West Bengal Academy of Science and Technology

Annual Report 2020

Thirtieth Annual General Meeting

7th May, 2021

CSIR - Indian Institute of Chemical Biology
Kolkata - 700 032

(S/65001 of 1990 - 1991)

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WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY
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Registered under the West Bengal Act XXVI of 1961
(S/65001 of 1990-91)
PAN- AAATW0707E

Published by:

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Printed by:

Creative Data Centre
58/32, Prince Anwar Shah Road
Kolkata- 700 045
E-mail: creative.174_dc@yahoo.in

ANNUAL ORATION

WEST BENGAL ACADEMY OF SCIENCE & TECHNOLOGY

Prof. Soumitra Sengupta

Amal Kumar Ray Chaudhuri Chair Professor,
School of Physical Sciences
Indian Association for the Cultivation of Science

Gravitational Wave - the song of the Cosmos

7 May 2021 @ 11:00 AM

The speaker will be introduced by Professor Partha Majumder,
President, West Bengal Academy of Science & Technology

👇

Click to join

Annual Report 2020

Report from the Secretary

President and Fellow members:

I am honoured to present before the learned Fellowship of the Academy the Annual Report of activities of the Academy for the year 2020. The Academy under the able leadership of Professor Partha Pratim Majumder (Distinguished Scientist & Founder of National Institute of Biomedical Genomics, Kalyani) has completed 4 years of its term. The Academy organized Annual Oration, Memorial Oration, Endowment lectures and other talks. However, due to current pandemics no physical meetings were organized last year.

a) **Annual Oration**: Annual oration in the 29th AGM of the Academy was delivered by Professor Gautam Basu, Bose Institute on December 17, 2019 in the Dr. J. C. Ray Auditorium, CSIR-Indian Institute of Chemical Biology, Kolkata. The title of his talk was "**Acharya J C Bose: The Road not taken**". The Annual Oration was attended by a large number of students, teachers and fellows of the Academy.

b) **Council Meeting**: The present Council met 3 times prior to the AGM being held today. The Conveners of the Sectional Committees were also invited in every Council meeting to promote better management so as to render distinct improvement in the activities of the Academy.

c) **Dr. Sunil Chandra Bose Memorial Oration**

Dr. Sunil Chandra Bose Memorial Oration was delivered by eminent clinician Dr. Satinath Mukhopadhyay, Professor, IPGME&R, SSKM Hospital, Kolkata on 19th February, 2021 through virtual platform. The title of his talk was "Vitamin D: the sunshine hormone". Professor Partha Pratim Majumder, President, delivered the welcome address and reminisced about the life & activities of Dr Sunil Chandra Bose. Dr. Arun Bandyopadhyay, Secretary, WAST introduced the speaker to the audience. The lecture was attended by large number of Scientists, Clinicians, Students and others. The program ended with the vote of thanks delivered by Dr. Asish K. Mukhopadhyay, Convener, Medical & Veterinary Science Section.

The abstract of the talk is appended in this report.

d) Endowment Lectures

17th Dr. J. C. Sengupta Endowment lecture was organized in the digital platform on 5th March, 2021. The endowment lecture was delivered by Professor Sudhir Sopory, SERB Distinguished Fellow, ICGEB New Delhi. The title of the talk was "Awareness in plant life: response to external environment ". The lecture was attended by the students, teachers and many WAST fellows. President, WAST introduced the speaker. The event was ended with the vote of thanks by Dr. Arun Bandyopadhyay, Secretary, WAST. A sincere appreciation is due to Professor Amita Pal, Convener, Plant Sciences section and Professor Maitreyee Dasgupta for actively helping organizing the event. The abstract of the talk is presented in this report.

e) **Public Lecture**: A public lecture was arranged by the convener, Engineering and Technology on August 17, 2020 on virtual platform. The talk was delivered by Dr. Prasanta Kumar Basu Retired Professor, Institute of Radio Physics and Electronics, University of Calcutta on "S N Bose, Bose-Einstein Condensation, and Its Relation to Current Information Technology". The lecture was attended by fellows of the academy and others including scientists, teachers and the students.

f) Professor Satyabrata Pal, Editor, WAST, has conveyed his heartfelt appreciation to all members of the learned Fellowship of the Academy for their kind cooperation towards communicating the updated bio-information for the WAST YEAR BOOK 2020. If the transmitted information by any Fellow has not been included in this Year Book inadvertently, the same may kindly be communicated to the Editor for inclusion in the next Year Book.

g) Induction to the Fellowship of the Academy

Based on the recommendation of each Sectional Committee, the Council approved of the induction of the eminent scientists to the Fellowship of

the Academy. The Section-wise lists of members approved are presented on the pages 18 to 27 of the Annual Report.

Finally, I convey my sincere thanks and gratitude to CSR-IICB for providing us all the facilities for organizing the Annual General Meeting of the WAST at the Institute premises. I also convey my thanks to all the EC Members and the Conveners for assisting me to conduct the various activities of the WAST.

Dr. Sunil Chandra Bose Memorial Oration

Vitamin D: the sunshine hormone

Dr. Satinath Mukhopadhyay

Introduction:

Vitamin D, the *pre-historic* "sunshine hormone" was first detected in Emilianii huxleyi, a phytoplankton that has existed on this planet since 750 million years. A large amount of ergosterol (provitaminD2) present in these phyto-planktons yielded Vitamin D2 on exposure to solar UVB radiation (290-315 nm).

The sea is a rich source of all minerals including calcium, that could be well absorbed by all sea dwelling creatures directly through their body surface. Vitamin D promotes the absorption of dietary calcium. So why did the phyto-planktons need so much vitamin D?

Did they serve as a sunscreen to absorb the harmful solar UVB rays that passed virtually unchecked through a poorly formed primitive atmosphere, thus protecting the fragile nucleic acids and proteins of the early aquatic life forms? While we do not have clear answers to these questions, what we now is that once life forms evolved and migrated to land from the sea, calcium from the sea water was no longer easily available to these terrestrial life forms and sunshine dependent cutaneous synthesis of vitamin D emerged as the main mechanism to regulate calcium metabolism in them.

Once synthesized from 7-dehydro cholesterol, cholecalciferol undergoes sequential hydroxylation at C-25 in the liver and C-1 in the kidneys to become Calcitriol, the active hormone. that enhance dietary *absorption*, skeletal *resorption* and renal tubular *re-absorption* essential for systemic calcium homeostasis. So what happens to the sunshine hormone, when there is little or no sunshine available to the birds and animals? Since birds can't synthesize vitamin D in their feathered skin, the concentration of pre-vitamin D increases in the un-feathered body parts, i.e., legs, by as much as 10 times that of human skin. Strangely cats do not make any pre-vitamin D in their furred skin; they depend entirely on their diet for the daily requirement of the hormone. All other animals and plants possess the machinery needed to manufacture the sunshine hormone. (7,8) In humans, synthesis of vitamin D depends on time and duration of exposure to sunshine, use of sunscreen or sun-protective clothing etc.

Both vitamins D3 and D2 may be obtained from diet and from foods fortified with them. diet remains a poor source amounts of vitamin D3 in general, with the exception of fish livers and egg yolks. (Holick, 2017)

Calcitriol, along with parathormone (i-PTH) and fibroblast growth factor-23 (FGF-23), maintain calcium and phosphorus homeostasis in the circulation. With a drop in the serum ionized calcium concentration below the normal range of 2.45–2.65mmol/L, kidneys, intestines and bones act in concert to bring the levels back to normal.

What defines a normal serum concentration of vitamin D? While there is no easy answer to this question, a level above 20 ng/ml is considered optimum for maintenance of musculoskeletal health. There is growing evidence that a level between 30-50 ng/ml may be essential for the extra skeletal actions of Vitamin D, i.e., to maintain insulin sensitivity and to prevent diabetes, cancer and cardiovascular disease; this is also the level required for maximal activity of the 25(OH)D-1a-hydroxylase enzyme. Based on all of these observations, vitamin-D deficiency may be defined as 25(OH)D <20ng/ml, insufficiency as 21-29ng/ml, and sufficiency as >30ng/ml.

Is there an epidemic of Vitamin D deficiency (VDD) in india?

83% individuals in the Kasmir valley, 90% of school children in Delhi and 88% male and 94% female in urban Tirupati are reportedly vitamin D deficient/insufficient.

75% of the West Bengal populace was found to be Vitamin-D deficient (Mukhopadhyay S, 2013-14). Vitamin D3 content of most available commercial preparations in India is not within the acceptable range. While only 28.5% of the formulations had vitamin D content within prescribed limits, Vitamin D3 content in tge remaining brands varied from -91% to +65%, which might lead to both under and overdosing. (Khadgawat R, 2013).

Obesity, a major risk factor for T2DM, cardiovascular disease and certain cancers is related to hypovitaminosis-D, as adipose tissue has a great capacity to store 25(OH)D, making it biologically unavailable. The increase in serum i-PTH secondary to VDD promotes intracellular calcium entry into adipocytes that turns on lipogenesis and causes further weight gain, a vicious cycle. VDD may underpin type 2 diabetes through multiple pathways, i.e., enhanced lipogenesis, pancreatic beta cell apoptosis and increased systemic inflammation.

Can Vitamin-D supplementation prevent type 2 diabetes?

Severe vitamin- D deficiency was about twice more common for individuals with prediabetes. Individuals with severe vitamin- D deficiency had the highest insulin

resistance in our published series. VDD could represent an independent risk factor for progression to T2DM. Determination of serum vit. D could provide a practical complementary approach to early diagnosis of T2DM. (Mukhopadhyay S, IJMR 2013).

Vitamin-d supplementation in deficient individuals with pre-diabetes significantly lower progression to T2DM (6/55 vs. 13/49; p = 0.04) and also led to higher reversal to normoglycemia (23/55 vs. 10/49; p = 0.02). Vitamin-D treatment was also associated with decreased insulin resistance and systemic inflammation (lowering of serum TNFa and IL6).

Recommended daily allowance (RDA) and estimated average requirement (EAR) of vitamin-D:

The daily EAR for vitamin-D intakes are defined as: infants up to 1 year, 400-1,000 IU/day (10-25 µg), children over 1 year 600-1,000 IU/day (15-25 µg) and all adults 1,500-2,000 IU/day (37,5-50 µg). (Holick 2017) Since obesity decreases bioavailability of Vitamin-D, the recommendation for obese people are three times higher than that for people with normal body weight. In patients with terminal liver function loss, or end stage kidney disease, supplementation needs to be done with activated vitamin-D metabolites. Patients with granulomatous disease such as sarcoidosis are often hypercalcemic and as such will require careful monitoring of Vitamin D supplementation. (Holick 2017) The RDA of vitamin-D is 600 IU for adults, for maintaining a serum level >20ng/ml.

The RDA of any nutrient is set to include the farthest ends of the curve. Thus, using RDA as a cut off for estimating Vitamin D deficiency will overestimate the prevalence of VDD in the general population, thereby shifting the entire population to higher intake. This in turn could cause Vitamin D toxicity in the population for whom it crosses the safe upper intake limit. But for practical purposes, RDA is used as the guidepost since it is not possible to estimate the exact requirement of a person, and RDA will nearly always meet the general requirement. (Lancet 2017)

Routinely fortifying food products with Vitamin D, as practiced earlier by many countries, is now discontinued. Although there is no recent experimental evidence of direct toxicity by vitamin D, except in studies done on pregnant rodents, Vitamin-D toxicity may result in hypercalcemia, ectopic calcium deposition in tissues, hypertension and cardiac arrhythmias.

Fortunately, vitamin D toxicity is not only extremely rare, but a serum 25(OH)D concentration of at least 150 ng/mL (375 nmol/L) is required before toxicity occurs. Such high levels are rarely reached with oral vitamin-D intake. Unfortunately, mega dose vitamin-D injections, which can push up the serum vitamin-D levels to toxic range and hence discontinued in the developed world, continues to be available in India. Use of these injections, sometimes seen in orthopedic and gynecology practice, can rarely cause vitamin-D toxicity, a potentially life threatening complication of such inadvertent use of such a useful hormone.

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WEST BENGAL ACADEMY OF SCIENCE & TECHNOLOGY

CSIR-INDIAN INSTITUTE OF CHEMICAL BIOLOGY

4, Raja S. C. Mullick Road, Jadavpur, Kolkata – 700032

The President and Council Members of the West Bengal Academy of Science and Technology have great pleasure in inviting you to the

"Dr. Sunil Chandra Bose Memorial Oration 2020"

to be delivered by ***Dr. Satinath Mukhopadhyay****, MD DM, FRCP (London), FAMS*
Professor, Institute of Postgraduate Medical Education & Research, Kolkata

on

"Vitamin D - the sunshine hormone"

on virtual platform at 3 pm on February 19, 2021.

Dr. Asish K. Mukhopadhyay
Convener, Medical & Veterinary Sciences Section, WAST

Dr. Arun Bandyopadhyay
Secretary, WAST

Prof. Partha Pratim Majumder
President, WAST

Programme overleaf

Dr. J. C. Sengupta Endowment lecture

Awareness in plant life: response to external environment

Sudhir K Sopory, International Centre for Genetic Engineering and Biotechnology, New Delhi

This lecture is partly based on our recent book on Sensory Biology of Plants (Ed. Sudhir Sopory; Springer 2019) . The survival of plants depends on their ability to sense the ever changing environment around them and accordingly adjust their physiology to deal with the perturbations under both favourable or unfavourable stress conditions be those abiotic or biotic in nature. The evolution of family of photoreceptors has provided a very sensitive way to perceive different wavelengths of light which regulate the process of photosynthesis as also photomorphogenesis. In addition to light, plants sense gravity as also touch responses. In a recent work it has been shown that plants also sense magnetic waves and sound as a signal. Depending on this signal perceived plant cells carry the message in the form of chemicals and hormones to induce specific gene expression leading to altered metabolism and physiology that helps the plants support their growth and development. Some of the signals are also volatile in nature and a produced as a defense/warning response against plant pathogens. Thus plants seem to be sentient in nature, a phenomenon that was described first time by Sir J.C. Bose and whose work on use of anaesthetics has now been carried out in different labs.

While many mechanisms have been advanced for the survival of plants under abiotic stress conditions, our work has also shown the importance of glyoxalase pathway, having two enzymes, glyoxalase I and II and which are required in GSH dependent way to detoxify methylglyoxal, a toxic compound produced as a by product of glycolysis . We have shown that both Gly I and II is a family of genes, many of these we have characterized, and we now find that these are regulated under stress as also under different light/dark regime.

Another phenomenon that has come to light lately is about the memory in plants, especially stress memory induced during stress priming. Role of prion like proteins as also melatonin has been ascribed to this property of plants. We have done genome wide analysis, across plant kingdoms, on the prion like proteins and have got some indications of their role in plant memory. Our results have also shown that melatonin can induce gly genes and thus may be involved in stress tolerance during priming response.

Overall this lecture brings out the concept of cognition in plant growth and development, and survival under stress environmental conditions.

WEST BENGAL ACADEMY OF SCIENCE & TECHNOLOGY

J.C. Sengupta Endowment Lecture, 2020

Dr. Sudhir K. Sopory

SERB Distinguished Fellow, ICGEB New Delhi

On

Awareness in plant life :
how they respond to external environment

March 5, 2021 at 3:30 PM

Link to join

Public Lecture

S N Bose, Bose-Einstein Condensation, and Its Relation to Current Information Technology

Prasanta Kumar Basu Retired Professor, Institute of Radio Physics and Electronics, University of Calcutta

Abstract: Satyendra Nath Bose, with Einstein's help, published two papers in Zeitschrift fur Fysik in 1924. His theory could explain Planck's radiation law without any ad hoc assumptions. Thus came Bosons, with photons as a member, as a quantum particle. Einstein used Bose's statistics to propose a new phase, leading to Bose Einstein Condensation (BEC), in which all bosons having integer spin, condense into the lowest lying phase coherent state. The idea was experimentally verified during 1990's with Rd+ and Na+ atoms cooled to micro Kelvin temperature. For their work, Cornell, Weiman and Ketterle got Nobel Prize in Physics in 2001. Excitons in semiconductors are electron-hole pairs bound by Coulomb interaction as in a H atom and have bosonic character. Since 1960's, they were considered as a suitable candidate to observe BEC at room temperature and above. The search intensifies after 2000. Finally BEC is observed in a semiconductor microcavity structure in 2006. The highly coherent state made of excitons gives a coherent emission of photons like lasers, requiring less input power. The laser, called the polariton laser, operates at room temperature with electrical input and is expected to play a role in current and future information technology. The webinar aims mainly to give historical sketches, and to explain the technical terms in simple language to persons even with knowledge in higher secondary physics.

West Bengal Academy of Science and Technology

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Distinguished Professor
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WAST SECTIONAL COMMITTEES (2019-2020)

Sectional Committee I: Mathematical Sciences

Prof. Satyabrata Pal **(Convener)**, Prof. Ayanendranath Basu, Prof. Bidyut Baran Chaudhuri, Prof. Manabendra Nath Mukherjee, Prof. Sudeshna Banerjea, Prof. Indrajit Lahiri, Prof. Asis Kumar Chattopadhyay, Prof. Uday Chand De, Prof. Manisha Pal.

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Prof. Nibir Mandal **(Convener)**, Prof. Anindya Sarkar, Dr. Santanu Bose, Prof. Sumit Ray, Prof. Bijan Saha, Dr. Anupendu Guha, Prof. Sudipta Sengupta.

Sectional Committee VI: Plant Sciences

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Sectional Committee VII: Animal Sciences

Dr. Sib Sankar Roy **(Convener)**, Prof. Dilip Mukherjee, Prof. Saumen Kumar Maitra, Dr. Ashok Kumar Giri, Dr. Subhash Chandra Biswas, Dr. Mahitosh Mandal.

Sectional Committee VIII: Medical and Veterinary Sciences

Dr. Asish K Mukhopadhyay **(Convener)**, Prof. Amiya Hati, Dr. Manoj Kumar Chakraborti, Dr. Parthasarathi Bhattacharya, Prof. Bibhuti Saha, Dr. Amit Ghosh, Prof. Somnath Roy.

Sectional Committee IX: Biochemistry and Biophysics

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Sectional Committee X: Agriculture and Forestry

Prof. Biswapati Mandal **(Convener)**, Dr. P. K. Ghosh, Dr. H. Pathak, Prof. Somnath Bhattacharjyya, Dr. Anirban Roy, Dr. Arin Ghosh, Dr.H.S.Sen.

Sectional Committee XI: Social Sciences

Dr. Shree Bhagwan Roy **(Convener)**, Prof. Papiya Nandy , Sk. E.Islam, Shri G. S. Rautela, Dr. Ambika Charan Banerjee, Dr. Sushil Mitra, Dr. Manas Pratim Das, Dr. Amalesh Mukhopadhyay.

Sectional Committee XII: Environmental Sciences

Prof. Aniruddha Mukhopadhyay **(Convener)**, Prof. Aloke Mookerjea, Prof. Sudip Banerjee, Prof. Anup Kr. Mitra, Dr. Arunava Majumdar, Prof. Joydeep Mukherjee.

List of Fellows Elected in 2020

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Complex Analysis

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Liquid Crystals

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Crystal growth, Magnetism, Superconductivity

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Synthetic Organic Chemistry

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Machine Learning

Section V: Earth and Planetary Sciences

Dr. Parthasarathi Chakraborty
Associate Professor
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Metal speciation and trace metal biogeochemistry

Dr. Prabir Dasgupta
Associate Professor and Head,
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Sedimentology

Prof. Dipak Chandra Pal
Department of Geological Sciences,
adavpur University, Kolkata-700 032;
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Ore Geology and Geochemistry

Section VI: Plant Sciences

Dr. Anindita Seal
Assistant Professor
Department of Biotechnology and
B. C. Guha Centre for Genetic Engineering
and Biotechnology,
Calcutta University,
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Kolkata-700019
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Beneficial plant microbe interaction

Section VII: Animal Sciences

Dr.Mausumi Bharadwaj
Scientist G; Head,
Division of Molecular Genetics &
Biochemistry &
Coordinator, Molecular Biology Group.
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Human Papillomavirus (HPV)
associated Cancer Biology

Prof. Urmi Chatterji
Cancer Research Laboratory
Department of Zoology
University of Calcutta
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Cell and Cancer Biology

Section VIII: Medical and Veterinary Sciences

Dr. Ranjan Kumar Nandy
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Molecular Microbiology

Dr. Samiran Panda
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Pune-411026
Head - Division of Epidemiology &
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Indian Council of Medical Research (ICMR)
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Communicable Diseases & Epidemiology

Section IX: Biochemistry & Biophysics

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Molecular Genetics and Diseases

Dr. Simanti Datta
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School of Digestive and Liver Diseases,
Institute of Post Graduate Medical Education and Research (I.P.G.M.E.&R.)
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Microbiology and Immunology

Prof. Tathagata Choudhuri
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Tumor Virology

Section X: Agriculture and Forestry

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Climate Change Mitigation in Agriculture

Dr.Debashis Chakraborty
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Division of Agricultural Physics
ICAR-Indian Agricultural Research Institute,
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Soil Physics-Soil and Water Management

Dr. Supradip Saha
Principal Scientist
Division of Agricultural Chemicals
ICAR-Indian Agricultural Research Institute
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Nutraceuticals

Section XII: Environmental Sciences

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Govt. of India
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Marine and Estuarine Biogeochemistry

Prof. Pinaki Sar
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Indian Institute of Technology Kharagpur
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Environmental Microbiology and Biotechnology

Associate Fellow

Section IX: Engineering & Technology

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High Voltage Engineering

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RF and Microwave Engineering

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Pharmacoengineering

Dr. Uttam Kumar Ghorai
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Department of Industrial Chemistry
& Applied Chemistry
Associate Faculty, Swami Vivekananda Research Centre
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Materials Science and Nanotechnology

Section VI : Plant Sciences

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Plant Molecular Biology

Section VII : Animal Sciences

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IIT Kharagpur Campus,
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West Bengal
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Molecular Immunology

Section VIII: Medical and Veterinary Sciences

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West Bengal University of Animal & Fishery Sciences,
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Veterinary medicine and molecular toxicology

Section X: Agricultural & Forestry

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Scientist (Sr. Scale),
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Koushik.Chakraborty@icar.gov.in

Plant Physiology

Dr. Subrota Hati
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SMC College of Dairy Science,
Anand Agricultural University,
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Email: subrota_dt@yahoo.com

Dairy Microbiology

Minutes of the 29th AGM held on the 17th December, 2019 at CSIR- Indian Institute of Chemical Biology, Jabalpur, Kolkata - 700032

The 29th Annual General Meeting (AGM) of the Academy was held on the 17th December, 2019 (Tuesday) at 2.30 p.m. in Dr. J.C. Ray Auditorium, CSIR-Indian Institute of Chemical Biology (IICB), Jadavpur, Kolkata under the Chairmanship of Prof. Partha Pratim Majumder, President of WAST. The following resolutions were adopted after discussion:

Item 1.0: The Minutes of the 28th AGM of the Academy held on the February 20, 2019 at CSIR-IICB were confirmed (Minutes were printed in the Annual Report of the Academy for 2019 and were circulated to all the Fellows).

Item 2.0: The Annual Report of the Academy for the year 2019 was placed in the meeting for confirmation and was adopted after discussion.

Item 3.0: The Auditor's Report for the financial year 2018-19 was presented by the Treasurer and was approved after discussion.

Item 4.0: The same Auditor was appointed for the year 2019-20, without any change in fees payable.

ItemÊ5.0: Apart from the regular Endowment, Memorial and Oration Lecture, it was resolved that the details of other programmes of the Academy would be planned and organized by the EC.

Item 7.0: **T**he names of the newly elected Fellows of the Academy for the year 2019 were announced and the President handed over the certificates to the elected academicians.

Item 8.0: Although Shri Bratya Basu, Hon'bl Minister-in-Charge, Department of Science & Technology and Biotechnology, Govt. of West Bengal, attended the 28th AGM and promised financial assistance to the academy no response was received thereafter in spite of the best efforts by the President.

The General Body appreciated the efforts made by the Council and supported the initiatives mentioned above. The meeting ended with a vote of thanks to the Chair.

Concluding Note from the Secretary

The activities of the West Bengal Academy of Science and Technology undertaken during the year 2019-20 are presented in the preceding pages of the Annual Report. It is my duty to present this Report to the distinguished Fellows of the Academy who are attending the 30th Annual General Body Meeting in the virtual platform today. Due to current pandemics, the Executive Council has initially decided to conduct the AGM in hybrid mode. But the second wave of COVID-19 has compelled us to organize this meeting on a digital platform only. After the presentation of this Report along with the Audit Report (to be presented by the Treasurer), these Reports are to be formally accepted by the Fellows present here.

The activities of the Academy were enthusiastically assisted by many Fellows of the academy including the Convenors of the various Sectional Committees and the Members of the Executive Council. However, this year our activities were limited to Dr. Sunil Chandra Bose Memorial Oration and J. C. Sengupta Endowment lectures with wholehearted support by the Sectional Committees. We have updated the Year Book- 2020 with inputs from the Fellows received. The website is updated from time to time with all notices and announcements on various activities of the Academy. The list of Fellows 2019-2020 and the Year Book- 2020 are also separately posted on our site. We sincerely hope that in the coming years we will surely be able to manage the organization of some new activities with the active participation of the Fellows (and the members of the EC).

Lastly, I remain grateful to all of you for the opportunity and the responsibility assigned to me to act as the Secretary of the Academy. I beg for an apology for any shortfall that remained from my side. Wishing for a safe and healthy life ahead.

Dated: May 7, 2021

Dr. Arun Bandyopadhyay
Secretary

Debasis Bandyopadhyay & Co.
Chartered Accountants

INDEPENDENT AUDITOR'S REPORT

To the members of **WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY**

Opinion
We have audited the financial statements of **WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY**, 4, Raja S. C. Mallick Road, Kolkata - 700 032, which comprises of the Balance Sheet as on 31st March 2020 and the Income and Expenditure Account for the year then ended and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements give a true and fair view of the financial position of the entity as at March 31, 2020, and of its deficit for the year then ended in accordance with the Accounting Standards issued by the ICAI.

Basis of Opinion
We conducted our audit in accordance with the Standards on Auditing (SAs) issued by ICAI. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the entity in accordance with the ethical requirements that are relevant to our audit of the financial statements under West Bengal Act XXVI of 1961, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and those Charged with Governance for the Financial Statements
Management is responsible for the preparation and fair presentation of the financial statements in accordance with the aforesaid Accounting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.
In preparing the financial statements, management is responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the entity or to cease operations, or has no realistic alternative but to do so. Those charged with governance are responsible for overseeing the entity's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements
Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

For DEBASIS BANDYOPADHYAY & CO.
Chartered Accountants
[Firm Registration No. – 324338E]

Debasis Bandyopadhyay, Proprietor
(M. No. – 057861)
Place : Kolkata
Dated : 03/05/2021
UDIN - 21057861AAAAJI7373

WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY

4, Raja S. C. Mallick Road, Kolkata - 700032

Receipts and Payments Account for the year ended 31st March 2020

	Receipts		Amt(Rs.)		Payments		Amt(Rs.)
To,	Opening Balance			By,	Printing and Publication for FY 2018-19		46,620.00
	Cash in hand		11,857.00				
	Cash at Bank			"	Printing and Publication for FY 2019-20		34,650.00
	i) Current a/c with SBI						
	(A/c No. 11079700023)	132,754.44		"	Salary to Staff (Part Time)		65,000.00
	ii) Fixed Deposit (WAST)	228,306.00					
	iii) Fixed Deposit (Endownm	170,000.00	531,060.44	"	Audit Fees (FY 2018-19)		5,900.00
"	Interest on Fixed Deposit		18,571.00	"	Bank Charges		708.00
"	Life Membership Subscription		180,000.00	"	Exp for B C Sengupta Oration		945.00
				"	Annual General Body Meeting		57,250.00
				"	Stationery, Printing, Refreshments etc.		10,594.00
				"	Closing Balance		
					Cash in hand		1,263.00
					Cash at Bank		
					i) Current a/c with SBI		
					(A/c No. 11079700023)	120,252.44	
					ii) Fixed Deposit (WAST)	228,306.00	
					iii) Fixed Deposit (Endownr	170,000.00	518,558.44
			741,488.44				741,488.44

Place : Kolkata
Dated : 03/05/2021

For WB Academy of Science and Technology

President

Dr. Partha Pratim Majumder
President
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

For WB Academy of Science and Technology

Secretary

Dr. Arun Bandyopadhyay
Secretary
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

For WB Academy of Science and Technology

Treasurer

Dr. Snehasikta Swarnakar
Treasurer
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

In terms of our report of even date

Debasis Bandyopadhyay, Proprietor
For Debasis Bandyopadhyay & Co.
Chartered Accountants
Membership No. - 057861

WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY

4, Raja S. C. Mallick Road, Kolkata - 700032

Balance Sheet as on 31st March 2020

Liabilities	Amt(Rs.)	Amt(Rs.)	Assets	Amt(Rs.)	Amt(Rs.)
General Fund			**Fixed Assets**		
As per last a/c	365,655.44		Furnitures (as per last a/c)	498.00	
Add : (Deficit) for the year	-23,146.00	342,509.44	Less : Depreciation @ 10%	50.00	448.00
Corpus Fund					
As per last a/c		177,760.00	**Cash and Bank Balance**		
			Cash in hand		1,263.00
			Cash at Bank		
			i) Current a/c with SBI		
			(A/c No. 11079700023)	120,252.44	
			ii) Fixed Deposit (WAST)	228,306.00	
			iii) Fixed Deposit	170,000.00	518,558.44
			(Endownment Fund)		
		520,269.44			520,269.44

Place : Kolkata
Dated : 03/05/2021

For WB Academy of Science and Technology
President

Dr. Partha Pratim Majumder
President
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

For WB Academy of Science and Technology
Secretary

Dr. Arun Bandyopadhyay
Secretary
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

For WB Academy of Science and Technology
Treasurer

Dr. Snehasikta Swarnakar
Treasurer
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

In terms of our report of even date

Debasis Bandyopadhyay, Proprietor
For Debasis Bandyopadhyay & Co.
Chartered Accountants
Membership No. - 057861

WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY

4, Raja S. C. Mallick Road, Kolkata - 700032

Income and Expenditure Account for the year ended 31st March 2020

	Expenditure	Amt(Rs.)		Income	Amt(Rs.)
To,	Printing and Publication for FY 2018-19	46,620.00	By,	Interest on Fixed Deposit	18,571.00
"	Printing and Publication for FY 2019-20	34,650.00	"	Life Membership Subscription	180,000.00
"	Salary to Staff (Part Time)	65,000.00			
"	Audit Fees (FY 2018-19)	5,900.00			
"	Bank Charges	708.00			
"	Exp for B C Sengupta Oration	945.00			
"	Annual General Body Meeting	57,250.00			
"	Stationery, Printing, Refreshments etc.	10,594.00			
"	Depreciation on Furnitures	50.00			
"	Excess of expenditure over income (deficit) transferred to General Fund	(23,146.00)			
		198,571.00			198,571.00

Note 1 : The following expenses incurred in the year 2018-19, but actually paid during the year 2019-20, has been accounted for in the year 2019-20

Creative Data *Printing Annual Report* *46,620.00*

Place : Kolkata

Da

For WB Academy of Science and Technology

President

Dr. Partha Pratim Majumder
President
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

For WB Academy of Science and Technology

Secretary

Dr. Arun Bandyopadhyay
Secretary
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

For WB Academy of Science and Technology

Treasurer

Dr. Snehasikta Swarnakar
Treasurer
West Bengal Academy of Science and Technology
4, Raja S. C. Mullick Road
Kolkata - 700 032

In terms of our report of even date

Debasis Bandyopadhyay, Proprietor
For Debasis Bandyopadhyay & Co.
Chartered Accountants
Membership No. - 057861

WEST BENGAL ACADEMY OF SCIENCE AND TECHNOLOGY

Notes attached to and forming part of the Accounts for the year 2019-2020

A. SIGNIFICANT ACCOUNTING POLICIES

1. Accounting Concepts
   The society follows the cash system of accounting and recognizes the income and expenditure on cash basis, whenever received or paid as the case may be, are being recorded.

   The accounts are being prepared on historical cost and going concern concept. Accounting policies referred to otherwise are consistent with generally accepted accounting principles.

2. Fixed Assets and Depreciation
   Fixed Assets have been shown at written down value, after charging depreciation. Depreciation has been charged under written down valued method and at the rates specified under Income Tax Act, 1961 with effect from the financial year 2013-2014.

3. Membership Subscriptions
   Membership fees received has been treated as revenue receipts as per accounting policy continuously followed;

4. Investments
   Investments in fixed deposits has been recorded at face value being invested; interest accrued and not due are not being accounted for as the accounting method followed by the society is cash basis accounting.

B. NOTES TO ACCOUNTS

1. The following expenses incurred in the year 2018-19, but actually paid during the year 2019-20, has been accounted for in the year 2019-20 :

Creative Data	Printing Annual Report	Rs. 46,620