

বসু বিজ্ঞান মন্দির

बसु विज्ञान मन्दिर

# BOSE INSTITUTE

## Newsletter

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A NEWSLETTER OF BOSE INSTITUTE

### FROM THE DIRECTOR'S DESK



I am very excited and privileged to present this edition of Newsletter of Bose Institute. This particular issue aptly highlights the significant activities, achievements and endeavours of the Institute during the period 2018-19. I am really delighted to experience the praiseworthy contribution

of all the members of staff of the Institute, and of course our dear students and faculty members for their tireless efforts to fulfil the objective of the iconic founder, Acharya Jagadis Chandra Bose i.e. to develop and disseminate knowledge freely for the benefit of the mankind. My beloved students and colleagues are quite instrumental to elevate the century-old prestigious Institute by organizing as well as participating in numerous academic and promotional activities including attending conferences, symposia/seminars, workshops and research activities in India and abroad. I congratulate them for their hard work and dedication, setting examples for generations to come.

During the year 2018-19, Bose Institute had published numbers of full length peer reviewed research papers in referred Journals and Books. The Institute had produced considerable number of Ph.D. students and trained a number of research manpower (other than Ph.Ds) who are now reputed experts in renowned Institutes in India and abroad. Our Institute has also brought a considerable number of funded projects from National and International agencies and Industries, organized various outreach activities, hosted lectures of eminent scientists, signed MoUs / accomplished important global and national collaborations during this period.

Notwithstanding our outstanding performance in the past, there is scope for improvement. In recent years there has been a steady decline in the faculty strength, due to superannuation of many of our senior members. Currently the faculty strength has hit an all time low with about forty three, which would go down further in the

coming years if not months. The need of the hour is to recruit young and dynamic faculty members, particularly those who are conversant with new and emerging technologies. At the same time, the research infrastructure will have to be upgraded further, in order to remain competitive at the national as well as international levels. The Institute will have to plan for new projects, keeping in mind the national priorities as well as the vision of our Founder. The administrative infrastructure has to be immediately revamped through the implementation of e-governance as well as paperless transaction procedures. Such ventures would require not only increased funding, but additionally determination and resolve on the part of all members of Bose Institute.

The challenges that exist are manifold. It is up to the younger generation of faculty members to rise to the occasion and meet these challenges. This being the 103<sup>rd</sup> year of our existence, it is important that we plan ahead with due diligence, so that years down the lane we can look back on these days with a sense of pride and satisfaction.

**Prof. (Dr.) Uday Bandyopadhyay**

Director

### OUR NEW DIRECTOR

Uday Bandyopadhyay obtained B.Sc (1985) and M.Sc (1987) in Physiology with Biochemistry as special paper from the University of Calcutta, Kolkata. He was awarded Ph.D (1994) in the area of gastric pathophysiology and cell biology. He worked as a Post-doctoral Research Fellow (1995-96) with Professor R Barouki, INSERM-U 99, Paris, France, studying the regulation of aspartate aminotransferase gene expression in hepatoma cells. He then worked as a Post-doctoral Research Fellow (1996-97) with Professor Andreas H Guse in the Department of Physiological Chemistry, University of Hamburg, Germany, studying inositol pentakisphosphate

### Editorial Board :

G. Basu, G. Gangopadhyay, Somshubhro Bandyopadhyay,  
Achintya Singha, I. Chatterjee and T. K. Maji  
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metabolizing enzyme as well as regulation of  $\text{Ca}^{2+}$  signaling in T-lymphocytes. On return to India, he initially joined as pool officer at CSIR-Indian Institute of Chemical Biology, Kolkata and then moved to CSIR-Central Drug Research Institute, Lucknow as faculty, in the Department of Biochemistry (2002-2006), where he initiated study of the identification of antimalarial drug target and new antimalarial lead molecules and also initiated work on apoptosis in host cells during malaria or different aspects of host-malaria parasite interaction. In 2006 he again joined CSIR-Indian Institute of Chemical Biology, Kolkata in the Department of Infectious Diseases and Immunology as a senior faculty and started working on different aspects of cell death mechanism in gastric mucosa in presence of non-steroidal anti-inflammatory drugs. Currently he is a senior principal Scientist at CSIR-Indian Institute of Chemical Biology and Professor of Biological Sciences (Academy of Scientific and Innovative Research, Govt. of India) and joined Bose Institute, Kolkata as Director w.e.f. 03-04-2019 (on lien) till date.

**Academic and Research Achievements:** Prof. (Dr.) Bandyopadhyay's research focused in the area of cell biology with particular reference to mitochondrial oxidative stress in relation to initiation of gastric ulcer/gastropathy by commonly prescribed non-steroidal anti-inflammatory drug (NSAIDs). His studies were aimed to define the molecular basis as well as players of developing mitochondrial oxidative stress and gastric mucosal cell apoptosis as result of electron transport chain defect induced by NSAIDs. He proved that correction of mitochondrial pathology and subsequent inhibition of gastric mucosal cell apoptosis is a novel rational for antiulcer therapy. Besides outstanding contribution in the field of gastric pathophysiology, he also made a remarkable contribution in the field of malaria and established that the development of oxidative stress in malaria parasite is a novel way to develop new antimalarial by designing new redox active molecule. He characterized an Alba-family protein from human malaria parasite *Plasmodium falciparum* and reported its binding to the telomeric and subtelomeric regions as well as to var gene promoter to control gene expression. He has published over 75 research articles in different national and international journals of repute. He has also published several Indian, USA, European and Japanese patents.

**Awards and Honours:** Prof. (Dr.) Bandyopadhyay is a recipient of several awards and honours including Humboldt Fellowship (Alexander Von Humboldt Foundation, Germany, 1996), INSERM Fellowship (National Institute of Health, France, 1999), Professor R. C. Shah Memorial Award (96<sup>th</sup> Indian Science Congress, 2009), Professor A. N. Bhaduri Memorial Award (Society of Biological Chemist (India), 2012) and J. C. Bose National Fellowship (Department of Science and Technology, 2015). He is a Fellow of the National Academy of Sciences (India), Allahabad, Fellow of Indian Academy of Sciences, Bangalore, Fellow of Indian National Science Academy, New Delhi and Fellow of West Bengal Academy of Science and Technology, Kolkata.



The **81<sup>th</sup> Acharya J.C. Bose Memorial Lecture** will be delivered by **Prof. Subhash Kak**, Regents Professor Emeritus, Oklahoma State University, Stillwater, USA on "**Computation, Indian Scientific Tradition, and Artificial Intelligence**".

## Computation, Indian Scientific Tradition, and Artificial Intelligence

### Abstract

The lecture will describe the lesser known history of the computational aspects of the Indian scientific tradition that has relevance to current controversies in artificial intelligence. Specifically, the role Indian ideas of physics played in Nikola Tesla's research on energy-mass transformation, and the influence of the Navya Nyaya School— that arose in Bengal and Bihar – on the development of mathematical logic will be described. Further the debates in Indian scientific literature on the nature of consciousness and how it might interact with matter will be described in relation to the current theories of consciousness proposed by neuroscientists, physicists, and logicians.

## Outstanding Student Awards 2019

### Sir Nilratan Sirkar Prize awarded to:



**Ms. Sweta Ghosh**  
Senior Research Fellow (CSIR-Adhoc)  
Division of Molecular Medicine  
Supervisor : Prof. Parames C. Sil

### Prof. B. B. Biswas Outstanding Student Award 2019 jointly presented to:



**Mr. Dibya Mukherjee**  
Guest Worker  
Division of Plant Biology  
Supervisor : Dr. Anupama Ghosh



**Ms. Humaira Ilyas**  
Senior Research Fellow  
Department of Biophysics  
Supervisor : Dr. Anirban Bhunia

### Prof. Shyamadas Chatterjee Outstanding Student Award (in the area of Physical and Environmental Science) awarded to:

**Mr. Rathijit Biswas**  
Senior Research Fellow  
Department of Physics  
Joint-Supervisors : Dr. Supriya Das & Prof. Sibaji Raha





## CURRENT EVENTS

### 102<sup>nd</sup> Foundation Day Celebrated



The 102<sup>nd</sup> Foundation Day of Bose Institute was celebrated on November 30, 2018. **Professor T.V. Ramakrishnan**, FRS, DST Year of Science Chair Professor, Distinguished Associate, IISc. Bangalore, and Emeritus Professor, BHU, Varanasi delivered the 80<sup>th</sup> Acharya J.C. Bose Memorial Lecture on "Acharya Jagadish Chandra Bose: Harbinger of Science in Today's India". Prof. Sujoy Kumar Das Gupta, Director (Officiating), Bose Institute, delivered the Welcome Address and presented the Institute Report. Prof. Indrani Bose, CSIR-Emeritus Professor presided over the programme.

### Dipta Memorial Symposium



Bose Institute Research Scholars' Forum organized **Dipta Memorial Symposium** on December 13, 2018 at Main Campus Lecture Hall. The programme consisted of speeches by the President - Sumit Ghosh, Dipta Secretary - Anindya Dutta and Nilanjan Banerjee. This was followed by Prof. Sujoy Kr Dasgupta, Officiating Director (BI) and Convener - Dr. Abhrajyoti Ghosh in place of Dr. Subrata Sau. This was followed by Lamp lighting in front of Diptadi's photo and garlanding of the photo. The main programme consisted of presentation of three speakers on the topic: **Evolution : Dissecting its many aspects**. Dr. Gautam Basu spoke on "How intelligent people become unintelligent by design?"; Dr. Arindam Bhattacharyya spoke on "Evolution of Immunology" and Dr Shyamal Chakrabarti spoke on "Knowledge as Capital: A question of the past and present". The programme concluded with the Quiz Competition involving 15 colleges from Kolkata.

### 43<sup>rd</sup> International Kolkata Book Fair 2019



Bose Institute participated in the 43<sup>rd</sup> International Kolkata Book Fair held at Central Park Mela Ground, Salt Lake during January 30 - February 10, 2019.

### Annual Sports Day

The Annual Sports Day was celebrated during 8<sup>th</sup> to 9<sup>th</sup> January 2019 at East Calcutta District Playground with the active participation by Staffs, Students and Faculty members of Bose Institute.

### National Science Day 2019



Bose Institute observed National Science Day on February 28, 2019 at the Unified Academic Campus. The Welcome Address by Prof. Sanjay Ghosh was followed by an interesting and interactive experimental hands-on-session under the theme 'Science for the people and the People for the Science' conducted by Prof. Samar Bagchi and Dr. B. N. Das. Scholars and students from Universities and various Colleges felt highly motivated and inspired.

### Conference on "Science, Communication, Popularisation & Extension in Bengali"



Prof. (Dr.) Uday Bandopadhyay, Director, Bose Institute was the Guest of Honour at the two-day conference on "Science Communication, Popularisation & Extension in Bengali: The Road Ahead", held at M.N. Saha Auditorium, CGCRI from April 26-27, 2019. The conference was a part of Vigyan Prasar's endeavor to expand its outreach programme in regional languages, Bengali being chosen as a part of this initiative.



### International Day of Yoga

International Day of Yoga was observed on June 21, 2019 at Centenary Campus of Bose Institute.

### Swachhata Pakhwada

"Swachhata Pakhwada" was observed on September 11 – October 2, 2019 in all campuses of the Bose Institute under the 'Swachh Bharat Mission'.

### Hindi Pakhwada



Bose Institute celebrated and observed Hindi Pakhwada during September 14 - 27, 2019 at the Centenary Campus. Hindi Day was observed on September 27, 2019. On this occasion the Institute organised a Hindi Workshop. A talk was delivered by Smt. Shruti Mishra of Rajbhasa Department (Govt. of India) followed by a cultural programme organized by the staff and students of the Institute.

### India International Science Festival (IISF-2019)



Bose Institute participated in the India International Science Festival (IISF-2019) at Science City, Kolkata from 05.11.19 to 08.11.19. The event was jointly organized by the Ministries of Science & Technology and Earth Sciences, Govt. of India in collaboration with Vigyana Bharati. **Dr. Harsh Vardhan**, Honorable Minister of Science & Technology, was the Chief Guest and inaugurated the exhibition.

### Rashtriya Ekta Diwas (National Unity Day)



"Rashtriya Ekta Diwas" (National Unity Day) was observed at Bose Institute, Kolkata on October 31, 2019 to commemorate the birth anniversary of Sardar Vallabhbhai Patel. A Pledge taking ceremony was organized at the Centenary Campus of the Institute before the bust of Acharya J. C. Bose. The programme was attended by all members of the Institute.

### Vigilance Awareness Week



Bose Institute, Kolkata observed the Vigilance Awareness Week from 28<sup>th</sup> October, 2019 to 02<sup>nd</sup> November 2019. The integrity pledge was taken on Monday, 28<sup>th</sup> October, 2019 at 11:30 am near the bust of Acharya J.C. Bose, the Founder of Bose Institute, situated at the lawn of the Centenary Campus of Bose Institute. Prof. Uday Bandyopadhyay, Director of Bose Institute, Prof. Anup Kumar Misra (the Registrar, officiating), Prof. Gaurab Gangopadhyay (the Vigilance Officer), the faculty and staff members from administrative sections and various departments took the pledge. Banners were displayed in the Main Campus, Centenary Campus, Salt Lake Campus, Madhyamgram Experimental Farm and Shyamnagar Campus of Bose Institute during the Vigilance Awareness Week.

### Visit of grand daughter of Sir Patrick Geddes



Marion Geddes, the grand daughter of J.C. Bose's first biographer Sir Patrick Geddes visited Bose Institute Main Campus on October 4, 2019. She took a walk around the Campus, Lecture Hall, Samadhi and felt motivated to view the archival documents on Geddes and Bose preserved in the J.C. Bose Museum. She was accompanied by members of Vigyan Prasar.

### Visit of the Hon'ble Minister of Maldives



The Hon'ble Minister of Communication, Science & Technology, Mohamed Maleeh Jamal, Maldives visited Bose Institute, Main Campus on November 8, 2019 in connection with the ongoing India International Science Festival 2019, Kolkata. He was accompanied by other delegates. A short documentary on J.C. Bose in the Lecture Hall was followed by a guided visit to the Acharya J.C. Bose Museum.



### 135<sup>th</sup> Birthday Celebration of Prof. Debendra Mohan Bose



The 135<sup>th</sup> Birthday of Prof. Debendra Mohan Bose was celebrated on November 26, 2019, at the Unified Academic Campus of Bose Institute. **Prof. K. Ramasubramanian**, Department of Humanities and Social Sciences, IIT Bombay, graced the occasion as Guest of Honour and delivered the **D. M. Bose Memorial Lecture 2019** on the topic “Use of Calculus in Indian Astronomy”. Prof. Gautam Bhattacharyya, Acting Director, Saha Institute of Nuclear Physics presided over the programme.

### Scheduled Tribe Specific Rural Biotechnology Programme

On the onset of the Scheduled Tribe Specific Rural Biotechnology Programme (STSRBP), funded by Department of Science and Technology, Government of India, Falta Experimental Farm has become the nodal Centre for carrying out various activities and implementation of the project. The main objectives of this project are to uplift the socio-economic condition, generation of awareness, empowerment of women of the Scheduled Tribe people in West Bengal. The major programmes through which Bose Institute extend the support to the ST rural people are viz, Agriculture, Orchard, Mushroom cultivation, Vermicompost production, Fishery, Apiculture, Piggery, Food Processing, Goat rearing, Rainwater harvesting for agriculture as well as drinking purpose, Country chicken rearing, Betel Leaf Cultivation, Crab Culture etc. In this connection, over the years Bose Institute with the help from STSRBP has developed some facilities at Falta Experimental Farm, which are required for carrying out training and generation of awareness of the rural ST people. Furthermore, training of the Project Supervisor and Village trainers through experts and Master Trainers as well as conducting animal health camps and awareness camps with the help of BDOs & BLDOs of Govt. of West Bengal are very often conducted under this programme. Throughout the year, about 151 personnel and Village Trainers function in coordination with Master Trainers to aware village people about various income generation programs and its successful implementation among the villagers. This programme is

spread over 13 districts of West Bengal namely Birbhum, South 24 Parganas, Purulia, Bankura, Jhargram, Paschim Medinipur, Purba Bardhaman, Murshidabad, Dakshin Dinajpur, Nadia, Hooghly, North 24 Parganas, Purba Medinipur. At present, about 5500 beneficiaries are associated with this programme through its various activities.

### SPECIAL EVENT

A group of 39 students from the Department of Biochemistry and Molecular Biology of Dhaka University visited the Centenary Campus of Bose Institute on March 14, 2019, coordinated by Dr. Shubhra Ghosh Dastidar.



### SYMPOSIA AND CONFERENCES HELD

#### Bose Institute Colloquium

- **Dr. Jyoti Shah**, University of North Texas, an eminent scientist in the field of plant defense response against biotic stresses, delivered the Institute Colloquium entitled: “Actin dynamics involving the Actin depolymerizing factor 3 and plant defense against insects that feed from the phloem” on January 18, 2019 at the Centenary Campus.
- **Prof. Pushan Ayyub** of Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research delivered the Bose Institute Colloquium entitled 'Nanotechnology lessons from nature: The significance of hierarchy' on January 24, 2019, at the Centenary Campus.

#### Foundation Day Oration

- The Foundation Day Oration was delivered by **Prof. Sumantra Chatterjee** (NCBS, Bangalore) on "Stress, memory and the tale of two neighbourhoods in the brain". This was organized by Central Calcutta Society for Advancement of Human Development and Research in collaboration with Bose Institute (and sponsored by DBT, WB) on January 25, 2019, at the Centenary Campus.
- A seminar and photographic exhibition entitled “Magical Nature- visible yet unseen” by Wildlife and Nature Photographer Mr. Dhritiman Mukherjee was held on January 16, 2019, at the Annexe Seminar Hall, Centenary Campus. The event was organized by the Bose Institute Research Scholars' Forum.



### Hands on workshop on Next Generation Sequencing to augment Microbial Research



Thermo Fisher Scientific Instructor was instructed to Participant

- A practicum titled “Hands on workshop on Next Generation Sequencing to augment Microbial Research” was conducted by Bose Institute at its Central Instrument Facility from 14<sup>th</sup> to 18<sup>th</sup> January, 2019. Faculty members, and Graduate, Doctoral and Post Doctoral students from Governmental and Non-Governmental Institutions such as Institute of Genetic Engineering, WB; University of Kalyani, WB; Anna University, Chennai, TN; Bidhan Chandra Krishi Viswavidyalaya, WB; Indian Institute of Technology Kharagpur, WB; University of Calcutta, WB; J. K. College, Purulia, WB; Aliah University, WB; The University of Burdwan, WB; University of North Bengal, WB; ICMR-National Institute of Cholera and Enteric Diseases, Kolkata, WB; National Institute of Technology, Rourkela, Odisha; University of Engineering and Management, Kolkata, WB; St. Xavier's College, Kolkata, WB, and private companies like Dr. KPC Life Science, Jadavpur, Kolkata and Thermo Fisher Scientific, India Pvt. Ltd., were trained on the various methods and applications in Microbial Genomics, Metagenomics and Community Analysis (Metataxonomy) by Scientists of Bose Institute. The training included both laboratory procedures and data analysis.

### Symposium entitled “Challenges for the freshwater systems: Sensors and treatment technologies:

- A symposium on water quality research entitled “Challenges for the freshwater systems: Sensors and treatment technologies” was organized by Prof. Tapan K. Dutta's lab at Centenary Campus of Bose Institute on 07-02-2019.



This was an effort to understand the ground reality of available freshwater in this part of India and to meet the challenges involved in the ongoing INDO-UK project entitled “The development and implementation of sensors and treatment technologies for freshwater systems in India”

### International Workshop on Forward and Jet Physics at LHC:



An International Workshop on Forward and Jet Physics at LHC was organized at the Unified Academic Campus, Bose Institute Kolkata during 11 – 12 February 2019. The aim of the workshop was to bring together experts (both theorists and experimentalists) from the field of jet and forward physics, review the past and current developments in this area of research and discuss the future perspective. Total number of participants in the conference was 90 including experts in this field from India and abroad. The programme included long and short duration talks delivered by the invited speakers on jet cross sections, jet properties, jet energy loss, jet-medium interactions, effect of gluon rich system to the QGP and particle production in heavy-ion collisions. Dr. Sidharth Kumar Prasad was the convener of the organizing committee of this workshop.

### ALICE-India Collaboration Meeting:



ALICE-India Collaboration meeting was organized at Unified Academic Campus, Bose Institute Kolkata during 13 – 16 February 2019. About 100 scientists from India working in the field of Experimental High Energy Physics at CERN, Geneva as a part of ALICE Collaboration participated in this meeting. A review of the ongoing activities and future perspective of the ALICE-India Collaboration in terms of detector development, Physics analyses and management was done in this meeting.

**34<sup>th</sup> CBM Collaboration meeting** was held at Unified Academic Campus, Bose Institute during 29 September – 3 October, 2019. About 110 participants were there including about 50 participants from abroad. Before the collaboration meeting there were a 2-day CBM software school and 1-day CBM Junior's day. In the collaboration meeting the progress of CBM project of FAIR and the future plan were discussed. Dr. Saikat Biswas, Department of Physics was the convener of these meetings.

### Vigyan Samagam 2019 at Science City:

Vigyan Samagam, a multi-city exhibition to showcase India's participation in International Mega Science Projects is being organized by Department of Science and Technology, Department of Atomic Energy and National Council of Science Museum, Govt. of India. Dr. Supriya Das of Department of Physics is a member of the editorial board of



Vigyan Samagam booklets from FAIR project. Dr. Saikat Biswas of Department of Physics is the volunteer's coordinator for FAIR project. He Conducted volunteers training and FAIR week at Mumbai, Bengaluru and Kolkata.



**Dr. Harsh Vardhan**, Hon'ble Union Minister of Health & Family Welfare, Science & Technology and Earth Sciences, Government of India, visited 'Vigyan Samagam' at Science City, Kolkata.

**Prof. Sanjoy Ghosh** (Department of Physics) acted as the Nodal Officer from Bose Institute for conducting six programmes under the banner of India International Science Festival (IISF) 2019 held on November 5 – 8, 2019 in Kolkata.

**Dr. Debabrata Basu** (Division of Plant Biology) acted as a coordinator of Agriculture Conclave of India International Science Festival (IISF) 2019 held at Kolkata during November 5-8, 2019.

**Dr. Ajit Bikram Datta** (Department of Biochemistry), **Dr. Somsubhro Bandyopadhyay** (Department of Physics) and **Dr. Kaushik Biswas** (Division of Molecular Medicine) acted as co-ordinators for the Overseas Minister's and Diplomat's Conclave (OMDC) as part of the India International Science Festival (IISF) 2019 held on Nov 5-8, 2019 at the Biswa Bangla Convention Center, Kolkata.

#### Hands-on-Training Programme:



Madhyamgram Experimental Farm (MEF) organized the 3<sup>rd</sup> Hands-on-Training programme on "Basic and Applied Physical and Biological Sciences for the High School Students from 18<sup>th</sup> to 20<sup>th</sup> December 2018. Thirty-five students of Class X-XII along with their teachers from six schools in the vicinity of MEF attended this programme. They performed experiments on Microbiology, Physics of Nanomaterials and Plant Biotechnology. They learnt the techniques to use of animals in drug development/ translational medical research and observed a 3D view of the molecular world. The students also attended lectures on Crop improvement, Atmospheric Investigations over Antarctica, 'DNA origami' and 'Fun with Mathematics'.

#### NESST-BASE:



The 13<sup>th</sup> North-East Students' Summer Training on Basic Sciences (NESST-BASE) was successfully held at Darjeeling Campus of Bose Institute from 3<sup>rd</sup> to 15<sup>th</sup> June 2019. This programme is dedicated to the school children of North Eastern states and is sponsored by DST, Govt. of India. Thirty two students from different states along with their accompanying teachers joyfully participated in this residential programme. The students were selected by the respective state authorities. They did hands-on experiments on Physical Science, Chemical Science, Plant Science, Microbial Science and Environmental Science. The Mathematics course was 'Fun with Maths'. The students also had a field trip to the Lloyd's Botanical Garden. Faculty members of Bose Institute and few eminent teachers from other institutions acted as resource persons. Professor Gautam Basu of Bose Institute and Dr Debiprasad Duari, Director, M. P. Birla Planetarium delivered popular lectures on 8<sup>th</sup> June 2019. Children from different schools of Darjeeling were also invited on this occasion. Dr. Abhijit Chatterjee, Associate Professor Environmental Sciences Section and Dr. Abhrajyoti Ghosh, Assistant Professor, Department of Biochemistry jointly co-ordinated the NESST-BASE program in 2019.

#### VISITS ABROAD

**Chandrima Bhattacharyya** (Biochemistry), a Ph.D. student of Dr. Abhrajyoti Ghosh, has visited the Middlesex University, London in 2019 through the Newton Bhabha Fellowship 2018-2019- an Indo-UK exchange program for PhD students.

**Dr. Anirban Bhunia** (Biophysics) delivered an invited talk at 8<sup>th</sup> Asia-Pacific NMR (APNMR) Symposium, which was held at Nanyang Technological University (NTU), Singapore.

**Aishee De** SRF (Division of Plant Biology) working under Dr. Debabrata Basu presented poster in the annual meeting of the American Society of Plant Biologists (ASPB), Plant Biology 2019, held at the San Jose Convention Center in San Jose, CA, USA from August 3-7, 2019.

**Aishee De** SRF (Division of Plant Biology) gave an Oral presentation in the Department of Plant Biology, Carnegie Institution for Science, Stanford University on August 2, 2019.

**Dr. Sanat Kr. Das** (Environmental Science) attended 16th Annual Meeting of Asia Oceania Geosciences Society (AOGS Conference 2019) during 28 Jul- 3 Aug 2019 at Singapore.

**Prof. Tapan K. Dutta** (Microbiology) visited London and the University of West England, Bristol, UK from 9-14 July, 2019 for Indo-UK Joint Review Meeting of the ongoing Indo-UK project entitled "The development and implementation of sensors and treatment technologies for freshwater systems in India" funded by the Indian Department of Science & Technology (DST), NERC and the EPSRC (UK) through the Newton-Bhabha fund.

**Prof. Gaurisankar Sa** (Molecular Medicine) was invited to deliver a Invited talk at 7<sup>th</sup> Federation of Immunological Societies of Asia-Oceania (FIMSA) at Bangkok, Thailand, in November, 2018.



**Prof. Tanya Das** was invited to deliver a Invited talk at 7th Federation of Immunological Societies of Asia-Oceania (FIMSA) at Bangkok, Thailand, in November, 2018.

**Dr. Atin K. Mandal** (Molecular Medicine) attended 'Protein Homeostasis in Health and Disease' meeting at Cold Spring Harbor Laboratory, NY, USA, 2018.

**Dr. Kaushik Biswas** (Division of Molecular Medicine) presented a poster titled "Ganglioside GM2-mediated tumor growth, progression and metastasis involves YAP-dependent transcriptional program" as part of the American Association of Cancer Research (AACR) Annual Meeting in Chicago, Illinois, USA, 2018.

**Baijayanti Ghosh** SRF (Molecular Medicine) working under Dr. Atin Kumar Mandal presented poster at the EMBO workshop on 'Protein quality control: From mechanisms to disease', Costa de la Calma (Mallorca), Spain, 28 April – 03 May 2019.

**Sayantana Bose** SRF (Molecular Medicine) working under Dr. Gaurisankar Sa presented a poster at the "2<sup>nd</sup> Human & Translational Immunology Conference" held from 29 May to 3 June, 2019 on Kos Island, Greece.

**Sk Mustak Ali** SRF (Physics) working under Prof. Dhruba Gupta attended the "ISOLDE Workshop and Users' meeting 2018" at CERN, Geneva, Switzerland during December 05-07, 2018 and presented a poster titled "The  $d + {}^7\text{Be}$  reaction to study the cosmological lithium problem".

**Kabita Kundalia** SRF (Physics) working under Prof. Dhruba Gupta attended the "ISOLDE Workshop and Users' meeting 2018" at CERN, Geneva, Switzerland during December 05-07, 2018 and presented a poster titled "Coulomb dissociation of  ${}^{14}\text{O}$  in the context of the hot CNO cycle".

**Dr. Saikat Biswas** (Physics) visited CERN, Geneva, Switzerland during November 11 - December 6, 2018 to take DCS data taking shift during heavy ion run of ALICE experiment. Attended and presented a talk in the RD-51 mini week.

**Shreya Roy** JRF (Physics) working under Dr. Supriya Das, presented a talk at Hampton University Graduate Studies (HUGS) Summer Program at Jefferson Lab, USA during May 27-June 14, 2019.

**Shreya Roy** JRF (Physics) working under Dr. Supriya Das, presented a poster at the 6<sup>th</sup> International FAIR School, Italy during September 7-14, 2019.

**Sayak Chatterjee** JRF (Physics) working under Dr. Saikat Biswas, presented a poster at the 6<sup>th</sup> International FAIR School, Italy during September 7-14, 2019.

**Sayak Chatterjee** JRF (Physics) working under Dr. Saikat Biswas participated in mCBM experiment campaign at GSI, Germany held during 13th November - 7th December 2019.

**Arindam Sen** DST-Inspire Fellow JRF (Physics) working under Dr. Saikat Biswas, presented a poster at the 6<sup>th</sup> International FAIR School, Italy during September 7-14, 2019.

**Dr. Soumen Roy** (Physics) visited the International Centre for Theoretical Physics of UNESCO at Trieste, Italy as a Regular Associate of ICTP during November-December 2018. He also delivered a talk on "Complex Systems: From networks to microbes".

**Dr. Sidharth Kumar Prasad** (Physics) and **Rathijit Biswas** visited CERN, Geneva during November – December 2018 to participate in the ALICE experiment. During their visits they ensured the smooth data taking of ALICE Photon Multiplicity Detector (PMD) for proton-proton collisions at 13 TeV and lead-lead collisions at 5.02 TeV. The PMD was de-commissioned in December 2018 after a successful operation in the ALICE experiment for 10 years of data taking. Dr. Prasad and Mr. Biswas were in charge of the de-commissioning of PMD from the ALICE experiment.



## RECENT AWARDS AND HONOURS

- **Chandrima Bhattacharyya** (Biochemistry) a Ph.D. student of Dr. Abhrajyoti Ghosh's laboratory, awarded from the Middlesex University, London in 2019 through the Newton Bhabha Fellowship 2018-2019- an Indo-UK exchange programme for Ph.D. students.
- **Soham Seal** SRF (Biochemistry) working under the guidance of Prof. Subrata Sau received the best poster award for "Domain structure and the folding-unfolding mechanism of a staphylococcal cyclophilin involved in pathogenesis" in "BIOSPECTRUM 2019: International conference on Biotechnology & Biological Sciences" held on 8<sup>th</sup>-10<sup>th</sup> August, 2019 at University of Engineering and Management, Newtown, Kolkata.
- **Abhirupa Ghosh**, SRF (Bioinformatics) working under the guidance of Dr. Sudipto Saha, attended the International Conference on Bioinformatics (InCoB) 2019 held on September 10-12, 2019 at Universitas YARSI, Jakarta, Indonesia with InCoB travel fellowship and presented a poster titled "Prediction of drug resistance in MTB using machine learning algorithms" and won best poster bronze award.
- **Debangana Chakravorty**, SRF (Bioinformatics) working under the guidance of Dr. Sudipto Saha, attended the International Conference on Bioinformatics (InCoB) 2019 held from September 10-12, 2019 at Universitas YARSI, Jakarta, Indonesia with InCoB travel fellowship and gave a short talk on "Computational approach to target USP28 for regulating Myc".
- **Rohit Das** SRF (Division of Plant Biology) working under Dr. Pallob Kundu received DBT-CTEP, CSIR and CCSTDS travel fellowships for attending the Plant Biology 2019 symposium held in the USA, 2019.
- **Dr. Jayanti Jodder** RA (Division of Plant Biology) working under Dr. Pallob Kundu received CSIR-RA fellowship, 2019.
- **Dibya Mukherjee**, SRF (Division of Plant Biology) working under Dr. Anupama Ghosh received SERB-ITS travel fellowship for attending the "30th Fungal genetics conference" held at Asilomar Conference Ground, USA during 12 – 17 March, 2019.
- **Rahul Datta**, SRF (Division of Plant Biology) working under Dr. Anupama Ghosh received CSIR foreign travel fellowship for attending the "XVIII Congress of IS-MPMI" held at SEC Glasgow, Scotland during 14 – 18, July 2019.
- **Dr. Sanat Kr. Das** (Environmental Science) received ITS-SERB Fund.
- **Dr. Atin K. Mandal** (Molecular Medicine) received travel award from DST to attend 'Protein Homeostasis in Health and Disease' meeting at Cold Spring Harbor Laboratory, NY, USA, 2018.
- **Baijayanti Ghosh** SRF (Molecular Medicine) working under Dr. Atin Kumar Mandal was awarded FEBS Letters poster prize at the EMBO Workshop on 'Protein quality control: From mechanisms to disease', Costa de la Calma (Mallorca), Spain, 28 April – 03 May 2019.
- **Prof. Gaurisankar Sa** (Molecular Medicine) was awarded as *Senior Scientist Oration Award* from Indian Immunological Society at its 46th Annual Conference held at BARC, Mumbai in November, 2019.



- **Sayantana Bose** SRF (Molecular Medicine) working under Dr. Gaurisankar Sa received a Travel Award from the organizing committee and a bursary from the Immunology Foundation for attending 2<sup>nd</sup> Human & Translational Immunology Conference” held on Kos Island, Greece.
- **Shreya Roy** JRF (Physics) working under Dr. Supriya Das won the Best Talk Award, at The Hampton University Graduate Studies (HUGS) Summer Program at Jefferson Lab, USA. May 27-June 14, 2019.
- **Sayak Chatterjee** JRF (Physics) working under Dr. Saikat Biswas won the Best poster award at the Workshop on Dynamics of QCD matter, NISER, Odisha held during August 15-17, 2019.

### Ph. D. Degree Awarded

- **Aditya Prasad Behera** (Biochemistry) Structure-function analysis of microtubule associated ubiquitin E3 Ligase ZNRF1. Supervisor: Dr. Ajit Bikram Dutta.
- **Soumitra Polley** (Biochemistry) Studies on the domains and domain-connecting helix of a peptidyl-prolyl *cis-trans* isomerase from *Escherichia coli*. Supervisor: Prof. Subrata Sau.
- **Nabanita Saha** (Biochemistry) Study of Vesicular Trafficking Pathway in *Giardia lamblia*. Supervisor: Prof. Srimonti Sarkar.
- **Debasree Sarkar** (Bioinformatics) Systematic discovery of linear motifs mediating protein-protein interactions. Supervisor: Dr. Sudipto Saha.
- **Prerna Priya** (Bioinformatics) Understanding The Mechanisms of High Affinity Ligands Inhibiting Bcl-2 Family Members With Flexible pockets: Molecular Dynamics Simulation Approach, Supervisor: Dr. Shubhra Ghosh Dastidar.
- **Tanmoy Jana** (Bioinformatics) Computer-aided prediction of potential drug candidates against cancer using protein-protein interaction modulators. Supervisor: Dr. Sudipto Saha.
- **Basusree Ghosh** (Biophysics) Understanding transcription factor specificity and design of synthetic transcription factor. Supervisor: Prof. Siddhartha Roy.
- **Aritreyee Datta** (Biotechnology) Structural insights into *de-novo* designed antimicrobial peptides: mechanistic analysis against plant and animal pathogens. Supervisor: Dr. Anirban Bhunia
- **Priya Mondal** (Biophysics) Peptides as a tool to understand signalling and epigenetic networks. Supervisor: Prof. Siddhartha Roy.
- **Sanjaya Kumar Sahu** (Chemistry) Understanding the regulation of immune response genes in *Mycobacterium tuberculosis*-infected macrophages. Supervisor : Prof. Joyoti Basu.
- **Manish Kumar** (Chemistry) Post transcriptional regulation of macrophage signaling pathways by *Mycobacterium tuberculosis*. Supervisor : Prof. Joyoti Basu.
- **Ayan Chatterjee** (Chemistry) The role of two component system dependent signal transduction in mycobacterial physiology. Supervisors : Prof. Joyoti Basu and Prof. Manikuntala Kundu.
- **Asif Ali** (Division of Molecular Medicine) Studies on the role of proteotoxic stress in cellular inflammation. Supervisor: Prof. Mahadeb Pal.
- **Joyita Hazra** (Division of Molecular Medicine) Study the role of DNA-PK and Paf1c in heat shock induced gene expression in human cells. Supervisor : Prof. Mahadeb Pal.
- **Shabina Parveen** (Division of Molecular Medicine) Role of host phosphatase and kinase during visceral Leishmaniasis disease: involvements to toll like receptors and protein kinase C. Supervisor: Prof. Subrata Majumdar.
- **Pravat Kumar Parida** (Division of Molecular Medicine) Synthesis, characterization and mechanistic studies of the stilbene derivatives as anticancer agents. Supervisor: Dr. Kuldip Jana.
- **Junaid Jibrin Jawad** (Division of Molecular Medicine) Role of protein kinase C isoforms in the regulation of T-cell subsets during *Leishmaniadonovani* infection. Supervisor: Prof. Subrata Majumdar.
- **Pritam Sadhukhan** (Division of Molecular Medicine) Oxidative stress and disease: targeting by different small molecules. Supervisor: Prof. Paramesh C. Sil.
- **Ishani Bhaumik** (Division of Molecular Medicine) Synthesis of the polysaccharide fragments corresponding to the bacterial O-antigens. Supervisor: Prof. Anup Kumar Mishra.
- **Sourav Panja** (Division of Molecular Medicine) Study of antioxidant and anticancer activities of a microalgae, *Euglena tuba (carter)*. From RARH region of West Bengal. Supervisor: Prof. N.N. Mondal.
- **Avisek Banerjee** (Division of Molecular Medicine) Defining the epigenetic regulation of ganglioside synthase genes in cancer. Supervisor: Dr. Kaushik Biswas.
- **Sukanya Saha** (Division of Molecular Medicine) Bioactive natural compounds: role in redox biology and organ pathophysiology. Supervisor: Prof. Paramesh C. Sil.
- **Kirti Kajal** (Division of Molecular Medicine) Studies on control of heat shock factor-1 and its target gene under proteotoxic stress in human cells. Supervisors: Prof. Gourisankar Sa and Prof. Tanya Das.
- **Tapasree Basu** (Division of Molecular Medicine) Studies on control of heat shock factor-1 and its target gene under proteotoxic stress in human cells. Supervisor: Prof. Nripendranath Mandal.
- **Joydeep Chakraborty** (Division of Plant Biology) Molecular approaches for developing tolerance in Chickpea to Fusarium infection and pod borer infestation. Supervisor : Prof. Sampa Das.
- **Papri Basak** (Division of Plant Biology) Functional promoter analysis of INO1 genes in wild and cultivated rice. Supervisor: Prof. A. N. Lahiri Majumder.
- **Niketa Bhawsinghkhya** (Microbiology) Transcriptomic analysis of mycobacteriophage D29 infection. Supervisor: Dr. Sujoy Kumar Dasgupta.
- **Prosenjit Pyne** (Microbiology) Molecular basis of tetrathionate oxidation by chemolithotrophic bacteria. Supervisor: Dr. Wriddhiman Ghosh.
- **Saswata Halder** (Physics) Lattice vibrational dynamics and electron transport in strongly correlated rare earth based oxides. Supervisor: Prof. T.P. Sinha.
- **Prasenjit Deb** (Physics) Role of Quantum Correlations in Quantum Information Processing. Supervisor : Prof. Somshubhro Bandyopadhyay.
- **Soumitra Maity** (Physics) Understanding the Properties of Strong Interactions in Effective QCD Models. Supervisor : Dr. Rajarshi Ray.
- **Sudipa Upadhaya** (Physics) Understanding the Signatures of Phase Transition in Strongly Interacting Systems Through Fluctuations and Correlations. Supervisor : Dr. Rajarshi Ray.
- **Sanat Kumar Biswas** (Library) Information literacy awareness and role of libraries : a study on students and faculty users of undergraduate college libraries under university of Kalyani in West Bengal. Supervisor: Dr. Arun Kumar Chakraborty.

## GRANTS RECEIVED

The following research proposals have been granted to Bose Institute during last one year by different funding agencies. The title of the project, funding agency involved, name of the principal investigator, amount of grant and duration of the projects are mentioned.

- Response of *B. aryabhattai* AB211 to maize root exudates: insights from transcriptome analysis; SERB (DST); Dr. Abhrajyoti Ghosh, Biochemistry; ₹ 38,68,803; 3 years.
- Deciphering the cross-talk between rhizosphere microbiome and the plant: insights from tea rhizosphere microbiome, metabolome and culture dependent analyses; CSIR; Dr. Abhrajyoti Ghosh, Biochemistry; ₹ 33,15,080; 3 years.
- Characterization of the cellular roles of the proteasome and its deubiquitinase G1Rpn11 of the differently-diverged eukaryote *Giardia lamblia*; SERB (DST); Prof. Srimonti Sarkar, Biochemistry; ₹ 42,33,000/-; 3 years.
- Development of knowledge base on pulmonary diseases for estimating the prevalence and etiology : a pilot study in eastern India; ICMR; Dr. Sudipto Saha, Division of Bioinformatics; ₹ 1,66,000; 2 years.
- Tailor Made Peptidomimetics Designing against Human Islet Amyloid Polypeptide (hIAPP) Aggregation: A Therapeutic Approach Associated with Type-2 Diabetes; DBT; Dr. Anirban Bhunia, Biophysics; ₹ 66,74,500; 3 years.
- Intracellular Dynamics of Small Molecules During Novel AMP-mediated Resilience in Plants: A Multidisciplinary Approach; SERB; Dr. Anirban Bhunia, Biophysics; ₹ 30,70,000; 3 years.
- Next generation advanced therapies for fight  $\beta$ -hemoglobinopathies via rational intervention in  $\gamma$ -globin regulatory network; Indo-Swiss; Prof. Siddhartha Roy, Biophysics; ₹ 1,16,21,600; 4 years.
- Physico-chemical factors influencing Aerosol Hygroscopicity during fog, its effect on Aerosol Radiative Properties and fog snowcasting: a study in the context of Regional Climate Change over Eastern India; CSIR; Dr. Sanat Kr. Das, Environmental Science Section, ₹ 30,52,000; 3 years.
- Investigation of the transcriptional regulation of miR-325 and evaluating its potential as a therapeutic agent for cancer; DBT, Prof. Gaurisankar Sa (Molecular Medicine); ₹ 80,00,000; 3 years.
- Developmental and functional aspects of newly identified CD8<sup>+</sup> T-regulatory cells in tumor microenvironment; CSIR, Prof. Gaurisankar Sa (Molecular Medicine); ₹ 21,00,000; 3 years.
- Role of Silica in Cancer regression : A mechanistic study; CCRH; Prof. Gaurisankar Sa, Division of Molecular Medicine; ₹ 11,59,830; 1 year.
- Understanding the epigenetic regulation of GM2-synthase gene in cancer; ICMR; Dr. Kaushik Biswas, Division of Molecular Medicine; ₹ 25,30,000(1<sup>st</sup> year); 3 years.
- Understand regulation of heat shock factor 1 activities in human cells; SERB; Prof. Mahadeb Pal, Division of Molecular Medicine; ₹ 30,65,148; 3 years.
- Convergent miRNA actions in coordination of stress-response to *Alternaria solani* infection in tomato lines, SERB; Dr. Pallob Kundu, Division of Plant Biology; ₹ 52,30,828; 3 years.
- Understanding the mechanisms of resistance to sucking pest, *Helopeltis theivora* and development of microbe – based bioformulation against major tea pests; DBT; Prof. Debabrata Basu, Division of Plant Biology; ₹ 39,00,396; 3 years.

- Deciphering the involvement of programmed cell death in the pathogenic development of *Ustilago maydis*; CSIR; Dr. Anupama Ghosh, Division of Plant Biology ; ₹ 19,60,000; 3 years.
- Development of a cost effective and portable electro-optical system for effective investigation of residual ambient gases using spark emission spectrometry towards the estimation of atmospheric gases composition w.r.t. height using high flying drones; DST; Prof. Sanjoy Kr. Ghosh, Physics; ₹ 24,37,600; 3 years.

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**Dr. Soumen Roy** (Physics) Software for analyzing videos of application or function for feature identification of the videos and related application or function Registration number: SW-10052 (2018)

## STAFF NEWS

### Appointments:

1. Prof. (Dr.) Uday Bandopadhyay joined as Director, Bose Institute on 03.04.2019.

### Promotion:

1. Prof. Dhruva Gupta promoted as Professor in Department of Physics w.e.f. 01.01.2019.
2. Prof. Gaurab Gangopadhyay promoted as Professor in Division of Plant Biology w.e.f. 01-01-2019.

### Retirements on Superannuation:

1. Prof. Barun Kr. Chatterjee, Sr. Professor, Physics on 30.11.2018.
2. Prof. Pinakpani Chakrabarti, Sr. Professor, Biochemistry on 31.12.2018
3. Mr. Satyabrata Chatterjee, Helper-G, Administration on 31-12-2018.
4. Mr. Amit Kumar Ghosh, Assistant Registrar I, Madhyamgram Experimental Farm on 31-12-2018.
5. Mr. Baladeb Goswami, Assistant Registrar I, Biophysics on 31-12-2018.
6. Prof. Parthasarathi Joarder, Associate Professor, Physics on 31.12.2018.
7. Mr. Walter D Rozario, Technician Gr-I, Workshop on 31.12.2018.
8. Prof. Swapn Kumar Saha, Professor, Physics on 31.01.2019.
9. Prof. Tapash Chandra Ghosh, Professor, BIC on 31.01.2019.
10. Prof. Nripendranath Mandal, Professor, DMM on 31.01.2019.
11. Mr. Chanchal Chakraborty, Technical Officer-I, Division of Plant Biology on 31.01.2019.
12. Mr. Jagabandhu Nayak, Helper-G, Administration, on 31.01.2019.
13. Mr. Munna Turi, Helper-G, Administration, on 31.01.2019.
14. Mr. Bijoy Munshi, Helper-G, DMM, on 30.06.2019.
15. Mr. Saral Chandra Das, Helper-E, Environmental Science on 31.07.2019.
16. Prof. Tanya Das, Professor, DMM on 30.09.2019.
17. Mr. Brahmdeo Prasad, Helper-E, Workshop on 31.10.2019.

We condole the passing away of  
**Mr. Subhas Chandra Paul**  
Helper-C, Chemistry Department, on 14.09.2019