



# SBC(I) NEWSLETTER

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<http://www.sbcihq.in>

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### TREASURER

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Dear Friends,

We are going through one of the biggest crisis ever faced by mankind. The coronavirus pandemic is having a “deep impact” on almost every sector and has resulted in unprecedented collapse of economic activities across the globe. Even though deep down inside we try to convince ourselves that “everything will be back soon”, we must accept that Covid-19 is here to stay, as suggested by many health experts. Hence, adaptability is the only key to survival in this situation. Sooner than later, we will be in a situation where our homes will provide space for the so-called mini office, and therefore all organizations should prepare them for this kind of a setup. Despite the fact that almost all organizations are now trying to revamp their work environments to come in line with such requirements, there is a need for a universal policy to guide each work sector in this regard.



Coming to the education sector, it is pertinent to mention that even before this pandemic took shape, “digital learning” attracted attention of many educationists, schools and universities. Many start-ups have also emerged victorious in imparting knowledge in the form of “e-classrooms”. However, it should be admitted that most of this “digital learning” was by and large restricted to private schools and universities. Even though attempts have been made by the HRD (Human Resource Development) ministry in this regard by introducing portals like e-Pathshala and NPTEL, further impetus is required to make these platforms “a mainstay”. Of note, such technologies must reach the government schools, colleges and universities so that curriculum is never hampered even in crisis situations.

Another critical concern that digital teaching faces is the future of “laboratory-based courses”. Hands-on practice is essential for developing the skills in budding scientists who will do many relevant experiments in future for the advancement of science. Moreover, practical teaching also has its own set of advantages for school students. Firstly, students enjoy doing experiments. Secondly, the knowledge is imbibed to much greater extent as compared to simply listening to lectures. We must try to fill this lacuna using innovative ways of incorporating laboratory teaching into e-learning.

These changing times has also necessitated SBC to accommodate its functioning. Given the present scenario, holding its annual meetings which attracts large gathering of scientists from across the country is not feasible. In addition, even holding regular executive committee (EC) meetings etc., at SBC headquarters has also become a remote possibility.

The immediate fallout of the present scenario was for SBC to conduct its first virtual EC meeting in June 2020 which was well attended by a larger number of members than usual because of omission of necessity of travel to SBC headquarters. Online activities and meetings are going to be new normal from hereon. Likewise, the local chapter could also organize virtual events including invited lectures and symposia. For the same reason this year’s SBC annual meeting cannot be held in December 2020 as previously planned. The Executive Committee decided that the 89th Annual Meeting of SBC(I) 2020 will be postponed to December 2021 owing to uncertainty arising from the COVID-19 pandemic. However, we decided that honouring the traditions, SBC lecture awards nominations will be invited this year also. The selected awardees will be requested to give award talks in December 2020 on

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a virtual platform. This will be good exposure and experience for all the members of SBC. We encourage all members and their associates to join this online forum to benefit from these award talks.

Before pandemic, SBC annual meetings were held each year in different geographical landscapes of our country with diverse themes that covered not only recent discoveries but also highlighted biological research being pursued in that area. The annual meeting of 2019, the 88th SBC meeting was successfully held at Bhabha Atomic Research Center between 31st October and 3<sup>rd</sup> November 2019 on "Interface of Biology & Chemistry: Health and Nutrition" as a focus of attention. This was a well-attended and well organised meeting. Apart from invited talks and plenary lectures, several award lectures were also held. The award winners of 2019 included Dr. Annapoorni Rangarajan, IISc, Bangalore for P. S. Sarma Memorial Award, Dr. Amal Kanti Bera, IIT-Madras, Chennai for P A Kurup Endowment Lecture Award and Dr. Chandrima Saha, NII, New Delhi for D P Burma Memorial Award. All the award talks were well attended.

The year 2019 also witnessed liberal support from SBC(I) to workshops/ symposia/ students international travel etc. For instance, SBC(I) provided support for an outreach program – a workshop on "The Phenomenon of Ageing, Related Disorders and Smart Ageing", held at Malda, West Bengal during July 6-7, 2019 and to Pantnagar Chapter for organizing 5th symposium on "Biochemical Processes and Technologies For Human Advantages" held at G. B. Pant University of Agric. & Tech. Pantnagar on 20th September 2019. SBC(I) also provided partial support in the form of an International Student Travel Fellowship to Mr. Rajesh Kumar Singh, Banaras Hindu University, Varanasi. The SBC(I) support can be considered for many more such activities if our membership numbers also increase. SBC(I) membership has been witnessing a steady increase, which is close to 4500, but this area can be more aggressively pursued. If each member can bring in one member, our society would represent an even wider representation of scientific fraternity.

When I communicated with you through SBC(I) Newsletter of July 2019 who would have thought that the world will change so much in a year. I sincerely hope that by this time in 2021, we are all immunized against COVID-19 and are back to OLD normal.

Prof. Rajendra Prasad  
President  
Society of Biological Chemists (India)

## 89<sup>th</sup> SBC(I) Annual Meeting

Please note that, as per the decision taken in the EC meeting held on 4<sup>th</sup> June 2020, the 89<sup>th</sup> Annual Meeting of SBC(I) 2020 has been postponed to December 2021 owing to an uncertain situation caused by the COVID-19 pandemic. The details of the 89<sup>th</sup> Annual Meeting 2021 will be updated on SBC(I) website in due course of time.

**Tentative Date: December 2021**

**Venue: Amity University Gurugram, Haryana**

**Organizer: Prof. Rajendra Prasad**

**Director, Amity University Haryana, Manesar, Gurgaon, Haryana 122413**

## NOMINATIONS FOR 2020 SBC (I) AWARD

SBC(I) invites nominations for Sreenivasaya Memorial Award, I.S. Bhatia Memorial Lecture Award, A. N. Bhaduri Award and A. Krishnamurthy Award (best paper published in Indian Journal) for 2020. Please send nominations in a single consolidated PDF including a cover letter addressed to Hon. Secretary, SBC(I), along with membership status and brief resume of the nominee to sbcihq@gmail.com. Due to the postponement of the SBC(I) Annual Meeting this year, the **award lectures will be conducted through online platform in the month of December 2020.**

**All nominations must be submitted online by 30th September 2020.**

## CRITERIA FOR 2020 AWARDS

<b>SREENIVASAYA MEMORIAL AWARD</b>	<p>Year of Commencement : 1972            Frequency : Once in three years            Value : Rs. 10,000/- with a citation</p> <p><b>Eligibility:</b></p> <ol style="list-style-type: none"> <li>1. The award is for the best work done in the field of Biochemistry and Allied Sciences in India.</li> <li>2. The recipient of the award should not have completed 50 years before January 1st in the year for which the award is announced.</li> <li>3. The award has to be nominated by a life member of the society, and no self-nomination is accepted.</li> <li>4. A lecture will be scheduled at the Annual Meeting of SBC(I), and a presentation will be made at that time.</li> </ol>
<b>I.S. BHATIA MEMORIAL LECTURE AWARD</b>	<p>Year of Commencement : 2000            Frequency : Once in three years            Value : Rs. 10,000/- with a citation            Field of research : Original research contributions in Plant Biochemistry,            Molecular Biology &amp; Allied Sciences</p> <p><b>Eligibility:</b></p> <ol style="list-style-type: none"> <li>1. The Award will be considered for "lifetime" achievements in the above disciplines.</li> <li>2. The award has to be nominated by a life member of the society, and no self-nomination is accepted.</li> <li>3. The Awardee should give a lecture at the Annual General Body Meeting of the Society of Biological Chemists (I) and should have been a member of the Society for at least two years</li> </ol>
<b>A. N. BHADURI AWARD</b>	<p>Year of Commencement : 2006            Frequency : Once in three years            Value : Rs. 10,000/- with a citation</p> <p><b>Eligibility:</b></p> <ol style="list-style-type: none"> <li>1. The recipient of the award should be below 50 years of age on December 31<sup>st</sup> of the year of the award.</li> <li>2. The award is open to all Indian Scientists who hold a permanent position in Universities, public-funded Institutes, and National laboratories.</li> <li>3. The award is given for Biological Chemistry and Allied Sciences, preferably related to parasitic infections.</li> <li>4. The award has to be nominated by a life member of the society, and no self-nomination is accepted.</li> <li>5. A lecture will be scheduled at the Annual Meeting of SBC(I), and a presentation will be made at that time.</li> <li>6. The awards will be given during the Annual Meeting.</li> </ol>
<b>A. KRISHNAMURTHY AWARD</b>	<p>Year of Commencement : 1976            Frequency : Annually            Value : Rs. 2,000/- with a citation</p> <p><b>Eligibility:</b></p> <ol style="list-style-type: none"> <li>1. The recipient of the award should be below 30 years of age on January 1<sup>st</sup> of the year of the award.</li> <li>2. The paper should be in the area of Biological Chemistry and Allied Sciences and the work should have been carried out in India.</li> <li>3. The paper published in any Indian Scientific Journal in the previous year will be considered for the award.</li> <li>4. In the case of multiple authorship, the senior author can nominate one of the authors or could be shared by all the eligible authors.</li> </ol>

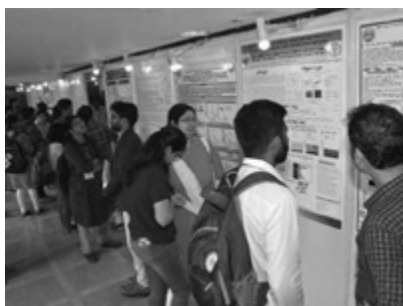
## Report on the 88<sup>th</sup> SBC(I) Annual Meeting held at BARC, Mumbai

The 88<sup>th</sup> Annual Meeting of the Society of Biological Chemists (India) and its associated Conference on “Advances at the Interface of Biology and Chemistry (SBCI-2019)” were organized by the Bio-Science Group, Bhabha Atomic Research Centre and Homi Bhabha National Institute (DAE Deemed to be University), at the Dept. of Atomic Energy (DAE) Convention Centre, Anushaktinagar, Mumbai, from 31<sup>st</sup> October to 3<sup>rd</sup> November, 2019. The conference was inaugurated by Dr. P.K. Pujari (Director, RC&IG, BARC) in the presence of Dr. Rajendra Prasad (President, SBCI), Dr. V.P. Venugopalan (Director Bio-Science Group, BARC), Dr. H.S. Misra (Head, Molecular Biology Division, BARC & Organizing Secretary SBCI-2019), Dr. G. Nagaraju (Secretary, SBCI), Dr. Anand Ballal (Convener, SBCI-2019) and Dr. Mahesh Subramanian (Co-Convener, SBCI-2019).

At the inauguration, Dr. P.K. Pujari emphasized the contribution of the chemical sciences in the development of the biological sciences and articulated how the synergy between the two disciplines was indispensable for the generation of novel products or technologies pertaining to biomedical applications and other societal benefits. Dr. P. V. Venugopalan welcomed all the delegates to the conference and provided a succinct synopsis of the multidisciplinary work being carried out in the Bio-Science Group of BARC. Prof. Rajendra Prasad highlighted the importance of the annual meetings of SBC(I), which provided a wonderful platform in disseminating exciting research from big and small labs from all over India. In his address, Dr. H.S. Misra underscored the importance of SBC(I) conferences in fostering collaborations between participants and, in particular, highlighted the role played by the younger researchers in raising the overall standard of research in our country. Dr. G. Nagaraju specifically elaborated on the objectives of the society and urged the younger participants to contribute to the growth of this dynamic society by enrolling as members. At the conclusion of the inaugural function, Dr. Anand Ballal thanked all the participants and organizers for their efforts in putting together the SBCI-2019 conference.

SBCI-2019 had a unique mix of speakers, which included the very senior faculty members to more recently appointed faculties in academic and research institutes in India. The conference had 3 Special Lectures, 3 Award Lectures, 12 Plenary lectures, 53 Invited Lectures, and 14 Oral Presentations. There were also ~200 poster presentations by students and faculty members who attended this conference from different parts of the country. The posters represented research performed in diverse fields ranging from the classical “Protein Biochemistry and Biophysics to more recent “Nanoscience and Molecular Therapeutics”. A panel of over 20 eminent faculties from the premier institutes of our country was requested to adjudge the poster awards. The panel recommended 12 young researchers for the best Poster Prize that was awarded by the Society. The Executive Council (EC) meeting of the society and the Annual General Body meeting of the society was also conducted during this conference. A cultural program and two special dinners were also hosted for the delegates who graced the SBCI-2019 conference. It gives us great pleasure to mention that the SBCI-2019 conference was attended by over 400 delegates during the 4-day period.

The SBCI-2019 conference was sponsored by Board of Research in Nuclear Sciences (BRNS), Science and Engineering Research Board (SERB), Council of Scientific & Industrial Research (CSIR), Trombay Council (BARC), Atomic Energy Regulatory Board (AERB), Nuclear Power Corporation of India Ltd. (NPCIL), Board of Radiation Isotope & Technology (BRIT) and other private sponsors.



## 2019 ANNUAL AWARDS

The Society announced the Annual Awards for the year 2019 at its Annual Meeting held at BARC, Mumbai, during October 31 – November 3, 2019. This year three awards were given, and the Society congratulates all the awardees and wishes them good luck in pursuing their goals. A brief description of the research interest, as provided by the awardees, is given below:

### PS. SARMA MEMORIAL AWARD



**Dr. Annapoorni  
Rangarajan**  
IISc, Bangalore

Annapoorni Rangarajan is a Professor at the Indian Institute of Science (IISc) in the Department of Molecular Reproduction, Development and Genetics. She obtained her Master's degree in 1994 in Biochemistry from Nagpur University, Maharashtra, and PhD in 2001 from the National Centre for Biological Sciences, TIFR Centre, Bangalore, on the role of Notch signalling in HPV-driven cervical cancer. In a collaborative work during her PhD, she initiated a project at the Massachusetts General Hospital, Charlestown, USA, on the role of Notch signalling in cell growth and differentiation. Thereafter, she did her postdoctoral research in the laboratory of Robert Weinberg at the Whitehead Institute, Cambridge, USA, where she investigated the molecular mechanisms of carcinogenesis. In the year 2004, she joined the IISc Bangalore as an Assistant Professor. The primary focus of her laboratory is to understand the origin and biology of cancer stem cells (CSCs), the subpopulation within a cancer that is crucial for new tumor initiation and relapse, and to develop strategies to target them towards more effective cancer treatment.

Annapoorni established and used a non-adherent mammosphere system that is enriched in stem/progenitor cells, to address the then nascent hypothesis of stem-cell origin of cancer. Her laboratory demonstrated that introduction of a specific combination of oncogenes into normal mammospheres converts them into cancerous cells. Interestingly, a significant sub-population of these laboratory-generated cancer cells harboured CSCs. Tumors initiated by these cells in immunocompromised mice showed marked resemblance with naturally-arising, invasive breast adenocarcinomas, the major form of breast cancer encountered in the clinic. The striking similarities between these induced CSCs with those derived from breast-cancer patient samples provided an early evidence for the provocative notion that solid tumors originate in adult stem cells. Her pioneering contribution to the emerging field of cancer stem cell biology earned her the National Junior Women Bioscientist Award (2013) by the Department of Biotechnology, Govt. of India.

As CSCs are resistant to conventional anti-cancer therapies leading to disease relapse, identifying novel means to target their self-renewal potential promises to offer more efficacious cancer treatment. Annapoorni's laboratory identified Bmi1 and Notch1 proteins as key regulators of breast CSC self-renewal, and contributed in generating novel anti-Notch1 monoclonal antibodies that depleted breast CSCs. In a major breakthrough, her laboratory demonstrated that the very transcription factors that promote epithelial-to-mesenchymal transition (EMT) during cancer metastasis also activate ABC-family of transporters that confer drug resistance to CSCs. This discovery established link among EMT, CSC & drug-resistance, and suggested that targeting EMT transcription factors could be a novel strategy to curb both metastasis and associated drug-resistance. More recently, her laboratory has identified that the master metabolic regulator and stress sensor AMPK is activated upon matrix-detachment and is critical for the anchorage-independent growth, which is a key property of CSCs. She was awarded the Wellcome Trust/DBT India Alliance Fellowship in the year 2010 to pursue this work.

Thus, her work has enriched our understanding of cancer origin and promises improved cancer treatment in the coming years.

### P A KURUP ENDOWMENT LECTURE AWARD



**Dr. Amal Kanti Bera**  
IIT-Madras, Chennai

Dr. Amal Kanti Bera is currently a Professor of Biotechnology at Indian Institute of Technology, Madras. He did his graduation and post-graduation in Physiology from the University of Calcutta, followed by Ph.D. in Biophysics from the University of Delhi. He got his post-doctoral training in Tel-Aviv University, Israel; UT South Western Medical School, Texas and Albert Einstein College of Medicine, New York. He joined IIT Madras in 2005 as Assistant Professor, and since then he leads an electrophysiology group. Prof. Bera made significant contribution in the area of Ion Channel Biology. His current research interests are in the areas of structure-function relationship and regulation of different ion channels, particularly those that are associated with neuronal and cardiac diseases. At the beginning of his research career, Prof. Bera demonstrated that mitochondrial voltage-dependent anion channel (VDAC), a key player in apoptotic cell death is regulated by phosphorylation and dephosphorylation. In eukaryotic system, cells need to communicate with each other. Gap junctions which are solely made up of connexins establish direct cell-cell communication by forming intercellular

channel. Prof. Bera's lab demonstrated that connexin-like protein 'pannexin' can also form gap junction in certain experimental conditions which raised the possibility of pannexin containing gap junction *in vivo*. His lab also showed how pannexin interacts with purinergic receptor P2X7 in extracellular calcium-dependent manner and determines cell fate. In another study, his group is looking into the cellular calcium signaling in diseased conditions. Endoplasmic reticulum (ER) is a major reservoir of cellular calcium. Alteration of ER-calcium homeostasis is associated with several diseases like Alzheimer's and Parkinson's. The level of ER-calcium is maintained by a delicate balance between uptake and release of calcium. 'Leak-channels' are believed to be associated with passive diffusion of calcium ion from the ER. However, exact identity of leak-channels is not known. Recently, Prof. Bera and his group identified a protein called LRRC8B, as possible leak-channel. The discovery of LRRC8B as a member of cellular calcium signaling network has added a new dimension to the fundamentals of cell biology.

## D P BURMA MEMORIAL AWARD



**Dr. Chandrima Shaha**  
NII, New Delhi

Study of cell death holds promise on providing understanding of a variety of pathways that are important for disease pathogenesis. The overall theme of the research program of Dr. Shaha is to elucidate the processes that influence cell death programs under varying physiological conditions in diverse model systems. The overarching question of Dr. Shaha's research was why and how cells survived or died under distinctive conditions and what was the functional outcome. The studies were pursued in two different systems, one of a lower eukaryotic cell, the *Leishmania* parasite and the other of eukaryotic cells with high division index like the germ and cancer cells.

The *Leishmania* parasite causes Kala-Azar, a neglected tropical disease affecting the poorer sections of the society and is endemic in certain parts of India. Dr. Shaha's research with the *Leishmania* parasite resulted in a paradigm shift in the understanding of cell death in unicellular organisms because programmed cell death was not known in protozoans although well detailed as a regular phenomenon in the metazoans. Dr. Shaha's work not only established programmed cell death as a regular form of demise in the medically important kinetoplastid parasites but also identified novel biochemical pathways important in this form of death. Her research pinpoints the origin of death pathways to two billion years prior to the onset of multicellularity. While the above discovery resulted in a great interest in unicellular cell death across the scientific community, it also introduced the concept of manipulating death pathways in medically important pathogens like the *Leishmania* parasites as a means to control diseases caused by them. Further discoveries from the laboratory identified the complex nature of how the parasite interacted with the host and categorized a cell surface protein prohibitin as a possible molecule on the parasite surface for antibody-based intervention and as a possible biomarker. A diagnostic test was validated in a sizable number of patient samples and has now been picked up by investigators across the world for further study.

There are several ways by which the parasite can manipulate the host system to survive within the host, like influence host proteins associated with cellular apoptosis or the process of autophagy. Findings from the laboratory using the *Leishmania* macrophage host-parasite model implicated the members of the Bcl-2 protein family as modulators of parasite survival within the hosts. This formed the basis of the proposal for development of Bcl-2 small molecule inhibitors or BH3 mimetics for parasite elimination through repurposing of a cancer drug. A related important discovery was the establishment of the role of autophagy in host cells in propagating the *Leishmania* infection. In addition, regulation of parasite autophagy as a means of control was shown by studies where autophagy protein 8 was identified as an important regulator leading to prospects of repurposing of anti-autophagy drugs being tried as therapeutics for cancer for possible interference with parasite growth both at the level of host and at the level of the parasite.

*Leishmania* parasite is one of the first mitochondrial eukaryotes. A unique cytosol to mitochondria transport machinery using calmodulin as a chaperone for the mitochondrial targeting signal was discovered pointing to an early evolutionary origin of a specific transport pathway.

Multiple approaches are required to combat cancer. Dr. Shaha's laboratory has provided insights into both apoptotic and autophagic pathways in these rapidly proliferating cells.

## 88<sup>TH</sup> ANNUAL MEETING OF SBC(I): BEST POSTER AWARDS 2019

### B. S. Narsinga Rao Best Poster Award

**Mr. Amrendra Kumar**  
IISc Bengaluru

Role(s) of acetylation in pathophysiology of *Helicobacter pylori*

**Ms. Vishwa Gandhi**  
BARC, Mumbai

Combinatorial effect of an organoselenium compound (BARC-X) and  $\gamma$ -radiation on the growth of lung carcinoma cells

### D.P. Burma Poster Award

**Ms. Devanshi Khare**  
BARC, Mumbai

Characterization of a putative cadmium translocation PIB-type ATPase from the uranium tolerant bacterium *Chryseobacterium* sp. Strain PMSZPI

**Ms. Monalisa Misra**  
NIT Rourkela, Odisha

Nanoparticles taken through oral route acts as a behavioral teratogen: a lesson learnt from fruit fly

### P.R. Sudhakaran Poster Award

**Ms. Neha Singh**  
ICMR-NIRRH, Mumbai

Germ cells control Testicular Tubulogenesis during Mouse Gonad Development

### U.K. Misra Best Poster Award

**Ms. Kandahalli V. Abhilasha**  
Univ. of Mysore, Mysore

p38 MAP-kinase inhibitor protects against platelet activating factor induced death in mice

## Best Poster Awards

**Mr. B. Goyal**  
TIET, Patiala, Punjab

Identification of potential inhibitors against  $\beta$ 2m aggregation in Dialysis-related amyloidosis by computational screening and molecular dynamics simulations

**Ms. Salini S**  
RGCB, Thiruvananthapuram

Expression of mycobacterial error prone polymerase DnaE2 contributes to mutagenesis and survival fitness in bacterial biofilm

**Mr. Dharendra Kumar Sharma**  
BARC, Mumbai

Genetic studies on the roles of natural transformation genes in repair and survival of *D. radiodurans*

**Mr. Prakash Kelwani**  
BARC, Mumbai

Biochemical characterization of Alr1562: The CRISPER-associated protein 7 (Cas7) from *Anabaena* PCC 7120

**Mr. Bagavathy S Karthikeyan**  
IMSc, Chennai

A curated knowledgebase on endocrine disrupting chemicals enabling mechanistic insights into systems-level perturbations upon exposure

**Ms. Addepally Uma**  
JNTUH, Hyderabad

Comparative analysis of various types of pretreatments of Rice straw and its effect on enzymatic saccharification

**Ms. Reema Devi Singh**  
BARC, Mumbai

Radiation as a stressor for rapid lipid induction in microalgae *Chlorella sorokiniana*

**Ms. Reema Chaudhary**  
BARC, Mumbai

DivIVA is an essential protein in radioresistant coccus bacterium *Deinococcus radiodurans*

## INTERNATIONAL TRAVEL FELLOWSHIP

**Awarded to: Rajesh Kumar Singh**  
Institution: Banaras Hindu University, Varanasi

The International Conference on Pharmacology Advances in Translational Sciences & Drugs Discovery 2019 was organized by the Department of Pharmacology, Yong Loo Lin School of Medicine, the National University of Singapore, during July 4, 2019 to July 5, 2019 and it was very informative and technical. Many leading scientists were invited and delivered their hypotheses and path-breaking research works. They were very interactive and discussed several aspects of research in the discovery and development of drugs, especially on target-specific and polyherbal drugs. Several distinguished scientists including Prof. Manjunatha Kini, Prof. Young-Joon Surh, Prof. Christina Chai, Prof. Yang Sun, Prof. Wupeng Liao, Prof. Aleksandra Adamska, Dr. Ruby John Anto, Prof. David Virshup, Prof. Hendrik Luesch, Prof. Charlie Tiong Chia Yeo, Prof. Thomas Keller and Dr. Ajaikumar B. Kunnumakkara presented their research work on different aspects of drug development, especially for cancer and diabetes.

I also presented my research work as a poster presentation entitled "Semecarpus anacardium Linn. leaf extract exhibits activities against breast cancer and prolongs the survival of tumor-bearing mice" highlighting the eco-friendly, cost-effective and potency of *S. anacardium* leave extract as source of anticancer lead molecules. During my presentation, I discussed several aspects and possibilities of drug development and standardization using Ayurvedic knowledge. Scientists appreciated my work and offered valuable suggestions for improvement. I was awarded the best scientific poster award.

I would like to thank Society of Biological Chemists (India) for granting me International Travel Fellowship.

## IUBMB-FAOBMB Young Scientist Program Fellowship Award-2019

**Submitted by: Shasank Sekhar Swain**  
Institution: ICMR-Regional Medical Research Centre, Bhubaneswar, Odisha

This is to inform you that I had gone to Kuala Lumpur, Malaysia, for attending the Young Scientist Program and 27<sup>th</sup> FAOBMB-44<sup>th</sup> MSBMB conference during August 16-23, 2019. I learned a lot during my Oral presentation in the Young Scientist Program and I gained more innovative ideas from other Young Scientists of the world through their research presentations during August 19-22, 2019 at Taylor's University, Malaysia. I may mention that I was the only Student selected from India for the Young Scientist Travel Fellowship with 36 Young Scientists from different countries. Additionally, my research topic on the development of potential anti-bacterial hybrids bearing sulfonamide and phytochemical against MRSA (Methicillin-resistant *Staphylococcus aureus*), entitled "Computer-aided synthesis of novel 'phytochemical-sulfonamide' hybrids as prospective alternate anti-MRSA drugs was praised by different scientists and faculty members.

My poster presentation at the 27<sup>th</sup> FAOBMB-44<sup>th</sup> MSBMB conference at Berjaya Times Square Hotel, Kuala Lumpur, was productive for polishing my research by interaction and suggestions from several renowned scientists. More than 350 posters presented innovative research findings from molecular biology, disease biology to drug development and drug delivery approaches by different worldwide research groups. The Malaysian Society organized a city tour for Biochemistry and Molecular Biology, especially for 36 Young Scientist Awardees to learn more about Malaysia's thrust research area through a visit to the Malaysia Genomic Research Institute.

I have got my Ph.D. degree in Biotechnology from Siksha' O' Anusandhan Deemed to be University, Bhubaneswar. Currently, I am working as an ICMR-Centenary Post-Doctoral Fellow at the same institute, ICMR-Regional Medical Research Centre, Bhubaneswar, Odisha.





## OUTREACH PROGRAM : MALDA WORKSHOP 2019

The 10<sup>th</sup> Malda Workshop – 2019 on “The phenomenon of Ageing, Related Disorders & Smart Ageing” was held at Sanaulah Mancha, Malda College Auditorium, Malda, West Bengal on 6<sup>th</sup> & 7<sup>th</sup> July, 2019. About 350 students from Schools & Colleges of Malda, Uttar & Dakshin Dinajpur, Murshidabad Districts as well as a good number of teachers, Professors, and Doctors participated in the Workshop. Renowned Scientist Prof. Tapas K Kundu, Director, CSIR-CDRI, Lucknow acted as Scientific Advisor of that Workshop. Four Research Scholars of JNCASR, Bangalore, were present as Course Guide. The Workshop was organized by Paschim Banga Bigyan Mancha, Malda, in collaboration with Malda College. The workshop was supported by BIO-RAD Laboratories (India) Pvt. Ltd. Gurugram- 122102; Society of Biological Chemist, India (SBCI-IISc); In-DNA Lifesciences (Dr. Birendra Nath Banerjee), Bhubaneswar; CSIR- Central Drug Research Institute, Lucknow- 226021 and Rotary Club of Mango City Malda. The meeting was supported by Prof. Ranga Uday Kumar, JNCASR, Bangalore; Dr. Sadhan Ch. Das, USA; Dr. Parijat Senapati, USA; Dr. Chandrima Das, SINP, Kolkata; and Dr. Rahul Modak, KIIT, Bhubaneswar.

On 6<sup>th</sup> July, 2019, the Workshop was inaugurated by honorable District Magistrate Sri Koushik Bhattacharya; Director of CSIR-CDRI, Lucknow Prof. Tapas K Kundu; Principal of Malda College, Dr. Manas Kr. Baidya; CMOH of Malda Dr. Siraj; Principal of Malda Medical College Dr. Mukhopadhyay; SDHO of Malda Dr. Mandal; President of PSBM, Malda Sri K. P. Singh; and the fellows of JNCASR, Bangalore were present on stage.

In his welcome address, Sri Sunil Das, Secretary, PBVM, Malda told about different aspects of organizing the 10<sup>th</sup> Malda Workshop – 2019. In his welcome speech, Sri Koushik Bhattacharya, DM, Malda thanked PBVM, Malda for organizing such a Workshop on Ageing. He also told why it is necessary for young people to know about ageing. He also hoped that the knowledge of this workshop will help the old people of the society. He also thanked Prof. Kundu for his valuable contribution to Malda to develop a scientific atmosphere among the students. In his speech Principal Malda College Dr. Baidya thanked PBVM for their contribution towards social awareness and also expressed his thanks to Prof. Kundu for his contribution towards students of the workshop. He also assured PBVM, Malda to help them in all respects in future. Dr. Siraj, Dr. Mandal, Dr. Mukhopadhyay also pointed out the various aspects of aging & utility of this workshop. Lastly, Prof. Kundu, in his inaugural & introductory speech expressed his dream to establish a Scientific Innovation Centre at Malda. He then told the participants why knowledge of aging is necessary & introduced the fellows of JNCASR, Bangalore.

After the inaugural session, the first talk was given by Pallabi Mostafi on “The Aging Process”. She nicely presented what is aging, different theories & factors, relative aging, environmental conditions, genetic factors, proteins involved, about DAF2, theories of Evolution, normal aging process & changes within our body, biochemical process of aging, modern programmed aging theory, error theory, wear & tear theory, aging cycle, cross-linking theory, free radical theory, immunological theory etc. After that, she stated about age-related diseases, hallmarks of aging. Finally, she concluded with “Ageing is a natural process, not a disease.”

After that, the second talk was given by Siddharth Sing on “Aging in Humans.” He started with a life span vs. life expectancy. Then he talked about life expectancy through the ages, male & female life expectancy in different regions on earth. He told that there is no typical older person – it depends on one’s lifestyle, factors affecting aging & the science of aging. As we are aged our brain, muscle, bones, joints all lose their natural activities & different body parts get different ages due to sociological, psychological & physiological factors. He then pointed out the causes & outcome of weight loss in older persons, about sarcopenia, dysphasia & undernutrition, anorexia of aging, effects of aging on nutrition, diet at old age, epigenetics behind aging, about elder abuse & its devastating consequences, eleven things that anyone can do to prevent abuse. In this way, he completed his valuable talk.

After the 2<sup>nd</sup> talk by Siddharth Sing, a question-answer session started. More than 100 questions were asked by the participants. Prof. Kundu & his associates answered all the questions with great patience. Some of the questions were really thought-provoking. After the question-answer session, the third talk was delivered by Akash Sing on ‘Ageing & disease, Part-I.’ In his talk, he stated the consequences of aging. He also indicated that aging is the greatest risk factor for chronic diseases like Neurodegeneration, Frailty, Cataracts, Heart Disease, Arthritis, Type-II Diabetes, Stroke, Cancer etc. He nicely explained everything & that was an excellent talk. Thus the first day’s program ended with a high expectation of the second day.

The second day’s program started with the talk on “New Horizon in Biotechnology” by Dr. Amrutraj from BIO-RAD Laboratories (I) Pvt. Ltd. He explained their activities & handed over a kit (Book) full of experiments such as DNA extracts etc. After that Prof. Kundu & his scholars answered the remaining questions of the previous day & questions of that day with great patience for a long time.

The fourth talk was given by Ila Joshi & her topic was “Ageing & Disease Part-II’. She started with what is aging and talked on age-related disorders, infectious diseases, metabolic disorders, and diseases that affect primarily women & men. She stated that aging increases the risk of infections due to immune changes, physiological changes etc., aging also increases infections like pneumonia, UTI etc.; aging also causes metabolic disorders e.g. Diabetes Mellitus etc.; Obesity in men & women, how aging affects men & women differently, about Osteoporosis in women, Hyperthyroidism vs Hypothyroidism, Prostrate problem in men. Thus she completed her talk very nicely.

## 10th MALDA WORKSHOP - 2019

### Topic : "The Phenomenon of Ageing, Related Disorders & Smart Ageing" at Malda, W.B., 6th & 7th July 2019.



Registration



Welcome Address by  
Sir Sunil Das, Secretary, PBVM



Welcome Address by  
Dr. Baidya, Principal, Malda College



Inaugural Speech by D.M.,  
Malda



Inaugural & Introductory  
Speech by Prof. Tapas K. Kundu.



1st Talk by  
Pallabi Mostafi, JNCASR



2nd Talk by  
Siddharth Sing, JNCASR



Question Answer Session



3rd Talk by Akash Sing,  
JNCASR.



Representatives of BIO-RAD  
Laboratories (I) Pvt. Ltd.



4th Talk by Ila Joshi  
JNCASR



Mood of Work Shop



Poster Session & Judgment



Poster Session & Judgment



Prof. Tapas K. Kundu  
Giving his talk



Sharing of Experience by  
Participants



Prof. Kundu giving away the  
Prize of Poster competition



Prof. Satya Chowdhury giving away  
the Memento



Prof. Kundu Felicitated by Rtn. Rajesh  
Kispotta, Secretary, Rc Mango City Malda



Enjoying Lunch.

The last talk was given by Prof. Tapas K. Kundu on "Ageing & Cancer". At first, he briefly discussed CDRI, its campuses, its functions. He said that CDRI is a Nodal centre for traditional knowledge-based Drug development, about its success stories & its social responsibility programs. Then he started with his topic & said that Cancer is an inflammatory disorder, a metabolic disorder & it has a direct connection with age & lifestyle. The major cause of Cancer is a constant irritation. Mobile is one of the causes of constant mental & physical irritation. He clearly mentioned the different influences on health in older age; Cancer is connected to older age – 89/100 patients are aged 50 or over, elderly Indians are more susceptible to Cancer, known risk factors for Cancer

like – tobacco, unhealthy diet, obesity etc. He then explained why age is the factor & showed the seven warning signs of Cancer. He also talked about the mobile Van of the Tamil Nadu Govt. for primary detection of Cancer, especially in rural women. He concluded his speech by quoting Stuart Scott, “You beat cancer by how you live, why you live & the manner in which you live”.

It was followed by Poster Session | 42 Posters were presented by the Participants. Prof. Kundu, with his research Scholars visited every Poster in groups, questioned the participants & judged. Among the Posters, 15 were selected for Prize.

Valedictory Session was started with the presence of Dr. Siraj; Secretary, Rotary Club of Mango City Malda, Rtn. Rajesh Kispotta & other dignitaries. The participants shared their experiences. Sri Sunil Das, Secretary, PBVM, Malda gave his thanks to Prof. Kundu & his associates, the Collaborator of the Workshop - Malda College, the co-partners of the workshop & all others who made the workshop successful. At first, Prof. Kundu handed over the Mementoes to the winners of the Poster Competition; fifteen participants were selected for that event. Prof. Satya Chowdhury handed over the Mementoes to the Scholars of JNCASR, Bangalore. Lastly, Rtn. Kispotta honored Prof. Kundu with the Memento. Sri K. P. Sing President, PBVM, Malda ended the Malda Workshop – 2019, which is an Out-Reach Programme of SBC(I), with a high expectation for the next Year's Workshop. All went to Lunch & thus, the Workshop ended happily.

## BRANCH ACTIVITIES 2019

### COASTAL KARNATAKA CHAPTER

Convener: Dr. K. Satyamoorthy

#### 7<sup>th</sup> Annual Symposium of Society of Biological Chemists (India) - Coastal Karnataka Chapter

Organized by  
Manipal School of Life Sciences, MAHE, Manipal

The 7<sup>th</sup> Annual Symposium of the Coastal Karnataka Chapter of the Society of Biological Chemists (India) [SBC(I)] organized by the Manipal School of Life Sciences (MSLS), MAHE, was inaugurated at the MSLS Auditorium, MAHE at Manipal on Saturday (23 Nov 2019) by the Pro-Chancellor of Manipal Academy of Higher Education (MAHE), Dr. HS Ballal, along with Dr. Ganesh Nagaraju (Secretary, SBC(I)) and Dr. K Satyamoorthy (Director, MSLS, MAHE).

Dr. HS Ballal, in his inaugural address, identified the lack of presence of Indian universities among the top echelons of world university rankings and urged the need for improving scientific research at universities. He lauded the School for making significant progress towards the objective of improving scientific research activities in the MAHE campus. Dr. Ganesh Nagaraju described the opportunities provided by SBC(I) being the earliest scientific society in India and its current reach within the country with several scholarships and grants for deserving students, scholars, and researchers.

The symposium was attended by 148 participants and 13 speakers from various institutes and universities in the coastal Karnataka region. Poster presentations by young researchers were also held during the symposium. Following are the list of speakers along with the title and gist of their presentations.

- 1. Dr. K Kemparaju, Department of Biochemistry, University of Mysore, Mysuru**  
**Title:** Echis carinatus venom induce tissue destruction: and emphasis on NETosis  
DNase I therapy can be efficiently used to target local toxicity that is induced by NETosis paving a way towards a potential therapeutic strategy against tissue necrosis induced by snake venom.
- 2. Dr. P Rangarajan, Department of Biochemistry, Indian Institute of Science, Bengaluru**  
**Title:** Development of an Indigenous Recombinant Hepatitis B vaccine: Current status  
Development of recombinant Hepatitis B vaccine aided by Pichia pastoris and its increasing availability in Indian markets, a transition from global technology.
- 3. Dr. Paturu Kondaiah, Molecular Reproduction Development and Genetics, Indian Institute of Science, Bengaluru**  
**Title:** Role of fibroblast in stroma for the progression of breast cancer  
The manipulation of TGF-B in tumor microenvironment which is a critical determinant of tumor behavior and identification of associated factors that promotes tumor growth and invasion in in-vivo system.
- 4. Dr. Ganesh Nagaraju, Department of Biochemistry, Indian Institute of Science, Bengaluru**  
**Title:** Rad51 paralogs: Unraveling the new roles in genome stability and tumor progression  
Site specific phosphorylation mediates activation of XRCC2 and recruitment of Rad51 paralogue (Rad51C) stabilizes genome-wide replication stress and promotes cell survival. A novel mechanism of how Rad51 paralogs along with activated XRCC2 can promote replication restart during replication stress.

5. **Rajendra Pilankatta, Central University of Kerala, Kasargod**  
**Title:** Understanding of dengue virus-host interaction: Need of lipidomic approach.  
 Unraveling the complex proteome and lipidome of dengue viruses to understand its life cycle, mechanism of infection and further exploiting them to develop diagnostic strategies and therapeutic interventions.
6. **Dr. Raghu Bhushan, Yenepoya University, Mangaluru**  
**Title:** Deciphering the non-coding and coding genomes during skeletal muscle development and cardiovascular diseases.  
 Role of short non-coding RNA and long Non-coding RNA in Marfan Syndrome and proving a possibility of trans-differentiation of smooth muscle cells to macrophages
7. **Dr. Sudharshan Prabhu, MAHE, Manipal**  
**Title:** Ferroptosis: A critical cell death in neurological disorders  
 Metal ion chelators have been identified to prevent ferroptosis in neuronal cells. Further studies will prove to be an effective therapeutic intervention to prevent ferroptosis in neurons thereby preventing neurodegenerative disorders.
8. **Dr. Guruprasad Kalthur, MAHE, Manipal**  
**Title:** Role of anti-diabetic drug metformin in Reproduction  
 Effect of metformin on oocyte development and male infertility has been identified using rodent models and showed that metformin altered the intrauterine environment during embryo development.
9. **Dr. Anurag Sharma, NITTE University, Mangaluru**  
**Title:** Benzene induced hematopoietic toxicity: Insights from drosophilla  
 Effect of benzene induced toxicity on hematopoietic niche environment in lymph nodes of Drosophila and removal of niche reverses the effect of benzene induced toxicity.
10. **Dr. Chithra Manisseri, Central University of Kerala, Kasargod**  
**Title:** Unlocking plant cell walls to biofuel  
 Increasing Bio-Ethanol production by altering the ligno-cellulose molecules and improving pre-treatment methods in the cells of diverse Indian crops.
11. **Dr. Vidhu Sankar Babu, MAHE, Manipal**  
**Title:** Floiar and floral nastic movement- Hypothesis and anatomical evidence derived from Portulaca species.  
 Exploring mechanisms of reaction to nastic movements in Portulaca species and explored the effect of phyto-melatonin in plants.
12. **Dr. MS Mustak, Mangalore University, Mangaluru**  
**Title:** Genetic Risk factors for the myocardial infarction in South-West coastal regions of India  
 Population based study to identify 24 genetic markers of myocardial infarctions in South Indian population to prevent cardiac arrest.
13. **Dr. KK Mahato, MAHE, Manipal**  
**Title:** Protein fingerprinting by LASER and LED induced auto-fluorescence  
 A quest to develop a stain and tag free detection and characterization of proteins in SDS PAGE based on the auto fluorescence properties of proteins using LASER and LED induced auto-fluorescence.



## CAMA MEMORIAL TRAVEL GRANT

Scientists attending and presenting a paper in an International Congress or FAOBMB meeting held once in 2 years or at infrequent intervals may apply for the award.

The candidate should be a member of SBC(I) for at least two consecutive years.

The candidate should have obtained partial support from other agencies and there should be a proof to that effect.

Applicants are invited to respond appropriately to the details informed in the advertisement. The application should reach the following address before 1<sup>st</sup> April of the year of the award.

Hon Secretary  
Society of Biological Chemists  
Indian Institute of Science  
Bangalore 560 012

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## FELLOWSHIPS FOR YOUNG SCIENTISTS

**The Society of Biological Chemists (India) has instituted a “financial support for research” scheme to support young research workers to carry out short term training/research activities in well-established laboratories/ institutions in India. The value of the fellowship is fixed at Rs. 5,000/- per term per selected fellow, and the total number of fellowships awarded every year will be up to 10.**

### Terms and Conditions;

1. Funding Rs. 5,000/- per fellow for periods up to 6-8 weeks.
2. The grant of Rs. 5,000/- will be awarded in the form of Rs.1,000/- for the fellow as personal maintenance/allowance for a minimum period of 6 weeks and Rs. 4,000/- as contingencies for the purchase of laboratory items, including stationery, preparation of reports, photographs, and other expenses related to the research work.
3. The Research/Training may be conducted in any of the leading research institutions/ laboratories/universities, with approval from SBC(I).
4. The candidate should be below the age of 32 years at the time of application.
5. The SBC(I) Membership is compulsory for eligibility for the fellowship award.
6. The fellowship amount will be released by the SBC(I) to the research supervisor by the 2<sup>nd</sup> or 3<sup>rd</sup> week of the training program.
7. The application should be forwarded through the investigator-in-charge of the laboratory in which the candidate proposes to undergo training.

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## INTERNATIONAL TRAVEL FELLOWSHIPS

GUIDELINES FOR AWARDING INTERNATIONAL TRAVEL FELLOWSHIPS FOR  
Ph.D. STUDENTS BY THE SOCIETY OF BIOLOGICAL CHEMISTS (INDIA)

**One travel fellowship of Rs.15,000/- per quarter (Two awards per year) will be awarded**

* Award period	** Last Date for receipt of application
I. Jan- Mar	.....Dec 31 Previous Year
II. Apr-June	.....Mar 30
III. July-Sept	.....June 30
IV. Oct-Dec	.....Sept 30

For example, those who wish to attend an International meeting scheduled to be held during July–Sept 2019, should submit the application by 30 June 2019.

\*Award period refers to the period during which the meeting is scheduled to take place.

\*\* The Committee will meet on these days to decide on the award.

This award is meant for Ph.D. students only.

The applicant should currently be a member of the SBC(I) and should have been a member for at least two consecutive years.

*Here's is an opportunity to be very creative and show your Talent!*

Put your creations in the form of cartoons, science comics, comic strips, limericks, excerpts from the conference you attended! Anything to do with Science, commentaries on new exciting developments is also welcome.

We are looking for young talents who can contribute to the SBC(I) Newsletter, which we are planning to bring every few months. Submit your contributions to us, and of course, the best contribution will be rewarded!

We will accept the contributions throughout the year but hurry up to see your contribution in the next Newsletter.

Don't wait! Pen down your excellent creative thoughts and reach us at

**Society of Biological Chemists (India)**

Indian Institute of Science

Bangalore 560 012

Phone 91-080-23601412, Email sbcihq@gmail.com

Send us a hard copy by post and a soft copy by an E-mail

## **Immunometabolism: A fat lesson from roundworms**

**Siddharth R Venkatesh<sup>#</sup>**

<sup>#</sup>Department of Molecular Reproduction, Development and Genetics  
Indian Institute of Science, Bangalore

Email:siddharthv@iisc.ac.in

The soil-dwelling nematode *Caenorhabditis elegans* is a bacterivore with an inducible immune system for defense against pathogenic microbes. The roundworm relies entirely on the production of immune effectors such as lysozyme, lectins, antimicrobial peptides and proteases to fight pathogens, thereby making it an energy demanding process. However, the source of energy to 'power' or fuel immune responses remains to be investigated. The study by Dasgupta et al. (1) aimed to understand if metabolic rewiring in the host is triggered by increased energy demands in the host, to fuel immune responses. In this study, the authors found differential expression of genes involved in lipid breakdown, in worms infected with an array of pathogens. In infection with Gram negative bacterium *Pseudomonas aeruginosa*, Gram positive bacterium *Enterococcus faecalis* and with pathogenic yeast *Cryptococcus neoformans*, the authors showed evidences for activation of lipid breakdown pathway leading to energy production via glyoxylate shunt. In *C. elegans*, like other eukaryotes, lipid droplets (LD) are the primary organelles for storage of neutral lipids. If lipids were the principle source of energy for fueling immune responses, then infections should trigger a rapid depletion of lipids in LDs. This is what the authors found to be happening in worms subjected to infections. Furthermore, increasing lipid levels prior to infection resulted in enhanced survival of worms. The authors show that a transcription factor NHR-49, an ortholog of human PPAR alpha, regulates lipid breakdown and immune effector production. Importantly, the authors show that the enzyme acyl coA synthetase required for beta oxidation of fatty acids promotes survival of worms. Lastly, the authors provide evidence that other roundworms, phylogenetically distinct from *C. elegans*, also utilize lipids to fuel immune responses. Altogether, this study shows close tethering between immune responses and metabolic alterations terming it immunometabolism.

1. Dasgupta M, Shashikanth M, Gupta A, Sandhu A, De A, Salil J and Singh V. NHR-49 transcription factor regulates immunometabolic response and survival of *Caenorhabditis elegans* during *Enterococcus faecalis* infection. *Infect Immun* 2020. 88:e00130-20.



## SOCIETY OF BIOLOGICAL CHEMISTS, INDIA APPLICATION FOR MEMBERSHIP

The Hon Secretary  
Society of Biological Chemists, India  
New Biological Sciences Building  
D-Wing, 1st Floor  
Indian Institute of Science  
Bangalore 560 012  
Phone: 080-23601412 Email: sbcihq@gmail.com

I wish to become a Student Member/Ordinary Member/Life Member of the Society. I enclose herewith Admission fee Rs. .... + Membership fee Rs. .... ( Total Rs..... ) (Cash/Demand Draft drawn on ..... ) as my membership contribution.

Name .....

Address .....

(City) ..... (State) ..... (Zip Code).....

Email: .....

Academic Qualification: .....

Membership in other professional Societies: .....

Date

Signature

Subscription	Membership Fee	Admission Fee	Total Payment
Life Member	Rs. 2000/-	Rs. 10/-	Rs. 2010/-
Ordinary Member	Rs. 350/-	Rs. 10/-	Rs. 360/-
Student Member	Rs. 300/-	Rs. 10/-	Rs. 310/-
Life Member (FR)			200 USD

- 1) Admission fee of Rs. 10/- for all categories of members .
- 2) Please send your fees by Bank Demand Draft in the favour of Hon Secretary, Society of Biological Chemists, India.





Image by Divakar Badal ([divakarbada1@iisc.ac.in](mailto:divakarbada1@iisc.ac.in)). Artistic representation of *Caenorhabditis elegans* feeding on Gram negative bacilli (brick red) and Gram-positive cocci (yellow). Immunometabolic response of *C. elegans* to pathogenic cocci entails rapid utilization of neural lipids. Lipid droplets are shown as red spheres in the gut of worms. (*Infect Immun* 2020. 88:e00130-20).

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(Printed Matter)

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