



BULLETIN

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PATRONS

Mr Richard Edward Hale,

F.C.I.B.

Mr Tan Keong Choon,

B.B.M.

32nd COUNCIL OF THE SINGAPORE INSTITUTE OF BIOLOGY

President

Assoc. Prof Lim Tit Meng

Vice-President

Asst. Prof Beverly Goh

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Asst. Prof Peter Lee Peng Foo

Assoc. Prof Low Boon Chuan

Assoc. Prof Sanjay Swarup

Assoc. Prof Benito C. Tan

Dr Darren Yeo

Ms Yong Ann Nee

Bulletin Editor

Dr Darren Yeo



This exhibition was created by The Field Museum, Chicago, USA

Watch out for a *T rex* named SUE.....

Message from the President of the 32nd SIBiol Council

Dear Member of the SIBiol,

I have been with the Institute since I was an undergraduate in NUS during the 1980s, first as a student member and then a life member. I have also been in the Council since 'don't-know-when', and now have to shoulder the responsibility of being the Institute President. It is with mixed feelings that I take on this role.

Of course, it is an honour to be entrusted the role, and I value all the support from council members and members at large. However, I also feel sad and wonder, that as time has passed and the pace of life and priorities among members have changed drastically in recent years, if members still have the zeal of being associated with the Institute. From the dwindling attendance at past AGMs, I can't help but ask our 32nd Council how we could make members enthusiastic again about the Institute's business.

SIBiol's main objective is to promote Biology, which is an all-embracing discipline and the root of the well-touted Life Sciences. but somehow the general impression is that Biology is outdated and old-fashioned. Hence the prestige of the institute suffers. I would like to encourage members to help restore the status of Biology and to correct the wrong mindset. We should collectively uphold the mission of the Institute and fulfill the objectives as spelled out in our constitution, which was very wisely laid down by our founding members. As we move along with the waves of the life sciences, the following objectives are still very relevant, noble and evergreen:

- a) To promote the advancement of biology and its applications.
- b) To encourage the improvement of education in biology and the training of those interested in biology.
- c) To advance the character and status of the profession of biology and its applications and the interest of those engaged therein.
- d) To facilitate the exchange of information in biology and its applications through meetings, exhibitions, publication and other ways.
- e) To publicise and disseminate information about biology and its application and on matters concerning the profession.
- f) To secure and distribute grants and loans for education and research in biology and its applications.
- g) To represent the opinion of the members of the Institute on matters related to the objects of the Institute.

The objectives are manifold, and we as biologists do have a role to play in education, industry and society, in addition to academia. I have set for the 32nd Council the task of striving towards the above objectives. In this year, we will roll out a new workshop for primary school teachers, we will organize a forum on environmental health issues, and we will also help in a special symposium on Dinosaurs! We will work closely with the Ministry of Education, not just in organising the Singapore Biology Olympiad and training for the International Biology Olympiad, but to also work with schools for meaningful projects that can enhance students' learning through inquiry. We will also present our opinion where applicable, such as on bioethics, through appropriate platforms. We will also seek collaboration with other Institutions under the Singapore National Academy of Science which may have synergy with us. As Biology interfaces with various disciplines to give rise to the exciting world of the life sciences, I believe that for us to stay relevant, we should also interface with others in meaningful ways.

The Institute exists because of its members. It is for the members that the Council exists. The tripartite relationship among Members, Council and the Institute should be an intimate one and should be mutually supporting. The SIBiol Bulletin and our website serve to communicate our partnerships and I urge you to participate in the Institute's business. If you have taken the time to read through this message, I am hopeful that you will also take time to support YOUR Institute, the SIBiol. Please share your views and ideas freely with the Council, so that the Council can serve you better and bring SIBiol to greater heights.

I take this opportunity to thank the past President, Shirley Lim, and the 31st Council members for serving the Institute through 2005. I look forward to the support of all members in 2006.

Thank you very much.

Yours sincerely,
Associate Professor Lim Tit Meng
President, 32nd Council, SIBiol

**THE SINGAPORE INSTITUTE OF BIOLOGY
31ST COUNCIL
ANNUAL REPORT (2004/2005)**

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 31ST COUNCIL

The 31st Council held seven meetings during the year to carry out the business of the Institute. Members of the 31st Council of the Institute for the year 2004/2005 comprised the following officers:

President:	A/P Shirley Lim
Vice-President:	A/P Lim Tit Meng
Honorary Secretary:	Dr Beverly Goh
Honorary Treasurer:	Mr Timothy Tan
Council Members:	A/P He Jie
	A/P Li Daiqin
	Dr Low Boon Chuan
	A/P Sanjay Swarup
	A/P Benito Tan
	Dr Tan Lik Tong (co-opted)
	Dr Darren Yeo
	Ms Yong Ann Nee

3. MEMBERSHIP

Twenty-nine new members (21 Ordinary Members, seven Student Members and one Associate Member) were admitted to the Institute during the year. They are:

Ordinary Members

Ms Airani Ramli	Ms Chua Siew Chin	Mr Mark Corea	Dr Gen Hua Yue
Ms Jani Thuaibah Isa Tanzil	A/P Koh Chong Lek	Mr Enoch Lau	Mr Law Hock Ling
Dr Peter Lee Peng Foo	Mr Lim Cheng Puay	Mr Lim Poh Yeong	Mr Michael Linich
Ms Low E-Wen	Ms Mary-Anne Pan	Ms Tan Beng Chiak	Dr Tan Lik Tong
Ms Dionne Teo Li-en	Dr Peter A. Todd	Mr Toh Jenn Peow	Mrs Wong-Ng Lee Gui
Ms Yang Shufen			

Student Members

Ms Magdeline Chew	Mr Hee Kim Hor	Mr Koh Teng Seah	Ms Mantazh Khanna
Ms Noorfaezah Binte Sadon	Ms Tan Ruijuan	Ms Tan Wee Kee	

Associate Member

Mr Haniman Boniran

Eleven 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 30 September 2005 is as follows:

Honorary Fellows:	2
Fellows:	7
Ordinary Members:	101
Associate Member:	8
Student Members:	25
Life Members:	54
TOTAL	197

4. ACTIVITIES OF THE INSTITUTE

4.1 30th Anniversary Celebrations

4.1.1 Biology in Asia International Conference

The "Biology in Asia" International Conference was organised to commemorate the Institute's 30th anniversary. The Conference was held from 7-10 December 2004, at NIE/NTU. The members of the organising committee were:

Co-Chairpersons :	A/P Shirley Lim	A/P Lim Tit Meng
Treasurer:	Dr Beverly Goh	
Secretary:	Dr Darren Yeo	
Members:	Mrs Chua-Lim Yen Ching	A/P Diong CH
	A/P He Jie	Mr Lee Siew Lin
	Dr Li Daiqin	Mr Jacques See
	A/P Sanjay Swarup	A/P Benito Tan
	Ms Tan Aik Ling	Dr Tan Lay Pheng
	A/P Tham Foong Yee	Ms Yong Ann Nee

The keynote address for the conference, entitled "Reason for Hope" was delivered by Dr Jane Goodall of the Jane Goodall Institute for Wildlife Research, Education and Conservation. In addition, 13 speakers under three sub-themes delivered plenary addresses. They were:

Biodiversity, Ecology and Conservation in Asia:

Dr Patrick Grootaert (Royal Belgian Institute of Natural Sciences, Belgium)
 Dr Jan Slikkerveer (Leiden University, The Netherlands)
 Dr Lucius Eldredge (Bishop Museum, Hawaii USA)
 Dr Pilai Poonswad (Mahidol University, Thailand)
 Dr Stuart Davies (Harvard University, USA)
 Dr Peter Ng (National University of Singapore, Singapore)
 Dr Roger Kitching (Griffiths University, Australia)

Biotechnology in Asia:

Dr Charles Arntzen (Arizona State University, USA)
 Dr Michael Horn (Prodigene, Inc., USA)
 Dr Maurice Moloney (Sembiosys Genetics, Inc, Canada)

Biology Education in Asia:

Mr David Micklos (DNA Learning Centre, Cold Spring Harbour Lab, USA)
 Prof Leo Tan (National Institute of Education, NTU Singapore)
 Mr Hans Moréllis (Institute for Curriculum Development, The Netherlands)

The Guest of Honour for the opening ceremony of the Conference was Mr Thaman Shanmugaratnam, Minister for Education, Singapore. A total of 271 participants from 29 countries (including Sweden, the Netherlands, Yemen, Egypt, Iran, Kazakhstan and Uzbekistan) attended the conference, delivering a total of 126 oral presentations and 68 posters.

4.1.2 The 30th Anniversary Dinner was held in conjunction with the Congress Banquet during the "Biology in Asia" Conference, on 9th December 2004. During this dinner, Prof Leo Tan (Director, NIE and President, the Singapore National Academy of

Sciences, FSIBiol) was made Honorary Fellow of SIBiol for actively promoting biology and biology education in Singapore. Four stalwart SIBiol members, namely, A/P CH Diong (Natural Sciences and Science Education, NIE), Prof Lee Sing Kong (Dean, Graduate Programmes & Research, NIE), A/P Tan Teck Koon (Dean of Students, Office of Student Affairs, NUS), and A/P Yeoh Hock Hin (Department of Biological Sciences, NUS), were made Fellows of the Institute in recognition of their contributions to SIBiol. A/P Peter Ng (Director, Raffles Museum of Biodiversity Research, Department of Biological Sciences, NUS) was the recipient of the Distinguished Biologist Award for outstanding research in biology.

4.2 **5th Singapore Biology Olympiad (SBO 2004), 16th International Biology Olympiad (IBO 2005) & 6th Singapore Biology Olympiad (SBO 2005)**

The 5th Singapore Biology Olympiad (SBO) was held in November 2004. The theory tests (Multiple Choice Questions) of the SBO were held on 5th November 2004 at NIE, NTU. The Practical tests were held on 17th November 2004 at (Natural Sciences & Science Education) NIE, NTU. A total of six students obtained gold medals, 12 were awarded silver medals and 16 awarded bronze medals. 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 2005. After a residential training camp at NIE/NTU in practical skills conducted in June 2005, and a further series of gruelling tests (theory and practical), four students were finally selected to represent Singapore in the 16th IBO.

The Singapore team, comprising Miss Mabel Ang, Mr Chen Shiwei, Mr Ng Shen Rong and Mr Teo Guoxuan, Colin, performed well at the 16th IBO (Beijing, China), and secured one Gold and three Silver medals. With these results, Singapore ranked 6th out of 50 participating countries. The team was led by A/P Lim Tit Meng, A/P Shirley Lim and A/P CH Diong (SIBiol).

The 6th SBO is scheduled in November 2005. A/P Lim Tit Meng is the Chairman of the SBO Organising Committee and the Committee comprises A/P Shirley Lim, Dr Beverly Goh and A/P He Jie. The theoretical tests will be held on 10th November and shortlisted candidates will sit for the Practical tests on 24th November 2005.

4.3 **SIBiol Members-Get-Together**

The Institute held a members-get-together function on 2 July 2005 (Saturday), a buffet 11:30am brunch at the Heritage Nonya Restaurant, Singapore Omnimax Theatre. A total of 60 people, comprising SIBiol members, the Singapore 16th IBO team, reserve team members and their immediate families, attended the event. Special commemorative umbrellas to mark SIBiol's 30th Anniversary, and to celebrate the successful "Biology in Asia" International Conference 2004 were distributed to members present at the gathering. This event was organised by Dr Tan Lik Tong and Dr Low Boon Chuan.

4.4 **5th Annual National Biology Convention**

The 5th Annual National Biology Convention (ANBC) is scheduled to be held on 22nd October 2005, in the morning of the 31st AGM of SIBiol. The coordinators of the ANBC are A/P Benito Tan, A/P Sanjay Swarup and A/P Li Daiqin. Three invited speakers will deliver talks on the following topics:

- The post-phosphorylation regulation provides a novel mechanism in signal transduction (Dr Liou Yih-Cherng, Department of Biological Sciences, NUS);
- Vision and Villainy: The Evolution of Acute Vision and Predatory Behaviour in Jumping Spiders (Ms Kathy Su Feng-Yi, Department of Biological Sciences, NUS);
- Mechanisms for specifying floral meristem identity (Dr Yu Hao Department of Biological Sciences, NUS);

4.5 **Publications**

4.5.1 **Singapore Institute of Biology Bulletin**

Two issues of the Bulletin Volume 28 were published this year. The editorial board was headed by Dr Darren Yeo.

4.5.2 **Singapore Institute of Biology Website**

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.

4.6 **Research Trust Fund**

A call for grant proposals for the SIBiol Research Trust Fund was made in October 2004. A total of four grant applications were received, and they were all reviewed by three external reviewers as well as an internal review sub-committee. The reviewers recommended that the following two projects be awarded grants from the SIBiol RTF:

- Biomedical potentials of marine fouling sponges collected from Singapore waters (Dr Tan Lik Tong, Natural Sciences and Science Education, NIE/NTU);
- The Brachyuran fauna of Singapore: A comprehensive study of the diversity of Singapore crabs (Crustacea: Decapoda) (Dr Darren Yeo, DBS, NUS)

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 2004/2005:

Mr Abdul Latiff Bin Zainal (Dept of Biological Sciences, National University of Singapore)
 Mrs Ang Swee Eng (Dept of Biological Sciences, National University of Singapore)
 Dr Charles Arntzen (Arizona State University, USA)
 Dr Lena Chan (National Parks Board, Singapore)
 Mr William Chew (National Institute of Education, Nanyang Technological University)
 Dr Chew Fook Tim (Dept of Biological Sciences, National University of Singapore)
 A/P Chew Shit Fun (National Institute of Education, Nanyang Technological University)
 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)
 Mrs Chua-Lim Yen Ching (Ministry of Education)
 Dr Stuart Davies (Harvard University, USA)
 A/P CH Diong (National Institute of Education, Nanyang Technological University)
 Dr Lucius Eldredge (Bishop Museum, Hawaii USA)
 Ms Gan Jumi (National Institute of Education, Nanyang Technological University)
 Ms Go Pei Ling (National Institute of Education, Nanyang Technological University)
 Dr Beverly Goh (National Institute of Education, Nanyang Technological University)
 Dr Patrick Grootaert (Royal Belgian Institute of Natural Sciences, Belgium)
 Dr S. Gunatilleke (University of Peradeniya, Sri Lanka)
 Dr Han Kwai Hin (University of Tunku Abdul Rahman, Malaysia)
 A/P He Jie (National Institute of Education, Nanyang Technological University)
 Dr Lars Hedanas (Swedish Museum of Natural History)
 Prof Hew Choy Leong (Dept of Biological Sciences, National University of Singapore)
 Ms Rebecca Ho Yen Yen (National Institute of Education, NTU)
 Mr Ho Wah Chai (National Institute of Education, Nanyang Technological University)
 Dr Michael Horn (Prodigene, Inc., USA)
 Prof Alex Ip (Dept of Biological Sciences, National University of Singapore)
 Mr Irfan Bin Samat (National Institute of Education, Nanyang Technological University)
 Mr Kaka Singh (Dept of Biological Sciences, National University of Singapore)
 Dr. Roger Kitching (Griffiths University, Australia)
 A/P Koh Chong Lek (DNA Centre@NIE, National Institute of Education, NTU)
 Ms Koh Liling (National Institute of Education, Nanyang Technological University)
 Ms Noelle Kong Yuitchan (National Institute of Education, NTU)
 Prof Lam Toong Jin (Dept of Biological Sciences, National University of Singapore)
 Ms Lao Yann Choo (National Institute of Education, Nanyang Technological University)
 Dr Peter Lee (National Institute of Education, Nanyang Technological University)
 Mr Lee Siew-Lin (Ministry of Education)
 Prof Lee Sing Kong (National Institute of Education, Nanyang Technological University)
 Mr Lee Soon Chai (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)
 Ms Liew Chye Fong (Dept of Biological Sciences, National University of Singapore)
 Mr Lim Cheng Puay (Raffles Girls School, Singapore)
 Mr Lim Chin Keong (National Institute of Education, Nanyang Technological University)
 Mr Ganges Lim Zi Yang (National Inst of Education, Nanyang Technological University)
 Ms Lim Mui Gek (National Institute of Education, Nanyang Technological University)
 Mr Norman Lim (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 (Dept of Biological Sciences, National University of Singapore)
 Mr Alfredo Amiel P Leonardia (Dept of Biological Sciences, NUS)
 A/P Loh Chiang Shiong (Dept of Biological Sciences, National University of Singapore)
 Dr Low Boon Chuan (Dept of Biological Sciences, National University of Singapore)
 Dr Shawn Lum (National Institute of Education, Nanyang Technological University)
 Mr Luo Hong Yi (National Institute of Education, Nanyang Technological University)
 A/P Rudolf Meier (Dept of Biological Sciences, National University of Singapore)
 Mr David Micklos (DNA Learning Centre, Cold Spring Harbour Lab, USA)
 Dr Henry Mok (Dept of Biological Sciences, National University of Singapore)
 Dr Maurice Moloney (Symbiosys Genetics, Inc, Canada)

Mr Hans Morélis (Institute for Curriculum Development, The Netherlands)
 Mr Muhammad Naufal Bin Haji Ariffin (National Institute of Education, NTU)
 Ms Ng Bee Choo (Nature's Niche)
 Ms Ng Shu Yee (National Institute of Education, Nanyang Technological University)
 Dr Peter Ng (National University of Singapore, Singapore)
 Dr Ong Bee Lian (Dept of Biological Sciences, National University of Singapore)
 Mr Ong Tang Kwee (Dept of Biological Sciences, National University of Singapore)
 Dr Ruth O'Riordan (Dept of Biological Sciences, National University of Singapore)
 Ms P Amuthavali (National Institute of Education, Nanyang Technological University)
 Mr Bryan Poh Tsai Fu (National Institute of Education, Nanyang Technological University)
 Ms Sharon Poh Siew Hui (National Institute of Education, NTU)
 Dr Pilai Poonswad (Mahidol University, Thailand)
 Dr Pitiwong Tantichodok (Walailak University, Thailand)
 Mdm Poon Chew Leng (Ministry of Education)
 A/P Prakash Kumar (Dept of Biological Sciences, National University of Singapore)
 Ms Qin Lin (National Institute of Education, Nanyang Technological University)
 Mr Rawi Bin Saipan (Dept of Biological Sciences, National University of Singapore)
 Mr Rosli Bin Abdul Latiff (Dept of Biological Sciences, National University of Singapore)
 Mr Safuan bin Jasmawi (Dept of Biological Sciences, National University of Singapore)
 A/P Sanjay Swarup (Dept of Biological Sciences, National University of Singapore)
 Mr Jacques See (National Institute of Education, Nanyang Technological University)
 Ms Siti Alimah Bte Aliyas (National Institute of Education, NTU)
 Ms Siti Mariamah Binte Mohamed Zain (National Institute of Education, NTU)
 Dr Jan Slikkerveer (Leiden University, The Netherlands)
 Ms Kathy Su Feng-Yi (Department of Biological Sciences, NUS)
 Ms Subha N (Dept of Biological Sciences, National University of Singapore)
 Mr Allan Tan (Dept of Biological Sciences, National University of Singapore)
 Ms Tan Aik Ling (Ministry of Education)
 Mr Alfred Tan Thuan Loy (National Institute of Education, NTU)
 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)
 Ms Joanne Tan Sze Wei (National Inst of Education, Nanyang Technological University)
 Dr Tan Koh Siang (Tropical Marine Science Institute, National University of Singapore)
 Dr Tan Lay Pheng (Republic Polytechnic)
 Prof Leo Tan (National Institute of Education, Nanyang Technological University)
 Dr Tan Lik Tong (National Institute of Education, Nanyang Technological University)
 Ms Tan Lu Yee (Dept of Biological Sciences, National University of Singapore)
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 A/P Tan Teck Koon (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)
 Ms Christina Tay Eeping (National Institute of Education, NTU)
 Mr Tay Hai Hwee (National Institute of Education, Nanyang Technological University)
 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)
 Ms Jill Wong Ai Chun (National Institute of Education, Nanyang Technological University)
 A/P Wong Sek Man (Dept of Biological Sciences, National University of Singapore)
 Ms Stella Wye Suet Peng (National Institute of Education, NTU)
 Mr Yan Tie (Dept of Biological Sciences, National University of Singapore)
 Dr Yap Ann Teck (Ministry of Education)
 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
 Genecet Biotechnologies, Singapore
 Jane Goodall Institute for Wildlife Research, Education and Conservation
 Ministry of Education, Singapore
 National Institute of Education, Nanyang Technological University
 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
 The Singapore American School
 Singapore Botanic Gardens
 Singapore National Academy of Science
 Temasek Life Sciences Laboratories, Singapore

Recorded by Dr Beverly Goh, Hon Secretary, 31st Council
 Vetted by A/P Shirley Lim, President, 31st Council

SINGAPORE INSTITUTE OF BIOLOGY (SIBIOL)

SUMMARY OF GENERAL ACCOUNT FUND MOVEMENTS
FOR THE YEAR ENDED 30 SEPTEMBER 2005

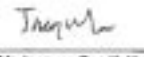
	Total Current A/C OCBC & HSBC	Fixed Deposit A/C OCBC Bank	TOTAL
	\$	\$	\$
BALANCE B/F: 1 OCT 2004	20,139.36	20,000.00	40,139.36
ADD: Income	8,794.84	Nil	8,794.84
ADD: Conference Proceeds	23,846.12	Nil	23,846.12
SUBTOTAL	52,780.32	20,000.00	72,780.32
LESS: Expenditure	26,133.26	Nil	26,133.26
TOTAL	26,647.06	20,000.00	46,647.06

Prepared by:

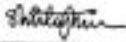

Mr Timothy Tan T. M.
Honorary Treasurer
31st Council, SIBiol.

Audited by:

(1) 
Dr Tan Lay Pheng
Honorary Auditor
18/10/05
Date

(2) 
Mr Jacques See K. Y.
Honorary Auditor
14/10/05
Date

The above statement was adopted at the SIBiol 31st Annual General Meeting held on 22 October 2005 at the Guild House, NUS.



A/P Shirley Lim S. L.
President, 31st Council, SIBiol.

SINGAPORE INSTITUTE OF BIOLOGY (SIBIOL)

STATEMENT OF GENERAL ACCOUNT FUND: INCOME AND EXPENDITURE
FOR THE YEAR ENDED 30 SEPTEMBER 2005

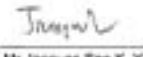
INCOME	\$	EXPENDITURE	\$
A. Membership Dues		A. SIBiol Book Price	Nil
Existing Members	2,030.00	B. Publications	
New Members	600.00	Bulletin (Oct 2004)	945.00
B. Activities		Bulletin (May 2005)	1,890.00
IBO/SBO (from MOE)	1,022.77	C. SNAS	
C. Biology in Asia Conference		Subscription (2005/06)	500.00
Proceeds	23,846.12	D. Activities	
Return of seed funds to SIBiol.	5,000.00	IBO/SBO	3,608.96
D. Banking		SIBiol 30 th Anniversary	3,099.95
Interest from Fixed-Deposits	130.57	(awards, lunch & umbrellas)	
Returned cheque	12.00	E. Stationery, Operations	1,007.50
		F. Postage	147.79
		G. Functions (AGM)	957.00
		H. RTF Audit & Bank Charges	400.00
		I. Income Tax	Nil
		J. Committed Activities - 2006	
		IBO/SBO	10,000.00
		ADMANBC	2,000.00
		School Activities	2,000.00
Total Income	\$ 32,640.96	Total Expenditure	\$ 26,133.26
Surplus (\$)			\$ 6,507.70

Prepared by:


Mr Timothy Tan T. M.
Honorary Treasurer
31st Council, SIBiol.

Audited by:

(1) 
Dr Tan Lay Pheng
Honorary Auditor
18/10/05
Date

(2) 
Mr Jacques See K. Y.
Honorary Auditor
14/10/05
Date

The above statement was adopted at the SIBiol 31st Annual General Meeting held on 22 October 2005 at the Guild House, NUS.



A/P Shirley Lim S. L.
President, 31st Council, SIBiol.

Members' Treats!

Dinosaur treat

As a treat for our members, free tickets will be given to each member (one ticket per member) to "DINOSAURS! A T rex named Sue and Friends", the dinosaur exhibition on at the Singapore Science Centre from 21 May to 20 Aug 2006.

These will be sent in the mail shortly. Enjoy!

Rainy day treat

SIBiol umbrellas were given out to members who attended last year's Members' Day event. For members who have yet to pick one up, the umbrellas are available for collection at the Department of Biological Sciences, NUS (Please contact: Ms Yong Ann Nee dbsyan@nus.edu.sg) or Natural Sciences and Science Education Academic Group, NIE, NTU (Please contact: A/P Shirley Lim slim@nie.edu.sg).

SIBiol Primary School Teachers' Workshop

HOW TO ORGANIZE A SCIENCE CAMP FOR SCHOOL CHILDREN

By

Associate Professor Lim Tit Meng, President of SIBiol

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.

Venue:

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

Date & time:

30 May 2006, Tuesday (9:30am to 5pm)

Fee:

\$ 120.00 (inclusive of tea breaks)

Transport:

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.

Contact: Please contact workshop coordinator, Associate Professor He Jie, for more information:

Associate Professor He Jie
Workshop Coordinator
c/o Natural Sciences Academic Group
National Institute of Education
Nanyang Technological University
1 Nanyang Walk
Singapore 637 616
Tel: 6790 3817
Fax: 6896 9432
Email: jhe@nie.edu.sg

SIBiol Public Forum

FACING OUR ENVIRONMENTAL CHALLENGES WITH SCIENCE & TECHNOLOGY

Coming to you in September 2006!

The emphasis on our environment in Singapore is embodied in the Singapore Green Plan 2012. The plan outlines the roadmap for nurturing and improving a healthy environment both for ourselves and the surrounding nature. New frontiers in science and technologies are helping globally in monitoring the environment, reducing pollution and in improving the environmental quality by means of remediation. Coinciding with the Tech month, Sci06, this September 2006, the Singapore Institute of Biology is organizing a forum to create awareness of the recent developments in these fields in improving our environment and lives. This event features talks by a panel of leading experts followed by a panel discussion for interactive learning and sharing of knowledge. Talks will include topics such as human impact on the marine environment; environmental impact on human health; and environmental remediation.

Don't miss this forum, which examines the vital roles and impacts of science and technology on the well-being of our environment.

Admission is free!

Further details will be announced shortly.

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

Contact: Please contact forum coordinator, Associate Professor Sanjay Swarup, for more information:

Associate Professor Sanjay Swarup
Forum Coordinator
c/o Department of Biological Sciences
National University of Singapore
14 Science Drive 4, Singapore 117543
Tel: (65) 6516-7933
Fax: (65) 6779-2486

Email: dbsss@nus.edu.sg

SIBiol Website

We are continuing to expand and improve on the institute's website. Do visit it at www.sibiol.org.sg for news and information on the Institute and its activities (including upcoming as well as past events); latest biology news; photo galleries of various activities; bulletin archives; interesting student project abstracts; and interesting/useful biology-related links.

We welcome the following new members

Life Member:

Miss Chang Teck Hui
Mr Tan Hong Kim

Ordinary Member:

Ms Koh Li Ling
Ms Noraini Binte Abbas

Student Members:

Mr Ho Boon Chuan
Mr Ng Weixin
Ms Tan Jingmei Eunice

This is an occasional section that will feature interesting topics of research that members of the institute are involved in.

Marine Cyanobacteria: A Prolific Source of Natural Products for Drug Discovery

Lik Tong Tan PhD

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Mother Nature is an important source of natural products for drug discovery. It has been estimated that about 40% of new drugs approved for clinical use in the US, between 1983 and 1994, were of natural origin.¹ The numbers are even more impressive when considering anticancer and anti-infective agents, accounting for over 60% and 75%, respectively.² A majority of these natural products, also known as secondary metabolites, are produced by terrestrial sources such as plants, fungi, and bacteria. The medicinal use of a wide variety of plants has also been documented in many ancient pharmacopeia from China and India. Collectively, these nature derived therapeutics have great commercial value, bringing in billions of dollars to pharmaceutical companies each year. One of the most famous natural products is the blockbuster anticancer drug, Taxol®, which has generated sales upwards of US\$9 billion per year for Bristol-Myers Squibb.³ The search for new drugs from nature is a continual enterprise, partly fueled by the occurrence of hard to treat infections, especially caused by multi-drug resistant pathogenic bacteria, as well as emerging new diseases such as the avian flu virus.

In the past few decades, it is becoming clear that another potential source of natural products is marine organisms. Since its inception in the mid 1950s, natural products chemists have uncovered thousands of structurally unique secondary metabolites from sponges, tunicates, soft corals, bryozoans, nudibranchs, and marine algae.⁴ Many of these compounds possess potent biological activities and are currently either in preclinical or clinical testing for the treatment of various human ailments.⁴ A number of success stories include the anticancer agents, ecteinascidin 743 (ET-743) and bryostatin-1 isolated from *Ecteinascidia turbinata* (a tunicate) and *Bugula neritina* (a bryozoan), respectively.⁴ With the ocean covering about 70% of earth's surface and estimated to have a million species living in it, scientists are just beginning to tap marine organisms for new pharmaceuticals.

Amongst the myriad of marine dwellers screened for biologically active molecules, one particular group, the marine cyanobacteria (also known as blue-green microalgae) has emerged as a prolific producer of novel secondary metabolites.⁶ Cyanobacteria are an ancient group of prokaryotic microorganisms with fossil records dating back three billion years. They contain photosynthetic pigments, namely chlorophyll a, and are able to exist as unicellular or multicellular forms. They are ubiquitous in nature, found to thrive in salty, brackish, or fresh water as well as in cold and hot springs. In the ocean, cyanobacteria are found along shores as benthic vegetation or as free floating marine plankton. Certain marine cyanobacterial species, given the right environmental conditions, can occur as algal blooms in the ocean. Unfortunately, some of these algal blooms are harmful due to the toxins they produce, such as lyngbyatoxins causing swimmers' itch and microcystins/nodularin which are cyclic peptides that cause severe liver damage (Fig.1)

In spite of a number of marine cyanobacterial toxins that are involved in public health issues, other species, such as *Lyngbya majuscula*, produce natural products with exquisite pharmacologically important activities, including antimicrobial, neurotoxicity, and anticancer properties.⁶ A majority of these molecules are nitrogen-containing and belong to a hybrid polyketide-nonribosomal polypeptide structural class. To date, more than 250 natural products of this structural class have been reported in the chemical literature. A famous example is the antimitotic agent, curacin A, isolated from a Curacao strain of *Lyngbya majuscula*. This unique molecule is currently in preclinical testing as an anticancer agent. In addition, a number of synthetic derivatives based on the chemical structure of curacin A have been made for further biological testing.

Another important class of marine cyanobacterial secondary metabolites is the dolastatins. The dolastatins were initially reported from the nudibranch, *Dolabella auricularia*, found living in the Indian Ocean in the 1980s. However, recent studies have shown that the true producer of the dolastatins is cyanobacterial in origin. These marine sea hares were found to sequester dolastatins from their cyanobacterial diet. A number of dolastatins, mainly dolastatins 10 and 15, has been in preclinical and clinical testing as anticancer drugs. In addition, at least three synthetic dolastatin-analogs (TZT-1027, LU 103793, and ILX651) were developed for

Phase I/II clinical testing as anticancer agents in North America (Fig. 1). For instance, the dolastatin 15 analog, ILX651, is currently in Phase II clinical trials for treatment of advanced or metastatic non-small cell lung cancer as well as for hormone-refractory prostate cancer.

Research on the natural products chemistry of marine cyanobacteria is dominated by species collected from the tropics, such as Guam, Hawaii, the Caribbean, and Papua New Guinea. In spite of the chemical richness of these prokaryotes, there have been no reports on natural products of marine cyanobacteria from South East Asian waters. Due to the lack of marine cyanobacterial natural products research from this region, an ongoing project was initiated in my laboratory, in collaboration with Dr. Peter Lee (National Institute of Education), to explore local species of marine cyanobacteria as a source of novel bioactive natural products for drug discovery. A number of marine cyanobacterial collections were made from intertidal areas located at the southern islands of Singapore, including St. John's Island and Pulau Hantu. Preliminary data indicated significant biological activities (e.g. anticancer) of organic extracts prepared from these marine cyanobacterial collections. Further research is now underway to characterize the molecular structures of these secondary metabolites.⁷ With examples of molecules currently in clinical trials, as well as promising preliminary data obtained from local species, marine cyanobacteria has proven to be an important source of pharmaceutically important natural products. It is not inconceivable that the next blockbuster drug may derive from these seemingly simple microorganisms.

References

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2. Cragg, G. M., D. J. Newman, & K. M. Snader, 1997. Natural products in drug discovery and development. *Journal of Natural Products* 60: 52-60.
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5. Newman D. J. & G. M. Cragg, 2004. Marine natural products and related compounds in clinical and advanced preclinical trials. *Journal of Natural Products* 67: 1216-1238.
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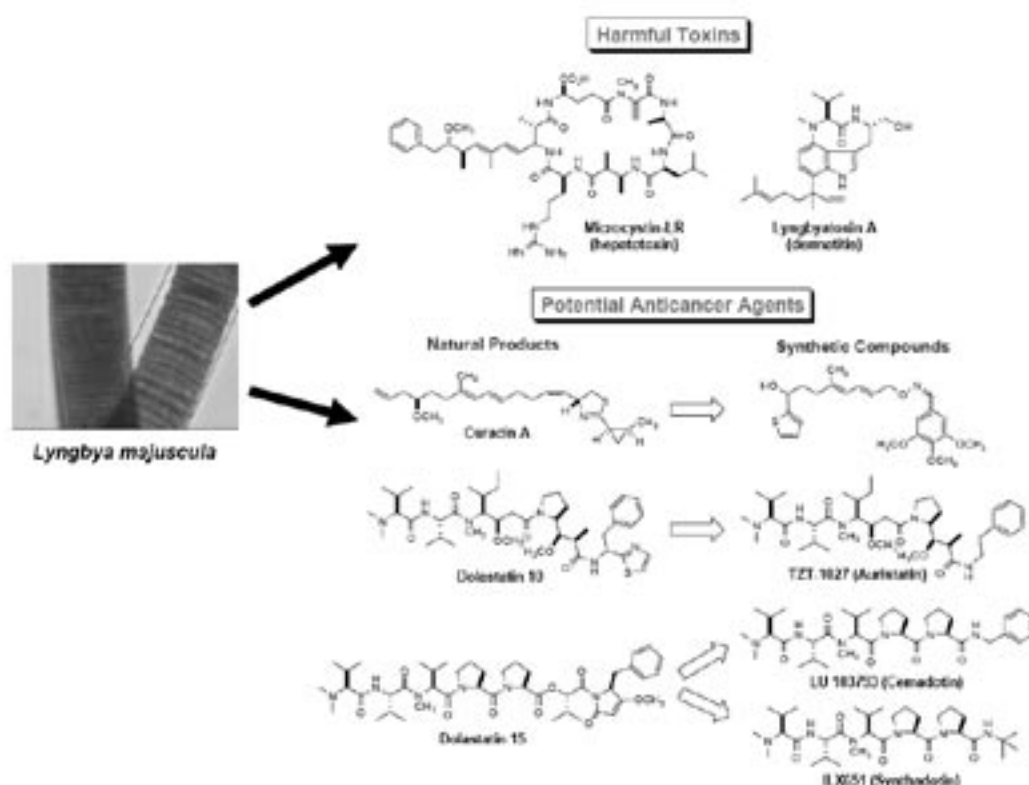


Fig. 1. Two faces of marine cyanobacteria as producers of harmful toxins and useful new therapeutic agents.

Student Abstracts

This will be a regular section highlighting abstracts of student projects that SIBiol and/or its members have been involved with in various ways (e.g., project supervision, financial support, etc.). This is in line with the institute's objectives of promoting and raising awareness of biology, and biology education and training. In this issue, we feature abstracts of prize-winning projects from three different programmes that SIBiol members have been involved with: the Science Research Programme (SRP) (www.science.nus.edu.sg/schools/srp/) by the Faculty of Science, NUS, and Nanyang Research Programme (NRP) (www.ntu.edu.sg/nrp/) by NTU, both for junior college students; and the Biological Sciences Graduate Congress (www.dbs.nus.edu.sg/Grad_Congress_2005/content/) by the Department of Biological Sciences, NUS, for graduate students.

From the SRP (silver medal winner at the Singapore Science and Engineering Fair 2006):

Transient expression of mutant and wild type forms of α -synuclein in two different cell lines affects cell viability

Sng Weizhong Jonathan¹, Koh Kai Sheng Kevin¹, Zhou Zhidong², Lim Tit Meng²

¹SRP Student, Raffles Junior College

²Department of Biological Sciences, National University of Singapore

Abstract. - The pre-synaptic protein, α -synuclein, has been associated with the pathogenesis of Parkinson's disease, as well as it being a major feature found in Parkinson's disease. The present study indicates that α -synuclein, but not its mutants can protect CNS dopaminergic cells from the parkinsonism-inducing drug 1-methyl-4-phenylpyridinium (MPP⁺), whereas MPP⁺ has no effect on non-dopaminergic neural blastoma cells. The study also indicates that the mutants have a greater neurotoxic effect on cells without MPP⁺ challenge to a much larger extent than wild type (WT) α -synuclein.

From the NRP (gold medal winner at the NRP 2005 Symposium):

Biomedical Potentials of Marine Organisms from Singapore

Ong Yan Zhi¹, Alfred Seng¹, Peter Lee Peng Foo², Tan Lik Tong²

¹Hwa Chong Institution (College Section)

²National Institute of Education, Nanyang Technological University

Abstract. - Scientists all over the world have been looking into marine organisms for naturally-occurring secondary metabolites that could be developed into important therapeutic agents. Singapore's offshore islands boast a rich underwater biodiversity, so there is good rationale in screening local marine organisms for biologically active compounds. Thirteen marine organisms, mainly sponges, were collected from two places in Singapore, St John's Island and Raffles Marina. Organic extracts prepared from these organisms were screened on two cancer cell lines, human leukemic cells(MOLT-4) and human breast carcinoma cells(MCF-7). The cytotoxicity of each extract was assessed using the MTT assay. One marine organism, RM5, from Raffles Marina exhibited high levels of cytotoxicity towards both cancer cell lines, which suggests the presence of bioactive compounds that have a general killing effect on both kinds of cancer cells. Another marine organism, RM4, also from Raffles Marina, appeared to be much more active on MOLT-4 cells than on MCF-7 cells, indicating the presence of bioactive compounds that may exhibit some specificity, targeting mainly MOLT-4 cells. In general, extracts from all the marine organisms collected showed significant levels of cytotoxicity towards cancer cells, a good indication that local marine organisms possess many useful bioactive compounds waiting to be discovered. During the course of screening the extracts for cytotoxicity, problems met are the difficulty in collecting a large and continuous supply of sponges for screening and the detrimental effects of such collection. To solve this problem, DNA has been successfully extracted from sponges and their symbiotic bacteria. We can then use this extracted DNA for other purposes such as amplification of gene of interest.

From the Biological Science Graduate Congress (first prize oral presentation winner under Cell and Molecular Biology theme):

Gene structures of two functionally diverse prothrombin activators, trocarin D and coagulation factor X, in *Tropidechis carinatus* snake

Md Abu Reza¹, Sanjay Swarup¹, R. Manjunatha Kini^{1,2}

¹Department of Biological Sciences, National University of Singapore, Singapore 117543

²Virginia Commonwealth University, Richmond, Virginia, USA

Abstract. - Recently we have shown that Australian rough scaled snake, *Tropidechis carinatus* possesses two parallel prothrombin activator systems. Trocarin D, a venom prothrombin activator plays an offensive role as toxin, whereas factor X (FX) plays role in hemostatic function. These two proteins are structurally similar and have identical domain architecture. But, their functional difference mandates a highly tissue-specific expression; trocarin D is expressed ~1150 times higher in the venom gland compared to FX expression in liver. Moreover, the expression of FX is constitutive, whereas that of trocarin D is inducible. Therefore, it is interesting to study the gene structure and regulation of expression of these two closely related proteins with divergent functional roles in snake. Here we present the complete gene structure of trocarin D and FX from *T. carinatus*. Both of the genes have 8 exons and all the exon-intron boundaries are almost at the same position. Introns of these two genes show high identity (>85%), indicating a recent gene duplication event. Interestingly, the promoter of trocarin D has a big insertion of 264 bp (-29 to -293). This region of trocarin D promoter may be responsible for high level of tissue-specific expression.

More abstracts can be viewed at the following link: www.sibiol.org.sg/student-abstracts/



Photo by Peter Mitrshin

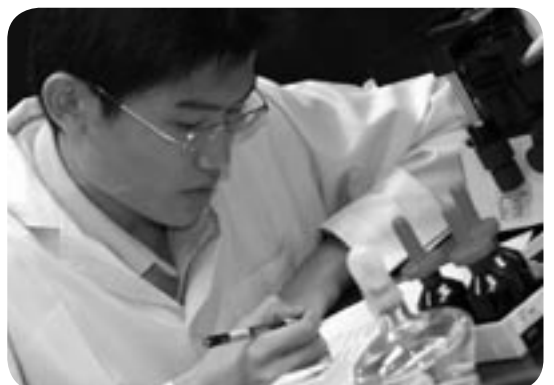


The 6th Singapore Biology Olympiad and Preparations for the 17th International Biology Olympiad

The 6th Singapore Biology Olympiad (SBO) Theory test was held on 10 November 2005 at the National Institute of Education, Nanyang Technological University (NIE/NTU). More than 300 junior college students took part in the test. After the scores were tallied, 33 students were short-listed for the Practical test. However, two students could not attend the practical tests conducted on 24 November 2005 (also at NIE) due to some CCA commitments.

The final results for the 6th SBO were seven gold, nine silver, and 15 bronze medals awarded. Twelve gold and silver medalists were interviewed by our SBO Committee, following which, nine were selected for IBO training, but one decided to drop out before the training sessions started in March. The remaining eight students are currently undergoing training with staff from the Department of Biological Sciences, NUS, and the School of Natural Sciences, NIE, NTU, who have volunteered their time. Finally, only four will be chosen to represent Singapore to take part in the 17th International Biology Olympiad (IBO) in Rio Cuarto, Argentina, from 9th to 16th July 2006. The eight students listed below are the cream of this year's crop of junior college biology students, and we wish them the best of luck in their training, and ultimately to the best four as they go forth for Singapore!

Au Yong Phui Sze (Hwa Chong Institution)
Huang Kee Wui (Anglo-Chinese JC)
Premchand Brian (Victoria JC)
Quah Pei Shan Adeline (Victoria JC)
Seng Wai Ping Alfred (Hwa Chong Institution)
Gwyneth Soon Shook Ting (Hwa Chong Institution)
Tay Rong En (Raffles JC)
Wee Liang Yi (Raffles JC)



Calendar of Events 2005/2006

Date	Event	Venue
10 Nov 2005	6th Singapore Biology Olympiad Theory Test	NIE
24 Nov 2005	6th Singapore Biology Olympiad Practical Test	NIE
Mar–Jun 2006	Theory and practical training of representatives selected from the 6th Singapore Biology Olympiad in preparation for 17th International Biology Olympiad	NIE & NUS
21 May- 20 Aug 2006	Dinosaur exhibition: DINOSAURS! A <i>T rex</i> named Sue and Friends Incorporating SIBiol Members' Treat	Singapore Science Centre
25-27 May 2006	Symposium <i>Dinosaurs!</i>	Singapore Science Centre
30 May 2006	SIBiol Primary School Teachers' Workshop: How to organize a science camp for school children	NIE
11 Jun 2006	John R. "Jack" Horner Public Lecture: "Jurassic Park – Fact & Fiction"	University Cultural Centre (UCC), NUS
9-16 Jul 2006	7th International Biology Olympiad	Rio Cuarto, Argentina
Sep 2006	Public Forum: "Facing our Environmental Challenges with Science & Technology"	To be announced
Oct 2006	32nd Annual General Meeting and 6th Annual National Biology Convention	To be announced
Nov 2006	7th Singapore Biology Olympiad	NIE



DINOSAURS!

A *T rex* named SUE and Friends

An exhibition on dinosaurs, “**DINOSAURS! A *T rex* named Sue and Friends**”, jointly funded and organised by NUS’ Faculty of Science and the Singapore Science Centre will open at the Singapore Science Centre on 21st May 2006. The exhibit will feature two casts of *Tyrannosaurus rex* - one of STAN that the Singapore Science Centre owns, and the other of “A *T rex* named Sue” from the Field Museum, Chicago.

Other components of the exhibition are a selection of polar dinosaurs called “Dinosaurs of Darkness” from Monash University’s Monash Science Centre, and an exhibition by NUS’ Faculty of Science with the working title of “Extinction is Forever”. Relevant current issues such as mass extinction, habitat loss in Southeast Asia and climate change that are obviously suggested by the demise of the dinosaurs will be addressed. More information is available at: <http://www.science.edu.sg> under “Exhibitions”. (See also **Members’ Treats**)

Along with this exhibition, there will be a 3-day **Symposium *Dinosaurs!*** from 25-27 May 2006 at the Singapore Science Centre, featuring speakers such as:

- * **Peter Larson** (President, Black Hills Institute of Geological Research, Inc., Hill City, South Dakota)
- * **Peter Makovicky** (Assistant Curator of Dinosaurs, The Field Museum Chicago, Illinois, USA)
- * **Xu Xing** (Professor, Institute of Vertebrate Paleontology & Paleoanthropology, Chinese Academy of Sciences, Beijing, China)

John R “Jack” Horner Public Lecture Jurassic Park – Fact & Fiction

11 June 2006 (Sunday), 4pm (tentative time)
University Cultural Centre (UCC), NUS
(Talk co-sponsored by SIBIOL)

In conjunction with the dinosaur exhibition, there will be a Public Lecture by **John R. “Jack” Horner** (Curator of Paleontology, Museum of the Rockies, Montana State University, Bozeman, Montana, USA), the renowned palaeontologist. Dr Horner is known not only for his numerous scientific achievements and discoveries in his field, but also as the technical advisor for the Jurassic Park movie.

co-sponsoring this Public Lecture as part of our efforts in promoting biology, especially the need for understanding the significance of conservation and extinction.

Limited places for Dr Horner’s talk at the UCC have been reserved **exclusively for SIBiol members**. **Members interested in attending the talk should book their places by sending an email to dinotalk@sibiol.org.sg from 15th May 2006 onwards** (places available on a first-come-first-served basis). The email should include the following details:

- Name
- SIBiol membership number
- Contact number
- Return email address
- Number of places requested (NOTE: maximum 4 places per member).