Abstract for 03 November 2018, Taoyuan, Taiwan

**From Bewilderment to Enlightenment: Logic in Cancer Research**

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I would like to discuss some apparently bewildering results in cancer research, explain what underlies them, and explore how one might overcome them. Tentatively, I will use the following two examples: (i) The phenomenon where most random gene signatures perform as well as any reported signature for predicting cancer survival; (ii) the phenomenon where a gene pair having mutually exclusive mutations but are provably not synthetic lethal, and yet inhibition of one gene of the pair in cell lines bearing deletion of the other causes cell death. The dissection of such phenomena reveals the logic of the relevant biology and genetics that confounds mechanically application of statistical tests and machine learning.

**Experience:**

Limsoon Wong is Kwan-Im-Thong-Hood-Cho-Temple Chair Professor in the School of Computing at the National University of Singapore (NUS). He was also a professor (now honorary) of pathology in the Yong Loo Lin School of Medicine at NUS. He currently works mostly on knowledge discovery technologies and their application to biomedicine. Limsoon is a Fellow of the ACM, named in 2013 for his contributions to database theory and computational biology. Some of his other recent awards include the 2003 FEER Asian Innovation Gold Award for his work on treatment optimization of childhood leukemias, and the ICDT 2014 Test of Time Award for his work on naturally embedded query languages. He co-founded Molecular Connections Pvt Ltd in India in the early 2000s and served as the company's chairman for a decade and a half, helped helm the steady 400x growth of the company to over 2000 engineers, scientists, and curators. Limsoon received his BSc(Eng) in 1988 from Imperial College London and his PhD in 1994 from University of Pennsylvania.