Curriculum Vitae dated 17 Sep. 09

Name: Lim Tit Meng

Current position: Associate Professor, NUS

Academic qualification: BSc (Direct Honours, 1st class) NUS (1984)
PhD University of Cambridge, UK (1987)

Executive programmes attended: Senior Management Programme: Leadership and Governance, LKY School of Public Policy, NUS, July 2006
Senior Management Programmes, School of Business in NUS, February to April 2007

Career history: Lecturer, Department of Zoology, NUS (1987-1991)
Senior Lecturer, Department of Zoology, NUS (1992-1998)
Associate Professor, Department of Biological Sciences, NUS (1998-Present)
Assistant Chief Executive, Science Centre Singapore (Aug 2007 – Jul 2009)

Leadership held:

- Founder member of the Institute of Molecular Agrobiology (1994-1996)
- Sub-Dean, Faculty of Science, NUS (1996-1998)
- Director, Bioscience Centre, NUS (1998-2000)
- Deputy Head, Department of Biological Sciences, NUS (1998-2003)
- Core Curriculum, University Scholar Programme, Area Coordinator (1999-2000)
- Programme Director, JTC in-house training course "Introduction to Life Sciences" and DSO in-house training course "Crash Course in Life Sciences" (2000-2001)
- Biosensor Focus Interest Group Founding member and leader (1999-2005)
- Vice Dean, Faculty of Science, NUS (June 2003 - Feb 2008)
- Vice President, Singapore Institute of Biology (2001-2005)
- President, Singapore Institute of Biology (2006 - 2009)
- Scientific Programme Chair for the joint KI-NUS Life Science Symposium 2002
- Co-chair for the Singapore Institute of Biology 30th Anniversary International Conference on Biology in Asia, 2004
- Chairman, Department Strategic Planning Retreat, (1999-2003)
- Chairman, Faculty Strategic Planning Retreat, 2004
- Chairman, Non-academics Faculty Review Committee (2003-2007)
- Chairman, Faculty Safety and Health Management Committee (2003-2007)
- Faculty Incident Commander in crisis management (2004-2007)
- Chairman, School Outreach Task Force (2003-2007)
- Chairman, Faculty Alumni Relation Task Force (2003-2007)
- Chairman, Science Research Programme (2003-2007)
- Chairman, Science Mentorship programme (2003-2007)
- Chairman, Scientific Review Committee for Singapore Science and Engineering Fair (From 2007)
- Chairman, Faculty Task Force for 'Dinosaurs: A *T. rex* named Sue and friends' exhibition at the Singapore Science Centre (2006)
- Co-chairman, University Task Force for 'Cultures of Creativity: Nobel Museum Centennial Exhibition' at NUS (2006/7)
- Chairman, Singapore Biology Olympiad (2001-2005)
- Founder and Director, BioNano International Singapore Pte Ltd (since 2003)
- Founder of a private Kids Club (since 1996)

Advisory Board Member:

- Singapore Science Centre (2007)
- PSB Academy Board (2007-2008)
- Meridian Junior College Advisory Board (2006 to present)
- SEAMEO BIOTROP Governing Board Member of Singapore (‘98-01)
- Science Centre Singapore Redevelopment Project EXCO member (from 2009)

Other Honours and Awards:

- NUS Undergrad Scholarships 1982, 1983
- Cambridge Churchill College Overseas Scholarship 1984-87
- UK Overseas Research Scholarship 1984-87
- Japan-Singapore Promotion for Science Fellowship 1991
- Commonwealth Fellowship 1995-96
- Faculty of Science Teaching Excellence Awards: 1993, 1994, 1998, 1999, 2000, 2001, 2002
- NUS Top 100 Excellent Teachers, 2002
- Outstanding Contributor Award in Science Mentorship Programme 2004; 2006; 2009
- Outstanding Mentorship Award in Science Mentorship Programme 2006
- Outstanding Contributor Award in Science Research Programme for service rendered spanning 1988 to 2007
- National University of Singapore Quality Service Award 2007
- Ministry of Education Service to Education Award 2009

External Examiner:

- Singapore Polytechnic Biotechnology Programme (2007 to 2011)
- Ngee Ann Polytechnic Chemical and Life Sciences Programme (2007 to 2009)

Consultancy:

- Consultant to AsknLearn Pte Ltd and developed e-modules for school teachers on 'Introduction to Life Sciences' and 'Introduction to Nanotechnology'
- Consultant to Zenitant Pte Ltd on 'Learning through Life Science Trails' and related teachers workshops
- Helped MOE in developing two Life Sciences Guide Books and one Lab Safety Guidebook for school use
- Life Science consultant to Hwa Chong Institute, River Valley High School, ACS (I), Victoria Junior College
- Consultant to Skill Development Centre as a biology content expert for the development of an e-learning package for biology 2001-2003
- Advisor to the Jurong Bird Park on bird molecular sexing matters 2001-2003
- International Biology Olympiad Jury member (2003, 2005)

Review Committees:

- A*STAR BMRC Grant Local Review Penal (2001-2003)

- NUS University Grant Review Committee (2003-2006)
- MOE 'A' Level Biology Curriculum Review Committee (2000/01) (2009/10)
- MOE Life Science Curriculum Review Working Committee member, 2000
- MOE Life Science Guide Books for Teachers, Co-Chair of Working Committee, September 2000- February 2001
- NUS High School for Science and Maths Curriculum Planning Committee (2002/03)
- Faculty Outstanding Researcher Award Selection Panel (2003-2006)
- MOE Co-ordinating Committee on the Revised Gifted Education Framework (2006)
- MOE Resource Panel for the Review of School Lab Safety Regulations (2006)

Journal Reviewer:

- BIOTROPICA (regional journal)
- Histology and Histopathology (International journal)
- Brain Research (International journal)
- International Journal of Nanoscience (International journal)
- Materials Chemistry and Physics (MCP) (International journal)
- Nucleic Acid Research (International journal)
- Journal of Electroanalytical Chemistry (International journal)
- Advanced Structure Materials (International journal)
- Analytical Chemistry (International journal)
- Journal of Zhejiang University - Science B (international journal)

Research Programme and Accomplishments

From AY2007/08 to AY2011/12:

(1) MOE Tier 2 grant- Mutant Cytoplasmic Nucleophosmin in the Etiology of Acute Myeloid Leukaemia, 2008 October to 2011 October, TPV of $925,010 (Approved Fundable project value - S$810,000; Approved RS budget S$115,010), as Principal Investigator

In up to 60% of patients with Acute Myeloid Leukaemia (AML) with a normal karyotype, a C-terminal frame-shift mutation results in skewed cytoplasmic accumulation of the usually nucleoli-bound protein nucleophosmin (NPM), and this is thought to function in cancer pathogenesis. The ability to pinpoint NPMs precise cytoplasmic function(s) is pivotal in opening up novel therapeutic opportunities to develop biology-adapted treatment strategies for this large subset of adult AML patients. While current research in NPMc+ AML focus on NPMc as a loss-of-function mutant, the novel leukaemogenetic model that we propose centres instead on NPMc as a gain-of-function mutant which suppresses apoptotic signalling excessively, and in doing so, aberrantly inhibits cell death required for haematopoeitic homeostasis. Our previous work demonstrated direct inhibition of caspases by NPMc, and is the first to imply excessive apoptotic inhibition in AML pathogenesis. Given NPMs interaction with other apoptogenic molecules such as p53 and Bax, further research work as proposed herein aims to chart the extent of cytoplasmic NPMs influence on the mitochondrial apoptosis signalling pathway. With therapeutic interests in mind, we also aim to further investigate NPMs role in the formation of a hypothetical death inhibitory complex through sequestration of various apoptogenic molecules, as well as the role of such a complex in pathogenesis and chemotherapeutic resistance in AML with cytoplasmic NPM mutation.

(2) ARF- Structural and functional study of the nucleophosmin protein in apoptosis, 2007 July to 2010 June, $176,500, as Principal Investigator

Recent evidences suggest that mutated NPM may be involved in immortalisation of immature myeloid blasts during leukaemogenesis. In our lab, we managed to show that abundance of NPM

in a wide range of cell cytoplasm leads to excessive inhibition of caspase-mediated cell death signaling. In this proposal we aim to study how NPM interacts with the caspases. We intend to perform structural studies to map out the sites on NPM that interact and inhibit active caspase. This will in future facilitate rationale small-peptide drug design, i.e. small molecules that bind these sites could be designed using bioinformatics approach to inhibit the interaction between NPM and caspases and thereby repress NPM-mediated inhibition of caspases.

(3) A*STAR CROSS COUNCIL OFFICE GRANT- A Data-driven Integrated Epidemiological Model of Dengue Spread in Singapore through Data-Mining, Mathematical Modelling, Vector Surveillance and Educational Outreach. Awarded $580,000 for 3 years from April 2009 to March 1012, as a Collaborator

The primary objective in this study is to formulate an integrated epidemiological model for dengue fever in Singapore. The model will be developed using mathematical and computational techniques with parameters that are grounded in the biological and epidemiological scientific literature and collected data. We will adopt a data-driven approach that will take into consideration all significant factors including the vector population, viral and clinical variables, environmental factors (including weather) and population characteristics. This integrated model will yield insights into the nature of dengue spread in Singapore and highlight mechanisms that we can disrupt to lower the incidence and prevalence of dengue fever.

(Note: This project grew from a project I mentored under the Science Mentorship Porgramme for 3 Raffles Institutions students in 2006. It was a project looking at the DNA profiles of mosquito larvae asking if they breed within a specific location. The project caught the attention of A*STAR IHPC, and a pilot project was done with the Raffles Institution before this became a cross council project.)

Prior to the above, the following were completed research programmes in the past 5 years:

(4) A*STAR BMRCThe Aging Brain; 2002 July to 2007 June, 5 year Programme Grant, $1,519,261, as Principal Investigator

Aging of the brain can lead to a gradual decline in our cognitive ability and memory capacity, with an increase in the onset of neurodegeneration such as Alzheimers and Parkinsons disease. It is a multi-faceted process that requires a concerted effort to understand it and to develop strategies to mitigate or reverse its impact on life. It is with this ideology that this research programme is formulated. In order to address the aging process of the brain at the cellular level, we need to dissect the biochemical pathways that are related to neuronal cell death. We aim to identify biomarkers as disease onset indicators. We will develop carbon nanotube-based nanosensors with patch-clamp methodology to clarify the biological functions of free radicals and neurotransmitters involved in the process of neurodegeneration. Besides understanding the etiology of neurodegeneration, we will test a polymer-based gene delivery system that condenses DNA into nanoparticles so as to develop a controllable in vivo neurotrophic and anti-apoptotic gene transfer technology as a novel therapeutic approach to treat aging-related neuronal loss and memory deficit.

(5) Biosensor Focused Interest Group:- micro-PCR and DNA micro-extractor lab-on-chip development; BIFG II from April 2001- March 2005, total amount funded by A*STAR SERC $2,163,620, I participate as co-Principal Investigator for the PCR project and as a team member in DNA extractor. I was also overall the NUS coordinator for BFIG

(5a) DNA Micro Extraction System
The aim of the project is to design, fabricate, and demonstrate a system for the extraction of DNA from human body fluids based on micro components. Specifically, the project aims to demonstrate DNA extraction from human blood. The deliverable for this project is a portable,

miniature module for DNA extraction and purification based on microfluidics and micromachining techniques. So far three technology disclosures have been filed for patent.

(5b) Micro PCR lab-on-chip
The aim of this project is to design and develop a microPCR as a lab-on-chip device. The device will be able to run PCR in very short time and with multiplexing feature. It is also meant to be a module system that can be integrated to the DNA extractor and a signal detector so as to make the micro-total analysis system feasible.

(6) NMRC Tissue Engineering of an Autogenous Periodontal Transplant for the Regeneration of the Periodontium, Feb 2001 to Feb 2004, $140,500, as a collaborator in this multidisciplinary project with Dentistry and Bioengineering

Regeneration by autogenous cell transplantation is one of the most promising tissue engineering technics as it has the potential to provide the ideal autogenic construct. This project aims to develop a cell culture system which allows the tissue engineering of a 3-D scaffold / periodontal fibroblast / osteoblast construct based on the PCL scaffolds developed earlier for tissue engineering bone and cartilage (Hutmacher et al 2000a,b). Human periodontal ligament fibroblast and osteoblasts are to be obtained and seeded onto a three-dimensional scaffold. The bioresorbable template provides the necessary support for cellular proliferation, differentiation and production of extracellular matrix, facilitating the assimilation in-vivo, eventually defining the overall configuration of the new periodontium with new attachment on the previously denuded root surfaces.

(7) ARF-- Modification of Human Acellular Dermal Matrix By Gamma Irradiation and Aging, 2003 July to 2004 June, $45,900, as Principal Investigator

The objective of the proposed research is to investigate how the modification of human acellular dermal matrix during scaffold fabrication, sterilization and storage may affect biophysical/mechanical properties and extracellular biochemical signaling function. We will use human acellular dermal matrix to study the effect of gamma irradiation and physiological aging.

The above research programmes resulted in many manpower trained, papers published, and where applicable, patents filed, as reported in each final report. The BFIG projects resulted in 2 nominations for the National Science and Technology Awards in 2001 and 2006, and an invitation to MIT Institute for Soldier Nanotechologies, to present our BFIG Lab-on-chip work in May 2005.

Publication Statistics as of July 2009
(Note: Journal tier is based on NUS university standards, which can be subjective)

ARTICLE IN JOURNAL	
INTERNATIONAL REFEREED	
TIER 1 - PREMIUM	
PUBLISHED	25
SUBMITTED FOR PUBLICATION	1
TIER 2 - LEADING	
PUBLISHED	31
TIER 3 - REPUTABLE	
PUBLISHED	8
TIER 4 - OTHERS	
PUBLISHED	8
NOT TIERED	
PUBLISHED	20
LOCAL/REGIONAL REFEREED	

TIER 4 - OTHERS		
PUBLISHED	1	
NOT TIERED		
PUBLISHED	6	
NON-REFEREED		
TIER 4 - OTHERS		
PUBLISHED	2	
NOT TIERED		
PUBLISHED	2	
		104
BOOK REVIEW		
PUBLISHED	1	
		1
CONFERENCE PAPER		
LOCAL/REGIONAL		
ORAL PRESENTATION		
PUBLISHED	39	
PRESENTED BUT NOT PUBLISHED	38	
POSTER PRESENTATION		
PUBLISHED	2	
PRESENTED BUT NOT PUBLISHED	1	
INTERNATIONAL		
ORAL PRESENTATION		
PUBLISHED	37	
PRESENTED BUT NOT PUBLISHED	17	
ACCEPTED FOR PUBLICATION	2	
POSTER PRESENTATION		
PUBLISHED	6	
		142
PAPER FOR SEMINAR, PUBLIC TALK, LECTURE		
LOCAL/REGIONAL		
PUBLISHED	3	
PRESENTED BUT NOT PUBLISHED	6	
INTERNATIONAL		
PUBLISHED	7	
PRESENTED BUT NOT PUBLISHED	2	
		18
EDITORIAL WORK ON BOOK		
PUBLISHED	1	
		1
COMPILATION WORK ON BOOK		
PUBLISHED	2	
		2
EDITORIAL WORK ON JOURNAL		
NON-REFEREED		
TIER 4 - OTHERS		
PUBLISHED	5	
		5

CHAPTER IN BOOK

PUBLISHED	9	
		9

OTHERS

PUBLISHED	14	
		14

Total no. of publications 296

Selected recent publications related to cell biology:

1. Jacqueline LY Chee, XL Guan, JY Lee, B Dong, SM Leong, EH Ong, AKF Liou and **TM Lim** (2005) Compensatory Caspase Activation in MPP+-induced Cell Death in Dopaminergic Neurons. *Cellular and Molecular Life Sciences*. 62: 227-238.
2. Chou AM, Sae- Lim V, Hutmacher DW and **Lim TM** (2006) Tissue Engineering of a Periodontal Ligament-Alveolar Bone Graft Construct. *Int J Oral & Maxillofacial Implants* . 21(4), 526-36.
3. Zhou YF, Sae-Lim V, Chou AM, Hutmacher DW and **Lim TM** (2006) Does seeding density affect in vitro mineral nodules formation in novel composite scaffolds? *J Biomed Mater Res A*, 78(1), 183-193.
4. Zhou ZD, Yap BP, Gung A, Leong SM, ST Ang and **Lim TM** (2006) Dopamine-related and caspase-independent apoptosis in dopaminergic neurons induced by overexpression of human wild type and mutant Î±-synuclein. *Experimental Cell Research*. 312: 156-170.
5. Teh CH, Lam KK, Loh CC, Loo JM, Yan T, **Lim TM** (2006) Neuronal PAS Domain Protein 1 Is a Transcriptional Repressor and Requires Arylhydrocarbon Nuclear Translocator for Its Nuclear Localization. *J Biol Chem* 281(45):34617-34629.
6. Teh CH, Loh CC, Lam KK, Loo JM, Yan T, **Lim TM** (2007) Neuronal PAS Domain Protein 1 regulates tyrosine hydroxylase level in dopaminergic neurons. *J Neurosci Res* 85: 1762-1773.
7. Zhou, Z, S Y Kerk and **T M Lim** (2008) "Endogenous dopamine (DA) renders dopaminergic cells vulnerable to challenge of proteosome inhibitor MG132". *FREE RADICAL RESEARCH*, 42, no. 5: 456-466.
8. Zhou, Z, S Y Kerk, G XIONG and **T M Lim** (2009) "Dopamine auto-oxidation aggravates non-apoptotic cell death induced by overexpression of human A53T mutant alpha-synuclein in dopaminergic PC12 cells". *Journal of Neurochemistry*, 108, no. 3: 601-610.
9. Zhou, Z and **T M Lim** (2009), "Dopamine (DA) induced irreversible proteasome inhibition via DA -derived quinones". *FREE RADICAL RESEARCH*, 43, no. 4: 417-430.
10. Zhou, Z and **T M Lim** (2009), "Roles of Glutathione (GSH) in Dopamine (DA) Oxidation Studied by Improved Tandem HPLC Plus ESI-MS.". *NEUROCHEMICAL RESEARCH*, 34, no. 2: 316-326.

Selected recent publications related to BioMEMS and Nanotechnology:

1. Qasem Ramadan, Victor Samper, Daniel Poenar, Zhu Liang Chen Yu and **Lim Tit Meng** (2005) Simultaneous cell lysis and bead trapping in a continuous flow microfluidic device. Sensor Actuat B-Chem, 113, 944-955.

2. Hui Chen, Chew Kiat Heng, Poenar Daniel Puiu, Xiao Dong Zhou, Ai Cheng Lee, **Tit Meng Lim** and Swee Ngin Tan (2005) Detection of Saccharomyces cerevisiae immobilized on self-assembled monolayer (SAM) of alkanethiolate using electrochemical impedance spectroscopy . Analytica Chimica Acta Volume 554, Issues 1-2, 4: 52-59.
3. Ye, J -S, H -F Cui, X Liu, **T M Lim**, W -D Zhang and F S Sheu (2005), 'Preparation and characterization of well-aligned carbon nanotubes/ruthenium oxide nanocomposites for supercapacitors'. Small, 1: 560-565.
4. Ye, J -S, X Liu, H -F Cui, W -D Zhang, F S Sheu and **T M Lim** (2005) 'Electrochemical oxidation of multi-walled carbon nanotubes and its application to electrochemical double layer capacitors'. Electrochemistry Communications, 7: 249-255.
5. A.C. Lee, J.S. Ye, S.N. Tan, D. Poenar, F.S. Sheu, C.K. Heng and **T.M. Lim** (2006) Carbon Nanotube-based Labels for Sensitive Nucleic Acids Detection. Nanotech. Vol. 2, p. 232- 235.
6. Hui, WC, L Yobas, V Samper, C K Heng, S Liw, H Ji, Y Chen, L Cong, J Li and **T M Lim** (2007) "Microfluidic systems for extracting nucleic acids for DNA and RNA analysis". *SENSORS AND ACTUATORS A-PHYSICAL*, 133: 335-339.
7. LEE, A C, JS Ye, SN Tan, DP Poenar, F S Sheu, C K Heng and **T M Lim** (2007), "Carbon nanotube-based labels for highly sensitive colorimetric and aggregation-based visual detection of nucleic acids". *NANOTECHNOLOGY*, 18, no. 45.
8. Yobas, L, H Ji, WC Hui, Y Chen, **T M Lim**, C K Heng and DL Kwong, "Nucleic Acid Extraction, Amplification, and Detection on Si-Based Microfluidic Platforms". *IEEE JOURNAL OF SOLID-STATE CIRCUITS*, 42, no. 8 (2007): 1803-1813.
9. LEE, A C, G Liu, C K Heng, SN Tan, **T M Lim** and Y Lin (2008), "Sensitive electrochemical detection of horseradish peroxidase at disposable screen-printed carbon electrode.". *ELECTROANALYSIS*, 20, no. 18: 2040-2046.
10. LEE, A C, Z Dai, B Chen, H Wu, J Wang, A Zhang, L Zhang, **T M Lim** and Y Lin (2008), "Electrochemical Branched-DNA Assay for Polymerase Chain Reaction-Free Detection and Quantification of Oncogenes in Messenger RNA". *ANALYTICAL CHEMISTRY*, 80, no. 24: 9402-9410.

Patents:

1) JI, H., YOBAS, L., CHEN, Y., HUI, W. C., HENG, C. K., & **LIM, T. M**. (2007). *IMMOBILIZATION UNIT AND DEVICE FOR ISOLATION OF NUCLEIC ACID MOLECULES*
2) Miao, Y., Chen, Y., **Lim, T. M**., & Heng, C. K. (2009). *Shallow multi-well plastic chip for thermal multiplexing*
3) SAMPER, V., HONGMIAO, J., YU, C., KIAT, H., Chew, & **LIM, T., Meng**. (2005). *NUCLEIC ACID PURIFICATION CHIP*
4) Miao, Y., Chen, Y., **Lim, T. M**., & Heng, C. K. (2008). *Shallow multi-well plastic chip for thermal multiplexing*
5) MIAO, Y., CHEN, Y., **LIM, T., Meng**, & HENG, C., Kiat. (2004). *SHALLOW MULTI-WELL PLASTIC CHIP FOR THERMAL MULTIPLEXING*
6) ZOU, Q., CHEN, Y., SINGH, J., **LIM, T., Meng**, YAN, T., & HENG, C., Kiat. (2003). *SINGLE WAFER FABRICATION OF INTEGRATED MICRO-FLUIDIC SYSTEM*
7) Miao, Y., Chen, Y., **Lim, T. M**., & Heng, C. K. (2004). *Shallow multi-well plastic chip for thermal multiplexing*
8) Zou, Q., Chen, Y., Singh, J., **Lim, T. M**., Yan, T., & Heng, C. K. (2004). *Process to fabricate an integrated micro-fluidic system on a single wafer*
9) Zou, Q., Chen, Y., Singh, J., **Lim, T. M**., Yan, T., & Heng, C. K. (2003). *Single wafer fabrication of integrated micro-fluidic system*
10) Zou, Q., Sridhar, U., Chen, Y., **Lim, T. M**., Zachariah, E. S., & Yan, T. (2003). *Miniaturized thermal cycler*
11) Zou, Q., Sridhar, U., Chen, Y., **Lim, T. M**., Zachariah, E. S., & Yan, T. (2003). *Miniaturized thermal cycler*

12) Zou, Q., Sridhar, U., Chen, Y., **Lim, T. M**., Zachariah, E. S., & Yan, T. (2002). *Miniaturized thermal cycler*
13) Zou, Q., Sridhar, U., Chen, Y., **Lim, T. M**., Zachariah, E. S., & Yan, T. (2002). *MINIATURIZED THERMAL CYCLER*
14) Zou, Q., Sridhar, U., Chen, Y., **Lim, T. M**., Zachariah, E. S., & Yan, T. (2002). *Miniaturized thermal cycler*
15) Samper, V., Hongmiao, J., Yu, C., Kiat, H. C., & **Lim, T.M**. (2005). *Nucleic acid purification chip*

Experience as an Educator

Modules taught in NUS:

- AB205 Embryology and Developmental Biology
- BL4104 Biotechnology and Entrepreneurship (pioneered this module for the Biotechnology Honours class)
- BL3227 Neurobiology
- BL5204 Current Trends in Biotechnology (pioneered this module for graduate students and it is multidisciplinary in nature)
- BL5207 Fish Development
- CCLS01 The Biomolecular Revolution (pioneered this module for the Core Curriculum/University Scholar Programme)
- LSM3233 Developmental Biology
- NUS Extension Course: Introduction to Life Sciences

Guest teaching:

- Master in Clinical Embryology Programme at the National University Hospital
- Neurobiology Graduate Programme at the School of Medicine
- Stem Cell Biology Course at the A*STAR Graduate School
- The KI-NUS joint PhD programme on Genetics And Medical Epidemiology (GAME)
- BL5301 Teaching in Biology course for Teaching Assistants in the Department of Biological Sciences
- Special Programme in Science, NUS
- NIE MSc in Biology Education Programme

Experience as a Mentor

Number of undergraduates, graduate students and post-doctoral fellows supervised/being supervised to date:

Undergraduates	MSc	PhD	Post-doctoral Fellow
49	20	23	5

Publications related to teaching:
Lim, T M, "Learning developmental biology has priority in the life sciences curriculum in

Singapore". *INTERNATIONAL JOURNAL OF DEVELOPMENTAL BIOLOGY*, 47 (2003): 117-121. (Spain) (Then as invited speaker at the Developmental Biology Society 62nd Annual Conference in USA on this topic)

Lim, T M. Review of "Science held hostage", by H J Van Till, D A Young and C Menninga. *Perspective*, (1989): 8.

Lim T M and K L Chua, "Can old dogs learn new tricks". *Proceedings of Teaching in Science Seminar Enhancing Teaching Effectiveness*, ed. B E Baaquie & Y M Teo (1992): 18-21. Singapore: Faculty of Science, NUS. (Proceedings of Teaching in Science Seminar Enhancing Teaching Effectiveness, 3 - 4 Nov 1992)

Lim T M and T W Tan, "The Cambridge supervision system - Some personal experience". *Seminar 'Teaching of Science at Tertiary Level'*, comp. Marcus A Karolewski and Teo Yong Meng (1991): 64-67. Singapore: National University of Singapore, Faculty of Science. (Seminar 'Teaching of Science at Tertiary Level', 8 - 11 Nov 1991)

Lim, T M, "Riding the waves of the life sciences". *MOE 9th Pricnipals' Forum* (27 Oct 2001, The Chinese High School Auditorium, Singapore) (Keynote lecture to the Principals and senior members in MOE).

Lim, T M, "Assessment of courses and teaching - how helpful is the student evaluation". *Proceedings of Teaching in Science Seminar. Excellence in Science Teaching at tertiary level*, ed. YM Teo and SC Ng (1993): 90-92. Singapore: NUS. (Excellence in Science Teaching at Tertiary level, 21 - 22 Oct 1993, NUS)

Lim, T M, "Too specialised to be a general tutor - a dilemma in small group teaching". *Teaching of Science at Tertiary Level* (18 Nov 1994)

Macer, D, C O Chin, T M Lim and M V Boost, "Bioethical reasoning of students in Singapore and Hong Kong". In *Bioethias for the People by the People*, ed. DRJ Macer, 165-169. Christchurch: Eubios Ethics Institute, 1994.

Lim, T M, "The use of the confocal laser scanning microscope in some aspects of Biology". *Asia Pacific Journal of Pharmacology*, no.8, no. 1 (1993): 53-54. (Singapore). (Invited speaker)

Lim, T M, "Positional information theory and embryonic development" Singapore Scientist,111 (41-45). Singapore: Science Centre Singapore, 2008.

Lim, T M, "Gastrulation-the most important process in our life". Singapore Scientist, 110 (42-44). Singapore: Science Centre Singapore, 2008.

Lim, T M, "Sonic hedgehog and other strange genes involved in embryonic development". Singapore Scientist, 113 (45-48). Singapore: Science Centre Singapore, 2009.

Lim, T M, "How does our hand establish the thumb and fingers pattern?" Singapore Scientist,112 (42-45). Singapore: Science Centre Singapore, 2009.

Lim, T M, "Nurturing students in creativity and innovation". *West Zone Centre of Excellence for Science and Technology Science Teachers Seminar* (30 May 2008, Science Centre Singapore, Singapore) (Keynote lecture).

Lim, T M, "Journey in Science". *MOE Project Work Sharing Session for teachers* (23 Apr 2008, Science Centre Singapore, Singapore) (Special invitation by MOE).

Lim, T M, "Nurturing student researchers". In *The hwei construct*, ed. Joanne Lim, 193-202.

Singapore: Candid Creation Publishing LLP, 2009. 10 pp.

Lim, T M, comp., *School Science Laboratory Safety Regulation*, Singapore: Ministry of Education Curriculum Planning & Development Division, 2006. 70 pp. (This is the combined effort of the Working Committee for the Review of Lab safety Regulation)

Lim, T M, comp., *Life Sciences Guidebook for upper secondary and junior college levels*, Singapore: Ministry of Education Curriculum Planning & Development Division, 2001. 159 pp. (This is the combined effort of the Life Science Guide Book Committee)

Invitation to present, lecture or judge:

-Invited by A*STAR to give a talk during the R&D Career Forum on Life long learning in a life science career, 4 September 2001.

-Invited to give a talk at the 62nd Society for Developmental Biology Meeting on Teaching Developmental Biology in Singapore, July 29-August 3 2003, Boston USA

-Invited to present a paper 'Mechanism of cell death in Parkinsons disease' at the National Neuroscience Institute Symposium on Neurodegenerative Diseases, 3 Dec 2003, Singapore

-Invited to present a paper 'Overexpression of wild type and mutant a-synuclein in doparminergic neural cell' at the Singapore International Neuroscience Conference, 22-23 July 2004

-Invited to give a talk on 'Genetically Modified Organisms: basic principles and applications' in a GMO Seminar organised by PSB Spring, Singapore, 17 June 2004.

-Invited to present a talk on 'Development of Micro-PCR and Micro-DNA/RNA Extractor Using bioMEMS Technology' at MITs Institute for Soldier Nanotechnologies during the Singapore-ISN Workshop on 18 May 2005

Life Science Workshop "Demystifying the Modern Genetics" to EDB (Philip Yeo and colleagues), Minister Mr Lim Swee Say, Mr Lim Neo Chian and colleagues, 19 – 15 June 2000.

Lecture on "Life Sciences in the New Millennium" to The Chinese High School, 27 July 2000

Lecture on "Life Sciences in the New Millennium" to the Raffles Junior College, 14 August 2000.

Life Sciences in the New Millennium workshop in NUS for MOE, 16 September 2000, and 4 November 2000

Lecture on "Importance and Impact of Life Sciences" to North Zone School Cluster, 27 September 2000

Special lecture to ITE: "Introduction to Life Sciences" 21 October 2000

Invited Life Sciences Talk to ACS(I) "Embryo Cloning and Gene Therapy" 15 January 2001

Invited lecture to Accenture Consultant on "The Bimolecular Revolution—Hope or Hype" 20 January 2001

Invited Life Sciences Talk to River valley High School "Embryo Cloning and Gene Therapy" 29 January 2001

Invited talk to JTC: 8 February 2001 "Animal Cloning Technology and Implications"

MOE GP teachers forum, lecture and panel discussion, on “Cloning-to do or not to do?” 10 February 2001

Invited talk by the Institute of Human Resource Management on the Impact of Life Sciences on Career Trends at a Conference on Career Trends in a Knowledge-based Economy, 27, 28 February 2001.

Special talk on “The Multifaceted Nature of Life Sciences” at the launch of MOE Life Science Guide Books for Teachers, on 21 Feb 2001 at the Methodist Girl School.

Key note speech for school “The Importance of Entrepreneurship in the New Millennium Workshop”: Clementi Town Secondary School (9 March 2001, topic: The Impact of Life Sciences on Career Trends),

Key note speech for school Life Sciences Workshop: Pioneer Junior College (12 March 2001, topic: A Crash Course in Human Genetics)

Dialog with parents of Heartfriends’ Community Before and After School Care service on “What is Life Sciences?” 17 March 2001

Lectures to JC Physics, Chemistry and Mathematics teachers on “The social, business, ethical and philosophical issues in Life Sciences”, 24 and 31 March 2001

Talk to Dover Community on Life Sciences in Mandarin, “Can Life Sciences prolong our life?” 13 April 2001

Invited lecture to Raffles Institution on “Embryo Cloning and Gene Therapy” 16 April 2001

Invited Lecture to Raffles Institution on “Cell, Nucleus and Genes” 23 April 2001.

Special lecture series to JC during the Fundamental Science Conference in 21-24 May 2001: coordinate 8 invited scientists from USA and Canada.

Invited lecture for the Science Camp at The Chinese High School (30 May 2001, topic: Chromosomes, Genes and DNA)

Invited talk to Jurong JC on the “Importance and Impact of Life Sciences”, 2 May 2001.

Talk to Chinese Clan Association on Life Sciences in Mandarin “Can Life Sciences prolong our life?” 5 May 2001

Talk to Anderson Junior College “Life Sciences in the New Millennium”, 8 May 2001

Invited talk to Temasek Junior College on the “Importance and Impact of Life Sciences”, 16 May 2001.

Pre-U Seminar Panel Discussion Chairman on the impact of Life Sciences in the new Economy: 30 May 2001

Lecture and discussion with JC students as part of the Science Focus events on “Cloning Technology—hope or hype?” 14 June 2001

Invited talk to Anglican High School on “Can life sciences prolong your life?”, 15 August 2001

Invited to take part in TV Media “After Hour” live talk show to discuss embryonic stem cell research issues, 28 August 2001

Life Science talk to Hougang Primary School on “The concept of Cell and genes”, 12 September 2001

MOE-BioRad LS workshop for teachers: 9,10 May, 18-22 June 2001

JTC In-House Training Workshop on “Introduction to Life Sciences—started since November 2000, into the 4th run in June 2001.

DSO Crash Course in Life Sciences 1st run 2 March to 14 April 2001.

Invited by MOE as Key Note Speaker on the 9th Principal Forum Riding the Waves of Life Sciences, 27 October 2001

Invited by A*STAR to be a speaker at Science.01 and Science.02.

Invited as Guest of Honour and delivered a talk “Embryo Transformation: from a single cell to a complex you” at the ACS (I) Life Science Fair, 2004

Invited to write a chapter on “The Genetic Basis of Obesity” for a book published by World Scientific Publishing Company “Slim Chance Fat Hope” edited by Catherine Tay; March 2004. The same chapter has been translated for a Chinese book, published by Global Publishing, edited by Li YY; March 2004.

Invited speaker at MOE Excel Fest 2006.

Invited to judge Science Challenge 2006, 2007.

Invited to a focus group discussion on “Mentoring in Singapore” by the National Youth Council in January 2007.

Invited to be the Keynote speaker for MOE Giftde Education Programme Annual Conference 2006 “Igniting Passion for Research” in November 2006.

Invited to be the Keynote speaker for MOE Gifted Education Programme “Passion Day” workshop in January 2007.

Invited to speak and take part in a Penal Discussion on R&D: Gearing Up for innovation at the “High Tech and Innovation: connecting France and Singapore” Symposium: 21-22 May 2007, as part of the Voilah! Festival.

Invited by MOE to be one of the Grand Judges at the Intel International Science and Engineering Fair held in New Mexico, USA, in May 2007.

Invited by the National Junior College to be the Chief Judge for the 1st Singapore International Science Challenge in May 2007, and then as panel judge in May 2009

<u>Conducted the Science Centre Lecture series (Feb 2008 to July 2009 with repeated runs):</u>
(1) Embryo cloning, how and what?

(2) How do embryonic cells develop structures and functions?

(3) Neural crest cells—a case study on how cellular environment affects differentiation

(4) Discovery of the nerve growth factor—story of a Nobel Laureate

(5) Stem cell biology, hope or hype?

<u>More talk to schools:</u>
-Stem Cell Biology-Hope or Hype at MJC 25 July 08

-Stem Cell Biology-Hope or Hype at PJC 24 Sep 08
-Creativity and Innovation to Sin Min Secondary School 14 Oct 08
-Trends in Life Sciences to NUSHS 27 Aug 08 and 15 Apr 2009
-How did I start my journey in Science to SCGS 11 March 2009
-Stem Cell Biology to SCGS 25 July 2009
-Advances in recombinant DNA technology to HCI 25 Aug 09

Workshop series for Science Mentorship Programme 2008 and 2009:
-Literature reviews
-Scientific methods and experimental design
-Scientific Writing—it is more than a lab report
-Science and Engineering Fair Project Presentation Skills

More talks to MOE teachers or HoDs:
-Lab safety and risk management 4 July 2007 at MOE JC Science HoDs Meeting
-Journey in Science 23 April 2008 for MOE CPDD specialists and teachers on JC Project work sharing session
-Nurturing students in creativity and innovation on 30 May 08 Keynote lecture to West Zone Centre of Excellence for Science and Technology Science Teachers Seminar
-Student project mentoring skills to Zhonghua Secondary School 18 Aug 2009

Special Invitations to events in recent years:
-GOH for NJC Sigma Science Fair 20 Feb 08
-SMP YSC judging 5 Sep 08, 9 Sep 09
-26, 28 Aug 08 Sci-Fi forum panel discussion member
-National Junior Robotic Contest 08 Chief Judge
-National Junior Robotic Contest 09 Jude
-National Science Challenge 08, 09 Judge
-Learn@1N 08 post event judging
-A*TS 08 Judge
-MOE Learning Journey 08 Speaker
-30 May 08 West Zone COE for Science and Technology Sci Teachers' seminar "Venturing beyond the classroom: From Ideas to Practice" Keynote speaker
-SSEF 07, 08 Fair Director
-GoH for Yu Hua Primary School Innovation Fair 19 Sep 08
-GEB Annual Individualised Research Study Exhibition on 7 Nov 08, Judge
-GOH 8th Singapore National Crystal Growing Challenge 27 Sep 08
-Science Buskers Festival 08, 09 Judge
-ACS(I) Life Science Symposium 09 Judge
-Tan Kah Kee Young Inventors Award 2009 Judge
-Sony Creative Science Contest 2008, 2009 Judge
-CHAOS 2007, 2008, 2009 Judge
-Moderator for Science Career Forum at the Science Centre 19 August 2009
-Invited guest lecture on recombinant DNA technology to Hwa Chong Institution Biology cohort 25 August 2009
- Expert Judge GMAC 09 Contest September 2009

Contributions to training students for International Biology Olympiad:

I have been a Chair or Co-Chair of the Singapore Biology Olympiad Committee since Singapore started taking part in the International Biology Olympiad. Over the past 10 years, I have helped coordinate training of students (and some times lead the team) to represent Singapore in the International Biology Olympiad since 2001 and the team results have been consistently very impressive despite being a small nation with a relatively small number of students to select from. The results are as follow:

IBO	Year	Host City	Team members (School)	Medals (Overall Rank)	Country ranking
12th	2001	Brussels, Belgium	Mr Wei Yifeng (ACJC) Mr Teo Shiyi (RJC) Ms Pricilla Ng (RJC) Ms Melissa Fullwood (RJC)	**Gold** (10) **Gold** (16) Silver (26) Silver (27)	**3rd** of 38
13th	2002	Jurmala-Riga, Latvia	Mr Ng Shuh Chang (RJC) Ms Huang Mingyan (RJC) Mr Jonathan Chia Wei Zhong (RJC) Mr Chia Sheng Zhi (RJC)	**Gold** (12) **Gold** (13) Silver (31) Silver (34)	**4th** of 40
14th	2003	Minsk, Belarus	Ms Shirleen Soh Ying Qi (VJC) Mr Hong Enping (RJC) Mr Ho Jiang Hai (HCJC) Mr Chew Guo-Liang (ACJC)	**Gold** (7) Silver (18) Silver (25) Silver (32)	**5th** of 41
15th	2004	Brisbane, Australia	Mr Lim Tse Yang (RJC) Mr Brandon Seah Kwee Boon (ACJC) Mr Huang Weixin (HCJC) Ms Zhang Tianyi (RJC)	**Gold** (1) **Gold** (4) Silver (32) Silver (48)	**2nd** of 40
16th	2005	Beijing, China	Mr Ng Sheng Rong (HCJC) Mr Chen Shiwei (HCJC) Mr Colin Teo Guoxuan (RJC) Ms Mabel Ang Yen Lin (RJC)	**Gold** (12) Silver (23) Silver (31) Silver (47)	**6th** of 50
17th	2006	Rio Cuarto, Argentina	Mr Huang Kee Wui (ACJC) Mr Justin Wee Liang Yi (RJC) Mr Alfred Seng (HCI) Mr Tay Rong En (RJC)	**Gold** (12) **Gold** (17) Silver (36) Silver (48)	**5th** of 49
18th	2007	Saskatoon, Canada	Mr Mayank Soni (RJC) Mr Gary Soh Hui Ming (ACJC) Mr Ian Wee Liang En (HCI) Mr Tan Yong Zi (HCI)	Silver (26) Silver (27) Silver (43) Silver (60)	**9th** of 55
19th	2008	Mumbai, India	Mr Men Yifei (RJC) Mr Joshua Sng Weirong (HCI) Mr Timothy Lim Min De (ACS(I)) Mr Kevin Choy Chi Chuen (ACS(I))	**Gold** (5) **Gold** (15) Silver (28) Silver (32)	**5th** of 55
20th	2009	Tsukuba, Japan	Ms Dong Yangzi (HCI) Mr Tan Wei Han (HCI) Mr Yuan Chengxiang (RJC) Ms Ang Qi Yan (HCI)	**Gold** (1) **Gold** (3) **Gold** (14) Silver (44)	**3rd** of 56

Other highlights:
-Served as an International Biology Olympiad Jury Member (2002, 2004, 2005)

-Served as an Intel International Science and Engineering Fair, USA, Grand Jury Member, 2007

-Headhunted to join the Science Centre Singapore as the Assistant Chief Executive (Education Programmes), Aug 2007 to Jul 2009 (2-years secondment from NUS)