Kar-Tong Tan

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Education

National University of Singapore

B.Sc Honors (First Class Honors)   2009 – 2013

- Double Major in Life Science (Molecular and Cell Biology) and Chemistry
- Minor in Business Management

Raffles Junior College, Singapore   2005 – 2006
Raffles Institution, Singapore   2001 – 2004

Publications and Book Chapter

Qiao-Yang Sun*, Ling-Wen Ding*, **Kar-Tong Tan***, *et al.*, Henry Yang and H Phillip Koeffler "Mutational Topography of Acute Myeloid Leukemia with Partial tandem duplication of the MLL gene (MLL-PTD)" *[Manuscript Submitted]*
* Co-First Authors

Ling-Wen Ding*, Qiao-Yang Sun*, **Kar-Tong Tan***, *et al.*, Henry Yang and H Phillip Koeffler "The Mutational Landscape of Acute Lymphoblastic Leukemia" *[Manuscript in preparation]*
* Co-First Authors

Kar Lai Poon, **Kar Tong Tan**, Yang Ye Wei, Chee Peng Ng, Alan Colman, Vladmir Korzh and Xiu Qin Xu (2012) "RNA-binding protein RBM24 is required for sarcomere assembly and heart contractility" *Cardiovascular Research.* [PMID: 2234530]

Xiu Qin Xu, Manasi Nandihalli, **Kar Tong Tan** and William Sun (2012) "Cardiomyocytes from Human Embryonic Stem Cells" Stem Cells. *Current Topics from the Encyclopedia of Molecular Cell Biology and Molecular Medicine*.

Conference Poster Presentations

Samuel Guan, **Kar Tong Tan**, Henry Yang, Hui Ling Yap, Nur Sabrina Binte Sapari, Richie Soong, Soo Chin Lee (2014) "Using next generation sequencing (NGS) to identify causative mutations in Asian cancer (CA) patients with suspected Lynch Syndrome"
Poster submitted for the 2014 American Society of Clinical Oncology Annual Meeting.
(http://meetinglibrary.asco.org/content/128308-144)

Raghav Sundar, Anand Jeyasekharan, **Kar Tong Tan**, Thomas Choudary Putti, Lay Mui Poh, Huiling Yap, Nur Sabrina Binte Sapari, Richie Chuan Teck Soong, Soo-Chin Lee. "Paclitaxel induced severe sensory peripheral neuropathy is associated with NDRG-1 genetic variant and negative NDRG-1 expression in nerve tissue."
Poster submitted for the 2014 American Society of Clinical Oncology Annual Meeting.

Xiu Qin Xu, Kar Lai Poon, **Kar Tong Tan**, Alan Colman and Vladmir Korzh (2010) Identification of novel cardiac genes through global analysis of human ESC cardiomyocyte differentiation. ***Poster submitted for The 16th International Conference on the International Society of Differentiation.***

Xiu Qin Xu, Set Yan Soo, **Kar Tong Tan**, William Sun, Robert Zweigerdt (2009) Gene Expression Profile of Human Embryonic Stem Cells Derived Cardiomyocytes. ***Poster submitted for the 7th Annual Meeting on the International Society for Stem Cell Research.***

Research Experience

Cancer Science Institute of Singapore, NUS   **May 2013 – present**

Bioinformatician

Project: The development of computational pipelines for the analysis of next-generation sequencing datasets, including:

- o Whole-exome/Targetted sequencing for identification of somatic variants
- o RNA-seq for expression and alternative mRNA splicing
- o RNA-editing from RNA-seq datasets
- o PAR-CLIP, CLIP-seq, iCLIP for RNA binding proteins binding sites

Supervisor: A/P Henry Yang

National University of Singapore   **Aug 2012 – Apr 2013**

Final Year Undergraduate Thesis

Project: Identification of Putative Cancer Driver Mutations at RNA Binding Protein Target Sites in the 3'UTR
Supervisor: A/P Henry Yang

National University of Singapore   **Jan 2012 – May 2012**

Undergraduate Research Opportunity Project
Project: A Novel Method for Synthesizing a shRNA Producing Dumbbell DNA Vector
Supervisor: Asst. Prof. Volker Patzel

National University of Singapore   **Jan 2012 – May 2012**

Research Project as part of the module LSM3241 Bioinformatics and Biocomputing
Project: Evaluation of discovery methods for identification of somatic mutations
Supervisor: A/P Henry Yang

Massachusetts Institute of Technology   **Jun 2011 – Aug 2011**

Summer Research Scholar
Project: Elucidation of the Mechanism of Leaderless Translation
Supervisor: Dr. Caroline Köhrer
Principal Investigator: Prof. Uttam L. RajBhandary

Institute of Medical Biology, A*STAR Singapore   **Dec 2009 – May 2011**

Undergraduate Research Assistant
Project: Characterisation of Novel Cardiac Genes Involved in Cardiogenesis
Supervisor: Dr. Joya Xu Xiuqin
Principal Investigator: Dr. Alan Colman

National University of Singapore   Sep 2010 – Nov 2010
LSM2241 Introductory Bioinformatics
Completed a Bioinformatics Miniproject analyzing the origin and structure of the NDM-1 protein.

National University of Singapore   Jan 2010 – May 2010
SP2171 Discovering Science Module
Wrote a Literature Review Paper entitled:-
"Neuronal Complexity: Regulation at the Post-transcriptional Level"

Institute of Medical Biology, A*STAR Singapore   Feb 2009 – Aug 2009
Research Intern
Project: Characterization of Human Embryonic Stem Cells Derived Cardiomyocytes
Supervisor: Dr. Joya Xu Xiuqin

Institute of Bioengineering and Nanotechnology, A*STAR Singapore   Nov 2005 –
                                                                        Dec 2005

Research Intern
Project: Optimization of Nutrient Delivery to Rat Hepatocytes in a Bioreactor for use in a
Bio Liver Artificial Device
Supervisor: Dr Leo Hwa Liang
Principal Investigator: Prof. Henry Yu

Institute of Molecular and Cell Biology, A*STAR Singapore   Nov 2005 – Dec 2005
Research Intern
Project: The Function of the Stat-3 and its Role in Cell Death
Principal Investigator: A/P Cao Xinmin

Awards and Scholarship

- 2009   Dean's List
- 2005   Lee Kuan Yew Science and Maths Award
- 2005   Singapore Chemistry Olympiad (Silver Medalist)

Extra-Curricular and Leadership

System Administrator for the Bioinformatics Core of the Cancer Science Institute of Singapore (2013 - Present)
- Defined the specifications, purchased and set-up a 32-core, 256GB memory linux server worth over 30k USD for the institute.
- Came out with cheap and practical solutions to upgrade the server for handling increasing amount of NGS datasets.
- Performed periodic updates and maintenance of software and bioinformatics packages on the server

Head Teaching Assistant for the Special Programme in Science (2012 - 2013)
- Led a team of 30+ Graduate and Senior-year Undergraduate teaching assistants in mentoring over 70+ freshman and sophomore year students in a number of integrated science courses and in their research project

ICGC-TCGA DREAM Mutation Calling challenge (2014)
- Led a team from my lab group in this international bioinformatics competition and we were one of the first few to complete the analysis for the real datasets (Team CSIBIO).

System Administrator for the Special Programme in Science (2011-2012)
- Constructed, set-up and maintained a linux webserver for the Special Programme in Science

Teaching Experience

Teaching Assistant for the Joint ENS-CSI Workshop on ChIP-seq data analysis (24th-25th March 2014)
- Guided a number of local scientists and graduate students through a workshop on the analysis of ChIP-seq datasets

Head Teaching Assistant for the Special Programme in Science (2012 - 2013)
- Developed an integrated science curriculum for undergraduate students alongside faculty members for the Special Programme in Science

Teaching Assistant for the Special Programme in Science (2011 - 2013)
- Served as a lab teaching assistant for a number of Biology, Chemistry and Physics based experiments
- Facilitated and taught tutorial classes conducted by faculty members
- Mentored three groups of freshman/sophomore year in writing a scientific literature review and in their research projects.

Skills

- **Computational:**
  Next-generation sequencing data analysis:
  - Analysis of CLIP-seq, PAR-CLIP and iCLIP libraries.
  - Mutation and variant calling from next-generation sequencing datasets.
  - Analysis of RNA-seq datasets for splice variants and differential expression
  - Analysis of RNA-seq datasets for RNA edited sites
  Programming/scripting skills: Perl, Python, bash/shell scripting, R
  Operating Systems: Windows, Linux command line
  System Administration: Set up a number of linux based servers and served as the system administrator for them
- **Wet-lab:**
  Molecular biology and Biochemistry:
  Western blotting, Quantitative Real Time PCR, Chloramphenicol Acetyl Transferase Reporter Assay, Gene knockdown and overexpression, DNA gel electrophoresis
  Microscopy and Imaging:
  Immunofluorescence, Confocal Microscopy, Fluorescence Microscopy.
  Others:
  RNA Immunoprecipitation, Generation of Microarray datasets, Mammalian Cell Line Culture and the maintenance of a mammalian cell bioreactor.