Assoc. Prof. Jeff Tan Kuan Onn

Position: Associate Professor, Head of Cancer Biology Lab

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Education:

- Ph.D. (Biochemistry), Iowa State University, USA
- B.Sc. (Biochemistry), Iowa State University, USA
- MBA, University of Southern Queensland, Australia

Honours,Awards and Memberships:

- Post-Doctoral Fellowship Award (IMCB, A*STAR, Singapore)
- Admitted into Gamma Sigma Delta Honour Society (USA)
- Johnson & Johnson Asia Pacific Nonstock Award
- ASCB (American Society for Cell Biology) Travel Award
- Awarded FRGS Research Grant (Ministry of Higher Education, Malaysia)
- Member of American Society for Cell Biology

Brief Employment History:

- Johnson & Johnson: Principal Scientist (Group Leader)
- A*STAR Institute of Molecular & Cell Biology (IMCB, Singapore): Research Scientist

Industry Experience (Epithelial and Melanoma Biology):

- Developed technology platforms for testing and characterization of bioactives
- Identified and characterized bioactives from bio-diversity resources
- Developed anti-pigmentation products for skin care industry

Teaching: Molecular Biology, Molecular Diagnostics, Pharmaceutical Biotech, Research Methodologies

Research Interests: Research activities in our lab focus on elucidating cellular mechanisms that contribute to cell fate regulation, including apoptosis. Members of Bcl-2 family and tumour suppressors are known to play an important role in cell fate regulation, and our research focuses on de-regulations of these physiological mechanisms that contribute to development of cancer, as well as finding new ways to eliminate cancer cells naturally. Our research investigations have identified novel suicide proteins, which destroy cancer cells through "suicide programme" or Apoptosis, leading to destruction of mitochondria, cell shrinkage and DNA fragmentation. At Sunway University, our research will continue to focus on cancer and cancer stem cell biology, and exploring new methods to kill cancer cells naturally through apoptosis while reducing reliance on chemo-drugs, which are known to have many side-effects on human body. Ultimately, our research aims to develop cancer therapies that are safe and effective, as well as improving the quality of life of cancer patients.

Foci of Transformed Human Breast Cancer Cells

In addition, we are interested in human skin biology, and its signalling mechanisms in response to environmental insults, including UVs induced carcinogenesis, photo-aging, and hyper-pigmentation. Research investigations will be carried out to assess the impact of UVs on human skin by using human skin equivalent models, and to identify natural bio-actives from Malaysian bio-diversity resources that confer UV-protective benefits to human skin.

Research Highlights:

Discovered and cloned human **MOAP-1 (MAP-1*, Modulator of Apoptosis 1)**, a novel tumour suppressor protein encoded by MOAP-1 gene located on human chromosome 14 (GenBank: AF305550.1). MOAP-1 interacts with Bax, and participates in cell signalling, leading to apoptosis through mitochondrial pathway. Over-expressed MOAP-1 induces chemo-sensitization and apoptosis in human cancer cells. MOAP-1 is a member of Paraneoplastic Ma Family (PNMA), and interacts with PNMA2. ***Tan et al. J. Biol. Chem.276, 2802-2807, Tan et al, PNAS (USA) 102, 14623-14628, Lee et al. BBRC 473,224-229.*

Selected Journal Publications

1. Lee Y.H. Pang S. W. **Tan K. O**. PNMA2 Mediates Heterodimeric Interactions and Antagonizes Chemo-sensitizing Activities Mediated by Members of PNMA Family. **Biochemical and Biophysical Research Communications** (2016) 473,224-229 (Research Paper *I.F. [2016] **2.30)**

2. Yap, M. S., Tang Y. Q., Yeo Y., Lim W. L, Lim L. W., **Tan, K. O**,, Richards, M, Iekhsan Othman, I., Poh C. L., Heng B. C. 2016 Pluripotent Human embryonic stem cell derived neural lineages for in vitro modelling of enterovirus 71 infection and therapy Virol J. (BMC) 2016; 13: 5. (Research Paper: I.F.* [2016] **2.181**)

3. Tan, K. O., Fu N. Y., Sukumaran S. K., Chan S-L, Kang J.H., Poon K. L., Chen B. S., Yu, V.C. 2005. MAP-1 is a mitochondrial effector of Bax**. Proceedings of the National Academy of Sciences USA** 102, 14623-14628. (Research Paper: **63** Citations, I.F. [2005]: **10.23**)

4 . Chua, B. T., Volbracht, C., **Tan, K.O**., Li, R., Yu, V.C., Li, P. 2003. Translocation of cofilin to mitochondria is an early and crucial step for the initiation of apoptosis**. Nature Cell Biol.** 5, 1083-9 (Research Paper: **213** Citations, I.F. [2003]: **20.27**)

5. Chan, S-L, Lee, M.C, **Tan, K.O**, Yang, L.K, Lee, A.S, Flotow, H, Fu,N.Y, Butler, M.S, Soejarto, D.D, Buss, A.D, Yu, V.C. 2003 Identification of chelerythrine as an inhibitor of BclXL function **J. Biol. Chem.** 278, 20453-6 (Research Paper: **163** Citations, I. F. [2003]: **6.48**)

6. Tan, K. O., Chan, S-L, Fu, N., Yu, V. C. 2003. MAP-1 is a putative ligand for the multidomain domain proapoptotic protein BAX. Programmed Cell Death, eds: Y. Shi, J.A. Cidlowski, D. Scott and Y.B. Shi, Kluwer Academic/Plenum Publishers Chapter 11 123-130 (Book Chapter)

7. Tan, K. O.,Tan, K. M., Chan, S-L, Yee, K. S. Y., Bévort, M., Ang K. C., Yu, V. C. 2001. MAP-1: a novel pro-apoptotic protein containing a BH3-like motif that associates with Bax through its Bcl-2 homology domains. **J Biol Chem.** 276, 2802-2807 (Research Paper: **106** Citations, I.F. [2001]: **7.26**)

8. Tan, K.M., Chan, S-L, **Tan, K. O**., Yu, V.C. 2001 The C. elegans sex- determining protein FEM-2 and its human homologue, hFEM-2, are Ca2+/calmodulin-dependent protein kinase phosphatases that promote apoptosis. J Biol Chem. 276, 44193-202 (Research Paper: **49** Citation, I.F. [2001]: **7.26**)

9. **Tan, K. O**., Tan, K. M, Yu, V.C. 1999. A Novel BH3-like Domain in BID is required for Intramolecular Interaction and Autoinhibition of Pro-apoptotic Activity. **J Biol Chem**. **(communication)** 274, 23687-90 (Research Paper: **59** Citations, I.F. [1999]: **7.67**)

10. Chan, S-L, **Tan, K.O**., Zhang, L., Yee, K.S.Y., Ronca, F., Chan, M-Y, Yu, V.C. 1999. F1Aα: a Death Receptor-Binding Protein Homologous to the Caenorhabditis elegans Sex-determining Protein, FEM-1, is a caspase Substrate that Mediate Apoptosis. J Biol Chem. 274, 32461-8 (Research Paper: **31** Citations, I.F. [1999]: **7.67**)

***I.F.= Journal Impact Factor**