

PULSE

IACR 2020-Leading The Fight Against Cancer



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waran A.* & G. S. Vinod Kumar**
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**Research Scientist

RGCB SCIENCE SPOTLIGHT

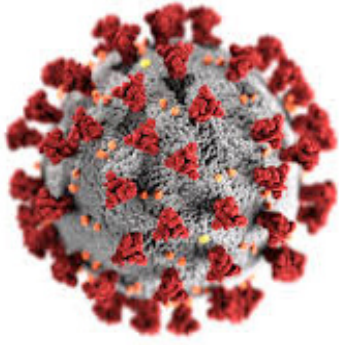


Kovalam at dawn
Photograph by Ananda Mukherjee, RGCB



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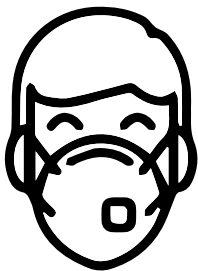
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COVID 19^{AND} RGCB

As we prepared for the release of February 2020 edition of PULSE on March 20, 2020 these are updates on the COVID 19 health problem and RGCB's responses.

- Corona virus information corner on the RGCB website
- Cancellation of MSc and PhD course work classes.
- Setting up of Institute Response Committee
- In-house hand sanitizers manufactured at RGCB
- Providing these alcohol based sanitizers to all the laboratories, cafeteria, common instrumentation rooms, etc.
- Wiping of elevator buttons, access keys and door handles every 30 minutes with sanitizers
- Strict regulation on visitors to RGCB.



- Thermal detector to detect the body temperature of all the RGCB personnel and sanitizing their hands before the entry into the main lobby
- Abiding all the rules set by the Government of India during this crisis period.
- Informing the RGCB family day-to-day update on the status and precautionary measure to be undertaken against Covid19.
- RGCB urged all its personnel to achieve the 'break the chain' initiative undertaken by the State of Kerala
- RGCB urged its members to maintain social distancing following the rules set by the Government of India.
- RGCB to take up molecular epidemiological studies to improve strategies to contain COVID-19

Editorial Team:

Debasree Dutta, Devasena Anantharaman
& Surya Ramachandran. Design: Harish. G

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Biotechnology (RGCB), Thiruvananthapuram 695 014 (For free subscription)

- ICMR approves RGCB as a testing facility for #COVID19 in the state, with a potential to test upto 3000 samples in 24 hours.
- “RGCB eLearn” Moodle based classes initiated for the MSc students who are at home in different parts of the country owing to suspension of classes



State banks on inputs from scientists

RGCB to take up epidemiological studies to improve the strategies to contain COVID-19

C. MADA
THIRUVANANTHAPURAM

As it braces for the next stage of the COVID-19 pandemic, when community transmission of the disease could derail even the best laid-out plans and overwhelm an already strained health system, Kerala is banking on the strength of inputs from the scientific community to guide the State through what could be a prolonged engagement with the pathogen.

The Rajiv Gandhi Centre for Biotechnology (RGCB) is conducting epidemiological investigations into the ongoing epidemic of COVID-19 which could help the State improve its strategies in surveillance and containment.

On Wednesday, the Indian Council of Medical Research approved the RGCB as one of the official testing sites for

COVID-19. Sample testing will commence as soon as test kits are received. With four PCR (polymerase chain reaction) platforms, the RGCB can handle nearly 500 samples daily.

Pneumonia cases

“The focus should not just be on diagnosing and counting cases. Unless we look more closely at the acute pneumonia cases being reported in hospital ICUs, we could be missing the silent transmission of COVID-19 in the community. The RGCB has already initiated the screening of all acute cases of pneumonia being reported in private hospitals. The State has now requested us that we include cases from the government hospitals and medical college hospitals too in our surveillance study,” RGCB Director M. Radhakrishna Pillai

Serovigilance studies to be held amongst health-care personnel to detect SARS-CoV-2 viral antibodies

COVID-19

told *The Hindu*.

All hospital-based cases of acute pneumonia with bilateral lung infiltration should be screened to determine whether it is bacterial or viral pneumonia and the causative agent should be identified. If at all a case of viral pneumonia due to SARS-CoV-2 is detected, (which is not officially accounted for), it could be the first indication of COVID-19 silently transmitting in the community. What is proposed is the

identification of sentinel sites, at least 10 hospitals in each district, from where respiratory samples (from pneumonia cases) would be collected and diagnosed using real-time PCR assay. Detecting community transmission early can help the State intensify surveillance.

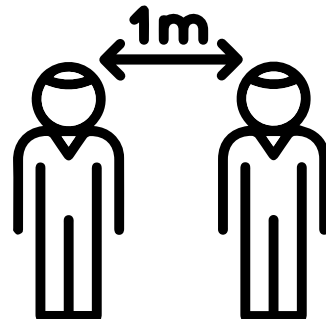
Strain identification

“We also propose to do the whole genome sequencing of the virus and strain identification studies amongst health-care personnel working in hospitals to detect SARS-CoV-2 viral antibodies (IgG or Immunoglobulin G) in their blood samples. This is another indication of community spread because front-line health-care workers would be the first persons in the

community at risk of contracting infection from a potential COVID-19 case,” Dr. Pillai said.

COVID-19 mostly presents as a mild infection, and it is very difficult to clinically distinguish it from common cold or even H1N1, from which healthy young individuals recover normally. IgG studies amongst health-care personnel would thus indicate the asymptomatic transmission of COVID-19.

The RGCB also plans to conduct epidemiological studies by studying the blood samples of COVID-19 patients who have since recovered from the disease. “The magnitude and impact of COVID-19 is huge and the virus is going to be with us for a long time. The sooner we invest in real science, the better grip we will have over the epidemic,” he said.



DIRECTORS TAKE



Our deepest sympathies go out to everyone affected by the ongoing coronavirus pandemic and the global medical crisis that has followed. There is significant uncertainty on how the disease will behave in the weeks and months ahead. In response to this rapidly evolving pandemic, RGCB has taken important steps to ensure the health and safety of our students, staff, partners, and the public. While this has required us to postpone or cancel our teaching programs and scale down research we remain fully operational in providing molecular diagnostics and laboratory services 24x7 for both coronavirus detection as well as other investigations. RGCB is also in the forefront leading public health studies on characterizing viral pneumonia across hospitals as well investigating prevalence of relevant antibodies, screening libraries for inhibitors, repurposing tested drugs-and understanding the immunomodulatory properties of classical Ayurveda formulations in the wake of the COVID 19 outbreak. The RGCB management, the disease response team, essential support systems and our scientists continue to work, sometimes albeit remotely, thus allowing us to carry out our mission without significant interruption.

It is clear now more than ever that scientific research is going to provide the answers needed to reduce the pandemic's impact on public health today and in the future. As a center of excellence in studying disease biology RGCB is proud to be contributing its share to the country in managing this pandemic.

Today's coronavirus pandemic will ultimately subside—thanks largely to the heroic efforts of medical professionals on the frontlines supported by scientists working in the background for better treatments and ways to prevent future outbreaks, and most importantly the brilliant support and administrative machinery of state and central governments. RGCB has implemented the Honorable Prime Minister's call to remain at home for the next 21 days.

In the months ahead, we look forward to sharing with you updates on the exciting progress our researchers are making in laboratories and clinics around the world. In the meantime, we wish you and your family good health.

Rajiv Gandhi Centre for Biotechnology (RGCB) organized the 39th Annual Conference of Indian Association for Cancer Research (IACR-2020) from February 5-7, 2020 at Thiruvananthapuram, India with the theme "Leading the Fight against Cancer". As the current head office of IACR is at RGCB and I am the President of IACR, the cancer research program at RGCB decided to make this event one of the best of IACR meetings.

The annual conference of IACR is India's best known cancer research meetings that traditionally brings students, researchers, post-doctoral fellows & young investigators together with established cancer researchers and oncologists to discuss current developments in understanding the molecular basis of cancer and therapeutics. As cancer researchers, we also care for the most deserved and contribute to serve the society through research.

The meeting began with the traditional lighting

of the holy lamp by all former presidents of IACR, including Professor Madhav Gajanan Deo (the founding president), Dr. Rita Mulherkar, Professor Neeta Singh, Dr. BhudevDas and Dr. Shubhada V Chiplunkar.

This was followed by a special address by Dr. Soumya Swaminathan, Executive Director and Chief Scientist, World Health Organization through a video message. She indicated the fact that “in India, shifting from traditional diet to western diet is one of the major reasons for cancer”. Dr. Swaminathan added, “major risk factors for NCDs are tobacco, unhealthy diets, inadequate physical activity, alcohol consumption and very importantly, air pollution and incidence of cancer expected to double by 2040”. Also she gave

for better accomplishment and excellence in India for goals of cancer prevention and therapy. Five Past Presidents including the Founder President, Padmasri Dr. Madhav Gajanan Deo led the session. The thought provoking debate session on “Cancer Research Investment should Shift from Late-Stage Treatment to Early-Stage Detection” was another special interactive session. Speaking for the motion was Dr. R Sankaranarayanan, Former Director of Cancer Prevention, IARC, Lyon, France and against the motion was Professor Soo Khee Chee, Former Director, National Cancer Centre, Singapore. This was an outstanding discussion bringing true realities in health policy planning, a topic that laboratory cancer researchers rarely get to understand or talk about.



hope that “India has potential like infrastructure as well as human resources to take advantage of the opportunity to tackle the situation”.

IACR normally has a Presidential Address. We thought that this was the time to reflect back at the origins of IACR, started 39 years back and to hear from the leaders who led the growth of the organization especially during its formative years. Hence the Presidential Address was converted into an enlightening session entitled “IACR-2020: Looking Back to Fight Forward”, celebrating the extraordinary achievements of past IACR Presidents in molding the present and future of Indian Cancer Research. This served as an open forum to share the past, to chart out changes needed and strive

This IACR conference also saw introduction of unique session “Fighting and Winning: the Self-fulfilling Prophecy” where three eminent personalities; Ms. Mamta Mohandas (Cine Artist), Dr. P Kusuma Kumari (Former Deputy Director, Regional Cancer Centre, Thiruvananthapuram), Dr. N Sreedevi Amma (Former Additional Director, Regional Cancer Centre, Thiruvananthapuram) who have in real life fought back against the disease shared their personal experiences in fighting and

winning the battle against cancer. This session for Cancer Survivors served the purpose of connecting cancer researchers to real life and was definitely an inspiration to initiate more clinical trials for cancer treatment in India. Former President of IACR, Professor Neeta Singh wrote about this session, **“they (the cancer survivors) showed that one is not handicapped by their body but by their mindset. If you have grit and determination you can dethrone the emperor of all maladies-cancer”**.

The keynote address was given by Professor Partha P Majumdar, former director of National Institute of Biomedical Genomics, and President of the Indian Academy of Sciences. Other renowned

scientists included Dr. Frederic Biemar, Director, International Affairs, American Association for Cancer Research; Dr. David A Wink Jr. of National Cancer Institute, NIH, USA; Dr. Ravi Dashnamoorthy, Rutgers Cancer Institute of New Jersey, USA; Dr. Patrick M. Gaffney, Oklahoma Medical Research Foundation, Oklahoma, USA; Professor Prem Kumar Reddy from Mount Sinai, New York, Professor Danny Dhanasekharan from Oklahoma University, USA, Mr. Manu Nair from the Oklahoma Medical Research Foundation, USA, Professor Bharat Aggarwal from Inflammation Research Center, San Diego, USA, Professor Subrata Sinha from All India Institute of Medical Sciences, New Delhi, Dr. Nitin Telang from Palindrome Consultants, USA, Professor Kumaravel Somasundaram and Professor Kondiah from IISc, Bangalore, Dr. Soumen Chakraborty from ILS, Bhubaneswar and Professor Prabhudas S Patel from Gujarat Cancer & Research Institute, Ahmedabad, and Ms Sutapa Biswas, Executive Director, Cancer Foundation of India.

The students and staff of RGCB gave an outstanding arts performance of the heritage of Kerala culminating in a spectacular mesmerizing panorama at the cultural evening on February 6, 2020.

It was a momentous experience for cancer research at RGCB and me when I handed over the first milestone payment of USD \$ 25,000 to my colleague Ruby John Anto as part of the first milestone payment for her drug development program following her discovery that Uttroside B (a plant derived compound) could potentially treat liver cancer. The molecule is now at final stages of pre clinical evaluation. For me as it was a great moment as head of RGCB, being the first real commercial success from any R&D program at the institute. For Ruby it was sweet moment as well proving eloquently that natural product research can go beyond publications.

Padmasri Dr. M G Deo distributed various Poster and Oral presentation awards to the contestants at the valedictory function. In his words to me

Dr. M G Deo, wrote, **“It was the most successful IACR conferences. All sessions were cutting edge science. The one on personal insights of cancer survivors was a lesson to all on how to live a ‘positive’ life.”**

I have a lot of colleagues to thank for this outstanding conference. My organizing secretary Priya Srinivas bravely undertook all the hazards involved in organization of such a large meeting and did a splendid job. My colleagues in the cancer research program, Harikumar and TR Santosh along with all scientists in the cancer research program strived very hard to ensure that all arrangements were in place. I also place on record my deep appreciation and gratitude to all the invited delegates, guests and delegates whose participation made this a great meeting. I must also thank the production managers of what is today rated as the best arts performance that RGCB has ever performed. Asha Nair, Devasena, Rajeswari, Sangeetha and Surya supported by the wonderful and outstanding RGCB students and staff really provided a treat. The RGCB Administration led by Mohan and Jayan ensured that details worked like clockwork. And finally a word of our student and young staff volunteers. Coordinated by Revathi they made what makes any conference organizer’s dream come true. These beautiful and charming persons made sure that no delegate returned home without wonderful thoughts of them and in turn RGCB.

Indeed this has been one of the most delightful and memorable events of my 15-year journey at RGCB. I started with a similar cancer research meeting in 2005 where the Late Dr. Abdul Kalam took RGCB by storm sitting in the lobby on stool surrounded by hundred of students. I am sure RGCB has a lot more in store for India.

Jai Hind



Professor M Radhakrishna Pillai,
FRCPath, PhD, FASc, FNASc, FAMS, FNA
Director

IACR 2020

SPECIAL PHOTO FEATURE



IACR 2020
CULTURAL
PROGRAM





STRAIGHT FROM THE HEART

MY TRYST WITH NATURE: WAYANAD, THE ETHEREAL BEAUTY

S Asha Nair, PhD

As I hopped into the AC compartment of Rajadhani express one cold evening on my official duty to Calicut University, I never deluded in my wildest dreams that the very next day I would be 2100 meters atop a hill sitting and contemplating the splendor of God's creation. Things happen in a tick, Right! After completing my official duty by 4.00pm in the evening, I was confronted with the question-“Coming to Wayanad, just 64 Kms from here”. Scores of thoughts raced through my mind. Was it excitement or fear, No idea. Never mentioned home that I would change plans for the day. Grabbed my phone, rang up home and lo and behold I got the green signal. I instantly turned into a kid. Excitement surged in and I started envisaging the uphill drive and the forest exquisiteness, which awaited me. Huddled on to the side seat of the car, with few of my friends we started the drive.

The city confines and the traffic block added to my limits of patience since I was by thoughts already in a jungle . It was dark and drizzling when we really started the rough terrain though the forest. Saji an experienced driver came with his Mahindra Bolero Camper and we all hopped in ready for the tumultuous journey, high up. The darkness caused all our senses to be very vigilant and the rough terrain accentuated the spookiness. Giant trees lined the path and the sound of crickets, frogs croaking for rain made a symphony unfamiliar to any us and we thought the orchestra to be awesome, mainly out of fear. The journey continued with the camper pulling us uphill. All were in utter silence except the chattering of Saji telling us on how



spectacular it is in the daylight and asked us to glance for some deers which can come dashing out of the woods. It felt like a horror movie and I sat peering out of the window in anticipation to see something scary. The bumpy ride was bone rattling and my rear end gave out warning signals of pain. Still we all were stiff as a rod held on tight to the handle of the camper with protuberant pupils as if dilated for an eye examination. Ha, Ha, Ha! We were getting accustomed to the darkness outside and our heartbeat was erratic, if an ECG showed a nearly straight line, it would not be surprising. Finally we made it to the cottage and was warned there would be no signal for whatsoever brand of phone and connectivity and there was no power. Generators run to light lamps till 11,00 pm. All stared at each other and none uttered a word. The coordinator, Mr. Sasi was sure to be murdered in the next instant and for his luck he was at the kitchen ordering whatever was available to eat.

But the ambience and the tranquillity surrounding us, with no phone beeps, no vehicle horns, no TV soap sounds and wailing, we all settled for a quite dinner and huddled up waiting for the generator to be put off. Saji had very humorously put forth that there would be animals prowling and we could hear sounds. I have never thought silence would be this daunting. Lights out, we delved beneath the blankets and all went off to sleep. In the heck of the night, suddenly I woke up to the sound of a bandicoot I think, hustling around the bushes and thought over my dream of a small tiger cub standing near our door. All said and done, it dawned and we all were given a cup of black tea,



and said breakfast at 9.00 am. Memories of school hostel gushed in and the coordinator Sasi sensing a bang on his head, as if watching over a tree just walked away.

We all scattered around and took in the perfection surrounding us. It was like heaven in Gods own Country. The lush green atmosphere, the chirping of birds, the squirrel on the trees, all was mesmerizing and we like children in front of candies started exploring the surrounding. We walked uphill the view point towards the dead end as Saji had directed us. Detol was sprayed by the kitchen boy on our toes and legs to keep away leeches. I last encountered a leech in my zoology lab studying its digestive system. Anyway, we

clambered up and the view point was a turning point for each one of us. The expanse of the dense forest below with natural water lakes and the canopy of huge trees filled each one of us with joy and love of our Universe and the creator's masterpiece. We sat down on the rock and absorbed in every ounce of winsomeness, elegance and artistry of nature into us. One moment of deeply inflowing into Nature can enthuse in us new attitudes and priorities in life that would take years to develop. When people feel immersed and absorbed in the natural world, they are learning the highest that nature has to offer — because Nature Herself is their Teacher. I closed my eyes to ponder my inner self and the surging

of tranquility within me was boundless. I felt one with God and the bliss was infinite. We all sat in our own thoughts, each one of us oblivious of the presence of another human nearby, burrowed into the ethereal beauty of the green canvas in front of us. Finally, it was time and we

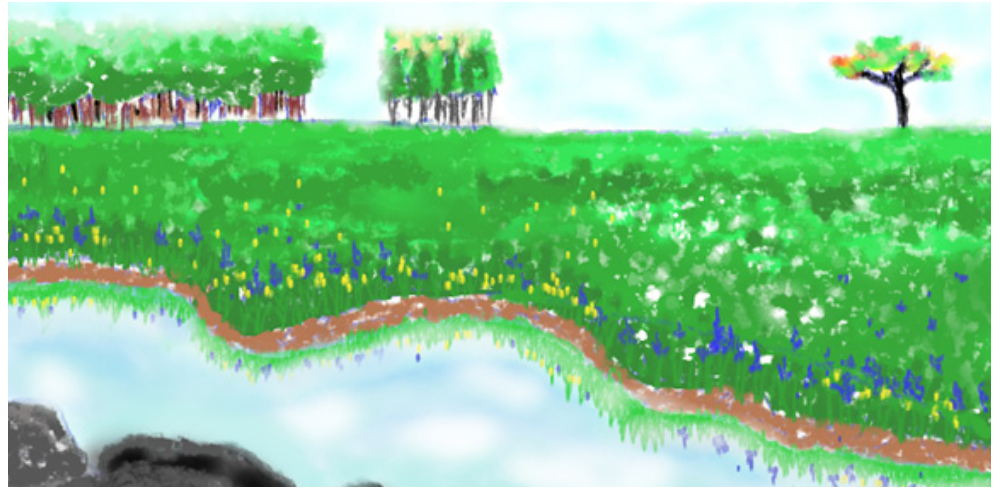
moved on slowly to the woods, smelling the wild lilies, caressing the green grass, stroking the giant trees and perceiving the wet ground beneath us.

I felt exhilarated. I felt like I was one with everything around me and it felt powerful, yet peaceful. Every part of me was moving and flowing in harmony. I could connect and be a part of nature and could connect to my deep inner self. I found beauty within me. Late afternoon, we started our descent, same terrain, but not spooky. We absorbed the splendour profusely, thanked Saji for his help and drove back into the Maddening Crowd.

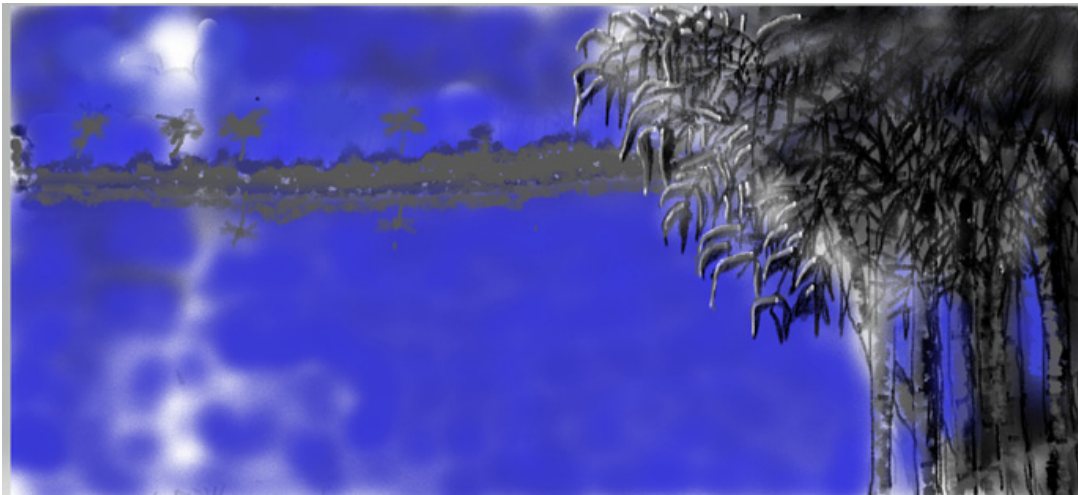


Manjula S, Ph D

AN DIGITAL ATTEMPT AT PAINTINGS



Scenery



Bamboo in moonlight



The woods

VIBRANT LIBRARY CULTURE OF KERALA STATE

Suma S Nair
Project Assistant (Library)

Kerala has a long and chequered tradition of libraries for centuries. India's first public library was set up in Kerala in Thiruvananthapuram in 1829. It is now known as the Central State Library in the city.

The ruler of Travancore State at that time was Maharaja Swathi Tirunal, a prodigy and a man of high accomplishment who laid the foundation for the modern system of education in the state. The then British Resident of Travancore Colonel Edward Cadogan, grandson of Sir Hansloans, the founder of the British Museum. He convinced the Maharaja about the need and importance of libraries in a modern educational system. Joining together they established in Trivandrum the public library. The king took active interest in the affairs of that public library throughout his rule. The first attempt to collect books in Malayalam was made during the regime of VishakamThirunal Maharaja. The first of such libraries was the Sugunaposhini in 1894 at Vanchiyoor in Trivandrum. At Neyyattinkara in the southern part of Travancore, a library with the name Janana Pradayini was formed in the year 1909. Later, in the central part of Kerala, at Chengannur, the Sankaravilasom Library came into being.

In the Malabar region, the library movement was built and nurtured as part of the Nationalist Movement. The leaders then build a network of libraries and make them part of the Freedom Movement as well as to promote their ideals.

Kerala Grandhasala Sangham: In 1956 Kerala State was formed by uniting the erstwhile Travancore,



Cochin and Malabar States. Since 1958, the Travancore Cochin Grandhasala Sangham has been known as the Kerala Grandhasala Sangham by incorporating the libraries of 32 Travancore, Cochin and Malabar. The emergence of the Kerala Grandhsala Sangham, with devoted service and voluntary spirit of many eminent personalities of different parts of Kerala, a new chapter began in the history of the library movement in Kerala.

From then libraries have become a part and parcel of "Malayalees". It has become a hub of activities, from reading to social activities to new plans and action.

The libraries, numbering more than 5000, were instrumental in inculcating the reading habit among the public. It is not in the number alone

that the Kerala libraries excel. It is in their quality of service and functioning that the public libraries claim their uniqueness. The Kerala library system owes less to Government sponsorship and aid and more to the voluntary effort of the people. Most of the libraries are established at the sole initiative of the local people.

It is true that the onslaught of the digital era and technologies have affected the reading habits of the people the world over. According to Dan Cohen, Vice Provost for Information Collaboration at Northeastern University libraries across the

ensure reading habits are inculcated in children and other important sections of the society.

This community experience of reading is one of the major driving forces for Kerala's libraries, even when the explosion on mobile phones and digital technologies, coupled with the boom in online retails where books are available at lower prices.

Kerala Libraries are also increasingly focusing a lot on digitizing their libraries and introducing IT applications.

The vibrant library culture has prompted private interest in setting up similar institutions in the State. For instance, in Thiruvananthapuram, a young civil engineer, has set up "The Reading Room", a bookstore-cum-library for, mainly, children. There are many "vayanakalaris" across the State.

Building the habit of reading in young minds is a must for building a sensible generation. Thanks to high literacy rate and education of, Keralites driven by the pure passion for reading

and social commitment are working very hard in creating and sustaining a culture of reading. Clearly, the drive is on.



country, and around the world, are seeing steady, and in many cases precipitous, declines in the use of the books on their shelves. The University of Virginia, one of the great public universities and an institution that openly shares detailed library circulation stats from the prior 20 years, is a good case study. College students at UVA checked out 238,000 books during the school year a decade ago; last year, that number had shrunk to just 60,000.

However Kerala stills holds on to libraries and has seen a rise in the number of libraries and people attending these institutions. Many small and big organisations and NGOs are taking several steps to

RGCB NEWS

RGCB AT INDIA INTERNATIONAL SCIENCE FESTIVAL 2019

RGCB stall at the Mega Science Expo at India International Science Festival showcased RGCB's achievements. The festival was inaugurated by Honorable Minister of Science & Technology, Dr. Harsh Vardhan





RGCB AT INDIA
INTERNATIONAL
SCIENCE
FESTIVAL 2019



RGCB
NEWS

RGCB NEWS

IISF 2019 MEGA
SCIENCE EXPO



Inquisitive minds of exquisite sizes! The youngest visitor at the RGCB Thiruvananthapuram stall IISF 2019 Mega Science Expo.



RGCB also conducted an outreach program for school students in its main campus ahead of the **IISF 2019 India International Science Festival 2019**. More than 200 students visited our laboratories and got a glimpse of our research activities. Dr Suresh Das Emeritus professor, IISER TVM inaugurated the program and Dr. E Sreekumar, RGCB gave a talk on “VIRUS” Facts Around Fiction.



RGCB
NEWS



RGCB NEWS

RGCB Thiruvananthapuram invents a low cost strip that identifies the type of poisonous snake from a blood test within 2 minutes of a snake bite. This will help the doctors administer the appropriate antivenom at the earliest.

New strip to identify snake bite

**DC CORRESPONDENT
THIRUVANANTHAPURAM, NOV 22**

A strip that identifies the type of poisonous snake from a drop of the victim's blood in less than two minutes of testing may soon be available, which will help doctors administer the toxin-specific antivenom and spare victims of side effects of the polyvalent antivenom.

The breakthrough invention was made by scientists at Rajiv Gandhi Centre for Biotechnology (RGCB), which fabricated the device at an in-house production cost of less than ₹50 apiece.

Continued on Pg 2

Strip to identify snake bites

■ From Page 1

Thiruvananthapuram: RGCB completed multi-centric field trials of the device and final results came in last week.

The strip is easy to use, needs no lab or no trained person to handle and can be stored at room temperature for a year. It has five lines on it, one for control, which has to be there every time for the test to be functional, and one for cobra, krait, Russell's viper, Saw-scaled viper respectively.

Depending on the type of snake, the corresponding line on the strip responds within two minutes. If the bite is nonpoisonous, there will be no change on lines even after 10 minutes.

Union Health Minister Harsh Vardhan is expected to dedicate the life-saving device to the nation soon. The Centre may entrust its mass production to Defence Research and Development Organization, offering a revolutionary salve to mounting snakebite deaths, estimated at 70,000 in Government hospitals alone.

lar to the strip, RGCB tested a lateral flow device capable of detecting all four snake species believed to cause most deaths in the country. Testing was done at both Government and private hospitals treating snakebites.

Test results are very promising with no cross-reactivity and very good correlation. This device is a lateral flow testing device that is similar in nature and usage as that of a pregnancy detection kit", said Dr R Radhakrishnan Nair at RGCB.

Elsewhere in the world, the ELISA technique is used, though labor-intensive, requiring skilled staff and a dedicated working environment (laboratory setup).

The strip test requires one drop of exudate from the wound or a drop of blood taken from a finger prick (like that being done for blood glucose evaluation).

Dr Jothydev Kesavadev said the latest tragic death of the student in Wayandu exposed the growing trend of risk-aversion among doctors.

RGCB Thiruvananthapuram at the Global Bio Meet 2019



RGCB Thiruvananthapuram Foundation Day lecture by Professor Vijayalakshmi Ravindranath, Founder & Director, Centre for Brain Research, Indian Institute of Science, Bangalore



RGCB NEWS

Dr. EV Soniya signing an MOU in the presence of the DBT Secretary Dr. Renu Swarup on behalf of RGCB with a consortium of leading institutions in the UK for promoting collaboration in the area of crop sciences



'Emerging concepts in Bacterial biofilms: Molecular mechanisms and control strategies' book published by Cambridge Scholars Publishing, UK. Edited by Dr. Sabu Thomas and team from RGCB Thiruvananthapuram



Young Malayalam cinema heart throb Tovino Thomas visits RGCB Thiruvananthapuram ahead of his upcoming movie on Forensic Science



RGCB NEWS

RGCB PULSE
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24

A HARVEST OF AWARDS FOR RGCB

RGCB received the Best Pavilion award in the IISF 2019 Mega Science Expo at Kolkata.



Dr. Arumugham Rajavelu receives Young Scientist Award from the Indian Society for Parasitology



Dr. EV Soniya, Scientist G, Department of Biotechnology, Government of India for the National Woman Bioscientist Award from the Union Minister of Science and Technology and Dr. Harsh Vardhan. The award is in recognition for her lifetime research contributions and their application to society. The award carries a cash prize of Rupees 5 lakhs together with a citation and a gold medal. Dr. Soniya has made significant contributions to understanding genomics of susceptibility of pepper to disease and also leads the DNA fingerprinting services. It was under her leadership that RGCB identified all victims of the Ochi cyclone and the Puttingal firework tragedy in record time.

A HARVEST OF AWARDS FOR RGCB

A HARVEST OF AWARDS FOR RGCB

Dr. KR Mahendran receiving the Merck Young Scientist Award in Biological Sciences. The award carries a cash prize of Rupees 2 lakhs together with travel grant of Rupees 1.5 Lakhs.



The 2019 Student Merit Award winners receiving the prizes from with Professor Vijayalakshmi Ravindranath and Professor M Radhakrishna Pillai, Director, RGCB



Professor M Radhakrishna Pillai receiving the Sun Pharma Science Foundation Research Award for life time achievements in Medical Sciences research from Dr Vinod Paul, Member, NITI AAYOG in Delhi.



Dr. Shijulal Nelson Sathi, receiving the Kerala State Council for Science, Technology and Environment (KSCSTE) Young Scientist Award 2019 from Honorable Chief Minister of Kerala.



A HARVEST OF AWARDS FOR RGCB

A HARVEST OF AWARDS FOR RGCB

Dr. Rakesh Laishram awarded the prestigious Swarnajayanti Fellowship by the Department of Science & Technology. Under this scheme a selected number of young scientists, with proven track record, are provided special assistance and support to enable them to pursue basic research in frontier areas of science and technology.



Dr. Surya Ramachandran receiving the ICMR Chaturvedi Kalawati Jagmohan Das Memorial Award for her research in the field of cardiovascular diseases from the Honorable Minister for Health, Family Welfare and Science and Technology Dr. Harsh Vardhan

PhDs AWARDED



SAJITH R

Title of the thesis: *"Proteomic analysis of dormant and reactivated Mycobacterium tuberculosis, and characterization of Rv0474, a putative transcriptional regulator identified from reactivated bacterium"*

Name of Mentor: Dr. Ajay Kumar R
September 2019



NIMMY MOHAN

Title of the thesis: *"Role of RNA binding protein, RBM10 in gene expression and cardiovascular functions"*

Name of Mentor:
Dr. Rakesh S Laishram
December 2019



PRIYA R PRABHU

Title of the thesis: *"Functional Attributes and Protective Efficacy of Antibodies Induced by Different Doses of Vaccination Against Human Papilloma Virus (HPV)"*

Name of Mentor:
Professor. M Radhakrishna Pillai
December 2019



KRUPA ANN MATHEW

Title of the thesis: *"Hypoxia Induced Cell Signaling in Drug Resistance of Cancer and Modulation of Cancer Stem Cells"*

Name of Mentor:
Dr. T R Santhosh Kumar
December 2019



KIRAN S KUMAR

Title of the thesis: *"Analysis of Genetic Variation in an Endemic Frog (Indirana Semipalmatta, Boulenger, 1882) Population aof the Western Ghats using Molecular Markers"*

Name of Mentor: Dr. Sanil George
December 2019



SUDHEESH A P

Title of the thesis: *"Mechanism and regulation of Star-PAP mediated 3'-end processing and alternative polyadenylation"*

Name of Mentor:
Dr. Rakesh S Laishram
December 2019



SHEENA PHILIP

Title of the thesis: *"Molecular mechanistic investigation and validation of the Ant-inflammatory activity of Tinospora cordifolia (Wild.) Miers- in vitro and in vivo"*

Name of Mentor: Dr. V V Asha
December 2019



ADITI MAJUMDER

Title of the thesis: *"Role of histone chaperones in cellular transitions"*

Name of Mentor:
Dr. Debasree Dutta
February 2020



ASHA LEKSHMI

Title of the thesis: *"Cell Cycle Dependent Cell Signaling Analysis using Single Cell Imaging Approach"*

Name of Mentor:
Dr. T R Santhosh Kumar
January 2020



TAPAS PRADHAN

Title of the thesis: *"Role of Cancer Stem Cells in Colorectal Cancer "*

Name of Mentor: Dr. S Asha Nair
February 2020



MANENDRA BABU L

Title of the thesis: *"Understanding the functional role of S1PR1 in pancreatic ductal adenocarcinoma"*

Name of Mentor:
Dr. Harikumar K B
February 2020

PhDS AWARDED

FLASH FROM THE PAST

REMEMBERING MY PhD DAYS...

Syed Khaja Mohieddin



Revisiting my PhD memories of RGCB is like the feeling of early childhood days where you try to stand and walk but you fall and try again and all over again until you learn to run. This is one of many things my PhD lab at RGCB has taught me and is indeed every student journey out there in RGCB, nurturing the young science students into the successful next generation of scientists. I'm currently continuing that exciting run on a new track as Postdoctoral Fellow in the land of Rising Sun at the RIKEN Centre for Integrative Medical

Sciences, Japan. The campus is situated close to the ever-buzzling Tokyo metropolis and a short drive to the iconic beautiful Mount Fuji.

Writing down this column is full of warm memories of how we worked not just between dawn and dusk. I belong to the bunch PhD students of the early batch of 2014. I was the first PhD student to be graduated from Dr. Debasree Dutta's lab. It has been a little more than a year since I graduated back in 2018. Looking back as a whole it was the incredible learning experience for me fulfilling my dream of working with the induced Pluripotent Stem Cells (iPSCs). I discovered my strengths and weakness as I dwelled into research. I was fortunate to work with Dr. Debasree Dutta, an ever-energetic and disciplined supervisor. It's not easy to forget or get away from the impressions imprinted by the supervisor. Still, I try every day to be as disciplined as my supervisor (tough though). Our tale is also quite similar to other student-supervisor tales; a stubborn and messy student working with an ever-supportive supervisor. I was extremely lucky to work in an environment of great support.

It is like a blessing to work with an excellent team of lab members with all sorts of craziness and fun on the 5th floor. And of course, every year I participated in Onam celebrations and it was so much fun. Special fun tasks during Christmas and New year week in the 5th floor was just amazing group activity.

All administrative work related to my fellowship and other conference travel were made so smooth by RGCB administration staff. For instance, I still remember how supportive was RGCB staff to stand-up for students in fellowship matters. All administrative staff should be applauded for their continuous efforts.

RGCB cafeteria is the favourite place for tea time to relax and to involve in mindless and also thought-provoking conversations. The whole RGCB landscape is quite relaxing after a long day in the lab. I enjoyed scientific meeting initiatives near the pond area for discussions (use to attend whenever I get time) and listen to several diverse opinions from other students on the campus. Not to forget activities outside RGCB, visiting the breathtaking unique beaches of Thiruvananthapuram and savouring different varieties of Kerala cuisine at the restaurants around RGCB. During PhD, I made many close friends and memories to look back. I miss those friendly chats, cafeteria food, beautiful morning walks in RGCB and of course just sitting in the lab for brain-storming sessions with my fellow lab members.

Apart from the fun-life in RGCB, working towards my goal of conducting successful experiments and finally solving obstacles in day to day lab work was the main driving motivation to drag myself to the lab. There were several moments of happiness during PhD, but I would pick acceptance of my first first-author publication and receiving the merit award as my most cheerful moments in RGCB. When I started my PhD, I believed I would

make it meaningful, and indeed it was a significant memorable learning experience with lots of roller-coaster rides. During the PhD course, many students feel pursuing the degree always seem to be a terrible idea. Indeed, it feels terrible unless you have a clear VISION. With my limited experience, I believe PhD is about creating an early mindset of asking the right questions, finding answers, and solving problems. I suggest all the future PhD trainees develop VISION for their future and work harder towards that VISION.

More challenges await me in my of postdoc life and the cycle repeats all over again. I am moving forward with what RGCB has given and taught to be a responsible and persistent researcher. Hopefully in the future I see myself on the other-side of the story.

FLASH FROM THE PAST

KNOW ME BETTER

Saraswathy Nagarajan
The Hindu

Courtesy: The Hindu
<https://www.thehindu.com/sci-tech/science/in-conversation-with-ev-soniya-winner-of-the-national-woman-bioscientist-award/article30931403.ece/amp/>

Dr. Soniya EV

She talks about her work in DNA fingerprinting and how her deep interest in molecular biology helped her make a mark in her area of expertise

Numerous phone calls later, one gets to speak to Dr. EV Soniya as she is in the midst of preparations to travel to Delhi to receive her award for the National Woman Bioscientist Award for her pioneering work in DNA fingerprinting. Chief Scientific Officer – Molecular Forensics and DNA Technologies at the city-based Rajiv Gandhi Centre for Biotechnology (RGCB), Soniya says it is a lifetime achievement award for various assignments for which she led her team. “And it is a recognition of my leadership skills, for my institution and my team,” she says modestly. The award is in recognition of her research contributions and their application to society.

Though the award is gender-based, Soniya does not want to focus on that aspect and would much rather talk about her work and its impact in different areas and it is always the ‘we’ that she highlights. “We are not a nine-to-five team. It is the passion for our work that has sustained the team led by our director M Radhakrishna Pillai and that has helped us meet some tough challenges,” she says.

Soniya believes it was that deep interest in her research that sustained her through the tough years of child-bearing and parenting. She feels that many of the women of her generation had to go through that phase to pursue a career. “It was not easy. But how many people have the opportunity to work in a field they enjoy? I know many bright

DECODING THE LANGUAGE OF GENES

EV Soniya, winner of the National Woman Bioscientist Award, talks about her work in DNA fingerprinting and how her deep interest in molecular biology help her make a mark in her area of expertise



men and women who did not get that chance to work in an area that challenges and motivates them,” she emphasises.

Pragmatic and ambitious at the same time, 54-year-old Soniya asserts that women would have to help themselves and not expect to have things done for them.

Dual responsibility

“That said, women usually bear the responsibility of running a home and are the primary caregivers once they have children. That dual responsibility is a reality in my generation. Moreover, usually, if the husband has a transferable job, it is the wife’s career that takes a hit. These are also some of the reasons why women are poorly represented in science and in the higher echelons of research,” she believes.

Born in a conservative joint family in Thrissur, Soniya had always been a bright student and an active participant in extra-curricular activities. She remembers how her mother, Sreedevi, an exceptionally bright student, was forced to leave school after class ten to become a wife and homemaker. So Sreedevi was keen that her three children do well in academics and go in for higher studies.

“After class ten, I chose science with the vague idea of studying medicine. It was not the age of the information glut and so we had no idea about the options and choices open to us. Eventually, I took up Botany for graduation and post-graduation,” she recalls.

Her teachers suggested she did her PhD. “But research did not necessarily lead to a job, and unless one had the exposure, studying abroad was not so easy to come by then,” she says.

Marriage to PK Govindan Potti, an engineer in Vikram Sarabhai Space Centre, brought her to Thiruvananthapuram and in 1990, Soniya enrolled for her doctorate in the University of Kerala. “Fortunately, my husband supported me and parenting was a shared responsibility. Even today, we give each other that space to pursue our individual careers,” she says.

Daily wonders of DNA

“Genetic analysis at the molecular level is one of the most effective methods for management of endangered animals and plants. Complaints regarding the identity of the elephants were a problem for the Forest Department. So they approached RGCB to develop a marker-based DNA fingerprinting of elephants in captivity. After collecting blood samples of all the captive elephants, we gave them a database with a unique DNA fingerprint of each captive elephant. Each elephant was given an ID card with its name, the name of the owner, other details and a QR code. If you scan the bar code on your phone, all the details of the elephant can be accessed. With this, the Forest Department could easily identify an elephant. This is the first time in India that DNA data has been included in ownership details of captive elephants. We also developed a protocol to DNA fingerprint wild elephants using dung and tusk samples, to help solve wildlife crimes, including poaching and illegal trade,” explains Soniya.

In 1995, she completed her doctorate and got the chance to work on a two-year project at the Central Tuber Crops Research Institute. Two years later when the project ended, she got a lucky break. RGCB had just come into existence and she got selected as a research associate. “It was in its nascent stage and we had to work mostly on our own and do our own research. The late Dr MR Das, founder-director of RGCB, had told us that we had to take up research in new realms of our specialisation. I took a little time to find my feet but once I found my niche, I understood the scope and expanse of my work. That is when my work no longer became work. It was intriguing and I was fascinated by the doors it opened,” she says.

Molecular trails

Beginning with delving into molecular biology and biotechnology of spices such as black pepper and ginger, she moved on to more intricate detailing of plants involving the identification of certain genes and enzymes.

“I am interested in understanding the molecular mechanisms working behind the interactions of plants with both biotic and abiotic factors, especially the plant-pathogen interactions and plant stress responses, and the molecular details of metabolic pathways for the production of secondary metabolites,” reads her profile on the website of RGCB. Publications in prestigious journals helped in gaining a reputation in her domain. At present, she is working on a project titled ‘GenomeIndia: Cataloguing the Genetic Variation in Indians.’ She comes into her own when she is talking shop. Gender discrimination and inclusivity do not really feature much in her conversation. “Well, women have to work doubly hard to prove themselves. That is true of most workplaces and not only in laboratories,” she feels.



Closure through Science

Soon after the Puttingal fireworks tragedy, when 111 people were killed after a pyrotechnics display went awry in a temple, RGCB’s help was sought to help identify the victims through DNA fingerprinting. “The work had to be completed at the earliest as the victims’ relatives needed some kind of closure. Moreover, there were damages to be paid and identification was crucial for that. The tragedy happened just a few days before the festival of Vishu and many of us spent Vishu at work. A team from RGCB visited the place to collect blood samples from relatives. Although, in some cases, there was little to go by and the work was heartbreaking, we were able to meet the deadline,” she recounts.

TRUTH OF THE MATTER

While focusing on methods to resolve paternity and immigration disputes by demonstrating the genetic links between individuals Professor Sir Alec Jeffreys invented DNA fingerprinting in 1984



PEOPLE WHO MAKE A BETTER PLACE

Anil Kumar R

Upper Division Clerk

This handsome young man can be seen anywhere and everywhere particularly during the conference and meeting season in RGCB. Anil is the 19th staff of RGCB with 24 years of experience. He was all of 19 years when he joined RGCB when it was a small charitable society called the Centre for Development of Education, Science and Technology (C-DEST) in 1994. Anil also has the distinction of having an opportunity to assist in measuring the land area of both the campuses of RGCB including the upcoming one at Akkulam. His major duties at RGCB are maintaining logistics of the official vehicles, insurance records of vehicles, printing of stationary, student record books, payment of imaging works, assist during scientific exhibitions and arrangements of meetings. He also diligently maintains the cafeteria accounts and files the auditing reports of the RGCB society. He rarely takes leave from his job and usually works on Sundays and holidays as per requirement. Ask him about RGCB and he says "Life is RGCB" which sums up his emotions and dedication towards the institution. Having travelled to all the major institutes in the city as part of his job, he says what he admires the most in RGCB is the camaraderie between fellow workers and the love that everyone shares with him and others irrespective of position



and designation. Anil loves to speak and if one goes with a quick question to him, chances are that the person will laugh back home with at least three humorous personal stories! Anil stays at Peroorkada, with his wife Lakshmi who works in the State Audit department and two daughters, Nandita (standard 7) and Gopika (standard 1) both of whom also had the distinction of acting in the first RGCB movie a few years back!

PEOPLE RGCB A WHO BETTER MAKE PLACE

Beena Nair L

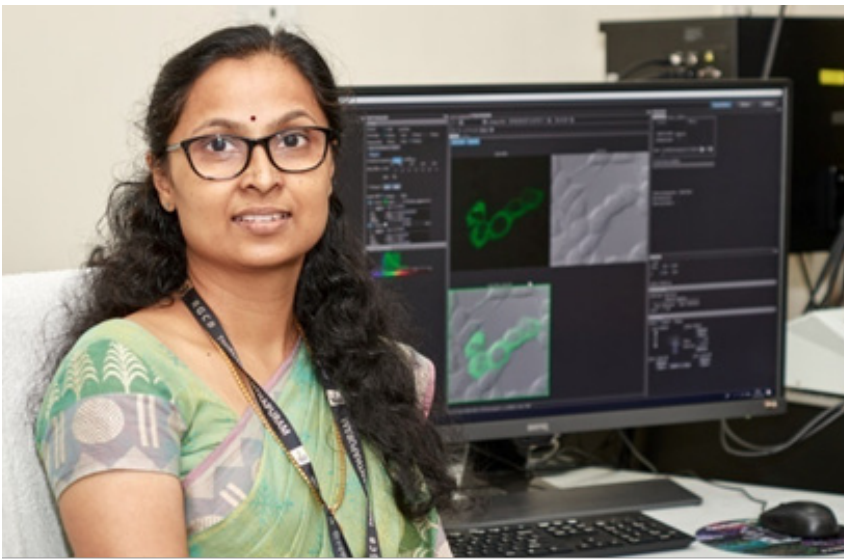
Project Assistant (Office of Academic Affairs)

After more than a decade of plush life in the travel and tour industry, strikingly charming Beena joined RGCB in 2016. She brought forward her administration skills in the tourism industry first to the Instrumentation department and then to the Office of Academic affairs where she faced a challenging task of managing academic dealings of the institute. Her duties involved assisting in coordinating the PhD and MSc courses, connecting with the faculties for classes and their travel logistics, accommodation of guest faculties, maintenance of documents of the students in each batch, preparation and issuing of certificates and fellowships, maintaining attendance of PhD students among several others as per need of the institution. Beena enjoys the challenging nature of her work and says “each day is a new learning experience” and is learning on the go. She is proud of being a RGCBite as she feels the institute is a standalone for woman empowerment. The female to male ratio in both the student and staff community is perfectly balanced and both men and women are treated as equals here. She is in awe of the recently concluded IACR conference as it was her first experience organizing an event of such magnitude. She believes there is “no time to stagnate” in this organization as it is always on its toes. She is grateful to her immediate authorities



for allowing her independence to work and is determined to establish a database of all students, past and present, which can be assessed easily. Beena is married to a Special Bureau of Intelligence officer, Preetham Kumar and lives in Karamana with daughter Aishwarya P Nair, a first year BTech student at SCT, Papanamcode.

PEOPLE WHO MAKE A BETTER PLACE AT RGCB



Bindu Asokan

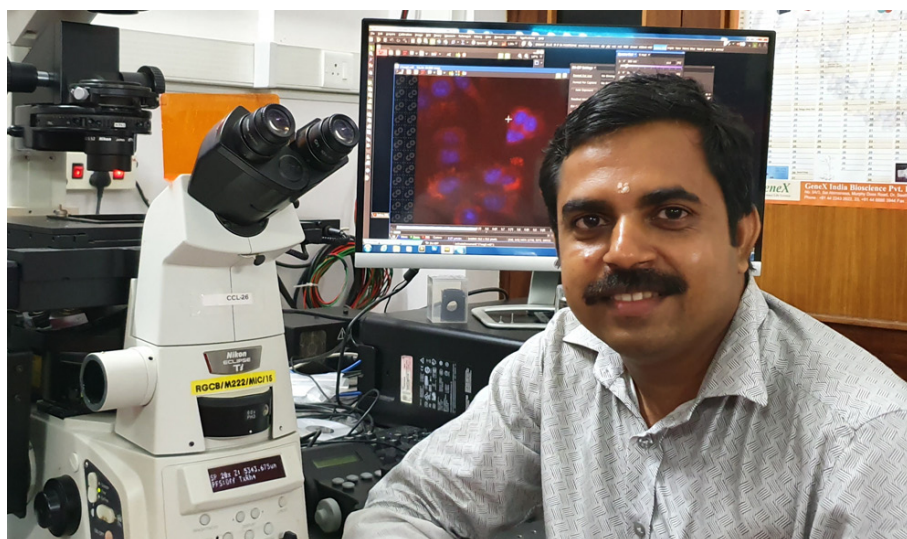
Senior Manager (Confocal Microscopy and TEM)

On entering the dark confocal microscopy room a pleasant smile emerges from behind the large monitor which can brighten up the day of any RGCBite! Bindu has been handling the confocal microscope since 2005 at RGCB. She joined RGCB in 1997 as Junior Technical Assistant after a brief stint at AIIMS, New Delhi where she worked as assistant to Dr Indira Nath on the flow cytometer. An alumna of Delhi University (DU), North Campus, she also has a Post Graduate Diploma in Biomedical Technology from DU, South Campus. Having travelled across the country thanks to her father's occupation in the Indian Airforce, it was her ardent desire to settle in Kerala and her fascination with

high tech machines that brought her to RGCB. Initially she worked in the DNA fingerprinting division and then shifted to protein studies before handling the confocal microscope. She was one among the few who standardized DNA fingerprinting experiments at RGCB. Bindu enjoys the wide exposure that working at RGCB has given her. She also enjoys the constant interaction with the younger generation of students which constantly keeps her updated about her work techniques. She wishes to create a program for creating bookings for each instrument online

such that the log and bookings become accessible to staff and students. Hailing from Pathanamthitta district, Bindu lives at Tirumala with her two sons Ashwin (Class 12) and Atul (Class 9). Her husband, Mony, is a Central Government employee posted at Ambala. She spends her free time listening to Indian light music and is great fan of the young singing sensation, Shreya Goshal.

PEOPLE RGCB A WHO BETTER MAKE PLACE



Prakash R

Lab Technician Central Cell Line and Tissue Repository

The ever smiling, omnipresent and endearing, Prakash was “adopted” by RGCB from SCTIMST. His duties at RGCB include maintenance of the central cell line facility and joined RGCB after a stint at lab associated assays, large scale expansion, freezing, long term maintenance of the cells, quality check, transfection and stable cell line development. He also does maintenance and operation of equipment such as Automated Microscopy and Live Cell Imaging. Prakash has been actively involved in the development of cell based assays necessary for high throughput drug screening. The work also includes managing stock of lab consumables, buffer preparation, tissue culture media preparation,

autoclaving and maintenance of all the required cell culture equipment.

Apart from his cell repository duties, Prakash is also our in-house travel co-ordinator during conferences, meetings and events organized by RGCB. He usually accosts foreign guests from the airport to their hotels and RGCB. During one of his travels he recalls how a senior faculty from Japan

hugged and thanked him profusely for giving him company and courage after traveling on a row boat at 3 am! Prakash also contributes to the functioning and maintenance of the MSc Biotechnology laboratories at KINFRA campus. He enjoys the work atmosphere and likes the KINFRA campus very much. He also admires the administrative management of the institution which has contributed to the success of RGCB. Prakash resides at Nedumangadu with his mother Vanaja Kumari, wife Neethu an Ayurveda practitioner at Ayur ahramam and two and a half year old daughter, Vaidehi.

RGCB SCIENCE RGCB SPOTLIGHT



Article

Insights into the Bacterial Profiles and Resistome Structures Following the Severe 2018 Flood in Kerala, South India

Soumya Jaya Divakaran[†], Jamiema Sara Philip[†], Padma Cherreddy, Sai Ravi Chandra Nori, Akshay Jaya Ganesh, Jiffy John and Shijulal Nelson-Sathi^{*†}

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Nanopore Passport Control for Substrate-Specific Translocation

Devika Vikraman, Remya Satheesan, K. Santhosh Kumar, and Kozhinjampara R. Mahendran*

Cite This: <https://dx.doi.org/10.1021/acsnano.9b09408>

Read Online

ARTICLE

Received: 23 January 2019 | Accepted: 31 May 2019

DOI: 10.1002/jcp.29003

ORIGINAL RESEARCH ARTICLE

Cellular Physiology WILEY

Cellular Physiology and Biochemistry

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Original Paper

Autoimmune Regulator Enhanced the Expression of Caspase-3 and Did Not Induce Massive Germ Cell Apoptosis in GC1-Spg Cells

Kongattu P. Bhagya^a, Rohini J. Aswathy^a, Karthika Radhakrishnan^{a,b}, Jeeva Sengottaiyan^a, Pradeep G. Kumar^a

^aDivision of Molecular Reproduction, Rajiv Gandhi Centre for Biotechnology, Thycad, Poojappura, Kerala, India, ^bCentre for Reproductive Health, Hudson Institute of Medical Research, Clayton, Australia

GBE

Phylogenomic Analysis Reveals the Evolutionary Route of Resistant Genes in *Staphylococcus aureus*

Jiffy John^{1,2}, Sinumol George¹, Sai Ravi Chandra Nori¹, and Shijulal Nelson-Sathi^{1*}

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PLOS NEGLECTED TROPICAL DISEASES

Postprandial Metabolism is Impaired in Overweight Normoglycemic Young Adults without Family History of Diabetes

A. Aneesh Kumar^{1,4}, Gopika Satheesh¹, Gadadharan Vijayakumar², Mahesh Chandran¹, Priya R. Prabhu¹, Leena Simon¹, Vellappillil Raman Kutty¹, Chandrasekharan C. Kartha³ & Abdul Jaleel^{1*}

RESEARCH ARTICLE

Mycobacterium abscessus infection in the stomach of patients with various gastric symptoms

Deepak Chouhan^{1,2}, T. Barani Devi¹, Santanu Chattopadhyay¹, Sanjai Dharmaseelan¹, Gopinath Balakrish Nair¹, Krishnadas Devadas³, Madhavan Radhakrishna Pillai^{1*}

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RGCB PULSE
FEB
2020

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OPEN **Evolutionary, genetic, structural characterization and its functional implications for the influenza A (H1N1) infection outbreak in India from 2009 to 2017**

Received: 4 January 2019
Accepted: 20 September 2019
Published online: 11 October 2019

Sara Jones¹, Shijulal Nelson-Sathi², Yejun Wang³, Raji Prasad¹, Sabrina Rayen², Vibhuti Nandei², Yueming Hu³, Wei Zhang³, Radhakrishnan Nair⁴, Sanjai Dharmaseelan⁵, Dhanya Valaveetil Chirundodhi¹, Rakesh Kumar⁶ & Radhakrishna Madhavan Pillai¹

ORIGINAL ARTICLE

β-hCG-induced mutant BRCA1 ignites drug resistance in susceptible breast tissue

Satheesh Kumar Sengodan^{1,2}, Sreelatha K. Hemalatha¹, Revathy Nadhan¹, Thara Somanathan³, Arun Peter Mathew⁴, Arkadiusz Chil⁵, Janusz Kopczynski⁶, Rakesh Sathish Nair^{1,7}, Jerald Mahesh Kumar⁸ and Priya Srinivas^{1,*}

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OPEN **PEG grafted chitosan scaffold for dual growth factor delivery for enhanced wound healing**

Amritha Vijayan^{1,3}, Sabareeswaran A.² & G. S. Vinod Kumar^{1*}

Received: 14 May 2019 | Revised: 22 August 2019 | Accepted: 11 September 2019
DOI: 10.1111/cpr.12710



ORIGINAL ARTICLE



Pre-clinical evidences for the efficacy of tryptanthrin as a potent suppressor of skin cancer

Mohan Shankar G.^{1,2} | Vijai V. Alex¹ | Amrutha Nisthul A.³ | Smitha V. Bava⁴ | Sankar Sundaram⁵ | Archana P. Retnakumari¹ | Sadasivan Chittalakkottu³ | Ruby John Anto¹

Published online 10 October 2019

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doi: 10.1093/nar/gkz875

Star-PAP controlled alternative polyadenylation coupled poly(A) tail length regulates protein expression in hypertrophic heart

Sudheesh A.P.^{1,2}, Nimmy Mohan^{1,2}, Nimmy Francis^{1,2}, Rakesh S. Laishram^{1,*} and Richard A. Anderson^{3,*}

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SCIENCE
SPOTLIGHT

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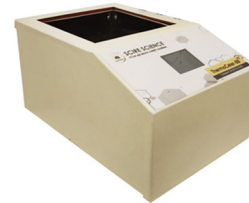


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The product has been launched in November 2019 during an International conference organized by SciCon Series™, Goa, India.



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M/s OmicsGen Life Sciences Pvt. Ltd



Health care associated infections are a major challenge and has reported mortality, morbidity and economic loss. A large number of people are working in health care and transmission of infections is a threat. OmicsGen Life science Pvt Ltd. Introduced health care products in Brand name "SMARTLYSE"- 1. Gadget wipes; 2. Hand Sanitizer. This microbial lysis solution can lyse all cells irrespective of bacteria and fungi and can further inhibit the colonization of these organisms for up to 4 days. SMARTLYSE solution is eco-friendly and has no harmful agents in it. It is a combination of inorganic compounds that can lyse the cell wall of these organisms and thereby kill them. The product is already in patenting as wipes for gadgets and trade mark registered for the same. This solution for hand sanitation is an extension of same product. This will be economically very feasible and we recommend to use on daily basis.

OmicsGen Life Sciences Ltd awarded with 1st prize worth GBP 5000 in "Dettol Innovative Challenge 2020".



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Paintings by Saraswati Nayar, RGCB



“Silence is not empty. It is full of answers.”
Unknown

Along the banks of Ashtamudi Lake, photographed by Surya Ramachandran, RGCB



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