個人簡歷

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個 人 資 料

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簡述：

My PhD dissertation focused on the basic science research-cell cycle regulation, particularly in the regulation of G2/M transition. For cell cycle research, an important and interesting question regarding cell cycle regulation is what controls cell cycle transition enables cells to pass through the restriction point. My previous findings figure out the question remain unsolved in 1996 Nature paper about why the first identified peptidyl-prolyl isomerase, Pin1, acts as a negative regulator of G2/M transition. I try to model a novel molecular interplay between Pin1 and the key G2/M regulator, Aurora A/hBora complex in the control of mitotic entry. These works were published in “Cell Cycle” and ”Journal of Cell Science” in 2013, respectively. In addition to my PhD thesis work, I also have a great interest in tumor biology and cancer drug discovery. Parts of these results were also published and listed below.

After completing my PhD program and the military service in Taiwan, I started my postdoctoral training at Baylor College of Medicine in March 2015. My current research focuses on tumor biology. Accumulating evidences reveal that the tumor microenvironment impacts on tumor progression, therapeutic strategy and the outcome of therapy, once we understand more about the interplay of cancer cells and tumor microenvironment, we can develop more effective treatment to cure cancer. Bladder cancer is the fifth most common malignancy, and is largely incurable when it progresses into invasive disease. The 5-year survival rate for metastatic bladder cancer is only 6% with no effective therapeutic options. Clinically, it is critical to investigate the mechanisms that drive bladder cancer progression and develop therapeutic drug for targeting. I am currently working on a project investigating how cancer cells interact with tumor microenvironment, particularly the extracellular matrix (ECM), influences the metastatic behavior of bladder cancer cells. “Seed and soil” theory is proposed to explain the metastatic preference of cancer cells for specific organ. Interestingly, we identified Collagen III-rich airway smooth muscle cells are a newly identified niche through CD167a/Stat3/HSP90 signaling pathway for lung metastatic colonization in lung. Hope our research can shed light in understanding of bladder cancer cell progression and may develop new therapeutic interventions by targeting the tumor microenvironment.

Furthermore, I had established Patient-derived xenograft (PDX) mice model, primary bladder cancer cell culture, liver and lung metastatic model and carcinogen (BBN)-induced bladder cancer mouse model. It has been reported that liver and lung are two common clinical metastatic sites of advanced bladder cancer. However, the metastatic models of bladder cancer to liver and lung by human PDX line are not well-established. Among our human PDX lines, two particularly isolated

PDX lines displays highly liver and lung metastatic potential, respectively. Currently, I am trying to profile gene expressions between primary bladder cancer line and liver or lung metastatic subline to discovery some organ sites-specific metastasis-related genes. These valuable materials can be used to investigate the molecular mechanism of bladder cancer progression and validate the clinical relevance.

主要學歷

學校名稱	主修學門科系	學位	起訖年月（西元年/月）
成功大學	基礎醫學研究所	博士	2007/09 至 2013/07
中山大學	生物醫學研究所	碩士	2004/09 至 2006/07
高雄醫學大學	醫學檢驗學系	學士	2000/09 至 2004/06

主要經歷

服務機構	服務部門 / 系所	職稱	起訖年月（西元年/月）
台北醫學大學	醫學科學研究所	助理教授	2019年8月~
美國貝勒醫學院	Molecular cell and biology	博士後研究員	2015年3月~2019年8月

研究專長及方向

1. 訊息傳遞學	2. 細胞週期調控	3. 腫瘤轉移研究	4. 腫瘤微環境研究
5. 癌症轉譯醫學	6. PDX 動物模型建立	7. 分子生物學	

動物模型建立

(1) Patient-derived xenograft (PDX) mice model.
(2) Liver and lung metastatic model of bladder cancer.
(3) Carcinogen (BBN)-induced bladder cancer mouse model.
(4) Primary cancer cell culture and in vitro 3D organoid culture.
(5) DDR1 transgenic mice model.
(6) Tail-vein metastatic model and bladder cancer orthotopic model.

這些動物model 的成功建立，有利於日後
(1) 癌症轉移的分子機制及其特異性器官轉移(organ-specific metastasis)之探討。
(2) 期望藉由病人PDX model的建立，提供與臨床醫師合作的機會，發展精準醫學及驗證基礎研究的臨床重要性。
(3) 結合BBN-induced bladder cell transformation model，延續博士班細胞週期調控的研究興趣，探討正常膀胱細胞，因細胞週期失調，而導致的癌化機制。
(4) 利用建立的tumor model平台，針對原位腫瘤，亦或是遠端轉移之癌症，進行抗癌症藥物的篩檢研發。

發表著作

1. **Lee YC**, Kurtova AV, Xiao J, Nikolos F, Tramel Z, Chen FG [3], Xiang Z, Shen JJ, Mo QX, Rowley D, Chan KS Collagen-rich airway smooth muscle cells are a metastatic niche for tumor colonization in the lung Nature Communications 2019 volume 10, Article number: 2131 **IF:12.35**

2. Mo QX, Nikolos F, Chen FG, Tramel Z, **Lee YC**, Hayashi K, Xiao J, Jianjun Shen, and Chan KS Prognostic power of a tumor differentiation gene signature for bladder urothelial carcinoma-a comparative analysis and systematic review. Journal of the National Cancer Institute (2018 Jan 12. doi: 10.1093/jnci/djx243) **IF:12.58**

3. Rodriguez-Brenes IA, Kurtova AV, Lin C, **Lee YC**, Xiao J, Mims M, Chan KS, Wodarz D. Cellular Hierarchy as a Determinant of Tumor Sensitivity to Chemotherapy. Cancer Res. 2017 May 1;77(9):2231-2241. **IF:9.122**

4. Brooks M, Mo Q, Krasnow R, Ho PL, **Lee YC**, Xiao J, Kurtova A, Lerner S, Godoy G, Jian W, Castro P, Chen F, Rowley D, Ittmann M, Chan KS Positive association of collagen type I with non-muscle invasive bladder cancer progression. Oncotarget. 2016 Dec 13;7(50):82609-82619 **IF:5.168**

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8. **Lee YC**, Que J, Chen YC, Lin JT, Liou YC, Liao PC, Liu YP, Lee KH, Lin LC, Hsiao M, Hung LY, Huang CY, Lu PJ. Pin1 acts as a negative regulator of the G2/M transition through an interplay with the Aurora A/hBora complex. Journal of Cell Science. 2013 Nov 1;126:4862-72 **IF:5.325**

9. **Lee YC**, Liao PC, Liou YC, Hsiao M, Huang CY, Lu PJ. Glycogen synthase kinase 3β activity is required for hBora/Aurora A-mediated mitotic entry. Cell Cycle. 2013 Mar 15;12 (6):953-60 **IF:5.006**

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12. Liu YP, Chen HL, Tzeng CC, Lu PJ, Lo CW, **Lee YC**, Tseng CH, Chen YL, Yang CN. TCH-1030 targeting on topoisomerase I induces S-phase arrest, DNA fragmentation, and cell death of breast cancer cells. Breast Cancer Res Treat. 2013 Apr;138(2):383-93. **IF:4.198**

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獲獎經歷及榮譽

1. **2004** 通過台灣『專門職業及技術人員高等考試 醫事人員考試』(醫學檢驗師執照)
2. **2006** 第21屆 台灣生物醫學年會 壁報論文競賽優等獎
3. **2006** 獲頒『台灣斐陶斐榮譽學會』榮譽會員
4. **2006** 台灣 中山大學 第3屆理學院 生物與環境科學論文競賽 第三名
5. **2006** 台灣 細胞及分子生物新知年會 -優秀論文壁報獎
6. **2011** 榮獲 台灣 台南奇美醫學中心 傑出研究計畫申請 補助
7. **2011** 台灣科技部 補助赴美參加 『American Society for Cell Biology』年會
   Poster title: Pin1 acts as a negative regulator in G2/M transition
8. **2012** 成功大學 博士論文競賽 傑出優勝獎
9. **2013** 台灣科技部 補助赴美參加 『 American Association for Cancer Research』年會
   Poster title: STK4 downregulation promotes tumor invasion/migration and is associated with poor prognosis in human colon cancer
10. **2015** American Association for Cancer Research 會員
11. **2015** 受邀為『Molecular and Cellular Biology』期刊 審稿員
12. **2016** 發表 貝勒醫學院 『細胞與基因治療中心』 壁報論文
13. **2017** 受邀為『 Biomedicine & Pharmacotherapy 』期刊 審稿員
14. **2017** 受邀為 貝勒醫學院『 第39屆MCB 學生壁報論文競賽』評審
15. **2018** 受邀為 貝勒醫學院『 第40屆MCB 學生壁報論文競賽』評審
16. **2019** American Association for Cancer Research symposium