

***SHORT COMMUNICATION*****A DOCTOR'S DILEMMA**

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**R**oyalty in Europe married within itself—a policy steeped both in the idea of keeping the money and the power within a small number of hands. But it did have its downside too, one of which was the frequency of the disease haemophilia. The Royal Barber had to shave His Royal Highness gingerly and with great care, lest he cuts the skin and draws blood. If he did, the consequences would be disastrous not only for the barber but for His Royal Highness as well. Haemophilia is a disease in which the mechanism by which blood clots goes awry. We now know it to be associated with an error in DNA. The Royal Physicians who knew no DNA, knew however that the condition runs in families and is hereditary. Consequently, they advised the Royal matchmakers to choose the alliances carefully enough so as to avoid haemophilia.

Hereditary diseases do not belong to palaces alone. The neurological condition called Huntington's chorea is a gene-related disorder that affects thousands of people all over the world. First discovered and described in some detail in America, it was established that this disease had descended from two brothers with

Huntington's chorea, who migrated to the US from England. Patients afflicted with this disease show signs of brain malfunction that includes restlessness, dance-like gestures (hence the name "chorea" from the Greek word for dance) to severe grimacings and grotesque motions. It also leads to progressive intellectual impairment and paranoid delusion. The patients need to be contained in hospitals and psychiatric clinics. Unfortunately, unlike its earlier cousin, Sydenham's chorea, also called the St. Vitus dance, Huntington's disease has no cure. Sydenham's chorea appears to arise from autosuggestion and is manifested as a kind of frenzy. Rampant in 11th and 12th centuries Europe, it involved dozens of people dancing in a frenzied fashion in churches, for periods lasting from minutes to days. They were considered possessed and the cure was thought to be through the blessings of St Vitus. Alas, Huntington's disease is not only more severe and incurable, but also one that involves a genetic disorder. The gene for Huntington's disease has been identified and is found to have a large number of "spelling errors", namely repeats of the base-sequence CAG. Close to 30,000 families in America are estimated to harbour this condition. We do not have any reliable statistics about its incidence and prevalence in India.

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Or take what is now called Alzheimer's disease. First discovered by the German physician Alois Alzheimer in 1907, this condition manifests itself in later middle life as a neurological disorder involving loss of memory, impaired thought processes and abnormal behaviour. The disease usually starting before the age of 65 is commonly referred to as Alzheimer's, and if it occurs after the age of 65 it is called senile dementia. It is estimated that as many as 5% of the American population over 65 years of age suffer from this condition and also that it is somewhat more prevalent among women than men. It runs its course anywhere from three to eight years and the hapless sufferer dies with no cure.

Modern genetics has thrown light on the molecular basis of these and a few other diseases. Just as Huntington's disease is associated with a stuttering of the gene with the CAG signal, Myotonic dystrophy another severe neuromuscular condition, is associated with a similar triplet stutter in another gene, this time involving CTG as the repeat. Such mistakes in spelling, phrase or syntax that occur in the genetic message are called mutations. Mutations can range from being occasionally helpful (new, improved message) to benign and often deadly. Mutations in what is called the *ApoE* gene seem associated with Alzheimer's disease. Every year, with increasing frequency, the litany of mutations and genetic disease in man rises. Many a cancer, whether it is ovarian or breast cancer in women or colon and prostate cancer in men, appear associated with mutations in one or more genes in our body.

## SHOULD WE TEST ?

As these discoveries are made, there is an increasing tendency to move them from the research table to the pathology laboratory. The urge to do genetic testing increases. A family might wish to know whether any debilitating condition like Huntington's or Alzheimer's, runs in the family and whether a child may carry the lethal gene.

In some instances, prior knowledge about a condition may be helpful. A woman who tests positive to breast cancer, might decide to go for mastectomy or surgical removal of the tissue, as a preventive measure. Or a person who discovers that he is a potential diabetic may change his habits and diet right away so as to lessen or annul the effects of the debilitating condition. Thus, there are tangible benefits to testing. On the flip side is the question of whether such a genetic testing is always desirable, especially in cases where there is no cure. If one is tested for such a mutation and the answer is negative, the result is an enormous relief and one can lead an ordinary life. But what if one tests positive? That would then turn out to be today's equivalent of the sword of Damocles. As is to be expected in a situation like this, there are extreme and divided views and stands taken. The Government of India, for example, banned prenatal testing for determining the sex of the yet-to-be-born baby in order to legally curb female infanticide, one of the worst ills of our society. Should there also be a ban on genetic testing for Alzheimer's, Huntington's and similar incurable diseases?

How much would such a knowledge add to the quality of life of the person who tests positive? Can he ever lead a stress-free life

thereafter? Then, there are other implications and overtones. For example, insurance companies can refuse to insure people who are prone to such conditions. Would it be right for insurance companies, therefore, to demand the genetic testing of prospective clients? Or is the individual better off not knowing anything about such a condition lurking in his genes?

The practice of every doctor before he starts his career is to solemnly swear by the oath of Hippocrates. The great Greek physician of the 5th Century BC wrote the following oath to be taken by every physician :

I will look upon him who taught me this art as one of my parents. I will share my substance with him and I will supply his necessities, if he be in need.... The regimen I adopt shall be for the benefit of my patients according to my ability and judgement and not for their hurt or any wrong....

Then should the doctor, in his wisdom, hide the information from his patient, in the best interest of the latter's physical and mental health? The basic advice a doctor ought to follow is : "First do no harm".

Despite this risk of psychological devastation, Dr. Richard Meyers, of the Boston University School of Medicine, has offered tests for the Huntington gene. He concedes that the benefits of such testing are not always clear, but he says he offers the test because he believes a person has an inalienable right to his or her genetic destiny. Dr. Meyers' assertion is a take-off in the spirit of the American constitution which offers its citizens the inalienable right to life, liberty and the pursuit of happiness. One needs

to ask whether knowing that you have the Huntington's gene gives you the right to life and the pursuit of happiness?

### ARE TESTS INFALLIBLE ?

On a completely different footing are the objections to this raised by other scientists. Dr. Francis Collins, who heads the National Centre for Human Genome Research, USA and also chairs the US National Advisory Council for Human Genome Research (NACHGR), has recommended against testing for some mutations which are thought to be associated with some form of colon cancer. The reason for their doing so is the inherent inaccuracies that creep into any such gene testing.

Collins argues that we do not yet understand what type of "false positives" and "false negatives" will occur in such testing. For example, in looking for a given gene you might find some abnormality in a given patient. There may be one or two bases that are altered in his gene when compared to the normal gene. Are these mutations and are they necessarily deadly? The difference between a dangerous mutation and a polymorphism—just a harmless genetic variant—is not easily interpreted. Polymorphism will thus appear as a false positive in the genetic testing. The "polymorphous" patient who came in for the testing might thus be unnecessarily worried—and the doctor too, for that matter. As of today there is no foolproof and general way to tell apart a potentially harmful change in the gene from a benign one.

Then there is the "false negative". Finding no abnormality in one gene does not guarantee that the testee is safe. There could be alterations or mutations in regions of the chromosome

other than the candidate gene tested. Several instances are reported where not one but two or three genes act in tandem to produce an effect.

That there is a demand and a market for genetic testing, at least in the US, is clear. An informal poll on 500 Americans found half of them opting for gene testing. It is certain that similar sentiments exist around the world. The feeling among the experts is that as of the moment, the worries regarding gene testing are more substantial than the benefits. The latter,

though they may be much larger one day, are small for one who test positive. The field of gene identification is still evolving. Scientists need to arrive at a consensus on how many genes, which genes and what sequences need to be tested. The methods need to be worked out made more rigorous and definitive. All this requires more work in the research laboratories before foolproof protocols and guidelines can be suggested to the pathologists. The bottom line is that it is too early to offer these services.

DO YOU KNOW?

- Q10. Are all bacteria health hazard?
- Q11. Will all bacteria die in boiling water?

**LIFE SKETCHES OF GENERAL PRESIDENT AND SECTIONAL PRESIDENTS  
92nd INDIAN SCIENCE CONGRESS, AHMEDABAD 2004-2005**

**PROF. N. K. GANGULY**  
**General President**

Prof. N. K. Ganguly did his MBBS from University of Kolkata, MD (Microbiology) from Post Graduate Institute of Medical Education & Research, Chandigarh and obtained D.Sc. (*h.c.*) from Bundelkhand University, Jansi and Chhatrapati Shahu Ji Maharaj University, Kanpur.

Currently, he is Director General, Indian Council of Medical Research, New Delhi. He is also acting Director, National Institute of Biologicals, NOIDA. He was also acting Director, Post Graduate Institute of Medical Education & Research, Chandigarh for the period from 08.12.1999 to 06.03.2000 and 01.10.2003 to 20.12.2003.

Prof. Ganguly has published 683 papers and guided 138 Ph.D. thesis. His major research areas have been tropical diseases cardiovascular diseases and diarrhoeal diseases. His area of specialization is infection and his interests in this area ranges from immunology, biotechnology and public health.

Prof. Ganguly is Fellow, Royal College of Pathologists, London; Royal School of Tropical Medicine, London; International Academy of Cardiovascular Sciences, Canada; Third World Academy of Sciences, Italy; and International Medical Sciences Academy, New Delhi. He is also Fellow of National Academy of Medical Sciences, New Delhi; Indian National Science Academy, New Delhi; National Academy of Sciences, Allahabad; Indian Academy of Sciences, Bangalore.

He was the President of National Academy of Medical Sciences, New Delhi and President, Asian Society of Diarrhoeal Diseases and Nutrition (2000-2003). He is Chairman, Lancefield International Society on Streptococci and Streptococcal Diseases; President, International Society of Health Research (Indian Chapter); President, Academy of Cardiovascular Sciences (Indian Chapter).

He has been Chairman of WHO-SEARO Advisory Committee on Health Research for the last 4 terms. He is Vice-Chairman, Joint Coordinating Board (JCB) for Special Programme for Research and Training in Tropical Diseases (TDR); Joint Indo-US Vaccine Action Programme; Joint Indo-US Maternal & Child Health; and Joint Indo-US STD/AIDS Working Board. He was Chairman, WHO Scientific Working Group on Criteria for Setting Health Research Priorities, WHO SEARO, New Delhi and Co-Chairman, Global Alliance for Vaccines and Immunization (GAVI). He is member, Scientific and Technical Advisory Committee (STAC) of TDR; Special Programme of Research, Development and Research Training

in Human Reproduction; Foundation Council, Global Forum for Health Research, Geneva; UNAIDS Vaccine Advisory Committee; Scientific Board Grand Challenges, Bill & Melinda Gates Foundation; Board of Trustees, International Centre for Diarrhoeal Diseases Research, Bangladesh (ICDDR, B); National Advisory Council, International Centre for Research on Women (ICRW), Delhi; International Advisory Group (IAG), Fogarty International Centre (FIC), National Institutes of Health, Bethesda, Maryland and Drugs for Neglected Diseases (DNDi) Core Group. He was Member of Joint Coordinating Board (JCB) for Special Programme for Research and Training in Tropical Diseases (TDR); Protoboard and Working Group of World Bank; International Advisory Committee, Vaccine Research Centre, National Institutes of Health, Maryland, USA; and Guideline Development Group in updating of the Technical Report on Rheumatic Fever and Rheumatic Heart Disease, WHO, Geneva. He is Chairman, Research Council of Central Drug Research Institute, Lucknow and Centre for Cellular & Molecular Biology, Hyderabad. He is Chairman, Scientific Advisory Committee, Centre for DNA Fingerprinting and Diagnostics, Hyderabad; Tata Memorial Centre, Mumbai and Bose Institute, Kolkata. He is Governing Body member of 22 Indian Institutes. He has been Scientific Advisory Committee member of various research institutes in India. He has participated as Temporary Advisor in 93 WHO meetings till date. He is also Chairman of various committees of Govt. of India like GM Food, Vitamin A, Environmental Health etc.

He had been Chief Editor of PGIMER's Bulletin, Chandigarh and was member, Editorial Board of various National and International Journals. He is Chairman, Editorial Board of

Indian Journal of Medical Research and ICMR Bulletin.

He has won 74 awards. Notable among them are 2004 Norman Alpert Award, Goyal Prize in the area of Applied Science (2002); INSA's Shambu Nath De Memorial Lecture Award, 1993; Dr. Yellapragada SubbaRow Memorial Lecture, 1999; Om Prokash Bhasin Award in Health & Medical Sciences, 1997; Ranbaxy Research Award, 1996; FICCI Awards, 1998-99 and five ICMR awards. He has been selected for the Prof. Niranjana S Dhalla Award for lifetime achievement in Cardiovascular Pharmacology to be awarded in January 2005 by the Indian Pharmacology Society.

**PROF. S. K. SANYAL**  
**President**  
**Section of Agriculture and**  
**Forestry Sciences**

Dr. S. K. Sanyal graduated with Honours in Chemistry from the Presidency College, Calcutta in 1972. He obtained Master's degree in 1974 from the Indian Agricultural Research Institute (IARI), New Delhi in Agricultural Chemistry & Soil Science. Subsequently, he joined the University of Cambridge, England and obtained the Ph. D. degree in Physical Chemistry in the

year 1978. On return from England, Dr. Sanyal served the Presidency College, Calcutta (1978-83) as an Assistant Professor of Chemistry in addition to teaching (as a Guest Lecturer) Soil Science and Agricultural Chemistry at the University of Calcutta (1978 till 2003) and Chemistry at Jadavpur University (1980-81). Dr. Sanyal joined Bidhan Chandra Krishi Viswavidyalaya in 1983 and rose to the position of Professor in Agricultural Chemistry & Soil Science in 1999. In between he spent two years (1989-91) as a Visiting Scientist at the International Rice Research Institute (IRRI), Philippines. Dr. Sanyal has been equally successful in undertaking independent research work since late 1978 and has acted/ has been acting as the Principal Investigator of 17 research schemes. Twenty research scholars have earned their Ph.D. degree under the supervision of Dr. Sanyal. He has published 92 research papers, 10 reviews and 8 book chapters and also co-edited one book. Dr. Sanyal's research interest covers transport processes, chemistry and fertility relationships of soil phosphorus and potassium as plant nutrients, colloid chemistry of soil humic substances, and lately, arsenic dynamics in soil-water-plant systems, in the arsenic affected belt of West Bengal. Dr. Sanyal has obtained several awards and won noted recognitions. He won the 12th International Congress Commemoration Award in Soil Science (1994), Visiting Scientist Fellowship of IRRI (1989), among others. Dr. Sanyal also served as a member of the Quinquennial Review Team for assessing the performance of the Indian Institute of Soil Science (ICAR), Bhopal (1996-97), a member of the ICAR Scientific Panel on Soil, Agronomy and Agroforestry (1996-98) as well as a member of the Editorial Board/ an Associate Editor of the Indian Society of Soil Science (1992-93; 2001-2004), Indian Chemical

Society (1998-1999; 2004-2005), Indian Agriculturist (1984-1990) and several other journals. In recognition of his research contributions, Dr. Sanyal was made the Foundation Fellow of the West Bengal Academy of Science and Technology, Calcutta (1989), Fellow of the Indian Society of Soil Science, New Delhi (2001), and Fellow of the National Academy of Agricultural Sciences, New Delhi (2002). He has been invited to deliver lead lectures at several national and international fora.

**PROF. B. D. JOSHI**

**President**

**Section of Animal, Veterinary and  
Fishery Sciences**

Prof. B. D. Joshi, (b 1947, district Pithoragarh : Uttaranchal) did his B. Sc., M. Sc., and Ph. D. From University of Lucknow. He started his career as Lecturer (1973) in Zoology from Hindu College, Moradabad, shifted to Kumaun University Campus, Almora (1978), joined as Reader & Head (1982) at Dept. of Zoology, Gurukula Kangri Vishwavidyalaya, Hardwar, where he became Professor of Zoology in 1985, at a relatively young age of 37 years. Presently Prof. Joshi is Head, Department of Zoology & Environmental Sciences & Dean, Faculty of Life Sciences. Prof. Joshi is known for his

contributions in the field of Piscine Haemato-Physio-Pathology and eco-biology of river Bhagirathi in the Up-lands of Himalay, besides his new interests on the Asiatic elephant *Elephus maximus*, in the Uttaranchal, Prof. Joshi has contributed much to the discipline of blood physiology, pathology and Trypanosomiasis of freshwater fishes of India. His researches have been widely cited in a number of books. One of the latter researcher has named one species of piscine Trypanosome, in his name, (Ind. J. Parasitol. 1986, 10(2):217).

Prof. Joshi has till now guided 14 Ph.Ds. and 61 M.Sc. dissertations, published 125 research papers in India and abroad, authored & edited six books, organised ten National Symposia, founded the Indian Academy of Environmental Sciences, Hardwar (1986) and Himalayan Journal of Environment & Zoology (1987), a bi-annual research journal which continues to be published for last 17 years and was a co-founder of Association of Animal Haematologists (1990). he also contributed vitally to revive the Zoological Society of India, at Hardwar in December 2001, of which today he is a Vice President. Till now he has participated in 73 national & international conferences in India & abroad. Besides, such personal achievements in academics, Prof. Joshi established P. G. Courses in Microbiology (1984) and Environmental Sciences (1995) and Ph.D. Programs, simultaneously at Gurukula Kangri University, Hardwar. Till now he has completed nine research projects. He has delivered about three dozen scientific radio talks & T.V. interviews. Prof. Joshi is member of about a dozen academic organizations and research journals. In recognition of his active research & academic contributions Prof. Joshi has been honored by a

number of academic organizations viz. : (i) J. S. Dutta Munshi Gold Medal of Z. S., (ii) Zoological Soc. India's Zoology Congress Gold Medal, 2000, (iii) Rashtriya Hindi Sahstrabdi Samman (2000), (iv) Zool. Soc. India Gold Medal (1998). Felicitation Award by WEC-IIEE-IAEWP (1997). (vi) Hindi Sahitya Parished, Delhi award for contributing the science in Hindi (1997), (vii) Fellow, Dr. Henryk Skolimovski Intnti. Centre for Eco-philosophy, IIEE, New Delhi (1995). (viii) Fellow, Zoological Society of India (1995). (ix) Fellow, Indian Ass. of Haematologist (1989). (x) Fellow, Indian Academy of Environmental Science (1987). (xi) Fellow Academy of Ichthyology, India (1982).

**PROF. M. BHARGAVA**

**President**

**Section of Anthropological and Behavioural Sciences (including Archaeology and Psychology & Educational Sciences)**

Dr. Mahesh Bhargava (born 15th Feb. 1947) M. A. (Psy.), M.Ed. and Ph.D. President, Harprasad Bhargava Memorial Educational

Society. All India Praachi Psycho-cultural Research Association, Meerut; Centre for Psychological Testing, Counseling and Management Research Studies, Alwar; Chairman, Harprasad Institute of Behavioural Studies; Vice President, Society for Community Mobilization for Sustainable Development, New Delhi; President, U. P. Chapter of All India Association of Educational Research, Pondicherry; Director, National Psychological Corporation, (largest organization of developing variety of Indian tests); Hony. Director, Samadhan Kendra, Agra and Executive Member of Akhil Bhartiya Brij Kala Kendra, Mathura and All India Bhargava Sabha, New Delhi. He had been the Recorder of Section of Psychological and Educational Sciences of ISCA Kolkata during 1992-1994. He had been the Executive Member of a dozen of Professional Associations, Treasurer and Secretary of Indian Psychological Association, New Delhi and Psycho-linguistic Association of India, Raipur for many years. Still he is associated as life members of about 45 professional organizations. He is the Editor of 'Psycho-lingua' and associated in the Editorial Board of Six reputed Journals of the country. He has published 108 research papers and theoretical articles in various reputed national Journals, ten psychological tests were developed by him, twelve books were reviewed by him in various Journals. He has edited five and contributed 10 books both reference and text books in English and Hindi medium. He has contributed about 30 articles of general nature and also composed about 30 Hindi lyrics. He

has participated in about 140 seminars and conferences and also has the experience of organizing about 25 academic programmes.

**PROF. V. K. SAXENA**

**President**

**Section of Chemical Sciences**

Prof. V. K. Saxena, presently, head of Chemistry Department, Dr. H. S. Gour University, Sagar, M. P. was born on December 01.1946 at Allahabad. He did research on "Chemical Study of Indian Medicinal Plants" and was awarded B. Phil. degree in 1969 from Allahabad University. He continued work on Phytochemical Analysis of Medicinal Plants and was awarded D. Sc. in 1982 from Sagar University, where he had joined as Assistant Professor in 1973, subsequently was appointed Reader in 1984 and Professor in 1986 in the same university. he was appointed Dean, Faculty of Science in 1998 and Head of Department on May 01, 2001.

Dr. Saxena has strengthened research at the natural products laboratory of Dr. H. S. Gour

University, SAGAR, isolating, purifying and identifying flavonoidal, steroidal, triterpenoidal, coumarins, lactones and other types of biologically active compounds from indigenous medicinal plants. A recipient of Cooper Memorial Medal in 1985, and Prof. K. A. Thaker award in 1992 by the Institution of Chemists, Kolkata, Prof. Saxena was awarded by M. P. Govt., the prestigious Dr. Kailash Nath Katju award (*Jointly*) in 1994 by M. P. Council of Science and Technology for his significant contribution in science.

In addition to being author/co-author of a few books, Prof. Saxena has published about 190 research papers and has supervised the research work of 36 Ph. D. students. Prof. Saxena has been Sectional President-organic, of Indian Council of Chemists (1992-1993), Vice-President, Indian Council of Chemists, and President, Sagar branch of Indian Chemical Society. He is in the editorial board of few journals, and is keenly associated with academic organisations. He has been invited speaker at various International conferences and has received a number of academic and professional recognitions for his contribution, by way of his co-option/nomination as external member in the Board of Studies and Research Degree Committees of various Universities in the country., Prof. Saxena is Fellow of Institution of Chemists, Kolkata, Life Member of a number of societies/academics. He is coordinator of M.P. council of science and technology cell and recently coordinated XIX M.P. Young Scientist Congress 2004.

**PROF. B. SATYANARAYANA**  
**President**  
**Section of Earth System Sciences**

Served Osmania University, Hyderabad as a Member of the Faculty in various cadres for a period of 38 years, teaching Under Graduate and Post Graduate students. He was responsible for establishing the Dept. of Geology at Post Graduate College of Science, one of the University Colleges of Osmania University. Guided many Research Scholars for their Doctoral Degrees in the Fields of Petrology, Geochemistry, Engineering Geology and Ground Water Geology. Research Publications numbering 39 are in the National and International Journals. Travelled extensively in and outside India on Professional assignments. He was recipient of "Best Teacher" Award. Authored 4 text books for Degree students of B. R. Ambedkar Open University, A. P. and also translated them into regional language i.e., Telugu. Edited 2 lab manuals for the same University and one text book for A. P. Telugu Akademy. During the period of 38 years of service he held several Academic and Administrative positions in the University such as Head, Department of Geology, Chairman

Board of Studies, Principal of one of the University Colleges, Member, Academic Senate of Osmania University for a period of 5 years. Attended several symposia, seminars, workshops and also organized them. He is a Member/Fellow of several Academic Bodies and Scientific Organisations. Was a Member of Board of Studies of 7 Universities in and outside Andhra Pradesh, and at present Member for 2 Universities. Served as the Treasurer of "Andhra Pradesh Academy of Sciences" for 2 consecutive terms of 2 years each. He is the Hon. Treasurer of 'Indian Academy of Geoscience'. His association with the Indian Science Congress Association (ISCA) dates back to 1966 and in 1998 was fortunately nominated as the Organising Secretary, by the Vice-Chancellor of Osmania University for the 85<sup>th</sup> Science Congress of ISCA, which was held at Osmania University, Hyderabad. He served ISCA as Member of the Executive Committee for 4 successive years i.e. 1997-2001. In 2001 he was elected as the General Secretary (Outstation) for a period of 3 years.

**PROF. (DR.) T. SINGH KAMAL**  
**President**  
**Section of Engineering Sciences**

Dr. Tara Singh Kamal was born at Dhanaula, District Sangrur in the year 1941. After the schooling at Dhanaula, he studied at SD College,

Barnala and Government College, Kudhiana. He graduated in Electronic and Communication Engineering and obtained his masters degree in Communication Systems, both from University of Roorkee and got Gold Medal by standing first in M. E. : He got his Ph. D. degree from Punjab University. He started teaching in the department of E & E C in Punjab Engineering College, Chandigarh in January 1966 and retired as Professor in E & E C in June 1999 from the same college. He held various prestigious positions such as Dean (Research and Technology Transfer). He retired as Professor and Head of Electronics & Comm. at Sant Longowal Institute of Engg. & Tech. LONGOWAL Distt Sangrur (Punjab). He has guided seven research scholars, who have obtained Ph. D. degree. Five more candidates are in the writing stage of their Ph. D. thesis. Five more are registered with him. He is widely travelled teacher and has published & presented more than 145 papers in the internationals and national journal and conferences. He is associated with the Institutaion of Engineers since 1972 and was elected to the State Center Committee of Punjab, Haryana and Himachal State Center in 1980. He was elected Honorary Secretary of the Center in March 1989 and organized various function at the state and national level such as 13th Engineering Congress at Chandigarh in April 1999. He was Chairman of Punjab and Chandigarh State Center of the I.E.I. the term of 1999-2001. He was the Vice-President of The Institution of Engineers(I) for the term 2001-2002.

He has been awarded life time award for his contribution of Electronics & Communication Engg. He has been awarded Sir Thomas Ward award for best research paper in Election & Telecommunication Journal of I.E.I. He was inducted into national council as member in the

year 1991. He remained Chairman of Electronics and Telecommunication Engineering Division for two terms, each of two years. He is life fellow of IE(I), IETE, member ISTE and Senior Member of IEEE (USA). He is associated with ISCA since 1979. He was Recorder of Engg. Sciences Section for two sessions i.e. 1984 Session at LUCKNOW 1985 Session at Delhi.

ACU Development fellow and conducted excellent research on fish steroids. Her research has enriched the understanding of the mechanism of action of xenobiotics at molecular levels in initiating the synthetic, disruptive, apoptotic or growth signals in various types of animal cells. She immobilized goat brain AChE and developed a dipstick like AChE Biosensor (in a DBT-funded project and also patented) with an efficiency of detecting very low concentrations of anticholinesterase agents. A multifunctional bioactive protein, C-reactive protein which has great evolutionary significance, has been purified from the haemolymph of the giant land snail, *Achatina fulica* by her group. With the financial assistance of UGC, CSIR, DST, DBT and ICAR she has established a well equipped Environmental Toxicology Laboratory at Visva Bharati.

**PROF. S. BHATTACHARYA**  
**President**  
**Section of Environmental Sciences**

Shelley Bhattacharya, (FNASc., FAScT) born on May 13, 1946 is a Professor of Zoology and Coordinator of the DSA Programme at Visva Bharati. She is also the Course Coordinator for the DBT funded MSc Biotechnology taught at the Centre for Biotechnology, Visva Bharati, a Central University, Santiniketan, West Bengal. She is noted for her pioneering work in the area of Environmental Toxicology. She was a DAAD Fellow in 1976 and 1983 in the Department of Environmental Toxicology at the University of Kiel, Germany, trained in Environmental Toxicology and also developed a highly viable immobilized enzyme product of *Electrophorus electricus* acetylcholinesterase (AChE). She visited the Department of Animal and Plant Sciences, Sheffield University, UK in 1990 as a

**PROF. K. K. AGARWAL**  
**President**  
**Section of Information and Communication Science & Technology**  
**(including Computer Sciences)**

Prof. K. K. Aggarwal, graduated in Electronics and Communication Engineering from Punjab University and obtained Masters degree in Advanced Electronics from Kurukshetra

University securing First position in both. Later, he did his Ph. D. in Reliability Evaluation and Optimization also from Kurukshetra University. In 1975, he rose to the level of Professor at an age of 27. He has been the Chairman of the Department of Electronics, Communication & Computer Engineering at Regional Engineering College, Kurukshetra for a long time and worked as Dean (Academic) for that institution. He was also Director, "Centre for Excellence for Manpower Development in Reliability Engineering" established by the Ministry of Human Resource Development at that College. Before taking up the present assignment as Vice-Chancellor, Guru Govind Singh Indraprastha University, Delhi, Prof. Aggarwal was Pro Vice-Chancellor, Guru Jambheshwar University (Technical University of Haryana), Hisar for a period of three years. He is President of the Institution of Electronics and Telecommunication Engineers (IETE). Prof. Aggarwal has extensively worked in various fields of Electronics and Computer Engineering. Has published more than 200 papers in the reputed journals—more than 100 of these in international journals. He has been invited to deliver lectures in several Universities in India and abroad.

Prof. Aggarwal did not confine his contribution to the academic field alone and instead made a very strong impact in the industrial world. He has been widely consulted by the industry, most-notable being his contribution towards the Reliability Analysis of PSLV (Polar Satellite Launch Vehicle).

Prof. Aggarwal has written a few books and many of his articles have appeared in several books published by IEEE of USA. A couple of years ago, he authored a book on Reliability

Engineering which is published by Kluwer Academic, Netherland/USA/UK. His latest book on Software Engineering was published in 2001. Prof. Aggarwal was honoured by the Reliability Society of IEEE, USA for his services as Guest Editor for the special issue on "State of Reliability Effort of the Indian Sub-Continent". He was conferred L.C. Verman Award by the Institute of Electronics and Tele-Communication Engineers. He was also awarded Life Time Achievement Medal by the India International Friendship Society. The Broadcast Engineering Society of India honoured him by conferring Honorary Fellowship on him in February, 2001.

#### **DR. N. KHARE**

**President**

**Section of Material Sciences**

Dr. Neeraj Khare is a Scientist in Superconductivity device group, National Physical Laboratory, New Delhi. Born on August 16, 1958, Dr. Khare received his B.Sc. and M.Sc. degrees from Allahabad University and PhD degree in Physics from Banaras Hindu University, Varanasi. He was a Lecturer at Department of Physics and Electronics, Avadh University, Faizabad from Oct 1987 to April

1988 and on PostDoc position at Department of Chemical Physics Application, Polytechnic of Milan, Italy from May 1988 to Nov. 1988. He joined National Physical Laboratory in Dec. 1988. He was on visiting Scientist positions at Department of Physics and Applied Physics, University of Strathclyde, Glasgow, UK and at IBM, T. J. Watson Research Center, Yorktown Heights, NY, USA. Dr. Khare is internationally known for his research contributions in understanding the role of grain boundaries in high- $T_c$  superconductors, colossal magnetoresistance materials and borocarbide superconductors. He has published over 90 research papers in referred journals and books. He has extensively studied tunneling and quantum interference effect in high- $T_c$  superconductors and developed the first high- $T_c$  SQUID in the country which operates at 77K and is capable of sensing very weak magnetic field. He has demonstrated the potentiality of the device in basic and applied research studies. His work on the study of symmetry of order parameter using high- $T_c$  artificial junction provides a strong evidence that symmetry of order parameter is d-wave or a mixture of s- and d- wave instead of a pure s-wave. On borocarbide superconductors, he has established that grain boundaries behave as Josephson Junctions. His research highlights on magnetoresistive oxides include carrier transport mechanisms, origin and reduction of conduction noise and destabilization of charge ordering. Dr. Khare has been honored with many awards and distinctions for his Scientific work and contributions. He has received Indian Science Congress Association Young Scientist award (1983), Merit Scroll of the A. N. Chatterjee Memorial Medal by Indian Cryogenics Council for the best work in the year 1990 on High- $T_c$

SQUIDs, Council of Scientific and Industrial Research (CSIR) Young Scientist award, Material Research Society of India Medal award and Rajib Goyal prize in the area of Physics. He has edited a Handbook on High-Temperature Superconductor Electronics published by Marcel Dekker, USA. He takes lot of interest in popularizing Science for the general public by writing popular Science articles in Hindi and by giving popular Science lectures in Schools and Universities. He has received Council of Scientific and Industrial Research (CSIR) "Vigyan Chinta Lekh Mala" award for his popular Scientific articles in Hindi.

**PROF. M. A. PATHAN**  
**President**  
**Section of Mathematical Sciences**  
**(including Statistics)**

Prof. M. A. Pathan was born on 12, Dec. 1941 at Kota (Raj). After graduating from Government college, Kota in 1961, he continued his studies at University of Rajasthan, Jaipur and received the Ph.D. degree in 1968. He joined the Department of Mathematics, Aligarh Muslim University in 1968 as a Lecturer and became Professor of Mathematics in 1993. He has served as Chairman of the Department of

Mathematics and Coordinator of D.S.A. (Department of Special Assistance) of U.G.C. from 1999 to 2002. He has held Faculty positions at University of Dares Salaam, Tanzania and Alfateh University, Tripoli, Libya. He has been President of the Indian Mathematical Society and is President of Bharat Ganit Parisad and General Secretary of the Society for Special Functions and their Applications. He has supervised 12 Ph.D.'s in Integral operators, Lie theory and Special functions. In addition to over 105 mathematical research papers, Professor Pathan has edited a number of Proceedings of international conferences. He has delivered the Thirteenth 'Ramanujan Memorial Award Lecture' in 2003 by Indian Mathematical Society. He has visited over 30 countries. His many contributions to Mathematics include collaborated work on "Lie algebra and Special functions" at university of Western Ontario, London, Canada. He has been member of Academic Board of Al-Ghurair University, Dubai. Prof. M. A. Pathan is actively associated, in an Editorial capacity, with a number of scientific journals. He is also a reviewer for Mathematical Reviews of American Mathematical Society.

He has published several articles on popular Science and History of Mathematics in English and Hindi. He has participated and delivered about a score of video lectures for the countrywide classroom project of U.G.C. He has worked as a principal investigator of a major research project of C.S.I.R. on Lie theory and Special functions. In addition to four books, he is a co-author of NCERT and IGNOU books on Mathematics. He has been member of Syllabi Revision Committee of Union Public Service Commission (UPSC), State Public Service Commission, U.P. and NCERT.

Prof. M. A. Pathan has made contributions in several areas of Mathematics. He has been able to develop the ideas further to generalize various Remanujan's theorems on hypergeometric series. His earlier work was on Integral operators, Fractional integrals and Special functions. Afterwards he started working on Lie Theory and Special functions and their applications. He developed a theory of representation of Lie groups and Special functions of Mathematical Physics by introducing new ideas and techniques. He is especially interested in the interplay of these two.

**DR. P. K. BANERJEE**  
**President**  
**Section of Medical Sciences**  
**(including Physiology)**

Dr. Pratul Kumar Banerjee, Scientist 'G', is the Director, Defence Institute of Physiology and Allied Science (DIPAS), DRDO, Ministry of Defence, Delhi. Born on 03 January 1947 in Jangipur, West Bengal, Dr. Banerjee did his M.Sc. and Ph.D. in Human Physiology from University College of Science, Calcutta University. He joined Defence Science Service in 1975 as Senior Scientific Officer (Gr. 1) and was posted at Institute of Aerospace Medicine

(IAM), Bangalore, where his area of work was research and training in Aerospace Environmental Physiology. In 1984, he was elevated to the position of Professor and Head, Physiology Deptt, and carried out several research projects under Aeronautical Research & Development Board (Human Engineering Panel) and Armed Forces Medical Research Council. He supervised 10 MD (Aerospace Medicine) dissertation work during the period.

In 1996, he assumed the duties of Additional Director in DIPAS, Delhi, and took over as its Director in April 2002. His research work has always been with the central theme of physiological understanding of human stress response in difficult and extreme environments and in trying out means of protection and promotion of performance efficiency of human operators. He has been honored with several awards including Science Day Commendation Award by Scientific Advisor to Raksha Mantri, Prof. S. R. Maitra Oration, and R. S. Sinha Memorial Oration Medal, by Physiological Society of India, and Millennium Oration Award by Vidyasagar University and Loescheke Research Prize by APPI. His association with Science Congress started in 1970 as a student member and there after as a Member of the Scientific Council on two occasions. His experience and service in the discipline brought him recognitions and honours with several important positions currently held, viz. Chairman, Human Physiology and Medicine Research Panel, National Center for Antarctic and Ocean Research, DOD, Chairman, RMC, TIFAC CORE on Ergonomics and Human factor Engineering, NITIE, Member Secretary, Life Science Research Board (Environmental Physiology & Behavior Panel), DRDO and Vice President, Physiological Society of India.

**PROF. R. V. HOSUR**

**President**

**Section of New Biology (including Biochemistry, Biophysics & Molecular Biology and Biotechnology)**

Prof. R. V. Hosur, was born on 16<sup>th</sup> May 1953 at Dharwad, in the state of Karnataka. He graduated in Chemistry from Karnatak University in 1971. He obtained his Masters in Chemistry from Indian Institute of Technology, Bombay, in 1973 and then joined the Tata Institute of Fundamental Research (TIFR). Working under the supervision of Prof. G. Govil, he obtained the Ph. D. degree from Mumbai University in 1979. Then he was appointed at TIFR as Research Associate and after two years he proceeded on study leave to ETH-Zurich, Switzerland, for post doctoral research in the laboratory of Professor Kurt Wuthrich. He returned to TIFR in 1983. Currently he is Professor and Chairperson of the Department of Chemical Sciences at TIFR. The major area of research of Prof. R. V. Hosur is in nuclear magnetic resonance (NMR) and its application to structure, dynamics and interaction of biological macromolecules. He has worked on topics such as, lipids and membrane organization, DNA duplexes, triplexes with

specific ligands, development of NMR pulse sequences, development of softwares for NMR data analysis, etc. He has many discoveries to his credit and is internationally recognized. Professor Hosur has won many laurels such as INSA young scientist award, Bruker young scientist award, B. M. Birla award, Professor B. D. Tilak Lecture award, Professor R. K. Asundi Memorial Lecture Award, Dr. Jagdish Shankar Memorial Lecture Award, to name a few. He is a Fellow of all the three major Science Academies in the country, namely, INSA, New Delhi, IAS, Bangalore, and NAS, Allahabad. He is currently the President of the Indian Biophysical Society (IBS). He has been the Secretary of the same Society earlier and also of the National Magnetic Resonance Society (NMRS). Professor Hosur has been invited to speak at many international conferences in India and abroad.

**PROF. R. S. SIROHI**  
**President**  
**Section of Physical Sciences**

Dr. R. S. Sirohi completed his Master's in Physics in 1964 from Agra University, Post M.Sc. in Applied Optics and Ph. D. in Physics both from Indian Institute of Technology, Delhi, in 1965 and 1970 respectively. He worked as

Assistant Professor in Mechanical Engineering Department during 1971-1979 and Professor in the Physics Department at Indian Institute of Technology, Madras. Currently, he is the Director, Indian Institute of Technology, Delhi. He had several assignments abroad like Humboldt Fellow at Physikalische-Technische Bundesanstalt Braunschweig, Germany; Senior Research Associate at Case Western Reserve University Cleveland, USA; Associate Professor at Rose Hulman Institute of Technology Terre Haute, USA; ICTP Consultant to Institute of Advanced Studies, University of Malaya, Malaysia and Visiting Professor at the National University of Singapore, Singapore. He was invited as JSPS Fellow and JITA Fellow to Japan. Professor Sirohi is fellow of many prestigious academies and societies. Dr. Sirohi was the President of Optical Society of India during 1994-1996 and currently is the President of the Instruments Society of India. He is on the International Advisory Board of the *Journal of Modern Optics*, UK and on the editorial board of the *Journal of Optics* (India), *Optik* (Germany) and *Indian Journal of Pure & Applied Physics*. He is also Associate Editor of the Journal 'Optical Engineering' and Asian Editor of Journal of Holography and Speckle. He is Chairman, Board of Governors, Netaji Subash Institute of Technology, New Delhi; Chairman, Governing Council, National Council of Science Museums and member on the boards of several institutes and member of a large number of committees.

Dr. Sirohi is also the founder member of India Laser Association, was Chairman for SPIE-INDIA Chapter, which he established with co-operation from SPIE in 1995 at Indian

Institute of Technology, Madras. Dr. Sirohi was awarded the prestigious Humboldt Research Award by Alexander von Humboldt Foundation Bonn, Germany for his outstanding contributions to Optical Metrology and was chosen by the International Commission of Optics (ICO) the 1995 Galilei Galileo Award. A recipient of 13th Khwarizmi International Award from Iranian Research Organisation for Science and Technology, Iran for his work on Speckle Metrology, UNESCO's Albert Einstein Silver Medal for his fundamental work, also received Prof. Y. T. Thathachari Prestigious Research Award in Science 2001, Giant's Gaurav Samman 2001 by Giants International and NAFEN's Annual Excellence Corporate Awards, 2001. The Optical Society of India awarded him the Amita De award for his contribution to optics. He is also the recipient of Pt. Jawaharlal Nehru National Award in Engineering and Technology by the Council of Science and Technology, Madhya Pradesh. He has also been awarded the Hari Om Trust Award entitled "Sir C. V. Raman Award : Physical Sciences" for the year 2002. He has also been honoured with Padma Shri by the Govt. of India. His published work includes 229 papers in national and international journals 58 papers in conferences proceedings in addition to thirteen authored/ co-authored/ edited books including five milestones for SPIE. Dr. Sirohi who participated in numerous international and national conferences and presented over 137 papers has also been Principal Co-ordinator for 24 projects sponsored by Government Funding Agencies and Industries.

**PROF. R. C. RAJAK**

**President**

**Section of Plant Sciences**

Prof. Ramcharan Rajak born on April 4th 1942 at Jabalpur obtained his Master's degree in Botany from University of Jabalpur in 1966. He was conferred Ph.D. degree in Botany (Mycology and Plant Pathology) from University of Jabalpur in 1972. He joined the Department of Biological Science at University of Jabalpur in 1982 and was appointed as Professor in 1989. He headed the Department of Biological Science from 1998 to 2001 and superannuated in April 2004. After superannuation he has been appointed as Director, Institute of Life Sciences, Bundelkhand University Jhansi, since 1st May 2004. He has been actively engaged in researches in various aspects of mycology and contributed significantly in understanding the diversity of mycoflora of Madhyapradesh and described a large number of taxa including several new to science. The mechanism of keratinolysis by non-dermato-phytic keratinolytic fungi has been reported for the first time. He developed cost effective, ecofriendly

mycopenicides based on indigenous fungal entomopathogens for Biological management of insects pests of agricultural crops and forest plants including teak, gram, soyabean etc. His another notable contribution has been the development of database of fifty three edible tribal mushrooms of Madhyapradesh and development of technology for large scale cultivation of two edible tribal mushrooms for economy generation in tribal region using cheap agro wastes. He established a strong school of applied mycology in the Department of Biological Science at R. D. University Jabalpur which has a viable repository of germplasm of fungi of significance, including entomopathogenic, kerationphilic, weed pathogenic fungi, edible mushrooms, Phosphate solubilizing and Biocontrol fungi.

Prof. Rajak has successfully completed fourteen research projects. He has around 200 publications including original articles and

reviews in national and international journals, edited six books and successfully supervised thirty seven Ph. D. students and twenty five M.Sc./ M. Phil. Dissertations. He has attended several National and International symposia/ conferences and delivered invited lectures and keynote addresses, chaired sessions and also organised National and International symposia. He was councillor and president of Central chapter of Indian Phytopathological Society, Recorder, Botany Section, Indian Science Congress during 1997-98. He is a fellow of Society of Mycology and Plant pathology, India, Plant Pathological Society of India, Indian Botanical Society and editor of Journal of Tropical Forestry. He is founder President of Society for Basic and Applied Mycology with its headquarter at Jabalpur. For his contribution in Mycology, he was awarded Shome Memorial lecture by the Mycological Society of India.

## KNOW THY INSTITUTIONS



### AGARKAR RESEARCH INSTITUTE, PUNE

The Institute, founded in 1946 as the Maharashtra Association for the Cultivation of Science Research Institute, was renamed in 1992 as the Agarkar Research Institute (ARI) in honour and memory of the Founder-Director, the late Professor Dr. Shankar Puroshottam Agarkar. The ARI is an autonomous research institution, fully funded by the Department of Science and Technology of the Government of India, since 1966. It operates under the overall umbrella of the Maharashtra Association for the Cultivation of Science (MACS).

The research activities of the Institute are conducted in three major disciplines of microbial, plant and animal sciences. The Institute for the research programme during 10th Five Year Plan identified thrust areas, which can be broadly grouped into the following areas : Crop Improvement, Microbial Technology, Biodiversity, Natural Product Chemistry, Human Nutrition, Development Biology and Palaeobiology. Molecular Biology and Biochemistry have become an important component of many research projects of the Institute.

## CROP IMPROVEMENT

ARI is one of the leading Centers of ICAR for implementing All India Coordinated Research Projects on Wheat, Soybean and Grapes.

**(a) Wheat**—The commercial and technological properties of Indian durum wheats were assessed. The studies on identification of molecular markers linked to quality traits like grain weight, carotene content and gluten strength have been ongoing. Since leaf and stem rusts are the major diseases of wheat, work on molecular markers linked to rust resistance genes is initiated.

**(b) Soybean**—It is often called as wonder crop, as it is the cheapest and richest source of vegetable protein with its nutritionally good seed oil. The main objectives of this center are : (i) to develop high yielding varieties with early midlate maturity, high oil content, better seed quality and seed germination, resistance to diseases, pests and pod shattering habit, (ii) to develop production technology for maximization of yield, (iii) to produce sufficient quantities of nucleus and breeder seed of MACS varieties for supplying to seed multiplying agencies and (iv) transfer of improved technology to farmers' fields.

**(c) Grape**—Work on induction of downy mildew resistance in commercially cultivated grapes is ongoing. The project also involves the assessment of genetic diversity in wild grape germplasm.

## MICROBIAL TECHNOLOGY

It is now widely recongnized that synthesis of monodisperse nanoparticles by environment friendly technique is a challenging area in the

newly emerging field of nanotechnology. ARI has pioneered a biological route for the synthesis of semiconductor nanoparticles and has successfully demonstrated the utility of the synthesized materials in functional electronic devices. A logical extension of this work is development of methods for biological synthesis of transition metal nanoparticles, viz gold and silver.

## BIODIVERSITY

Conservation of biodiversity has been an important issue in the environment strategy of India. Conservation of wild forest resources of direct use value consumptive value and existence value is on the top priority among them. In view of importance of conservation, groups like under exploited medicinal plants and endemic rare specis are being evaluated under the project collection, conservation and multiplication of wild resources. Diversity assesment is being carried out using exomorphic characters as well as chemical and DNA markers. Bioprospecting of natural resources is an emerging area of importance and plants of nutraceutical importance are being evaluted under this programme. First hand data on propagation and multiplication of species of high use values and antioxidant capacities and prebiotic properties of wild foods are expected outcome of these projects.

## NATURAL PRODUCT CHEMISTRY

Standardization and assesment of quality of medicinal plant is a difficult task due to their complex nature. In standardization protocol, seasonal variations in active constituents of crude drugs is an important parameter. Plant materials and herbal remedies derived from them represent

a substantial proportion of global drug market and in this respect it is necessary to follow internationally recognized guidelines for their quality assessment. In view of this, it is essential to develop pharmacopoeial standards of materials used in Indian system of medicine and their formulations. Pre-clinical pharmacological investigations using suitable animal systems to evaluate medico-botanical resources are also a need of the day to understand mechanism of action, their limitations and probable application as medicine.

### **HUMAN NUTRITION**

Studies are done on secular trend in growth, data on maternal factors and child health collected on adolescent rural mothers were analysed to see how maternal education affects the nutritional status of their children. Considering the high prevalence of cataract in Indians, the study of influence of micronutrient deficiencies in cataract was undertaken. With the increasing knowledge about antioxidant potential of many micronutrients such as zinc and vitamin C, their role in oxidative stress related cardio-vascular health disorders have been postulated.

### **DEVELOPMENTAL BIOLOGY**

Embryonic cells continuously interact with

one another and with extracellular matrices during morphogenesis and pattern formation. These interactions are through direct physical contacts and through diffusible signaling molecules that act in an autocrine and paracrine fashion. In the laboratory, the role of insulin, activin, fibroblast growth factor and Bmicroseminoprotein-related molecules in cell-cell signaling during early vertebrate morphogenesis is being studied.

### **PALAEOBIOLOGY & PALAEOCLIMATE**

Phylogenetic studies on the fossil plants from the Deccan intertropical beds of India and its impact on late Mesozoic environment is studied.

During this year, 43 in-house projects and 35 sponsored projects were undertaken. Notable among the new projects are NMITLI project on Biotechnology for Leather Processing, Development of Ayurveda Based Plant Derived Anti-Arthritides Formulation and an Industry funded project on nanotechnology. The Institute filed new patent applications mostly dealing with microbiology.

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## Conferences / Meetings / Symposia

Date	Topic	Contact
21-24 January 2005	1st International Weed Science seminar on Innovative Approaches for Eco-safety Weed Management Mohanpur	<b>Dr R. K. Ghosh.</b> Dept. of Agronomy Faculty of Agriculture, BCKV, Mohanpur-741252, Nadia, W.B. Email:rkgbckv@yahoo.com/ rkgbckv@redffmal.com,
3-4 February 2005	National Symposium on Biodiversity & Inset Pest Management, Chennai	The Entomology Research Institute, Lyola College, Chennai, e-mail:eri-lc@hotmail.com
9-1 February 2005	International Conference on Costal Hazards, Thanjavur	<b>Prof. G. V. Rajamaniekam</b> Department of Disaster Management, Sastra Deemed University Thanjavur-613402 Email:vrajamanickam@yahoo.com
11-12 February	<b>Seminar on Water 2005 Vision for 21st Century,</b> Kolkata	Federation Hall Society 294/2/1, Acharya Prafulla Chandra Road, Kolkata-700 009
1-3 March 2005	Indo-Australian Conference on Biotechnology in Infections Diseases, Manipal	<b>Prof. K. Satyamoorthy</b> Department of Biotechnology, Kasturba Medical College, Manipal 576104 Email : dbt@mahe.manipal.edu
16-18 May 2005	11th International Conference on Modelling, Monitoring & management of air pollution Cardova, Sapin	Rachel Green, Senior Conference Coordinator, Air polluton 2005 Wessex Institute of Technology Ashurstlodge, Ashurst, Sought Hoampton SO 40 7AA U.K. Email:rgreen@wesses.ac.uk Website.www.essex.ac.uk

Date	Topic	Contact
3-4 June 2005	Fourth Biennial Conference on Ecology & Human Wee Being, Mumbai	The Indian Society for Ecological Economics Institute of Economic Growth, Delhi-110007. e-mail:vrajendran@mepcoeng.ac.in
13-15 July 2005	International Conference on Nanomaterials Sivkasi	Mepco Schlenk Engine- College, Sivkasi, Mepco Engineering College (PO) 626005. T.N. e-mail vrajendran@mepcoeng.ac.in
11-13 April 2005	3rd Annual Symposium on Origin and Development of Vertebrate Traitres, Kobe, Japan	Secretariat, Riken Center for Development Biology (CDB) 2-2-3 Minatojima Minamimachi, Chou-ku, Kobe, 6500047, Japan e-mail:sympo2005@cdb.riken.jp

### ANSWERSTO "DO YOU KNOW?"

- A 1. It appears that all people alive today can be traced to one 'Eve', an African woman who lived about 140,000 years ago.
- A 2. One reason is that it does not contain grain boundaries, inclusions etc. which scatter light.
- A 3. The frequency decreases with increasing weight. Thus the largest mammal, the hump back whale, has the lowest heart rate.
- A 4. Yes, About 100 tons.
- A 5. Yes, the brain structure also suggests this.
- A 6. No, in rare cases the heart can be located in the right side.
- A 7. Carbon.
- A 8. Yes.
- A 9. No, it is a mammal.
- A10. No.
- A11. No-some can survive even boiling.

## S & T ACROSS THE WORLD

### EU—INDIA WIND ENERGY NETWORK

With over 2600 MW of installed wind power capacity, a robust growth rate and supporting government policies, wind energy seems to be blowing in right direction in India. Further, recently approved “EU—India Wind Energy Network (EIWEN)” project will help it gather speed. The network, co-funded by the European Commission, has been established under the EU-India Economic Cross Cultural Programme and is being implemented by a consortium comprising CII, ECN (Netherlands) EWEA (Belgium), Rise National Laboratory (Denmark), India Wind Turbines Manufacturers Association and Centre for Wind Energy Technology in India. The main object of 36 month project is to facilitate entrepreneurial partnerships among wind energy actors in India and Europe. The project offers exciting opportunities to promote durable collaboration between the Indian wind industry and European counterparts. A help desk is proposed to be created in CII to ensure smooth and efficient dissemination of data/information gathered through the project to the industry, financial institutions and technical/research centres.

*(CII Communique, July 2004)*

### OBSERVATION OF EARTH FROM SPACE

Indian Space Research Organisation (ISRO) and the US National Oceanic and Atmospheric Administration (NOAA) announced recently that India and United States intend to work together

on the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) which is engaged in remote sensing from a polar orbit. Expected launch of NPOESS is in the year 2009. NPOESS will provide rapid distribution of global and regional environmental imagery, meteorological, climatic, terrestrial, oceanic and solar-geophysical data for use by the international community. Data from this system is expected to help in the timely prediction of cyclones, support disaster management efforts and benefit the development and management of agriculture, fisheries, maritime industries and other sectors.

*(Chemical Weekly, June 29, 2004)*

### ISRO'S TELEMEDICINE NETWORK

Launch of the operational phase of Karnataka Telemedicine Project and the recent inauguration of Telemedicine projects in West Bengal and the North East gives further fillip to ISRO's telemedicine network. Telemedicine helps to connect remote real hospitals/health centres to super specialty hospitals located in the cities and helps patients in remote and rural areas to avail timely consultation from specialist doctors without the ordeal of travelling. The system consists of customized medical software integrated with computer hardware along with medical diagnostic instruments connected to VSAT (very small aperture terminal) at each location. In the past three years, ISRO's network has expanded to connect 45 remote and rural hospitals and 15 super specialty hospitals. The remote/rural nodes include the offshore islands of Andaman & Nicobar and Lakshadweep, the mountainous and hilly regions of Jammu & Kashmir including Kargil & Leh, Medical

College hospitals and some of the rural/distict hospitals in Orissa and some in he mainland states. In West Bengal, besides earlier connectivity between the districts hospitals and Bankura and Siliguri with Asia Heart Formation, Kolkata and Naryana Hrudayalaya, Bangalore, other recent connections are district hospitals at Krishna Nagar, Malda and Balurghat with super specially hospitals Sri Ramakrishna Seva Prathistan Hospital and SSKM hospital in Kolkata besides others North Eastern States.

*(Space India, Jan-Mar., 2004)*

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### **NANO SILICON**

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The tiny science on nanotechnology could give a big boost to cancer patients undergoing tumor treatment. BrachySil by biotech firm pSivida, is a silicon-based nanoscale system that takes drugs direct to the tumour site. Silicon structure carries and electrical current, is porous and adaptable to manging release of right amount of drug when needed. Biosilicon material is said to be cheap to make, biodegradable and safe to administer. Silican can also be very porous at that tiny scale. The pores are typically about 10 atoms across and can be loaded with drugs, peptides, genes, proteins, radionuclides and other therapeutics or vaccines. BrachySil is made by concentrating phosphorus in the silicon and putting it in a reactor. This creates the radioactive isotope phosphorus-32, which has a long half-life of 14 days, much longer than other radionuclides currently used, which often break down after just 60 hours. So far, lab tests have

been bery successful, and the next phase of human testing in Singapore on primary liver tumour patients is expected to yield results by September or October, 2004. Singapore has one of the highest rates of liver cancer in the world.

*(BBC News, June 18, 2004)*

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### **BUILDINGS AT RISK**

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Even though historic buildings and monuments may have stood for a couple of thousand years, they could be badly affected by a change in patterns of wind, rainfall and solar radiation, as observed by Britain's University of East Anglia. Italian researcher Cristine Sabbioni opines that sand storms caused by desertification could lead to the erosion of stones used to build the ancient temples and historic places of southern Italy. In view of the above, European experts are putting together a "Noah's Ark" list of famous and historic buildings that could be at risk from climate change. The three-year scheme backed by 1.2 million euros in funds from the European Commission, is being coordinated by the Institute for Sciences of the Atmosphere and Climate at the National Research Council in Bologna, Italy. Researchers from ten countries will set up a number of test sites to assess the risk of climate change on culture heritage. They will subsequently draw up a "Vulnerability Atlas" to indicate the areas which could be at threat, for necessary possible remedial measures.

*(PTI Science Services, July 16-31, 2004)*