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"REFRESHING"
Photographic Essay Competition 2007
Entry by Ms Lam Hui Ching (St Andrew's Junior College)
1st Prize winner (School/JC Category)

Comment

Promoting Biology

Mr Timothy Tan

After the recent Public Forum co-organised by SIBiol, it was gratifying to note that a teacher in the audience had commented that she would 'look forward to more of such public outreach talks'. But more intriguing was her comment that 'it's just a pity that there weren't more people to learn about [the topics presented]'. This was despite the good turnout and comments from library staff that SIBiol-organised talks draw a bigger crowd than most such events held there!

For over 33 years, SIBiol has been organising many activities for education and outreach in line with our charter to 'promote biology' and other aims of the society as set out in our Constitution. In this issue of the *Bulletin* alone, we have reports of the public forum, two teachers' workshops, a student photo competition, SBO and IBO accomplishments, and the forthcoming Annual National Biological Convention.

These activities reach out across the spectrum of our membership, teachers, students and the general public, and have been made possible by the dedication, hard work and expertise volunteered by some of our members. But can we do even better?

Perhaps, as revealed by the teacher's comment, we need to achieve more *reach* in our outreach though better dissemination and publicity. I call on our members to actively participate, and to let others know about our activities. Why not pass this copy to a colleague or friend when you are done with it?

From this issue, Timothy takes over from Dr Darren Yeo, Editor of the SIBiol Bulletin since 2003. If you have any feedback or suggestions, email the Editorial Team at bulletin@sibiol.org.sg

18th INTERNATIONAL BIOLOGY OLYMPIAD

15 - 22 July 2007
Saskatoon, Canada

The Singapore team at this year's International Biology Olympiad (IBO) has once again done Singapore proud by garnering four silver medals and an overall ranking of ninth out of 55 participating countries. The team members were Mayank Soni, Gary Soh Hui Ming, Ian Wee Liang En and Tan Yong Zi, with reserve team member Wang Liang Wei. Congratulations to the team, and to the dedicated trainers who have devoted their time to intensively coach the students prior to the competition.

Mr Lim Tse Yang has a unique dual perspective, he competed at the 15th IBO in 2004 and returned this year as an observer. He reflects on his experiences at the IBO on Page 5.

8th SINGAPORE BIOLOGY OLYMPIAD

November - December 2007
National Institute of Education, Nanyang Technological University

The 8th Singapore Biology Olympiad (SBO), which is organised by SIBiol, with support from the National Institute of Education, Nanyang Technological University (NIE/NTU), Department of Biological Sciences, National University of Singapore (DBS, NUS), and the Ministry of Education, will take begin in November 2007. This annual competition sees the cream of our country's pre-university biology students competing against one another for honours and for the chance to represent Singapore at the International Biology Olympiad. All participants first sit for a Theory Test (to be held on 14 Nov 2007). The top students emerging from the Theory Test round will move on to the next round of evaluation in a Practical Test (to be held on 5 Dec 2007). Both rounds will be conducted at NIE/NTU. More information on the SBO and IBO are available on the SIBiol website at http://www.sibiol.org.sg/ibo/

NEWSFLASH!

SINGAPORE TO HOST IBO 2012

The 33rd Council and the SBO Organising Committee are pleased to announce that with the full support of the Ministry of Education, Singapore has succeeded in its bid to host the International Biology Olympiad in 2012. This means that in five short years, this eminent event will be held here, with the top students from around the world converging in the spirit of friendly yet resolute competition. SIBiol will have the monumental task of spearheading the planning and organisation of the IBO. Watch this space for more news soon.

Public Forum on 'Symmetry, Shapes and Colour in Biology'

22 September 2007 at the National Library

This event was jointly organised by the Singapore Institute of Biology & National Library Board after the strong interest in the similar forum held last year. This year, an even bigger audience of over 70 people attended, and they formed a diverse but lively group of young and old, drawn by interest or curiosity to the topics presented.

These included 'Building Beauty: What Underlies Floral Patterning?' by Dr Yu Hao (Assistant Professor, Department of Biological Sciences, National University of Singapore), 'Colours and Pollination Biology of Orchids' by Dr Yam Tim Wing (Senior Researcher, Orchid Breeding Division, Singapore Botanic Gardens, National Parks Board, Singapore), and 'Colour for Camouflage and Communication in Rocky Shore and Mangrove Crabs', by Dr Peter Alan Todd (Instructor, Department of Biological Sciences, National University of Singapore).

The audience were so enthralled that they could not wait for the Panel Discussion period at the end before peppering the speakers with enthusiastic questions during and immediately after their talks! The discussions even continued during the sumptuous tea break.

Feedback was overwhelmingly good and the audience were appreciative that 'the speakers made a very laudable effort to pitch the talks at a level palatable for the public'. In particular, Dr Peter Todd's talk was singled out as being 'very pertinent to both teachers and students, as he showed how experimental designs in ecology can be very creative and multi-faceted...'

In conjunction with the forum, the winning entries from The SIBiol Digital Photographic Essay Competition were put on display at the Lee Kong Chian Reference Library at the National Library for two weeks. The images and essays were the perfect complement to the theme of the forum.

Dr Yu Hao

Dr Yam Tim Wing

Dr Peter Todd

SIBiol Primary School Teachers' Workshop

Workshop: How to organize a Science Camp for School Children

Associate Professor Lim Tit Meng, President of SI Biol

At the primary school level, science is not taught as separate domains of biology, chemistry, or physics but is treated as a holistic subject in a manner that young students can relate science to the real world. While some science concepts can be rather abstract for primary school level, students can actually learn science effectively through play and with hands-on experiments. The fun and experiential approach can be offered through a Science Camp to supplement classroom teaching.

The workshop was conducted on 24 March 2008 at the Natural Sciences and Science Education laboratories at the National Institute of Education (NIE). A total of 27 teachers attended the workshop.

Some of the activities that generated a lot of interest include the one that challenged participants to find the maximum number of straws joined end to end that they could still effectively suck water up vertically, so as to simulate the water transport system in a tree. Many teachers competed to outdo one another and one group managed an amazing 17 straws!

The other activity that tickled the participants was the one that required them to draw the digestive system on a big sheet of paper put over a person's body. The artistic skills of some teachers were most impressive! 'How would my baby look like' was a game that dealt with human genetic and to illustrate the principle of random assortment of genes. That too was a fun activity that the teachers liked.

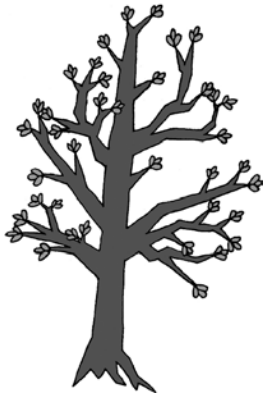
A DIY cell model was shown to the participants and many teachers took pictures of the cell model which was made by the instructor's daughter for her school project. The teachers were very impressed by the board game using the human digestive system as the "trail" for the players to journey through and to answer questions from random cards picked from a stack was a board game made by the instructor's son.

The teachers were overheard talking about wanting to share the many ideas learned when they returned to their schools. That is exactly what we had hoped for!

The workshop was conducted with teachers assuming the role of students and they had to take part in these exciting activities:

1. Getting to know you, getting to know all about you (Theme: Genetic variation and biodiversity)
2. How would my baby look like? (Theme: Genetic: principle of random assortment of genes)
3. Show me your guts (Theme: Human anatomy - digestive system)
4. Optical illusions (Theme: Human anatomy - eyes and brain)
5. Adaptation of the human hand (Theme: Human anatomy and mechanical design)
6. Communication - Don't take it for granted (Theme: living things communicate)
7. How good are you in water transport if you were a tree (Theme: Plant water transport system)
8. Bouncing raisins (Theme: Physics (gas and buoyancy) and Chemistry (reaction that generates CO2)
9. Making a floating compass (Theme: Mangetism)
10. Making a rainbow (Theme: Light and optic)
11. Paper cutting can be mathematically fun! (Theme: a field of maths called topoloy)
12. Invisible ink with secret message (Theme: Chemical component in a liquid)
13. Making a cell model (Theme: Cell biology)
14. Making a board game on the Human Digestive System (Theme: Human body at work)

SIBiol Primary School Teachers' Workshop



Workshop: Get to Know Your Wayside Trees in Three Easy Steps

Associate Professor Koh Chong Lek

Five primary school teachers attended the above Workshop, which was conducted by Assistant Professor Shawn Lum, National Institute of Education (NIE), Nanyang Technological University (NTU), on 23rd May 2007 at the Plant Sciences Lab, Natural Sciences and Science Education, NIE, NTU.

The teachers had a fun time examining and describing the salient features of different plants for the purpose of plant identification. They also put together a plant guide best suited for their own or their students' use. Finally they put their knowledge of plant identification to use by taking a short tour of the NIE campus to look at wide variety of trees there.

18th International Biology Olympiad

Experiencing the IBO… both ways

Dear SIBiol,

Many of us will have been told by our parents (and those who are parents will know it to be all too true), "You won't know how much work it is being a parent until you become one yourself." So it is with the International Biology Olympiad – the participants are told, year after year, "You don't know how much work goes into this."

Having now seen the Olympiad both as a participant and a jury member, I can now justifiably declare the statement above to be entirely true. From the months put into preparing the team beforehand to the many hours that the jury members spend slaving over the final exam papers, every part of our Olympiad success thus far is truly the result of a joint effort by professors and students both.

I had arrived in Saskatoon, Canada – a small but sprawling city built on the banks of the lazily-slow Saskatchewan River, surrounded by never-ending prairies and surmounted by cloudless blue skies – utterly unprepared for the intensity of the jury-room experience. We spent a leisurely day spent recovering from the jetlag from 31 hours of flying, and then the action began. Between ceremonies and meals, hour upon hour was spent in a whirlwind frenzy of debating and editing questions, typing and printing; all the while nervously wondering (to take the metaphor further) with all the anxiety of a parent sending a child off to an examination whether the students would be able to understand a certain phrase or perform a given practical task. It is no exaggeration to say that by the time we stumbled back through the biting prairie winds, groggy and exhausted, to the warmth of our beds, the first glimmers of sunlight would already be visible in the east. It meant the dawn of a new day, a few hours of sleep, and another afternoon and night of jury work to come.

Through such efforts, and the hours of effort put in by the professors and students back home in the months of training, we managed to maintain our record of attaining nothing less than a silver medal at the IBO – we attained four of them, to be precise, an excellent achievement.

Besides the toil and labour, though, there was something more to this year's IBO experience for me – it started as a twinge of excitement to be back, and grew gradually into a kind of full-blown elation that just swept me up and away, that nothing else can quite replicate. This thrill is what makes the IBO so unique and precious an experience – the thrill of being amongst the best biology students (and professors) in the world, in competition but more importantly in community. It was for precisely this transcendent experience that the IBO was started 18 years ago, and it is precisely for this that it should and will continue in the years to come – including

The Singapore team during a brief moment of respite in the Jury Room (front to rear): Associate Professor Shirley Lim, Mr Lim Tse Yang, Assistant Professor Peter Lee, Mr Tan Hong Kim

when we welcome it to Singapore in 2012.

I am immensely grateful to SIBiol for having allowed me to undergo this incredible episode for a second time – to have been allowed to, in my words from 3 years ago – "Eat, drink, breathe, sleep, dream, excrete, [and above all] LIVE biology!"

Mr Lim Tse Yang
September 2007

About the author:
Lim Tse Yang participated in the 15th International Biology Olympiad in 2004, held in Brisbane, Australia. He has since been actively involved in preparing the participants for subsequent years, and this year returned to the IBO in Saskatoon, Canada, as an observer, assisting the Singapore jury. He is currently a first-year undergraduate, majoring in Ecological & Evolutionary Biology at Yale University.

The 7th Annual National Biological Convention (ANBC) of the Singapore Institute of Biology (SIBiol)

Abstracts of Talks to be Presented at the 7th ANBC of SIBiol at NUSS Guild House on 27 Oct (Saturday) from 3-5 pm

ALL ARE INVITED

1. Control Measures for HPAI Virus and Bird Flu Problem in Singapore

Dr Chang Siow Foong

Head of Epidemiology & Surevillance Branch, Agri-Food and Veterinary Authority, Singapore

This presentation will cover the various control measures that AVA has implemented in Singapore in order to prevent HPAI incursion and hence keeping Singapore free from HPAI virus. These measures will include disease-free zoning in source countries, import control measures and sampling and testing. The rationale behind AVA's derivation of these measures will be elaborated. The presentation will also make brief highlights of the surveillance system for HPAI in Singapore.

2. Ecological Correlates of Herpetofaunal Communities in Fragmented Lowland Rainforest in the Philippines

Arvin C. Diesmos (and Navjot S. Sodhi, Peter K.L. Ng)

Herpetology Section, Zoology Division, National Museum of the Philippines, Manila, Philippines, and Department of Biological Sciences, National University of Singapore, Singapore 117543

We investigated the effects of habitat fragmentation on herpetofaunal communities in disturbed lowland forests of the Sierra Madre Mountains, a key biodiversity area in the Philippines. Through strip transects, we characterized patterns of species richness and endemism, abundance, distribution, and ecological guilds between the herpetofauna in a contiguous forest and ten forest fragments in response to forest loss and other anthropogenic disturbances. An information theoretic approach helped us identify correlates of extinction proneness by examining a combination of ecological and life history variables. Microclimate and habitat structure significantly influenced the observed patterns of herpetofaunal distribution. The fauna in forest fragments consisted of subsets of the species pool in contiguous forest. Frogs, lizards, and snakes responded variedly to fragmentation, which is attributed to differences in their ecological guilds and life history traits. Fragments tend to support higher densities of lizards. In contrast to other studies, our results indicate that large body size is not an important correlate of extinction risk in the herpetofauna. Forest fragmentation resulted in a cascading loss of species and had profound effects on the community structure of the herpetofauna. Species extinctions in the fragments ranged from 15% to as high as 94% of the species found in contiguous forest. Snakes manifested the sharpest decline in richness and abundance and are the most sensitive to habitat transformation compared with frogs and lizards. We classified 48 species that are vulnerable to extinction and identified the reproductive mode as an important trait to predict extinction proneness. Although the preservation of large forest areas is the best strategy to maintain herpetofaunal diversity, habitat fragments may serve as important refuges for some species, including rare endemics and threatened species. The restoration of these altered habitats is a viable conservation strategy.

3. The Ecology and Evolution of Carnivorous Butterfly Caterpillars

David Lohman
Department of Organismic & Evolutionary Biology, Harvard University, Cambridge, MA, USA, and Department of Biological Sciences, National University of Singapore, Singapore 117543

The orders Coleoptera, Diptera, Hymenoptera, and Lepidoptera comprise nearly 80% of all described insect species. Unlike the other three mega-diverse orders, which include substantial numbers of carnivores (including parasites and parasitoids) and herbivores, more than 99% of Lepidoptera obtain their sustenance from living plants. However, the few exceptions to this general trend provide the opportunity to study adaptations to a novel mode of life. I will discuss the diversity of carnivorous and other "aphytophagous" caterpillars, with special reference to the carnivorous caterpillars of SE Asia and their adaptations to avoiding detection by their Hemipteran prey and associated ants.

4. Systematics of the Crabs of the Family Varunidae (Brachyura, Decapoda) With Description of a New Family, Xenograpsidae

Dr. Ng Ngan Kee
Department of Biological Sciences, National University of Singapore, Singapore 117543

Crabs of the family Varunidae are a large group of primarily marine and freshwater crabs that occur in tropical to temperate seas worldwide. Currently, there are 19 known genera with over 100 known species, many of which are of commercial, economic, medical and scientific importance. Varunid crabs also have one of the most diverse habitat ranges, from freshwater to marine, and occurring in caves and high mountains to the deep sea and hydrothermal vents. The last comprehensive review of this family was done over 100 years ago by Alcock in 1900, and many modern workers still follow the system in which the varunid crabs are regarded as a subfamily of the Grapsidae. The study uses traditional characters as well as a variety of new sexual and non-sexual features. One enigmatic Indo-West Pacific genus associated with hydrothermal vents, Xenograpsus, is shown to be unrelated to varunids despite their superficial similarities, and is transferred to a new family, Xenograpsidae. Based on evidence from adult and larval morphology, as well as DNA analyses show that the separation between lineages is very deep, and that it should be regarded as belonging to a distinct family.

"Dichotomy Between Two"
Tan Guoxiang Dex

"Orbs of Enigmá"

SIBiol Digital Photographic Essay Competition 2007

Assistant Professor Lee Yew Jin

SIBiol organized its first digital photographic essay competition this year. With three very interesting themes – Life and Death; Nature's Art; Poetry in Motion – the event attracted 79 entries (64 from schools and 15 from tertiary institutions). There was quite a wide spread of participation as entries came from 27 schools/junior colleges and 7 tertiary institutions.

On the whole, the judging panel felt that the quality of entries was above average, and some clearly showed a high level of technical expertise and knowledge of picture composition. As well, some of the accompanying texts were thought-provoking and demonstrated that there were many hidden poets out there in Singapore!

It was also encouraging to learn that many teachers had brought their students as a class outdoors to snap photographs, which probably created many moments of enjoyment and wonder. One entry, for example, described an unexpected discovery of huge Atlas moth caterpillars—a true monster among caterpillars—munching on a tree next to the school. The surprised students took photographs, the teacher then identified the creatures, and both parties were thrilled at the end of the day.

It was simple incidents like these that warmed the hearts of the organizers for ultimately, the aim of the competition was to promote the learning and appreciation of nature through exploring and observing the natural world around us. From the enthusiastic responses and number of entries, we believe that these aims were amply achieved.

View the photo essays at http://www.sibiol.org.sg/photoessay/