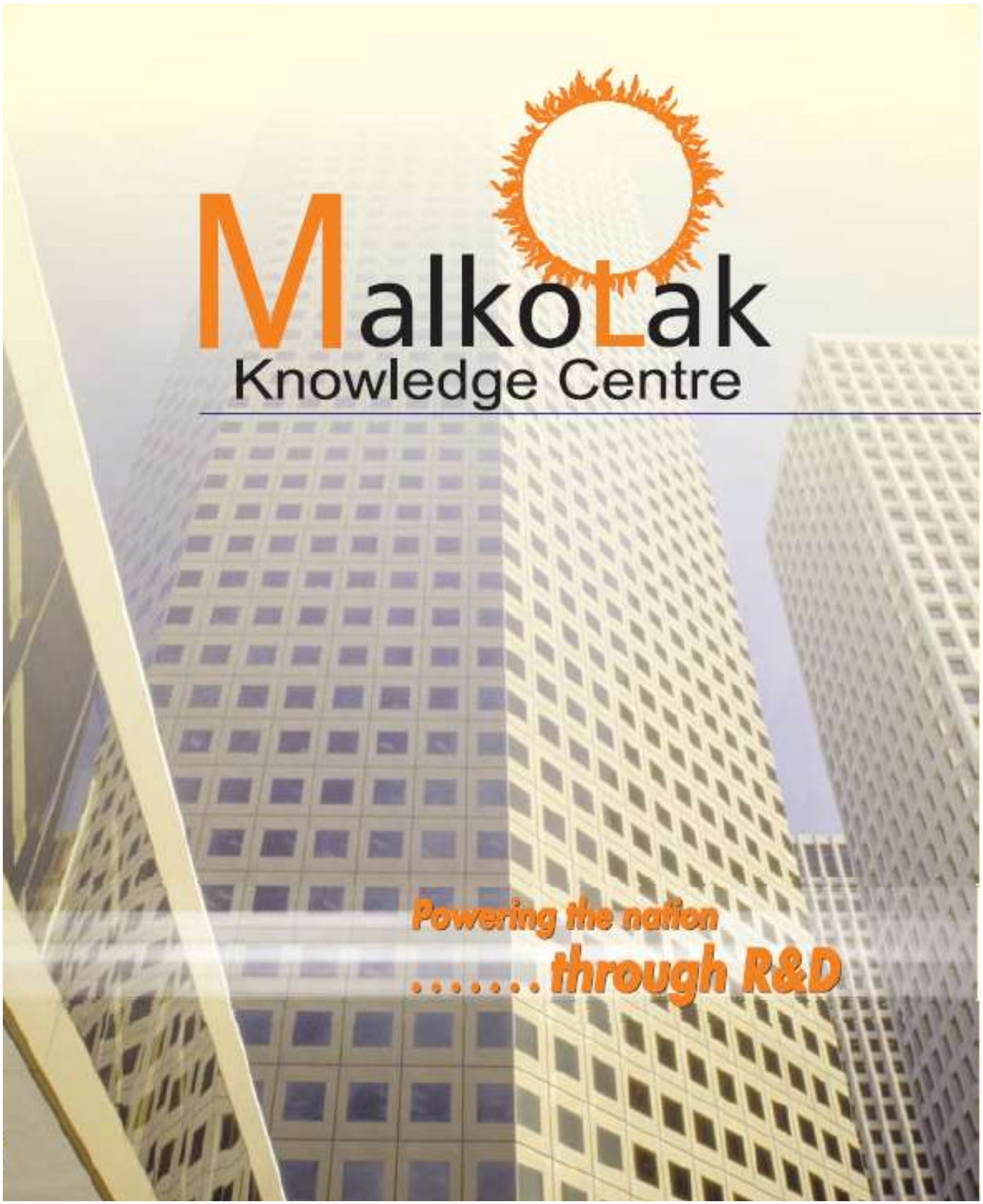
MalkoLak
Knowledge Centre
Powering the nation
.....through R&D

THE CONTEXT

The vision of Malkolak is to evolve a Knowledge Centre as the world's premier research organisation, providing new methods and technologies for building a strong research base in frontier technologies, develop tools, methods and processes in the application of knowledge so as to derive accelerated results in collaboration with various institutions, industry, businesses and academia.

The Institute has visualised a framework that draws in people with ideas, as well as capability in areas of cutting-edge technologies, while serving as a hub for collaboration in knowledge creation, innovation and technological breakthroughs. The central objective is to satisfy the felt needs of scientists, experts, industrialists and entrepreneurs in the pursuit of technological advancement for the benefit of the society and development of the nation.

ABOUT MALKOLAK

Malkolak Knowledge Centre (Malkolak) is a registered Trust formed in March 2005 promoted by a strong team of professionals with proven experience in different domains of knowledge, with several distinctive achievements to their credit. They are committed to this effort, with a Mission and clear commitment to realise the strong potential that exists to match knowledge and opportunity in India and abroad, to realize enormous wealth in Frontier areas. The Trust has members who worked both in the public domain and private sector at the higher echelons and gained vast experience in various fields. Sharing a common dream, the founders of the Trust conceived this knowledge centre as a catalyst institution. The knowledge centre focuses primarily on research and development in various frontier areas of technology and also humanities and social sciences.

VISION

To give fillip to research and development endeavours into certain frontier technology areas, aims to bridge gaps in research and development in the country today.

MISSION STATEMENT

To realize the strong potential that exists to match knowledge and opportunity in India and abroad, to realize enormous wealth in frontier areas.

PURPOSE

To undertake advanced research, training, consulting and information services in areas through-

a. Innovation
b. The advancement of knowledge
c. Collection and dissemination of information
d. Development of transfer of processes and technologies.

ACTIVITIES

The mission of the Institute will be accomplished by

- Research and Development
- Pursuit of programmes of Education
- Technology Transfer
- Advanced Training
- Establishing linkages between Government, University, Research Laboratories and Industry
- Concentrating on Export Product/Services and providing turn-key consultancy.

OBJECTIVE

The main objective of the Malkolak Knowledge Centre is to give fillip to research and development endeavours into certain frontier technology areas, to develop tools, methods and processes in the application of knowledge so as to derive accelerated results in collaboration with various institutions, industry, businesses and academia.

The objects for which this trust is established are:

- To devise and conduct programs to promote academic, research & development and consultancy activities and for this purpose to educate, train, foster and develop intellectual, moral and scholastic talents among students / scholars in India and abroad.
- To establish and maintain:
  - Training, evaluation, research and development institutions for the purpose
  - Scholarships for merit and ways and means of the students of such institutions
  - Earmarked funds for financial assistance to needy teachers of such institutions and their families.

- To strive to provide placement services to talented and eligible students / scholars, for them to be gainfully employed.

- To establish different wings / units within the centre, and chapters at regional, state, national and international level by providing affiliations.
- To conduct academic and research exchange tours, campaigns, festivals, talks, meets, presentations, demos, seminars, road shows, exhibitions, expos etc. Solely or jointly with other academic and research / other institutions in India and abroad.

AREAS OF FOCUS

The School of Innovation for analytical sciences will focus on emerging processes and technologies in areas such as

- Space Sciences
- Biotechnology
- Marine Biology
- Macatronics and Robotics
- Nanotechnology
- Pharmaceuticals/Nutraceuticals/alternate medicine
- Simulation and modelling.

OUR STRENGTH

At present, Malkolak Core team comprises of a committed pool of resource persons, scientists and researchers involved with the activities in specified areas of study. Apart from full time team in place, we take guidance and intellectual support from many distinguished and eminent individuals and scientists both from India and abroad. Malkolak has a considerably good network of scientists both from India and abroad from different emerging areas of Science and Technology such as Nanotechnology, Biotechnology, Space technology, Medical fields etc.

The Malkolak team has been guided by members who are committed themselves to see India as a developed country. The trust has members who worked both in the public domain and private sector at the higher echelons and gained vast experience in various fields. Their efforts are crucial in molding this centre which will strive and contribute for the development of the country and society.

Malkolak Knowledge Centre

Malkolak Core team comprises of

1. Smt.P.Ch.Sita Devi, M.Sc(Physics) with Electronics & PGDCS from University of Hyderabad, M.B.A(HR) from IGNOU, New Delhi.
2. Smt. Neeti Dixit, M.A. (History), B.Ed, PGHRD, M.Sc (Ecology & Environment), SMT University.
3. Ms.Vanaja Sunkam, Ph.D (Biochemistry) Indian Institute of Chemical Technology, Hyderabad, A. P., India.
4. Dr.Y.Bala Murali Krishna, Senior Journalist(S&T/Media/Development Communication), UNI based at Hyderabad.
5. Shri Vishwakiran Yanamandra, M.Sc.(Marine Biology) and M.Sc.(Bioinformatics) with over 14 years of experience in Aquaculture, CADD, Zebrafish research and pharmaceutical sciences.
6. Mr.Subhajit Basu, PhD Scholar from University of Goa.

At present, a committed pool of resource persons, scientists and researchers are involved with the activities of Malkolak Knowledge Centre in specified areas of study:

1. Dr.S.K.Bakshi, Ex-Dep. Director, Indian Institute of Integrative Medicine (CSIR), Jammu, Jammu & Kashmir.
2. Dr. Anil Chatterji, Marine Biologist, Government Research Institution, Kuala Terengganu, Malaysia.
3. Dr.Swapna Priya, Plant Pathologist.
4. Dr.V.S.Krishna Murthy Chennubhotla, Former Principal Scientist, Central Marine Fisheries Research Institute (ICAR) Cochin, Head of CMFRI Research Centres at Minicoy Island (Lakshadweep) and Visakhapatnam (Andhra Pradesh).
5. Dr.R.C.Panigrahy, Professor in Marine Biology, Dept. of Marine Sciences, Berhampur University.(Orissa).
6. Dr.Satyanarayana Behera, Marine Scientist from Belgium.

ACADEMIC PROGRAMMES

a. **Ph.D Programmes**
b. **R&D**
c. **Advanced Training Programmes**

The four main constituent units visualised are:

a. An Innovation Laboratory
b. An R&D Incubation Centre
c. A Learning Centre
d. A Commercialisation Centre.

The key drivers of growth and development will be

- To attract people with visionary ideas, passion, and potential.
- To survey and identify the technological requirements of industry in high end sectors.

OPPORTUNITY

Business related aim of the Institute is to establish more state-of-the-art research facilities in India or abroad either on its own or in strategic partnerships with other collaborating organisation(s), to carry out basic and applied research to develop processes of manufacture and/or synthesis and branded products for domestic and export markets.

The focus is on emerging technologies and processes in the representative but not exhaustive sectors of drugs and pharmaceuticals, biotechnology, information and communication technologies, microelectronics, nanotechnology, environment and ecology, aero-space, earth and ocean sciences etc. Other areas include pre-clinical and clinical R&D for drug discovery and development, education and training and other extended activities in pursuit of its business plans to cater to both its own requirements and those of other client organisations in India and abroad.

With the kind of statistics in relation to the higher education facilities and drive of the Indian youth to further their knowledge in diverse areas combined with the cheaper acquirement cost of the research scientists in comparison to any other country in the world keeping the quality in perspective the project proposal is a 'now or never' opportunity.

- Open up research opportunities for post graduates in the phase wise specified areas "Research Gap" areas with a stipend or apprentice fee to encourage more higher education students to take up research in areas of national & international importance – this will be an "Academic Research Centre" from where the research scholars finish their basic research successfully with a product / service / formulation / knowledge capsule which can be transacted with a prospective client or with the model of 'Research for the client'. The successful scholars will then be provided an opportunity to further their research in the relevant areas in an advanced application areas with a full time salary & perks for post

doctoral work in the areas of the centers & its clients interest. – the centre will be "Application Research Centre.

- Organizing focus area specific "International Seminars & Conventions for Scientists" to promote Malkolak & Indian Research with government as a partner.
- Developing research specific curriculum designed for institutions of higher education colleges to produce continuous stream of prospective scientists for the country.

METHODOLOGIES

- Innovate new avenues, tools, methods and processes in the application of knowledge so as to derive accelerated results.
- Collaborate with various institutions, industry, business and academia.
- Gather and disseminate knowledge among the competent entities so as to evolve as a global body of knowledge in various frontiers contextual to local and international arena.
- Transfer and share the processes and technologies so innovated towards creation of wealth.

REVENUE CENTRES

Primary

- Research Process Outsourcing from Internal / External Agencies (Govts/ Univs / Business Houses).
- Partnership / Alliance fee for Scientist Outsourcing or Contracting
- International Conventions – Sponsor Fees / Promotional Revenue
- Consulting / Training
- Patenting & Product Promotion through incubator organizations

Secondary

- Partnership / Alliance fee for Space / Lab / Equipment Usage / Facility Usage
- Doctoral Admissions
- Publication Revenues
- Proposed Partners & Concept Supporters: Government of India – Dept. of Science & Technology & many other National and International Institutions.

PROJECTS ON HAND WITH MALKOLAK KNOWLEDGE CENTRE

1. Mutant Phage Library Technology for rapid diagnostics: Mutant Phage Library Technology for rapid diagnostics of pathogenic Saureus strains: The concept of fast diagnosis requires the development of appropriate instrumentation that will enable to process the diagnostic sample in field conditions. It is possible to develop a device that can handle practically any diagnostic sample, and that can be used for the diagnosis of practically any pathogen (i.e.. bacteria, viruses, immune sera, toxins etc., Evaluate the above described mutant phage library technology to classify Staphylococcus aureus strains according to their clinical and epidemiological pathogenicity. Bacterial isolates are obtained from extensive field surveys. Pathogenic characteristics will be established on the basis of inflammatory response in the host (somatic cell counts) and antibiotic susceptibility pattern of the isolates.
2. Commercialization of anti-viral compounds - New Lead molecules for Malaria

   The crude extract prepared by the enzyme-acid hydrolyzing process from a marine organism showed initially a potent anti-malarial activity, at least when examined for in vitro cultures of Plasmodium falciparum in human erythrocytes. This led to an effort towards isolating and characterizing the molecular entity(ies) responsible for anti-malarial activity. An activity-guided fractionation strategy was followed in present research where a variety of chromatographic steps were employed. These included HPLC using a range of columns (hydrophobic, selective absorption, ion-exchange etc.), preparative thin layer chromatography, selective derivatization and gel filtration chromatography. Selective enrichment of activity was monitored at every step using P. falciparum culture for in vitro studies. This effort has resulted in eventually identifying two compounds that independently showed anti-malarial activity. This was followed by structure elucidation of the chemical structure of these two compounds. The elucidated structures were also independently validated and found potent.
3. Biosensor to determine potassium concentration in human blood serum-The present invention relates to the development of a biosensor to determine potassium in human blood serum using dibenzo-18-crown-6 (DB18C6) as ionophore. Human blood serum contains potassium in ppm levels i.e 137 to 200 mg/litre and sodium co exists with a 30 times higher concentration. Such a high concentration tends to interfere the selectivity towards potassium, but DB18C6 proves to have an excellent selectivity towards potassium and is highly sensitive to the lowest concentration of potassium levels present in the human blood serum. So the present invention reports the fabrication and characterization of ISFET (Ion Selective Field Effect transistor) coated with a monolayer of crown ether, dissolved in chloroform, on the gate of electrode.

4. **A novel potentiometric cholesterol sensor for the quantitative estimation of total cholesterol in human blood serum - The present invention provides a novel sensor for the estimation of total cholesterol in human blood serum using molecular imprint of cholesterol. Human blood serum contains 150-250 mg/dl cholesterol. The present invention provides a sensor device and a process for the fabrication of ISFET (Ion Selective Field Effect Transister) coated with molecular imprint of cholesterol on the SiO2 + Si3N4 dielectric gate of the said electrode. The molecular imprint of cholesterol (MIPC) anchored on to a silica matrix sensing material is identified as a sensing material which has specific selectivity towards the cholesterol in presence of other organic constituents in human blood serum.**

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RESEARCH CENTRES UNDER MALKOLAK

A. MALKOLAK INSTITUTE OF MARINE STUDIES in Goa-to take up advanced research for developing products which have high industrial value – led by a marine biologist of international repute presently teaching in Malaysia having many patents to his credit. The Mission is to drive the fields of science, technology and management of aquatic natural resource through generation of excellent academic and research programs towards the development of the leaders of the world needs who ensure the sustainability of society and the nation.

OBJECTIVES

- To accomplish graduate, post graduate and Ph. D. programmes in core and emerging disciplines of the Marine Science and Technology
- To promote and co-ordinate educational and research programmes and its application in Marine Science and Technology
- To carryout basic and strategic researches in frontier areas of Marine Science and Technology
- To provide, undertake and promote consultancy services in the fields of education, research, training and dissemination of information in Marine Science and Technology.
- To disseminate research and general information relating to Marine Science and Technology through publications and information system, and instituting and promoting transfer of technology programmes for the benefit of the society.

The main purpose of this institute is to integrate various disciplines related to marine research where young researchers will be produced with vast knowledge of these disciplines. These programmes will be supported by many reputed scientists and academia which is going to be the first attempt of its own kind in India. The institute is developing linkages with national and international organizations where our young and highly trained personnel will get opportunity to join these organizations.

PROJECTS PLANNED

Project Title: Implementation of a conservational programme for the protection and sustainable utilization of Indian horseshoe crab along the coast of Orissa

Scientists world over started evincing keen interest in studying the horseshoe crab in all aspects as it is likely to unlock the secret of its longevity for millions of years without any change in its physical structure, genetic resistance to deadly marine bacterial attacks, and even its capacity to self-regenerate severed organs.

The scientists, with the help of Malkolak, had designed the horseshoe crab project to bring about awareness among the fishermen of the Jamboo Island to start with and other villages later, on the need for conserving the horseshoe crab using local resources. The research taps into tremendous potential for spectacular scientific breakthroughs that could rewrite the pages of medical history in finding cure for AIDS, Cardio Vascular diseases and Diabetes, leave alone defence and other strategic applications from horse shoe crab.

Project Title: Isolation and purification of heparin from fish waste

Heparin, a well known saulfated polysaccharide with potent anti-coagulant and anti-lipaemic actions, has been used clinically for the past 50 years. Sulfated polysaccharides provide a broad biochemical interest, because of their wide occurrence in animals and plants and due to their biological activities as blood anticoagulant and connective tissue stimulant.

Research Approach

Fish wastes will be collected from the different fish landing centers and transported to the laboratory for further analysis. The appropriate tissues or portion will be selected for the extraction of heparin following the standard method of Holick et al. (1985). The sample will be purified using sequential purification scheme. The metachromatic and anticoagulant activities will be assessed as per the method of Grant et al. (1984) and USP method (1996) respectively.

Project benefit

Heparin has widely been used as medicine for the society due to its anticoagulant, anti-thrombotic and anti-lipaemic properties. Considering the global demand and short supply of heparin, the isolation of heparin from fish waste will supplement its short supply in national and international markets on affordable cost to the society. Secondly the waste materials produced from the discarded fish will be put to use for production of valuable heparin.

Advisory Board of Malkolak Institute Of Marine Science And Technology

Green Oscar Winner Mr. Mike Pandey, River Bank Studio, New Delhi.
Padmashree Dr. G. C. Mishra, Ex-Director, National Centre fore Cell Sciences, Pune.
Dr. Kanury V. S. Rao, The International Centre for Genetic Engineering and Biotechnology(ICGEB), New Delhi.
Mr Arvind Bhanushali, Chairman, Yashraj Group of Companies, Mumbai.
Mr. Chitta Behera, Project Swarajya, Cuttack (Orissa).
Mrs.Dolly Dash, Project Swarajya, Cuttack (Orissa).
Dr.Huma Alam, Australia.
Prof. Srini Kaveri, the French National Institute of Health and Medical Research (Inserm) Paris (France).
Prof. Rajoo Balaji, Petronas (ALAM), Malaysia.
Dr.D.B.Sahoo, Department of Botany, University of Delhi, New Delhi.
Dr.Y.Balamuralikrishna, Senior Journalist(S&T/Media/Development Communication), UNI based at Hyderabad.

B. MALKOLAK INSTITUTE OF ALTERNATE MEDICINE AND NUTRACEUTICALS IN JAMMU – To create a State-of-the-Art Herbal Research Centre devoted to innovative Science and Technological advancement and integrating various segments of higher education related to the Herbal Health care Medicine based on Indian Herbals to meet the aspirations of domestic and Global Herbal Industry.

The fundamental mission of the Institute is Generation, advancement and dissemination of scientific knowledge on Indian Herbals and value addition in order to provide global standards of excellence in the fields of education and research focused to growing needs of the herbal industry.

OBJECTIVES

- To contribute to increased productivity, commercialization and competitiveness of prioritized high value Indian Botanicals through generation and promotion of knowledge, information and technologies that respond to requirements of the industry.
- To sustain and develop its identity as a research and teaching institution of the highest quality.
- To enhance the scientific and cultural vision of society as well as its economic position by conducting regular seminars, industry cum grower meets and bringing primary producers closer to scientists/Technologists, manufacturers and buyers.
- IAMN will remain focused on integrated research for development by ensuring that all research activities undertaken or promoted are market/demand-driven. IAMN will achieve this through active participation of the industry.

Standardization of appropriate agro & post harvest technology of each prioritized botanical. Crop species having higher production returns per unit area to be earmarked for commercial cultivation after successful pilot scale field trials.

- Chemical evaluation of the selected botanicals for marker compounds
- Developing technologies for the production of standardized herbal extracts meeting international quality standards.
- Developing pharmacologically active and adequately tested herbal formulations as potential herbal medicine/health supplements.
- Collaborating with Universities and Research Ins. both in India and abroad.
- Capacity and competence building for integrated agricultural research for development
- Disseminate research findings and catalyse adoption of suitable technologies
- Information and documentation services focusing on information technology and content delivery, organization, maintenance and archiving.
- Developing strong market linkages with the user industry

The following activities would be undertaken within the mandate of the Institute:

1. Undertaking Research projects that have high commercial value and will have positive impact on the society.
2. Affiliating the Institute with several National and foreign universities for registering students for Ph. D. programmes.

3. Getting fellowships from industries and academic to support the activities of the Institute.
4. To initiate a National/International Seminars and publication in high impact factor journals.

PROJECTS PROPOSED

- Identification of value added products much sought after by the industry.
- Prioritization of prospective botanicals of medicinal, functional and nutritional value.
- Production technology of prioritized herbs, as per global requirements and to transfer the technology to production region(s) for societal uplift.
- Plant biotechnology studies to develop protocols for the fast propagation of difficult to grow plant species & their adaptation and to maximize key chemical ingredients through biotechnology intervention.
- Quality assurance and standards development at all levels of supply/manufacturing.
- Chemical evaluation of the selected botanicals for marker compounds.
- Developing technologies for the production of standardized herbal extracts meeting international quality standards.
- Developing pharmacologically active and adequately tested herbal formulations as potential herbal medicine/health supplements.
- Testing and standardisation of herbal medicines.
- Improvements in the existing products and processes
- Stability Profile
- Toxicological studies
- Collaborating with Universities and Research Institutes both in India and abroad.
- Information and documentation services focusing on information technology and content delivery, organisation, maintenance and archiving.
- Cooperative research with industries
- Developing strong market linkages with the user industry

Collaboration with universities/Research institutes

1. Faculty Training-The newly recruited technical staff, individually or in a group, may undergo advanced/specialized training in various aspects of herbal technology.
2. Joint Ph.D. Program-A multi-faculty joint program for Ph.D. will developed between MIAMN & collaborating institute. This program and learning will be offered to students registered either at MIAMN.

3. Exchange Program- MIAMN & collaborating agency may evolve an exchange program for their scientists and post -Graduate scholars.
4. Technology Support-The collaborating research institute/university will provide utilization of their technical facilities, expertise and resources for support of research facilities of MIAMN in the initial period of 2-3 years.
5. Joint Projects-Scientists from MIAMN and collaborating inst./university Will work together to undertake joint research projects from funding agencies in the area of integrative medicine and health care.
6. Industry Partnership or collaboration- MAIAN will undertake collaborative activities with the industry partners for applied and productive research.
7. Diploma Course for Advanced Technologies for Natural Products- MIAMN and Collaborating institute will jointly develop an advanced course for integrative learning and training and for technologies applied for standardization and development in the field of natural products.

C. ADVANCED MEDICAL TECHNOLOGY RESEARCH CENTRES – These centres proposed to be set up in different states focuses primarily on research and development in various key areas of medical research. These centres are planned in different states with a view to take up advanced research in the areas of Genetics or stem cell therapies, tuberculosis, leprosy, cholera and diarrhea diseases, viral infections including AIDS, Malaria, kala-azar nutrition, food and drug toxicities, reproduction issues immune-hematology, oncology and medical data analytics etc. and leveraging international and national expertise that supports Government of India's agenda for Public Health. The main aim is to establish state of art AMTRCs facilitating advanced research in different medical streams.

AREAS OF RESEARCH

- Stem Cell Research
- Modeling the impact of climate changes on ecosystem cost and health effects
- Human genetics
- Clinical Informatics
- Medical informatics
- Bio Informatics and Bio Statistics
- Technology and training & Orientation.
- Other centres envisaged are - space, nanotechnology, biotechnology, brain research, Genetics etc.

D. MALKOLAK SPACE RESEARCH INSTITUTE (MSRI) is proposed to be set up in Nellore district, A.P., strategically close to SHAR in Sriharikota, the world's renowned spaceport of our country. A major sea port also is coming up in Nellore district.

OBJECTIVES

The objective of the MSRI is to take up advanced research in space technologies

1. to nurture students in space sciences and aerospace engineering
2. Create human resources in the design and development space applications and programmes
3. Introduce such advanced courses which will bolster the

    - Interest in understanding space and space explorations
    - to stimulate and network collaborations with Industry
    - Linking up with various Universities and engineering colleges

4. To institute a major fund for incubating various space related technologies, conduct activities
5. Developing public private participation in space related endeavours
6. Develop appropriate curriculum in space and cosmological sciences
7. Develop partnerships with Engineering and technology institutions
8. Linking up with different countries – to have exchange programmes, who have advanced space studies.
9. Public private partnership to raise more funding and investments for various endeavours.
10. Identify 30acre land in the vicinity of ISRO and have a tie-up with other sister establishments like NRSC, PRL etc. to work on projects under PPP model in a big way.

E. MALKOLAK INSTITUTE OF LIFE SCIENCES: There is a dramatic increase in our knowledge of nature and natural processes. The main purpose of the proposed Institute which is located at Hyderabad is to encourage students for research by exposing them to variety of research areas. This programme along with being a partial fulfillment for their academic degree (as per their academic norms), helps to choose their fascinating area of research in which the candidate can excel themselves. The programmes are aimed at updating practical applicability of technology among students pursuing B.Sc / B.Tech /M. Sc / M.Tech both freshers and experienced equally, to pursue careers in research in Biotechnology field.. Under BioSpace progarmme, Malkolak enables the aspirants to open several Gateway avenues of the Bio World.

BioSpace@Malkolak is one of its kind multidisciplinary programme that offers

- hands-on training to students pursuing careers in Life Sciences that suits the demands of industry and Research laboratories.
- Meet the demand of the Bio-Industry and Research institutes by nurturing Quality professionals interested in bringing about breakthrough innovations.

Modules Include-

1) Molecular Bio & Immune-techniques
2) Real Time Diagnostic Analysis
3) Environmental Sciences
4) Clinical Research
5) Agricultural Biotechnology
6) Communication Skills & Research Aptitude.

Apart from the above, Malkolak Knowledge Centre offers following Industrial Training modules for Life Science Graduates and post graduates under its Summer Research Projects and Training programme in collaboration with Industry.

PROJECT/PRODUCT PORTFOLIO

A. Commercialization of Product and process Patents with scientists of Malkolak:

I. Isolation and purification of heparin from fish waste
II. Extraction of Anti-viral compounds obtained from marine animal.
III. Identification, isolation and characterization of active compounds from the Indian green mussels to develop drugs.
IV. Purification and characterization of compounds with anti-malarial activity from the extract of the Indian green mussel.
V. Purification and characterization of a DC-stimulatory compound from the extract of the Indian green mussel.
VI. Novel Molecules to Develop Drug for the treatment of Osteoporosis.
VII. A Novel Molecule for Inducing Differentiation of Dendritic Cells.
VIII. Indian Green Mussel as a Source of Anti HIV-Activity.
IX. The extract of Indian green mussel (Perna viridis) inhibits growth of Mycobacterium tuberculosis.
X. The extract of Indian green mussel (Perna viridis) shows an activity that inhibits replication of the Gemini virus.

XI. Development of Nutraceutical products related to

- Anti-Aging
- Weight Management
- Digestive
- Anti-inflammatory
- Calming and Sleep
- Immune-modulators/suppressors
- Memory Enhancers
- Aphrodisiacs

B. Projects planned with support from different Govt. and other sources

I. Conservation of Indian horseshoe crab, its ecosystem and their sustainable use.

II. Conservation of mangrove ecosystem in Andhra Pradesh (with a focus on Coringa) ecosystem.

III. Imparting training of farming Indian green mussels on floating raft in Lake Chilka.

IV. Imparting training on producing food products from Indian Green mussels.

V. Characterization of novel compounds from peri-vitelline fluid of the fertilized eggs of Indian horse shoe crab for the early development of commercially important fishes.

VI. Identification, purification ad characterization of novel growth factor from peri-vitelline fluid of the fertilized eggs of horse shoe crab for its use in stem cell research.

VII. Identification, purification and characterization of pro-angiogeneic factor from the peri-vitelline fluid of the fertilized eggs of horseshoecrab.

VIII. Development of bio-fertilizers from seaweeds.

IX. Development of bio-sensor to determine Thyroid in Human Blood Serum.

X. Development of bio-sensor to determine Uric acid in human blood serum.

XI. Purification and Anti-tumor Effects of a contortrostatin a (Indian Russell's Viper) Snake Venom Disintegrin, inhibits integrin – mediate Human Metastatic Melanoma Cell Adhesion.

C. Courses planned under Malkolak -

- **Post Graduate Diploma in Herbal Technology** of One year (Full Time Course) duration- With an objective to develop excellence, skill and entrepreneurship for strengthening the human resource base in medicinal & Aromatic plant sector; To make use of technological innovations for improving outreach and effectiveness of the proposed post graduate diploma course; and to establish

professional linkages with reputed institutions in India and abroad having expertise and experience in conducting such courses.

- **Malkolak Institute of Marine Studies at Goa proposes** to accomplish graduate, post graduate and Ph. D. programmes in core and emerging disciplines of the Marine Science and Technology and Maritime Studies
    - Degree in Maritime (B.Sc.)
    - Post graduate diploma in product processing (flora and fauna), knowledge of conventional and modern gears, quality assurance and marketing
        - Capture and culture fisheries
        - Products (fish & seaweed) processing and quality assurance
        - Development of planning and management in Marine Science and Technology
        - Conventional and modern fishing gears and aquaculture systems
        - Coastal aquaculture (seaweed, pearl, mussel etc)
        - Income generation in-house aquaculture practices (live feed, hatcheries, ornamental fishes, aquaponics, biodiesel etc).

For Collaborations Contact:

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