Life Sciences 生命科學

Sleeping Beauty lends a hand to cancer research

「睡美人」協助癌症研究發展

Dr Vincent Keng
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A method named after a fairy tale heroine has helped researchers develop a sophisticated model for the study of malignant tumours.

一項以童話故事女主角命名的實驗方法，有助研究人員成功建立一種研究惡性腫瘤的精密實驗模型。

Working with a team of international researchers, Dr Vincent Keng Wee-keong, Assistant Professor of the Department of Applied Biology and Chemical Technology, has developed a sophisticated model for investigating malignant peripheral nerve sheath tumours (MPNSTs), rare but aggressive tumours associated with extremely poor prognosis. The development paves the way for the discovery of new genes and genetic pathways, potentially leading to therapies for this deadly form of cancer resistant to all current treatment regimes.

To identify the genes promoting MPNST formation in mice, the team – from the University of Minnesota, Cincinnati Children's Hospital, and the University of Florida in the US and the Institute of Predictive and Personalized Medicine of Cancer in Spain – adopted the Sleeping Beauty transposon method, a powerful unbiased genetic tool. Analysis revealed 745 cancer candidate genes, both known and new, as well as genes and signalling pathways that cooperate in MPNST formation. The researchers discovered that switching off FOXR2, in particular, dramatically decreases the tumours' growth ability.

These findings – published in the May 2013 issue of *Nature Genetics* – are exciting news, as the current five-year survival rate for patients with metastatic MPNST, which occurs in roughly one in 3,000 people worldwide, is less than 25%. "We desperately need more accurate models of the disease to cure it", Dr Keng said. The new model provides a solid foundation for his laboratory's ongoing efforts to find that cure.

理大應用生物及化學科技學系助理教授龔偉強博士透過與國際團隊合作，成功建立三種用作研究「惡性外周神經鞘瘤」的精密實驗模型，以研究其致癌基因及遺傳途徑，期望為這種罕見而病人存活率不高的惡性肉腫瘤，研發更有效的治療方法。

龔博士與由美國明尼蘇達大學 (University of Minnesota)、辛辛那提兒童醫院 (Cincinnati Children's Hospital)、美國佛羅里達大學（University of Florida)及西班牙預測與個人化癌症醫藥研究所 (Institute of Predictive and Personalized Medicine of Cancer) 組成的團隊，透過有效及較客觀的遺傳病研究工具「睡美人轉座子」方法，以老鼠為實驗對象，識別引致惡性外周神經鞘瘤的遺傳基因。該實驗經過研究人員分析後，已識別七百四十五個已知及新確認的可能導致惡性外周神經鞘瘤的基因，這些基因的相互作用及細胞內的信號通道也一併確認。研究人員發現，每當阻止誘發癌症的FOXR2基因的表達，便能顯著地抑制腫瘤生長。

以上的研究結果已在二零一三年五月號的國際學術期刊《自然－遺傳學》(Nature Genetics) 發表。現時全球每三千人中，便有約一人會患上惡性外周神經鞘瘤，這類癌症的癌擴散患者的五年存活率不足百分之二十五，故是次的研究結果實在令人振奮，正如龔博士所言：「我們需要建立更準確的實驗模型，為這種癌症的病人提供更適切的治療方法。」他的團隊將利用這項嶄新的實驗模型，繼續探求更有效治療這項癌症的良方。