附　件

一　　中山醫學大學生醫系傑出校友選拔推薦表

推薦類別：□學術類□服務類 □母系貢獻類 □特殊類　填表日期：民國111 年8 月9　日

被推薦人	姓名	吳俊毅	性別	男	
	英文姓名	Chung-Yi Wu	生日	1978/10/19	
	畢業科系(級別)	86級			
	最高學歷	陽明大學生命科學暨基因體科學研究所博士			
	經歷	2011~至今　中央研究院基因體中心博士後研究員			
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傑出事蹟	2011 陽明大學傑出論文獎 2017 中央研究院基因體中心傑出論文獎 2017 研發全球第一隻鼻噴式廣效流感疫苗 2018 台日新藥交流台灣代表 2018 中研院暨國衛院成果發表中研院代表 2020 中央研究院基因體中心傑出論文獎 2021 中央研究院基因體中心傑出論文獎 2022 研發全球第一隻廣效新冠肺炎mRNA疫苗				
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EDUCATION AND POSITIONS HELD:

- Ph.D., Department of Life Sciences and Institute of Genome Sciences, National Yang-Ming University (2011).
- Postdoctoral Fellow, Genomics Research Center, Academia Sinica, Taipei, Taiwan (2011~)

HONORS:

Award for the Best Paper of Life Science in National Yang-Ming University (2011)

2017 GRC Outstanding Performance Award

The speaker of 2018 Joint New Drug Cooperation Meeting of Taiwan and Japan

The speaker of 2018 joint presentation of research and development results of NHRI & Academia Sinica.

2020 GRC Outstanding Performance Award

2021 GRC Outstanding Performance Award

RESEARCH INTERESTS:

We focused on not only the basic studies but also the host immune response of the influenza A virus (IAV) and coronavirus, especially on the relationship between glycosylation and virus. Furthermore, base on our findings, we wanted to development the universal influenza or cononavirus vaccine.

PUBLICATIONS:

- Su CY, Cheng TJ, Lin MI, Wang SY, Huang WI, Lin-Chu SY, Chen YH, Wu CY, Lai MM, Cheng WC, Wu YT, Tsai MD, Cheng YS, Wong CH. `` High-throughput identification of compounds targeting influenza RNA-dependent RNA polymerase activity.`` *Proc Natl Acad Sci U S A*. 2010 Nov 9;107(45).
- Liao TL, Wu CY, Su WC, Jeng KS, Lai MM. `` Ubiquitination and deubiquitination of NP protein regulates influenza A virus RNA replication.`` *EMBO J*. 2010 Nov 17;29(22):3879-90.
- Wu CY, Jeng KS, Lai MM. `` The SUMOylation of matrix protein M1 modulates the assembly and morphogenesis of influenza A virus.`` *J Virol*. 2011 Jul;85(13):6618-28.
- Chuang HY, Ren CT, Chao CA, Wu CY, Shivatare SS, Cheng TJ, Wu CY, Wong CH. `` Synthesis and vaccine evaluation of the tumor-associated carbohydrate antigen RM2 from prostate cancer.`` *J Am Chem Soc*. 2013 Jul 31;135(30):11140-50.
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CP, Shivatare VS, Wong CH. `` Influenza A surface glycosylation and vaccine design.`` *Proc Natl Acad Sci U S A.* 2017 Jan 10;114(2):280-285.

- Lo, Pei-Wen; Shie, Jiun-Jie; Chen, Chein-Hung; Wu, Chung-Yi; Hsu, Tsui-Ling; Wong, Chi-Huey. `` GlcNAcylation of Methyltransferase EZH2 at S729 Facilitates the di/tri-Methylation of H3K27 without Affecting its Monomethylation.`` *Proc Natl Acad Sci U S A.* 2018 July 10;115 (28): 7302-7307.
- Liu CP, Tsai TI, Cheng T, Shivatare VS, Wu CY, Wu CY, Wong CH. `` Glycoengineering of Antibody (Herceptin) Through Yeast Expression and in vitro Enzymatic Glycosylation. *Proc Natl Acad Sci* U S A. 2018 Jan 23;115(4):720-725.
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- Po-Kai Chuang, Michael Hsiao, Tsui-Ling Hsu, Chuan-Fa Chang, Chung-Yi Wu, Bo-Rui Chen, Han-Wen Huang, Kuo-Shiang Liao, Chen-Chun Chen, Chi-Long Chen, Shun-Min Yang, Chiung Wen Kuo, Peilin Chen, Ping-Tzu Chiu, I-Ju Chen, Jiann-Shiun Lai, Cheng-Der Tony Yu, Chi-Huey Wong. Signaling pathway of globo-series glycosphingolipids and β1,3-galactosyltransferase V (β3GalT5) in breast cancer. *Proc Natl Acad Sci U S A*. 2019 Feb 26;116(9):3518-3523.
- Chung-Yi Wu, Hong-Yang Chuang & Chi-Huey Wong. Influenza virus neuraminidase regulates host CD8+ T-cell response in mice. *Commun Biol 3, 748 (2020).*
- Chuang, Hong-Yang; Huang, Chiu-Chen; Hung, Ting-Chun; Huang, Lin-Ya; Chiu, Chih-Wei; Chu, Kuo-Ching; Liao, Jung-Yu; You, Tsai-Hong; Wu, Chung-Yi; Chao, Ping; Shivatare, Sachin S.; Zeng, Yi-Fang; Tsai, Charng-Sheng; Lin, Nan-Horng; Wu, Chung-Yi Development of Biotinylated and Magnetic Bead-Immobilized Enzymes for Efficient Glyco-engineering and Isolation of Antibodies. *Bioorganic Chemistry.* 2021 February. DOI: 10.1016/j.bioorg.2021.104863.
- Lee CD, Watanabe Y, Wu NC, Han J, Kumar S, Pholcharee T, Seabright GE, Allen JD, Lin CW, Yang JR, Liu MT, Wu CY, Ward AB, Crispin M, Wilson IA. A cross-neutralizing antibody between HIV-1 and influenza virus. *PLoS Pathog*. 2021 Mar 22;17(3):e1009407.
- Han-Yi Huang, Hsin-Yu Liao, Xiaorui Chen, Szu-Wen Wang, Cheng-Wei Cheng, Md. Shahed-Al-Mahmud, Ting-Hua Chen, Jennifer M. Lo, Yo-Min Liu, Yi-Min Wu, Hsiu-Hua Ma, Yi-Hsuan Chang, Ho-Yang Tsai, Yu-Chi Chou, Yi-Ping Hsue, Ching-Yen Tsai, Pau-Yi Huang, Sui-Yuan Chang, Tai-Ling Chao, Han-Chieh Kao, Ya-Min Tsai, Yen-Hui Chen, Chung-Yi Wu, Jia-Tsrong Jan, Ting-Jen Rachel Cheng, Kuo-I Lin,Che Ma and Chi-Huey

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- Chung-Yi Wu, Cheng-Wei Cheng, Chih-Chuan Kung, Kuo-Shiang Liao, Jia-Tsrong Jan, Che Ma, Chi-Huey Wong. Glycosite-deleted mRNA of SARS-CoV-2 Spike Protein as Broad-Spectrum Vaccine. March 2022. Pr*oceedings of the National Academy of Sciences* 119(9). DOI: 10.1073/pnas.2119995119.

Significance

Influenza A virus (IAV) is a major threat to global public health, and so understanding the biology of IAV is essential to develop anti-flu vaccines and therapeutics.

For the basic study, we found the links between the post-translation modification on viral proteins and IAV function, including the ubiquitination, SUMOylation and glycosylation. In recently studies, we explained the role of neuraminidase activity in the host immune response and the mechanism of IAV specific CD8+ T cells induction, and provide a direction for universal flu vaccines design and production.

For flu vaccine design, we set up the reverse genetics system for Taiwan government to develop the new strains of flu vaccine, and generate the first nasal spray universal influenza vaccine in the world. In addition, we also use the traits of neuraminidase activity and MDCK cells to produce the universal flu vaccines.

The outbreak of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in 2019, the vaccination is an effective strategy to control the spread of SARS-CoV-2. Here, we first analyed the function of glycosyaltion on spike protein. Then we found that removal of the glycans that shield the conserved epitopes can induce broader and stronger immune responses. According to this, we generated the first glycosite-deleted SARS-CoV-2 mRNA vaccine which was shown to have a broad-spectrum of protection against SARS-CoV-2 and the five variants of concern, including the alpha, beta, gamma, delta and omicron variants, and this new strategy could be applied to the development of other mRNA vaccines.