

## **CANCER RESEARCH INITIATIVES FOUNDATION**

### **Progress report (January 2009)**

#### **(a) Biomarkers for the diagnosis and therapy of oral and nasopharyngeal cancer**

Oral cancer is a major world health problem accounting for some 400,000 new cases each year. It is a disease that unfortunately, is invariably lethal and in those patients that do survive, the morbidity is appalling. Despite advances in radiotherapy and reconstructive surgical techniques, the prognosis of oral cancer has remained unchanged for 30 years. Led by Dr Cheong Sok Ching and CARIF's collaborators (see below), we have sought to uncover the molecular basis for the development of oral cancer. To date, we have established a unique panel of Malaysian oral cancer cell lines, conducted the first gene expression microarray analysis of oral cancers in Malaysia, and identified a number of genes which we are developing as potential biomarkers for the diagnosis and treatment of oral cancer.

Nasopharyngeal cancer is a major problem particularly in Asia – in Malaysia, nasopharyngeal cancer is the second most common cancer amongst Malaysian men. Led by Dr Yap Lee Fah and CARIF's collaborators (see below), we have analysed the gene expression profile of nasopharyngeal cancer and are developing biomarkers as potential diagnostic or prognostic markers for NPC.

To date, the work has resulted in 19 publications in international journals, 3 submitted manuscripts, 51 oral and poster presentations at local and international conferences, 4 international and 1 national research awards (2 UICC Awards, Normal Rowe Research Award, AACR Ito Award, Loreal for Women in Science Award).

#### **(b) Genetics of breast cancer in Malaysia's multiethnic population**

The discovery of the *BRCA1* and *BRCA2* genes which cause an inherited increased risk to breast and ovarian cancer has transformed the management of high risk families and led to the development of therapy specifically targeted at these hereditary tumours. Unfortunately, although collectively the Malays, Chinese and Indians account for >60% of the world's population, these ethnic groups often constitute less than 5% of international studies looking at the genetics of breast and other cancers. At CARIF, working together with University Malaya, we have recruited 900 breast cancer patients to a study to identify genetic factors that cause increased risk to breast cancer. This is the largest study of *BRCA1* and *BRCA2* in Malaysian women (full sequencing of ~200 women) and we are in the process of developing more robust methods to identify women at risk to breast and ovarian cancer.

To date, the work has resulted in 2 publications, 2 manuscripts in preparation, 20 oral and poster presentations at local and international conferences and 3 international and 1 national research awards (including the NCI-AACR International Investigator Opportunity Grant, British High Commissioners Award, and the Wellcome Trust Bursary)

#### **(c) Drug Discovery from Malaysia's biodiversity and traditional knowledge**

Malaysia is one of the world's 17 mega-diversity centres that is home to 10% of living organisms in the world, with an estimated 15,500 species of higher plants, 300 species of mammals and 189 species of amphibians.

One of CARIF's most exciting projects is our work to identify new photosensitisers for Photodynamic Therapy (PDT). PDT is a relatively new cancer treatment that uses the combined effects of light and light-activated compounds (photosensitisers) to specifically

target tumour cells for destruction. There are currently only four photosensitising drugs approved for clinical use, and there is significant interest in developing new ones that offer greater effectiveness and fewer side effects. In addition, we are identifying compounds that specifically kill cancer cells. Led by Dr Lee Hong Boon, CARIF has developed our very own methodology for high throughput screening of extracts from various organisms (including higher plants, algae, soil microbes and fungi). Since 2004, we have screened more than 4,000 extracts and identified approximately 450 active extracts. We have purified a number of these extracts to isolate promising compounds, which we are characterizing in cell-based and animal models as potential drug candidates.

To date, the work has resulted in 3 publications in international journals, 2 submitted manuscripts and 3 manuscripts in preparation, 28 oral and poster presentations at local and international conferences and 8 international research awards (IPA Young Investigator Award, British High Commissioner's Award (Singapore), Wellcome Trust Bursary and various conference awards).

## STAFF AT CARIF

### **(a) Oral and nasopharyngeal cancer**

Dr Cheong Sok Ching, PhD (UKM), Group Leader for Oral Cancer Research  
Dr Yap Lee Fah, PhD (Bristol), Postdoctoral Scientist for Nasopharyngeal Cancer Research  
Ms Amyza Salleh (CARIF-UM Joint PhD student)  
Ms Lim Kue Peng (CARIF-University of Bristol Joint PhD student)  
Ms Gan Chai Phei (CARIF-UM Joint MSc student)  
Mr Chong Chan Eng, MSc (UKM)  
Cik Nur Diana Anuar, MSc (UNIMAS)  
Mr Muhammad Mamduh Ahmad Zabidi, BSc (Purdue)  
Pn Sharifah Nurain Zanaruddin, BSc (University of Texas)  
Pn Sharifah Hamid, Senior Laboratory Scientist

### **(b) Genetic risk factors in breast and ovarian cancer**

Dr Teo Soo Hwang, PhD (Cambridge), Chief Executive  
Dr Eswary Thirthagiri, PhD (Bristol), Postdoctoral Scientist for Breast Cancer Research  
Mr Peter Kang, MSc (UCLA)  
Ms Daphne Lee Shin Chi, MSc (Birmingham)  
Ms Lee Sheau Yee, BSc (Sheffield)  
Ms Yoon Sook-Yee, MA (Cambridge), Associate Genetic Counsellor (Australia)

### **(c) Drug discovery from Malaysia's biodiversity**

Dr Lee Hong Boon, PhD (Cambridge), Group Leader for Drug Discovery  
Dr Tan Pei Jean, PhD (UPM)  
Mr Lim Siang Hui, MSc (UPM)  
Ms Ong Cheng Yi, MSc (UMS)  
Mr Fadzly Adzhar (CARIF-UM Joint MSc student)  
Ms Tang Yee Voon (CARIF-UM Joint MSc student)

### ***Current Expertise***

CARIF has a well-equipped laboratory that has been developed from CARIF funds and research grants. We have expertise in a diverse array of techniques, which include the majority of cell biology (cell culture, establishment of new cancer cell lines, invasion assays, transfection, fluorescence imaging of live cells, cytotoxic assays), molecular biology (standard and quantitative PCR, DNA and RNA analysis, DNA sequencing, SEQUENOM technology), gene expression (Affymetrix GeneExpression Analysis, Illumina DASL assay, immunohistochemistry, laser microdissection), proteomic techniques (Western blots, 2D gel analysis, LC-MS) and drug discovery techniques (bioassay-guided fractionation, natural product chemistry, synthesis, LCMS, NMR).

## COLLABORATORS

CARIF is privileged and honoured to be working closely with a network of experts locally and internationally. Our collaborators include:

### **(a) Oral and nasopharyngeal cancer**

Professor Rosnah Zain, OCRCC, University Malaya  
Dr Lau Shin Hin, Institute of Medical Research, Ministry of Health  
Datin Dr Norain Abu Talib, Ministry of Health, Oral Health Division  
Professor Stephen Prime and Dr Ian Paterson, University of Bristol  
Professor Yusuke Nakamura, Human Genome Centre, Japan  
Professor Connie Yang Yi-Hsin, Taiwan  
Professors Lawrence Young and Paul Murray, University of Birmingham  
Dr Alan Khoo, Institute of Medical Research, MOH  
Professor Looi Lai Meng, University Malaya  
Dr Selvaratnam, Nilai Cancer Institute  
Dr Zulkifi Zamrod & Dr Heilly Chong, Inno Biologics Sdn Bhd  
Dr J Silvio Gutkind & Dr Vyomesh Patel Oral & Pharyngeal Cancer Branch, National Institute Of Health, USA  
Dr R Pathmanathan, Subang Jaya Medical Centre  
Dr Ng Ching Ching, University of Malaya  
Professor Jaap Middeldorp, VU University Medical Center, The Netherlands

### **(b) Genetic risk factors in breast and ovarian cancer**

Professor Yip Cheng Har, University Malaya  
Dr Thong Meow Kheong, University Malaya  
Dr Liu Jian Jun, Genome Institute of Singapore

### **(c) Drug discovery from Malaysia's biodiversity**

Professor Nordin Lajis and Associate Professor Khozirah, Universiti Putra Malaysia  
Professor Phang Siew Moi, Universiti Malaya  
Professor Vikineswary Sabaratnam and Dr Noorlidah Abdullah, Universiti Malaya  
Dr Rasadah Mat Ali and Dr Ling Sui Kiong, Forest Research Institute Malaysia  
Dr Rita and Dr Charlie Yeo, Sarawak Biodiversity Centre  
Dr Anthony Ho, Dr Ng Chew Hee & Dr Khoo Kong Soo, Univerisiti Tunku Abdul Rahman  
Dr Charles Vairappan and Dr Ivy Wong, Universiti Malaysia Sabah  
Dr Chu Wan Loy, International Medical University  
Mr Satoshi Nimura, Nimura Genetic Solutions  
Professor Kevin Burgess, Texas A&M University  
Professor Hubert van den Bergh and Dr Georges Wagnieres, EPFL Switzerland  
Professor Kevin Smith, Louisiana State University United States of America

## AWARDS

### **(a) Oral and nasopharyngeal cancer**

1. L'Oreal Women in Science Award for Dr Cheong Sok Ching, Nov 2008
2. Best Free Paper Presentation, Malaysian Oncological Society Annual Meeting for Ms Sharifah Nurain Zanaruddin, Oct 2008
3. UICC Fellowship for Dr Cheong Sok Ching, Jun 2008
4. American Association for Cancer Research ITO EN Ltd Scholar-in-training Award for Dr Yap Lee Fah, Apr 2008
5. Young Investigator Award at the 2nd Regional Conference on Molecular Medicine, KL for Ms Gan Chai Phei, October 2007
6. UICC Fellowship for Dr Cheong Sok Ching, 2005
7. Norman Rowe Award Young Investigator's Award for Dr Cheong Sok Ching, 2005
8. Young Investigator Award at the 1st Regional Conference on Molecular Medicine, KL for Dr Cheong Sok Ching, October 2005

### **(b) Genetic risk factors in breast and ovarian cancer**

1. Best Free Paper Presentation, Malaysian Oncological Society Annual Meeting, Oct 2008
2. National Cancer Institute (USA) - American Association for Cancer Research International Investigator Award, April 2008
3. British High Commissioners Bilateral Award, for Dr Teo Soo Hwang and Dr Eswary Thirthagiri, Mar 2008
4. Wellcome Trust Advanced Course Bursary for Dr Eswary Thirthagiri, Oct 2007

### **(c) Drug discovery from Malaysia's biodiversity**

1. International Phytochemical Society of Europe Travel Award for Ms Tang Yee Voon, September 2008
2. 5<sup>th</sup> International Conference on Porphyrins & Phthalocyanines Travel Award for Mr Fadzly Adzhar, July 2008
3. British Association for Cancer Research/European Association for Cancer Research Symposium Travel Award for Mr Lim Siang Hui, June 2008
4. Wellcome Trust Advanced Course Bursary by Dr Lee Hong Boon, June 2008

5. European Science Foundation-Cooperation in Science & Technical Research (ESF-COST) High Level Research Conference Travel Award for Ms Nurkhalida Kamal, April 2008
6. British High Commissioner's (Singapore) Bilateral Travel Award for Dr Teo Soo Hwang and Dr Lee Hong Boon, Oct 2007
7. 11<sup>th</sup> World Congress of the International Photodynamic Association – Thomas J. Dougherty Travel Fellowship for Dr Lee Hong Boon, Mar 2007
8. Joint 3<sup>rd</sup> AOHUPO & 4<sup>th</sup> Structural Biology & Functional Genomics Conference - Travel Award for Dr Lee Hong Boon, Dec 2006

## PUBLICATIONS

### (a) Oral and nasopharyngeal cancer

1. "Oral Cancer Prediction Model for Malaysian Sample." RM Dom, SA Kareem, B Abidin, RL Raja Jallaludin, **SC Cheong** and RB Zain. 2008. *Austral-Asian Journal of Cancer* 7(4): 209-214.
2. "MDM2 SNP309 does not confer an increased risk to oral squamous cell carcinoma but may modulate the age of disease onset". **S Hamid**, YH Yang, KLP Ng, SM Ismail, RB Zain, **KP Lim**, WM Wan Mustafa, MT Abraham, **SH Teo** and **SC Cheong**. 2008 *Oral Oncol* (2008) doi: 10.1016/j.oraloncology. 2008.06.003
3. "Upregulation of FOXM1 is an early event in hman squamous cell carcinoma and co-operates with nicotine in malignant transformation." E Gemenetzidis, A Bose, AM Riaz, T Chaplin, BD Young, M Ali, D Sudgen, JK Thurlow, **SC Cheong**, **SH Teo**, H Wan, A Wasseem, AK Parkinson and MT Teh. 2008. *PlosOne-In revision*.
4. "Building partnership in oral cancer research in a developing country-processes and barriers." RB Zain, WMN Ghani, IA Razak, RL Raja Jallaludin, AR Samsuddin, **SC Cheong**, N Abdullah, AR Ismail, N Abu Talib and A Jallaludin. *BMC Public Health- Submitted (August 2008)*.
5. "GSTM1, GSTT1 and CYP1A1 polymorphism and risk of oral cancer: a case-control study in Jakarta population, Indonesia." R Amtha, **SC Cheong**, R Zain, I Abdul Razak, B Basuki, BO Roeslan, W Gautama and D Purwanto. *Asian Pacific Journal of Cancer Prevention-In revision*.
6. "Different aetiological factors determine the distinct gene expression patterns in oral squamous cell carcinomas." **S.C. Cheong**, GVR Chandramouli, **A Saleh**, RB Zain, SH Lau, S Sivakumaren, R Pathmanathan, SS Prime, **SH Teo**, V Patel and Gutkind, JS 2007. *Oral Oncol* (2008)doi:10.1016/j.oraloncology. 2008.11.002
7. "The ATM tumor suppressor gene is downregulated in EBV-associated nasopharyngeal carcinoma." S Bose\*, **LF Yap**\*, M Fung, J Starzycynski, **A Saleh**, S Morgan, CW Dawson, MB Chukwuma, E Maina, Buettner M, W Wei, J Arrand, PVH Lim, LS Young, **SH Teo**, T Stankovic, CBJ Woodman and PG Murray. (2008) *J Pathol In Press. (\*Equal contribution)*
8. "Expression of the Epstein-Barr virus-encoded Epstein-Barr virus nuclear antigen 1 in Hodgkin's lymphoma cells mediates Up-regulation of CCL20 and the migration of regulatory T cells." KRN Baumforth, A Birgersdotter, GM Reynolds, W Wei, G Kapatai, JR Flavell, E Kalk, K Piper, S Lee, L. Machado, K Hadley, A. Sundblad, J Sjoberg, M Bjorkholm, A.A Porwit, **LF Yap**, **SH Teo**, RG Grundy, LS Young, I Ernberg, CBJ Woodman and PG Murray. (2008) *Am J Pathol*. 173(1):195-204.
9. "Malaysian Nasopharyngeal Study Group" KC Pua, ASB Khoo, YY Yap, SK Subramaniam, C.A Ong, G Gopala Krishnan, H Shahid, **The Malaysian NPC Study Group** (2008) Nasopharyngeal carcinoma database. *Med J Malaysia*. 63 (Suppl C): 59-62. (*SH Teo and LF Yap are members of The Malaysian Nasopharyngeal Study Group*)
10. "Upregulation of Eps8 in oral squamous cell carcinoma promotes cell migration and invasion through integrin-dependent Rac1 activation." **LF Yap**, V Jenei, CM Robinson, TM Benn, K Moutasim, SP Threadgold, V Lopes, W Wei, GJ Thomas, IC Paterson. (2008) *Oncogene (Revised manuscript under review)*
11. "The role of HOP tumor suppressor gene in Head and Neck Cancer." **LF Yap**, **MM Zabidi**, **SH Teo** and IC Paterson. (2008) (*Manuscript in preparation*).
12. "Establishment and Characterization of Asian Oral Cancer Cell lines as In Vitro Models to Study a Disease Prevalent in Asia." **S Hamid**, **KP Lim**, RB Zain, SM Ismail, SH Lau, WMW Mustafa, MT Abraham and **SC Cheong** (2007). *Int J Mol Med* 19(3): P453-60.
13. "HPV infection and the alterations of the pRB pathway in oral carcinogenesis". **KP Lim**, **S Hamid**, SH Lau, **SH Teo** and **SC Cheong** (2007) *Oncol Rep* 17: P321-1326.

14. "Determination of the global gene expression profile of oral cancers using paraffin-embedded tissues." **A Saleh**, RB Zain, H Hussaini, **S Hamid**, **SH Teo** and **SC Cheong** (2007) *Oral Oncol Suppl* 2/1: pp. 65 (O40).
15. "Valproic Acid induces cell death and growth inhibition in oral cancer cell lines." RB Zain, **S Hamid**, **CP Gan**, SM Ismail, WMW Mustafa, **SH Teo**, **SC Cheong** and N Saunders (2007) *Oral Oncol Suppl* 2/1: pp.197 P216
16. "The association of MDM2 T309G with oral cancer and precancer in Malaysians." SM Ismail, **S Hamid**, YH Yang, WMN Abdul Ghani, **KP Lim**, K Ng, RB Zain, RL Raja Jalaluddin, IA Razak, N Abdullah, **SH Teo** and **SC Cheong** (2007) *Oral Oncol Suppl* 2/1: pp. 196 P218.
17. "Spindle checkpoint and centrosome abnormalities in oral cancer." **E Thirthagiri**, CM Robinson, Huntley, SM Davies, **LF Yap**, SS Prime, IC Paterson (2007) *Cancer Letters* 258: 276-285
18. "Alterations of the p14<sup>ARF</sup>-p53-MDM2 pathway in oral squamous cell carcinoma: MDM2 overexpression is a common event." **KP Lim**, **S Hamid**, SH Lau, **SH Teo** and **SC Cheong** (2005) *Oncol Rep* 14: P963-968.
19. "Human telomerase reverse transcriptase expression in oral carcinogenesis - A preliminary report." S Kumar, RB Zain, SM Ismail and **SC Cheong** (2005) *J Exp Clin Cancer Res* 24(4): P207-214.
20. "Establishment and characterization of an oral squamous cell carcinoma cell line from a patient with no apparent habits associated with oral cancer." **SC Cheong**, **S Hamid**, **KP Lim**, SM Ismail and R Zain (2005) *Oral Oncology Supp* Vol 1 (1): P20.
21. "Oral cancer and precancer research in Malaysia- The Minimum Dataset And Tissue Resource Bank." RB Zain, RL Jalaluddin, IA Razak, S Ismail, AR Samsuddin, SA Atiya, BY Hashim, A Jallaludin, WM Nasir, **SC Cheong**, AZ Bustam, WMW Mahadzir, MT Abraham, J Norma, KK Tay, KM Yuen and other MOCRI Team Members. (2005) *Oral Oncology Supp* Vol 1 (1): PD185.
22. "Immunohistochemical localization of hTERT protein in oral carcinogenesis." S Kumar, M Ismail, RB Zain, MT Abraham and **SC Cheong** (2005) *Oral Oncology Suppl* Vol 1 (1): PD160.

### **(b) Genetic risk factors in breast and ovarian cancer**

1. "Evaluation of BRCA1 and BRCA2 mutations and risk prediction models in a typical Asian country (Malaysia) with relatively low incidence of breast cancer." **E Thirthagiri**, **SY Lee**, **P Kang**, **D Lee**, **GT Toh**, **SA Selamat**, **SY Yoon**, NA Taib, MK Thong, CH Yip, and **SH Teo**. *Breast Cancer Research* 2008: 10 R59
2. "BRCA1 and BRCA2 germline mutations in Malaysian women with early-onset breast cancer without a family history". **GT Toh**, **P Kang**, **SS Lee**, **DS Lee**, **SY Lee**, **SA Selamat**, NA Taib, **SY Yoon**, CH Yip and **SH Teo**. *PlosOne* 2008: 3(4) e2024

### **(c) Drug discovery from Malaysia's biodiversity**

1. "Systematic analysis of *in vitro* photo-cytotoxic activity in extracts from terrestrial plants in Peninsula Malaysia for photodynamic therapy" **CY Ong**, SK Ling, R Mat Ali, **CF Chee**, ZA Samah, **ASH Ho**, **SH Teo**, **HB Lee**. Submitted to *J. Photochem. Photobiol. B* 2008.
2. "Light-activated Cytotoxic Compounds from Malaysian Microorganisms for Photodynamic Therapy (PDT) of Cancer" **N Kamal**, V Sabaratnam, N Abdullah, **ASH Ho**, **SH Teo** and HB Lee. *Antonie van Leeuwenhoek* 2008, in press.
3. "p53 status does not affect photodynamic cell killing induced by Hypericin" **HB Lee**, **ASH Ho**, **SH Teo**. *Cancer Chemother Pharmacol.* 2006, 58, 91-8
4. "Photo-cytotoxic pheophorbide-related compounds from *Aglaonema simplex*" **CF Chee**, **HB Lee**, HC Ong, **ASH Ho**. *Chemistry & Biodiversity* 2005, 2, 1648-55.

## PRESENTATIONS

### (a) Oral and nasopharyngeal cancer

1. "The role of WNT5A in nasopharyngeal carcinoma." 11<sup>th</sup> NIH Scientific Conference 2008 Making a difference: Inculcating research in health care. Munirah, TL Chu, M Daker, P Siti Rohana, SK Tan, W Ngu, **MM Zabidi**, **LF Yap**, **SH Teo** and ASB Khoo. 24-26 October 2008. Kuala Lumpur, Malaysia.
2. "Development of Nasopharyngeal Carcinoma Peptide Vaccine. Malaysian Oncology Society Conference." **MM Zabidi**, H Zembutsu, A Saleh, P Lim, A Khoo, Y Nakamura, **SH Teo** and **LF Yap**. 17-19 October 2008. Kota Kinabalu, Sabah, Malaysia.
3. "Potential use of molecular signatures for oral cancer prognostication." SN Zanaruddin, S Hamid, A.A N Khairul Bariah, SH Teo, **SC Cheong** and SH Lau. Presented at the Malaysian Oncological Society Scientific Meeting, Kota Kinabalu, Sabah. 16-18<sup>th</sup> October 2008.
4. "Cutting edge research in health" **SH Teo** Presented at the Oral Health Research Conference, Putrajaya, Malaysia 31 Jul – 1 Aug 2008
5. "Immunohistochemical study of Ki-67 and MMP-1 in premalignant and malignant oral lesions." Z Mohamad Zaini, L Pong, T Lu, **SC Cheong**, M Jamaludin and T Abraham. Presented at the International Academy of Oral Pathology (IAOP)/American Academy of Oral and Maxillofacial Pathology (AAOMP), San Francisco, June 2008.
6. "GSTM1, GSTT1 and CYP1A1 polymorphism and risk of oral cancer: a case-control study in Jakarta population, Indonesia." R Amtha, **SC Cheong**, R Zain<sup>1</sup>, I Abdul Razak<sup>1</sup>, B Basuki<sup>4</sup>, B O Roeslan, W Gautama and D Purwanto. Presented at the 12<sup>th</sup> International Congress on Oral Cancer in Conjunction with 24<sup>th</sup> Congress of ICMS (former IAMFS) Shanghai, China May 22-25 2008.
7. "Dietary isothiocyanates (ITCs), glutathione s-transferase (GST) polymorphism and risk of oral squamous cell carcinoma (OSCC)." KLP Ng, M Jamaludin, **S Hamid**, **SC Cheong**, RB Zain. Presented at the 12<sup>th</sup> International Congress on Oral Cancer in Conjunction with 24<sup>th</sup> Congress of ICMS (former IAMFS). Shanghai, China May 22-25 2008.
8. "Over-expression of EPS8 in oral squamous cell carcinoma enhances integrin-mediated cell spreading and migration." **LF Yap**, GJ Thomas, CM Robinson, TM Benn, SP Threadgold, V Lopes, W Wei, and IC Paterson. The American Association for Cancer Research (AACR) Annual Meeting. April 12-16, 2008, San Diego, USA.
9. "The use of WGA in amplification of DNA from formalin fixed paraffin embedded (FFPE) tissues of oral squamous cell carcinoma." Siti Zuraidah M, Shin Hin Lau, Khairul Bariah, AM Ali, **SC Cheong**, Y Abwadiyah and Zubaidah Zakaria. Presented at the Medical Genetic Conference, 16-19<sup>th</sup> November 2007, Bukit Tinggi, Malaysia.
10. "Expression of Ki-67, p53, MDM-2 and Bcl-2 at the tumour invasive front in Oral Squamous Cell Carcinoma." YF Choon, **SC Cheong** and RB Zain. Presented at the Dental Student Conference, Hiroshima, October 2007.
11. "Genetic polymorphism in oral cancer-correlation with clinicopathological parameters." MT Abraham, KLP Ng, WMN Ghani, S M Ismail, **SC Cheong**, RB Zain, IA Razak, RL Raja Jallaluddin, ZAA Rahman, **S Hamid**, WM Wan Mustafa, N Prepagaran, KM Yuen, AR Samsudin, KK Tay and N Jalil. Presented in the International Association of Dental Research Meeting, Bali, September, 2007.
12. "Dysregulation of WNT5A in nasopharyngeal carcinoma" **MM Zabidi**, Khoo A, **LF Yap** and **SH Teo**. Presented at the 7<sup>th</sup> MOH-AMM Scientific Meeting, Penang 6 – 8 Sep 2007
13. "Microarray Gene Expression." **SC Cheong** and **SH Teo**. Presented at the World Congress of Pathology Laboratory Medicine, Petaling Jaya, 20-24th August 2007.

14. "Downregulation of the ATM tumour suppressor gene in nasopharyngeal carcinoma is mediated by EBV infection." **LF Yap**, S Bose, M Fung, **A Saleh**, J Starzynski, S Morgan, CW Dawson, E Maina, MB Chukwuma, G Niedobitek, W Wei, J Holborn, J Arrand, P Lim, LS Young, **SH Teo**, T Stankovic, CBJ Woodman and PG Murray. (2007) *East-West Symposium on Nasopharyngeal Carcinoma, 30<sup>th</sup> July – 2<sup>nd</sup> August, 2007, Australia.*
15. "The role of molecular biology in prognostication and therapeutics." **SC Cheong**. Presented at the *AGM/Annual Scientific Meeting of the College of Surgeons, Academy of Medicine, Cameron Highlands, 8-10<sup>th</sup> June 2007.*
16. "Ensuring Quality Research in Oral Cancer Research in a Developing Country" RB Zain, **SC Cheong**, **CP Gan**, WMN Ghani, KLP Ng, **S Hamid**, **NA Nam**, **CE Chong**, **A Saleh**, LS Koh, **SH Teo**, H Hussaini, AT Norain, Z Saiful Bahry and R Saini. - *The Malaysian Oral Cancer Biobank. Presented at the Annual meeting of the International Society for Biological and Environmental Repositories (ISBER), Singapore, 30<sup>th</sup> May - 2nd June 2007.*
17. "Determination of the global gene expression profile of oral cancers using paraffin-embedded tissues." **A. Saleh**, RB Zain, H Hussaini, **S Hamid**, **SH Teo** and **SC Cheong**. Presented at the *1<sup>st</sup> World Congress of the Academy of Oral Oncology, Amsterdam, 17-20<sup>th</sup> May 2007.*
18. "Valproic Acid induces cell death and growth inhibition in oral cancer cell lines." RB Zain, **S Hamid**, **CP Gan**, SM Ismail, WMW Mustafa, **SH Teo**, **SC Cheong** and N Saunders Presented at the *1<sup>st</sup> World Congress of the Academy of Oral Oncology, Amsterdam, 17-20<sup>th</sup> May 2007.*
19. "The association of MDM2 T309G with oral cancer and precancer in Malaysians." SM Ismail, **S Hamid**, YH Yang, WMN Abdul Ghani, **KP Lim**, KLP Ng, RB Zain, RL Raja Jalaluddin, IA Razak, N Abdullah, **SH Teo** and **SC Cheong**. Presented at the *1<sup>st</sup> World Congress of the Academy of Oral Oncology, Amsterdam, 17-20<sup>th</sup> May 2007.*
20. "Global gene expression profile of buccal mucosa cancers using formalin fixed paraffin-embedded (FFPE) tissues." **A Saleh**, RB Zain, H Hussaini, **S Hamid**, **SH Teo** and **SC Cheong**. Presented at the *University Malaya Invention and Innovation Expo 2007. (Awarded Bronze Medal)*
21. "Effects of Valproic Acid on Oral Cancer Cell Lines-An anticonvulsant drug for anti-cancer therapy?" RB Zain, **S Hamid**, **CP Gan**, SM Ismail, WM Wan Mustafa, ZAA Rahman, **SH Teo**, **SC Cheong** and N Saunders. Presented at the *University Malaya Invention and Innovation Expo 2007.*
22. "The potential use of an HDAC inhibitor in the treatment of oral cancer." **CP Gan**, **S Hamid**, **SH Teo**, N Saunders, RB Zain and **SC Cheong**. Presented at the *2<sup>nd</sup> Regional Conference on Molecular Medicine, Kuala Lumpur 2007.*
23. "MDM2 splice variants in oral cancer." **CE Chong**, **CP Gan**, **S Hamid**, **SH Teo** and **SC Cheong**. Presented at the *2<sup>nd</sup> Regional Conference on Molecular Medicine, Kuala Lumpur 2007.*
24. "Mutational status of EGFR in Malaysian oral cancer patients – An indication contributing towards targeted therapy." **NA Nam**, **S Hamid**, SH Lau, RB Zain and **SC Cheong**. Presented at the *9th A-IMBN and 16th MSMBB Conference, Legend Hotel, Kuala Lumpur, 4-5<sup>th</sup> September 2006.*
25. "The expression of EPS8 in oral cancer." **LF Yap**, CM Robinson, S Huntley, IC Paterson (2006) *97<sup>th</sup> Annual Meeting of the American Association for Cancer Research (AACR). April 1-5, 2006, Washington DC, USA.*
26. "Global gene expression analysis of OSCC cell lines associated with different aetiological factors." **A Saleh**, RB Zain, S Prime and **SC Cheong**. *Oral Cancer in the Asia Pacific: A regional update and networking conference, Kuala Lumpur, 2006.*
27. "Preliminary findings of genetic polymorphism of CYP1A1, GSTM1 and GSTT1 genes and oral cancer in Malaysians." RB Zain, RL Raja Jalaluddin, **SC Cheong**, AS Atiya, WMN Wan Ghani, IA Razak, **S Hamid**, SM Ismail, MT Abraham, WMW Mahadzir, N Jalil, KK Tay and KM Yuen. *A case control study. Oral Cancer in the Asia Pacific: A regional update and networking conference, Kuala Lumpur, 2006.*

28. "Association of Glutathione S-Transferase  $\mu$ 1 (GSTM1) genotypes with age, gender, and smoking and oral cancer-hospital based study in Jakarta, Indonesia." R Amtha, BO Roeslan, RB Zain, IA Razak, **SC Cheong**, W Gautama and D J Purwanto. *Oral Cancer in the Asia Pacific: A regional update and networking conference, Kuala Lumpur, 2006.*
29. "Gene Expression Profiles of Oral Cancers with Differing Aetiological Factors." **SC Cheong, A Saleh**, RB Zain, SH Lau, CV Gadiseti, V Patel, SS Prime and JS Gutkind, *Presented at the 84th General Session & Exhibition of the IADR, Brisbane, 2006*
30. "Oral Cancer and genetic polymorphism of CYP1A1, GSTM1 and GSTT1." RB Zain, RL Raja Jalaluddin, **SC Cheong**, AS Atiya, WMN Wan Ghani, IA Razak, **S Hamid**, SM Ismail, MT Abraham, WMW Mahadzir, N Jalil, KK Tay and KM Yuen. *Presented at the 84th General Session & Exhibition of the IADR, Brisbane, 2006*
31. "Association of GSTM, GSTT1, age, gender, smoking and oral cancer-a hospital-based study in Jakarta, Indonesia." R Amtha, BO Roeslan, RB Zain, IA Razak, **SC Cheong**, W Gautama, DJ Purwanto. *Presented at the 84th General Session & Exhibition of the IADR, Brisbane, 2006*
32. "Immunoexpression of pRb and EGFR using tissue microarray (TMA) technique-a preliminary study." NP Kipli, **SC Cheong**, RB Zain, **NA Nam**, **KP Lim**, MT Abraham, SM Ismail and H Mohd Hussaini. *Presented at the 13<sup>th</sup> International Congress on Oral Pathology and Medicine, Brisbane, 2006.*
33. "Expression of human b-defensin-3 in oral squamous cell carcinoma using tissue microarray-a preliminary study." H Mohd Hussaini, **KP Lim**, **S Hamid**, RB Zain, **SC Cheong** and **NA Nam**. *Presented at the 13<sup>th</sup> International Congress on Oral Pathology and Medicine, Brisbane, 2006.*
34. "Preliminary findings of genetic polymorphism of CYP1A1, GSTM1 and GSTT1 genes and oral cancer in Malaysians." RB Zain, RL Raja Jalaluddin, **SC Cheong**, SA Atiya, WMN Ghani, IA Razak, **S Hamid**, SM Ismail, MT Abraham, WMW Mahadzir, N Jalil, KK Tay, KM Yeun. *Presented at the Research and Innovation Expo 2006, University Malaya. (Bronze Medal for Fundamental Research Category)*
35. "Partnership building in oral cancer research- The Malaysian case study." RB Zain, RL Raja Jalaluddin, IA Razak, AR Samsudin, **SC Cheong**, WM Nasir, HM Hussaini. *Presented at the Research and Innovation Expo 2006, University Malaya. (Bronze Medal for Fundamental Research Category)*
36. "The expression of EPS8 and HOP in oral cancer." **LF Yap**, W Wei, V Lopes, PG Murray and IC Paterson. *National Cancer Research Institute (NCRI) Cancer Conference. October 2-5, 2005, Birmingham, United Kingdom.*
37. "Genome-wide analysis of gene expression in nasopharyngeal carcinoma." **LF Yap**, W Wei, **Saleh A**, P Lim, **SH Teo**, PG Murray and CB Woodman. *(1<sup>st</sup> Regional Conference on Molecular Medicine. September 9-11, 2005, Kuala Lumpur, Malaysia. (awarded the second prize for the poster in the category of Applied Science)*
38. "Oral Cancer Database Software/Real and Virtual Tumour Bank System (OCBS/RVTBS) – an aid for multicentre studies." RB Zain, RL Raja Jalaluddin, IA Razak, SM Ismail, AR Samsudin, AS Atiya, BY Hashim, A Jalaludin, WM Nasir, **SC Cheong**, G Krishnan, AZ Bustam, WMN Ghani, ZAA Rahman, NP Kipli, I Othman and MOCRI TEAM. *Presented at the Research and Innovation Expo 2005, University Malaya. (Gold Award for Innovative Research Category)*
37. "Results of Early Studies." RB Zain, RL Raja Jalaluddin, IA Razak, SM Ismail, AR Samsudin, AS Atiya, **SC Cheong**, NP Kipli, WMN Ghani, SKS Kumar, I Sumairi, A Abdul Rahman, T Abraham and MOCRI TEAM. *Oral Cancer and Precancer Malaysia –Presented at the Research and Innovation Expo 2005, University Malaya. (Silver Award for Fundamental Research Category)*
38. "Oral Cancer Database Software/Real and Virtual Tumour Bank System (OCBS/RVTBS) –an aid for multicentre studies." RB Zain, RL Raja Jalaluddin, IA Razak, SM Ismail, SA Atiya, BY Hashim, A Jallaludin, AZ Bustam, ZAA Rahman, G Krishnan, NP Kipli, AR Samsudin, WM Nasir, WMW

- Mahadzir, MT Abraham, N Jalil, KK Tay, KM Yeun, **SC Cheong** and Other MOCRI team members. *Presented at the IPTA Expo, Kuala Lumpur, 2005. (Bronze Award for Potential towards Commercialization Category)*
39. "Alteration in p16-Cyclin D1/CDK4-pRb pathway in oral squamous cell carcinoma." **K.P. Lim, S Hamid**, SH Lau and **SC Cheong**. *2005 2<sup>nd</sup> International Conference on Areca Nut and Betel quid use with/without Tobacco and Oral Cancer. Kaohsiung, July 29<sup>th</sup> – 31<sup>st</sup> 2005.*
  40. "Genetic Polymorphism of GSTM1 in Malaysian Oral Cancer Patients." **SC Cheong**, S Kumar, RB Zain, MT Abraham, SM Ismail, ZAA Rahman, WMW Mahadzir, SHA Primuharsa and HM Hussaini. *2<sup>nd</sup> International Conference on Areca Nut and Betel quid use with/without Tobacco and Oral Cancer. Kaohsiung, July 29<sup>th</sup> – 31<sup>st</sup> 2005.*
  41. "Establishment of *In vitro* Models for Studying Oral Cancers." S Hamid, **KP Lim, NA Nam**, SM Ismail, RB Zain, S Somiah, P Rajadurai, **SC Cheong**. *1<sup>st</sup> Regional Conference on Molecular Medicine, Kuala Lumpur, 2005.*
  42. "Centrosome abnormalities and its association with chromosomal instability and malignant progression in oral cancer." **E Thirthagiri**. *1<sup>st</sup> Regional Conference on Molecular Medicine, Kuala Lumpur, 2005.*
  43. "Identification of genetic events leading to the inactivation of the p53 pathway in oral squamous cell carcinomas." **KP Lim**, SH Lau & **SC Cheong**. *1<sup>st</sup> Regional Conference on Molecular Medicine, Kuala Lumpur, 2005.*
  44. "Identification of events leading to the alteration of the p53 pathway in oral squamous cell carcinomas." **SC Cheong, KP Lim, S Hamid**, SH Lau and **SH Teo**. *5<sup>th</sup> HUGO Pacific Meeting & 6<sup>th</sup> Asia-Pacific Conference on Human Genetics, Singapore, 17<sup>th</sup> – 20<sup>th</sup> November 2004.*
  45. "Genome-wide analysis of gene expression in nasopharyngeal carcinoma." **LF Yap, A Saleh**, Paul Lim and **SH Teo**. *17<sup>th</sup> The Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB)- International Union Of Biochemistry and Molecular Biology (IUBMB) Symposium, November 2004, Bangkok, Thailand.*
  46. "hTERT expression and telomerase activity in oral carcinogenesis." S Kumar, SM Ismail, MT Abraham, RB Zain and **SC Cheong**. *9<sup>th</sup> Annual Scientific Meeting of the International Association for Dental Research- South East Asian Division. 3-6 September 2004.*
  47. "Oral cancer Research Co-ordination-The Malaysian Experience." RB Zain, RL Jalalludin, IA Razak, S Ismail, AR Samsuddin, SA Atiya, BY Hashim, MA Jallaludin, WM Nasir, **SC Cheong**, AZ Bustam, WMW Mahadzir, MT Abraham, K Lim, ZAA Rahman, NP Kipli, G Gopalakrishnan, I Rushdan, I Othman and other MOCRI Team Members. *19<sup>th</sup> Annual Scientific Meeting of the International Association for Dental Research-Southeast Asia Division. 3-6 September 2004.*
  48. "MDM2 Overexpression in Oral Squamous Cell Carcinoma Lacking p53 Mutations." **KP Lim**, SH Lau, S Kumar, RB Zain, **S Hamid** and **SC Cheong**. *Presented in the 14<sup>th</sup> MSMBB Scientific Meeting, Melaka. July 2004.*
  49. "Human Telomerase Reverse Transcriptase Expression in Oral Carcinogenesis." S Kumar, **SC Cheong**, SM Ismail & RB Zain. *Presented at the 4<sup>th</sup> Scientific Meeting of the International Association for Dental Research (Malaysian Section), Kuala Lumpur. February, 2004.*
  50. "Laser Capture microdissection assisted analysis of key regulatory genes in oral tissue." **SC Cheong**, SH Lau, KH Han, **S Hamid**, H Govindan, I Othman and **SH Teo**. *Presented at the 14<sup>th</sup> National Biotechnology Seminar, Penang. December, 2003.*
  51. "Understanding oral cancer at the molecular level." **SC Cheong**. *Presented at the Malaysian Dental Association Symposium Petaling Jaya. June 2003.*
  52. "Understanding oral cancer in Malaysia" **SC Cheong**. *Oral Surgeon Specialist Meeting, Kuala Lumpur. March 2002.*

**(b) Genetic risk factors in breast and ovarian cancer**

1. "Cancer Genetic Predisposition in Asia" **E Thirthagiri** and **SH Teo**. *Medical Genetics Conference, Kuala Lumpur, 12 – 14 Dec 2008*
2. "Genetic predisposition to breast cancer in Asia" **SH Teo**. *Asian Breast Cancer Research Meeting, University Malaya Medical Centre, 15 Nov 2008*
3. "Genetic predisposition to breast cancer – from laboratory to clinic" **SH Teo, Thirthagiri E, SY Lee, Kang P, D Lee, GT Toh, SA Selamat**, NA Mohd Taib, **SY Yoon** and Yip CH. *Malaysian Oncological Society Meeting, Kota Kinabalu. 17 – 19 Oct 2008*
4. "Evaluation of BRCA1 and BRCA2 risk prediction models in a typical Asian country with low ASR of breast cancer." **SH Teo, Thirthagiri E, SY Lee, Kang P, D Lee, GT Toh, SA Selamat**, NA Mohd Taib, **SY Yoon** and Yip CH. *kConFab conference, Brisbane Australia. 19 – 22 Aug 2008.*
5. "Analysis of recurrent germline mutations of the *BRCA1* and *BRCA2* genes in Malaysian Malay, Chinese and Indian breast cancer patients." **E Thirthagiri, Lee SC**, Liu JJ, Bonnard C, Taib NA, Yip CH, and **SH. Teo**. *kConFab conference, Brisbane Australia. 19 – 22 Aug 2008.*
6. "Genetic Counselling in Familial Breast Cancer predisposition testing in an underserved multi-ethnic population – a Malaysian pilot study". **Yoon SY**, Thong MK, Yip CH, **Teo SH**. *kConFab conference, Brisbane Australia. 19 – 22 Aug 2008.*
7. "Emerging landscape of breast cancer susceptibility – what do we know in Asian women?" **SH Teo**. *42<sup>nd</sup> Congress of Medicine, Kuala Lumpur 31 Jul – 2 Aug 2008*
8. "Breast cancer predisposition genes amongst Malaysian women" **SH Teo**. *Novartis Breast Cancer Meeting, Kuala Lumpur 24 – 25 May 2008*
9. "Evaluation of BRCA1 and BRCA2 risk prediction models in a typical Asian country with low ASR of breast cancer." **SH Teo, Thirthagiri E, SY Lee, Kang P, D Lee, GT Toh, SA Selamat**, NA Mohd Taib, **SY Yoon** and Yip CH. *American Association of Cancer Research Conference, San Diego USA. 12 – 16 April 2008*
10. "Evaluation of BRCA1 and BRCA2 mutation prevalence and risk prediction models in Malaysian families with high risk of breast cancer." **P Kang, D Lee, SY Lee, GT Toh, Lee SSW, SA Selamat, SY Yoon**, NA Taib, CH Yip, and **SH Teo**. *2<sup>nd</sup> Regional Conference on Molecular Medicine, October 2007, Kuala Lumpur.*
11. "Analysis of *BRCA1* and *BRCA2* Germline mutations in Malaysian Women with Early-Onset Breast Cancer Without A Family History." **P Kang, D Lee, SY Lee, GT Toh, Lee SSW, SA Selamat, SY Yoon**, NA Taib, CH Yip, and **SH Teo**. *1<sup>st</sup> International KL Breast and Colorectal Cancer Conference, 9-11 August, 2007, Kuala Lumpur.*
12. "Analysis of *BRCA1* and *BRCA2* Germline Mutations in Malaysian Women with Multiple Risk Factors." **GT Toh, SA Selamat, D Lee, SY Lee, P Kang, SSW Lee, SY Yoon**, NA Taib, CH Yip, and **SH Teo**. *1<sup>st</sup> International KL Breast and Colorectal Cancer Conference, 9-11 August, 2007, Kuala Lumpur.*
13. "Checking CHEK-2\*1100DelC's contribution to risk to breast cancer in Malaysians." **E Thirthagiri, SY Yoon**, CH Yip, **SH Teo**. *1<sup>st</sup> International KL Breast and Colorectal Cancer Conference, 9-11 August, 2007, Kuala Lumpur.*
14. "Genetic Counselling in Familial Breast Cancer Predisposition Testing – A Malaysian Experience." **SY Yoon**, MK Thong, CH Yip, **SH Teo**. *1<sup>st</sup> International KL Breast and Colorectal Cancer Conference, 9-11 August, 2007, Kuala Lumpur.*

15. "Inherited Risk to Breast Cancer In Malaysian Women." **SH Teo**. *Annual Scientific Meeting, College of Surgeons, Academy of Medicine of Malaysia. 8-10 June 2007, Cameron Highlands, Malaysia.*
16. "Molecular Analysis of *BRCA1* and *BRCA2* in Females with Early Onset Breast Carcinoma." **Toh GT, Kang P, SA Selamat, SY Yoon, NG Tan**, CH Yip and **SH Teo**. *Regional Conference on Molecular Medicine 2005. 09 – 11 September 2005. Hotel Palace of the Golden Horses, Malaysia.*
17. "*BRCA1* and *BRCA2* Alterations in Malaysian Women with Early Onset Breast Carcinoma." **GT Toh, P Kang, Selamat, SY Yoon**, CH Yip and **SH Teo**. "Familial Cancer 2005: Research & Practice" Conference. *A combined meeting of kConFab, AOCS, the Family Cancer Clinics of Australia and New Zealand, and the ACCFS. 30 August – 03 September 2005. Couran Cove, Island Resort, Queensland, Australia*
18. "*BRCA1* and *BRCA2* Sequence Variants Identified in Malaysian Breast Cancer Patients." **Toh GT, Kang P, SA Selamat, SY Yoon**, Yip CH, **NG Tan** and **SH Teo**. *HUGO Mutation Detection 2005. VIII International Symposium on Mutations in the Genome. 31 May – 4 June 2005 Santorini Island, Greece.*
19. "Identification of *BRCA1* and *BRCA2* Sequence Variants among Malaysian Female Breast Cancer Patients." **GT Toh, P Kang, SY Yoon**, CH Yip, **NGTan** and **SH Teo**. *17th FAOBMB Symposium/2nd IUBMB Special Meeting/7th A-IMBN Conference. 22-26 November 2004. The Imperial Queen's Park Hotel, Bangkok, Thailand.*
20. "Analysis of *BRCA1* and *BRCA2* genes in a high-risk Malaysian family identifies 2 novel germline alterations." **NG Tan, NA Nam, S Bahnu, SY Yoon**, R. Pathmanathan, E Peter, S Nair, **I Othman** and **SH Teo**. *14<sup>th</sup> National Biotechnology Seminar "DNA: 50 years and beyond". 11-13 December 2003. Penang, Malaysia.*

### **(c) Drug discovery from Malaysia's biodiversity**

1. "The Search for Novel Photosensitisers from Malaysian Plants and Microorganisms" **HB Boon, K Nurkhalida, CY Ong**, V Sabaratnam, N Abdullah, SK Ling, R Mat Ali, **ASH Ho, SH Teo** *International Conference on Molecular Chemistry 25-26 Nov 2008 Kuala Lumpur Malaysia*
2. "Photodynamic Activity of Plant Extracts from Sarawak" WW Jong, **FA Kamarulzaman**, VM Thomas, TC Yeo, **HB Lee** *Biodiversity & Biotechnology Symposium 19-21 Nov 2008 Kuching, Malaysia*
3. "Screening of soft coral *Sinularia* sp. For anti-bacterial and photo-cytotoxic activities." FS Lim NW Sit, HB Lee, **YV Tang, ASH Ho**, KS Khoo. *8<sup>th</sup> Asia-Pacific Marine Biotechnology Conference 12-15 Nov 2008 Busan, Korea*
4. "Selective Accumulation of New Cytotoxic Rosamine Derivatives in Mitochondria of Cancer Cells." **HB Lee, SH Lim**, L Wu, K Burgess. *UK-Malaysia Partners in Science Symposium on "Recent Developments in Medicinal Chemistry" 13 Oct 2008 Kuala Lumpur, Malaysia*
5. "From Natural Sources to Targetted Therapy for Cancer: A rational Screening Approach" **SH Teo**. *BioMalaysia 2008 Conference 7 – 9 Oct 2008 Kuala Lumpur, Malaysia*
6. "Photosensitisers from Malaysian Seaweeds for Photodynamic Therapy of Cancers" **YV Tang**, SM Phang, WL Chu, **ASH Ho, SH Teo** and **HB Lee**. *International Phytochemical Society of Europe Symposium on "Natural Products in Cancer Therapy" 23-26 Sep 2008 Naples, Italy*
7. "Screening for photosensitisers from Malaysian terrestrial plants" **CY Ong**, SK Ling, R Mat Ali, AS Zainon, **ASH Ho, SH Teo, HB Lee**. *International Phytochemical Society of Europe Symposium on "Natural Products in Cancer Therapy" 23-26 Sep 2008 Naples, Italy*
8. "Hypericin-Mediated Photodynamic Therapy (PDT) in Combination with Doxorubicin Exhibits Synergistic Cell Killing on Human Oral Cancer Cell Lines" TJ Jie, HB Lee, **ASH Ho**. *International*

*Phytochemical Society of Europe Symposium on "Natural Products in Cancer Therapy" 23-26 Sep 2008 Naples, Italy*

9. "Identification of Photo-cytotoxic derivatives of Pheophorbide-*a* and -*b* from *Piper Penangense*" **Fadzly Adzhar, ASH Ho**, N Haji Lajis, K Shaari, **HS Teo, HB Lee**. *5<sup>th</sup> International Conference on Porphyrins and Phthalocyanines 6-11 July 2008 Moscow Russia*
10. "Selective accumulation of new cytotoxic rosamine derivatives in mitochondria of cancer cells" **SH Lim**, L Wu, **SH Teo**, K Burgess, **HB Lee**. *British Association for Cancer Research/European Association for Cancer Research Symposium 20 Jun 2008 Nottingham UK*
11. "Identification of Potential Photosensitizers for Photodynamic Therapy of Cancer from Malaysian Microorganisms." **K Nurkhalida**, S Vikineswary, N Abdullah, **ASH Ho, SH Teo, HB Lee**. *European Science Foundation –COST High Level Research Conference 18-23 May 2008 Italy*
12. "Identification of Photosensitisers from Green and Brown Algae at Port Dickson for Photodynamic Therapy of Cancers." **YV Tang**, SM Phang, WL Chu, **ASH Ho, HB Lee**. *12<sup>th</sup> Biological Science Graduate Conference 17-18 Dec 2007 Kuala Lumpur, Malaysia*
13. "*Syzygium polyanthum* (Myrtaceae) – a Potential Source of Photo-sensitizers." S Intan Ismail, **HB Lee**, Norakmar Ismail, Norshahida Md Shofian, **FA Kamarulzaman** *Exhibition of Invention Research & Innovation 27-29 Nov 2007, Universiti Putra Malaysia, Serdang, Malaysia*
14. "Photosensitizers from *Micromelum sp.* for the treatment of cancers using Photodynamic Therapy (PDT)" **CY Ong**, SK Ling, **ASH Ho**, MA Rasadah, **SH Teo, HB Lee**. *Women's Health & Asian Traditional Medicine 16-17 Nov 2007 Kuala Lumpur, Malaysia*
15. "Identification of Potential Photosensitizers for Photodynamic Therapy of Cancer from Malaysian Soil Microorganisms" **K Nurkhalida, CF Chin**, S Vikineswary, Noorlidah Abdullah, **ASH Ho, SH Teo, HB Lee**. *12<sup>th</sup> Asian Chemical Congress 23-25 Aug 2007 Kuala Lumpur, Malaysia*
16. "The Search for Novel Photosensitisers from Nature" **HB Lee, ASH Ho, SH Teo**. *11<sup>th</sup> World Congress of the International Photodynamic Association 28-31 Mar 2007 Shanghai China*
17. "Differentially expressed proteins in metastatic oral cancer cell-lines" **HB Lee**, HC Chew, M C Tan, **SH Teo**. *4<sup>th</sup> Asian Oceania Human Proteome Organisation Congress 4-7 Dec 2006 Singapore*
18. "Screening of red extracts from actinomycetes and fungi for photodynamic therapy" **CY Ong**, SE How, SH Puah, SH Mahassan, K Suppayah, **SH Teo**, NK Wong, **HB Lee**, CC Ho. *5<sup>th</sup> ANRAP International Seminar - MNPS 22<sup>nd</sup> Annual seminar 8-10 Nov 2006 Kuala Lumpur, Malaysia*
19. "Marine Algae as a Source of Photosensitizer for Photodynamic Therapy in Cancer Treatment" YV Tang, SM Phang, WL Chu, **HB Lee**. *10<sup>th</sup> Seminar on Medicinal and Aromatic Plants 12-13 Sep 2006 FRIM, Selangor, Malaysia*
20. "Proteomic Profiling of Two Vastly Different Photosensitisers in an Oral Cancer Cell-line by Two-Dimensional Gel Electrophoresis" **HB Lee, HC Hew, ASH Ho**. *Oral Cancer In The Asia Pacific – A Regional Update and Networking Conference 17-19 Feb 2006 Kuala Lumpur, Malaysia*
21. "Identification of Differentially Expressed Proteins in Oral Cancer Cell Lines That Have Different Metastatic Potentials by Two-Dimensional Gel Electrophoresis Mass Spectrometry Proteomic Analysis" **HC Hew, HB Lee**. *Oral Cancer In The Asia Pacific – A Regional Update and Networking Conference 17-19 Feb 2006 Kuala Lumpur, Malaysia*
22. "Cyclooxygenase-2: a potential target to increase efficacy of PDT treatment in oral cancer" **E Thirthagiri**, SA Tan, **SC Cheong, HB Lee, ASH Ho**. *Oral Cancer In The Asia Pacific – A Regional Update and Networking Conference Kuala Lumpur, Malaysia 17-19 Feb 2006*
23. "Understanding photodynamic therapy-induced apoptosis by two-dimensional gel electrophoresis mass spectrometry proteomic analysis" **HB Lee, HC Hew, ASH Ho**, C Yong, KW Low. *HUPO 4<sup>th</sup> Annual World Congress, Munich, Germany, 28 August – 1 September 2005*

24. "Photodynamic Therapy for Cancer: A New Avenue for Natural Products Research" **CF Chin, HB Lee, N Lajis, K Hj Shaari, AM Ali, R Mat Ali, SK Ling, SK Sabaratnam, V N Abdullah N, HC Ong, ASH Ho.** *International Science Congress, Kuala Lumpur, Malaysia 3-6 August 2005.*
25. "The Photo-cytotoxicity of six compounds isolated from *Aglaonema simplex* against human cancer cell lines" **CF Chin, EJ Cheng, HB Lee, HC Ong, ASH Ho.** *20th Annual Seminar of the Malaysian Natural Products Society, Kuching, Malaysia 29-30 November 2004.*
26. "The Influence of p53 status on Photodynamic Cell Killing" **HB Lee, ASH Ho, I Othman, SH Teo.** *14th National Biotechnology Seminar, Penang, Malaysia 11-13 December 2003.*
27. "Bio-Assay Screening of 7 Local Plant Extracts for Light Activated Cytotoxic Activity" **P Kang, HW Lim, ASH Ho, HB Lee, HC Ong, SH Teo, I Othman.** *19th International Seminar on Natural Products, Kuala Lumpur, Malaysia 13-16 October 2003.*
28. "Isolation and Characterization of a Novel Compound from a Local Tuberos Plant as a Potential Light Activated Cytotoxic Agent" **ASH Ho, AM Ali, N Hj Lajis, K Shaari, YA Manap, HB Boon, SH Teo.** *12th Scientific Meeting of the Malaysian Society for Molecular Biology and Biotechnology, Subang Jaya, Malaysia 22-24 May 2002.*