

## Defence models magnetise students

By Niharika

The 99th Indian Science Congress was a memorable experience for thousands of school and college students who thronged the exhibition ground to see various models of missiles and technology demonstrations. The DRDO exhibition at this mega event has been a big hit.

For Puja Pende, a student of Vidya Pratishthan at Baramati in Maharashtra it was like a dream came true. "Pictures of Agni, Prithvi and other missiles were familiar to me, but seeing their life-size models was a different experience. I feel proud when I see our defence research projects", she said. The

exhibition presents science and technologies in strategic sector for national security and it is exciting for young, creative minds with scientific temper. DRDO scientists from over 25 laboratories are present for interactions with visitors, especially students.

A science student was overwhelmed after seeing the radars. He said, "I want to pursue a career in guidance technologies like radar in relation to their military application and I am keen in joining the DRDO. I am sure one day I will." Not only for students, the DRDO exhibition also caught the fascination of their parents and teachers. Chief Controller for Life

Sciences and International Cooperation at DRDO Dr W Selvamurthy said DRDO is doing a number of activities and the exhibition is helpful for visitors in understanding the activities of the defence Institutes. "Nearly 85 percent of NBC defence inventory held by the Indian armed forces has been developed by DRDO. It has developed the interceptor missile that allowed India to join an elite club of five nations possessing such advance technology," he added.

The main attractions of this exhibition are strategic and tactical missiles Agni, Prithvi, Nag, Akash, BrahMos and Astra. The other

models that cover the entire extent of research and development included India's Light Combat Aircraft-Tejas, UAVs NISHANT and Pilotless Target Aircraft (PTA) Lakshya, bridging systems Sarvatra and BLT T-72, autonomous underwater vehicle, torpedoes like Varunastra and decoys. DRDO is also exhibiting bio-digesters that are used to solve human waste disposal problem in high altitude regions. The technology developed by the country's premier defence research and development organisation was used to decompose biological waste generated by soldiers deployed in regions of Siachen and Ladakh.

## Behind the scene heroes and heroines

By Bijayashree Parida

All roads lead to Odisha's elite KIIT University, the venue of ongoing scientific extravaganza – the 99th Indian Science Congress. A mega event as it is, venues of various events and technical sessions are scattered around different campuses of the University, spread over 25 sq. km. area. For uninitiated, it is a daunting task to find their way through different campuses and venues. There they come to your help. Yes, they are the volunteers, mostly the students of KIIT and KISS in action.

Starting from guiding the delegates, guests, invitees to different venues of ISC to taking care of their food, making arrangements for their tours and shopping to rushing the unwell to the hospital, the volunteers are leaving no stone unturned to make the event a grand success.

A group of nearly 1500 students are working day and night to put everything in place. They have been deployed at different venues and assigned different duties to provide special hospitality to more than 18,000 delegates and guests. The young and dynamic volunteers have happily joined hands together to bring glory to the institution. "I am overjoyed for having the chance to volunteer such a mega event. I am actively participating and enjoying my duty," says Monika Madhuvasini, a second year student of Electrical Engineering who is in-charge of the control room at Odisha Mandap, the site that represents the State's art, culture and heritage.

Ankur Sidhha, the co-volunteer of the control room, echoed similar views. "We are trying our best to help people. When satisfied, the delegates say 'thank you' and it becomes our reward," says Ankur. The delegates from the country and abroad have all praises for these KIITians and KISSians. "They are outstanding. They are very responsible, friendly and cooperative," says Dr. D. N. Mohata, a Physics Professor from Jharkhand. Volunteers are the best part of the event, he adds.

A dedicated team of volunteers is working at the Help Desk, located at the entrance of the main gate of Campus-6. We make every effort to satisfy the queries and needs of people who come to us. If one wants to know the way to a particular venue, tour guidelines, about accommodation or anything else, we are ready to assist, says Ankit Garg, a Help Desk member and a third year student of biotechnology. His teammates Amit Kumar, A. Santosh Kumar, K. Pravir and Sweta Panda are equally enthusiastic to volunteer. For the students it's not only about helping others, but an opportunity to learn too. Dibyamayee Patra, a third year student of biotechnology, who is on duty to attend an NRI scholar Dr. Srikanth Anand, said, "Dr. Anand is a cancer stem cell professor in the US. He has got a variety of experience and knowledge on science in particular and life in general. I have learnt many things from him".

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# 99th Indian Science Congress

# SCIENTIAL OUTLOOK

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Watch 99th Indian Science Congress live at [www.kiit.tv](http://www.kiit.tv)



## Ahuja resents the term 'woman scientist' and calls it secular

Science is secular and there should be nothing as woman scientist, opined Commissioner-cum-Secretary of Women and Child Development Department of Government of Odisha, Aarti Ahuja while speaking at the valedictory ceremony of the first Women's Science Congress organized as a part of the 99th Indian Science Congress. Many great women scientists have overcome obstacles to reach the pinnacle of success, he said.

Ahuja lamented that while in the 80s forty percent work force in IT sector constituted of women it has come down drastically, she said. Ahuja drew the attention of the audience through an example as to how an ex-President of Harvard University was removed from his post for

making a comment that women did not have an aptitude for mathematics

Since Science demands working in a set-up and the likes most women do not prefer it because women prefer sedentary jobs and that is the reason why there are less women scientists, she said.

Dr Vijay Laxmi Saxena, General secretary, Scientific Affairs of ISCA delivered the welcome address, while Dr Vinita Sharma from the Department of Science and Technology, Government of India said that the efforts of past two and half decades for inculcating science in women were yielding results now. Since the schemes relating to women are directly monitored by the Prime Minister, there has been a sea change. She expressed the

confidence that the science would come to the rescue of women in rural India. She narrated a story on how Prime Minister who attended the Convocation of Santiniketan found 99 percent of the medals won by girls. "He immediately sought to know the number of women in all the scientific labs in the nation and it was found out to be a mere 14 percent".

Describing the theory of "leaky pipeline" which germinates when a woman gets married and shoulders responsibility of the household, Dr Sharma said mentorship was required by these women. The government-sponsored schemes also became ways to nurture women in science. The availability of the schemes has widened with the age to grab them increasing from 50 to 60 years.

## National Science Film Festival Concludes

By Nyapi Bomjen

The two-day National science film festival, Rastriya Vigyan Chalchitra Mela, as a part of the 99th Indian Science Congress came to an end today. Films from across the country in the categories of documentary on science, health, education, awareness and animation were screened. The animation film 'I love you human' by M Rajkumar, with the message of peace, won applause of the audience. The bitter war between the Tamils and Singhaiese inspired him to make the film.

## Today's Programme

9.00 am - 10.00 am	Plenary Session
Recent Advances in Pharmaceutical Sciences	Venue: Campus 6 Hall 1
9.00 am - 10.00 am	Plenary Session
Rural Livelihood and Livestock Management	Venue: Campus 6, Hall 2
9.00 am - 10.00 am	Task Force Recommendations
Venue: Campus 6 Hall 3	
10.00 am - 13.00 pm	Plenary Session
Energy and Sustainability for a Greener Tomorrow	Venue: Campus 6 Hall 1
10.00 am - 13.00 pm	Plenary Session
Water Scarcity and Water Security	Venue: Campus 6 Hall 2
16.30 pm - 17.30 pm	General Body Meeting
Venue: Campus 6 Auditorium	
18.00 pm - 19.30 pm	Valedictory Function
Venue: KIIT Stadium	



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Editor:

Satyendra Patnaik

Editorial Team:

Satyabrata Das, Rajesh Verma.

Design:

Smruti Ranjan Nayak



Bhubaneswar-751024, Orissa, INDIA, Phone : +91 2725113, 2741998, 2725232, 2725272, 2725701  
Fax : +91 674 2725721, 2740326, Email : [kiit@kiit.ac.in](mailto:kiit@kiit.ac.in); URL : [www.kiit.ac.in](http://www.kiit.ac.in) , [www.isc2012.com](http://www.isc2012.com)

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# Editorial

## Adieu to 99<sup>th</sup> ISC

From the day of announcement for hosting the 99<sup>th</sup> Indian Science Congress till it was inaugurated, KIIT University, as a united family, worked day and night under the supervision and guidance of its Founder, Dr. Achyuta Samanta. The misgivings in the minds of some people who suspected the capability of KIIT holding such a mammoth event have been proved wrong. KIIT could do it and could do it with style and aplomb. We do not deny that there might have been some difficulties for some delegates but these things are but natural in a big event like this. The volunteers have done their works with commendable efforts. They have tried their best to help each and every one who needed some specific help. The address of the Prime Minister, Chief Minister and that of the General President of the 99<sup>th</sup> Indian Science Congress, reflected their satisfaction over the overall arrangement made by KIIT for hosting this edition of the Indian Science Congress. Similar views have been expressed by Dr. A. P. J. Abdul Kalam, the Former President while speaking in the Children's Science Congress. He was happy, so were the children who participated in it. The Women's Science Congress with distinguished ladies like Union Minister of State for HRD, Dr. D. Purandeswari, Indian Ambassador to the US, Smt. Nirupama Rao, General President, Prof. Geetha Bali, General Secretary, Prof. Vijay Laxmi Saxena and many others who participated in the deliberations spoke high of KIIT's efforts in organizing such a mammoth event. The Science Communicators' Meet and the Science Film Festival were two other important events that were being properly organized. It was perhaps KIIT's ability that prompted the organizers of the UNESCO Kalinga Prize to have their 60<sup>th</sup> Anniversary in KIIT during the 99<sup>th</sup> Indian Science Congress. The Pride of India Exhibition showcasing Indian scientific advancement and the Odisha Mandap showcasing everything for which the state is proud of, the cultural programmes both in the main venue and in the Odisha Mandap stole every delegate's heart. The accommodation, the food and the smiles on the faces of all volunteers raised the standard of this 99<sup>th</sup> Indian Science Congress to a greater height. The publications made during this period were superb. Everybody deserves a pat on their shoulders. But while the entire team of KIIT worked relentlessly to make it a success, yet some grievances cannot be ruled out. The team has been well instructed to do everything right, but to err is human, and if anything which one thinks was not to his/her satisfaction, we apologise. Like all good things come to an end, the 99<sup>th</sup> Indian Science Congress will come to an end today with valedictory function. We wish all the delegates a great year ahead and we want them here again and again.

As the Editor of this News Bulletin, I bid you a warm farewell and I join with my Editorial Team to wish you a great New Year ahead.

## KIITians design economic, eco-friendly electric vehicle

By Niharika

Four students of engineering stream of KIIT University, Bhubaneswar have developed a three-wheel rechargeable (battery operated) vehicle of Rs 1 lakh. The vehicle can be customized for different requirements. It has been developed completely in-house with the use of KIIT infrastructure. For the first time it is exhibited in the science expo at 99th Indian Science Congress.

Indian vehicle industry has embraced the new concept of electric vehicles that are very popular in the developed countries like America, Japan and China. The students claimed that with the rising cost of fuel at international and national level and at a time when the increasing levels of pollution and congestion are running high, the electrically charged vehicle will surely come as a solution for many.

Dipam Chatterjee, Harsh Shyam, Akhilesh Devangam of Mechanical Engineering and Pratik Patnaik of Electric Engineering have made the economic and eco-friendly vehicle. They said, "The conceptualization of the vehicle began last year. We have decided to develop it further and will make a fully developed prototype." Explaining about the features of three wheeled

vehicle, Dipam said, "The area below the seat has been designed to carry luggage. The vehicle can run on the roads with an ease. It is the only electric vehicle that has gear box. Popular eco-friendly vehicles like YO-bikes also lack this feature. But this vehicle involves gear and several other mechanisms in an electric set-up."

Pratik informed the vehicle's motor controller and battery charging devices have been self designed. "For the exterior body we have used auto rickshaw because we wanted to test the project first. It takes care of pollution problems because of its electrical set up. The features of this vehicle will surely attract people, especially those who prefer eco-friendly vehicles."

Harsh said, "Electric cars are considered as the future driving technology all over the world. High cost of fuel, large carbon emissions and high running cost have set a widespread platform for electric cars. We are confident that our invention will benefit the society at large."

It will take at least one more year to fully develop the electric vehicle. However, the students are confident that even the final model will not cost them more than Rs1.5 lakh.



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The film, 'To be a smoker or not to be a smoker' made by a group of class nine students of Indus International School, was also appreciated by the audience. These students were on the anti-smoking campaigns within their cities beside sponsoring community education to the terminally ill patients' children. 'Thalassemia, Ek Chunoti' directed by Manisha Sharma exhibited the plight of the child patients of Thalassemia Major, a genetic blood disorder. It depicted how it passes to an unborn child from the parents and discussed about the precautionary measures to prevent it.

Among other films, 'The Dream Fulfilled' by Satish Pande focused on Delhi Metro Rail Corporation, its making and challenges faced by the engineers who had completed the Metro train within four and half years and as well to encourage the future engineers in the upcoming projects. Some of the other films are Refraction by Tabish Anwar, Magnet Part -I by Deepak Verma, Home our garden of Eden by Suresh Elamon, The Darwin Puzzle by Arjun Bhagat, Hatyare Kee Hatya, The story of vaccines by Seema Murlidhara and India's targeted drug delivery system, Fungisome by Dr. Matiuar Rahman were also screened.

## Strategic systems provide a minimum deterrence against external threats - Tessy Thomas

By Bhavan Meitei

Strategic system plays a vital role in the countries defence and to provide a minimum deterrence against external threats, said Project Director of Advance Systems Laboratory (ASL) Dr. Tessy Thomas. Delivering a public lecture at the Women's Science Congress, she said basic design drivers for a strategic missile system are many, the primary being the range capability, accuracy, survivability, mobility and anti-ballistic defence capability, which forms the design specifications.

"Missile system can be broadly classified into Strategic and Tactical Systems. The missile programme of

DRDO has a wide reach ranging from a few kilometer 'Nag' missile to thousands of kilometer 'Agni' missile systems," she said. The 'missile woman of India' described a new guidance scheme that was designed and evolved for Agni solid propelled system, which is a technology breakthrough in establishing long range explicit guidance system with high accuracy. This guidance scheme is used in all the Agni series.

"Mission design of a strategic missile is the most challenging field which includes the mission sequencing. The main features of mission sequencing are event based

decision making, backup for critical events and software interlocks between events," the distinguished scientist maintained. Design of strategic missions, Thomas said, is a confluence of scientific and mathematical formulations, statistical techniques, engineering concepts, numerical simulations and threat analysis, involving a tremendous effort of multi disciplinary optimization at all phases of design. Mission design culminates from many design conciliations by careful optimizations of configuration design, to achieve a final system that meets the overall system requirements," she told.

The ASL project director who is also the Project Director for 3000-km plus range Agni-IV nuclear-capable missile further said on ground the performance prediction is essentially done before flight in six degree of freedom (6-DoF) trajectory simulation. "Missile trajectory is simulated in a 6-DoF environment and performance of the system such as flight loads, aerodynamic and wind dispersions are evaluated for design of flight control systems. This simulation is also used to interpret the flight data and reconstruct the flight events by plugging in the flight data," Thomas added.

## Broccoli can prevent cancer

By Diksha Upadhyay

The dreaded disease cancer is preventable if the intake of broccoli, which is the richest anti-oxidant, nuts and holy basil, is maintained, said Dr Ashok Kumar, Vice Chancellor of CSIM University of Kanpur opined while delivering a Special Lecture on 'Diet and Cancer Prevention'. "Fruits and vegetables have photochemical which protect against cancer and green vegetables have anti-oxidants which are good for the body, he said. He extensively spoke about the different promoters of cancer which are high fat diets, high calorie intake, obesity and high protein diet.

Over boiling of tea or use of milk in tea should be avoided as it has inhibitory effect which is quite dangerous, hence people should

drink Green tea, advised Dr. Kumar. "Walking everyday for more than 20minutes should be made a compulsory part of the routine", pointed out Kumar. It is an established fact that scientifically, socially and mythologically, vegetables are good for the health but it is a big question in our country that how safe are these vegetable, he wondered. Cancer can never die out in the society as it happens due to environmental factors. "The main causes of cancer are genes, environment and diet of a person. It is unfortunate that the exact identification of process of Cancer is still unknown", said Kumar.

He further threw light on how cancer cells were different from normal cells. Cancer cells do not

divide and continue to grow and results in the damage of DNA, he added.

He explained the two chemicals of cancer which are directly entering carcogene and indirect carcogene. "The three stages of Cancer - initiation, promotion and progress and the two types of tumors, which develop in the body due to Cancer - the malignant tumor, which is very dangerous as they keep growing and spread all over the body", said Kumar. The second one is benign tumor which stays at one place and hence is less dangerous.

In his talk he said about different types of cancer named Carcinomas (most common), Sarcoma, Leukemia and Lymphomas. He

focused on the cancer development factors which are genetic, immune, environmental, physical activity and dietary factors which involve cancer initiators, cancer promoters and protection. "If a person has cancer then it is not necessary that the offspring will also have cancer but yes, he will be more susceptible to it. People with healthy lifestyle and vigorous physical activity have the lowest risk of colon cancer", Kumar said. He laid emphasis on different initiators of Cancer which are pesticides, food additives, alcohol combined with smoking, food preparatory methods (like barbeque, oiling, grilling).

## If you want change to happen, stick to the rules - Sarabhai

By Ramani Ranjan Mohapatra

Environment and sustainable development are two sides of a same coin. So educating the public for strengthening environmental management and conservation is an important part of the whole system of sustainable development, Founder Director of Ahmedabad-based Centre for Environment Education (CEE) Kartikey V. Sarabhai said while speaking at Panel Discussion on 'Education for Sustainable Development' at the 99th Indian Science Congress (ISC) on January 6. He advocated for the change in the approach of human behaviour and also in the existing

educational system. Sarabhai said environment in India faces several challenges and there are so many challenges for environmental educators too. "There is a need to change the mindset of the people. If you want to change, change the feeling of the people and let them understand why you do this", he maintained.

Citing examples like how Indian do not mind throwing things to the streets for the sake of keeping their own house clean, he said, "If you want change to happen, stick to the rules". "Literacy is not about reading

and writing; it is more than that. It is an integration of ways of thinking, talking, interacting, in addition to reading and writing. Language plays very important role to change the perception of the people," Sarabhai said while pointing out that language plays very important role to change the perception of the people.

Finding problem in the approach of teaching, he said "Existing educational system should also undergo change, particularly the style of teaching for the sustainable development. Text book is not the

final authority, think beyond". Suggesting a teaching pattern for the e-age teachers the CEE director said the environment teacher has to say to the students - I do not know, let us find together while replying to their queries instead of asking them to just quote from the textbooks.

"There should be a paradigm change in the role of a teacher who should learn first rather than teaching and empower rather than socialising. A teacher has to think global and yet local specific and create an environment where a student can acquire skills and learn," he added.



## Day 4: 99th Indian Science Congress



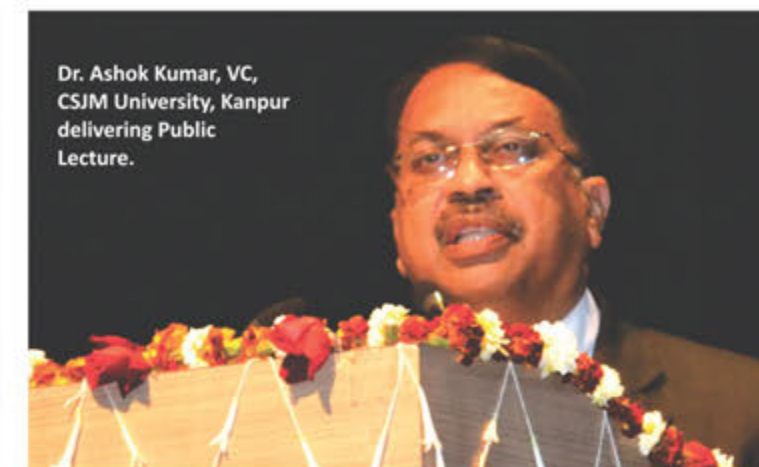
Dr. Thomas Hartung, Director of the Center for Alternatives to Animal Testing (CAAT), Baltimore at Plenary Session on Animal Alternatives in Teaching and Testing.



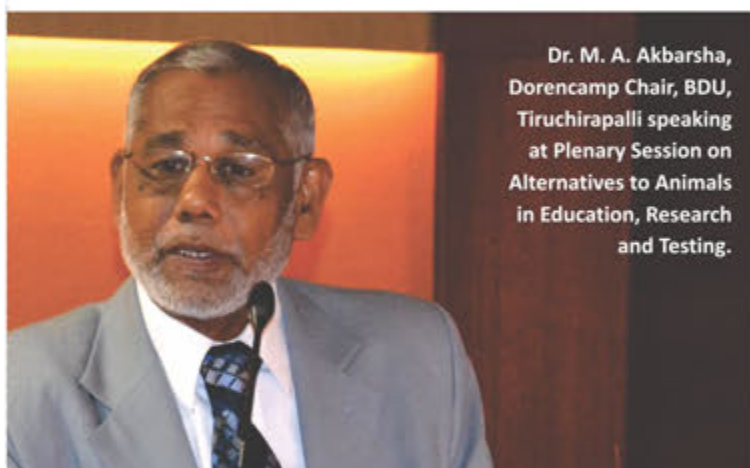
Mr. V. K. V. Ravichandran, Farmer, Tamil Nadu at Plenary Session on Agricultural Biotechnology in India-Scientific, Regulatory and Societal Challenges.



Dr. Vinita Sharma, DST, Gol at the valedictory function of Women's Science Congress



Dr. Ashok Kumar, VC, CSJM University, Kanpur delivering Public Lecture.



Dr. M. A. Akbarsha, Dorencamp Chair, BDU, Tiruchirapalli speaking at Plenary Session on Alternatives to Animals in Education, Research and Testing.



Dr. Vijay Laxmi Saxena, General Secretary (Scientific Affairs), ISCA speaking at valedictory ceremony of Women's Science Congress.



Dr. Hoysall Chanakya, Centre for Sustainable Technologies, IISC, Bangalore speaking at Plenary Session on Clean Energy from Renewable sources.



Smt. Arti Ahuja, IAS, Commissioner-cum-Secretary, Women and Child Development Department, Govt. of Odisha at the valedictory ceremony of Women's Science Congress.



Dr. Padma Saxena of DAV College, CSJM University, Kanpur at Science for Women session of Women's Science Congress.



Dr. Gerta Fleissner, J.W. Goethe University, Germany delivering Special Lecture.



Prof. K. Rudramma Devi of Osmania University at Science for Women session of Women's Science Congress.



Dr. Mukulika Hitkari of DGPC College, CSJM, Kanpur speaking at Science for Women session of Women's Science Congress.



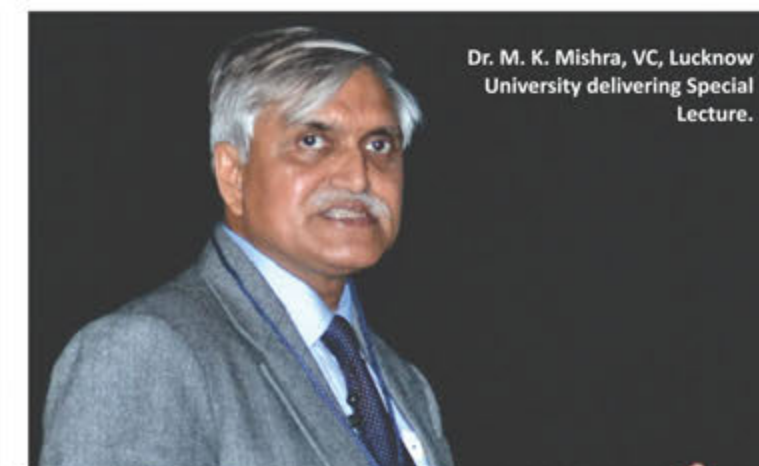
Dr. Ronald J. Herring, Cornell University, New York at Plenary Session on Agricultural Biotechnology in India-Scientific, Regulatory and Societal Challenges.



Dr. C.S. Prakash, Director, Center for Plant Biotechnology Research, College of Agricultural, Tuskegee University speaking at Plenary Session on Agricultural Biotechnology in India-Scientific, Regulatory and Societal Challenges.



Dr. Kartikeya Sarabhai of Centre for Environment Education at Panel Discussion Education for Sustainable Development.



Dr. M. K. Mishra, VC, Lucknow University delivering Special Lecture.



## 3R stressed for animal alternatives in teaching and testing

Bhavan Meitei



True humanity distinguishes humans from all other species. It is the capability for social cooperation, which is intimately linked to a compassionate and empathetic attitude towards other species, Dr Ramamurthy Rallapalli, Former Vice Chancellor, SV University, Tirupati said here, while speaking on Plenary Session on Animal Alternatives in Teaching and Testing on the 4<sup>th</sup> day of 99<sup>th</sup> Indian Science Congress at KIIT University.

He stressed on the concept of 3Rs - reduction, refinement and replacement - that was developed by Russel and Burch in 1959 in the context of "humane-ness" versus inhumanity in case of animal experiments.

By analysing and documenting the research of the past, the value of

animal tested result is overestimated, which may vary from humans, Thomas Hartung, Professor of Johns Hopkins University said. He spoke on 'From alternative methods to a new regulatory toxicology'. Only three percent chemical available in the market is well tested and more and more product is produced by using more chemical, Dr Thomas said. And even some drugs are withdrawn from market even after using for more than a decade.

Dr Shiranee Pereira, Senior scientist of Indian Council of Agricultural Research said that the use of animals in research, teaching and testing is an important ethical issue. Much of the discussion about this issue revolves around the relative value, often referred to as 'moral value', of humans and animals, she added.

Dr H Hosseinkhani, Associate professor from Taiwan suggested the novel and vitro, in silico- omics biology and mathematical modelling could contribute to reducing animal use. Dr. Krishna K.Sharma, Dean of MDS University, Ajmer criticized the system of keeping animals in many institutes, citing it as a major threat to biodiversity. To identify single species, hundreds of same species are caught and to improve this he suggested that it could be identified by bioacoustics spectrum analysis, monocular DNA and by sound spectrum.

Dr Surendran, Head of Animal Science Division, Agakhar Research Institute said hydra was immortal and it was useful in most modern techniques.

## Fleissner for a healthful sleep

By Ramani Ranjan Mohapatra

When a living being is awake, the muscle tones are strong. When it closes its eyes for sleeping, the muscle tones become weak. When deep sleep is induced, no muscle tones are found. This came to the fore after the discovery of the Rapid Eye Movement (REM) sleep in 1953.

becomes the deepest at the first half of the night sleep and smaller in the second half. Similarly REM sleep interrupts the sleep phases. Its duration increases towards the end of the sleep. When people stay in bed for a long time, the sleep is interrupted by many awakenings.

Speaking on 'Why we should sleep' at the 99th Indian Science Congress on January 6, Dr. Gerta Fleissner of J.W.Goethe University, Germany said, "A healthy sleep occurs in several phases and each lasts about 60-90 minutes". According to the Electroencephalogram (EEG), the intensity of sleep changes. It

She explained that there could be physical effects of sleep deprivation as aches, blurred vision, depression and colour blindness. Without sleep or continuous disturbed sleep, the living beings get tired, put on weight also fall ill. Dr. Fleissner observed that sleep was indispensable. "Everybody needs at least 8 hours of

sleep. It helps to convert the problem of today into solution of tomorrow. It is studied that deprivation of more than five days may kill the rats and no rat survives without sleeping for more than 30 days," she said.

Sleep should have breaks in times, she reasoned adding that sometimes reduced sleep might help and partial sleep deprivation might induce a transit recovery of mood problem. She also denied the fact that "the more you sleep, the better you feel" and observed that it was the most healthful to sleep that you need and also asked not to use

sleeping pills. Prof. Santosh Kar of KIIT University chaired the special lecture which was followed by a question-answer session.

**"It is studied that sleep deprivation of more than five days may kill the rats and no rat survives without sleeping for more than 30 days"**

## 'Cancer stem cell can make copies of itself'

By Bikash Chandra saho

A stem cell's ability to produce specialized cells for various tissues in the body is "generic" and it can make exact copies of itself indefinitely, said Dr. Srikant Anant, University of Illinois, Chicago.

He was speaking at Plenary Session on Cancer Stem Cells on January 6. Stem cells are distinguished by their ability to differentiate into many types of cells in the body and to self-replicate indefinitely.

Cancer stem cells are found within tumors, which possess characteristics associated with normal stem cells, specifically the

ability to give rise to all cell types found in a particular cancer sample. On the other hand Dr. Rita Ghosh explained about bladder cancer cause and said that Bladder cancer is a disease in which abnormal cells multiply without control in the bladder. "Tobacco smoking is the main known contributor to urinary bladder cancer.

In most population, smoking is associated with over half of bladder cancer cases in men and one-third of cases among women", she said. She further said that a normal stem cell may be transformed into a cancer stem cell through deregulation of

the proliferation and differentiation pathway controlling it. Cancer stem cells may generate tumors through the stem cell processes of self-renewal and differentiation into multiple cell types. Breast cancer comprises 22.9% of all cancers in women all over the world. In 2008, breast cancer caused 458,503 deaths worldwide (13.7% of cancer deaths in women).

Breast cancer is more than 100 times more common in women than breast cancer in men, although males tend to have poorer outcomes due to delays in diagnosis, said Dr Chendil Damodaran. Existing

cancer treatments have mostly been developed based on animal models, where therapies able to promote tumor shrinkage were deemed effective. However, animals could not provide a complete model of human disease.

Particularly in mice, whose life span doesn't exceed two years, tumor relapse is exceptionally difficult to study. As CSCs would form a very small proportion of the tumor, this may not necessarily select for drugs that act specifically on the stem cells.

## Clean energy from renewable sources

By Belal Abu Horaira

Unfortunately there is little understanding what energy is all about. People misunderstand and misuse the energy. Fossil fuel based power plants is need of the time. Mr Y B Ramakrishnan laid emphasis on hydro and wind energy saying lots of energy available to us has been wasted.

The fossil emits very less pollution. Bio-gas generation from cow dung and agriculture wastes, urban solid and liquid waste needs to be more focused. He said, "We have well developed renewable energy but we are lacking in implementing it". He laid emphasis on potential of bio fuel as a renewable source of energy, but he was also concerned about the barrier in using the bio fuel. He also talked about the effective land use for the better extraction of renewable sources, while questioning whether we really have enough land to create biomass energy. Probably India has largest land use under agriculture but there is debate whether energy security is important or food security.

In the field of solar thermal power very little has been done to develop it as a renewable source of energy. India's abundant sunshine should be used. He also laid stress on the wind energy as a renewable source of energy. "India is the only country apart from china having large number of villages, we have huge potential as far as wind is concerned. We have potential to produce more than 2000 mega watt of energy from wind. Integrated long term approach to energy planning is needed", opined Ramakrishna.

Dr. Shreshth B. Kedare from IIT Mumbai said that it was one of the easiest ways to use renewable energy in the form of solar thermal energy. Dr. Hoysall Chanakya said, "We have to look beyond the cooking as the use of Bio gas energy. Bio gas plants provide actual waste management system for houses. There are opportunities emerging in agriculture for bio gas plant. We need to look at various other Bio mass energy", he argued. He added that there was not enough cow dung in the country to produce energy. Girish Sant from

Paryas energy group, Pune talked about the energy trend in India. He said that renewable energy was key to solve the energy problem in the country.



Dr. Y. B. Ramakrishna, Chairperson, Bio-fuel Board, Govt. of Karnataka at Plenary Session on Clean Energy from Renewable sources.

## YOUNG SCIENTIST AWARDEES 2011 - 2012

### Agriculture and Forestry Sciences

Vigya Kesari,  
I.I.T., Guwahati

### Animal, Veterinary & Fishery Sciences

Nitin Pathak,  
Dept. of Zoology, Govt. Motilal  
Vigyan Mahavidyalaya, Bhopal

### Anthropological and Behavioural Sciences (including Archaeology and Psychology & Educational Sciences and Military Sciences)

Shabnam  
Dept. of Psychology, GNDU, Amritsar

### Chemical Sciences

Mahesh Sundararajan,  
Theoretical Chemistry Section, BARC, Mumbai

### Earth System Sciences

Poulomi Ghosh,  
Dept. of Geological Sciences, Jadavpur University

### Engineering Sciences

S. Paul,  
Solar & Energy Materials Lab., Tezpur University, Tezpur

### Environmental Sciences

Surabhi Dipali Muduli,  
Dept. of Environment and Sustainability, Intt. of  
Minerals and Materials Technology, Bhubaneswar

### Information and Communication Science & Technology (including Computer Sciences)

Debarati Chakraborty, ISI., Kolkata

### Materials Science

Ashutosh Kumar Dubey, IIT., Kanpur.

### Mathematical Sciences (including Statistics)

Dilip Kumar  
Senior Research Fellow (DST)  
Centre for Mathematical Sciences,  
Pala, Kerala, India

### Suchandan Kayal

Department of Mathematics, IIT, Kharagpur.

### Medical Sciences (including Physiology)

Rajender Singh,  
Central Drug Research Institute, Lucknow

### New Biology

(including Biochemistry,  
Biophysics & Molecular  
Biology and Biotechnology)  
Sanjit Mukherjee, IICB., Kolkata

### Physical Sciences

Rajesh V. Nair, Bhabha Atomic Research  
Center, Mumbai

### Plant Sciences

Rashmi Singh, Dept. of Botany, K.N.Govt  
PG College, Bhadohi, U.P.

### Jeremy Dkhar

Plant Biotechnology Laboratory, Department  
of Botany North-Eastern Hill University,  
Shillong-793022.

