

SI **biol** BULLETIN

Volume 30 Number 1

April 2007

M.I.T.A (P) No. 065/04/2007

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B.B.M.

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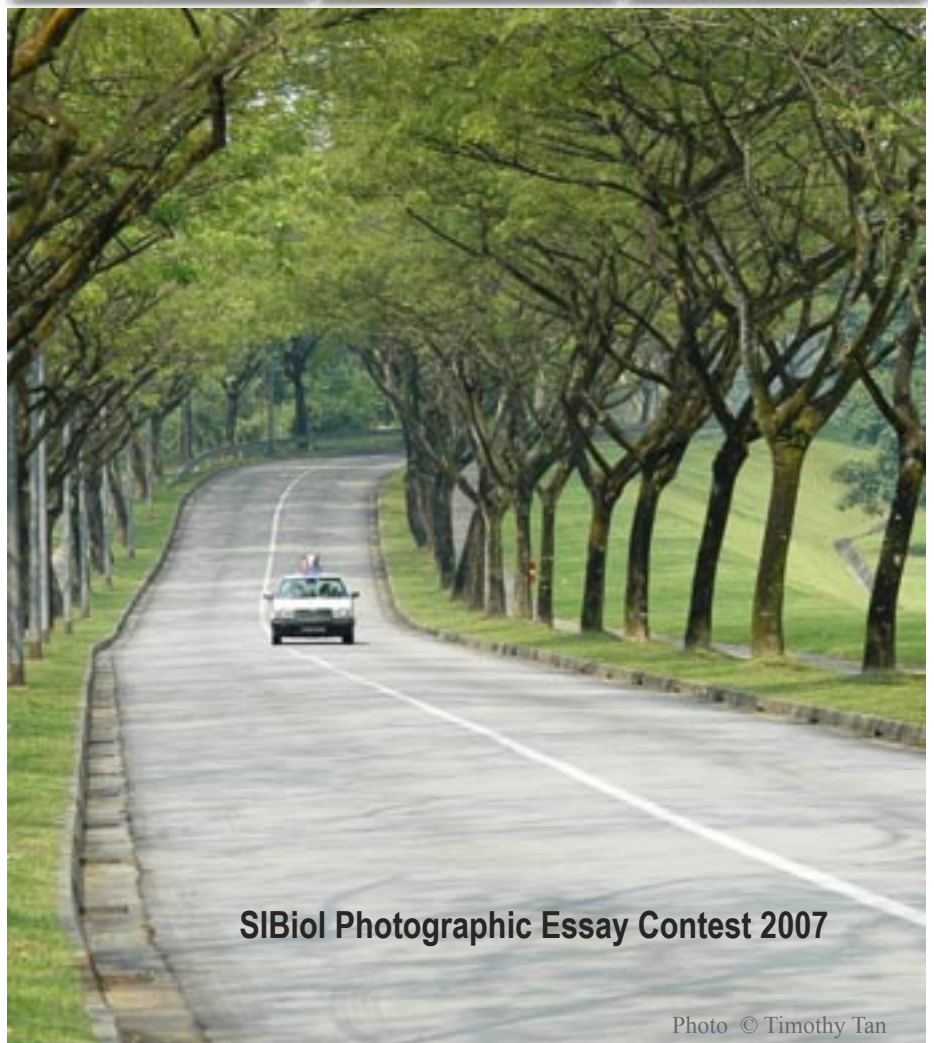
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Bulletin Editor

Dr Darren Yeo



SIBiol Photographic Essay Contest 2007

Photo © Timothy Tan

Message from the President of the 33rd SIBiol Council

Dear Member of the SIBiol,

This is my second term as the President. Let me first thank all members for your continuous support, in one way or another, that has helped the 32nd Council achieve the objectives of the Institute in the past year.

In last year's message, I stated that I had been with the Institute since I was an undergraduate in NUS, first as a student member and then as a life member. I have also been in the Council for almost 20 years. I therefore have a long affiliation with the Institute and remain grateful for the many experiences and lessons I gained through events and involvement in SIBiol over these many years.

Last year, we had a new primary school teachers' workshop on how to organize science camp activities and to have fun in teaching science. We also partnered the National Library Board for the first time in organizing a very successful public forum on environmental health issues. In addition, we celebrated another year of success in training our students for the 16th International Biology Olympiad, and they came home with good results.

Since the turn of the millennium, Biology as a discipline in science has ushered us into the brave new world of Life Sciences. In this time and age, it is quite fair to say that Biology has become the darling discipline among students and Life Sciences a new engine for manpower and industrial development. Therefore, I firmly believe that SIBiol is still as relevant today as it was when it was set up in the 1970s by our founders.

In 2007, we will continue to organize events to promote Biology, and will also initiate new collaborations with relevant agencies. We are planning a new contest for students using digital photography to capture the beauty of Biology. We hope to inspire the young minds to appreciate Biology with a creative perspective.

While we strive on, I continue to feel sad that a large proportion of our members seem to have lost the zeal for being associated with the Institute. How we could make members enthusiastic again about the Institute's business remains a challenge for the Council.

If you are reading this Bulletin and have any feedback for the Institute to better achieve its objectives of promoting Biology and the profession of Biologists, please do not hesitate to contact me or any council members.

Thank you very much.

Yours sincerely,

Associate Professor Lim Tit Meng
President, 33rd Council, SIBiol

WE WELCOME THE FOLLOWING NEW MEMBERS

Ordinary Members:
Mrs Patricia Joseph
Mr Nah Hong Leong

Student Members:
Ms Chishio Hidaka
Mr Koh Teck Hui
Mr Marco Perrig



Photo © Timothy Tan

THE SINGAPORE INSTITUTE OF BIOLOGY
32nd COUNCIL
ANNUAL REPORT (2005/2006)

1. GENERAL REVIEW

The objectives of the Institute were actively promoted during the year as reflected by the activities organized by the Council. These are summarized below:

2. THE 32nd COUNCIL

The 32nd Council held nine meetings during the year to carry out the business of the Institute. Members of the 32nd Council of the Institute for the year 2005/2006 comprised the following officers:

President:	A/P Lim Tit Meng
Vice-President:	Dr Beverly Goh
Honorary Secretary:	Dr Tan Lik Tong
Honorary Treasurer:	Mr Timothy Tan
Council Members:	A/P He Jie
	A/P Low Boon Chuan
	A/P Sanjay Swarup
	A/P Benito Tan
	A/P Shirley Lim
	Dr Darren Yeo
	Dr Peter Lee Peng Foo
	Ms Yong Ann Nee

3. MEMBERSHIP

Thirteen new members (eight Ordinary Members, three Student Members and two Life Members) were admitted to the Institute during the year. They are:

Ordinary Members

Koh Li Ling
 Noraini Binte Abbas
 Dr. Adrian Elangovan
 Dr. Preejith P.V.
 Wu Chiu Hsia Alexandra
 Dr. Tim Roberts
 Goh Joo Leng Jeffrey
 Dr. Paul Teng P.-S.

Student Members

Ho Boon Chuan
 Tan Jingmei Eunice
 Ng Weixin

Life Members

Tan Hong Kim
 Lim Chin Keong

An existing member, Miss Chang Teck Hui, was converted to Life Membership. Twenty-one members were deleted from the membership list. These members had either requested to cancel their membership or not paid their subscriptions for over three years. By-law 5(c) of the Constitution provides the clause that any member whose subscriptions is two years in arrears may by resolution of the Council be excluded from membership of the Institute after the Council has informed him/her of its intention to do so by letter. Some of these members were not contactable, having relocated without providing a forwarding address.

The membership profile of SIBiol as of September 30, 2006 is as follows:

Patrons:	2
Honorary Fellows:	2
Fellows:	7
Ordinary Members:	93
Associate Members:	8
Student Members:	19
Life Members:	58
TOTAL	189

4. ACTIVITIES OF THE INSTITUTE

4.1 *SIBiol Members' Treats*

Public Lecture by Jack Horner (June 11, 2006)

The Institute co-sponsored with the Singapore Science Centre (SSC) on a public lecture by Jack Horner held at SSC, June 11, 2006. A total of 150 seats were reserved for SIBiol members. In addition, Dinosaur Pins were given out to members at the 32nd AGM.

Dinosaur! Exhibition at SCC (May 20 – August 20, 2006)

SIBiol provided discount coupons to SIBiol members for use at the Dinosaur! Exhibition held at SCC. The coupon enables each member up to five admission tickets at 20% discount each. Ann Nee designed and printed the discount coupons.

4.2 *Teachers' Workshop (May 30, 2006)*

SIBiol organized a Teachers' Workshop titled "SIBiol Primary School Teachers' Workshop: How to organize a science camp for school children" held at NIE (Natural Sciences and Science Education) on May 30, 2006. A total of 25 teachers attended this workshop. Photos taken during this event were uploaded in the SIBiol website.

4.3 *SIBiol Public Forum at the National Library (September 9, 2006)*

The SIBiol Public Forum titled "Facing our Environmental Challenges with Science & Technology" was jointly organized by SIBiol and the National Library Board at the National Library Building on September 9, 2006. More than 80 enthusiasts gather for this occasion.

Three noted speakers talked about diverse aspects of the environment, its concerns and what we can do about it as good Samaritans in Singapore. First talk entitled "Preserving Singapore's Marine Biodiversity" was delivered by Professor Chou Loke Ming, Department of Biological Sciences, National University of Singapore. He presented the changing face of marine environment surrounding Singapore and the region. Prof. Chou ended his talk on the positive note that it is indeed possible for marine biodiversity to co-exist with active sea traffic, basing this optimism on the results from the recent conservation efforts at Pulau Semakau. Next, Mr. Edwin Khew, CEO of IUT Global, Singapore, delivered his talk on "Environmental 'Greening' by Renewable Energy". He provided a broad view of the waste recycling measures and future targets in Singapore, impact of waste management on the environment, and how new technologies such as biomethanization of solid waste can provide sustainable commercial solutions to waste recycling and energy generation. In the third and final talk by Professor Ong Choon Nam, Department of Community, Occupational, and Family Medicine, National University of Singapore, he discussed about the broad global and local effects of climate change. His talk "Impact of Environmental Aerosol on Water Resources and Human Health" pieced together effects of global warming, its sources, and possible areas of reduction of greenhouse gas emissions. Prof. Ong also discussed the effects of climate change on human health, in particular the increasing incidences of vector-borne diseases.

These talks were followed by a panel discussion, where the three experts provided their views on questions raised by the public. It was gratifying to see much interest from both young and young at heart in this theme. Based on this response, SIBiol plans to organize other such thematic events in partnership with NLB in 2007.

In conjunction with the Forum, NLB set up some panels at the level 7 Reference Library section, to showcase posters offered by the noted speakers. NLB also compiled a list of related references and resource books for library visitors to learn more about biodiversity, conservation, and environmental health issues. This public forum was organized by Drs. Sanjay Swarup and Low Boon Chuan.

4.4 *The 6th and 7th Singapore Biology Olympiad (SBO 2005 and SBO 2006) & the 17th International Biology Olympiad (IBO 2006)*

The 6th Singapore Biology Olympiad (SBO) was held in November 2005 at NIE, NTU. A total of 10 students were shortlisted for an interview by the SBO organising committee, after which eight were selected for training beginning in February 2006. After a residential training camp at NIE/NTU in practical skills conducted in June 2006, and a further series of gruelling tests (theory and practical), four students were finally selected to represent Singapore in the 17th IBO.

The Singapore team, comprising Tay Rong En, Alfred Seng Wai Ping, Justin Wee Liang Yi, and Huang Kee Wui, performed well at the 17th IBO (Rio Cuarto, Argentina, July 9 – 16, 2006) by securing two Gold and two Silver medals. With these results, Singapore ranked 5th out of 47 participating countries. The team was led by Drs. Shirley Lim and Beverley Goh (SIBiol).

The 7th SBO is scheduled in November and December 2006. Dr. Shirley Lim is the Chairman of the SBO Organising Committee and the Committee comprises Drs. Lim Tit Meng, Beverly Goh, and He Jie. The theoretical tests will be held on November 16 and shortlisted candidates will sit for the Practical tests on December 5, 2006.

4.5 **6th Annual National Biology Convention (October 28, 2006)**

The 6th Annual National Biology Convention (ANBC) is scheduled to be held on October 28, 2006, after the 32nd AGM of SIBiol 3pm. The Chairman of the ANBC is Dr. Benito Tan. Five invited speakers will deliver talks on the following topics:

- A. Bioscience Entrepreneurship in Asia Or Making Money from the New Biology
Prof. Dr. Paul TENG P.-S., NSSE, NIE, Nanyang Technological University
- B. How Ethical Dilemmas in Bioethics can be Resolved
A/P Dr. John Elliott, Department of Psychology, National University of Singapore
- C. CITES Implementation in Singapore
Mr. Gerald Neo, Senior Wildlife Enforcement Officer, AVA, Singapore
- D. I Smell You! - Evidence of Eavesdropping in Orb-Weaving Spiders
Mr. Koh Teck Hui and Daiqin Li, DBS, National University of Singapore
- E. Biodiversity is the Raw Materials for Biotechnology: the Case of Tarsiers
Dr. Myron Shekelle, DBS, National University of Singapore

4.6 **Publications and Website**

Two issues of the Bulletin Volume 29 were published this year. The editorial board was headed by Dr Darren Yeo. The Institute still maintains its own website address with an outsourced website-hosting to a commercial service provider. The URL is <http://www.sibiol.org.sg/>. The website was maintained by Mr Timothy Tan and Ms Yong Ann Nee.

5. **ACKNOWLEDGEMENTS**

The Institute gratefully acknowledges the support and contributions of the following persons and organizations (in alphabetical order) for its various activities during the year 2005/2006:

Miss Celestine Chan (National Library Board)
 Dr Chew Fook Tim (Dept of Biological Sciences, National University of Singapore)
 A/P Chew Shit Fun (National Institute of Education, Nanyang Technological University)
 Mr Oliver Chia (Ministry of Education)
 A/P Chia Tet Fatt (National Institute of Education, Nanyang Technological University)
 Mr Chong Ping Lee (Dept of Biological Sciences, National University of Singapore)
 Prof Chou Loke Ming (Dept of Biological Sciences, National University of Singapore)
 Mr Chow Wun Han (National Library Board)
 A/P CH Diong (National Institute of Education, Nanyang Technological University)
 A/P John Elliott (Dept of Psychology, National University of Singapore)
 Dr Beverly Goh (National Institute of Education, Nanyang Technological University)
 A/P He Jie (National Institute of Education, Nanyang Technological University)
 Prof Hew Choy Leong (Dept of Biological Sciences, National University of Singapore)
 Mr Ho Wah Chai (National Institute of Education, Nanyang Technological University)
 Prof Alex Ip (Dept of Biological Sciences, National University of Singapore)
 Mr Edwin Khew (CEO, IUT Global, Singapore)
 A/P Koh Chong Lek (DNA Centre@NIE, National Institute of Education, NTU)
 Mr Koh Teck Hui (Dept of Biological Sciences, National University of Singapore)
 Dr Peter Lee (National Institute of Education, Nanyang Technological University)
 Miss Michelle Lee Swee Ling ((National Institute of Education, Nanyang Technological University)
 Mr Mobius Leng (National Institute of Education, Nanyang Technological University)
 A/P Leung Ka Yin (Dept of Biological Sciences, National University of Singapore)
 Dr Li Daiqin (Dept of Biological Sciences, National University of Singapore)
 A/P Shirley Lim (National Institute of Education, Nanyang Technological University)
 A/P Lim Tit Meng (Dept of Biological Sciences, National University of Singapore)
 Dr. Liou Yih-Cherng (Department of Biological Sciences, National University of Singapore)
 A/P Loh Chiang Shiong (Dept of Biological Sciences, National University of Singapore)
 A/P Low Boon Chuan (Dept of Biological Sciences, National University of Singapore)
 Dr Shawn Lum (National Institute of Education, Nanyang Technological University)
 A/P Rudolf Meier (Dept of Biological Sciences, National University of Singapore)
 Dr Henry Mok (Dept of Biological Sciences, National University of Singapore)
 Mr Gerald Neo (AVA, Singapore)

Ms Ng Bee Choo (Nature's Niche)
 Prof Peter Ng (National University of Singapore, Singapore)
 Dr Ong Bee Lian (Dept of Biological Sciences, National University of Singapore)
 Prof Ong Choon Nam (Dept of Community, Occupational and Family Medicine, NUS)
 Mr Ong Tang Kwee (Dept of Biological Sciences, National University of Singapore)
 Ms P Amuthavali (National Institute of Education, Nanyang Technological University)
 Miss Sara Leng Leng PEK (National Library Board)
 Mr Timothy Pwee (National Library Board)
 Mdm Poon Chew Leng (Ministry of Education)
 A/P Prakash Kumar (Dept of Biological Sciences, National University of Singapore)
 A/P Sanjay Swarup (Dept of Biological Sciences, National University of Singapore)
 Ms Siti Alimah Bte Aliyas (National Institute of Education, NTU)
 Ms Kathy Su Feng-Yi (Department of Biological Sciences, NUS)
 Dr Myron Shekelle (Dept of Biological Sciences, National University of Singapore)
 Ms Subha N (Dept of Biological Sciences, National University of Singapore)
 Mr Allan Tan (Dept of Biological Sciences, National University of Singapore)
 A/P Benito C Tan (Dept of Biological Sciences, National University of Singapore)
 Dr Tan Heok Hui (Dept of Biological Sciences, National University of Singapore)
 Mr Tan Hong Kim (Ministry of Education)
 Ms Joanne Tan Sze Wei (National Institute of Education, Nanyang Technological University)
 Prof Leo Tan (National Institute of Education, Nanyang Technological University)
 Dr Tan Lik Tong (National Institute of Education, Nanyang Technological University)
 Ms Tan Lu Wee (Dept of Biological Sciences, National University of Singapore)
 Dr Tan Swee Hee (Dept of Biological Sciences, National University of Singapore)
 A/P Hugh Tan Tiang Wah (Dept of Biological Sciences, National University of Singapore)
 Mr Timothy Tan (National Institute of Education, Nanyang Technological University)
 Mr Tay Hai Hwee (National Institute of Education, Nanyang Technological University)
 Miss Tay Pei Lin (National Library Board)
 Prof Paul Teng (National Institute of Education, Nanyang Technological University)
 Mr Andrew Tham (Dept of Biological Sciences, National University of Singapore)
 A/P Tham Foong Yee (National Institute of Education, Nanyang Technological University)
 Mr Tong Shaw Wei (National Institute of Education, Nanyang Technological University)
 Mr Damien Wang Khang Cheh (National Library Board)
 A/P Wong Sek Man (Dept of Biological Sciences, National University of Singapore)
 Mr Yan Tie (Dept of Biological Sciences, National University of Singapore)
 Dr Darren Yeo (Dept of Biological Sciences, National University of Singapore)
 A/P Yeoh Hock Hin (Dept of Biological Sciences, National University of Singapore)
 Dr. Yu Hao (Dept of Biological Sciences, National University of Singapore)
 Ms Yong Ann Nee (Dept of Biological Sciences, National University of Singapore)
 Ms Zeehan Jaafar (Dept of Biological Sciences, National University of Singapore)
 Department of Biological Sciences, Science Faculty, National University of Singapore
 Ministry of Education, Singapore
 National Institute of Education, Nanyang Technological University
 National Library Board
 National Parks Board, Singapore
 Nature's Niche, Singapore
 Natural Sciences & Science Education, National Institute of Education, NTU
 Raffles Museum of Biodiversity Research, Department of Biological Sciences, NUS
 Singapore Botanic Gardens
 Singapore National Academy of Science

Recorded by Dr Tan Lik Tong, Hon Secretary, 32nd Council
 Vetted by A/P Lim Tit Meng, President, 32nd Council



SIBiol Public Forum 2007

Coming soon!

Look out for another SIBiol Public Forum coming your way soon. This event will once again see a panel of leading experts share their thoughts as well as field questions on a biological topic of broad interest.

Further details will be announced shortly.

Please refer to the SIBiol website www.sibiol.org.sg for updates.



The 7th Singapore Biology Olympiad and 18th International Biology Olympiad preparations

Congratulations are due to all the aspiring biologists who were sent by their schools to last year's 7th Singapore Biology Olympiad (SBO); these represent the pick of Singapore's junior college biology students. The 7th SBO got underway on 16th November 2006 with these 287 students representing 15 junior colleges competing in the Theory test round at the National Institute of Education, Nanyang Technological University (NIE/NTU). This marked not only the first round of the SBO but also the beginning of the long selection process that will eventually lead to the selection of Singapore's representatives at the 18th International Biology Olympiad (IBO) to be held in Saskatoon, Canada, from 15th to 22th July 2007. Based on their first round scores, twenty-one students from seven junior colleges eventually went on to take part in the Practical test round on 5th December 2006 also held at NIE/NTU. The final results saw four gold, six silver, and 11 bronze medals being awarded to these students. Eight of the medal winners were then invited for interviews with the SBO Committee, who eventually shortlisted the five students who are currently undergoing intensive training with staff of the Natural Sciences and Science Education Academic Group, NIE/NTU, and Department of Biological Sciences, NUS. Four of them will ultimately be selected to don Singapore colours at the 18th IBO in July and we wish them all the very best in their training and in Saskatoon!

The 18th IBO trainees are:

- Mayank Soni (Raffles JC)
- Soh Hui Ming, Gary (Anglo-Chinese JC)
- Tan Yong Zi (Hwa Chong Institution)
- Wang Liang Wei (Hwa Chong Institution)
- Wee Liang En, Ian (Hwa Chong Institution)

Singapore Institute of Biology Photographic Essay Contest 2007

Nature is filled with endless combinations of living designs and survival means; many of these form fascinating images that are both awesome and inspiring. Our first SIBiol Photographic Essay Contest thus aims to promote the learning and appreciation of nature outside of the classroom, by encouraging students to observe and explore the living realm around them. An exhibition will be organised to showcase the best and most informative entries in order to share with one and all, the wonder and spectacle of the natural world.

Contest Themes

Nature's Art, Life & Death, Poetry in Motion

Contest Format - Photo Essay

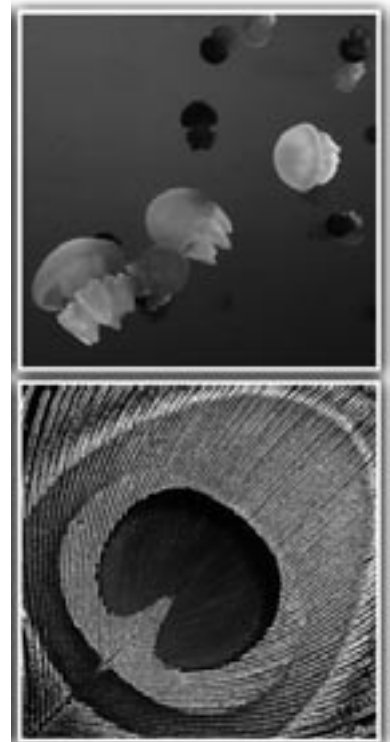
Each entry should be based on one of the above three themes and should consist of:

1. A single image, or a set of up to three images, with
2. Accompanying text of not more than 300 words, and
3. Online contest entry form, duly completed.

Contest Categories

1. School Category
For students from secondary schools, junior colleges and MOE-accredited institutions up to pre-university level in Singapore.
2. Tertiary Institution Category
For full-time students of polytechnics and universities in Singapore.

Details are available at <http://www.sibiol.org.sg/photoessay/>



SIBiol Primary School Teachers' Workshops



Workshop 1: Get to know your Wayside Trees in Three Easy Steps

By Assistant Professor Shawn Lum (National Institute of Education, NTU)
23rd May 2007, Wednesday (9.30 am to 5 pm) at NIE, NTU

Introduction:

Are you tired of not knowing your wayside trees, or even worse, don't know how to figure out the best way to do it? Are you tired of randomly flipping through guide books in a vain attempt to find a picture that matches your mystery plant? Have you hurt your neck after staring up at a tree canopy in a vain attempt to figure out what it was you were looking at? Come to the workshop to find out how you can take your first steps on the road to becoming a tree identification expert!

Activities will include the following:

Three Easy Steps

- Looking closely at plants – what are the salient points in plant identification?
- Describing plants – how can I best articulate what is observed?
- Identification resources – how best to use a field guide or key?

“Bonus”

- Do it yourself – what can one do to put together a guide best suited for my own or my students' use?
- Let's go walkabout – a short tour of the NIE campus to look at trees

Trainer profile: Assistant Professor Shawn Lum has spent the past fifteen years in Singapore trying to learn its trees. His main interests include rainforest ecology and the diversification of tree species, but he also does work in conservation biology and environmental education. His duties at NIE allow him to interact with a broad range of collaborators, from fellow researchers to primary school pupils, and he has learned a great deal from all of them.

Workshop 2: How to Organize a Science Camp for School Children

By Associate Professor Lim Tit Meng, President of SIBiol
24th May 2007, Thursday (9.30 am to 5 pm) at NIE, NTU

Introduction:

At the primary school level, science is not clearly defined as biology, chemistry, or physics but is taught as a holistic subject at a level that the kids can relate to in the real world. The trainer believes that kids can learn science effectively through play and competition, with hands-on experiments and have fun. Such activities can be offered in a Science Camp or each as a standalone to supplement classroom teaching. In the workshop, teachers will assume the role of the school kids and take part in a series of activities designed to complement teaching in primary school science. Teachers can then adopt or modify the activity sheets for their school application. Part of the workshop will also include the making of a board game that the teachers can take with them to use in school.

Activities with worksheets include the following:

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 on the digestive system*)
4. Optical illusions (*Theme: Human anatomy: eyes and brain*)
5. Adaptation of the human hand (*Theme: Human anatomy and mechanical designs*)
6. Communication--don't take it for granted (*Theme: living things do 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: Magnetism*)
10. Making a rainbow (*Theme: Light and optic*)
11. Paper cutting can be mathematically fun! (*Theme: a field of maths called topology*)
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*)

Trainer profile:

Associate Professor Lim Tit Meng attained his bachelors in Zoology from NUS with a first class Honours degree and his Ph.D. from Cambridge University in UK. His research interests cover neurobiology and biotechnology. He holds several patents related to his research. He has also received many teaching awards over the years and is a popular speaker at workshops and seminars. He has held the position of a Director for the Bioscience Centre, a Programme Director for many Life Sciences workshop series, a Deputy Head of the Department of Biological Sciences, Vice Dean for the Faculty of Science, and holds many other administrative portfolios at the National University of Singapore. He has also served in several committees at the Ministry of Education on education matters related to Life Sciences. He has also experience in running a Kids Club programme for his children and their friends.

Workshop fees:

\$120.00 (inclusive of tea breaks) for each workshop

Venue for both workshops:

Natural Sciences Laboratories, National Institute of Education, Nanyang Technological University, 1 Nanyang Walk, Singapore 637616

Getting there:

By private vehicle: The map of NIE and the location of the carpark nearest to the Natural Science laboratories will be provided after confirmation of registration.

By public transport: SBS bus no. 199 from Jurong Point MRT station and alight at NIE carpark 7 (next to the tennis courts), followed by a 5 min walk to the Natural Sciences Laboratories). The map of NIE will also be provided after confirmation of registration.

For more information please contact:

Associate Prof. Koh Chong Lek
Workshop Coordinator
c/o Natural Sciences Academic Group
National Institute of Education
Nanyang Technological University
1 Nanyang Walk
Singapore 637 616
Tel: 6790 3374
Fax: 6896 9414
E-mail: chonglek.koh@nie.edu.sg



SIBiol Calendar of Events 2006/2007

<u>Date</u>	<u>Event</u>	<u>Venue</u>
16 Nov 2006	7th Singapore Biology Olympiad Theory Test	NIE
5 Dec 2006	7th Singapore Biology Olympiad Practical Test	NIE
Mar–Jun 2007	Theory and practical training of representatives selected from the 7th Singapore Biology Olympiad in preparation for 18th International Biology Olympiad	NIE & NUS
1 May–31 Jul 2007	SIBiol Photographic Essay Contest 2007	Anywhere you like!
23 May 2007	SIBiol Primary School Teachers' Workshop: <i>Get to know your Wayside Trees in Three Easy Steps</i>	NIE
24 May 2007	SIBiol Primary School Teachers' Workshop: <i>How to organize a Science Camp for School Children</i>	NIE
15–22 Jul 2007	18th International Biology Olympiad	Saskatoon, Canada
Sep 2007	Public Forum and Public exhibition of winning entries from SIBiol Photographic Essay Contest 2007	To be announced
Oct 2007	33rd Annual General Meeting and 7th Annual National Biology Convention	To be announced
Nov 2007	8th Singapore Biology Olympiad	NIE

SIBiol Research Trust Fund – Supported projects from latest round of applications

Project proposals submitted to the SIBiol Council following the latest call for proposals for research grants under the SIBiol Research Trust Fund (RTF) [see SIBiol Bulletin 29(2)], were reviewed by at least three external reviewers as well as an internal review sub-committee. The following two projects have been awarded RTF support:

Ecology and community succession of submerged aquatic vegetation and related impacts on water quality of Lower Seletar Reservoir

- A/P Shirley Lim and A/P He Jie (National Institute of Education, Nanyang Technological University)

Abstract. – This project aims to study the ecology and succession of two such aquatic plants, *Hydrilla verticillata* and *Najas indica*, which have recently proliferated in the Lower Seletar Reservoir, resulting in, among other things, costly maintenance for the Public Utilities Board (PUB). Emphasis of the study will be on the impact of these plants on water quality and the over-proliferation problems caused. Specific objectives include studying the aquatic plant distribution (mainly that of *Hydrilla* and *Najas* sp.) in Lower Seletar Reservoir in relation to environmental conditions; investigating the conditions that promote aquatic plant growth and succession; and formulating recommendations to the Public Utilities Board (PUB) on the control of aquatic plant proliferation in Lower Seletar Reservoir to prevent future eutrophication. The study will involve field surveys of aquatic plant species distribution and associated environmental parameters; laboratory analyses of mineral composition of water and plant tissues to investigate the relationship between plant growth pattern and mineral composition; and comparative studies on the morphological and physiological changes (e.g., photosynthetic O₂ evolution) of *H. verticillata* and *N. indica* in response to manipulation of selected environmental factors (e.g., water turbidity). Information from this study can be applied by PUB in the strategies for management of the reservoir's aquatic plant communities and to aid in the improvement of the water quality and the aesthetic appearance of the reservoir.

Population estimation and dynamics of rabbitfishes (Siganidae) around the Southern Islands of Singapore by mark-recapture

- Mr Marco Perrig and Dr Beverly Goh (National Institute of Education, Nanyang Technological University)

Abstract. – Siganid fishes, together with other herbivores, are believed to play an important role in the coral reef ecosystem by grazing on algae and preventing phase shift from coral-dominated to algal-dominated communities. Despite suggestions that the herbivorous fish guild in Singapore waters is dominated by siganids, basic data to verify this, such as population size estimates and distribution, is lacking. To address this gap, our study aims to estimate population size of Siganidae around the Southern Islands of Singapore using mark-recapture method. Prior to that, an estimation of the post-tagging mortality and observations on behavioural changes of tagged versus untagged fish will be carried out. Data collected can help determine the homogeneity of siganid densities around the Southern Islands and connectivity between the islands and island groups to facilitate better understanding of the population dynamics of local siganid populations. Additional data on the substrate type, algal cover and topographical complexity will also be collected using the established Line Intercept Transect (LIT) methodology in order to correlate the abundance of the Siganidae with environmental factors. As this study aims to provide urgently-needed basic knowledge on siganids (and herbivory is an important factor in resilience from algal dominance), it will also be a step towards determining the significance of siganids in providing resilience to Singapore's deteriorating coral reefs. This is important for the conservation and proper management of local reefs.

Student Project Abstracts

Featuring student projects mentored by SIBiol members.

This issue includes abstracts from the Nanyang Research Programme (NRP) 2006 [www.ntu.edu.sg/nrp/], Science Research Programme (SRP) 2006/07 [www.science.nus.edu.sg/schools/srp/] and the 11th Biological Science Graduate Congress [www.biology.sc.chula.ac.th/bsgc11/index.html]

From NRP - Gold Medal winner, NRP 2006:

DNA Science w/o the DNA! - Gel Electrophoresis

Tan Wei Liang¹, Tan Zong Ying¹, Timothy Tan Ter Ming², Peter Lee Peng Foo²

¹Hwa Chong Institution (High School Section)

²National Institute of Education, Nanyang Technological University

The aim of the project is to develop a low cost apparatus to conduct hands-on experiments for the teaching and demonstration of DNA gel electrophoresis. DNA gel electrophoresis requires the use of specialized apparatus, toxic reagents, expensive agarose gel and DNA samples, as well as a considerable amount of valuable classroom time. Yet, the principle of electrophoresis itself is simple, and developing alternative methods, substitute reagents and even low-cost apparatus is possible. Beyond the basics, the scope can be expanded to the development of simple but compelling demonstrations of key biotechnological processes and applications. Developed as a package, successful realization of the project would ultimately promulgate useful and exciting teaching protocols and products to schools, to support curriculum-based teaching, as well as for enrichment activities.

From NRP - Gold Medal and Top Gold Project winner, NRP 2006:

Cytotoxicity of Potential Metal-Based Anticancer Drug

Yang Yiyu Carlos¹, Ooi Chen Feng¹, Wan Melvin¹, Peter Lee Peng Foo²

¹Hwa Chong Institution (High School Section)

²National Institute of Education, Nanyang Technological University

This study aims to explore the anticancer properties of copper (II) complexes of salicylaldehyde-N-N-di(benzyl)-semicarbazone. Novel metal-based drugs which may be medically more effective have been synthesized. The effectiveness of both the ligand and copper complex was determined through cytotoxicity (MTT) assays using 5 cell lines of neoplastic origin, and 1 cell line of benign origin. Percentage of live cells left after a 24-hour incubation of the cells with different concentrations of the drug was quantified using MTT salt. Copper (II) complexes of salicylaldehyde-N-N-di(benzyl)-semicarbazone showed higher cytotoxicity on all cell lines, compared to the ligand. The Chang Liver cell line (benign origin) showed higher resistance to both complex and ligand, while most other cell lines were relatively sensitive to the complex. By further comparison, the copper complex is more effective on certain cell lines than commercial anticancer drug cisplatin. Further experimentations are undergoing in order to understand the mechanisms of cell death caused by the drug.

From NRP - Bronze Medal winner, Singapore Science and Engineering Fair 2007; Merit Award winner, NRP 2006:

Cytotoxicity and Anti-Quorum Sensing Activity from Marine Organisms

Chan Wai Hong Ronald¹, Yap Chuan Sheng Sean¹, Goh Shao Sheng², Peter Lee Peng Foo³, Tan Lik Tong³

¹Raffles Institution

²Victoria Junior College – Integrated Programme

³National Institute of Education, Nanyang Technological University

Different species of marine cyanobacteria were collected from various offshore islands in Singapore. The organic products of

these cyanobacteria were screened for biological activity, in particular cytotoxicity and anti-quorum sensing activity. To test for cytotoxicity, assays measuring the toxicity of these natural products on the MOLT-4 (acute lymphoblastic leukaemia) and Chang (liver) human cell lines were conducted. To test for anti-quorum sensing activity, quorum sensing inhibition assays using *Chromobacterium violaceum* CV026 as the biomonitor strain were conducted. This project eventually aims to uncover and isolate the biologically active compounds, which could potentially be developed as drugs in the future.

**From SRP – First Prize winner (Biochemistry category), International Science and Engineering Fair 2007;
Gold Medal winner, Singapore Science and Engineering Fair 2007:**

Functional Diversity of BCH/sec14 Domains

Wee Liang En, Ian¹, Zhou Yi Ting², Low Boon Chuan²

¹*Hwa Chong Institution (College Section)*

²*Department of Biological Sciences, National University of Singapore*

BCH (Bnip-2 and Cdc42GAP homology) domains are a novel class of protein-interacting domains. First identified in BNIP2 and in Cdc42GAP, a GTPase-activating-protein (GAP), canonical BCH domains play important and varied roles in the control of cell morphology and apoptosis induction, amongst others. However, this domain is currently classified under lipid-interacting sec14 domains due to low sequence identity (~20%). Given this intriguing similarity, the relationship between BCH and sec14 domains is worth further study. As BCH/sec14 domains are closely associated with cell signaling and human disease, characterization of these domains and the elucidation of their functional diversity could better aid our understanding of their cellular functions and disease pathogenesis. Using *in silico* computational prediction and protein-protein interaction studies, we have further classified and identified several key signaling proteins that harbor the BCH domain, raising the possibility that this domain might play a significant role in controlling cell dynamics and disease manifestation.

Best presentation, 11th Biological Science Graduate Congress (Biodiversity, Ecology, and Conservation Session):

Gobies of Malay Peninsula and Preliminary Phylogenetic Data

Zeehan Jaafar, Chou Loke Ming

Department of Biological Sciences, National University of Singapore

The family Gobiidae comprises of some 2000 small teleost fishes commonly known as “gobies”. A recent faunistic survey of this group carried out in Singapore, Peninsular Malaysia and Southern Thailand yielded some 120 species and made apparent taxonomic problems still inherent at all levels within this group. Using preliminary data set of mitochondrial genes, a phylogenetic tree is constructed in the attempt to elucidate taxonomic inconsistencies. In particular, the placement of species from the sub-family Gobiinae will be discussed.



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