Notes and News

Science and Culture in the list of UGC approved Journals

It is my pleasure to inform that our journal Science and Culture has been included in the UGC enlisted journals for recruitment of college and university teachers and also for the promotion of University and College teachers for API score from Assistant Professor to Associate Professor and also to Professor of Botany. It reflects that our journal has also reached to a different height. ❐

Sudhendu Mandal
Honorary Secretary, ISNA

ISNA Council Member Honoured

It is a pleasure to inform you that Dr. Suprakash Chandra Roy, a member of Indian Science News Association and the Editor-in-Chief of the journal *Science and Culture*, has been nominated to the National Commission of History of Science of the Indian National Science Academy (INSA) as a member.

National Commission of History of Science (NCHS) consists of following members :

Professor A. K. Sood, *President (Chair)*; Professor Kankan Bhattacharyya, *Vice-President*; Professor N. R. Jagannathan, *Vice-President*; Dr. A. K. Bag, *Advisor*; Professor D. Balasubramanian, Dr. Baldev Raj, Professor Deepak Kumar, Professor Nibir Mandal, Professor G. Parthasarathy, Professor R. Ramaswamy, Dr. S. Balachandra Rao (Bengularu), Professor S. C. Roy (Kolkata), Dr. B. S. Shylaja (Bengaluru), Professor R. H. Singh (Varanasi), Professor Vibha Tripathi (Varanasi).

NCHS was established in 1961 in which Prof. D.M. Bose, who was the Editor of the journal *Science and Culture* at that time. He played an important role in NCHS was also the Editor of *Indian Journal of History of Science* during 1966 to 1974 published by National Commission of History of Science since 1966. We congratulate Dr. Roy on this well earned recognition. Dr. Roy is also the Editor of *Applied Radiation and Isotopes*, a journal published by Elsevier. ❐

Barun Kumar Chatterjee
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International Conference on Biomedical Science and Instrumentation
Conference Report

The International Conference on 'Biomedical Science and Instrumentation' was organised by Joint Academic Programme on Biomedical Instrumentation (JAP-BMI) of the University of Calcutta and the West Bengal University of Health Sciences. The participants included speakers from USA, UK and India. The conference was attended by over 80 delegates including faculty and students. The conference was inaugurated by Smt. Chandrima Bhattacharya, Chairperson, West Bengal Medical Services Corporation Ltd., and Former Minister, Govt. of West Bengal in the presence of Prof R K Poddar, former Vice- Chancellor, University of Calcutta, Prof N Basu, Director, School of Tropical Medicine, Govt. of West Bengal, Prof Bhabatos Biswas, Vice-Chancellor of W.B.U.H.S, Prof S K Ray, Director, S N Bose National Centre for Basic Sciences,Kolkata, Prof P A Kyriacou of the Dept. of Biomedical Engineering, City University, London and Prof G C Das of the Baylor College of Medicine, Houston, USA.

The keynote address was delivered by Prof S C Roy, former Professor and Chairman, Dept. of Physics, Bose Institute, Kolkata on 'Progress in Biomedical Instrumentation and Recent Trends' in a session chaired by Prof. Poddar. In a wide-ranging talk Prof Roy harked back to the pioneering applications of X-rays by Rontgen and continued with examples of the applications of Physics, Chemistry, Nuclear and Information Sciences to bring about revolutionary changes in medical diagnostics, protection and therapy. This was followed by a Plenary Talk by Prof P A Kyriacou of the Dept. of Biomedical Engineering, City University, London on 'Optical Sensors in Medicine'. His

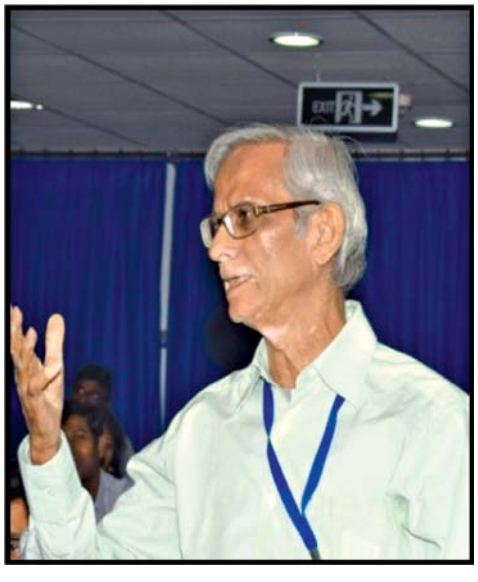
talk discussed development of optical sensors used for invasive or non-invasive physiological measurements. He also covered real-time physiological and biochemical monitoring using optical techniques and spectral analysis. This session was chaired by Prof C K Dasgupta, former Professor University of Calcutta. The next Invited Talk was delivered by Prof G C Das of the Baylor College of Medicine, Houston, USA on 'Integration of Advanced Technology and Approaches to prove complex Human Diseases'. His talk focused on recent advances in Functional Genomics using therapeutic and gene therapy. The objective was to apply state-of-the-art technology to tackle HIV-associated necropathy and / or Hep C induced Type II diabetes.

Industrial involvement was exemplified by illustrated talks presented by member of Siemens Healthineers and Icon Analytical Equipment Pvt. Ltd. respectively, outlining their extensive facilities and activities in Medical Instrumentation in India. The second morning saw the presentation of 8 research papers of an impressively high standard by students. Notable among these were papers on 'Spectroscopic techniques for Potential Biomedical Applications' by Nanbarun Polley and Prof Samir Pal of the S N Bose Centre, ' Measurement of O^{18} isotope in exhaled CO_2' by Santanu Mondal et al also from the S N Bose Centre and 'Natural ^{18}C and ^{13}C – urea in gastric juice for tracking non-ulcerous dyspepsia' by Mithun Pal et al of the S N Bose Centre, ' Fabrication highly sensitive Electro-responsive Membrane' by Fazle Kibria and Dipankar Mandal of Jadavpur University and research work on 'Structural Characterization of Blood Cells (Normal & Diseased) Using Scanning Electron Microscope' by

Delegates on the dias –ICBSI 2016

Smt. Chandrima Bhattacharya

Prof. P. A. Kyriacou of City University, London, U.K



Prof. A. S. Chakraborti, University of Calcutta

Triparna Datta and on 'Automatic Detection of White Matter and Gray Matter from MRI Image for Diagnosis of Neurological Diseases' by Arani Mazumdar were presented.

The Valedictory session was addressed by Prof D N Bose, former Dean I I T Kharagpur and Prof A S Chakraborty Dept of Biophysics and Molecular Biology, University of Calcutta who spoke highly of the very successful conference and offered the Vote of Thanks. The organisers are grateful to the Indian Council Medical Research, India for major financial support, supplemented by grants from Siemens Healthineers and Icon Analytical Equipment Pvt. Ltd. The organizers are also grateful to the Director, S N Bose National Centre for basic sciences for permission to hold the Conference in the premises. This International Conference held in the Eastern region was coordinated by Dr Anima Sen of the University of Calcutta ably assisted by a dedicated group of staffs, students and efficient treasurer Mr. Subhankar Dutta. Thanks also to the advertisers- Siemens Healthineers (Kolkata), Icon Analytical Equipment Pvt. Ltd. (Kolkata), Transasia Bio-Medicals Ltd. (Kolkata), Synchro Electronics (Kolkata), Kolkata, Scientific Clinical Research Laboratory Pvt. Ltd (Kolkata), Microtech Industries (Kolkata), Institute of Neurosciences Kolkata (Kolkata). ❐

Dr. Anima Sen
Co-ordinator, ICBSI 2016

Commemorating 100th Birth Anniversary of Decipherer of the Anatomy of a 'Killer'

In 1953, legendary biologists James Watson and Francis Crick created a visual model of DNA molecule as tall as the height of their laboratory. They were awarded Nobel Prize in 1962 and in the same year, English protein chemist and immunologist Rodney Porter built a model of the antibody protein (or immunoglobulin, which play the pivotal role in internal defense mechanism in vertebrate body against infections) molecule, proposed and clarified its modern-version 'Y-shaped' molecular (chemical) structure. He went on to become Nobel Laureate ten years later (1972). Numerous studies on antibody structure have confirmed the accuracy of this model as the basic structure for all five isotypes of immunoglobulin.

In 1959, Prof. Porter injected rabbits with ovalbumin, bovine serum albumin, human serum albumin (pneumococcal polysaccharide Type III). Rabbit sera containing antibody to each of these antigens were fractionated by 'salting out technique' to obtain the antibody-rich gamma globulin protein fraction. In order to study chains of the molecule separately in convenient manner and for amino acid analysis, he fragmented rabbit Ig (IgG, obtained from rabbit antiserum) protein molecule with the highly purified protein-splitting enzyme papain in the presence of reducing agent cysteine and EDTA, into three functionally-different parts, which could be separated chromatographically on carboxy-methyl cellulose in sodium acetate buffer, having pH 5.5. He identified a large component without antigen-binding capability (the base of the Y structure), that crystallized spontaneously at neutral pH and two similar smaller fragments with active sites that bound to the antigen. It contained the antigen binding sites of original antibody. Two smaller fragments had Mol.wts of 50KDa, while large fraction/component had 80KDa. These three components per whole IgG molecule were resolved by gel electrophoresis. He was sure that the crystallizable fragment was apparently common to all molecules, while the two identical fragments each carried a combining site and with it, the inherent variability associated with the whole antibody {Another source of information (MadSci Network, webadmin@www.madsci.org) points out that by ultracentrifugation, he separated original Ig protein fraction into a 19S (high Mol.wt) and a 7S (low Mol.wt) fraction, and then treated 7S IgG with papain to obtain the three fragments}.

Analysis of amino acid content of the three fractions revealed that two smaller fractions are structurally similar to each other, while that of the large fraction is significantly different. In a subsequent experiment, he treated the two smaller fractions with 2-mercaptoethanol. It resulted in cleavage of intra-chain disulphide bonds in the molecule; the chains were dissociated and separated when run on Sephadex columns in acetic or propionic acid, yielding heavy and light chains of Mol.wts approximately 50KDa and 20KDa respectively. Each of these two fractions yielded two protein pieces that had equal Mol.wt of 25KDa but were antigenically different; one piece was identical to the light chain while the other contained the amino-terminus of heavy chain. He showed that Fab (antigen binding fragment) contained antigenic sites common to both heavy and light chains but crystallizable fragment those common to heavy chains only. In 1962, this led Porter and his co-researchers to postulate that the intact Ig molecule was composed of two 50KDa heavy chains and two 25KDa light chains.

He proposed three possible arrangements of the fractions to explain the structure of antibody molecule. By 1969, a complete model of it comprising more than 1300

amino acids had been achieved and its sequence determined. During his career, he was anxious to learn about complex protein molecules which could interact with other proteins, to study Ig(s), their genetic markers and the early members of the complement protein cascade in serum. He tried to find out novel methods of protein fractionation, he succeeded in separating antibodies into several distinct fractions, continued to work on Ig partly to find out whether the light- or the heavy-chain alone or both were responsible for antigen-binding. Later on, he investigated on antibodies as receptors upon surface of the cells that synthesize them, the way Ig of blood react with cellular surfaces, and concentrated on developing techniques for labeling and identifying cell receptors.

Rodney Porter was born in Liverpool city, a part of Lancashire in north-west England in October 1917. At the time when he was working as Whitley Professor of Biochemistry at Oxford University, he was killed in a car accident near Hampshire on 6th September, 1985 at 67 years of age. He could explain how variations in the amino acid sequence of individual antibodies results in different binding shapes; it is an astonishing diversity of antibodies that our body can manufacture. We owe to Prof. Porter for our thorough understanding of the features that gave the possibility of forming antibodies of innumerable different specificities. These molecules may be seemingly identical-looking, but individual antibodies have the capacity to target and destroy specifically any one of an almost infinite range of pathogens. Antibodies in bloodstream 'kill' infection-causing bacteria principally by three ways: i) they make the bacteria unable to enter or damage host cell by binding to their surface, ii) they activate complement system, that destroys membrane integrity of the bacteria causing loss of internal equilibrium with its environment, and iii) *via* opsonization process, antibodies mark the bacteria, subsequently macrophages and neutrophils kill them by phagocytosis. Antibodies can also eliminate viruses from the body before they get the chance to infect a body cell. Prof. Porter will be remembered for laying the foundation for structural understanding of immunity, precisely humoral aspects of immune response at molecular level. ❐

Subrato Ghosh

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Role of Ribosome to Defy Aging

Finally the answer to the question 'How to live a long life?' has been found. At least, that's what it seems from a recent research.

There's a multi-billion-dollar industry devoted to products that fight signs of aging, but moisturizers only go skin deep. Aging occurs deeper, at a cellular level, and scientists have found that eating less can slow this cellular process.

Recent research published in Molecular and Cellular Proteomics offers one glimpse into how cutting calories impacts aging inside a cell. The researchers found that when ribosomes, the cell's protein makers, slow down, the aging process slows too. The decreased speed lowers production but gives ribosomes extra time to repair themselves.

"The ribosome is a very complex machine, sort of like your car, and it periodically needs maintenance to replace the parts that wear out the fastest," said Brigham Young University biochemistry professor and senior author John Price. "When tires wear out, you don't throw the whole car away and buy new ones. It's cheaper to replace the tires."

So what causes ribosome production to slow down in the first place? At least for mice: reduced calorie consumption.

Price and his fellow researchers observed two groups of mice. One group had unlimited access to food while the other was restricted to consume 35 percent fewer calories, though still receiving all the necessary nutrients for survival.

"When you restrict calorie consumption, there's almost a linear increase in lifespan," Price said. "We inferred that the restriction caused real biochemical changes that slowed down the rate of aging."

Price's team isn't the first to make the connection between cut calories and lifespan, but they were the first to show that general protein synthesis slows down and to recognize the ribosome's role in facilitating those youth-extending biochemical changes.

"The calorie-restricted mice are more energetic and suffered fewer diseases," Price said. "And it's not just that they're living longer, but because they're better at maintaining their bodies, they're younger for longer as well."

Ribosomes, like cars, are expensive and important, they use 10-20 percent of the cell's total energy to build all the proteins necessary for the cell to operate. Because of this, it's impractical to destroy an entire ribosome when it starts to malfunction. But repairing individual parts of the ribosome on a regular basis enables ribosomes to continue producing high-quality proteins for longer than

they would otherwise. This top-quality production in turn keeps cells and the entire body functioning well.

Despite this study's observed connection between consuming fewer calories and improved lifespan, Price assured that people shouldn't start counting calories and expect to stay forever young. Calorie restriction has not been tested in humans as an anti-aging strategy, and the essential message is understanding the importance of taking care of our bodies.

"Food isn't just material to be burned — it's a signal that tells our body and cells how to respond," Price said. "We're getting down to the mechanisms of aging, which may help us make more educated decisions about what we eat."

Adapted from ANI 14 February 2017 ❐

P. K. Ray

Ex- Director, Bose Institute, Kolkata

Improved Biofuel Generation from Water Hyacinth: A Recent Feat from IIT Kharagpur

The emission of greenhouse gases, rapidly depleting fossil fuels and a sharp rise in the global consumption of energy are posing a formidable challenge to the very existence of mankind. This situation necessitates the development of alternative sources of energy, some of which are solar power, microwave, ultrasound, wind power, UV-visible light, etc. But a rise in the global demand of energy requires further intensive research towards this end.

A joint venture of the Department of Chemical Engineering and the P.K. Sinha Centre for Bioenergy Research at the Indian Institute of Technology at Kharagpur has reported a remarkable progress in this regard (*Nature Scientific Reports*, Dec. 1, 2016). Water hyacinth has been known for some time past to be a source of biofuel or bioethanol. The cell walls of hyacinth contain both cellulose and hemicelluloses, the two top most abundant natural polymers on earth, in nearly 2:1 ratio. Enzymes break down these polymers to form soluble sugars that are fermented to result in biofuel. But the production of biofuel from water hyacinth has not been economically viable so far primarily because only about a quarter of the soluble sugars of hemicelluloses are released by the plant cell walls. The IIT research group, led by Professor Saikat Chakraborty, has uncovered pore-scale phenomena which result in fourfold increase in the yield of fermentable sugars from the hemicelluloses. They say, it is the pore-scale reactions that release three quarters of the soluble sugars from the hemicelluloses. The enzymes that break down these polymers diffuse and adsorb inside the pores. Therefore, an increase in the porosity of these polymers results in double to fourfold increase in the swelling of these porous materials because of the combined capillary action and Coulombic forces of attraction. The adsorption of the enzymes on the pore walls is thus accelerated, which results in rapid degradation of hemicelluloses into fermentable sugars, from which biofuels are generated.

Even commonly available grasses, red and green algae, etc., which contain about 2.5 to 3 times more hemicelluloses than cellulose, can be utilised for the generation of biofuel. As per their estimate, 1 kg of such dry hemicellulosic biomass furnishes on hydrolysis at 40°C around 60 g of fermentable sugar which, in turn, can produce about 200-300 g of biofuel with significant fuel value. The yeast strain that is used for fermentation determines the actual amount of biofuel. In this way, the productivity and cost-effectiveness of biofuel is increased by more than 50%. Further, the researchers have improvised to minimise inhibitions of biofuel production caused by some soluble sugars and hemicelluloses. The researchers are trying to develop the required technology based on their findings. ❐

Professor Manas Chakrabarty, FRSC

Formerly, Department of Chemistry, Bose Institute, Kolkata

A Hair for the Prosecution - A Breakthrough in Forensic Science

Crime does not pay! Now-a-days the analysis of DNA of a criminal's body part, e.g. hair, tooth, nail, etc. or anything used or touched by him, e.g. fingerprint can identify the criminal reliably from among 10^{13} unrelated individuals. This is acceptable in court. But the method has a serious limitation – the material has to be analysed within a short period of time after the crime has been committed since DNA is degraded by environmental (temperature, humidity, pH), chemical and biological (bacteria and other microbes) factors.

But a few months back a hair-raising news for the criminals has come up – one Stefano Vanin, a Reader in Forensic Biology at the University of Huddersfield, U.K. has published a report (*PLOS ONE*, **11** (9), e0160653, 2016. DOI: 10.1371/journal.pone.0160653) that the protein

profile of even a single hair is different for different individuals and that the method is applicable to even bio-archaeological hair samples.

Firstly, hair shaft is physically flexible and structurally robust because it is composed primarily of coiled-coil proteins with a high degree of intermolecular disulfide and isopeptide covalent bonds. Secondly, hair possesses a high content of protein – a single hair has been found to contain more than 300 different proteins. Finally, the genetic information in DNA is translated into amino acids which, in turn, constitute proteins. The authors, therefore, tried to establish the protein profiling of human hair as an additional tool for identifying criminals.

The authors collected hair samples from a large number of individuals belonging to different races, including mixed ones, and from different archaeological sites. Each sample was milled, broken down to a mixture of peptides by trypsin in a solution containing urea and DL-dithiothreitol (a detergent that stabilises enzymes and other proteins containing free sulfhydryl groups, i.e. prevents them from being oxidised). The resulting peptides are analysed by LC-MS, a combined chromatographic-Mass Spectrometric technique. The researchers identified around 100 protein markers in a single hair sample – a tool to identify a criminal from among more than 10^3 European people. The efficacy was considerably less in the African population. But in contrast to DNA analysis, the present technique based on hair samples can't differentiate between twins – a serious drawback indeed!

The method needs to be polished to be acceptable by a court. Mimicking the landmark forensic book "A fly for prosecution" by Lee Goff, can we possibly name a future book on the use of hair samples as "A hair for prosecution"? Let's wait and see. ❐

Professor Manas Chakrabarty, FRSC

Formerly, Department of Chemistry,
Bose Institute, Kolkata

Influx of Asteroids in 2017 : Menace to our Blue Planet

A near-Earth asteroid (NEA), designated 2017 EA, 3 metres (10 feet) across whizzed past the Earth safely on the 2nd March, 2017, though it passed well inside the ring of geosynchronous satellites. This asteroid came as close as Earth at 14:04 UTC at an altitude of 14,500 kilometres (9000 miles) above the eastern Pacific Ocean. At its closest point, the asteroid 2017 EA was 20 times closer than the Moon and then it quickly moved into the day time sky and naturally could no longer be observed by ground-based telescopes. This asteroid was originally detected only about 6 hours before its closest approach to the Earth by the astronomers of Catalina Sky Survey of NASA, near Tucson, Arizona. It was also observed by several other observatories before it passed into the Earth's shadow just before closest approach. Actually, 2017 EA was tracked for only a single day. But its orbit is now quite accurately known to the Centre for Near Earth Object Studies (CNEOS). Their computations assure that 2017 EA will not approach our 'Blue Planet' so close again for atleast a hundred years. In this context, I would mention that on the 2nd February, 2017 one near-Earth asteroid (NEA), (which was actually the 4th one in 2017 till the designated 2017 BS 32 just cruised by our planet. This speedy rock, a bus-sized body, nearly 40 feet in diameter was discovered on the 30th January, 2017. It passed by Earth making its closest approach at a distance of 1,01,214 miles (much closer to the Earth than the Moon). Though it is thought that the sudden influx of NEA in 2017 is just a coincidence, however astronomer Paul Cox attached with the Slooh Observatory said that the repeated calls "still surprise the researchers".

The memory of "Chelyabinsk meteor" is still afresh in our mind. It was a superbolide caused by an approximately 20 metre near-Earth asteroid that entered Earth's atmosphere over Russia on the 15th February, 2013 at about 03:20 UTC with a speed of 19.16 0.15 kilometres per second (60,000—69,000 km/h or 40,000—42,900 mph).

It became very quickly a brilliant superbolide meteor over the southern Ural region. The light from the meteor was brighter than the Sun and visible upto 100 km (62 mi) away. Some eye-witnesses felt intense heat from the fire-ball. On account of its high velocity and shallow angle of atmospheric entry, the object exploded in an air burst over Chelyabinsk Oblast at a height of about 29.7 km (18.5 mi) and the explosion created a bright flash producing a hotcloud of dust and gas. The object was undetected before its atmospheric entry, in part because its radiant was close to the Sun. With an estimated initial mass of about 12,000—13,000 metric tonnes heavier than the Eiffel Tower and measuring about 20 metres in diameter, it is the largest known natural object to have entered Earth's atmosphere since the 1908 Tunguska event, which destroyed a wide, remote, forested and very sparsely populated area of Siberia.

Chelyabinsk meteor caused non fatal injuries to 1491 persons, damage of 7200 buildings, collapse of many factory-roofs and shattering of several windows. A near-Earth asteroid, now designated "Asteroid 2017 AG 13" slipped quietly past the Earth on the 9th January, 2017 missing the Earth by 0.5 lunar distance. We did not see it coming.

This was a HIGHRISE-sized (25—35 metres) asteroid travelling at a speed of 15.7 km/sec was first spotted late on the 8th January,2017 by the Catalina Sky Survey. It was roughly the same size as that which exploded in the sky above Chelyabinsk, Russia in 2013 (already mentioned). Had the "Asteroid 2017 AG 13"exploded high in the atmosphere, the amount of energy-release would have been 700 kilotons of TNT, which is much higher compared to 20 kilotons released during the Nagasaki bomb-explosion. ❐

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We gratefully acknowledge the receipt of generous donations from the following persons in response to our appeal published in the May-June 2016 and July-August 2016 issues of Science and Culture

1. Prof. (Mrs.) Bani Talapatra *(Kolkata)*
2. Mr. Sumit Kumar Banerji *(Kolkata)*
3. Prof. Subrata Laskar *(Hooghly, West Bengal)*
4. Prof. Vashist N Pandey *(Gorakhpur, Uttar Pradesh)*
5. Dr. K. S. Srinivasan *(Chennai)*
6. Prof. Vasant Natarajan *(Bangalore)*
7. Prof. Bikas K. Chakrabarti *(Kolkata)*
8. Prof. S. N. Balasubrahmanyam *(Bangalore)*
9. Prof. Sunil Kumar Talapatra *(Kolkata)*
10. Dr. Suresh Ghosh, Philadelphia, *USA*
11. Dr. Subhas Mitra *(Hooghly, West Bengal)*
12. Dr. Satyabrata Chakrabarti *(Kolkata)*
13. Prof. P. K. Ray *(Kolkata)*
14. Mr. Shyamalendu M Bose *(Kolkata)*

All Donations are qualified for exemption u/s 80G (5) (vi) of the I.T. Act 1961 Vide Memo No.CIT (E)/10E/619/16-17/G-0389/3687-89 dated 30.01.2017

THE INDIAN SCIENCE CONGRESS ASSOCIATION

14, DR. BIRESH GUHA STREET, KOLKATA-700 017

ISCA YOUNG SCIENTIST'S AWARD PROGRAMME : 2017-2018

To encourage Young Scientists, The lndian Science Congress Association has instituted a number of awards in different disciplines. These awards carry a sum of Rs.25,000/- besides a Certificate of Merit. Applications are invited from members (Life & Annual) of the Association who have paid their subscription on or before ***July 15, 2017.*** *The upper age limit of the candidates for the award is 32 years as reckoned on* ***December 31, 2017 (born on and after January 01,1986).***

Four copies of the abstract (not exceeding 100 words) along with four copies of full length paper must reach the office of the General Secretary (Membership Affairs) not later than ***August 16, 2017.*** *At the top of each copy of the paper and its abstract, the name of the Section under which the paper is to be considered should be indicated. For details of Sections see http://www.sciencecongress.nic.in/html/paper/presentations.php*

1. *Along with the Four copies of paper, Four copies of the Application Form (to be downloaded from ISCA website (http://www.sciencecongress.nic.in/young_sc_programme.php) with brief bio-data of the candidate (not exceeding 2 pages), list of publications , with copies of reprints of already published papers if any and a soft copy of the duly filled application form with scanned copies of enclosures (excluding reprints), full length paper and abstract in MSWord (not PDF) along with bio data in the form of a CD must also be sent simultaneously along with the hard copies.*
2. *The Paper submitted must be a single author paper and the research work should have been carried out in India and this has to be certified by the Head of the Institution from where the candidate is applying.*
3. *The candidate should give an undertaking that the paper being submitted has not been published in any journal or presented in any other Conference / Seminar / Symposium or submitted for consideration of any award.*
4. *A Young Scientist can present only one paper in any one Section (and not a second paper on the same or any other topic in any other Section).*
5. *A person who has already received Young Scientist Award in any section once will not be eligible to apply for the above Award in the same or any other section.*
6. *lncomplete Applications will not be considered.*
7. *The papers submitted will be subjected to verification for authenticity.*
8. *Full length paper will be evaluated by experts and the selected Young Scientists (maximum of six) in each section will be invited to make oral presentation of their paper during 105th lndian Science Congress. The selected candidates will be provided admissible travelling allowances by ISCA.*
9. *The final selection for the Awards will be made by a duly constituted committee and the awards will be given during the Valedictory Session of 105th the lndian Science Congress session to be held on January 7, 2018.*
10. *Applications submitted for the above award will not be returned.*
11. *The last date for receiving papers at ISCA Headquarters is August 16,2017.*

All correspondences should be made to: ***The General Secretary (Membership Affairs), The Indian Science Congress Association, 14, Dr. Biresh Guha Street, Kolkata-700017.*** *Tel. Nos. (033) 2287-4530/ 2281-5323, Fax No. 91-33-2287-2551, email :* ***iscacal@vsnl.net, es.sciencecongress@nic.in, website:http://www.sciencecongress.nic.in***

THE INDIAN SCIENCE CONGRESS ASSOCIATION

14, DR. BIRESH GUHA STREET, KOLKATA-700 017

ISCA BEST POSTER AWARDS : 2017-2018

To encourage Scientists, The Indian Science Congress Association has instituted two Best Poster Awards in each Sections . These awards carry a sum of Rs.5,000/- besides a Certificate of Merit.

1. *Applications are invited from members (Life, Annual & Student) of the Association who have paid their subscription on or before* ***July 15,2017.***
2. *Four copies of full length paper along with four copies of the abstract (not exceeding 100 words) must reach the office of the General Secretary (Membership Affairs) not later than* ***September 15,2017.*** *At the top of each copy of the paper and its abstract, the name of the Section under which the paper is to be considered should be indicated. For details of Sections see http:// www.sciencecongress.nic.in/html/paper_presentations.php*
3. *Along with the Four copies of paper, Four copies of the Application Form (to be downloaded from ISCA website http://www.scie ncecongress.nic.in) with brief bio-data of the candidate (not exceeding 2 pages), full length paper, abstract in the form of a CD must also be sent simultaneously along with the hard copies.*
4. *The number of authors of each poster submitted for the award shall be limited to two only.* ***The first author of the poster shall be the presenting author. Both the authors should be the members of the Association and have paid their subscription on or before 15th July, 2017.***
5. *The research work should have been carried out in India and this has to be certified by the Head of the Institution from where the candidate is applying.*
6. *The candidate should give an undertaking that the paper being submitted has not been published in any journal or presented in any other Conference / Seminar / Symposium or submined for consideration of any award.*
7. *A scientist shall submit only one poster in any one Section (and not a second poster on the same or any other topic in any other Section) for consideration for poster presentation award.*
8. *A person who has already received ISCA Best Poster Award in any section once will not be eligible to apply for the above Award in the same or any other section.*
9. *Incomplete Applications will not be considered.*
10. *Full length papers will be evaluated by experts and twenty posters in each section will be selected for presentation during 105th lndian Science Congress.*
11. *The final selection for the Awards will be made by a duly constituted committee and the awards will be given during the Valedictory Session of 105th lndian Science Congress session to be held on January 7, 2018.*
12. *Applications submitted for the above award will not be returned.*
13. *The last date for receiving applications for the above award at ISCA Headquarters is* ***September 15, 2017.***

All correspondences should be made to:

The General Secretary (Membership Affairs), The Indian Science Congress Association, 14, Dr. Biresh Guha Street, Kolkata-700017. Tel. Nos. (033) 2287-4530/2281-5323, Fax No.91-33-2287-2551, *E-mail:iscacal@vsnl.net, Website: http: //www.sciencecongress.nic.in*

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Students Award on Basic Science Research

Indian Science News Association (ISNA) with generous donation received from Prof. Mrinal Kanti Dewanjee of USA, is inviting applications from XI and XII standard students for two awards one in Physical Science and other in Life Sciences. Each award contains a cash prize of Rs. 10,000.00 (Rupees ten thousand) and a certificate.

Procedures

i. A write up on a proposal (not more than 2000 words) describing the importance of Basic Science Research including Translational Research and their impact on Society is to be submitted to the Honorary Secretaries, Indian Science News Association, 92, A.P.C. Road, Kolkata 700009.

ii. Applicants must be residents of West Bengal.

iii. At least 85% average marks received in Science Subjects in Class X board examinations.

iv. Application should be forwarded through the Head of the Institution.

v. Last date of receiving application **31st July 2017**.

vi. The write up will be screened by an expert committee appointed by the competent authority.

vii. Selected candidates are required to present the proposal stated in the write up before an expert committee as decided by the competent authority.

viii. Awardees are required to present a seminar during the award giving ceremony.

Brief Profile of Prof. Mrinal K. Dewanjee

Prof. Dewanjee completed his M.Sc. in Chemistry from Dacca University (Bangladesh) and Ph.D. in nuclear chemistry/physics from McGill University, Canada. In early 1970s, Dr. Dewanjee was the humble beneficiary of "Lab Bench-to-Bedside" Translational Research on developing the radioactive tracers for noninvasive imaging and measuring tools in cardiovascular diseases (Myocardial infarct [MI]-Heart attack) at Harvard Medical School, Boston, Coronary thrombosis, Mayo Clinic, Rochester, MN) and neurovascular disease (Stroke; Brain attack, University of Miami, FL) in animal models with clinically relevant endpoints. He made the algebraic equation for measuring platelet density on injured walls of artery and artificial surface of cardiovascular prostheses. After getting Federal Drug Administration's (FDA), USA, approval with preclinical evaluations, they used the noninvasive nuclear imaging methods for imaging site of MI and arterial platelet-thrombi and evaluated the effect of several platelet-inhibitors in animal models and patients (Aspirin, Plavix, Prostacycline and recombinant Hirudin). At present Dr. Dewanjee is an Honorary Guest Scientist at Neurobiology, Neurodegeneration & Repair Laboratory, National Eye Institute, National Institutes of Health, USA. His present interest is on STEM Cell Research, one of the latest and advanced biomedical research to treat some of the deadly diseases, e.g. stroke, retinal blindness, Alzheimer's and Parkinson's disease.

Honorary Secretaries, ISNA

Particulars of the Journal Science and Culture *as per Form IV of the Registration of Newspapers (Central) Rules, 1956*

Place of Publication : Calcutta, Periodicity of Publication : Bi-monthly, Printer's and Publisher's Name, Nationality, Address : Prof. S. C. Roy, Indian, Indian Science News Association, 92, Acharya Prafulla Chandra Road, Kolkata-700 009, Editor's Name, Nationality, Address : (1) Prof. S. C. Roy, Indian, Indian Science News Association, 92, A. P. C. Road, Kolkata-700 009, (2) Professor Parimal Chandra Sen, Department of Chemistry, Bose Institute, Kolkata-700 054, (3) Prof. Sudhendu Mandal, Indian, Department of Botany, Visva-Bharati, Santiniketan-731 235, (4) Prof. Barun Kumar Chatterjee, Indian, Department of Physics, Bose Institute, 93/1, Acharya Prafulla Ch. Road, Kolkata-700 009, (5) Prof. Syamal Chakraborti, Indian, Department of Chemistry, Calcutta University, 92, A. P. C. Road, Kolkata-700 009, (6) Dr. Amit Krishna De, Indian, Executive Secretary, Indian Science Congress Association, 14, Dr. Biresh Guha Street, Kolkata-700 017. (7) Shri Biman Basu, Indian, C-203, Hindon Apartments, 25, Vasundhara Enclave, Delhi-110 096, (8) K. Muraleedharan, Indian, Director, CSIR-Central Glass and Ceramic Research Institute, Kolkata-700 032, (9) Professor Manas Chakrabarty, Indian, Former Professor, Department of Chemistry, Bose Institute, Kolkata-700 009. (10) Dr. Satyabrata Chakrabarti, Indian, General Secretary, The Asiatic Society, 1, Park Street, Kolkata-700 016. Names and Address of individuals who own the newspapers and partners or shareholders holding more than one per cent of the capital : Indian Science News Association, Kolkata.

I, Prof. S. C. Roy hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/- S. C. Roy
Publishers

31.03.2017

(On behalf of the Indian Science News Association)