

Vision The main vision of the department is to build need based economical and sustainable technologies for grassroots development of rural lifestyle and economy. To address the critical issues of rural telangana, mainly in agriculture and health sector. To impart education on interdisciplinary domains (viz. Bioinformatics, Biomedical & Biomaterial etc) and fundamental aspects of biodiversity, ecology, environment and sustainability issues (key to nation's economical and social prosperity).

Mission Research Goals: No other science has been as pervading and amalgamating as biological sciences. Not only integration with other disciplines is important for its manifestation but the molecular understanding of living processes has been inspiring for innovative applications in engineering and crucial for maneuvering matter on the living scale. The main thrust areas of research of the department are as follows:

Bioinformatics: The major thrust is on developing novel algorithms for biological analysis and deriving biological implications from sequence analysis and structural predictions.

Agriculture: Development of biofertilizers, nutraceutical (medicinal foods) and harnessing sustainable energy and useful industrial products from agricultural and food waste.

Environment remediation: The major focus has been development of economical and efficient water purification technologies with the integration of nanoscience and screening of different plant based materials as molecular sieves.

Sustainable technologies: The current focus of the department is to utilize biological resources to recycle products and derive energy or useful industrial products from waste. There is also impetus on building resilient materials from biological sources and developing eco-friendly products with the aid of interdisciplinary pursuits.

Biophysical chemistry of proteins: The fundamental aspects of the structural and functional attributes of novel proteins are endeavored using biophysical, molecular biology and biochemical techniques to discern the fundamental biological paradigms and gain insight into the biological role of such proteins.

Drug design and development: The in silico method of rational drug design and development of different nano biocompatible materials and validating the efficiency of drug in vitro and in vivo approaches are the major areas being focused by the department. Will be updated soon.

Will be updated soon.

Achievements Conducted awareness program on Biodiversity in 2012 ? Lectures on biodiversity

conservation were held and competitions on Essay writing/Posters/Painting among students on the theme of biodiversity were conducted. Established the association with Deshpande Foundation in 2016 for empowering entrepreneurship, skill development & leadership qualities in students to drive social innovation and entrepreneurship ecosystem. Submitted proposal for generation of biogas from kitchen waste under partnership (to receive 60% of the cost) with Telangana State Council of Science and Technology (TSCOST) to the Department of Science and Technology (DST) in 2016. Green Belt initiative for conserving and enhancing biodiversity in the campus from 2015 onwards. Dr. K. Madhusudhan received recognition award from the Hon^{ble} Minister I.K. Reddy for playing a key role in developing green campus of RGUKT Basar recently in 2017. Waste treatment through the process of Vermicomposting is being developed in the university under the aegis of the Department. Attended bioasia 2020 at Hyderabad along with the students to emphasize current happening in biological field and to inculcate research attitude among them . Future Directions Short term goals: Induction of short course to award diploma certification on Intellectual Property Rights (IPR). Building awareness on environmental issues and creating platform for scientific knowledge dissemination (by conducting Seminars/Workshops/Conferences and Outreach Programmes). Start Postgraduate course in Environmental Engineering and seek funding support scheme of FIST of Science and Engineering Research Council (SERC) to establish the state of the art infrastructure in due time. Building resource of Bioinformatics computational facility as a primer to accelerate knowledge discovery and scientific research. Long term goals: Envisage the creation of Knowledge Dissemination Centre for sharing and spreading established knowledge to agricultural, health and sanitation related problems with specific relevance to rural societies. Envisage the creation of Technological Centre for Biotechnological interventions for rural problems and generate income from such technological social innovations. Envisage the creation of Centre for Excellency which will act as a nodal centre for technology transfer to uplift rural economies and foster support as a regional facility for the local institutions for interdisciplinary scientific research. Also act as incubation centre and aid in forging industrial linkages for building translation research to transform fundamental research to viable commercial products. Will be updated soon. Will be updated soon.

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