring together like-minded organisations, network to harness synergies needed to support this ecosystem.

BIRAC is playing a significant role in the implementation of flagship programs of Government of India including 'Make in India', 'Startup India' for the Biotech Sector and 'Swachh Bharat'. Programs of BIRAC such as BIG, SPARSH, SBIRI, BIPP, PACE and BioNEST along with our equity funding schemes, SEED, LEAP and AcE Fund are responsible for tapping the entrepreneurial energy within the country. Strategic funding infusement, creating infrastructure capacity building in emerging regions together with success stories of growth of Biotech start-ups have made positive impact in the growth of Indian bio-economy.

This Make in India booklet featuring certain 'Commercialized Products/ Technologies of Biotech Start-ups' showcases some examples of the growing Biotech Start-ups ecosystem across the country. Stakeholders are encouraged to come forward and avail opportunities to co-develop, in-license, collaborate with Start-ups and create platform for the scaling up and commercial growth.

As we look forward, we intend to amplify our engagements with relevant partners, continuously improvise to co-evolve. BIRAC is poised to catalyse the transformation of the country through infusing right energy in innovation, through our rigour and our commitment to excellence.

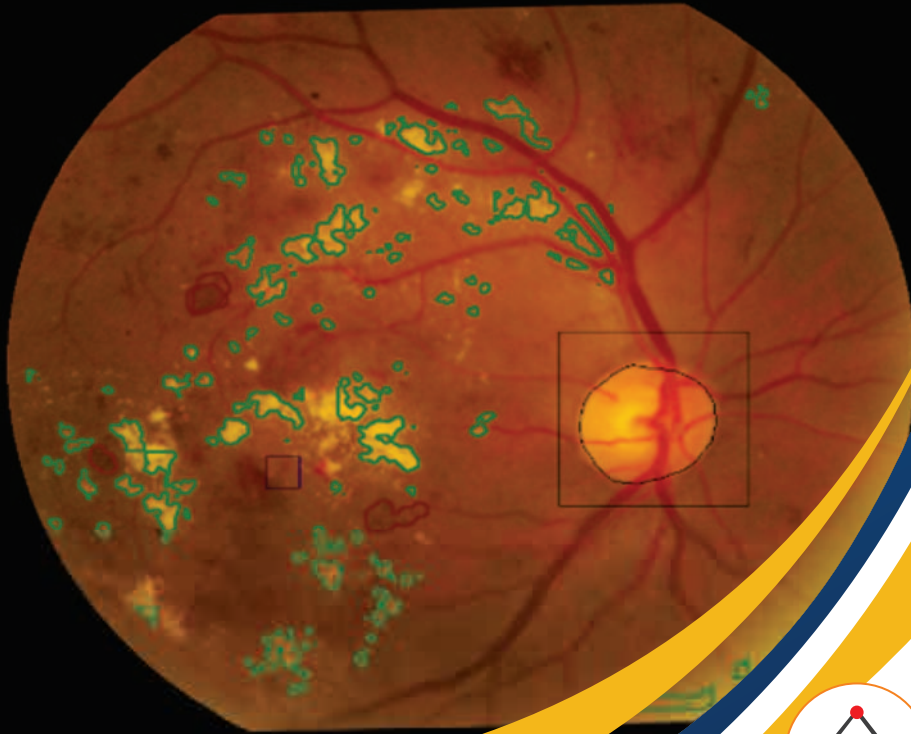


Dr. Mohd. Aslam

Advisor

Department of Biotechnology
& Managing Director, BIRAC

ChironEye - A Screening Tool



USP

- ChironEye uses retina as BIOMARKER and a gateway to disease detection absolutely noninvasively
- It automatically reads a retinal image and diagnoses diseases based on observed medical signs and manifestations through a robust differential diagnostic mechanism
- The technology is build on Cutting-Edge Research in Deep Learning, Machine Learning, Computer Vision and Image Processing
- ChironEye has claimed accuracy of 96.43% in validation study of 10,000 patients and detects 30+ diseases, generates Report within milliseconds
- ChironEye has CE certification (Class I)



- INR 30-50 for basic tests
- INR 150+ for more advanced test which will be launched in 2020



18



India

Product Positioning

ChironEye can be deployed as a retinal **screening tool** for any abnormality, as well as inside a clinic as a decision support system.
B2B, moved to be B2C in future.



IP Status

Two IP filed in India, PCT filing planned by Q2 2019.
Few more patents under process of filing



Awards

Fellow (by selection) - Unreasonable USA, Barclays 2018, Hong Kong, UK
Winner India - Start Tel Aviv Competition 2016, Tel Aviv



National/ International Relevance

WHO maintains that as much as 80% of all blindness and vision impairment is preventable or treatable if diagnosed early. 69 million people in India are at risk of preventable blindness.

The device may help in reduction of preventable blindness through early identification and develops comprehensive eye care facilities that could scale in every district, in line with National Health Policy, 2017.



Export Substitution

All geographies but currently targeting South Africa, Spain and other European Countries.



ArmAble- A game based arm rehabilitation device



- Immersive games developed exclusively for arm therapy makes the session more engaging and fun filled
- Device motivates the patients to engage in therapy which leads to an increased number of repetition. The high number of repetitions augment the recovery of the arm function
- Tele-rehabilitation in ArmAble connects therapist to patients by remotely connecting through a cloud platform
- Therapist can monitor and analyze the patient's progress recovery by looking at the movement data such as patterns, speed, accuracy etc

USP



INR 3,00,000



5 Pre-orders

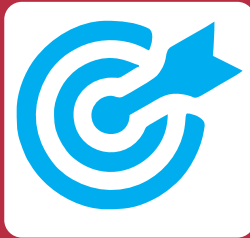


India

Product Positioning

Target Customers: Hospitals and Rehabilitation Centers, Rental for individuals.

ArmAble, acts as an interactive arm training rehabilitative device which enables higher repetition that stimulate the brain to rewire and strengthen neural connections. The higher repetitions compared to traditional therapy helps to recover the arm functionality much faster.



National/ International Relevance

Stroke is considered as one of the leading cause of disability in India & the world. More than 1.8 million cases of strokes are reported in India. More than 80% of patients suffer weakness or paralysis of one side of the body. Traditional therapies are not only insufficient for patients suffering from a stroke but also time intensive, need one to one sessions and physiotherapy.



IP Status

Full specification and PCT filed



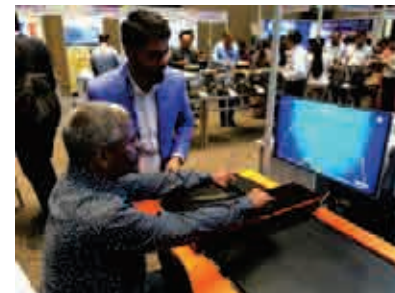
Export Substitution

Europe, GCC, Africa, South-East Asia



Awards

First Prize Winner of German – Indian Startup Connect – Munich 2018



SYNC- Smart & All-in-one compact Glucometer



- SYNC is a Smart & All-in-one compact sized Glucometer
- It is an integrated glucometer, to test all the components a user would need to test for Blood Glucose, weighing less than 90 grams
- The unique strips designed on proprietary electrochemical platform; are most affordable gives a Glucose result in 5 seconds and requires less than a microliter of Capillary blood
- The results are compliant with ISO15197:2013. The built in Bluetooth connectivity enables real time tagging of results on a smartphone with the SYNC app with trends and Analytics of data accumulated over time

USP



INR 1500 per unit



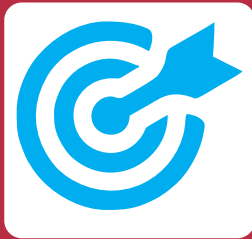
35000+ units sold
all over India



All Over India

Product Positioning

Claimed as First Made in India Bluetooth enabled glucometer under the make in India initiative of government of India. It can be placed at Entire trade market of India including hospitals, outpatient clinics, emergency rooms, ambulatory medical care (ambulances, helicopters, cruise ships), and home self-monitoring.



National/ International Relevance

Glucose meters are universally utilized in the management of hypoglycemic and hyperglycemic disorders in a variety of healthcare settings.

It offer an ease of self-Assessment for diabetes to maintain quality of life and to prevent long term complications.



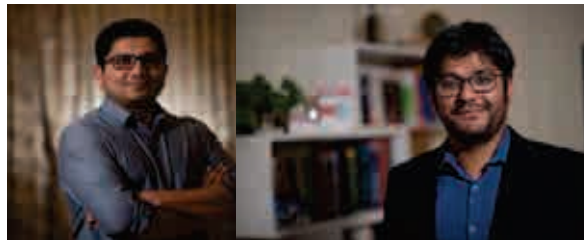
Awards

Approved by National Institute of Biologicals.



Export Substitution

Made in India Bluetooth enabled glucometer available in the Market.



TouchHb-Non-invasive haemoglobinometer



USP

- Made in India non-invasive haemoglobinometer (TouchHb) is a device which calculates estimated value of haemoglobin without any prick
- The pain free/ needleless device works on principle of reflectance photometry and is used on the right eye with exposed conjunctiva
- The device captures the image of the exposed conjunctival palor and differentiates between the redness and the paleness of the palor and gives an estimated value of haemoglobin
- No recurring cost in its operation



INR 50,000/-



25000+ units sold
all over India



All over India (It is only
available in government
medical facilities and NGOs)

Product Positioning

Particularly relevant for Rural India, PHC, SCs, where people find it difficult to access health facilities.
Screening anaemia, reducing maternal mortality and infant mortality rates in India.



National/ International Relevance

State and central Governments may employ for anaemia screening.



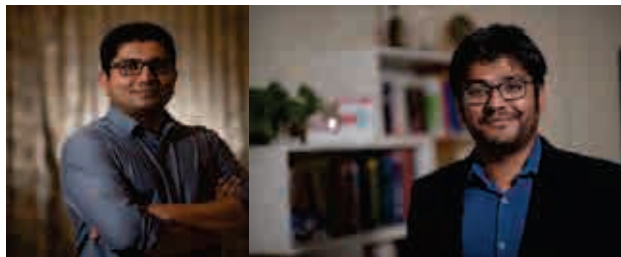
IP Status

1677/MUM/2014



Export Substitution

One of its kind having no competitors in the market.



Dozee - Contactless Health Monitor



- Contactless health monitoring device that silently tracks your sleep patterns, heart, respiration and stress levels
- Dozee App, gives you detailed insights that help you stay on top of your health, manage stress and sleep better
- Remotely Monitoring parameters including Heart Rate, Respiration Rate, Stress (Heart Rate Variability), Sleep (Duration, Stages, Time to Sleep), Restlessness, Apnea-Hypopnea Episodes, Irregular Heart Rhythm

USP



INR 11,999

SOLD OUT

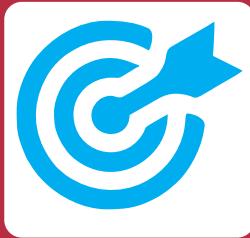
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All over India

Product Positioning

45+ subjects, senior care, high-risk patient care.
Globally, the elderly and chronic illness population is increasing rapidly. There are very few solutions for this population to keep a track of their health on regular basis. Current solutions are expensive, inconvenient and inaccurate.



IP Status

Patent filed



Awards

IKP-Berkely Med-Tech Awardee



National/ International Relevance

Convenience with precision, although contactless, Dozee is claimed to be 98.4% as accurate as medical grade devices clinically.



FIBROHEAL - Silk protein derived wound dressing for advanced wound care



Fibroheal™ Silk Protein, Asiaticoside
Derived Wound Healing Sheet



Fibroheal™ Ag



- Fibroheal contains two active components i.e. activated silk matrix and asiaticosides from Centella asiatica
- Fibroheal AG prevents secondary infection with the help of silver in its composition
- It is Bio-compatible, Non-toxic, & offers faster healing rate, enhanced Epidermal growth functionality, wound protection from secondary infection, easy removal of dressing during recovery/post-healing phase & minimization of scar

Fibro heal

10X10 cm - MRP.Rs.270/-
10X25 cm - MRP.Rs.650/-

Fibro heal AG

10X10 cm - MRP.Rs.350/-
10X25 cm - MRP.Rs.850/-



Fibro heal

Approximately 36,000
units sold of the plain Fibroheal

Fibro heal AG

2200 units



Top 20 major hospitals
which have plastic surgery
and burn wards in India.

Product Positioning

Initially targeted for Plastic and burn surgery, also useful for non/slow healing and diabetic foot ulcers.



IP Status

Patent file number: 245840; Date: 23/02/2007 (Fibro heal)



National/ International Relevance

India is a second largest producer of silk globally & non textile uses of silk would create secondary income from silk waste for reelers and formers. Silk as a biomaterials is being researched across the world for use in tissue engineering and reconstructive surgery. It is a versatile biomaterial, non toxic, non allergenic and biodegradable.

No silk based wound dressing in Indian market so far.



Export Substitution

Post approvals of various regulators the products has large domestic and export possibilities.



FIBROHEAL Ag Meshed -Silk protein derived & silver based meshed wound dressing



USP

- Fibroheal Ag contains three active components i.e. activated silk matrix, asiaticosides from Centella asiatica and silver in meshed form
- It is Bio-compatible, Non-toxic, & offers faster healing rate, enhanced Epidermal growth functionality, wound protection from secondary infection, easy removal of dressing during recovery/post-healing phase & minimization of scar
- It is also prevents secondary infection with the help of silver in its composition
- FIBROHEAL Ag Meshed specially designed for high exudates wounds and infected wounds in mesh form
- FIBROHEAL Ag sprinkling powder is specially developed for chronic or acute wounds, infected/non infected wounds, cavity or surface slow healing wounds

Fibro heal AG Meshed

10X10 cm – MRP.Rs.450/-
10X25 cm - MRP.Rs.950/-

Fibro heal AG Sprinkling powder

10 gms – MRP.Rs.199/-
50 gms - MRP.Rs.900/-



Fibro heal AG Meshed

3600 units of plain FibroHeal

Fibro heal AG Sprinkling powder

5500 Units

SOLD OUT



Top 20 major hospitals which have plastic surgery and burn wards in India.

Product Positioning

No silk based wound dressing in Indian market so far.
Initially targeted for plastic and burn surgery also useful for non/slow healing and diabetic foot ulcers.



National/ International Relevance

India is the second largest producer of silk globally & non textile uses of silk would create secondary income from silk waste for reelers and formers. Silk as a biomaterials is being researched across the world for use in tissue engineering and reconstructive surgery. It is a versatile biomaterial, non toxic, non allergenic and biodegradable.



IP Status

Patent applied



Export Substitution

Post approvals of various regulators the products has large domestic and export possibilities.



Awards

FKCCI award for innovation in emerging technologies



The Dedko and Rhino Digester Systems



USP

- Waste processing machine and service that is suitable for organizations (restaurants, hotels and cafeterias) and individual urban homes
- Users enjoy a sanitary method for waste disposal (in compliance with laws) and also get renewable bio-gas as cooking fuel and organic fertilizer for plants
- Community benefits immensely through reduced health-care and waste disposal costs



₹25,000/- to 20,000,000/- depending on the quantum of waste to be processed



70



South Gujarat, Mumbai region and Goa

Product Positioning

Organizations –
a) Hospitals, canteens, clubs, etc.
b) Individual homes



IP Status

Patented



Awards

DIPP for Swatchh Bharat Mission



National/ International Relevance

Organic waste is responsible for 12% of the total national greenhouse-gas emissions. Finding sanitary methods to deal with biodegradable waste is a significant global challenge. Landfill sites in Delhi and Mumbai are almost as tall as the Qutub Minar. The primary impact of this work is in providing basic sanitation while other are in generation of renewable energy, food security and employment.



3nethra neo - An advanced wide-field digital imaging camera



- The 3nethra neo is a compact, portable, and easy-to-use mydriatic wide-field digital imaging camera used for the photo documentation of ocular diseases that manifest in human eyes
- The ergonomically designed, lightweight hand piece allows for single-handed operation, and captures 120-degree high resolution images of the posterior and anterior segments of the eye

USP



INR 25 Lakhs



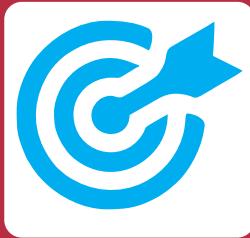
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India, Mexico, Nepal, UAE,
Italy, France, UK,
Indonesia, Bangladesh etc.

Product Positioning

Primary buyers are ROP Specialists (Retina Doctors), Neonatal Intensive Care Units (NICU), Sick Newborn Care Units & Private/Government Hospitals across the world. The price is in the range of 20 - 25 Lakhs whereas the price of competitor products cost in the range of 90 - 120 Lakhs.



IP Status

5 patents have been applied



Awards

Social innovation award from The Marico Innovation Foundation in 2018



National/ International Relevance

There are >6500 NICU's in India and only about 120 ROP Specialists are directly involved in Indirect Ophthalmoscopy, which requires the physical presence of doctors. An operator can be trained to operate 3nethra neo for ROP Screening using a cloud based telemedicine platform enabling remote diagnosis of pediatric ocular diseases.

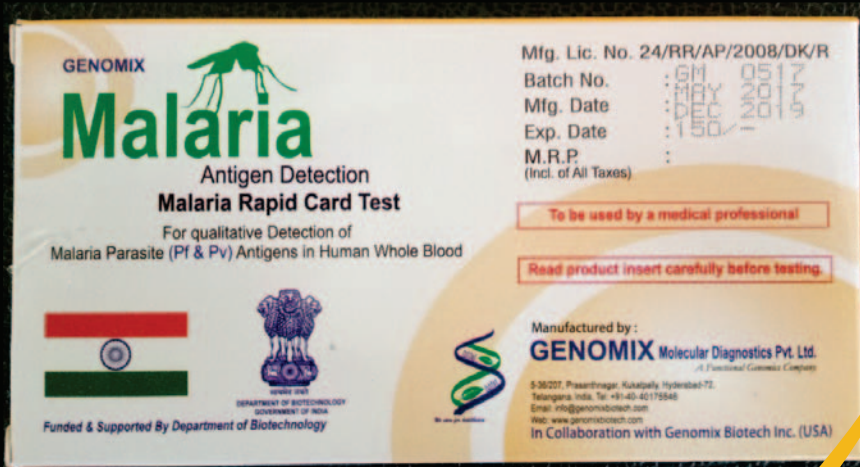


Export Substitution

All geographies but currently targeting South Africa, Spain and other European Countries.



Genomix Malaria Pf/Pv Antigen Self detection Test Kit



- Lateral Flow based Assay for the qualitative determination of Malaria Plasmodium falciparum Specific Histidine rich protein - II (Pf HRP-II) and Malaria Plasmodium vivax Specific Lactate dehydrogenase (pLDH) proteins in human whole blood specimens
- The kit is validated by WHO/FIND/CDC
- GENOMIX Malaria Antigen Test is designed for the Differential diagnosis between Plasmodium falciparum and Plasmodium vivax

USP



Malaria pf/pv Ag rapid test
kit INR 30



~10 00 000



India, Europe, Africa

Product Positioning

Malaria's transmission is ongoing in 108 countries with 1.2 billion at high risk causing 1 million deaths each year.

Genomix malaria test kit is suitable to normal climate and can be performed at resource limited areas and addresses all the diagnostic problems to detect Malaria at point of care areas in worldwide.



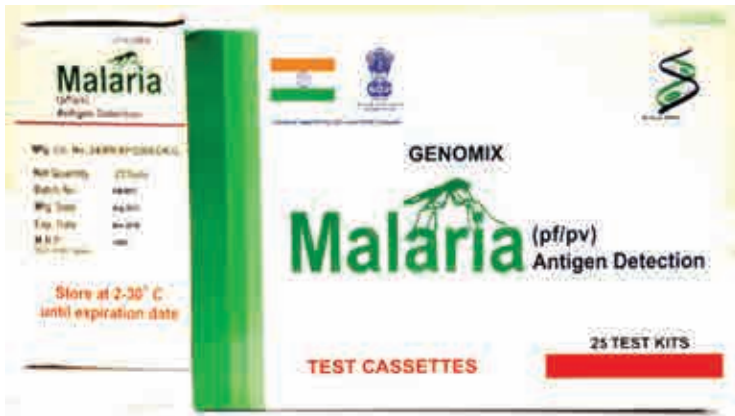
National/ International Relevance

In the global market the value of the proposed kit varies from 2 to 3 US dollars. Currently, the market value is estimated to be \$70 to \$80 million.



Export Substitution

Supplied to Foundation for Innovative New Diagnostics (FIND), Global Malaria Programme conducted by World Health Organization, WHO Malaria Rapid Diagnostic Test (RDT) Product Testing Programme, WHO/HTM/GMP, 20 Appia Avenue, and 1211 Geneva, Switzerland. Malaria RDTs are sold globally. Growth of demand is driven by increasingly larger orders from the African public sector and in endemic countries more over all the regions of India, African and South Asian countries.



Aum Voice Prosthesis



- Aum medical device start up working on area of voice restoration for throat cancer patients and recently invented the AUM VOICE PROSTHESIS
- low cost speaking device for throat cancer patients who have lost their voice to surgical removal of voice box
- People who have undergone Laryngectomy through this device would be able to not only speak again but also find jobs and lead a life of dignity



The device costs \$ 1.00, Rs 3000 with a comprehensive kit



Successfully tested with > 200+ patients



Bangalore currently, all India by April 2019

Product Positioning

Current western devices in market cost anywhere between INR. 25,000/- to 45,000/-. This device (AUM) is made using platinum cured silicon medical grade comes nearly at cost of Rs 50 (<1\$). Throat Cancer patients who have undergone Laryngectomy and are not able to speak due to the expensive nature of current treatment.



IP Status

Filed 4 design and 3 utility patents



Awards

1st Runnerup - DBS NUS SVC Asia - 2018



National/ International Relevance

Patients with throat cancer coming in stage 4 end up losing their voice box because by then the voice box is completely destroyed by the cancer. 80% of our cancers are detected late - stage III/IV, 80% of those hail from poor economic background, 80% of our healthcare is privately run & purchase power parity (PPP) of an average Indian is - <\$2 per day. 10,000 patients in India each year potentially stand to lose their voice box to throat cancer.



Export Substitution

Globally there are 1.5 million patients throat cancer (upto 1/3rd need Laryngectomy) annually.



KEYAR-Portable FHR and Uterine contraction monitoring device



USP

- KEYAR is an affordable, easy to use portable FHR and Uterine contraction monitoring device which also communicates with an intrapartum monitoring mobile application (DAKSH) for digital partograph for low resource healthcare settings
- It is a wearable technology with an Electrode patch with sensors accompanied with a device to read and record uterine contractions and Fetal Heart Rate, Stress etc. The disposable sensor patch sticks onto the mother's belly to read up contractions and FHR
- It also generates alerts in case of complications, based on an in-built algorithm



40,000 INR + tax



40 Pre orders



India

Product Positioning

Aimed at providing affordable and portable CTG to hospitals/clinics/nursing home.



National/ International Relevance

KEYAR provides easier format results while existing device cardiotocography (CTG) uses doppler & pressure sensors to monitor these fetal parameters which requires a skilled health worker to interpret graphical results.



IP Status

2 Patents in India filed



Awards

Best Healthcare Startup Award by healthcare summit 2019



Nasofilters: A Nano-Respiratory Nasal Filter



USP

- Most affordable bio safe nanofibers with its proprietary polymer technology
- First ever non inserted, hypo allergenic and self-adhering nanotechnology based respiratory disposable nasal filters, which sticks to the user's nasal orifice
- Saves daily commuters from the harmful effect of bacteria, viral infections and tiny suspended particles hence avoid respiratory disease, heart problem and lung cancer



Rs. 10/Unit



1 million+ units sold



New Delhi

Product Positioning

Clients are from government, like delhi police, chandigarh police. In B2B we have HZL where we have planted Nasofilters dispensers and Apollo where Nasofilters are available.



IP Status

Patent Published



Awards

"INAE Innovator Entrepreneur Award 2018" by Indian National Academy of Engineering (INAE)



National/ International Relevance

The product provides filtration of not only 2.5pm aerosols but also to bacteria, viral infections and pollen allergies at cost 5 times lower than existing competing products (Global Nasal Filter Report 2017).

Individuals who are outside or exposed to various work environments i.e joggers, walkers painters, in chemical industry, construction workers, bike riders, skiers, fertilizing, crop dusting, exterminating etc.

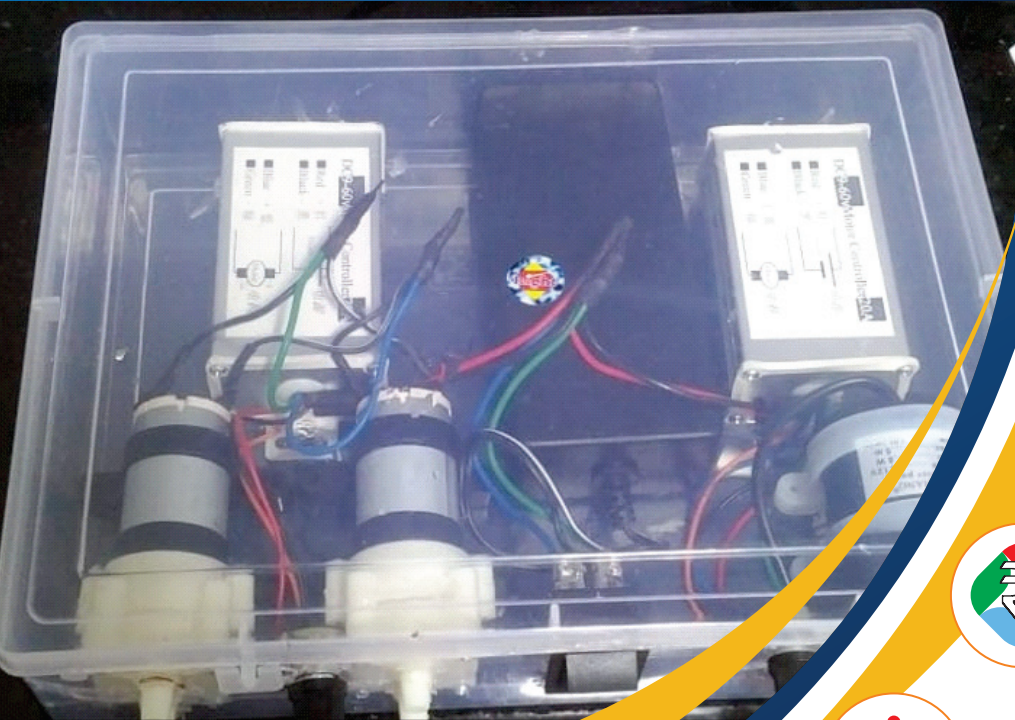


Export Substitution

Started acquiring 500 customers daily and 15% repeat orders online through Amazon and our website.



BacSec™ Integrated Technology platform for Protein Production from E. coli



USP

- BacSec™ Integrated Technology platform for Higher Yield of Endotoxin-free Biologic Protein Production from E. coli
- A proprietary Plasmid using recombinant DNA technology
- A proprietary line of E. coli cells (patent filed) that are genetically engineered to enable 'extracellular protein secretion'
- A proprietary growth media mix to enable 'optimal biomass production' and also enable protein folding
- A proprietary perfusion system - comprised of one magnetic levitation pump, to minimize cell shearing during perfusion and two synchronized peristaltic pumps for feeding the biomass while simultaneously harvesting the recombinant protein



1/10th of industrial scale manufacturing.



In advanced discussion with mid-sized pharma players



Worldwide

Product Positioning

An ideal solution for both established as well as new entrant players in the production of Biosimilars. Wacker Chemie AG of Germany is the only other platform technology enabling extra-cellular protein expression but has limitations over BacSec™.



IP Status

BacSec™ technology is covered by 5 patents (Applied)



National/ International Relevance

Offers 'Higher yields' of ~2 to 3 grams of protein compared to ~0.3 grams in conventional processes.



FlexiOH: Next generation orthopedic immobilization technology.



FlexiOH™

the next generation
orthopedic immobilization technology



short arm cast



splint/slabs

*Absolute washable orthopedic cast/splint
for bone immobilization and sports injuries*

- Washable
- Breathable
- Lightweight
- Easy Application

- Ultimate comfort
- Freedom in daily routine
- Feasible to doctors for application

In Pipeline

- Short Leg cast
- Slabs for lower limbs
- Full arm cast for upper limbs



short arm cast

USP

FlexiOH is (completely) washable, breathable, light weight, safer (prevents skin complications and compartment syndrome), easy application and removal. Suitable for field use



INR 2300-5200



~700+



India (Chandigarh, Mumbai, Bangalore, Mangalore, Surat, Rajkot, Ahmedabad, Vadodara)

Product Positioning

Corporate hospitals, Govt hospitals, Defense, Private Clinics
B2B



IP Status

BacSec™ technology is covered by 5 patents applied for



Awards

Top 10 innovation DST Lock Heed Martin IIGP 2016

CII Top 10 Promising Startup



National/ International Relevance

About 24 out of 1000 people suffer from bone fractures every year and most of them require immobilization (cast/ splint/ slab). This is most advanced technology in immobilization which is having many advantages over existing technologies in orthopedic immobilization. It is completely developed indigenously & has generated 15 full time employment and >20 short term employment with a vision to generate >100 full time employment end of 2020.



Export Substitution

Washable cast are mainly imported from either Korea, USA, Germany, we can substitute those cast with our product. Can be exported worldwide, mainly Europe, USA, Australia and China.



MAXIOTM - Planning and Targeting for CT guided procedures



- An image-guided, physician controlled stereotactic accessory to a Computed Tomography (CT) system, intended for the stereotactic spatial positioning and orientation of an end effector
- An instrument guide to assist in manual advancement of one or more instruments such as rigid straight needles for early diagnosis of Cancer and Pain Management (Palliative and Degenerative pain) and probes for ablation of the Tumor (Thermal, Cryo, IRE, Iodine 125) during CT guided percutaneous procedures

USP



In India approx Rs 1.5 Cr with ablation device.

SOLD OUT

100+ products globally including ROBIO & PIGA



India, China, EU, Russia, Australia, Vietnam

Product Positioning

- Interventional Radiologist and Pain Management.
- Enables consistent quality of outcome irrespective of physician skill level, thus making it possible for patients in smaller towns to be treated successfully.



National/ International Relevance

Global customer base with USFDA, CE, CFDA regulatory approvals to sell in US Europe and China in addition to India.



IP Status

Received 4 US patents and 1 Indian patents



Export Substitution

The product is already exported to China, Europe, Russia and Vietnam. The product can be exported to other countries also.



Awards

National Technology Day Award



"SAMPOORTI-POORTI system- post-surgical prosthetic rehabilitation of mastectomees



USP

- SAMPOORTI-POORTI system – An empathetic, holistic and affordable physical trial based system for post-surgical prosthetic rehabilitation of mastectomees to help restore their confidence, dignity and femininity
- Sampooriti – A mobile and concise suitcase comprising of prosthesis of different sizes and pocketed bras of different sizes with prosthesis covers
- Poorti – a user-centric holistic post-mastectomy kit (comprising of a light weight silicone breast prosthesis and accessories)



Rs. 4500 to Rs. 6750 (based on size) to the end user inclusive of 12% GST and shipping charges



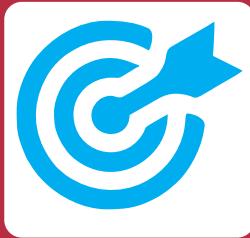
1200 sales + 600 pre-order



India – States: Punjab, Uttarakhand, Gujarat, Tamil Nadu, Delhi-NCR and Cities: Meerut, Bareilly, Agra, Pune, Bhubaneshwar, Kolkata, Mumbai and Bikaner

Product Positioning

- B2C, B2B The cost of full kit comprising of a light weight prosthesis and all accessories is less than one third the cost of an imported light weight prosthesis alone.
- Breast-cancer survivors also deployed the Sampoorti-Poorti system in various states in India & other countries.



National/ International Relevance

Breast cancer is the top most common cancer affecting women all over the world with 16,71,000 new cases being reported per year globally and India alone harbours almost 10% of this disease burden with 1,62,468 being added to the list of existing patients every year (Globocan, 2018).



IP Status

Patent for manufacturing process granted.

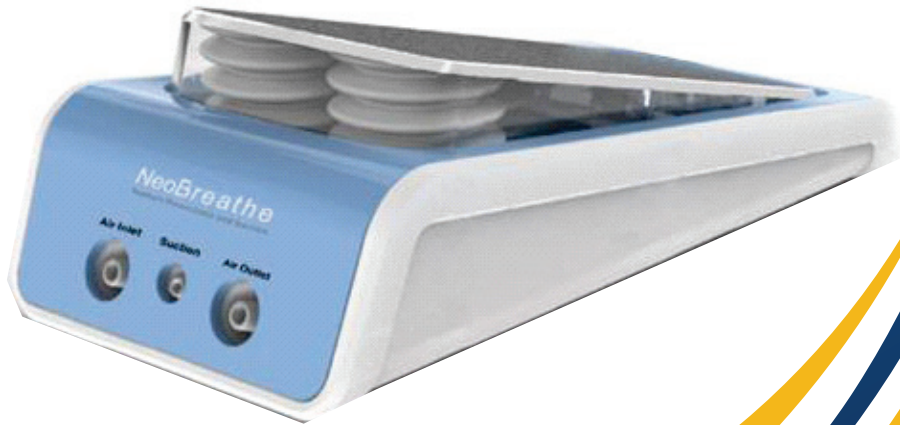


Export Substitution

Catered to patients from Nepal, Bangladesh, Sri Lanka, Russia and Africa.



NeoBreathe- A newborn resuscitator



USP

- NeoBreathe is a foot driven, easy-to-use newborn resuscitator, specifically designed for frontline unskilled health workers
- It enables a single person (instead of two) to resuscitate a newborn effectively
- NeoBreathe integrates multiple functions essential for resuscitation into a single robust, reusable, manual device that needs no batteries or electricity



INR 25,000/-



150+



Commercially available for sale in India, Africa, South America and other regions depending on local law

Product Positioning

- It can be deployed in PHCs/Hospitals
- Intense multi-tasking is required in the first 5 minutes of life if the baby is to be saved.
- Salient features include enhanced pressure safety, pressure monitoring, Positive End Expiratory Pressure and the ability to deliver regulated amounts of oxygen – as opposed to blindly delivering 100% oxygen which can be toxic. NeoBreathe is a foot operated resuscitator. The freed hand also allows more effective multi-tasking.



National/ International Relevance

Ten percent of all deaths under 5 years occur due to birth asphyxia or simply - failure to breathe at birth (estimated 200,000 annual deaths in India alone and Estimated 800,000 globally).



IP Status

Filed patents in India, US, Europe



Export Substitution

Opportunity regions: Africa, South Asia, South-East Asia, South America.



Awards

National Award for Commercialization of Indigenous Technology from Hon'ble President of India 2017



YeggMore Omega- An Avian Feed Additive



Omega 3 Fatty acid enriched with
Silkworm pupa oil and de-oiled cake

- YeggMore Omega- An Avian Feed Additive for the production of omega 3 enriched Designer Eggs
- The product aids in increasing egg production, reducing shell breakage, enriching eggs with omega 3 fatty acids and essential nutrients
- It comprises of a unique combination of omega 3 fatty acids from silkworm pupae, carotenoids, herbs, micro and macro nutrients in chelated form
- During the trial in various poultry farms it has resulted in an enrichment of omega 3 in eggs from 40 mg to 240 mg

USP



The table eggs produced are priced 40% lesser than the existing once in the market



10 tons



Available in Karnataka, Andhra Pradesh, TamilNadu, Telangana & Kerala.

Product Positioning

- B2B
- The current products could be a major substitute for fish, krill etc. This technology produces Table Eggs enriched with Omega 3 fatty acid from silkworm pupae which is at least 40% cheaper.



IP Status

Two Indian Patents filed: Patent numbers: 201941001259 & 201941001262



Awards

Global Winners in the Waste Beneficiation Category of the Global Cleantech Innovation by UNIDO and Cleantech Global.



National/ International Relevance

Marine organisms are tending to be limiting in terms of cost, supply, purity (marine sources often report high levels of heavy metals e.g. mercury and other contaminants (dioxins, chlorobenzenes, etc.).

Around 26000 MT of silkworm pupae is discarded annually in India and if this could be utilized judiciously can cater to the Omega 3 fatty acid need of around 9 million infants and lactating women in India at as per the Recommended Daily Allowance (RDA) by WHO.



Export Substitution

It is a substitute for import/export of other sources of Omega 3 Fatty acids like fish, krill, flaxseed etc.



****This is a zero-waste technology which does not use any solvent or chemicals**



XanSil™ for prevention of bacterial blight of pomegranate



USP

- Product is useful in
- Drying of diseased spots & Prevention of cracking of fruit
 - Causes reduction in costs of disease mitigation (15–35%)
 - 10–100 Times ROI (based on saving in crop loss)



Rs 970 – 1090 per acre per application



15000+



Dispatched from Pune
H.O. as per order

Product Positioning

To farmers for Disease prevention & reducing stress on the plants.



National/ International Relevance

Farmers across India lose on an average 30% of the crops because of diseases. If the season is bad the risk is as high as 90%. We de-risk the farmers by providing preventive, cost-effective, organic products. It is a non-toxic product provides ecological, nutritional and financial benefits.



IP Status

PCT International Application No.
PCT/IB2017/055157



Export Substitution

Product is a good substitutes to toxic chemicals.

Immediate export opportunity in AFGANISTAN.

Swasti Agro has also formed 100% subsidiary in East Africa.



Hybrid orchids (of Indian Origin)



USP

- Kwaklei and Khonggunmelei Orchids Pvt. Ltd. has been focusing mainly on synthesis of new hybrid orchids using potential parents available in India, particularly in the northeastern states
- Elite genotypes of the already synthesized hybrids have been selected and propagated clonally
- So far, more than 50 primary as well as secondary orchid hybrids are developed



Rs. 25-200 per plant based on the size and quality of the plant. Larger and flowering plants will cost more (> Rs 500/- per plant)

SOLD OUT

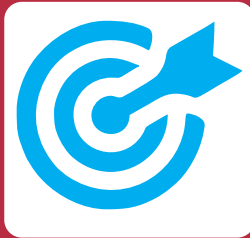
500+ plants till now



At Imphal, Manipur India

Product Positioning

- B2B, B2C
- Major target customers are the Indian orchid cultivators and the tissue culture laboratories that do commercial micropropagation.
- Our orchids will be more suitable in the different agro-climatic conditions in India for cultivation, than those imported ones.



National/ International Relevance

There is the 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.



IP Status

Registered 10 hybrid orchids



Export Substitution

India can also be an exporter of good quality orchids to Europe, Middle East and America.



Awards

Dr Th. Ibeyaima Innovation Award, 2018
(State Award, Conferred by Manipur Science and Technology Council)



Dextrasol- A Dextran Solution



USP

- In sugar production Dextrans are undesirable compounds synthesized by contaminant micro-organisms from sucrose, causes processing problems like increased juice viscosity, poor clarification, and crystal elongation
- Some bacterial strains, filamentous fungi and a small number of yeasts have been shown to produce dextranase
- Dextrasol hydrolyses the dextran which alleviate the processing and product quality problems



Rs 1450/kg



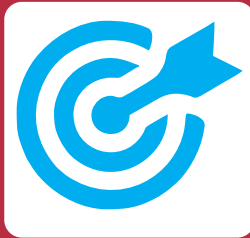
95 MTs



Directly supplied
from plant to end user

Product Positioning

- B2B
- Indian and overseas sugar industry



National/ International Relevance

This technology would be based on locally available raw materials and resources with no environmental load.

Indigenous dextranase has the potential of bringing cost saving of approximately Rs 1000 crores annually to the nation on an estimated crushing of 250 million tons of sugarcane.



IP Status

Patent applied



Export Substitution

We are exporting Dextrasol in Vietnam, Thailand, U.K, Russia, Czech Republic and Uganda.



Ricela- Cattle Feed Supplement



USP

- Ricela cattle feed supplement is tailor made from byproduct of rice bran oil refining
- It is proved significant for its utilization as feed ingredient by NDRI Karnal
- It incorporates the benefits of phospholipids along with source of fat with calcium as carrier. The product is helpful in fulfilling the energy demand, increases the milk production & improves health of the cattle



Around Rs.40/kg packed in PP bags
and Rs. 47/- packed in Fibre Drums



~ 43 tons



Punjab.

Product Positioning

The product is claimed to be unique for the Indian Market & also has global market potential as a fat source ingredient in Cattle feed.



National/ International Relevance

The product has the potential to lay a good foundation for the development of the secondary agriculture led products which will in turn boost agri-economy of India. It is a value addition to the low value byproduct of refining process which has a great potential to serve as a cheap yet nutritious ingredient for cattle feed industry.



Vibrioshield: An antimicrobial preparation for Vibriosis



USP

- VIBRIOSHIIELD is an all-natural, non-chemical antimicrobial preparation for controlling the Vibriosis
- The active ingredients of VIBRIOSHIIELD are naturally occurring bacteriophages that selectively and specifically kill *Vibrio harveyi*
- VIBRIOSHIIELD is loaded with high concentrations of potent bacteriophages that can eliminate *Vibrio harveyi* from the culture ensuring higher yield and profitability



Rs. 7000 per kg



7000 kgs



India, Thailand

Product Positioning

VIBRIOSHIELD is highly useful for Bacteriophage based product for vibriosis in especially in aquaculture hatcheries



IP Status

Patenting in progress



Awards

National Technology Day Award



National/ International Relevance

Asian countries like Taiwan, Indonesia, Thailand and India have emerged as global leaders in shrimp production. Outbreak of diseases, caused by *Vibrio* spp causes a major setback in aquaculture, & considered a significant problem to the development of this sector with severe economic losses worldwide. Bacteriophage therapy is most preferred over the use of antibiotic due to risk associated i.e. residual traces of antibiotic & development of antibiotic resistance in most of the *Vibrio* spp. It increases the shrimp production by avoiding loss due to vibriosis thus increase in export revenue.



Export Substitution

Major potential countries are Thailand, Indonesia, Vietnam, Philippines, Bangladesh, Ecuador, Mexico, Saudi Arabia,



PCR kits with internal control for shrimp viruses WSSV, YHV, TSV and IHNV



Single tube nested PCR kits for the notorious viruses i.e WSSV, IHNV, TSV and YHV. It includes:

- Single tube nested PCR kit for WSSV with Internal control
- Single tube nested RT-PCR Kit for TSV with Internal control
- Single tube nested RT-PCR Kit for YHV with Internal control
- PCR kit for IHNV with Internal control



Rs. 58000 per 200 tests



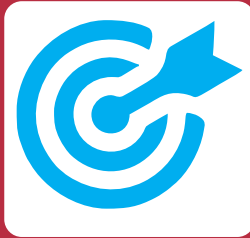
45



India

Product Positioning

The shrimp industry is export oriented and the farmers are aware of the use of PCR techniques for early diagnosis of viruses. There is great need for indigenously developed kits for these viruses.



IP Status

2 Patents filed



National/ International Relevance

At the time of launch of this product labs which were using only imported kits, now claimed to have switched over to these kits.



Export Substitution

In aquaculture industry.



Trypsin Clearance Assay- ELISA Kit



USP

- Unique monoclonal and polyclonal antibodies against trypsin enzyme that are resistant to auto catalysis by the protease enzyme
- Typically used in Insulin manufacturing for monitoring any residual trypsin enzyme
- It has many other industrial applications such as immunomatrix for purifying trypsin, prenatal diagnostic kit for measuring immunoreactive trypsin



Rs 25000-50000 per ELISA kit



400+ kits



Bangalore

Product Positioning

- B2B
- Insulin manufacturing companies aiming diagnostic markets in future



National/ International Relevance

The product is customized to meet client and regulatory expectations.



Export Substitution

Only able to cater a very niche market (Insulin manufacturers) with only few clients in India.



Stackable Shaker - Orbitek® - LE 4676



- Stackable Shaker -Orbitek® - LE 4676 in 2012 to facilitate large scale production of microbial/animal/plant cells by simulating the best possible conducive environment
- Stacked unto 3 high Individual Temperature and SPEED CONTROL for each shaker
- Swing down front open door and slide out universal platform enable convenient access
- Full SS Inner chamber, PLC based touch screen operation, Speed range up to 400 RPM and amplitude 25mm/50(optional) & Upgraded to hold 6 Litre capacity flask

USP

650000 per unit



202 UNITS



PAN India and Finland, Italy,
Germany, Italy, Japan, Vietnam,
Malaysia, Bangladesh

Product Positioning

Price is only 60% of imported Brands
Target market: Life sciences & Biotechnology



National/ International Relevance

First Indian manufacturer of Stackable Shaker.

The products is used in vaccine /bio fertilizer manufacturing industries, which will result in cost effectiveness of agricultural input products and healthcare products to the society.



IP Status

None



Export / Import Substitution

World over & developing and neighbouring countries.



GOpure™ Anytime –Anywhere Water Disinfection




USP

- GOpure™ disinfects water via pure form of chlorine dioxide (CD)
- GOpure™ is the only portable CD releasing technology in India that disinfects without contaminating the product water with hazardous disinfection by-products or reactants
- Supplied in kits, each contains one canister and 70 sets of precursor and activator A and B. In single batch (1 set of A and B), one can treat 300-2000 liters of water within 10-30 min
- The kit is provided with neutralizer for environmental friendly chemical waste discard



<5p/liter



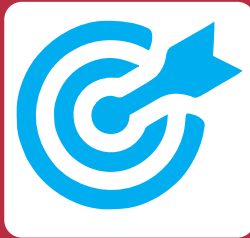
41, 500



Mumbai, Delhi, Chennai

Product Positioning

Safe, Easy, Economical useful in Municipal and Industrial water treatment



IP Status

Indian Patent granted. PCT applied



National/ International Relevance

Globally, 1 in 9 people lack access to safe water & waterborne diseases are responsible for 2 million deaths each year, with the majority occurring in children under 5. WHO estimates that one tenth of the global disease burden can be achieved by improving water sanitation and hygiene. In India alone , 21 % of communicable diseases are linked to unsafe water and the lack of hygiene practices.

The Govt of India, US FDA and EPA also approves CD for drinking water disinfection.

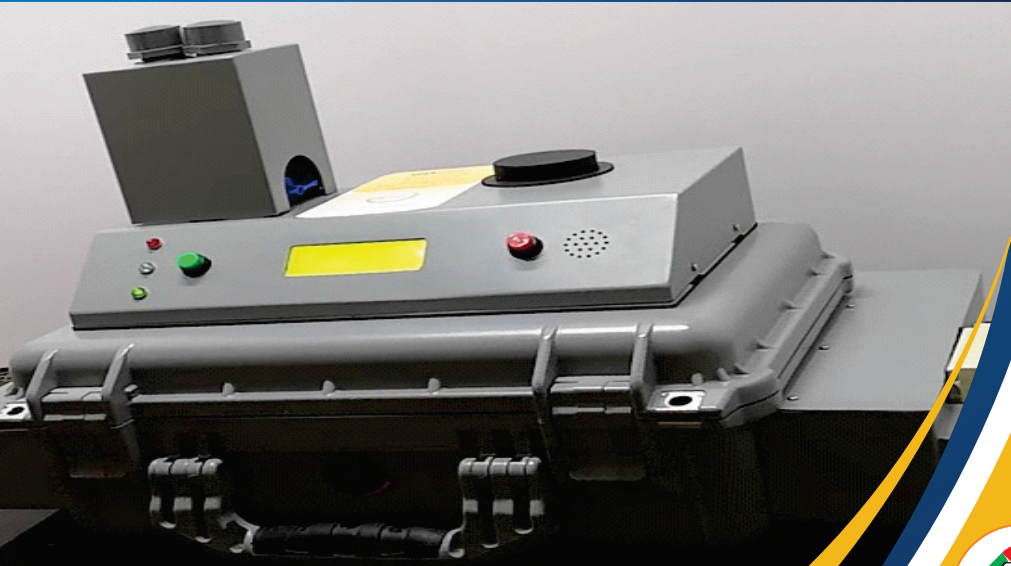


Export Substitution

Majorly in Africa and other developing nations.



GOsteri Anytime-Anyplace sterilization of surgical instruments



USP

- GOsteri is a no power/no steam requiring sterilizer for surgical instruments
- It is based on MicroGO's patented platform Tubelet™ that releases surgical sterilant that is used for sterilization
- It is portable, easy to use and can perform sterilization on the go in any resource limited settings



11.00 INR (0.16 USD) per cycle



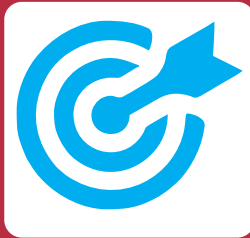
Ready for deployment



India

Product Positioning

Any place surgical sterilization, PHCs | Ambulances | Disaster response



IP Status

Patent granted for the platform on which GOsteri is based.



National/ International Relevance

Global healthcare need access to safe surgical sterilization. Inadequate sterilization also contributes to the spread of HIV and other diseases.

With 70% of our population in rural areas we need a field deployable, portable, reliable, durable, affordable, non-steam equipment that can perform surgical sterilization even in scarce resources.



Export Substitution

African continent and other developing nations.



Smart stethoscope: AyuSynk



USP

- AyuSynk converts conventional stethoscope into Digital stethoscope
- It enables amplification, recording, sharing and analysis of heart and lung sounds for early detection of heart and lung diseases
- Modular attachable device, preserves look and feel of the conventional stethoscope



- AyuSynk (Bluetooth version) - 14,000 INR
- AyuLynk (Wired version) - 12,000 INR



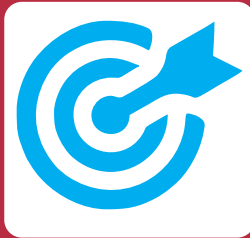
460 units (Including 100 units to the Government of Maharashtra and 20 units to Bhavnagar Zilla panchayat in Gujarat state)



India

Product Positioning

Telemedicine or digital health platforms, Physicians, Medical students, Government for PHC



IP Status

Patent published



Awards

Winner of AIT Prize held at Zurich, Switzerland,

Top 2 in Healthcare segment of Vibrant Gujarat Startup summit



National/ International Relevance

Heart and lung diseases have become the top causes of death in India, accounting for 2.8 million deaths annually (2015 data).

The structural abnormalities in heart valves and defects characterized by heart murmurs cannot be detected by electrocardiogram (ECG). This device can be used as cost-effective and accurate detection of cardiac and pulmonary illnesses. This device provides the ability to convert existing stethoscope to smart by adding just adding an attachment.



Export Substitution

Export opportunity regions: Africa, South East Asia.



National Biopharma Mission



Industry-Academia Collaborative Mission for Accelerating Discovery Research to Early Development For Biopharmaceuticals –
Innovate in India (i3) Empowering Biotech Entrepreneurs & Accelerating Inclusive Innovation

Launched the
**National
Biopharma Mission**
with the World Bank

**Enhancing India's
Biopharma development
capabilities by**

**Strengthening the
biopharma product
development value chain**

- Creating sophisticated high end infrastructure
- Supporting skilled human resource development

**Developing indigenous
& affordable
biopharma products**

- 5 indigenous vaccines
- Clinical development of 3 biosimilars
- Core medical technologies for 3 priority products

IMPACT

- Affordable products
- Public health impact
- Increase in market capitalization
- SME support for current and future products
- Increased translation capacity for academia
- Outsourcing and Service Industry
- Next-generation technologies
- Global network of experts
- Improving clinical capacity
- Developed mass of critical talent
- Economic and manpower sustainability
- Enhanced translational capacities

PROPELLING THE BIOPHARMA SECTOR

National Biopharma Mission's Mandate is to address the largest gap in Biopharma Sector, which is Lab to commercial scale manufacturing of Biopharmaceuticals.

The mission is funding Shilpa Medicare Ltd. Biologics Unit, Dharwad, Karnataka, to set up a pilot biologics cGMP facility to cater to Clinical Drug Substance and Drug Product requirements of customers for human clinical trials and early commercial batches, and a 2000 sq.ft. Centre for Advanced Protein Studies (CAPS) in Syngene's campus at Bengaluru.

The cGMP facility will have 1x200L disposable mammalian bioreactors with option to run perfusion process along with one downstream facility that ensures optimum capacity utilization. The Analytical facility at Syngene will host a state-of-the-art GLP accredited analytical laboratory having an entire range of advanced analytical equipment under one roof.

Services offered from the NBM-BIRAC funded cGMP manufacturing facility are -

- Pilot GMP (Upto 200L) batches for mammalian cell culture derived API
- Pilot Fill – finish batches
- Non-GMP and GMP Stability data generation
- Regulatory dossier support



cGMP Manufacturing Facility at Shilpa Medicare Ltd.



CAPS Facility will provide an in-depth characterization support for various biotherapeutic molecules. Characterization services include:

- Assessment of physiochemical characteristics
- Functional assays
- Immunogenicity (antidrug-antibody), contamination, strength and more



GLP Analytical Facility – Syngene CAPS Facility



THE DIFFERENCE:

- Differential subsidized fee services for Biopharma start-ups, SMEs and researchers for the above services
- Advancing technical skill development to global standards, by conducting various trainings and workshops involving eminent subject experts
- A governance model in place

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MAKE IN INDIA



**Biotechnology Industry Research
Assistance Council**

(A Govt. of India Enterprise)

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