Sand bed filter over a rainwater storage tank

RWH in a village school (Tumkur district)

RWH in a village school (Hassan district)

and monitoring the performance. School Development and Management Committees (SDMCs) in the local village and the teachers of the respective schools are part of the planning, implementation and maintenance team of the RWH system. By June 2006 around 9000 schools had the RWH system in place to receive rainwater. An RWH manual called *Amruthavarshini* (A guide for rainwater harvesting) has been published by KSCST with all the details for effective implementation of the programme.

KSCST has taken RWH projects from Vidhana Soudha to a rural village house. Upon successful implementation of the planned activities, Karnataka State will be the first state in the country to have RWH system installed and working to harvest rainwater for drinking water needs in every other village of Karnataka.

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MEETING REPORT

Biology today*

The Indian Academy of Sciences (IAS), Bangalore held its seventeenth mid-year meeting at Bangalore during 14–15 July 2006. In addition to promoting and upholding science, the Academy expects its Fellows, individually and collectively, to promote original research and disseminate scientific knowledge to the community through multiple activities such as meetings, seminars, discussions, etc. Further, the Academy recognizes the special relationship of scientific creative activity with the process of education, and upholds the principle of social responsibility for all scientific effort. It further reiterates that the quest for knowledge and truth cannot be reconciled with any dogma (IAS, *Year Book*, 2006, p. 3). The above principles are operationalized through various committees that the Academy has constituted, among which the Science Education Committee is entrusted with the mandate of encouraging and supporting the student and teaching community in its pursuit of science.

In keeping with the above objectives, a one-day symposium was organized for science teachers coinciding with the mid-year meeting. Facilitated by Vidyanand Nanjundiah (Indian Institute of Science, Bangalore) the overall purpose of the initiative was to create larger audience interest and provide a glimpse of current ideas in contemporary biology that could be used in classroom teaching and laboratories. The symposium was structured to consist of lectures of 20–25 min duration each, followed by small group discussions. Teachers were asked to provide candid feedback that could be used constructively for future programmes.

Nanjundiah's lecture on social amoebae focused on the following framework: (a) that natural selection is the overwhelming explanation for the phenomenon of life; (b) however, there are certain exceptions to this phenomenon, of which the altruistic model is the most notable; (c) possible solutions to this curious phenomenon, and (d) an illustration of the solutions using the case of unicellular slime molds. Nanjundiah also stated that despite significant advances, one basic question on how frequent genetic exchange is continues to be perplexing. The focus of the lecture was on the evolutionary explanation for altruism, and the paradox of this witnessed in slime molds. In conclusion, he stated that the level of genetic similarity or heterogeneity does not determine or define altruism or selfishness, and an explanation to this could be possibly found in the socio-biological theories.

*A report on the one-day symposium 'Biology Today' organized by Indian Academy of Sciences, Bangalore on 13 July 2006 at Bangalore.

D. P. Kasbekar (Centre for Cellular and Molecular Biology (CCMB), Hyderabad), spoke on neurospora, a fungus that is normally associated with forest fires and burning of agricultural waste. Of interest is the fact that neurospora is one of the favoured foods in Indonesia and other South Asian countries. Kasbekar's lecture focused on repeat-induced point mutation (RIP) and meiotic silencing within the context of the organism figuring out a way to destroy duplication. His lecture had an in-built component of continued interaction with the participants, in that a potential project idea to involve teachers was distributed to the group.

R. Geetha (State University of New York, USA) spoke on phylogenetic biology. She repeatedly focused on the need to formulate the right question and the merit of 'tree-thinking'. While reiterating that evolutionary and phylogenetic studies are intrinsic scientific methods, Geetha's lecture detailed the differences in approach between evolutionary and developmental biology. Other aspects that were covered include speciation through the process of isolation and divergence. She concluded her lecture on the note that every biological statement that is put forward is always fundamentally a taxonomic statement.

The focus of Imran Siddiqi's (CCMB) lecture was on meiotic chromosome organization. He elaborated on the dynamics of meiotic chromosome organization, and the control of chromosome segregation in meiosis and mitosis. The molecular mechanisms underlying cohesion have been uncovered through identification of cohesion, a complex of proteins that hold sister chromatids together, and whose controlled destruction allows chromosomes to move apart. Siddiqi also elaborated on the possibility of manipulating meiosis for plant breeding through a process known as apomixis, which is a phenomenon where seed development is made possible by bypassing mitosis.

Somdatta Sinha (CCMB) presented an emerging branch of expertise in biological sciences, viz. systems biology. By tracing the evolution of biological sciences, Sinha illustrated the integrated approach that can be achieved through systems biology, which may be defined as a composite of inter-related and inter-dependent elements that interact. This assemblage of biological systems is complex and can be organized into structural, functional and temporal systems. Reiterating the need to develop a holistic understanding to be effective, Sinha concluded that systems biology can be explained as a natural follow-up of genome sequencing and functional genomics, or basically as a merger of biology and engineering.

Vineeta Bal (National Institute of Immunology, New Delhi), located her lecture on immunological memory in the domain of public health, thereby eliciting active response from the participants. A vaccine is considered 'successful' when it offers long-lasting protection against an infection, wherein 'long-lasting' and 'protection' are the key issues. An ideal vaccine should cause minimal or no side effects, and in countries such as India where primary health infrastructure is rather scant, a vaccine that can be given without injections and does not entail cold-storage facilities, is more effective. Similarly, single-dosage vaccines are more effective compared to multiple dosage vaccines that witness high patient attrition. She elaborated on how to regulate pathogen-specific T and B cells in the body, so that the longevity of immunological memory can be assured.

Jaya Sivasawami Tyagi (All India Institute of Medical Sciences (AIIMS), New Delhi) presented her current work on improved laboratory diagnosis for tuberculosis (TB). She presented an overview of the robust, reproducible and multipurpose Universal Sample Processing (USP) methodology that has been developed at AIIMS for reliable diagnosis of TB. She also spoke on the successful TB eradication programmes of the Government and the traditional diagnostic procedures that are in use.

Revising and reworking the brain after injuries was the topic presented by Neeraj Jain (National Brain Research Centre, Gurgaon). While dispelling some of the fond notions that people harbour on the structure and function of the brain, Jain stated that brains of adults retain a remarkable ability to change in response to changes in incoming information due to injuries or excessive stimulation. He explained in detail the possible changes that the brain could undergo under various conditions of stress and trauma.

Following the lectures, the participants were divided into small groups with each of the presenters functioning as the lead discussant. Potential ideas for mainstreaming some of the concepts and innovations into existing curriculum were discussed. Emerging rather clearly during the symposium was the need to have a mechanism in place for not only ensuring the continued interaction between the experts and teachers, but also to make certain that college managements are conducive to such initiatives.

The initiative of N. Mukunda (Chairman, Science Education Committee) to enlarge the ambit of the teachers programme to include teachers from states other than Karnataka was well received; as illustrated by the response of a teacher from North Kerala, who said that such initiatives are the best way to reach the rather 'remotely located' colleges in smaller towns and cities. For, these colleges and their teachers do not lack the enthusiasm to excel, but are badly crippled by lack of exposure.

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