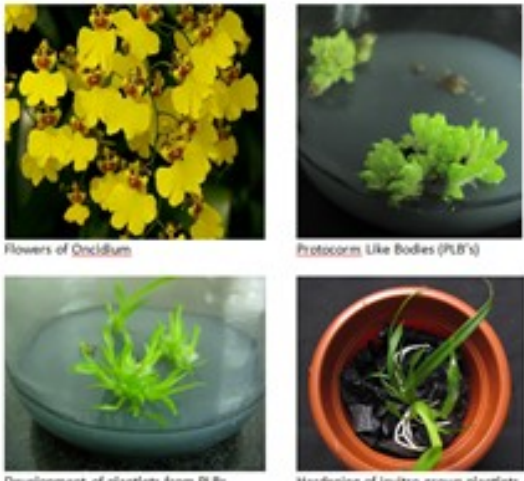


Details of the developed products

SL. No.	Faculty name	Product Developed
1	Dr Vidya Niranjana	<ol style="list-style-type: none"> 1. PICv tool in the collaboration with PDBe, EBI https://pymolwiki.org/index.php/PICv 2. MutVis tool for mutational pattern recognition and visualization https://github.com/AkshathaPrasanna/MutVis 3. Clin-mNGS for clinical metagenomic analysis pipeline https://github.com/AkshathaPrasanna/Clin-mNGS 4. MutaXome is a database for cancer exomes and mutations http://vidyalab.rf.gd/?i=1 5. Decision support system for prognosis of cancer https://share.streamlit.io/sabhpathi0306/streamlit/main/dss.py 6. Mutacheck, a novel pipeline for SNP detection and annotation in mitochondria https://www.sciencedirect.com/science/article/pii/S2352914821001568 7. UAAPRD: Unified <i>Aedes aegypti</i> protein resource database https://uaaprd.herokuapp.com/user. <p>PICv (Protein interaction clustering and visualization) is an pioneer attempt in understanding protein-protein interaction at a residue level. With Uniprot id as input it appends all the information from PDB database, clusters the proteins based on the interaction pattern.</p> <p>MutVis is an integrated, automated, open-source and user-friendly framework to analyze mutational signatures from bacterial whole genome next generation sequencing data.</p> <p>Clin-mNGS is an integrated, open-source, scalable, reproducible, and user-friendly framework scripted using the Snakemake workflow management software.</p> <p>Plant mineral information system is an Agricultural Information System is a working database of all known crops, minerals and nutrient information.</p> <p>MutaXome is a comprehensive knowledge base of identified mutational profiles for twenty different cancer exomes.</p> <p>Mutacheck is a pipeline is created for the analysis of a mitochondrial DNA genome to detect the presence of pathogenic mutations and predict clinical significance of these mutations.</p> <p>UAAPRD (Unified <i>Aedeys aegypti</i> protein resource database) is a comprehensive database for all modelled proteins in the proteome of <i>Aedes aegypti</i>.</p> <p>Cancer decision support system is a web application for providing a decision on the prognosis for cancer based on genomic mutations.</p>

<p>2 Dr HG Ashok Kumar</p>	<p>1. <i>In vitro</i> propagation technique for Oncidium, an Orchid has been developed for large scale production. Oncidium is generally propagated by pseudobulbs, and the number of pseudobulbs per plant are limited. <i>In vitro</i> technique is the only alternative technique for the propagation of Oncidium in large scale.</p> <p style="text-align: center;">Micropropagation of Oncidium "Gower Ramsey"</p> <div style="text-align: center;">  <p style="display: flex; justify-content: space-around; font-size: small;"> Flowers of Oncidium Protocorm Like Bodies (PLB's) </p> <p style="display: flex; justify-content: space-around; font-size: small;"> Development of plantlets from PLBs Hardening of <i>in vitro</i> grown plantlets </p> </div> <p>2. Production of cellulase and pectinase enzymes from microbes by utilizing agriculture waste and domestic wet waste as substrate. The purpose of this work is to convert waste into some useful products such as enzymes and manure.</p> <p>3. Formulation of biofertilizer by using bacteria and fungi not only improves the plant growth and soil fertility but also reduces the dependence on the chemical fertilizers.</p>
<p>3 Dr A V Narayan</p>	<p>1. Existing (literature based) phase diagrams are used in Downstream Process Laboratory for finding out total composition in liquid-liquid extraction experiment</p>

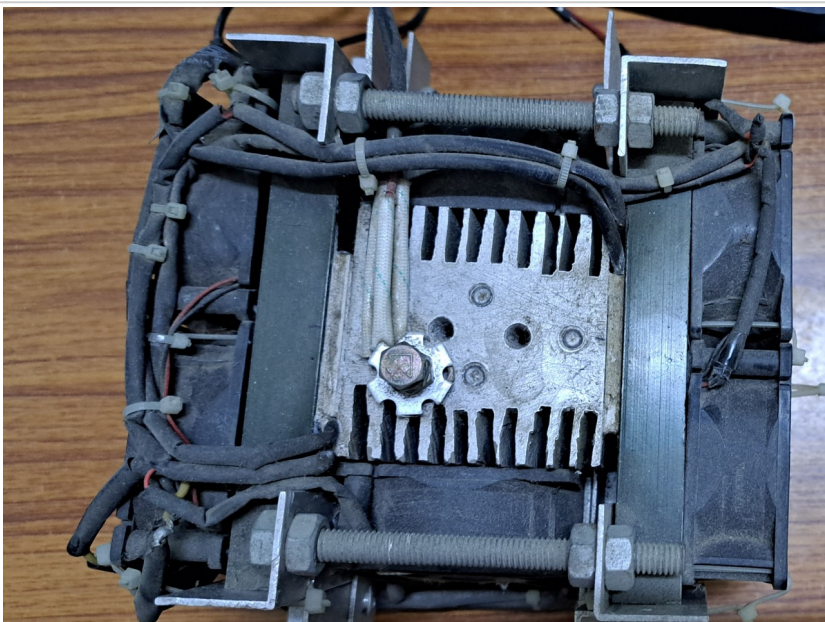





		<p style="text-align: center;">Phase Diagram for PEG 4000/Potassium phosphate at 20°C (Albertsson, 1986)</p>
4	Dr A H Manjunatha Reddy	<ol style="list-style-type: none"> 1. Waste compression unit (working model)- Write up 2. The solid waste can be condensed using the mechanical support.
5	Dr Neeta Shivakumar	<ol style="list-style-type: none"> 1. Bioactive Thin film for food packaging is developed which is Biodegradable and also enhances the shelf life of the food product. 2. Neeta Shivakumar and Pushpa Agrawal. Bioactive thin films for food packaging. Application no. 201741044070. Indian patent, Patent granted in 2022. 3. Bioactive Thin films for food packaging (Patented Technology) 4. A bioactive thin film for food packaging comprising: a first layer of a metal foil of thickness less than 0.2 mm which acts as a barrier for packed food; and a second layer of a nanochitosan corn starch solution deposited on the metal foil to form a nanochitosan corn starch bioactive thin film, wherein the bioactive thin film enhances the shelf life of the packed food. The first layer comprises of a metal foil that acts as a barrier to light and oxygen, odors and flavors, moisture and germs for the packed food.


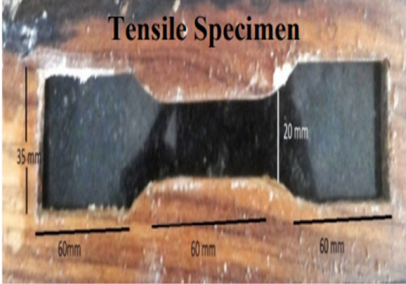



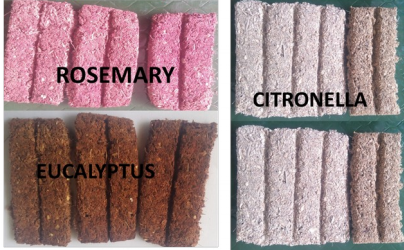


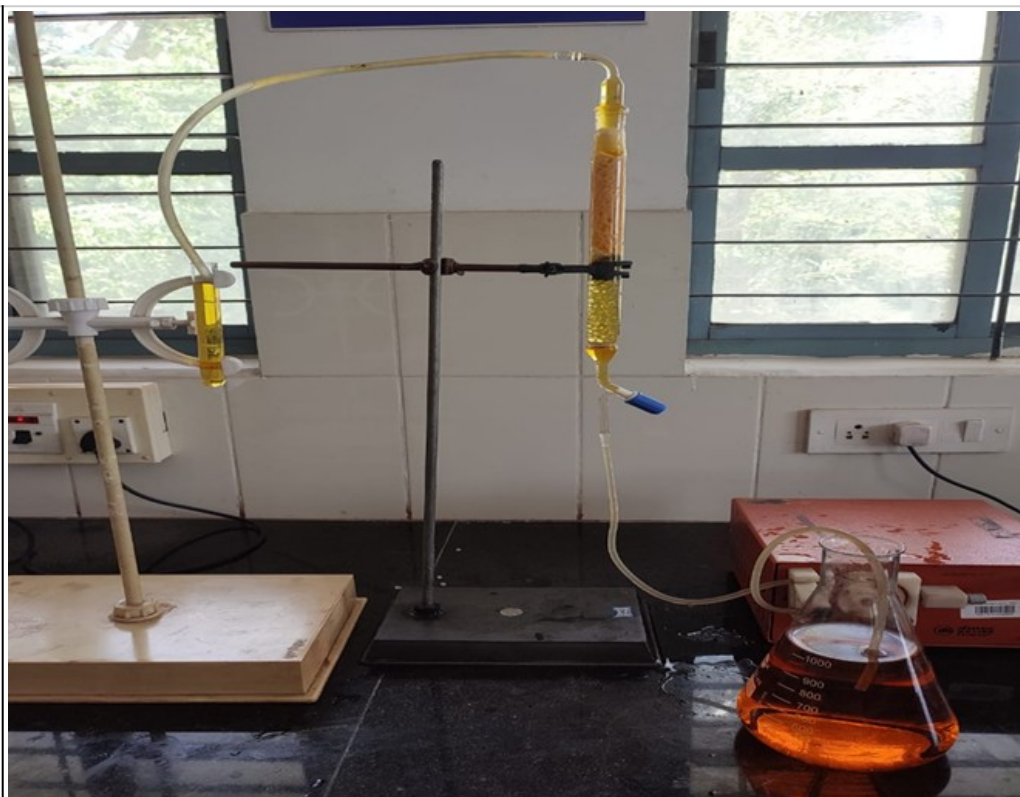
1. Designing and Fabrication of a Mini PCR which is portable and is used in the amplification of the gene sequence.

2. Design and Fabrication of MINI PCR


Aluminum block of size 60*60*60mm is mechanically processed for the PCR machine to incorporate four heaters and two PCR tubes, used to amplify sequences of macromolecules. Each PCR tube is heated by 3 heating elements which are 120° apart. The block is assembled with a thermo couple which measures and sends real time temperature data to the main circuitry which switches on or off the power to the heaters. Arduino pro mini is programmed to switch ON and OFF at specified interval of time. The machine uses peltier units, aluminum heat sink and fans to cool the block. Solid state relay is used to switch ON and OFF the heaters and the coolers. The machine is programmed to cycle for different time interval with different temperature setting for amplification. This has to be fabricated for outer cabinet and a display unit to monitor the temperature.

		
6	Dr Nagashree N Rao	<ol style="list-style-type: none"> 1. Functional food /Probiotic product with enriched micronutrients with an approach of food to food fortification. 2. Design and development of bio- based Oil adsorbent for industrial applications. Developed a bio- based sorbent mat that is super hydrophobic and oleophilic in nature. <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Plant Fiber</p> </div> <div style="text-align: center;">  <p>Loom</p> </div> <div style="text-align: center;">  <p>Yarn</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 10px;"> <div style="text-align: center;">  <p>Mat</p> </div> <div style="text-align: center;">  <p>Water Used oil + Water Used oil</p> <p>Test cell – plant fiber mat – Used oil</p> </div> </div>
7	Dr G Vijayakumar	<ol style="list-style-type: none"> 1. Co designed a 100 liters fermenter as a part of the funded project.
8	Dr Lingayya Hiremath	<ol style="list-style-type: none"> 1. Pectin from dried plants leaves for biological applications
9	Dr Ashwani	<ol style="list-style-type: none"> 2. Eco-friendly sustainable bio-composites were designed using the waste

	<p>Sharma</p>	<p>natural materials which either becomes a pollutant or ecological menace. Composite material made has the matrix which is slurry of biological origin and has the tensile strength to bear the considerable strength.</p>    <p>3. Eco Friendly Mosquito repellent :</p>   <p>Organic plant coil</p>  <p>Mosquito repellents made out of various medicinal plants, with coconut husk and corn cob as binder.</p>
10	Dr M Rajeswari	<p>4. Nanoparticles of zinc oxide synthesized using natural bio-adsorbent materials (<i>Citrus aurantifolia</i>), Designing and development of continuous column and evaluating its feasibility and performance for removal of azo dyes using synthesized biosorbant</p>



11	Dr Ajeet Kumar Srivastav	<ol style="list-style-type: none"> 1. Bioethanol production using cellulosic waste. 2. Bioethanol production using cellulosic waste. Production of ethanol using individual microorganism as well as mixed culture of microorganisms along with cellulosic waste.
12	Dr Shivandappa	<ol style="list-style-type: none"> 1. Production of Algal Biodiesel from Botryococcus braunii through microbial transesterification. 2. Designed, developed Workflows and Implemented one of the of the workflows in shell. 3. Designed Artificial Neral Network to predict the secondary structures for the given unknown protein sequence.
13	Dr Narendra Kumar S	<ol style="list-style-type: none"> 1. Development of Photo-bioreactor for Pharma waste to clean energy Demo model of capacity 10lit. Bioreactor consists of a media optimization unit with parameters like Ph and temperature sensitivity. Demo model was developed with Satva Health solutions Pvt. Ltd. The model was exhibited at National level competition held at Kottayam Kerala and received best model and won the cash prize of Rs. 12000/-. 2. Production of eco- friendly bio-detergents as a cleaning agent to reduce the impact of chemical detergents
14	Dr Praveen Kumar Gupta	<ol style="list-style-type: none"> 1. A prebiotic product is developed in the name of Xylooligosacchrides (XOS) by using corncob waste; currently the preclinical testing is going on in the Veterinary Institute Bangalore- Hebbal. XOS possess the

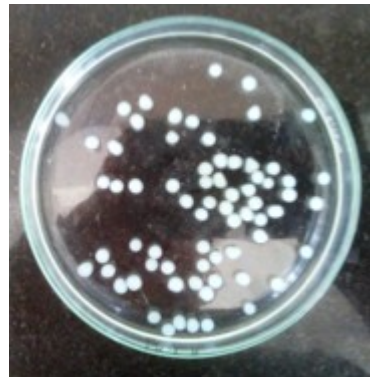
		<p>antioxidant activity due to interfering phenolic substituents activities. The XOS possesses blood-related effects and activity in skin disorders. It also has anti-allergy, anti-microbial, anti-infection and anti-inflammatory properties. Studies have proven that the XOS acts on selective cytotoxic activity and possesses immunomodulatory action. Therefore, XOS are potentially used in skin and cosmetic industries and has antiviral and antitumor drugs properties etc.</p> <p>2. A Patent Granted for invention titled: METHOD AND SYSTEM FOR PRODUCING XYLOOLIGOSACCHARIDES FROM DRIED ORANGE PEELS, by the Indian Patent Office. Patent Number- 398942.</p> <p>Product Details- Patent No- 39894</p>  <p>Prebiotics Powder form, Xylooligosaccharides ,pH-6.3, Self Life-6 months ,</p> <p>No preservatives ,Colour- Pale White.</p>
15	Dr Trilok Chandran B	Phase diagrams are used in Downstream Process and product recovery lab for finding out total composition in Aqueous two phase extraction experiment, design and development adsorption column.
16	Dr Raju H	<p>1. Enzymatic extraction and characterization of vanillin and iso-vanillin from vanilla beans and standardization of protocol for assay of vanillin.Synthesis, Characterization, In-vitro antimicrobial and Antiproliferative studies of novel 1<i>H</i>-pyrazol-5-amine derivatives and replacing the hydroxyl group at position 3 by sodium phosphates to increase the water solubility, methoxy at position 4 by piperazine ring and substitute the other nitrogen of the piperazine with different substituted alkyl/aryl halides.</p>



17 Dr. Sumathra M

2. BCA immobilized on Chitosan Beads

3. Immobilization of enzyme on PU foam for CO₂ sequestration. Immobilization of BCA provided resistance under high temperature and pH conditions – Calcium alginate and PU foam were found to be appropriate material for immobilization when operated in 30°C and 40°C respectively. PU foam stabilized enzymes under wider range of pH.



BCA immobilized on calcium alginate beads



BCA immobilized on Chitosan Beads



BCA immobilized on Polyurethane Foam