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## MAJOR RESEARCH INTERESTS

Our group focuses on the application of genome and proteome-level targeted technologies to address biological questions in cancer and infectious disease. Although these two scientific domains may appear quite separate, a number of common cancers have been shown to possess infectious etiologies, including hepatitis viruses in hepatocellular carcinoma, and *Helicobacter pylori* in gastric cancer. We are intrigued by the rapid mutability and genomic plasticity of the cancer genome, as such features are also frequently observed in pathogens as well. Current projects include

1. Genomic and Proteomic Discovery of Biomarkers in Breast Cancer
2. Discovery of oncogenic pathways and processes in gastric cancer.
3. Host-pathogen Interactions in *Burkholderia pseudomallei*, the causative agent of melioidosis

## RECENT REPRESENTATIVE PUBLICATIONS

1. Tan PB, Lackner MR, and Kim SK (1998) MAP kinase signaling specificity mediated by the LIN-31 WH/LIN-1 Ets transcription factor complex during *C. elegans* vulval induction. *Cell* 93(4):569-580
2. Tan P and Kim SK (1999) Signaling Specificity - The RTK/RAS/MAP Kinase Pathway In Metazoans. *Trends in Genetics* 15(4):145-149.
3. Terskikh A, Fradkov A, Ermakova G, Zaraiskiy A, Tan P, Kajava A, Zhao X, Din L, Lukyanov S, Matz M, Kim S, Weissman I and Siebert P (2000) "Flourescent Timer" : Proteins that Change Color With Time. *Science* 290:1585-1588
4. Tan, P and Gan, Y.H. (2002) The Use of Animal Infection Models To Study the Pathogenesis of Melioidosis and Glanders (Letter of Response). *Trends in Microbiology* 10(11), 484-485
5. Tay ST, Leong SH, Yu K, Aggarwal A, Tan SY, Lee CH, Wong K, Visvanathan J, Li D, Wong WK, Soo KC, Kon OL, Tan P (2003) A combined comparative genomic hybridization and expression microarray analyses of gastric cancer reveal novel molecular subtypes, *Cancer Research*, 63, 3309-3316
6. Kun Y, How LC, Hoon TP, Bajic VB, Lam TS, Aggarwal A, Sze HG, Bok WS, Yin WC, Tan P (2003) Classifying the Estrogen Receptor Status of Breast Cancers by Expression Profiles Reveals a Poor Prognosis Subpopulation Exhibiting High Expression of the ERBB2 Receptor, *Human Molecular Genetics* 12(24), 3254-3258
7. Kun Yu, Chee How Lee, Puay Hoon Tan, Ga Sze Hong, Siew Bok Wee, Chow Yin Wong, and Patrick Tan (2004) A Molecular Signature of the Nottingham Prognostic Index in Breast Cancer, *Cancer Research* 64, 2962-2968 (Advances in Brief)
8. Catherine Ong, Ooi Chia Huey, Dongling Wang, Hweeling Chong, Ng Kim Chong, Fiona Rodrigues, May Ann Lee, and Patrick Tan (2004) Patterns of Large-Scale Genomic Variation in Virulent and Avirulent *Burkholderia* Species, *Genome Research* 14, 2295-2307
9. Aggarwal Amit, Siew Hong Leong, Cheryl Lee, Oi Lian Kon, Patrick Tan (2005) Wavelet Transformations of Tumor Expression Profiles Reveals a Pervasive Genome Wide Imprinting of Aneuploidy on the Cancer Transcriptome. *Cancer Research* 65, 186-194
10. Amit Aggarwal, Dong Li Guo, Yujin Hoshida, Siu Tsan Yuen, Kent-Man Chu, Samuel So, Alex Boussioutas, Xin Chen, David Bowtell, Hiroyuki Aburatani, Suet Yi Leung, and Patrick Tan (2006) Topological and Functional Discovery in a Gene Co-expression Meta-Network of Gastric Cancer, *Cancer Research* 66, 232-241 (cited on journal cover)
11. Weiping Cao, Patrick Tan, Chee How Lee, Haifeng Zhang, and Jinhua Lu (2006) A Transforming Growth Factor  $\beta$ -induced Protein Stimulates Endocytosis and Is Up-regulated at the Immature State of Dendritic Cells, *Blood* 107, 2777-2785
12. Jing Tan, Xiaojing Yang, Li Zhuang, Xia Jiang, Wei Chen, RK Murthy Karuturi, Patrick Boon Ooi Tan, Edison T. Liu and Qiang Yu (2007) Pharmacologic disruption of Polycomb-repressive complex 2-mediated gene repression selectively induces apoptosis in cancer cells. *Genes Dev* 21, 1050 – 1063

13. Kumaresan Ganesan, Tatiana Ivanova, Yonghui Wu, Vikneswari Rajasegaran, Jeanie Wu, Ming Hui Lee, Kun Yu, Sun Young Rha, Hyun Cheol Chung, Bauke Ylstra, Gerrit Meijer, Kon Oi Lian, Heike Grabsch, and Patrick Tan. (2008) Inhibition of Gastric Cancer Invasion and Metastasis by PLA2G2A, a Novel  $\beta$ -catenin/TCF Target Gene. *Cancer Res.* 68(11):4277-4286.
14. Qingsong Hou, Yong Hui Wu, Heike Grabsch, Yansong Zhu, Siew Hong Leong, Kumaresan Ganesan, Debra Cross, Lay Keng Tan, Jiong Tao, Veena Gopalakrishnan, Bor Luen Tang, Oi Lian Kon, Patrick Tan. (2008) Integrative Genomics Identifies RAB23 as an Invasive Mediator Gene in Diffuse Gastric Cancer. *Cancer Res* 68: 4623-4630.
15. Kun Yu, Kumaresan Ganesan, Lay Keng Tan, Mirtha Laban, Jeanie Wu, Xiao Dong Zhao, Hongmin Li, Carol Ho Wing Leung, Yansong Zhu, Chia Lin Wei, Shing Chuan Hooi, Lance Miller, Patrick Tan (2008) A Precisely Regulated Gene Expression Cassette Potently Modulates Metastasis and Survival in Multiple Solid Cancers. *PLoS Genetics.* 4(7): e1000129.