

長庚大學 微生物及免疫學科 臨床免疫體學實驗室

楊佳郁 Chia-Yu Yang

助理教授 Assistant Professor

電話：03-2118800 ext. 3527 Lab:5370

信箱：chiayu-yang@mail.cgu.edu.tw



➤ 學經歷

Education:

2002/9-2009/2

博士，國防醫學院 生命科學研究所

Ph.D., Graduate Institute of Life Sciences, National Defense Medical Center, Taiwan.

1999/9-2001/7

碩士，陽明大學 公共衛生研究所

M.S., Dept. of Public Health, National Yang-Ming University, Taiwan.

1995/9-1999/6

學士，長庚大學 醫事技術學系

B.S., Dept. of Medical Biotechnology and Laboratory Science, Chang Gung University, Taiwan.

Research Experience:

2016/08~present

Assistant Professor, Dept. of Microbiology & Immunology, Chang Gung University, Taiwan

2014/3~2016/7

Assistant Research Fellow, Molecular Medicine Research Center, Chang Gung University, Taiwan.

2010/2~2014/1

Postdoctoral Fellow, Immunology Research Center, National Health Research Institutes, Taiwan.

2009/2~2009/12

Postdoctoral Fellow, Institute of Molecular Biology, Academia Sinica, Taiwan.

2001/7~2002/8

Research Assistant, Institute of Molecular Biology, Academia Sinica, Taiwan.

➤ 研究方向

1. 感染性肺炎的免疫調節因子鑑定與功能性探討

肺炎(pneumonia)是指肺部實質出現發炎的現象，其致病原以感染細菌或病毒為主，偶有其他微生物的感染而引起。肺炎常見的症狀有咳嗽、胸痛、發熱與呼吸困難，約有百分之四十的肺炎病人會合併出現肋膜腔積液，肋膜腔積液的產生會大幅增加肺炎病人的死亡率，抗生素治療或搭配胸管引流是目前臨床上治療的選擇。我們利用蛋白質體學技術(Proteomics)，系統性的建立肺炎病人肋膜腔積液的蛋白質體資料庫，並從其中鑑定出多個參與免疫調節機制的新穎蛋白標誌(immune-related biomarker)，我們評估這些新穎的蛋白標誌在臨床應用於肺炎病人分期、治療與預後的成效，更進一步探討這些免疫調節因子在肺炎中扮演的生物學角色與機轉。我們也利用代謝體學技術(Metabolomics)，分析肺炎病人肋膜腔積液的代謝分子組成，期望鑑定出與疾病相關的代謝分子，並探討其生物功能。同時，肺炎病人肋膜腔積液中也存在著大量的免疫細胞，其中以嗜中性球為主，我們以基因體學技術(Genomics/Next-generation sequencing)，分析免疫細胞的轉錄體變化，了解免疫細胞在於疾病進展的機轉與角色。我們期望以感染性肺炎為模式，串連高通量實驗的數據，建立免疫體學的應用。

2. 口腔癌的癌化功能性探討

口腔癌是指發生在口腔各個部位的惡性腫瘤，其中大約有九成都是屬於鱗狀細胞癌，好發於 45 歲以上的男性，但近年來口腔癌好發年紀有下降趨勢。嚼食檳榔、吸菸、喝酒、蛀牙與不良的口腔衛生習慣等等，都是可能的危險子。治療方式是以外科手術和放射線治療為主，有些病人會搭配抗癌藥物的化學治療。口腔癌早期個案治療後，有七成以上的人其五年存活率很好，所以早期發現與治療會有相當好的成效。我們實驗室關注於口腔癌的癌化機轉研究，我們建立口腔癌的癌症動物模式以及人類腫瘤細胞異體移植動物模式，以研究口腔癌病患的病理及基因多樣性，並分析腫瘤細胞對藥物的敏感性以及免疫相關訊號路徑的調控。在口腔癌的腫瘤組織中有許多的訊號路徑可能與癌化相關，其中包含 mitogen-activated protein kinase (MAPK)訊號途徑的過度激活。磷酸化與去磷酸化的作用參細胞內許多重要的訊號傳遞，並且這個過程主要透過磷酸酵素與去磷酸酵素的交互作用。Dual-specificity phosphatase (DUSPs)是一群蛋白去磷酸酵素，可將蛋白質中的磷酸酪氨酸和磷酸絲氨酸/磷酸蘇氨酸殘基去磷酸。我們實驗室利用一系列的分子生物實驗與動物模式實驗，關注 DUSPs 的功能、調節、和交互作用

蛋白之機轉在口腔癌癌化過程中所扮演的角色。此外，我們也分析病原菌和口腔癌的相關性，利用次世代定序平台，建立口腔癌病人的口水與癌組織的菌相圖譜，進一步探究病原菌在口腔癌之癌化機轉的角色。

3. 去磷酸酶在免疫細胞的功能角色

DUSPs 去磷酸酶家族蛋白，可使有絲分裂原活化蛋白激酶(mitogen-activated protein kinase, MAPK) 去磷酸化而調控其功能，MAPK 生物路徑對免疫細胞的發生、存活、分裂、及分化極為重要，而 DUSPs 也可能調節其它激酶而影響生物訊號路徑。我們利用基因剔除鼠模式與深度體學分析平台，研究 DUSPs 家族蛋白對免疫細胞的調節機轉如免疫細胞發育及免疫反應的調節，也以動物實驗模式探討 DUSP 影響免疫細胞活化及免疫疾病的引發。

我們非常歡迎對免疫學，腫瘤生物學，基因體學有興趣的大學部專題生與碩博研究生加入實驗室，進行專題研究與碩博士論文研究。

➤ 實驗室成員

研究助理

詹斐雯 2017.09 ~ present
(長庚大學 生醫所碩士畢業)



王婉玲 2018.08 ~ present
(萬能科技大學 生技系學士畢業)



博士班學生

蔡挺霖 2018.09 ~ present
(長庚大學 生醫所碩士畢業)



陳旻 2019.09 ~ present
(長庚大學 生醫所碩士逕修讀博士)



碩士班學生

張益誠 2019.08 ~ present



郭郁瑄 2020.08 ~ present



張媛瑄 2020.08 ~ present



大學部學生

王翊珊 2018.07 ~ 生技系大四



李家羚 2019.03 ~ 生技系大四



游凱婷 2019.10 ~ 生技系大三



黃郁婷 2019.09 ~ 生技系大三



鍾葦璇 2020.07~ 生醫系大三



➤ 畢業學生

大學部

蘇晉賢 2018.07 醫學生物技術學系學士

陳旻 2019.07 醫學生物技術學系學士

鐘宜庭 2019.07 生醫系學士

曾苡瑄 2020.07 醫學生物技術學系學士

郭郁瑄 2020.07 醫學生物技術學系學士

碩士班

羅盛煜 2016.09 ~ 2019.02 生醫所碩士

蔡佩筑 2018.07 ~ 2020.08 生醫所碩士

➤ 實驗室環境



➤ 實驗室聚餐



➤ 著作

1. **Yang CY**, Lin NH, Lee JM, Huang CY, Min HJ, Yen JJ, Liao NS, Yang-Yen HF. (2009) Promoter Knock-In Mutations Reveal a Role of Mcl-1 in Thymocyte-Positive Selection and Tissue or Cell Lineage-Specific Regulation of Mcl-1 Expression. *Journal of Immunology* 182:2959 -2968. (IF=5.646, 18/128 in IMMUNOLOGY)
2. Wu PS, **Yang CY**, Yen JJ, Chou CH, Chen SH, Wang CK, Lai YG, Liao NS, Yang-Yen HF. (2009) Critical Roles of Translationally Controlled Tumor Protein in the Homeostasis and TCR-Mediated Proliferation of Peripheral T Cells. *Journal of Immunology* 183: 2373 -2381. (IF=5.646, 18/128 in IMMUNOLOGY)
3. Weng SY, **Yang CY**, Li CC, Sun TP, Tung SY, Yen JJ, Tsai TF, Chen CM, Chen SH, Hsiao M, Huang PH, and Yang-Yen HF. (2011) Synergism between p53 and Mcl-1 in protecting from hepatic injury, fibrosis and cancer. *Journal of Hepatology* 54: 685-694. (IF=9.264, 4/74 in GASTROENTEROLOGY & HEPATOLOGY)
4. Chuang HC, Lan JL*, Chen DY*, **Yang CY***, Chen YM, Li JP, Huang CY, Liu PE, Wang X, Tan TH. (2011) The kinase GLK controls autoimmunity and NF- κ B signaling by activating the kinase PKC- θ in T cells. *Nature Immunology* 12:1113-1118. (*These authors contributed equally to this study) (IF=26.008, 3/144 in IMMUNOLOGY)
5. Wang X, Li JP, Kuo HK, Chiu LL, Dement GA, Lan JL, Chen DY, **Yang CY**, Hu H, Tan TH. (2012) Downregulation of B-cell receptor signaling by hematopoietic progenitor kinase 1 (HPK1)-mediated phosphorylation and ubiquitination of the activated BLNK. *Journal of Biological Chemistry* 287:11037-11048. (IF=4.651, 62/290 in BIOCHEMISTRY & MOLECULAR BIOLOGY)
6. Chen KR, Chang CH, Huang CY, Lin CY, Lin WY, Lo YC, **Yang CY**, Hsing EW, Chen LF, Shih SR, Shiao AL, Lei HY, Tan TH, Ling P. (2012) TBK1-associated protein in endolysosomes (TAPE)/CC2D1A is a key regulator linking RIG-I-like receptors to antiviral immunity. *Journal of Biological Chemistry* 287:32216-32221. (IF=4.651, 62/290 in BIOCHEMISTRY & MOLECULAR BIOLOGY)
7. **Yang CY**, Li JP, Chiu LL, Lan JL, Chen DY, Chuang HC, Huang CY, Tan TH. (2014) Dual-specificity phosphatase 14 (DUSP14/MKP6) negatively regulates T-cell receptor signaling by inhibiting TAB1 activation. *Journal of Immunology* 192:1547-1557. (IF=4.922, 26/148 in Immunology) (This paper was highlighted in *Journal of Immunology* "In This Issue" section.)
8. Li JP, **Yang CY**, Chuang HC, Lan JL, Chen DY, Chen YM, Wang X, Chen A, Belmont J, Tan TH. (2014) The phosphatase JKAP/DUSP22 inhibits T-cell receptor signaling and autoimmunity by inactivating Lck. *Nature Communications*

- 5, 3618. DOI: 10.1038/ncomms4618 (IF=11.470, 3/55 in MULTIDISCIPLINARY SCIENCES)
9. Chuang HC, Sheu W, Lin YT, Tsai CY, **Yang CY**, Cheng YJ, Huang PY, Li JP, Chiu LL, Wang X, Xie M, Schneider M, Tan TH. (2014) HGK/MAP4K4 deficiency induces TRAF2 stabilization and Th17 differentiation leading to insulin resistance. *Nature Communications* 5, 4602. DOI: 10.1038/ncomms5602 (IF=11.470, 3/55 in MULTIDISCIPLINARY SCIENCES)
10. **Yang CY***, Chiu LL*, Tan TH. (2016) TRAF2-mediated Lys63-linked ubiquitination of DUSP14/MKP6 is essential for its phosphatase activity. *Cellular Signalling*, 28, 145-151. (*These authors contributed equally to this study) (IF=4.191, 65/184 in CELL BIOLOGY)
11. Wu KA, Wu CC, Chen CD, Chu CM, Shih LJ, Liu YC, Wang CL, Lin HH#, **Yang CY**#. (2017) Proteome profiling reveals novel biomarkers to identify complicated parapneumonic effusions. *Scientific Reports* 7(4026):1-10. (IF=4.259, 10/64 in MULTIDISCIPLINARY SCIENCES)
12. Chen TW, Lee CC, Liu H, Wu CS, Pickering CR, Huang PJ, Wang J, Chang YF, Yeh YM, Chen CD, Li HP, Luo JD, Tan BC, Chan EH, Hsueh C, Chu LJ, Chen YT, Zhang B, **Yang CY**, Wu CC, Hsu CW, See LC, Tang P, Yu JS, Liao WC, Chiang KW, Rodriguez H, Myers JN, Chang KP, Chang YS. (2017) APOBEC3A is an oral cancer prognostic biomarker in Taiwanese carriers of an APOBEC deletion polymorphism. *Nature Communications* 8(1):465. (IF=12.124, 3/64 in MULTIDISCIPLINARY SCIENCES)
13. Wu SM, Liu H, Huang PJ, Chang IY, Lee CC, **Yang CY**, Tsai WS, Tan BC. (2018) circIncRNAet: an integrated web-based resource for mapping functional networks of long or circular forms of noncoding RNAs. *GigaScience*. 7(1):1-10. (IF=6.871, 6/64 in MULTIDISCIPLINARY SCIENCES)
14. **Yang CY**, Yeh YM, Yu HF, Chin CY, Hsu CW, Liu H, Huang PJ, Hu SN, Liao CT, Chang KP, Chang YL. (2018). Oral microbiota community dynamics associated with Oral Squamous Cell Carcinoma staging. *Frontiers in Microbiology*, 9:1-15. (IF=4.076, 26/125 in Microbiology).
15. Huang PJ, Lee CC, Chiu LY, Huang KY, Yeh YM, **Yang CY**, Chiu CH, Tang P. (2018). VARepoter: variant reporter for cancer research of massive parallel sequencing. *BMC Genomics*, 19(suppl2):86. (IF=3.729, 35/160 in Biotechnology & Applied Microbiology).
16. **Yang CY***, Chiu LL*, Chang CC*, Chuang HC, Tan TH. (2018) Induction of DUSP14 ubiquitination by PRMT5-mediated arginine methylation. *THE FASEB Journal*, 32(12) 6760-6770. (*These authors contributed equally to this study) (IF=5.391, 46/299 in Biochemistry & Molecular Biology)

17. Lin HJ, Jiang ZP, Lo HR, Feng CL, Chen CJ, **Yang CY**, Huang MZ, Wu HY, Chen YA, Chen Y, Chiu CH, Lai CH. (2019) Coalescence of RAGE in Lipid Rafts in Response to Cytolethal Distending Toxin-Induced Inflammation. *Frontiers in Immunology*. 10: 109 (IF= 5.085, 38/158 in Immunology)
18. Wang LJ, **Yang CY**, Chou WJ, Lee MJ, Chou MC, Kuo HC, Yeh YM, Lee SY, Huang LH, Li SC. (2019) Gut microbiota and dietary patterns in children with attention-deficit/hyperactivity disorder. *European Child & Adolescent Psychiatry*, 29(3):287-297. (IF= 3.941, 8/128 in Psychiatry)
19. Wu KA, Wu CC, Liu YC, Hsueh PC, Chin CY, Wan CL, Chu CM, Shih LJ, **Yang CY**[#]. (2019) Combined serum biomarkers in the noninvasive diagnosis of complicated parapneumonic effusions and empyema. *BMC Pulmonary Medicine*, 19(1):108 (IF= 2.813, 27/64 in Respiratory system)
20. Wu SM, Tsai WS, Chiang SF, Lai YH, Ma CP, Wang JH, Lin J, Lu PS, **Yang CY**, Tan CM, Liu H. (2020) Comprehensive transcriptome profiling of Taiwanese colorectal cancer implicates an ethnic basis for pathogenesis. *Scientific Reports*, 10(1):4526 (IF=3.998, 17/71 in Multidisciplinary sciences)
21. **Yang CY**, Liu CR, Chang YF, OuYang CN, Hsieh CH, Huang YL, Wang CI, Jan FW, Wang WL, Tsai TL, Liu H, Tseng CP, Chang YS, Wu CC, Chang KP. (2020) Cotargeting CHK1 and PI3K Synergistically Suppresses Tumor Growth of Oral Cavity Squamous Cell Carcinoma in Patient-Derived Xenografts. *Cancers*, 12(7):1726 (IF= 6.126, 37/244 in Oncology)
22. Chen YW, Huang MZ, Chen CL, Kuo CY, **Yang CY**, Chuan NC, Chen YY, Hsieh CM, Wu HY, Kuo ML, Chiu CH, Lai CH. (2020) PM 2.5 impairs macrophage functions to exacerbate pneumococcus-induced pulmonary pathogenesis. *Particle and Fibre Toxicology*, 17(1):37 (IF= 7.546, 3/92 in Toxicology)
23. **Yang CY**^{*}, Chuang HC^{*}, Tsai CY, Xiao YZ, Yang JY, Huang RH, Shih YC, Tan TH. (2020) DUSP11 Attenuates Lipopolysaccharide-Induced Macrophage Activation by Targeting TAK1. *The Journal of Immunology*, 205(6): 1644–1652 (*These authors contributed equally to this study) (IF= 4.886, 44/158 in Immunology)
24. Hsueh PC, Wu KA, **Yang CY**, Hsu CW, Wang CL, Hung CM, Chen YT, Yu JS, Wu CC. (2020) Metabolomic profiling of parapneumonic effusion reveals a regulatory role of dipeptides in interleukin-8 production in neutrophil-like cells. *Analytica Chimica Acta*. 238-250 (IF= 5.977, 10/86 in Chemistry, Analytical)