

বসু বিজ্ঞান মন্দির
बसु विज्ञान मन्दिर

BOSE INSTITUTE

Newsletter



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A NEWSLETTER OF BOSE INSTITUTE

FROM THE DIRECTOR'S DESK



On November 30, 2017, Bose Institute will complete a century of its existence. The Institute's history is intertwined with the revival of modern scientific thoughts in the country and re-discovery of the forgotten scientific heritage. However, we must ensure that the glorious past heralds a promising future as well. Towards that goal, the Institute is moving to the forefront of many areas of futuristic research. High energy and Astrophysics are the two areas in which the Institute is playing a leading role in the international arena. We have also taken a promising role in Climate Science research, which will only enlarge in the future. In biology, we are planning to push ahead with several new cutting-edge areas, such as Synthetic and Systems Biology and Human Microbiota and its role in human health and aging.

Our new state-of-the-art campus will give us new opportunities to expand our footprint into these futuristic areas. The newsletter will give some flavors of our activities as the Institute enters the second century.

Siddhartha Roy

Director (Officiating), Bose Institute

CENTENARY LOGO



Inauguration of the Unified Academic Campus of Bose Institute



Shri Pranab Mukherjee, the then Honourable President of India in presence of **Dr. Harsh Vardhan**, Honourable Minister of Science & Technology, Earth Science, Environment, Forest and Climate Change, Government of India, **Shri Y. S. Chowdary**, Honourable Minister of State of Science & Technology and Earth Science, Government of India and **Prof. Ashutosh Sharma**, Secretary to the Government of India, Ministry of Science & Technology inaugurated the Bose Institute's Unified Campus at Salt Lake, Kolkata on June 29, 2017. **Shri Keshari Nath Tripathi**, Honourable Governor of West Bengal presided over the function.

In order to bring all the laboratories under one roof, a project sanctioned by DST Govt. of India has been undertaken to build a Unified Campus at Sector V, Bidhannagar, Kolkata. The sanctioned area is 41000 sqm and the anticipated cost is INR. 224 crores.



Editorial Board :

Prof. D. Home, Prof. G. Basu, Dr. G. Gangopadhyay,
Dr. Somshubhro Bandyopadhyay, Dr. Achintya Singha,
Dr. I. Chatterjee and Shri T. K. Maji
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Speaking on the occasion, the President said that it was indeed a privilege for him to be present on the occasion of inauguration of the Unified Campus of this prestigious Institute. He stated that almost a century ago, J.C. Bose dedicated this Institute, the first of its kind in the country fully devoted towards scientific research, to the service of the nation and with the inauguration of this new campus, Bose Institute is embarking upon a fresh phase in its journey, more so befitting as the Institute celebrates its Centenary this year. The President said he was informed that a series of international conferences, visits and lectures by eminent scientists including Nobel laureates are planned to celebrate this milestone. At the same time, the Institute also seeks to chart a new course with the launching of a number of new Research and Social Outreach Programmes. Taking into account the projected expansion of the Institute, this campus is expected to serve its need for many more years.



The 79th Acharya J.C. Bose Memorial Lecture will be delivered by Prof. Ada Yonath, Department of Structural Biology, Weizmann Institute, Rehovot 76100, Israel and recipient of the Nobel Prize in Chemistry in 2009 on "Next Generation Environmental Friendly Antibiotics".

Next Generation Environmental Friendly Antibiotics

Abstract

Resistance to antibiotics is a severe problem in contemporary medicine. Many antibiotics inhibit protein biosynthesis by hampering the ribosome function. Structures of bacterial ribosomes in complex with these antibiotics illuminated common pathways of antibiotics inhibitory action, namely binding to the ribosomal binding sites, but could not illuminate the species-specific diversity in infectious-diseases susceptibility. Recent structural studies on ribosome from a multi-resistant pathogenic bacteria and careful comparisons to previous ribosomes structures revealed novel structural motifs, essential for protein biosynthesis but are not located in the primary ribosomal active sites, hence no mechanism for

their modification, which may lead to resistance are currently known, hence if at all, resistance will appear slowly and less efficiently. These findings prompted the design of antibiotics with desired structures that can be optimized in terms of their chemical properties, toxicity, cellular penetration, and species-specificity, thus preserving the microbiome, as well as increasing their bio degradability, thus reducing the ecological hazards caused by the non-digestible components of the current antibiotics' metabolites.

CURRENT EVENTS



100th Foundation Day Celebrated

The 100th Foundation Day of Bose Institute was celebrated on November 30, 2016. Professor Raghavendra Gadagkar, Center for Ecological Sciences and Center for Contemporary Studies, Indian

Institute of Science, Bangalore and President, Indian National Science Academy, Delhi graced the occasion as the Guest of Honour and delivered the 78th Acharya Jagadis Chandra Memorial Lecture on Social Regulation of Reproduction in a Tropical Insect Society. Professor P. Balaram, Molecular Biophysics Unit, Indian Institute of Science, Bangalore, presided over the programme. Prof. Siddhartha Roy, Director (Officiating), Bose Institute, delivered the Welcome Address and presented the Institute Report. Sir Nilratan Sirkar Prize 2016 was awarded to Ms. Shahana Mitra, (Under Dr. Atin K. Mandal) Division of Molecular Medicine. Prof. B. B. Biswas Outstanding Student Award 2016 were presented to Ms. Senjuti Sen, (Under Prof. Sampa Das) Division of Plant Biology and Mr Soumitra Polley (Under Dr. Subrata Sau) Biochemistry Department.

Press Meet:

A Press Meet was held at the Lecture Hall, Bose Institute, Main Campus, Razabazar on November 29, 2016 for broadcasting the forthcoming objectives



and scientific programmes of Bose Institute to mark its Centenary Year. The meet was presided over by Prof. Siddhartha Roy, Director (Officiating). Other Faculties who opined included Prof. Sibaji Raha, Prof. S.R. Sikdar, Prof. Dipankar Home and Prof. Gautam Basu. Prof. Roy and Prof. Raha elaborated on the new areas of Research and their objectives in the field of Plant Science, Molecular Medicine, Astrophysics and so on, to be initiated by the Institute following the Centenary Year.



The meet was followed by a visit to the J.C. Bose Museum to highlight the attractions for the Centenary Year. This included display of twelve digitized Notebooks of Acharya Jagadis Chandra Bose containing his Experimental notes, College notes (1882-1884), Notes on instrument design, Visitors' Book (1917 onwards), Donation Book (1920 onwards), etc. The user friendly Touch Screen Kiosk on J.C. Bose and the Museum was a fascinating object of coverage by Media.

India International Science Festival (IISF-2016 & IISF-2017)



Bose Institute participated in the India International Science Festival (IISF-2016 & IISF-2017) at National Physical Laboratory, Pusa, New Delhi held during December 07 – 11, 2016 and IIT, Anna University, Chennai held during October 13 – 16, 2017. 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.

Science Day 2017

Bose Institute observed **National Science Day** on February 28, 2017, through various activities. The theme of the National Science Day 2017 was **“Science and Technology for specially abled persons”**. This day is celebrated in our Institute every year during which students demonstrate various science projects as well as their latest researches. The celebration also includes exhibitions of science movies, science exhibition based on themes and concepts, debates, quiz competitions, science model exhibitions and many more activities. A large number of participants including guests, scientists, students and other professional attended the programme.

133rd Birthday Celebration of Prof. Debendra Mohan Bose



The 133rd Birthday of Prof. Debendra Mohan Bose was celebrated on November 26, 2017, at the Main Campus Lecture Hall of the Institute. Prof. Ram Ramaswamy, Professor & Concurrent Faculty, School of Computational and Integrative Sciences, Jawaharlal N e h r u University, New Delhi – 110 067, graced the occasion as Guest of Honour and delivered the **D. M . B o s e M e m o r i a l L e c t u r e** on the topic **“Chimera States : Spontaneous Symmetry-Breaking in Dynamical Systems”**. Many distinguished scientists, students and other professionals from all over India were present.



CENTENARY CELEBRATION - 2017

| Distinguished Lecture

Prof. N. Mukunda, Indian Institute of Science, Bangalore delivered distinguished lecture on "Science and the Human Predicament" on August 1, 2017.

Prof. Joel Sussman, Weizmann Institute, Israel delivered distinguished lecture on "Acetylcholinesterase: 25 Years since the 3D Structure was Determined: What Have We Learned?" on October 10, 2017.

| Centenary Lecture



Prof. Harvey Lodish, MIT, Boston, USA delivered 1st Centenary Lecture on "Self-renewal of human hematopoietic progenitor cells: From the clinic to the laboratory and back to the clinic: Development of novel therapies for anemias" during January 8-10, 2017.



Sir Richard J. Roberts, New England Biolabs, Ipswich, MA, USA, recipient of the 1993 Nobel Prize in Physiology or Medicine delivered 2nd Centenary Lecture on "Bacterial Methylomes" on March 27, 2017.



Prof. Ronald G. Prinn, TEPCO professor of Atmospheric Sciences, Department of Earth, Atmospheric and Planetary

Sciences and The Director of the Centre of Global Change Science of Massachusetts Institute of Technology, USA delivered 3rd Centenary Lecture on "Climate Change Risks and the Challenge of Avoiding 2°C Warming" on August 30, 2017.



Prof. Inder M. Verma, Laboratory of Genetics, The Salk Institute, La Jolla, California, USA delivered 4th Centenary Lecture on "Cancer: Lessons From the Past Forty Years" on October 17, 2017.

Centenary Celebration Lecture on 'History of Indian Science: Ancient and Medieval' on November 24, 201



Lecture delivered by Prof. V. Shinde on 'Science and Technology of Indus Valley Civilizations'



Lecture delivered by Prof. J.V. Narlikar 'Ancient Indian Science in a Historical Context'



Lecture delivered by Prof. P. Divakaran on 'The Mathematics of India: From Counting to Calculus'



Lecture delivered by Swami Atmapriyananda on 'Jagdish Chandra Bose's Scientific Philosophy and their Roots in Ancient Indian Spiritual wisdom'



Lecture delivered by Prof. Partha Ghosh on the works of 'Dr. M. N. Saha and Dr. S. N. Bose'

Lecture delivered by Prof. Syamal Roy on the 'Discovery of U. N. Brahmachari on Kala-Azar'.



Centenary Celebration Lecture on 'History of Indian Science: Modern Contribution' on November 25, 2017



Lecture delivered by Prof. Amitava Ghosh on 'Scientific aspects of Indian Engineering and Architecture'



Lecture delivered by Dr. Amit Ghosh on the works of Dr. Shambhunath De, 'Discovery of Cholera Toxin'.



Lecture delivered by Prof. Sibaji Raha on the work of 'Sir J. C. Bose and Dr. D. M. Bose'



Lecture delivered by Dr. B. N. Chakraborty on the works of 'Dr. Subhas Mukherjee'

Bose Institute Centenary Meeting on "Future of Science" on 27-28 November, 2017



Lecture delivered by Prof. Partha P Majumder on the works of 'Dr. Mahalanobis'



Prof. Charles Bennett, Thomas J. Watson Research Center, Yorktown Heights, New York; delivered distinguished lecture on November 27, 2017.



Prof. Jagadish Shukla, Distinguished University Professor, George Mason University (GMU), President, Institute of Global Environment and Society (IGES), Research Hall, Room 105, George Mason University, MSN: 2B3 4400, University Drive, Fairfax, VA 22030 USA; delivered distinguished lecture on November 27, 2017.



Dr. M. Rajeevan, Secretary to the Government of India, Ministry of Earth Sciences, Prithvi Bhavan, Lodi Road, New Delhi; delivered distinguished lecture on November 27, 2017.



Prof. Eran Elinav, Dept. of Immunology, Wolfson Bldg, Room 211, Weizman Institute of Science, Rehovot-761000, Israel; delivered distinguished lecture on November 27, 2017.



Prof. Dr. Yaakov (Kobi) Benenson, Associate Professor, Head, Synthetic Biology Group, Dept. of Biosystems Science and Engineering, ETH Zurich, Mattenstrasse 26, 4058 Basel, Switzerland; delivered distinguished lecture on November 28, 2017.

Prof. Sankar Ghosh, Chair, Silverstein and Hutt Family Professor, Dept. of Microbiology and Immunology, Columbia University, New York; delivered distinguished lecture on November 28, 2017.



Prof. Karlheinz Langanke, Schlossgartenstrabe 2, 64289 Darmstadt; delivered distinguished lecture on November 28, 2017.

| Rural Biotechnology Programme

In the last one year twenty-five NGOs were engaged under Scheduled Tribe-Specific Rural Biotechnology Programme in different project sites covering six districts of West Bengal. Total 1,830 tribal beneficiaries were involved in various programmes like chicken rearing (390 beneficiaries), duck rearing (112 beneficiaries), goat rearing (289 beneficiaries), sheep rearing (76 beneficiaries), pig rearing (110 beneficiaries), Fishery (142 beneficiaries), bee-keeping (20 beneficiaries), mushroom cultivation (49 beneficiaries), rain water harvesting pond for irrigation (7 beneficiaries), rain water harvesting tank for drinking (143 beneficiaries), vermicompost unit (165 beneficiaries), agricultural support (151 beneficiaries), kitchen gardening (90 beneficiaries), orchard (29 beneficiaries), crab cultivation (34 beneficiaries), toilet (20 beneficiaries) and food processing (3 beneficiaries).



Distribution of goat to the tribal beneficiaries at Itai village, Debra Block, Paschim Medinipur in collaboration with Ava Kalyan Sanstha, the NGO involved in the Scheduled Tribe-Specific Rural Biotechnology Programme.

Nine Animal Health Camps were organized under the Scheduled Tribe-Specific Rural Biotechnology Programme in different project sites where 1,689 cows/buffaloes, 2,794 goats/sheep, 195 pigs, 8,758 poultry birds (total 13,436 domestic animals) were either vaccinated or treated with preventive medicines. Our resource person's veterinary surgeon Dr. Nihar Kanti Ghosh and Dr. Asim Prasad

Chattopadhyay along with other resource persons and project staffs conducted those Animal Health Camps in collaboration with Animal Resource Department, Government of West Bengal.



Animal Health Camp was organized at Chowbatta village, Mahammad Bazar Block, Birbhum on 06.11.2017 in collaboration with Surul Centre for Services in Rural Area (CSRA), the NGO involved in the Scheduled Tribe-Specific Rural Biotechnology Programme.

Two training programmes were organized on different aspects of rural development programme for scheduled tribe beneficiaries during May 02-08, 2017 and May 23-29, 2017 at Falta Experimental Farm for supervisors and village trainers engaged by different NGO's under the scheduled tribe-specific rural biotechnology programme. Three numbers of one-day awareness camp were organized on August 4, 13 and 20, 2017 at Amlasole, Jhargram.

SYMPOSIA AND CONFERENCES HELD

The 19th National Conference of Indian Aerobiological Society was held at Bose Institute, Main Campus during December 9 – 11, 2016. The organising secretary was Prof. Swati Gupta Bhattacharya.



International Conference “Insight to Plant Biology in the Modern Era”



Division of Plant Biology, Bose Institute organized an International symposium on "Insight to Plant Biology in the Modern Era" from February 8 – 10, 2017 to celebrate the Centenary of Bose Institute (1917-2017). The aim of the symposium was to bring experts of plant researchers from India and abroad under one umbrella to discuss the progress and future direction in different areas of plant research. Eminent Plant scientists from different part of the country and abroad participated to make this symposium a great success. Among the international participants, Prof. B W Poovaiah (Washington State University, USA), Prof. Walter Gassmann (University of Missouri, USA), Prof. Jyoti Shah (University of North Texas, USA) and Dr. Rudolf Valenta (Medical University of Vienna, Austria) delivered lead lectures in different session of the symposium. Leading plant scientists from India notably Prof. Akhilesh Tyagi (Delhi University, South Campus), Prof. Jitendra Khurana (Delhi University, South Campus), Prof. Usha Vijayraghavan (IISc, Bangalore), Prof. Maitrayee Das Gupta (University of Calcutta), Prof. Sudip Chattopadhyay (NIIT, Durgapur) were some of the distinguished participants. Faculty members, research scholars and students of Bose Institute and other Universities and Institutes from India were among the audience. Prof. D. J. Chattopadhyay, (VC, Amity University, Kolkata) delivered the valedictory lecture.

Advanced Detectors for Nuclear, High Energy and Astroparticle Physics



As a part of the centenary celebration of Bose Institute the national conference on “Advanced Detectors for Nuclear, High Energy and Astroparticle Physics” was organized

during February 15–17, 2017 to provide an exceptional venue to showcase outstanding developments and contributions across the nuclear physics, high-energy physics and astroparticle physics instrumentation fields in India. The conference included plenary talks from the experts of their fields and contributory talks from the students and young researchers.

Broad classifications of the topics covered in the conference are

1. Detectors for accelerator-based high energy physics
2. Nuclear physics Detectors
3. Instrumentation and Astroparticle physics Detectors
4. Detectors for non-accelerator particle physics
5. Detector Simulation and Electronics

This conference brought together 73 scientists from around the nation and 2 experts from abroad including head of the GSI detector laboratory, Germany to share their knowledge. Ten students were supported by the “Young researcher grants” that includes registration fee waiver and cost of accommodation. Proceedings of the conference will be published in the Springer book series “Springer Proceedings in Physics”.

An international conference called "Aerosol Climate Change Connection (AC3)" was organized at Darjeeling campus of Bose Institute during April 25 – 27, 2017. A very good number of students, scholars and pioneering scientists from India and abroad participated in the conference. Various recent issues on recent global climate change have been addressed. Dr. Abhijit Chatterjee was the convener of the conference. The conference was organized by Environmental Sciences Section and CAPSS.

NESST-BASE:



11th North East Students Summer Training in **Basic Science** (NESST – BASE 2017) was held at Bose Institute, Darjeeling during May 22 – June 3, 2017.

The meeting on “Microbiology in the New Millennium – from Molecules to Communities” (MNM 2017) organized by the members working in the area of Basic and Applied Microbiology (Program V) was held during October 27 – 29, 2017. It was organized in connection with the centenary celebration of Bose

Institute. The meeting was a huge success. The plenary talks that were delivered by eminent scientists such as Drs. Lalita Ramakrishnan, Victor Lorenzo, Arthur Grossman, Mary Voyetek, Werner A Liesack, Teresa Zoladek, John Hallsworth and Devaki Bhaya were thoroughly illuminating. The topics covered different areas in microbiology, ranging from infectious diseases to environmental microbiology and astrobiology. This is the



Dr. Lalita Ramakrishnan, Cambridge University UK, delivering a lecture

first symposium to be held at the newly built Unified Academic Campus auditorium block. The ambience was excellent and all the delegates were impressed with the facilities that were made available to them.



The delegates posing for a group photograph in the lobby.

RTCMP 2017 Conference

As a part of the centenary celebration of Bose Institute, a National Conference on Recent Trends in Condensed Matter Physics (RTCMP 2017) was organised at Unified Academic Campus during October 31 – November 3, 2017. The inaugural lecture of the conference was delivered by Prof. Arup K. Raychaudhuri, Former Director of National Physical Laboratory, New Delhi and S. N. Bose National Centre for Basic Sciences, Kolkata on the topic "Detecting Radiation - Our Tribute to Acharya". In the inaugural session, Prof. Siddhartha Roy, Director (Officiating) of Bose Institute welcomed the participants and highlighted the works of Acharya J. C. Bose and Prof. Subrata Majumder, Convener of Centenary Celebration Committee apprised the participants about the programme of the Centenary Celebration of the Institute followed by the vote of thanks by Prof. T. P. Sinha, Chairman of RTCMP 2017. More than 200 participants from various parts of the country attended the conference and presented their research works. About 60 invited speakers from IISc Bangalore, TIFR Mumbai, IACS Jadavpur, SINP Kolkata, SNBNCBS Kolkata, Bose Institute Kolkata, CGCRI Kolkata, various IITs, NITs, IISERs and Universities delivered the lecture on the recent trends of research in Condensed Matter Physics. The conference ended with a valedictory function.

VISITS ABROAD

Dr. Anirban Bhunia (Biophysics) visited Gordon Research Conference (GRC) on antimicrobial peptides, Ventura city, CA, USA.

Dr. Debjani Roy (Biophysics) Delivered invited talk on "Systems level insight into Parkinson's Disease: Computational perspectives in biomarker and drug discovery" in the 8th Annual Congress of Neurotalk-2017 during May 22 – 24, 2017 held in Barcelona, Spain and also delivered on "Epigenetics in Alzheimer's Disease: The Computational Systems Biology Paradigm for Understanding the Epigenetic-based Markers and Drugs" in the Drug Discovery and Therapy World Congress 2017 during July 10 – 13, 2017 held in The Westin Copley Place, Boston, USA.

Prof. Joyoti Basu (Chemistry) delivered a lecture at the "EMBO Conference on Hijacking Host Signaling and Epigenetic Mimicry During Infections" held in Paris, France, from June 13 – 16, 2017; delivered a lecture at the "Inhaled Therapies for Tuberculosis and Other Infectious Disease" held in Durham, North Carolina on October 16 – 17, 2017.

Prof. Manikuntala Kundu (Chemistry) presented her work in the "Gordon Research Conference" Tuberculosis Drug Discovery & Development, held in Renaissance Tuscany IlCiocco, Lucca (Barga), Italy, during June 25 – 30, 2017.

Arijita Subuddhi (SRF, Chemistry) working under Prof. Joyoti Basu attended the International Symposium on "Development of Tissue – and Pathogen-specific Cellular Innate Immunity" in Freiburg, Germany during September 27 – 29, 2017.

Manish Kumar (SRF, Chemistry) working under Prof. Joyoti Basu attended the EMBO / EMBL Symposium : Innate Immunity in Host-Pathogen Interactions, held in Heidelberg, Germany, during June 26 – 29, 2016.

Dr. Kaushik Biswas (Division of Molecular Medicine) presented a poster titled "GM2 mediates tumor cell migration and induces EMT through involvement of the integrin signaling machinery and targeting YAP, a major component of the HIPPO signaling pathway" at the AACR Annual Meeting held during April 16 – 22, 2016 themed "Delivering Cures Through Cancer Science" in New Orleans, Louisiana, USA.

Prof. Nripendranath Mandal (Division of Molecular Medicine) visited and delivered a special invited keynote lecture in the "3rd International Conference and Expo on Herbal and Alternative Medicine" held on September 01 – 02, 2017 at Park Inn by Radisson, London, UK organized by Allied academics Pte Ltd.

Ms. Nandini Ghosh (SRF, Division of Plant Biology) working under the guidance of Prof. Swati Gupta Bhattacharya attended International Conference on Glycobiology organised by PULSUS group (September 21 – 22, 2017) at Houston, USA.

Ms. Koyel SenGupta (SRF, Division of Plant Biology) working under the guidance of Prof. Swati Gupta Bhattacharya attended British Society for Allergy and Clinical Immunology (BSACI) Annual Meeting 2017 (October 1 – 3, 2017) at Telford, UK.

Ms. Sangeeta Roy (SRF, Division of Plant Biology) working under the guidance of Prof. Swati Gupta Bhattacharya worked at The University of Manchester, UK during June to September 2017 on Newton-Bhaba fellowship.

Miss Banani Mondal (CSIR-SRF Adhoc, Division of Plant Biology) presented poster: "Understanding the crosstalk between biotic and abiotic stress responses through the study of NAC domain transcription factors induced in resistant *Sinapis alba* on challenge with *Alternaria brassicicola*" at Plant Biology 2017 organised by American Society of Plant Biologists (ASPB) from June 24 – 28, 2017 at Hawaii Convention Centre, Honolulu, Hawaii, USA.

Dr. Mrinmoy Mazumder (CSIR-RA Adhoc, Division of Plant Biology) participated NSF Funded International Workshop on "Plant Metabolomics and Stable Isotope Labeling Workshop

2017", organized by University of Minnesota, at Saint Paul, MN, USA from July 24 – 28, 2017.

Ms. Niketa Bhaesinghka (Microbiology) participated in the 38th Annual Lorne Genome Conference 2017 held in Lorne, Victoria, Australia from February 12 – 14, 2017 and presented a poster.

Dr. Dhruva Gupta (Physics) visited Institut de Physique Nucleaire Orsay, France and CERN, Geneva, Switzerland for collaborative research during October 3 – 14, 2017; attended the workshop XXth Colloque GANIL at Amboise, France during October 15 – 20, 2017 and presented a poster titled "Nuclear reactions with ⁷Be to study the cosmological lithium problem".

Dr. Mandira Sinha (RA, Physics) working under Dr. Dhruva Gupta visited Texas A&M University, USA to participate in an experiment involving exotic nuclei and attended the 50 yrs of Beam symposium during November 7 – 22, 2017 and presented a poster titled "The effect of breakup on elastic and fusion reactions involving loosely bound nuclei"; attended the 61st DAE-BRNS Symposium on Nuclear Physics 2016 at SINP, Kolkata and was awarded for best poster presentation.

Prof. Swapan K Saha (Physics) attended the ISOLDE Workshop and Users Meeting at CERN, Geneva, Switzerland during December 7 – 9, 2016 and presented a poster titled "Transfer reactions with ⁷Be to study the cosmological lithium problem"; attended the workshop XXth Colloque GANIL at Amboise, France during October 15 – 20, 2017 and presented a poster titled "Coulomb dissociation of ⁹Li"

Dr. Soumen Roy (Physics) visited Institut Montpelliérain Alexander Grothendieck at Université de Montpellier, France in January-February 2017 on an Indo-French project in applied mathematics entitled "Propagation de fronts pour populations microbiennes coopératives".

Rathijit Biswas (Physics/ CAPSS) visited to undertake central Detector Control System (DCS) shifts for the ALICE experiment, to join the team for the operations and maintenance of the Photon Multiplicity Detector (PMD) and participate in the Physics Working Group for Jet analysis (PWG-JE) discussions during April 11, 2017 to June 10, 2017.

Dr. Sidharth K. Prasad (Physics/CAPSS) visited for repair and maintenance of the Photon Multiplicity Detector (PMD) in the ALICE experiment at Large Hadron Collider (LHC) at CERN: PMD is a fully indigenous contribution to the ALICE experiment, installed in 2009 and participating in the data taking since then. In the technical shutdown early 2017, the fixing of various components such as detector modules, power supplies, detector control system, data acquisition system etc were performed in the ALICE experimental cavern at point-2. The detector coverage was increased and PMD was made ready to participate in the data of 2017 LHC run during March 19, 2017 to April 09, 2017.

Prof. Sanjay K. Ghosh (Physics/CAPSS) visited GSI, Darmstadt, Germany for CBM Collaboration meeting during March 19 – 25, 2017.

Dr. Saikat Biswas (Physics/CAPSS) visited (i) to take Central DCS data taking shift during heavy ion run of ALICE experiment. Participated also in the testing of OROC chamber of ALICE TPC with heavy ion at Point 2 (ALICE site) during November 24 – December 6, 2016, CERN, Geneva, Switzerland. (ii) To present an oral and two posters in the conference INSTR17: International Conference "Instrumentation for Colliding Beam Physics" during 27 February – 3 March, 2017, Budker Institute of Nuclear Physics, and Novosibirsk State University, Novosibirsk, Russia. (iii) To take Central DCS data taking shift of ALICE experiment during May 5 – May 18, 2017, CERN, Geneva, Switzerland.

Dr. Sudipto Saha (Bioinformatics) delivered oral presentation at Keystone Conference on "Asthma : From Pathway Biology to Precision Therapeutics" during February 13-17, Colorado, USA.

RECENT AWARDS AND HONOURS

- **Mr. Rajiv K. Kar** (Biophysics) received Jharna Rani Samal Best student award from NMRS 2017", IISc, Bangalore, February 16-19, 2017.
- **Prof. Joyoti Basu** (Chemistry) awarded J C Bose Fellowship Award, 2016.
- **Sanjaya Kumar Sahu** (SRF, Chemistry) working under Prof. Joyoti Basu won the best poster award in the International Symposium on Microbiology in the New Millennium : from Molecules to Communities (MNM2017) from October 27 – 29, 2017 at Bose Institute, on the theme of Tuberculosis (MNM_01).
- **Dr. Kuladip Jana** (Division of Molecular Medicine) received "BHARAT VIKAS AWARD" 2017 for his outstanding performance in the field of Molecular Medicines.
- **Prof. Swati Gupta Bhattacharya** (Division of Plant Biology) elected as Editor-in-Chief of the 'Indian Journal of Aerobiology' from December 2016.
- **Ayan Das** (SRF, Division of Plant Biology) selected best poster presentation in the International Symposium on "Insight to Plant Biology in the Modern Era" (February 8 – 10, 2017).
- **Bodhisattwa Saha** (SRF, Division of Plant Biology) working under the guidance of Prof. Swati Gupta Bhattacharya won ISCA Young Scientist Award at 104th Indian Science Congress (January 3 – 7, 2017) held at SV University, Tirupati.
- **Koyel Sen Gupta** (SRF, Division of Plant Biology) working under the guidance of Prof. Swati Gupta Bhattacharya won Barry Kay Award, 2017 for "The Best Clinical Research on Basic Science" at British Society for Allergy and Clinical Immunology (BSACI) Annual Meeting 2017 (held on October 1 – 3, 2017) at Telford, UK. She also won P.H. Gregory Memorial Award at 19th National Conference of Indian Aerobiological society (December 9 – 11, 2016) held at Bose Institute, Kolkata.
- **Banani Mondal** (CSIR-SRF Adhoc, Division of Plant Biology) received best poster award at 'Insight To Plant Biology In The Modern Era' Bose Institute, February 8-10, 2017, Kolkata for the poster titled 'Dual role of NAC domain transcription factors in *Alternaria brassicicola* resistance and abiotic stress responses in oil seed mustard'
- **Adrita Roy** (SRF, Division of Plant Biology) selected for best poster award in the international conference "Insight to Plant Biology in the Modern Era" held in Bose Institute from February 8-19, 2017.
- **Chandrima Bhattacharyya** (Microbiology) working under the guidance of Dr. Abhrajyoti Ghosh, has been selected to attend the 10th Hope meeting with Nobel Laureates to be held in Yokohama, Japan in 2018.
- **Dr. Soumen Roy** (Physics) selected as a Regular Associate of UNESCO's International Centre for Theoretical Physics at Trieste, Italy for the period 2017-2022.
- **Shib Shankar Singha** (JRF, Physics) received best poster award in One day Symposium on Nanotechnology: From Materials To Medicines And Their Social Impact held on March 25, 2017 at Birla Industrial And Technological Museum, Kolkata, West Bengal.
- **Tara Shankar Bhattacharya** (SRF, Physics) received best poster award in National Conference on Recent Trends in Condensed Matter Physics (RTCMP-2017) held during October 31 – November 3, 2017 at Bose Institute, Kolkata, West Bengal.

Ph. D. Degree Awarded
(From April 1, 2016 to March 31, 2017)

- **Gopa Dhar** (Biochemistry) Interaction of small molecules with proteins and peptides involved in macromolecular assembly. Supervisors: Prof. P. Chakrabarti and Prof. B. Bhattacharyya.
- **Himadri Biswas** (Biochemistry) Isolation, characterization and crystallographic studies of different mannose-binding Plant lectins, and model building of enteropathogenic *E. coli*, enterotoxigenic *E. coli* type IVb pilins. Supervisor: Prof. Rajagopal Chattopadhyaya
- **Arup Panda** (Bioinformatics) The role of protein structural disorder on the evolutionary features of prokaryotic and eukaryotic genomes. Supervisor: Prof. Tapash C Ghosh
- **Paulami Rudra** (Chemistry) Mechanism of inhibition of transcription by Rv1222 of *Mycobacterium tuberculosis*. Supervisor: Dr. Jayanta Mukhopadhyay
- **Ranjit Kumar Prajapati** (Chemistry) Study of interaction of delta subunit with RNA polymerase of *Bacillus subtilis*. Supervisor: Dr. Jayanta Mukhopadhyay
- **Shreya Sengupta** (Chemistry) Study of 'sigma cycle' paradigm in *Bacillus subtilis*. Supervisor: Dr. Jayanta Mukhopadhyay
- **Manjari Kundu** (Division of Molecular Medicine) Deciphering the role and elucidating the mechanism of tumor derived gangliosides in tumor cell growth, migration, invasiveness and metastasis. Supervisor: Dr. Kaushik Biswas
- **Poulami Khan** (Division of Molecular Medicine) A mechanistic approach towards delineating the molecular mechanisms regulating metastasis of non-small cell lung carcinoma. Supervisor: Prof. Tanya Das
- **Taniya Saha** (Division of Molecular Medicine) Molecular insights into the mechanism of nuclear-cytoplasmic trafficking : Emerging role of cytoskeletal proteins in cancer. Supervisor: Prof. Tanya Das and Prof. G. Sa
- **Sourav Dutta** (Division of Molecular Medicine) Study on the Molecular Understanding of Disease Resistance or Susceptibility by Developed DNA Markers in Giant Black Tiger Shrimp. Supervisor: Prof. Nripendranath Mandal
- **Nikhil Baban Ghate** (Division of Molecular Medicine) Study of Anticancer And Anti-Inflammatory Properties of Indigenous Natural Resources. Supervisor: Prof. Nripendranath Mandal
- **Usri Chakrabarty** (Division of Molecular Medicine) Development and Characterization of DNA Markers to Identify Disease Resistant Population of *Penaeus monodon* for Disease Free Shrimp Aquaculture. Supervisor: Prof. Nripendranath Mandal
- **Ajoy Mallik** (Division of Molecular Medicine) Study on The Research Scenario of White Spot Disease and Importance of Biomarker in the Disease Prevention of Marine Shrimp. Supervisor: Prof. Nripendranath Mandal
- **Dipankar Chaudhury** (Division of Molecular Medicine) Isolation and Identification of Natural Bioactive Antioxidant and Anticancer Compounds In *Spondias pinnata*. Supervisor: Prof. Nripendranath Mandal
- **Debashis Dhara** (Division of Molecular Medicine) Synthesis of oligosaccharide repeating units of the bacterial cell wall polysaccharides. Supervisor: Prof. Anup Kumar Misra
- **Tamashree Ghosh** (Division of Molecular Medicine) Synthesis of complex oligosaccharides of bacterial origin. Supervisor: Prof. Anup Kumar Misra
- **Supriya Chakrabarty** (Division of Molecular Medicine) Evaluation of the molecular mechanism of synthetic Aryl Methyl

- Bis-Indolyl (AMBI) analogs in regulation of cellular calcium homeostasis to induce anti-tumorigenic effect in human breast carcinoma cells. Supervisor: Prof. Parimal C. Sen
- **Mrs Upala Saha** (Division of Plant Biology) Identification and Analysis of Auxin Related Signalling Genes Involved in Incompatible Interaction of *Alternaria brassicicola* with *Sinapis alba* L. Supervisor: Dr. Debabrata Basu
 - **Dipan Roy** (Division of Plant Biology) Elucidating the change in the chromatin structure of the DREB protein coding loci during Abiotic stress. Supervisor: Dr. Shubho Chaudhuri
 - **Ayan Das** (Division of Plant Biology) Expression of *Colocasia esculenta* tuber agglutinin (CEA) in Indian mustard (*Brassica juncea* L.) with an aim to develop resistance against sap sucking insect pest. Supervisor: Prof. Sampa Das
 - **Anirban Bhar** (Division of Plant Biology) A molecular approach towards understanding plant-pathogen interaction-dynamics between chickpea (*Cicer arietinum*. L) and *Fusarium oxysprum* f.sp. ceceri Race- 1 (Foc 1), Supervisor : Prof. Sampa Das
 - **Ms Ranjana Prasad** (Division of Plant Biology) Study on Genetic Diversity of Sesame (*Sesamum indicum* L.) for Development of Improved Genotypes by Marker Assisted Selection. Supervisor: Dr. Gaurab Gangopadhyay
 - **Arunava Mandal** (Division of Plant Biology) Mechanism of Regulation of Leaf Developmental Gene(s) by Tomato Leaf Curl Virus in Infected Leaves. Supervisor: Dr. Pallob Kundu
 - **Gaurab Sircar** (Division of Plant Biology) Aeromycological, immuno-biochemical and proteomic analysis of IgE reactive molecules from certain allergenic moulds. Supervisor: Prof. Swati Gupta Bhattacharya
 - **Bodhisattwa Saha** (Division of Plant Biology) Proteomics and Biochemical Studies to identify IgE Reactive Proteins from some Allergenic Palm Pollen Grains of West Bengal. Supervisor: Prof. Swati Gupta Bhattacharya
 - **Sourabh Samaddar** (Microbiology) Understanding the dynamics of mycobacteriophage – mycobacteria interaction using mycobacteriophage D29-*Mycobacterium smegmatis* as the model system. Supervisor: Prof. Sujoy K Das Gupta
 - **Soumik Basu** (Microbiology) Molecular Insight into Bacterial Catabolism of Aromatic Compounds. Supervisor: Prof. Tapan K. Dutta
 - **Sujoy Saha** (Physics) Transport Properties of Nanostructured Perovskite Semiconductors. Supervisor: Prof. T. P. Sinha
 - **Sadhan Chanda** (Physics) Optoelectronic behaviour of pure and magnetically doped rare earth based perovskite oxide nanoparticles. Supervisor: Prof. T. P. Sinha
 - **Md. Monwar Hoque** (Physics) Dielectric Relaxation and ACConductivity in $A(B_{13}B_{23})O_3$ (A = Ba, Sr & Ca; B = Ni, Mg & Zn; B = Ta, Sb & Nb). Joint Supervisor: Prof. T. P. Sinha
 - **Dipanwita Majumdar** (Physics) Study of Nanomaterials and Ultra Sensitive Molecular Detection using Raman Spectroscopy. Supervisor: Dr. Achintya Singha
 - Study to understand the pollination ecology as well as applicability of placing apiary boxes in the forested area of Sundarbans; WWF; Prof. Swati Gupta Bhattacharyya, Division of Plant Biology; ₹ 30,00,000/-; 3 years.
 - Elucidating the GWAS-Associated Genetic Variants within lncRNA candidate loci: Role in Cancer; SERB; Dr. Zhumur Ghosh, BIC; ₹ 45,18,800/-; 3 Years.
 - Hydrogenogenic carbon monoxide conversion under mesophilic condition using anaerobic granular sludge biomass for biodesulphurization; DBT; Prof. Tapan K. Dutta, Microbiology; ₹ 25,74,000/-; 3year.
 - Role of co-chaperones in triage decision of Hsp70; SERB; Dr. Atin Kumar Mandal, Division of Molecular Medicine; ₹ 39,43,000/-; 3 years.
 - Systematic identification of regulatory networks in pluripotent cells integrating coding and noncoding word; ICMR; Dr. Sudipto Saha, BIC; ₹ 33,00,000/-; 3 years.
 - Epigenetic Alterations Inducing Oncogenicity in Stem Cell Derivatives; ICMR; Dr. Zhumur Ghosh, BIC; ₹ 21,89,200/-; 3 years.
 - Multi-dimensional Research to Enable Systems Medicine: Acceleration using a Cluster Approach' at Kalyani, West Bengal; DBT; DIRECTOR, BOSE INSTITUTE; ₹ 14,05,32,000/-; 4 years.
 - Targeting onco-miRNAs with a novel oleic acid-pluoronic stabilized porous TiO₂ nanoparticle for specific synergistic delivery of small molecule combination to combat triple negative breast cancer; DST; Prof. P.C.Sen, Division of Molecular Medicine; ₹ 42,91,584/-; 3 years.
 - A novel role of ganglioside GM2 in the regulation of the Hippo signaling pathway in tumorigenesis; SERB; Dr. Kaushik Biswas, Division of Molecular Medicine; ₹ 44,16,183/-; 3 years.
 - Quest for the biophysical basis of habitability of hydrothermal vent ecosystems; SERB(DST); Dr. Wriddhiman Ghosh, Microbiology; ₹ 35,84,420/-; 3 years.
 - Structural insight and Dynamical properties of Alpha synuclein fibrillation in the context of Mitochondrial membrane or Biological membranes : Pathological role in synaptic transmission Aggregation property and cellular toxicity; CSIR; Dr. Anirban Bhunia, Biophysics; ₹ 24,43,800/-; 3 years.
 - Crucial role of transcription factor-EB(TFEB) in regulating differential antigen presentation and cross presentation during Leishmania donovani infection; CSIR; Prof. Subrata Majumdar, Division of Molecular Medicine; ₹ 25,93,800/-; 3 years.
 - Proteome analysis during *Lipaphis erysimi* - *Rorippa indica* incompatible interaction to identify putative proteins responsible for aphid tolerance and their interacting partners; CSIR; Prof. Samir Ranjan Sikdar, Division of Plant Biology; ₹ 15,00,000/-; 3 years.
 - Antimicrobial peptides against crop disease; Indo-Swedish; Dr. Anirban Bhunia, Biophysics; ₹ 31,39,000/-; 2 years.
 - Transcriptional regulator RegX3-dependent modulation of the macrophage immune response by *Mycobacterium tuberculosis*; DBT; Prof. Manikuntala Kundu, Chemistry; ₹ 61,84,000/-; 3 years.
 - Deciphering the in-planta secretome of *Rhizoctonia solani* AG1-1A during infection of rice; CSIR; Prof. Swati Gupta Bhattacharyya, Division of Plant Biology; ₹ 28,93,800; 3 years.
 - National Carbonaceous Aerosols Programme WGIII: Carbonaceous Aerosols Emmissions, Source appointment and Climate effects; MoEFCC; Dr. Abhijit Chatterjee, Environmental Science Section; ₹ 1,06,08,000/-; 5 years.

GRANTS RECEIVED

The following research proposals have been granted to the 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.

- Study of Helium potential in soil gases at Tantloi-Bakreswar of Jharkhand- West Bengal Region; DRDO; Prof. Sibaji Raha, Physics; ₹ 24,60,000/-; 1 years.
- CBM MUCH; IFCC; Prof. Sanjay K. Ghosh, Physics; ₹ 28,80,40,000/-; 6 years.

STAFF NEWS

Promotion:

1. Prof. Mahadeb Pal promoted as Professor in Division of Molecular Medicine on 01-01-2017.
2. Prof. Srimonti Sarkar promoted as Professor in Biochemistry Department on 01-01-2017.

Retirements on Superannuation:

1. Mr. Asraf Ali Molla, Helper-G, Biochemistry on 30-11-2016
2. Mr. Murari Mohan Shee, Helper-G, Workshop on 30-11-2016
3. Prof. Pradip Das, Professor, Chemistry on 31-12-2016
4. Mr. Ramesh Prasad, Helper-G, Microbiology on 31-01-2017
5. Ms. Ranubala Das, Helper-D, Biochemistry on 31-01-2017
6. Prof. Pradip Kumar Parrack, Professor, Biochemistry on 28-02-2017
7. Mr. Panchanan Santra, Technician GR-I, Workshop on 28-02-2017
8. Mr. Panchu Gopal Karak, Technician GR-I, Workshop on 31-03-2017
9. Mr. Dipak Dutta, Helper-G, Library on 31-05-2017
10. Mr. Gautam Mukherjee, LDC, Library on 30-06-2017
11. Mr. Dilip Kr. Bhattacharya, Helper-G, Microbiology on 30-09-2017
12. Mr. Rabin Talukdar, Helper-D, MEF on 31-10-2017

Closing Ceremony of Centenary Celebrations of Bose Institute



Shri Ram Nath Kovind, the Hon'ble President of India in presence of Prof. Ashutosh Sharma, Secretary, Dept. of Science Technology, New Delhi, Firhad Hakim, Hon'ble Minister for Urban Development, Prof. Bikash Sinha, INSA Emeritus Scientist, VECC & Chairman, Bose Institute Council addressed Bose Institute on November 29, 2017 at the Closing Ceremony of the ongoing Centenary celebrations in the Lecture Hall, Main Campus. Shri Keshari Nath Tripathi, Hon'ble Governor of West Bengal presided over the function.

PATENT

Dr. Subhrangshu Chatterjee (Biophysics) received US Patent Granted on "Cancer chemotherapeutic agent/formulation, manufacture and use thereof " (US patent Number : US9682926B2)

Dr. Anirban Bhunia and Dr. Santasabuj Das (Biophysics) received PCT International Patent No.: PCT/IN2016/000040 (Publication No.: WO2016132377 A1)

Dr. Debjani Roy (Biophysics) patent applied on "Systems level methods for epigenetic drug development for human diseases". Application Number: 201731039952

FORTHCOMING EVENTS

- International Symposium on Systems, Synthetic and Chemical Biology (SSC2017) from December 5 to 7, 2017. Conveners: Prof. Manikuntala Kundu and Dr. Suman Banik (Chemistry)
- Madhyamgram Experimental Farm (MEF) will organize the second Hands-on-training Programme for the High School Students on "Basic and Applied Physical and Biological Sciences" from December 11 to 13, 2017 as a part of the Centenary Celebration of Bose Institute. Contact person: Dr. Gaurab Gangopadhyay

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