YIQUAN WANG

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Professional Summary

I am an Assistant Professor at the University of Florida with a multidisciplinary background in virology, immunology, structural biology, and artificial intelligence. My research focuses on developing AI models to understand the coevolutionary dynamics of viruses and the human immune system, with a particular emphasis on viral and antibody sequence–structure–function relationships. By integrating high-throughput sequencing, protein engineering, and computational biology, my lab seeks to bridge experimental and computational approaches to advance vaccine development and immune therapeutics.

Current Position

2025 - Present

University of Florida, Gainesville, FL
Assistant Professor
Department of Infectious Diseases and Immunology

Education

2020 - 2025

University of Illinois at Urbana-Champaign, Champaign, IL
Biochemistry, Doctor of Philosophy

2015 - 2019

Chongqing University, Chongqing, China
Bioengineering, Bachelor of Bioengineering

Professional Experience

2020 - 2025

University Of Illinois at Urbana-Champaign, Champaign, IL
*Biochemistry (**Carter Fellow**), Doctor of Philosophy*
Viral evolution, Antibody Engineering, Deep Learning, Model Explainability

2022 - 2023

Genentech Inc, San Francisco, CA
Structural and Computational Biology, Intern
Graph Neural Networks; Protein Function; Antibody Design

2019 - 2020

The University of Hong Kong - Pasteur Research Pole, HK
School of public health, Research Assistant
Viral Evolution, Immune Responses, DNA/RNA seq

2018 - 2019

Chinese Academy of Sciences, Shenzhen
Shenzhen Institutes of Advanced Technology, Visiting student
Mouse Models; In Vitro Translation System

2017 - 2018

Chongqing University, Chongqing
Bioengineering, Undergraduate Researcher
Fluorescent Nanoparticles; Hierarchical Encapsulation Method

Publications

*Equal contribution, #Co-corresponding

Preprints

Dailey KE, **Wang Y**, Teo QW, Wang C, Lei R, Tong M, Rodriguez LA, Wang L, Wu NC. Vulnerability in the breadth evolution of an influenza broadly neutralizing antibody. bioRxiv DOI: 10.1101/2025.11.03.686356

Yang K, Liu J, Wu J, Yang C, Fung YR, Li S, Huang Z, Cao X, Wang X, **Wang Y,** Ji H. If llm is the wizard, then code is the wand: A survey on how code empowers large language models to serve as intelligent agents. arXiv preprint arXiv:2401.00812. 2024 Jan 1.

Lamers MM*, Breugem TI*, Mykytyn AZ*, **Wang Y**, Groen N, Knoops K, Schipper D, van der Vaart J, Koopman CD, Zhang J, Wu DC, van den Doel PB, Bestebroer T, GeurtsvanKessel CH, Peters PJ, Muraro MJ, Clevers H, Wu NC, Haagmans BL. Human organoid systems reveal in vitro correlates of fitness for SARS-CoV-2 B.1.1.7. *bioRxiv* DOI: 10.1101/2021.05.03.441080

2026

Wang Y#, Ouyang WO, Wang C, Liu G, Nourmohammad A, Wu NC. Experimental immunologists in the era of AI. **Trends in Immunology** (2026, *in press*)

2025

Ouyang WO, Lv H, Liu W, Lei R, Mou Z, Pholcharee T, Talmage L, Tong M, Ji W, **Wang Y**, Dailey KE, Gopal AB, Choi D, Ardagh MR, Rodriguez LA, Guthmiller JJ, Dai X, Wu NC. High-throughput synthesis and specificity characterization of natively paired influenza hemagglutinin antibodies with oPool+ display. **Science Translational Medicine** 17:eadt4147 (2025)

Teo QW*, **Wang Y***, Lv H*, Oade MS, Mao KJ, Tan TJC, Huan YW, Rivera-Cardona J, Shao EK, Choi D, Wang C, Tavakoli Dargani Z, Brooke CB, te Velthuis AJW, Wu NC. Probing the functional constraints of influenza A virus NEP by deep mutational scanning. ***Cell Reports***. 2025 Jan 28;44(1).

2024

Wang Y*, Lv H*, Teo QW, Lei R, Gopal AB, Ouyang WO, Yueng YH, Tan TJC, Choi D, Shen IR, Chen X, Graham CS, Wu NC. An explainable language model for antibody specificity prediction using curated influenza hemagglutinin antibodies. ***Immunity*** 57:2453-2465.e7 (2024)

2023

Wong LYR#, Odle A, Luhmann E, Wu DC, **Wang Y**, Teo QW, Ptak C, Sariol A, Lowery S, Mack M, Meyerholz DK, Wu NC, Radoshevich L, Perlman S#. Contrasting roles of MERS-CoV and SARS-CoV-2 internal proteins in pathogenesis in mice. ***mBio*** 14:e02476-23 (2023)

Teo QW*, **Wang Y***, Lv H*, Tan TJ, Lei R, Mao KJ, Wu NC. Stringent and complex sequence constraints of an IGHV1-69 broadly neutralizing antibody to influenza HA stem. ***Cell reports***. 2023 Nov 28;42(11).

Lei R*, Kim W*, Lv H*, Mou Z*, Scherm MJ*, Schmitz AJ, Turner JS, Tan TJC, **Wang Y**, Ouyang WO, Liang W, Rivera-Cardona J, Teo C, Graham CS, Brooke CB, Presti RM, Mok CKP#, Krammer F#, Dai X#, Ellebedy AH#, Wu NC#. Leveraging vaccination-induced protective antibodies to define conserved epitopes on influenza N2 neuraminidase. ***Immunity*** 56:2621-2634.e6 (2023)

Lei R, Garcia AH, Tan TJ, Teo QW, **Wang Y**, Zhang X, Luo S, Nair SK, Peng J, Wu NC. Mutational fitness landscape of human influenza H3N2 neuraminidase. ***Cell reports***. Jan 31;42(1). (2023)

2022

Yuan M, **Wang Y**, Lv H, Tan TJC, Wilson IA, Wu NC. Molecular analysis of a public cross-neutralizing antibody response to SARS-CoV-2. ***Cell Reports*** 41:111650 (2022)

Lei R, Tan TJC, Hernandez Garcia A, **Wang Y**, Diefenbacher M, Teo C, Gopan G, Tavakoli Dargani Z, Teo QW, Graham CS, Brooke CB, Nair SK, Wu NC. Prevalence and mechanisms of evolutionary contingency in human influenza H3N2 neuraminidase. ***Nature Communications*** 13:6443 (2022)

Liu T, **Wang Y**, Tan TJC, Wu NC#, Brooke CB#. The evolutionary potential of influenza A virus hemagglutinin is highly constrained by epistatic interactions with neuraminidase. ***Cell Host & Microbe*** 30:1363-1369.e4 (2022)

Liang W, Tan TJC, **Wang Y**, Lv H, Sun Y, Bruzzone R, Mok CKP#, Wu NC#. Egg-adaptive mutations of human influenza H3N2 virus are contingent on natural evolution. ***PLoS Pathogens*** 18:e1010875 (2022)

Wang Y*, Yuan M*, Lv H, Peng J, Wilson IA, Wu NC. A large-scale systematic survey reveals recurring molecular features of public antibody responses to SARS-CoV-2. ***Immunity*** 55(6):1105-1117 (2022). (**Cover**)

2021

Wang Y*, Lei R*, Nourmohammad A, Wu NC. Antigenic evolution of human influenza H3N2 neuraminidase is constrained by charge balancing. ***eLife*** 10:e72516 (2021)

Lv H*, Tsang OTY*, So RTY, **Wang Y**, Yuan M, Liu H, Yip GK, Teo QW, Yihan Lin Y, Liang W, Wang J, Ng WW, Wilson IA, Peiris JSM, Wu NC#, Mok CKP#. Homologous and heterologous serological response to the N-terminal domain of SARS-CoV-2 in humans and mice. ***European Journal of Immunology*** 51:2296-2305 (2021)

Tan TJC*, Yuan M*, Kuzelka K, Padron GC, Beal JR, Chen X, **Wang Y,** Rivera-Cardona J, Zhu X, Stadtmueller BM, Brooke CB, Wilson IA#, Wu NC#. Sequence signatures of two public antibody clonotypes that bind SARS-CoV-2 receptor binding domain. ***Nature Communications*** 12:3815 (2021)

Lamers MM, Mykytyn AZ, Breugem TI, **Wang Y,** Wu DC, Riesebosch S, van den Doel PB, Schipper D, Bestebroer T, Wu NC, Haagmans BL. Human airway cells prevent SARS-CoV-2 multibasic cleavage site cell culture adaptation. ***eLife*** 10:e66815 (2021)

2020

Lv H*, Wu NC*, Tsang OTY*, Yuan M, Perera RAPM, Leung WS, So RTY, Chan JMC, Yip GK, Chik TSH, **Wang Y**, Choi CYC, Lin Y, Ng WW, Zhao J, Poon LLM, Peiris JSM#, Wilson IA#, Mok CKP#. Cross-reactive antibody response between SARS-CoV-2 and SARS-CoV infections. ***Cell Reports*** 31:107725 (2020)

2018

Wang, Y*, Wei Zhou*, Feng Chen, Kaiyao Sun, Jixi Zhang, Ezgi Özliselib, and Jessica M. Rosenholm. "Terbium complexes encapsulated in hierarchically organized hybrid MOF particles toward stable luminescence in aqueous media." ***CrystEngComm*** 20.30 (2018): 4225-4229.

Grant Writing Experience

NIH Director's Early Independence Award (DP5), University of Illinois Urbana-Champaign, 2024

Finalist; prepared and submitted proposal on AI modeling of virus–antibody coevolution (not funded)

Talks & Presentations

2024-07 — **CEIRR Annual Network Meeting 2024**
Talk: Predicting Adaptive Immune Receptor Repertoire Functionality using Deep Learning Models

2024-06 — **American Society for Virology Annual Meeting**
Talk: An Explainable Language Model for Antibody Specificity Prediction

2024-02 — **Biophysical Society**
Poster: An Explainable Language Model for Antibody Specificity Prediction

2022-06 — ***Keystone symposia***
Poster: A large-scale systematic survey reveals recurring molecular features of public antibody responses to SARS-CoV-2

2022-07 — **American Society for Virology Annual Meeting**
Talk: Antigenic evolution of human influenza H3N2 neuraminidase is constrained by charge balancing

Awards & Fellowships

2024	Outstanding Graduate Student Award
2024	Art of Science Image Contest Winner
2024	Biophysical Society Travel Award
2023	"Life Inspiring" Art Competition Second Place Winner
2023	HERBERT E. CARTER FELLOWSHIP
2022	Biochemistry Department Graduate Student Conference (Travel) Awards
2017	"Meritorious Winner" in The Mathematical Contest in Modeling, COMAP