



RGCB

DISCOVERIES FOR A
BETTER TOMORROW

“**BE A LAMP** **OR A LIFEBOAT** **OR A LADDER”**

FACULTY & SCIENTIST DIRECTORY





WHO WE ARE

Rajiv Gandhi Centre for Biotechnology (RGCB) is an Autonomous National Institute of the Government of India, Ministry of Science & Technology, Department of Biotechnology. The mandate of the institute is Discovery, Innovation & Translation in Biotechnology and Disease Biology.

India's engagement with biotechnology, life sciences and medicine is dynamic and constantly evolving. RGCB sees itself as a key player in this development process. Our research is focused on understanding disease biology and processing this knowledge for better management and design of potential therapeutics. The trademark feature of RGCB is the collaborative and interdisciplinary approach we bring to everything we do. We are also special being an institute that translates biotechnology for the society providing advanced molecular diagnostics and forensics besides developing new products and processes. This unique facet and energetic atmosphere of the institute is our success. It also creates an ideal and fertile teaching atmosphere for graduate students and postdoctoral trainees. RGCB is truly of the people, by the people and for the people.



DISEASE BIOLOGY

CANCER RESEARCH	PATHOGEN BIOLOGY	PLANT BIOLOGY
CARDIOVASCULAR DISEASES & DIABETES BIOLOGY		NEUROBIOLOGY
REGENERATIVE BIOLOGY		REPRODUCTION BIOLOGY

INTERDISCIPLINARY BIOLOGY

MEMBRANE & CELL PHYSIOLOGY
ENVIRONMENTAL BIOLOGY
COMPUTATIONAL BIOLOGY

TRANSLATIONAL BIOTECHNOLOGY

TECHNOLOGY, PRODUCT & BUSINESS DEVELOPMENT
LABORATORY MEDICINE & MOLECULAR DIAGNOSTICS
MOLECULAR FORENSICS



RAKESH KUMAR PhD
Distinguished Professor & National Chair

The laboratory asks hypothesis-driven questions to reveal novel insights into the biology and therapeutic relevance of two interconnected areas - chromatin and cytoskeleton remodeling in progression of women's cancers using tools from molecular biology, genetics, proteogenomics, epigenetics, bioinformatics and platform based technologies. Professor Kumar hopes to enable younger colleagues and students live out their dreams in biomedical research and to become future leaders by close mentoring.



RUBY JOHN ANTO PhD, FNASc
Faculty Scientist

The laboratory identifies natural products having chemotherapeutic, chemosensitizing and chemopreventive potential (specifically curcumin, resveratrol, tryptanthrin and uttroside B) explores their mechanism of action and validates them through pre-clinical models.



S. ASHA NAIR PhD
Faculty Scientist

Rising incidence and predisposition at younger ages towards colorectal cancers in India necessitate better understanding of molecular mechanisms behind the origin and progression of this disease. Main emphasis of the laboratory is to understand role of "stemness" regulating genes such as FoxM1 and drug resistance modulating genes like ABCG2, MRP1 in tumor progression and relapse.



T.R. SANTOSH KUMAR PhD
Faculty Scientist

The thrust area of research is to understand molecular mechanisms of chemo resistance and tumor recurrence in triple negative breast cancer. Another important focus of the laboratory is development of live cell based assays for identifying molecules that specifically target key pathways in cancer such as cell cycle, proteasome-Ubiquitin pathway, angiogenesis, HIF and tumor stem cells.



SUPARNA SENGUPTA PhD
Faculty Scientist

Proper spindle segregation is of utmost importance in mitotic division. Cancer cells undergo uncontrolled cell division and develop a resistance towards apoptosis. Our laboratory looks into the role of gamma tubulin associated proteins in controlling mitotic division and at the signaling events that convert a cancer cell into an apoptotic cell.



PRIYA SRINIVAS PhD

Faculty Scientist

Major focus of the laboratory is understanding the mechanisms involved in early onset breast cancer, BRCA1 mutated hereditary breast/ovarian cancers, develop anti-cancer/anti-metastatic strategies based on cues from the tumor micro-environment as well as development of non-invasive diagnostic tools for early detection of cancer.



S. SREEJA PhD

Faculty Scientist

Main focus of the laboratory is to understand the functional role of estrogen, progesterone and selective estrogen receptor modulators (SERMs) using in-vitro and in-vivo models. The laboratory also screens for novel SERMs from bioactive sources.



DEVASENA ANANANTHARAMAN PhD

Faculty Scientist

Principal focus of the laboratory is human papillomavirus (HPV) research, developing studies on cancer prevention, cancer screening and molecular characterization of HPV-related tumors besides identification of pre-diagnostic markers for oral cavity and oropharynx cancer and evaluating intermediate end-points for long-term protection offered by the HPV vaccines.



NIRMALYA SEN PhD

Faculty Fellow

My objectives are to understand the regulation of ERG and ETV1 fusion proteins by upstream kinases and role of ETS (E26 transformation-specific) family of transcription factors in the development of androgen resistance in prostate cancer.



G.S. VINODKUMAR PhD

Faculty Scientist

The laboratory focuses on novel polymer drug delivery systems for cancer, developing nanoparticle and implant based systems as well as synthesis of efficient wound healing systems for tissue engineering applications.





HARIKUMAR K.B. PhD
Faculty Scientist

The main focus of the laboratory is understanding the role of inflammation in physiology (innate immune response) and pathophysiology (cancer). We are particularly interested in the roles of Sphingosine 1-phosphate (S1P) in inflammation and carcinogenesis.



TESSY THOMAS PhD
Program Scientist

The major focus of our laboratory is to unravel the signaling pathways and their intermediates that regulate self-renewal property. In parallel, we generate peptides that can be used for minimal residual tumor detection.



ANI V. DAS PhD
Program Scientist

My research program looks at involvement of non-coding RNAs and associated proteins in stem cell maintenance and also their correlation with HPV-mediated tumorigenesis in cervical cancer. Research also involves elucidation of epigenetic mechanisms in the regulation of multidrug resistance of germ cell tumors.



ANANDA MUKHERJEE PhD
Faculty Fellow

My research is focused on non-canonical nuclear functions of PTEN in development and progression of endometrial adenocarcinoma.



RADHIKA NAIR PhD
Faculty Fellow

The laboratory's primary research interest focuses on investigating mechanisms underlying the metastatic cancer phenotype by integrating genomic, epigenetic and proteomic data with an eventual goal of identifying metastatic "activators" and "suppressors" that may offer new targets in treatment of metastatic disease.



C. CHANDRASEKHARAN KARTHA

MD, FRCP, FAMS, FNASc, FASc
Distinguished Honorary Professor

Professor Kartha provides mentoring and leadership to young investigators working to understand the biology of cardiovascular and diabetes associated diseases. Studies include investigations into atherosclerosis and diabetes, pathogenesis of varicose veins, role of traditional ayurvedic formulations in reversing age associated cardiac dysfunction, pathogenesis of cerebral arterio-venous malformations and metabolic switch in the heart during haemodynamic stress.



ABDUL JALEEL PhD

Faculty Scientist

The laboratory investigates the use of MS-based metabolomics and how independent risk factors for type 2 diabetes evolve over time in developing insulin resistance. We also study regulation of PPAR gamma using miRNA as molecular switches in reducing adipocyte hypertrophy and hyperplasia, since obesity and diabetes are highly associated due to interwoven molecular links.



RAKESH LAISHRAM PhD

Faculty Scientist

The laboratory's focus is on mechanism of 3'-UTR regulation and how it affects cellular functions and diseases. We are particularly interested in non-canonical PAP, Star-PAP that selects mRNA targets and investigates its role in development cardiac hypertrophy (CH).



SONA RAJAKUMARI PhD

Faculty Scientist

The laboratory's long-term goal is to elucidate genetic pathways that regulate brown adipogenesis since in mammals, adipocytes play a vital role in systemic metabolism. Our goal is to investigate if manipulating these pathways to increase the function of brown fat provides new therapeutic avenues to combat obesity and associated metabolic diseases including type 2 diabetes.



**SURYA
RAMACHANDRAN** PhD

Program Scientist

Developing approaches to understand how hyperglycaemia interferes with key genetic, inflammatory and cellular pathways to accelerate vascular diseases using in vitro cellular systems and in vivo murine models.



SUMI S. PhD

Program Scientist

Pathogenesis of varicose veins is not well understood. Our studies have suggested that varicose veins are associated with arterialization of saphenous veins. We focus on mechanosensing and mechanotransductive pathways initiated by altered shear stress in the development of varicosities.



JACKSON JAMES

Faculty Scientist

The laboratory focuses on understanding differential Notch activation for the maintenance of neural stem cells/progenitors, involvement of Pax-6 in guiding the retinal ganglion cell axons to brain visual centers and Pax6-Tlx3 axis de-regulation during early development.



DEBASREE DUTTA

Faculty Scientist

The laboratory focuses on exploiting cues determined from developmental studies including hematopoiesis, angiogenesis/lymphangiogenesis and pluripotency in stem cells to develop disease models (leukemia), creating better tools to detect disease (filiriasis) or designing new molecular targets (metastatic breast cancer).



M. RADHAKRISHNA PILLAI

FRCP^{ath}, PhD, FAMS, FNASc, FASc, FNA

Professor of Disease Biology

We investigate human immune response to natural infection and vaccines of three clinically important viruses. The HPV vaccination study evaluates the clinical and biological effectiveness of one, two and three doses of quadrivalent HPV vaccine in preventing cervical neoplasia. The second program does a comparative evaluation of natural versus vaccine induced immune response to the H1N1 influenza virus. The third study examines cellular and molecular immune responses in understanding reasons for measles vaccine failure (and success).



K. SANTOSH KUMAR PhD

Faculty Scientist

The laboratory has identified several novel Cationic Antibacterial Peptides (CABPs) from the skin secretion of frogs *Clinotarsus suscurtipes* and *Hylarana temporalis* seen in the Western Ghats. We analyze structure-activity that helps develop novel peptide anti-infectives against emerging multidrug resistant pathogenic microorganisms. We also use our expertise in polymers to develop peptide conjugated dendritic nanocarriers and anti-infective gels for local delivery of anti microbials.



R. AJAY KUMAR PhD

Faculty Scientist

The laboratory looks at host-pathogen interactions between *Mycobacterium tuberculosis* (MTb) and human macrophage cells. We focus on how intracellular MTb regulates expression of host genes, especially those involved in immune responses. The laboratory also has programs discovering novel anti-mycobacterial molecules from actinomycetes.



SABU THOMAS PhD

Faculty Scientist

The laboratory studies molecular mechanisms involved in pathogenicity and multidrug resistance of *Vibrios* and cholera control with emphasis on biofilms and probiotics of human origin. Studies also involve understanding the role of polymicrobial biofilms and matrix proteins in chronic wound infections.



E. SREEKUMAR MSc, PhD
Faculty Scientist

The laboratory focuses on targeting host factors to generate broad-spectrum antivirals and disease pathogenesis modifiers. Studies look at identifying interferon-stimulated genes (ISGs) and their modulators as antivirals against Chikungunya as well as elucidating key molecules involved in vascular endothelial leakage as disease modifiers in severe dengue.



JOHN JOHNSON PhD
Faculty Scientist

The laboratory focus is on understanding key mechanisms underlying viral interaction and modulation of the innate immune parameters including complement system. Our model system includes RNA viruses such as chandipura virus and chikungunya virus.



KRISHNA KURTHKOTI PhD
Faculty Fellow

Research focuses on iron homeostasis in mycobacteria. We aim at identifying pathways that contribute to growth arrest and survival during iron starvation employing transposon mutant libraries.



**ARUMUGHAM
RAJAVELU** PhD
Faculty Fellow

Research focuses on epigenetic signaling network of the malarial parasite Plasmodium falciparum to identify various epigenetic markers in DNA, RNA and histone proteins in relation to its relevance in parasite pathogenesis.



SARA JONES PhD
Program Scientist

Studies investigate how influenza viruses evolve in a population exposed to natural infection compared to being vaccinated. We also investigate molecular factors involved in measles vaccine failure.



IYPE JOSEPH MBBS, MPhil
Program Scientist

We focus on epidemiology of leptospirosis including transmission dynamics between various mammals, environment and man. We study the spectrum of serovars and their carrier hosts, impact of climate variability and variation in disease severity.



GEORGE THOMAS PhD
Faculty Scientist

Focus of the laboratory is molecular characterization of incompatible response in the wild species *Zingiber zerumbet* against the soil-borne necrotrophic soft-rot pathogen *Pythium* with an aim of designing control measures for soft-rot disease in the highly susceptible obligately asexual spice crop ginger (*Zingiber officinale*).



V.V. ASHA PhD
Faculty Scientist

The major mandate of the laboratory is isolation and characterization of bioactive compounds from plants identified by ethano-botany. Current work includes characterisation of active anti-inflammatory principle of *Tinospora cordifolia* (Thunb.) Miers and the interplay of autophagy and apoptosis in hepatocellular carcinoma cells using plant based anti-cancer lead molecules.



S. MANJULA PhD
Faculty Scientist

The laboratory focuses on molecular analysis of innate immune responses in *Piper nigrum* L. To develop novel priming-based host protection strategies, we generate high throughput proteome and transcriptome data in *Piper nigrum* (black pepper), under conditions of disease and natural defense elicitor treatments and functionally analyze this by gene over expression and silencing approaches.



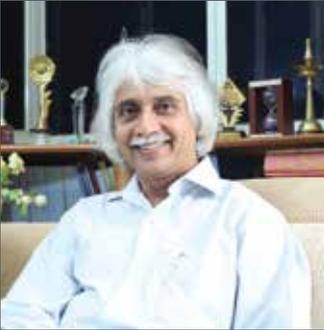
E.V. SONIYA PhD
Faculty Scientist

We study stress-responsive non-coding RNAs from black pepper using high-throughput sequencing to elucidate molecular mechanisms of plant defense responses. Another focus is on the Type III Polyketide synthases involved in the biosynthesis of natural products for possible medical uses.



SARASWATI NAIR PhD
Faculty Fellow

The focus of the laboratory is studying hormone related genes in the algae *Chlorella*. Research focuses on functionally characterizing these hormone related biosynthesis and signaling genes in *Chlorella* for use in bio-diesel production and phytoremediation along with elucidating the role of hormones present in lower plants.



G. PRADEEP KUMAR PhD
Faculty Scientist

The laboratory works on germ cell development and differentiation in mammalian testis, explore how genome integrity is preserved in germline stem cells and attempt to trans-differentiate germline stem cells. We also aim to crack the code of meiosis and understand nature's way of inducing totipotency in the fusion product of two "nullipotent" gametes.



MALINI LALORAYA PhD
Faculty Scientist

The laboratory focuses on understanding events crucial for successful pregnancy including attainment of uterine receptivity involving adhesion, invasion, tissue remodeling and immune tolerance leading to embryo implantation. Polycystic Ovarian Syndrome and Type 1 diabetes are associated with sub-fertility and hence, research on these metabolic syndromes forms a second focus of the laboratory.



R.V. OMKUMAR PhD
Faculty Scientist

Calcium signaling in neurons is essential for higher order brain functions such as learning and memory. Loss of its regulation underlies the cellular mechanisms leading to neurological diseases. Using in vitro models including primary neuronal cultures and in vivo models, we attempt to understand these mechanisms and devise therapeutic strategies that target these mechanisms.



MAYA DEVI PhD
Faculty Scientist

The laboratory looks at regulation of guidance molecules in excitotoxicity one of the causes of neuronal death. Studies involve interaction of guidance pathways with downstream glutamate signaling.



MOINAK BANERJEE PhD
Faculty Scientist

The laboratory studies the intricacies of neuropsychiatric disorders including diagnosis & therapeutics of these diseases from genetic, pharmacogenetic, immunogenetic and epigenetic perspectives.



RASHMI MISHRA PhD
Faculty Scientist

Main theme of the laboratory is to elucidate design principles that may remodel surface dynamics of brain tumors, neural stem cells and neurons that crucially influence origin and progression of neurological diseases with particular emphasis on galectins and lipid rafts as the central modules.



P.K. UMASANKAR PhD
Faculty Fellow

The laboratory focuses on cholesterol transport and metabolism in cells to discover novel drug targets and risk factors for pancreatic and liver cancer, atherosclerosis and fatty liver disease.



MAHENDRAN K.R. PhD
Faculty Fellow

Engineered membrane pores have demonstrated applications notably in single-molecule sensing. We investigate hetero-oligomeric pores for single molecule detection that is effected by monitoring ionic current blockage passing through the pore. This allows the analysis of a wide variety of small molecules, nucleic acids and proteins.



**SHIJULAL
NELSON SATHI** PhD
Faculty Fellow

The laboratory uses an integrated evolutionary bioinformatics platform to understand disease biology with particular focus on better understanding of origin, adaptation, transmission and evolution of pathogenicity and antibiotic-resistance among microbes in a wide variety of environments.



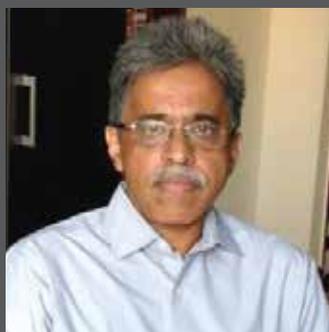
SANIL GEORGE PhD
Faculty Scientist

The laboratory focuses on molecular ecology of amphibians and discovery of natural antimicrobial peptides (AMPs) for new therapeutic applications including the AMPs present in the skin secretion of endemic and untapped frog species of Western Ghats.



K. HARIKRISHNAN PhD
Faculty Scientist

Primary focus of the laboratory is metagenomics, specifically characterizing a novel L-Asparaginase from the soil metagenomic library, having potential in leukemia therapy. Studies also look at characterizing novel antifungal molecules from metagenomic libraries generated from various soil environments and identification of the gut microbiome in Kerala populations.



SAJI GEORGE M.Tech, PhD
Distinguished Scientist & National Chair

A major mandate of RGCB is to translate research into products and solutions to improve human, animal and plant health through innovation that transforms science and data into actionable public benefits. The translational biotechnology group provides operational leadership and support to cross-functional teams throughout all phases of development and commercialization by driving such assigned projects to completion. The group also manages the RGCB-BioNest, a biotech incubator facility in Kochi.



E.V. SONIYA PhD
Faculty Scientist

Molecular Forensics is a major service provider of human DNA Fingerprinting services to judicial, crime investigating and law enforcing agencies. We analyze samples related to maternity/ paternity disputes, crime, alleged rape and man missing. Also provided is DNA Fingerprinting services for flora and fauna including RAPD, AFLP or microsatellite marker-based studies, testing for genetic diversity, species/ population/variety discrimination, hybrid seed testing, Cox-1 based molecular identification and DNA bar coding especially for species identification in wildlife forensics.



R. RADHAKRISHNAN PhD
Faculty Service Scientist

Laboratory Medicine & Molecular Diagnostics (LMMD) facility is the only NABL and NABH accredited molecular diagnostics in the government sector. With high incidence of epidemics in Kerala, LMMD provides 42 viral and many bacterial tests. Affordability, accuracy, credibility and punctuality have helped us in setting an exemplary standard in better diagnostics.

**TRANSNATIONAL
BIOTECHNOLOGY**



S. DAYAKAR PhD
Program Scientist

My work involves development and implementation of in-house standardized PCR based testing for reliable and cost-effective diagnostics. These include Scrub typhus (nested PCR), Leishmania sp. (Nested PCR), HBV genotyping, one step multiplex RT PCR assay to detect human metapneumovirus (HMPV) and Respiratory syncytial virus (RSV) from nasal/throat swabs, one step RT PCR procedure to detect Japanese encephalitis virus from human clinical samples (Blood and Cerebro-spinal fluid).



UMA S. UNNI PhD
Program Scientist

Primary work involves diagnosis, assay improvement and development of screening protocols to detect inborn disorders that can cause early mortality or lifelong disability. Detectable disorders include in-born errors of metabolism, organic acid disorders, fatty acid oxidation disorders, amino acid disorders, hemoglobinopathies, endocrine disorders and other metabolic disorders. Research interests include skeletal muscle signaling in pre-diabetic states and metabolic inflexibility.



PRADIPTA TOKDAR PhD
Program Scientist

Using classical and recombinant methods, Wild type strains are modified to overproduce secondary metabolites of interest having commercial application. The operation would be based on customer driven and institute requirements. Current molecules being developed include Micafungin, Caspungin, Echinocandins as well as recombinant therapeutic peptides such as Liraglutide, Semaglutide and Dulaglutide.

RGCB YOUNG INVESTIGATOR MENTORING PROGRAM

YOUNG SCIENTIST AWARDEES, SENIOR POST DOCTORAL FELLOWS AND POST DOCTORAL FELLOWS

RGCB provides a unique and nurturing ecosystem for young investigators to develop into professionals ready to move into faculty positions, nationally and internationally. Young investigators get close mentoring by senior faculty and are allowed to develop skills such as obtaining extra mural grants as well as develop research collaborations - all needed for becoming fully qualified for independent faculty positions.

RAJESH RAJU PhD

DST Young Scientist Awardee

The study captures the temporal dynamic patterns of microRNA, mRNA, protein and phosphoprotein across subsequent time points in diverse cell types under different dosage conditions. This data is converted to graph-based models for the analysis of relative deviations across cell types for specific ligand stimulation. The graph models are further analysed to identify conservations in signaling pathways and their read-outs.

SANTANU CHATTOPADHYAY PhD

RGCB-GNR Fellow

Gastrointestinal microbiome of gastric cancer and peptic ulcer patients with reference to H. pylori infection.

SOURAV SEN GUPTA PhD

RGCB-GNR Fellow

Understanding the microbial basis of malnutrition in children in relation to caloric sufficiency.

ARCHANA P.R. PhD

DST-SERB National Post Doctoral Fellow

Exploring better modes of drug delivery using nano formulations so that the bioavailability and retention time of these compounds within the body are enhanced.

SWATI KAUSHIK PhD

DST-SERB National Post Doctoral Fellow

Developing methods to visualize cell death in 3D culture models in real-time and high-throughput mode for quantitative drug screening.

PRAMOD DARWIN PhD

KBC Funded Post Doctoral Fellow

We hypothesize that photodynamic therapy (PDT) can target cancer stem cells and cells with a multi drug resistance (MDR) phenotype because of MDR independent accumulation of photosensitizers, light delivery and non-classical death induction. These findings will be tested in stem cell driven melanoma.

VINITHA RICHARD PhD

ICMR Women Scientist

Intend to distinguish an identity of metastasis promoting tumorigenic stem-like cancer cells from non-metastatic cells and define the cellular and molecular regulatory networks that initiate the transition from a naïve tumor cell to a chemo- and immune-resistant metastatic stem-like cell in Breast cancer subtypes.

RATHEESHKUMAR T. PhD

DST- SERB National Post Doctoral Fellow

In vitro evaluation of molecular mechanisms behind occurrence of Pancreatic Ductal Adeno Carcinoma (PDAC) in BRCA1/BRCA2 mutated patients on insulin administration

SHYLA G. PhD

KSCSTE Young Scientist Fellowship

Transcriptome profiling and functional analysis of host defense peptides of frog skin to identify potential host defense peptides with broad spectrum activity against pathogens, present in the skin secretion of the endemic frog species of Western Ghats.

NISHA JOY PhD

DST Woman Scientist

Elucidating the possible functions of 'Simple Sequence Repeats' (SSRs) that occur in the hair-pin precursor sequences of microRNAs (pre-miRNAs).

ARAVIND MADHAVAN PhD

DBT Post Doctoral Fellow

Identify and delineate the role of MTb proteins that are associated with HDAC1 in infected macrophages to downregulate the expression of immune response genes.

ARUN K.B. PhD

KSCSTE Post Doctoral Fellow

Cloning, purification and functional characterization of proteins with predicted acetyltransferase activity.

LEKSHMI SRINIVAS PhD

DST-SERB National Post Doctoral Fellow

Investigating the role of polymorphisms in CYP3A4, CYP3A5 and ABCB1 genes in influencing Tacrolimus response and dosing in transplant recipients.

RENJINI A.P. PhD

DST - Research Associate

Identifying structural ER α -STAT3 interaction to decipher its functional significance during adhesion, invasion and epithelial-mesenchymal transition.

ASWATHY P.M. PhD

DST-SERB National Post Doctoral Fellow

Identification of genetic and environmental correlates involved in susceptibility to Alzheimer and Fronto-Temporal dementia.

DHANYA R. PhD

KBC Post Doctoral Fellow

Currently available therapeutic agents lower blood glucose through multiple mechanisms but do not directly reverse the decline in beta-cell mass. Antioxidant treatments have demonstrated beneficial effects in animal models of diabetes although none these effects have been translated in larger clinical trials suggesting the need for new and more efficient antioxidants, targeting multiple factors of diabetes and its complications. This study examines cytoprotective effects of quercetin, a citrus flavonoid on pancreatic beta cells under induced oxidative stress.

RAJESWARI GOPAL PhD

KSCSTE Post Doctoral Fellow

Circulating adiponectin levels in vivo are inversely associated with risk of cardiovascular diseases and malignancies associated with obesity. Osmotin is a 24 KDa multifunctional stable plant protein which provides osmotic tolerance and exhibits antifungal activity. The protein shows homology to human hormone adiponectin and is reported as an adiponectin receptor agonist. The study aims to express and purify osmotin protein from the wild pepper plant *Piper colubrinum* and analyze its role in possible prevention of obesity associated cancers.

ASHA P. PhD

KSCSTE Post Doctoral Fellow

The study focuses on the anti-inflammatory and anticancer activities of sea algae-derived compounds as potential small-molecule therapeutics in prevention and/or treatment of colorectal cancer using suitable pre-clinical animal models.

LIJU V.B. PhD

KSCSTE Post Doctoral Fellow

A synergistic combination of curcumin and the conventional chemotherapeutic drug, 5-Fluorouracil can bring down the amount of 5-Fluorouracil needed for inducing apoptosis in breast cancer cells. The combination has been shown to work in a receptor independent manner with maximum cytotoxicity in triple negative breast cancer cells (TNBC). The major objective of this study is to evaluate the anti-tumor effect of this combination against cancer stem cells population in MDA-MB-231 cells and to elucidate the mechanistic pathways regulating the same.

POULAMI BASU PhD

DBT Post Doctoral Fellow

Gestational Diabetes Mellitus (GDM) is a common complication in pregnancy often diagnosed in the last trimester of pregnancy when the fetus may already be affected by the faulty maternal metabolism. This study investigates exosomal micro-RNA and RNA processing factors found in GDM that reaches the target cells and can potentially deregulate protein production and downstream pathways leading to GDM.

SAYUJ K.P. PhD

CSIR Research Associate

The work focuses on elucidating the Zingiber-Pythium pathosystem at the histological level to decipher underlying mechanism of Pythium penetration and colonization in the ginger tissues.

VISHNU S. NATH PhD

KSCSTE Post Doctoral Fellow

Agronomic practices and the use of chemical fungicides are less effective in controlling the soft rot disease in ginger caused by the soil borne necrotrophic oomycete pathogen *Pythium* spp. The study focuses on "defense priming" in ginger against soft rot at the molecular basis of elicitor action and to evaluate their translational potential in disease control at the field level.

KALAIVANI V. PhD

DST - SERB National Post Doctoral Fellow

Pre-eclampsia (PE), a medical condition in which hypertension arises in pregnancy in association with proteinuria, is the 3rd leading cause for maternal mortality and the 7th leading cause for the perinatal mortality. The pathogenesis of PE is caused by poor placentation with impaired angiogenesis of maternal spiral arteries leading to intra-uterine growth restriction. The study aims to identify the role of O-glycan structure of apolipoprotein(a) [apo(a)] in the modulation of angiogenesis associated with pre-eclampsia.

KRIPA KRISHAN PhD

Research Associate

Development of assays for the identification and absolute quantification of biological molecules (metabolites, drugs etc.) in samples through fragment ion determination and quantification (quantitative analyses of compounds) by LC/MS/MS.

RINCE JOHN PhD

DBT Research Associate

Fodrin a cytoskeleton protein is made up of two subunits α subunit (240kDa) and β subunit (235kDa). Previous studies have shown that it interacts with γ -tubulin, which is primarily localized in the centrosome. Therefore, this study aims to generate reagents such as truncated mutants of α -fodrin to identify the region of interaction between α -fodrin and γ -tubulin as well as mammalian overexpression construct of β -fodrin.

MAHESH S. KRISHNA PhD

DST Young Scientist

Adipogenesis is a process of cell differentiation leading to development of adipocytes from mesenchymal stem cells. Obesity is an end result of de-regulated adipogenesis. Understanding regulation of molecular mechanisms underlying obesity through miRNA is the major focus of this study.

NEELIMA SINGH PhD

DBT Post Doctoral Fellow

Lipotoxicity is defined as a process where excess accumulation and over-activation of lipid signaling pathways trigger cellular distress which causes defective mitochondrial function, endoplasmic reticulum stress and ultimately leads to lipoapoptosis. My study investigates the regulatory role of non coding RNA's in lipoprotein metabolism.

ABITHA MURALI PhD

DST Young Scientist

The primary aim of the study is to evaluate usefulness of miRNA in saliva of oral cancer patients as a clinical biomarker of disease and to determine its potential prognostic value.

ABBREVIATIONS

CSIR:	Council for Scientific & Industrial Research, Government of India
DBT:	Department of Biotechnology, Government of India
DST:	Department of Science & Technology, Government of India
RGCB-GNR:	GN Ramachandran Post Doctoral Fellowships offered by RGCB
KBC:	Kerala Biotechnology Commission
KSCSTE:	Kerala State Commission for Science, Technology & Environment
SERB:	Science and Engineering Research Board, Government of India



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