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The 5th Visakha Life Sciences and Entrepreneurship-2025 Symposium Oral and Poster Abstracts.

Date Rape Drugs: Detection Challenges and Advances in Analytical Screening.

Sri Padma Kadiyala & Krishnamanjari Pawar Amgoth*

Department of Pharmaceutical Analysis, Andhra University, Visakhapatnam, A.P. India.
*Correspondence to K.P.A.: akmpawar@andhrauniversity.edu.in

Date rape drugs, including gamma-hydroxybutyric acid (GHB), flunitrazepam (Rohypnol), ketamine, and alcohol, are potent central nervous system depressants frequently misused to facilitate sexual assault. These substances impair consciousness, coordination, and memory, leaving victims defenseless and unable to recall events. Due to their odorless, colorless, and tasteless properties, they can be easily mixed into beverages without detection, posing serious threats in social environments such as bars, parties, and gatherings. The increasing number of substance-assisted sexual assault cases underscores the urgent need for awareness, education, and effective preventive strategies. Addressing this issue requires collaboration between healthcare professionals, law enforcement, and the public to ensure early recognition, timely medical intervention, and enhanced safety practices. Promoting vigilance, responsible behavior, and advanced detection approaches is crucial to safeguarding individuals and reducing the growing menace of date rape drug-related crimes.

AI-driven heart attack prediction framework.

Rajesh Chennu*

Infosys Limited, Hyderabad, T.S. India.
*Correspondence to R.C.: chennurajesh.somu@gmail.com

The author chose not to display the abstract due to the proprietary nature of his presentation.

Sustainable agricultural mulch sheets from chitin-based bioplastics.

Naveena Tanakala, Dhanalakshmi Allaboina, Saketh Varma Danthuluri & Karteek Rao Amperayani*

Department of Organic Chemistry, Gayatri Vidya Parishad College for Degree and PG Courses, Visakhapatnam, A.P. India.
*Correspondence to K.R.A.: a.karteek.akrao@gmail.com

This project introduces a sustainable solution to agricultural plastic pollution by developing 100% biodegradable and bio-sourced mulch sheets from chitin-derived bioplastics. The core concept transforms chitin, an abundant and underutilized waste product from the seafood industry (shrimp shells), into a valuable material. These biodegradable mulch sheets are designed to perform the essential agricultural functions of conventional plastic mulch: weed suppression, soil moisture conservation, and soil temperature regulation. Furthermore, chitin's inherent antimicrobial properties may offer an added benefit of disease suppression, and the biodegrading material has the potential to enrich the soil with nitrogen and carbon.

Evaluation of antibacterial and antifungal susceptibility of pharmaceutical drugs and medicinal plant extracts against *Staphylococcus aureus* and *Aspergillus niger*.

Dharshan Manohar Arasavalli* & Shabana Jasmeen Pattan.

Department of Microbiology, Jagarlamudi Kuppuswamy Choudary College, Guntur, A.P. India.
*Correspondence to D.M.A.: dharshanarasavalli@gmail.com

As microbes are getting stronger against medicines, so we need different treatments that are safe, easy to get, and helpful. We tested the antimicrobial activity of pharmaceutical drugs like Fluconazole, Miconazole, Econazole, and Ketoconazole against Aspergillus niger and Penicillin, Tetracycline, Oflaxin, and Cifroflaxin against Staphylococcus aureus and medicinal plant extracts like neem, guava, holy basil, and betel leaves against *Staphylococcus aureus* and *Aspergillus niger*. Standard antibiotic and antifungal discs were used. Plant extracts were tested using agar well diffusion and disc diffusion methods. Zones of inhibition were measured with a vernier caliper to assess pathogen susceptibility. Among the antibacterial drugs tested against Staphylococcus aureus, Penicillin showed the highest activity with a 19 mm zone of inhibition (20 µl). Among the antifungal drugs tested against *Aspergillus niger*, Miconazole had the strongest antifungal effect with 13 mm zone (20 µl). For the plant extracts, betel leaf had shown the highest antibacterial activity against *Staphylococcus aureus* (17 mm per 20 µl). Guava leaf extract showed the greatest antifungal effect against *Aspergillus niger* (14 mm per 20 µl) along with antibacterial effect against *Staphylococcus aureus* (12 mm per 20 µl). These results indicate that Guava plant extract had a significant antimicrobial potential, sometimes comparable to standard pharmaceutical agents. The study clears that there is a need to combine traditional medicinal practices with modern microbiological methods. This project helps to identify new natural compounds that may be useful as complementary or alternative therapies in the fight against antimicrobial resistance.

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TCABSE-J Interdisciplinary Sciences Journal

Portable diagnostic kit for rural health care.

Venkata Poojitha Tadiboina* & Lakshmi Prasanna Dharanikota*

Department of Chemical Engineering, Andhra University, Visakhapatnam, A.P. India.
*Correspondence to V.P.T.: poojitha02tadiboina@gmail.com and L.P.D.: prasanna555217@gmail.com

Background: a portable diagnostic tool designed for rural health care to detect impactful diseases such as malaria, dengue,and bacterial infections and anemia. The tool uses hardware based assay kits similar to home pregnancy tests but customized to detect specific diseases biomarkers through visible colour changes within 10-20 minutes. It employs simple materials including nitrocellulose membranes pre-coated antibodies and colored particle -conjugated detection anti-bodies. The device requires only a drop of blood, saliva,or urine,requires no electricity or refrigeration and can be administered with minimal training. This cost effective, rapid and easy-to-use diagnostic technology aims to provide timely and accurate disease detection to improve health outcomes in remote and resource -limited rural areas. This approach is particularly vital for diseases that progress rapidly and pose severe public health burdens in underserved populations, Suitable for limited areas with limited medical infrastructure.

Bioluminescent algae lighting up our cities naturally.

Udaykiran Mellika, Madhuri Kambam & Devavarshini Anupoju*

Dr. V. S. Krishna College, Visakhapatnam, A.P. India.
*Correspondence to D.A.: varshinianupoju16@gmail.com

Bioluminescent algae represent an innovative approach to lighting up our cities naturally using nature's own light. Bioluminescence is the natural ability of living organisms to produce light through a chemical reaction, in which an enzyme called luciferase acts on the molecule luciferin to release visible light without heat. Common examples include fireflies, deep sea fishes, and glowing algae such as noctiluca scintillans and pyrocystis fusiformis. The concept proposes urban lighting from living algae, where cities are illuminated by glowing algae instead of electric lamps. These algae can be cultured in transparent tubes or bio canals along paths or parks. The system functions when disturbed air flow or movement triggers a blue green glow, creating a living, breathing light source. During the day, algae photosynthesize by absorbing CO2 and releasing oxygen, while at night their natural luminescence provides illumination. Real life examples include bioluminescent street lights in France and glow in the dark benches using Pyrocystis species. This approach offers several advantages, including eco-friendly operation with no electricity and no carbon emissions, aesthetic enhancement of landscapes, air purification through CO2 absorption and oxygen release, and educational value in promoting awareness of marine biotechnology and renewable design. However, challenges include short lifespan, fading glow due to limited bioluminescent duration, maintenance requirements for proper temperature, nutrients, and light conditions, low brightness compared to traditional lights, and costly setup requiring controlled environments and regular care.

Revolutionizing Drug Delivery through Nano biotechnology: A Pathway to Smart Therapeutics.

Yusuf Mohamed Nabay*

College of Pharmaceutical Sciences, Andhra University, Visakhapatnam, A.P. India.
*Correspondence to Y.M.N.: yusufmnabay608@gmail.com

Nanobiotechnology is revolutionizing medicine by enabling smart drug delivery systems that target diseased cells precisely while minimizing side effects. Nanocarriers such as nanoparticles, liposomes, dendrimers, and polymeric micelles allow controlled drug release and targeted delivery, addressing challenges like poor bioavailability and systemic toxicity. Functionalization with biological ligands enhances selectivity, enabling treatment of cancer, neurological disorders, and chronic diseases. This field also presents significant entrepreneurial opportunities through biotech start-ups and green, sustainable innovation. By merging science, technology, and business, nanobiotechnology is shaping the future of next-generation therapeutics with transformative global impact.

AI-driven clinical decision support for personalized drug prescribing.

Ravi Viswanadhapalli*

College of Pharmaceutical Sciences, Andhra University, Visakhapatnam, A.P. India.
*Correspondence to R.V.: viswanadhapalliravi35@gmail.com

Clinicians often face a significant "prescribing predicament," struggling to process complex, multi-modal patient data-including EHR, genetic data, and lifestyle information-to make personalized drug decisions, often resulting in sub-optimal outcomes and preventable Adverse Drug Events. The poster introduces a novel solution: a Cloud-based Predictive Modeling As A Service (PMAAS) platform. This service employs ML and Deep Learning algorithms to accurately predict an individual patient's drug response, encompassing both efficacy and toxicity. The system is designed for EHR Integration to ensure a seamless data flow and deliver real-time, evidence-based recommendations for optimal drug and dosage selection. It is particularly tailored

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TCABSE-J Interdisciplinary Sciences Journal

to manage complex patient populations in specialized clinics such as oncology and auto-immune disorders. The platform will be monetized through a subscription-based model targeting hospitals, health systems, and large physician groups, positioning it as a critical tool for future personalized medicine.

Smart health alert message.

Bhavani B. G. D. Gubbala.*

Gayatri Vidya Parishad College of Engineering for Women, Visakhapatnam, A.P. India.
*Correspondence to B.G.: gangadurgabhavani7@gmail.com

The user wears a smart health band equipped with heart rate, temperature, and stress sensors. Before use, the user registers two emergency contacts – one family member and one nearest hospital (selected from available options). When the system detects abnormal readings or unconsciousness, it sends an automatic alert message with health data and live location to both contacts. The family gets notified immediately, and the hospital can dispatch an ambulance to the user's location.

Intelligent field monitoring and alert system using Raspberry Pi and Telegram Bot.

Hephzibah Rani Singh*, Giridhar Dittakavi, Rashmitha & Yeshwanth.

Gayatri Vidya Parishad College for Degree and PG Courses, Visakhapatnam, A.P. India.
*Correspondence to H.R.S.: hephzibah@gvpcdpgc.edu.in

Crop damage due to pest infestation, animal intrusion, or human interference remains a critical challenge in modern agriculture leading to financial loss and reduced food security. This research presents on field monitoring and alert system that leverages the Raspberry Pi, Deep learning – based object detection and telegram Bot notifications to provide real-time surveillance and alerts for crop protection.The system integrates a camera module with a pre-trained YOLOv5 model to detect potential threats such as humans, animals or other intruders in the field. Detected intrusions trigger instant alerts via a Telegram Bot, accompanied by captured images, enabling farmers to take immediate action. Additional environmental monitoring modules including temperature and wind sensors, further enhance crop safety by sending notifications when temperature exceeds 40 ℃ or wind speed crosses 3 Mph. Simulated outcomes demonstrate the system's ability to accurately identify threats with minimal latency providing early warnings that reduce potential crop damage. This solution offers a scalable cost effective and accessible approach to precision agriculture promoting sustainable farming practices while safeguarding both crop yield and ecosystem health.

From Tier 1 Agent to Endemic Threat: A Critical Roadmap for Advancing Diagnostics, Novel Therapeutics and Vaccine Development Against the Burkholderia Species.

Kishore B. V. M. Boddeda & Lakshmi Monica Kada.*

Department of Pharmacy Practice, Vignan Institute of Pharmaceutical Technology, Visakhapatnam, A.P. India.
*Correspondence to L.M.K.: lakshmimonica1@gmail.com

Particularly in endemic areas such as Southeast Asia, melioidosis and glanders – caused by the Gram-negative pathogens *Burkholderia pseudomallei* and *Burkholderia mallei*, respectively – represent serious but underappreciated public health risks. Both diseases have significant research and policy deficiencies despite designation as Tier 1 selected agents due to high mortality rates, inherent and developing antibiotic resistance, and potential for bioterrorism. Synthesis of the current literature shows that melioidosis is unreported in many endemic countries such as Malaysia, leading to under-reporting and incomplete understanding of its true epidemiological burden. Furthermore, although antibiotic therapy (such as ceftazidime, meropenem and TMP-SMX) is the clinical mainstay, the efficacy of treatment is threatened by increasing resistance, especially in biofilm-associated infections, and there are not many alternatives. Despite encouraging experimental results, phage therapy lacks clinical validation and standardized protocols. Despite progress in identifying immunogenic outer membrane proteins (e.g., OmpA, OmpW, Omp85, BuCl8) and glycoconjugate candidates, Importantly no licensed vaccines exist for neither disease. Additionally, the interaction of *Burkholderia* spp. The accompanying host complement system – an essential arm of innate immunity – is poorly characterized, particularly for B. Members of Mallee and *B. cepacia* complex, leaving the major immune evasion mechanism unresolved. Furthermore, surveillance systems remain fragmented across human, animal and environmental sectors, undermining the One Health approach needed for effective control. This review highlights these interconnected gaps – spanning diagnostics, therapeutics, vaccinology, host-pathogen immunology and integrated surveillance – and calls for coordinated, multidisciplinary research to address the persistent challenges posed by melioidosis and glanders.

PCR-screening of COVID-19 affected blood samples to test the presence of HIV: testing a conspiracy theory!

Sadhya S. Kasara, Neelima Polamarasetty & Ravikiran S. Yedidi.*

ISSN: 2583- 2557, *Volume 2, Issue 1, pp9-16. 2026.*

TCABSE-J Interdisciplinary Sciences Journal

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

During the COVID-19 pandemic there were some conspiracy theories claiming that the causative coronavirus was manmade using the HIV genome as a backbone. We hypothesized that if this were true then the COVID-19 patient blood samples must contain HIV related genes that can be detected through PCR screening. Our preliminary results indicate no presence of such predicted HIV genes in the samples tested so far suggesting that the causative virus of COVID-19 may not have been genetically engineered using HIV genome as a backbone. However, a larger set of patient samples are yet to be screened in order to obtain a statistically significant finding in the future.

Novel Shell-Based Coastal Habitat Restoration of Microhabitats, Marine Larval Nurseries, and Miniature Reef Structures for Biodiversity Recovery.

Kandrakota Shiny Jasmine, Mekala Ramya, Pothamsetti Saranya, Pentakota Shruti, Eyyunni Pardha Saradhi Ayyangar*

SPACES Degree College (Autonomous), Payakaraopeta, Visakhapatnam, A.P. India.
*Corrsp. to E.P.A.: epardhasaradhiayyangar@gmail.com

Coastal habitats are collapsing under anthropogenic pressures, with declining coral reefs and vanishing juvenile marine populations. This Study presents a novel, low-cost, and scalable approach to coastal habitat restoration using naturally abundant empty shells, as engines of life, creating self-sustaining modular ecosystems which include Shell-Based Microhabitat Modules, arranging shells in patterns mimicking natural reefs and tide pools to encourage recolonization by microalgae, invertebrates, and juvenile fish; Shell Seedbanks for Marine Larvae, where selected shells serve as protective nurseries for mollusc, crustacean, and small fish larvae, leveraging natural architecture for attachment and survival; and Shell Coral-Like Reef Builders, stacking shells to form miniature reef structures promoting settlement of reef organisms, including coral larvae. The design incorporates spatial arrangement optimization, and modular deployment patterns tailored to tidal zones. Shells are cleaned, sterilized, and arranged using a patterned lattice framework that maximizes flow, shelter, and attachment surfaces. Modules are monitored for occupancy, larval survival, and biodiversity recovery, with quantitative assessment through underwater visual surveys and photographic mapping. Preliminary deployment indicates rapid colonization by microalgal coverage, and improved juvenile fish presence. The system introduces multiple patentable elements, including shell arrangement, stacking patterns, and micro-reef architecture. This approach provides a first-of-its-kind, environmentally friendly, and scalable solution for coastal biodiversity restoration, offering a low-cost alternative to artificial reefs while enhancing ecosystem resilience and fisheries sustainability.

Design and Evaluation of a Multi-Layer Biofiltration System Employing Natural Bioadsorbents for Sustainable Water Purification.

Vaishnavi, Sarvasiddhi Syamala, Manchiganti Supriya, Eyyunni Pardha Saradhi Ayyangar*

SPACES Degree College (Autonomous), Payakaraopeta, Visakhapatnam, A.P. India.
*Corrsp. to E.P.A.: epardhasaradhiayyangar@gmail.com

Water contamination remains a critical environmental and public health challenge, necessitating affordable and sustainable purification strategies. This study focuses on the design and evaluation of a multi-layer biofiltration system employing naturally derived bioadsorbents for effective water treatment. The system comprises sequential chambers of Desmostachya bipinnata and cocos nucifera coir for preliminary removal of suspended particles, Moringa oleifera seed powder for natural coagulation and antimicrobial action, and alum for final clarification. Each layer is separated by a fine mesh to regulate flow and enhance debris retention. The filtration efficiency was assessed using rainwater, tap water, and municipal water samples. Parameters such as total hardness, and microbial load were analysed before and after filtration using standard physico-chemical and microbiological techniques, including agar plate inoculation to determine colony-forming unit reduction. Results demonstrated significant improvement in water clarity and reduction of microbial and chemical impurities. The study highlights a low-cost, eco-friendly approach for decentralized water purification using readily available natural resources.

Herbal solution for PCOS.

Sai Pravallika Yerra, Sowmya Balla, Jaya Swaroopa Tillapudi.*

Department of Chemical Engineering, Andhra University, Visakhapatnam, A.P. India.
*Correspondence to J.S.T.: jayaswaroopatillapudi@gmail.com

Polycystic Ovary Syndrome (PCOS), a common endocrine disorder affecting women. A detailed step-by-step process for creating a herbal powder blend using natural ingredients such as fenugreek, shatavari, turmeric, spearmint, whole lentils, and amla. This combination is aimed at balancing hormones and alleviating symptoms related to PCOS. The subsequent sections highlight the therapeutic approach for PCOS care through the use of herbal medicine, emphasizing

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TCABSE-J Interdisciplinary Sciences Journal

the importance of natural remedies in restoring hormonal balance and improving overall reproductive health. The herbal formulation serves as an alternative to allopathic treatments that often focus only on symptom control rather than root causes.a unique herbal chocolate recipe created with ingredients known for their health benefits, such as specific herbs like cinnamon and stevia which is a natural sweetener. The preparation includes specific quantities and instructions designed to retain the active properties of the herbs, making the treatment both effective and enjoyable.The comparative overview provided contrasts allopathic and Ayurvedic treatment models for PCOS, noting the latter's emphasis on holistic and natural hormone regulation.This approach underscores the growing interest in integrative medicine for managing complex endocrine disorders like PCOS.

Sanger sequencing and mutational analysis of street food in Visakhapatnam.

Vasantha Uddandam* & Hema Hanisri Saragada.

Sri Sarada Vidya Nilaya (High School), Visakhapatnam, A.P. India.
*Correspondence to V.U.: uddandamvasantha@gmail.com

Sequencing of microbial DNA from Biryani stuff sample by using the Sanger sequencing method. Four steps involved in this process are: 1. Microbial DNA extraction, 2. DNA chromatogram analysis, 3. Navigate to NCBI database and 4. BLAST search.

Dystrophin Gene Annotation.

Chandini Reshma Mandala* & Saranya Lekkala.*

Prathibha Vidyalayam (High School), Visakhapatnam, A.P. India.
*Correspondence to C.M. & S.L.: gomparamana576@gmail.com

Gene annotation is the process of identifying genes, their structures, and biological functions within a DNA sequence The dystrophin gene (DMD), located on the X chromosome (Xp21.2) is one of the largest human genes, spanning about 2.4 million base pairs with 79 exons. It produces the dystrophin protein, which maintains muscle fiber strength and stability. Using databases like NCBI, we analyzed its sequence and structure. This annotation helps understand the gene's function, locate mutation hotspots, and support research on muscular disorders.

Protein annotation.

Malathi Pinapolu* & Karthika Lavanya Ambati

Sri Sarada Vidya Nilaya (High School), Visakhapatnam, A.P. India.
*Correspondence to M.P.: malathipm199@gmail.com

Protein annotation is the process of assigning biological information to a protein sequence, such as its function, structure, and other characteristics. In this research, we focus on the annotation of human salivary amylase, an enzyme responsible for the initial breakdown of starch into simpler sugars during digestion. We used bioinformatics tools from UniProt database to perform a peptide search by providing an amino acid sequence as input. Through this process, we identified key information regarding the protein's sequence, molecular function, and associated biological pathways. This study highlights the importance of protein annotation in understanding enzyme functionality and provides insights into how databases like UniProt can aid in protein research and functional prediction.

Alpha fold 3 to predict protein structure and interactions.

Mohan Seshasai Vasa.*

National Institute of Open Schooling, Visakhapatnam, A.P. India.
*Correspondence to M.S.V.: vasa.mohanseshasai@gmail.com

Duchenne Muscular Dystrophy (DMD), a genetic disorder that causes progressive muscle weakness, or Doctor of Dental Medicine, a professional degree in dentistry. Duchenne Muscular Dystrophy is the most common and severe form of muscular dystrophy, primarily affecting boys, due to a lack of the protein dystrophin. I came across a child suffering from DMD with 2-29 exons duplicated mutation. I am using AlphaFold 3 to understand how the lack of dystrophin is affecting his muscle function. Dystrophin protein acts like a shock absorber for muscle fibres during their contraction and relaxation, its absence causes the muscle tissue to tear and a scar tissue is formed. I am showing the interaction of dystrophin protein with the Actin protein using AlphaFold 3. Get FASTA sequence of Human Dystrophin and F-Actin from NCBI database. Go to https://alphafoldserver.com/ and prepare a job with dystrophin and actin as input proteins. Run the job and identify the interactions between Dystrophin and F-Actin.

AI-Powered Disease Diagnosis Revolutionizing Healthcare with Machine Learning.

Divyasree Putcha* & Keerthi Harshini Raparthi.

College of Engineering for Women, Andhra University, Visakhapatnam, A.P. India.
*Correspondence to D.P.: divya.putcha326@gmail.com

Artificial Intelligence (AI) is transforming healthcare by enabling faster, more accurate, and data-driven approaches to disease diagnosis. Advanced machine learning and deep learning algorithms allow AI systems to analyze large volumes of medical data and imaging, identifying subtle patterns often undetectable to the human eye. These systems can detect and predict diseases such as cancer, pneumonia, diabetic retinopathy, and COVID-19 with high precision, improving diagnostic speed and reliability. The proposed AI-powered diagnostic system utilizes image processing and

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TCABSE-J Interdisciplinary Sciences Journal

trained models to automatically classify medical conditions from X-ray and MRI scans. By learning from extensive annotated datasets, it distinguishes between healthy and diseased tissues, supporting clinical decision-making. This approach reduces diagnostic time, minimizes human error, and enhances early detection and patient care. We hypothesize that AI-driven systems can outperform traditional diagnostic methods, contributing significantly to the advancement of personalized and precision medicine and enabling more efficient, accessible healthcare delivery.

CRISPR-Based Diagnostic Kit for the Detection of Latent HIV-1 Infections using Patient Blood Samples.

Chiranjeevi V. M. Ganteti, Madhuri Vissapragada and Ravikiran S. Yedidi*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

HIV/AIDS continues to be a significant global health challenge, even with the widespread use of antiretroviral therapy (ART). A major obstacle is the persistence of latent HIV-1 reservoirs that remain hidden in the body and cannot be eliminated by ART, creating the risk of viral rebound. Conventional diagnostic techniques such as RT-PCR, ELISA, and viral outgrowth assays (VOAs) have notable limitations in detecting these latent infections. The present disclosure introduces a CRISPR-based diagnostic kit (CHIKit-SA) designed to detect latent HIV-1 infections using patient blood samples. The kit includes a genomic DNA extraction, a CRISPR-Cas9 platform, and an agarose gel electrophoresis setup. We targeted HIV-1 DNA integrated within the host genome. This system provides accurate identification of latent reservoirs and infected host cells. Importantly, the kit enables early detection of individuals with latent infections, facilitating informed treatment decisions, monitoring of Highly Active Antiretroviral Therapy (HAART) effectiveness, and helps prevent both viral rebound and transmission. Additionally, the kit can trigger reactivation of latent virus, thereby enhancing strategies aimed at more effectively treating HIV-1 infection.

Design and synthesis of 2-methyl-indole-3-acetic acid derivative-based novel proteolysis-targeting chimera molecule to inhibit the replication cycle of HIV.

Chiranjeevi V. M. Ganteti, Balarohitha Sundaram, Venkat Pochiraju and Ravikiran S. Yedidi*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

Human immunodeficiency virus (HIV) infections cause Acquired immunodeficiency syndrome (AIDS). HIV has been known to undergo mutations randomly and rapidly resulting in multidrug-resistance challenging the currently available antiviral drugs. The viral capsid protein (CA) forms a protective protein shell around the viral genome and helps in viral transfer from cell to cell in the host. Lenacapavir is the only FDA-approved reversible inhibitor that targets HIV-CA so far. However, lenacapavir-resistance has already been seen in patients with monotherapy. In this study we designed and synthesized a 2 methyl-indole-3-acetic acid derivative (BRS01001)-based proteolysis-targeting chimera (PROTAC). BRS01001 was designed to bind and permanently degrade the HIV-CA instead of reversible inhibition. We report the ongoing synthesis of BRS01001 and the quantitative structure-activity relationship (QSAR) analysis of the linker region for optimal PROTAC activity. The synthetic scheme involves two amide coupling steps leading to the final core molecule. The compound characterization and its purity analysis are currently under evaluation. Biological evaluation of BRS01001 will be performed using in vitro methods in the near future.

Edible Probiotic Yogurt Vaccine Prototype for COVID-19.

Keerthi R. Bhukya, Madhuri Vissapragada and Ravikiran S. Yedidi*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

The administration of COVID-19 vaccines through injections posed challenges during the pandemic due to pain, the need for clinical supervision, and limited compliance. As a potential alternative, an edible probiotic yogurt-based vaccine (YoVac) was conceptualized. We hypothesized that YoVac prepared using Lactobacillus carrying an antigen-coding gene (donor) can transfer the same to other bacteria (recipients) in the human gut microbiome through lateral gene transfer for boosted antigen levels, potentially triggering a robust immune response. YoVac uses *Lactobacillus* engineered with an antigen-coding gene, which can be transferred to other gut bacteria through lateral gene transfer (LGT). *In vitro* experiments confirmed successful LGT of pRBD-Ampr from Lactobacillus (donor) to *E. coli* and *H. pylori* (recipients), as evidenced by both acquisition of ampicillin-resistance and RBD protein expression, resulting in enhanced antigen production with the potential to strengthen the immune response. Conclusion: This proof-of-concept study demonstrates that probiotic *Lactobacillus* can serve as a gene-delivery vehicle for antigen expression and transfer to other bacterial species.

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TCABSE-J Interdisciplinary Sciences Journal

Targeted degradation of the hTERC component of human telomerase using siRNA for pan-cancer RNAi.

Indu Singupuram, Nehasri Revalla, Balarohitha Sundaram & Ravikiran S. Yedidi.*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

Cancer is a disease where the body's cells grow uncontrollably. Telomeres, the protective caps at the ends of chromosomes, shorten with each cell division. Telomerase, an enzyme responsible for maintaining the length of telomeres, is upregulated in cancer cells thereby increasing the cellular lifespan by supporting the multiple cell divisions. The human telomerase reverse transcriptase (hTERT) and human telomerase RNA component (hTERC) plays a crucial role in telomere extension. The current study is focused on the RNA-interference (RNAi) technology in which a small interfering RNA (siRNA) molecule is designed to bind the hTERC and thereby leading to the degradation of hTERC through RNAi which in turn disables the hTERT-mediated telomere extension in cancer cells in pan-cancer. The cancer cell division will be halted due to the disabled telomerase which helps in slowing down the tumor formation and metastasis of cancer cells to other parts of the human body.

Crosslinking oligonucleotide-mediated degradation of RNA stem-loops containing CUG repeats in Myotonic Dystrophy patients.

Zebedee Maddi, Mythili V. S. Akella & Ravikiran S. Yedidi.*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

Myotonic dystrophy 1 (DM1) is a genetic disorder that is characterized by progressive muscle weakness, atrophy, heart rhythm disturbances, cognitive impairments, stiffness etc. This is caused due to excessive (>50) CTG trinucleotide repeats occurring in the 3'-UTR region of the DMPK gene, which leads to the formation of mRNA with more than 50 CUG repeats. CUG binding protein-1 (CUGBP-1) is an mRNA splicing factor that is disabled due to the excessive CUG repeats causing the accumulation of damaged mRNA in the nucleus. Our current invention is a small interference RNA (siRNA) molecule with crosslinking capability that specifically targets the excessive/pathogenic CUG repeats in the DMPK mRNA and promotes its degradation through RNA-interference. This process helps remove the damaged mRNA from the nucleus of the affected cells which in turn restores the normal cellular physiology.

Nanozymes targeting TSHR auto-antibodies: A novel approach to Graves disease.

Sarvani V. N. S. S. Pratha, Azeez Shaik & Ravikiran S. Yedidi.*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

Graves disease is an auto-immune disorder in which excessive thyroxine (T4) is produced (hyperthyroidism) due to the presence of autoantibodies against the thyroid stimulating hormone receptor (TSHR). Overproduction of T4 accelerates body functions and if untreated, can result in serious health issues such as irregular heartbeat, blood clots, stroke, heart failure, muscle problems, complications with fertility, menstruation and pregnancy. The current invention is a nanobody with catalytic abzyme capabilities (Nanozyme) that can specifically target and disable the TSHR-autoantibodies to restore the production of T4 to normal levels. The Nanozyme contains two domains, one that recognizes the TSHR-autoantibodies with high precision and the second domain has catalytic capability that cleaves the target. The dual function of Nanozymes as both binders and catalysts ensures precise recognition and neutralization of TSHR-autoantibodies thus offering a promising therapy for Graves' disease.

Design and development of cecrocin & novel antifungal cecropin-tagged ricin protein.

Jahnavi Silantharajula, Alekhya Nagareddi & Ravikiran S. Yedidi.*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

This invention is about a novel antimicrobial composition that consists of cecropin and ricin for effective antifungal activity. This study is focused on the interaction between cecropins and ricin which shows synergistic antifungal activity, enhancing their efficacy against resistant fungal strains. Cecropins disrupts the fungal membranes, leading to cell lysis, while ricin inhibits protein synthesis, resulting in cell death. A bacterial expression system will be used to produce these components, enabling the study of their combined activity on fungal cells. This finding shows significant potential in treating resistant fungal strains. This technology provides an innovative approach to address the challenges in fungal infections and can also be used in different fields like agriculture, medicine and biotechnology.

TCABSE-J Symposium Proceedings
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Aromat: A Nutraceutical Composition For Treating Polycystic Ovarian Syndrome In Patients.

Balarohitha Sundaram, Lekhana Akula, Mythili V. S. Akella & Ravikiran S. Yedidi.*

Department of Intramural Research Core, TCABS-E Laboratories, Visakhapatnam, A.P. India.
*Correspondence to R.S.Y.: tcabse.india@gmail.com

We prepared a nutraceutical composition for the treatment of Polycystic Ovarian Syndrome (PCOS) using an extract derived from the leaves of *Ficus religiosa*. This nutraceutical composition leverages the natural properties of *Ficus religiosa* to increase the activity of the enzyme aromatase, which catalyzes the conversion of testosterone into estrone and estradiol. By promoting this conversion, the nutraceutical composition reduces elevated testosterone levels in the bloodstream, thereby alleviating symptoms of PCOS such as irregular menstrual cycles, excess hair growth (hirsutism) and insulin-resistance. Additionally, the increase in estrogen levels boosts the production of Sex Hormone Binding Globulin (SHBG), which binds free testosterone and further decreases its bioavailability. This natural, safe, and effective treatment offers a sustainable solution for managing PCOS with minimal side effects.

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