

Ke Cheng

DOCTOR OF PHILOSOPHY

Department of Pharmaceutical Chemistry, UCSF, 600 16th St. Box 2280, San Francisco, CA 94158

☎ 415-986-9632 ✉ ke.cheng@ucsf.edu 🌐 <https://linkedin.com/in/kecheng1> 🏠 <https://chengresearch.com>

Education

City University of Hong Kong

PHD, CHEMISTRY

- Advisor: Prof. Hongyan Sun

Hong Kong

2018 - 2021

Jinan University

MS, MEDICINAL CHEMISTRY

- Advisor: Prof. Ke Ding

Guangzhou, China

2015 - 2018

Wuhan Institute of Technology

BS, PHARMACEUTICAL ENGINEERING

- Advisor: Prof. Shuangxi Gu

Wuhan, China

2010 - 2014

Professional Experience

2024-Pres. **Postdoctoral Scholar**, Department of Pharmaceutical Chemistry, UCSF, Advisor: Prof. Adam Renslo

2022-2023 **Postdoctoral Researcher**, School of Pharmaceutical Sciences, Sun Yat-sen University, Advisor: Prof. Wenbin Deng

2021-2022 **Research Assistant**, Department of Chemistry, City University of Hong Kong, Advisor: Prof. Hongyan Sun

Research Interests

Chemical Biology, Medicinal Chemistry, Cancer Theranostics, Nanomaterials

Skills & Expertise

Organic Synthesis; Analytical Chemistry; Chemical Probe Development; Fluorescent Labeling/Imaging; Molecular Docking
Drug Design/Optimization; Prodrug Development; Peptide Chemistry; Gel Electrophoresis; Western Blotting; Cell Culture
Fluorescence Microscopy; Chemoproteomics; Bioinformatics; Nanomaterials Synthesis/Characterization

Awards & Fellowships

2018-2021 **Postgraduate Studentship**, City University of Hong Kong

2018 **Creative Research Award**, Jinan University

2015-2018 **Postgraduate Fellowship**, Jinan University

Research Experience

University of California, San Francisco - Department of Pharmaceutical Chemistry

ADVISORS: PROF. ADAM RENSLO AND PROF. MICHAEL EVANS

- Project: "Trioxolane and disulfide probes for enhanced radioligand therapy"

San Francisco, CA

2024- Present

Sun Yat-sen University - School of Pharmaceutical Sciences (Shenzhen)

ADVISORS: PROF. WENBIN DENG AND PROF. LIN MEI

- Project: "Self-assembled nanoprobe for targeted anticancer therapy"

Shenzhen, China

2022 - 2023

City University of Hong Kong - Department of Chemistry

ADVISOR: PROF. HONGYAN SUN

- Thesis: "Developing isoxazole as a novel photo-cross-linker for chemoproteomics"

Hong Kong

2018 - 2022

Jinan University - School of Pharmacy

ADVISORS: PROF. KE DING AND PROF. ZHENGQIU LI

- Thesis: "Tetrazole-based probes for integrated phenotypic screening, affinity-based proteome profiling, and sensitive detection of a cancer biomarker"

Guangzhou, China

2015-2018

Wuhan Institute of Technology - School of Chemical Engineering and Pharmacy

ADVISOR: PROF. SHUANGXI GU

- Dissertation: Synthesis of aryl sulfocyanic ester derivatives

Wuhan, China

2013-2014

Presentations

Winter 2019, Conference Poster, Dutch Chemistry Conference CHAINS, The Netherlands

Summer 2017, Invited Speaker, Annual Conference of Guangdong Pharmaceutical Society, Guangzhou, China

Teaching Experience

2020 **Principles of Organic Chemistry**, Teaching Assistant

CityU, HK

2018 **Chemistry**, Teaching Assistant

CityU, HK

Publications

1. **Cheng, K.**; Lee, J. S.; Hao, P.; Yao, S. Q.; Ding, K.; Li, Z., Tetrazole-Based Probes for Integrated Phenotypic Screening, Affinity-Based Proteome Profiling, and Sensitive Detection of a Cancer Biomarker. *Angew. Chem. Int. Ed.* 2017, 56 (47), 15044-15048.
2. **Cheng, K.**; Qi, J.; Ren, X.; Zhang, J.; Li, H.; Xiao, H.; Wang, R.; Liu, Z.; Meng, L.; Ma, N.; Sun, H., Developing Isoxazole as a Native Photo-Cross-Linker for Photoaffinity Labeling and Chemoproteomics. *Angew. Chem. Int. Ed.* 2022, 61 (47), e202209947.
3. **Cheng, K.**; Qi, J.; Zhang, J.; Li, H.; Ren, X.; Wei, W.; Meng, L.; Jing, L.; Li, Q.; Zhang, H.; Deng, W.; Sun, H.; Mei, L., Self-Assembled Nano-photosensitizer for Targeted, Activatable, and Biosafe Cancer Phototheranostics. *Biomaterials* 2022, 291, 121916.
4. Klope, M. T.; Tapia Cardona, J. A.; Chen, J.; Gonciarz, R. L.; **Cheng, K.**; Jaishankar, P.; Kim, J.; Legac, J.; Rosenthal, P. J.; Renslo, A. R., Synthesis and In Vivo Profiling of Desymmetrized Antimalarial Trioxolanes with Diverse Carbamate Side Chains. *ACS Med. Chem. Lett.* 2024, 4c00365.
5. Pezacki, A. T.; Gonciarz, R. L.; Okamura, T.; Matier, C. D.; Torrente, L.; **Cheng, K.**; Miller, S. G.; Ralle, M.; Ward, N. P.; DeNicola, G. M.; Renslo, A. R.; Chang, C. J., A Tandem Activity-Based Sensing and Labeling Strategy Reveals Antioxidant Response Element Regulation of Labile Iron Pools. *PNAS* 2024, 121 (28), e2401579121.
6. Ren, X.; Li, H.; Peng, H.; Yang, Y.; Su, H.; Huang, C.; Wang, X.; Zhang, J.; Liu, Z.; Wei, W.; **Cheng, K.**; Zhu, T.; Lu, Z.; Li, Z.; Zhao, Q.; Tang, B. Z.; Yao, S. Q.; Song, X.; Sun, H., Reactivity-Tunable Fluorescent Platform for Selective and Biocompatible Modification of Cysteine or Lysine. *Adv. Sci.* 2024, 11(31), 2402838.
7. Meng, L.; Chen, X.; **Cheng, K.**; Chen, N.; Zheng, Z.; Wang, F.; Sun, H.; Wong, K.-C., TransPTM: A Transformer-Based Model for Non-Histone Acetylation Site Prediction. *Brief. Bioinform.* 2024, 25(3), bbae219.
8. Xiong, Y.; He, C.; Lin, X.; **Cheng, K.**; He, F.; Zhao, J.; Yang, M.; Gao, H.; He, F.; Zhang, X.; Liu, Z.; Liu, G.; Deng, W., Black Phosphorus Nanosheets Inhibit Glioblastoma Cell Migration and Invasion Through Modulation of WNT/ β -Catenin and NOTCH Signaling Pathways. *Chem. Eng. J.* 2024, 481, 148614.
9. Meng, L.; Lin, J.; **Cheng, K.**; Xu, K.; Sun, H.; Wong, K.-C., UniPTM: Multiple PTM Site Prediction on Full-Length Protein Sequence. *bioRxiv* 2024, 2024.08.03.606471.
10. Wu, P.; Qu, Z.; Zhang, J.; Ren, X.; Wang, D.; Huang, C.; **Cheng, K.**; Qi, J.; Shi, H.; Gan, S.; Wei, W.; Zhang, Y.; Lee, C.-S.; Wang, L.; Sun, H., A General Cyanine-Based Platform for Designing Robust Dual-Channel Near-Infrared Fluorescent and Photoacoustic Probes. *Adv. Funct. Mater.* 2024, 2400597.

11. Fan, Z.; Liu, Z.; Zhang, N.; Wei, W.; **Cheng, K.**; Sun, H.; Hao, Q., Identification of SIRT3 as an Eraser of H4K16la. *iScience* 2023, 26(10), 107757.
12. He, F.; **Cheng, K.**; Qi J.; He F.; Chu C.; Xiong, Y.; Zhao, j.; Ding, J.; Kong, F.; Cao, Z.; Liu G.; Deng, W., Black Phosphorus Nanosheets Enhance Differentiation of Neural Progenitor Cells for Improved Treatment in Spinal Cord Injury. *Chem. Eng. J.* 2023, 472, 144977.
13. Zhang, J.; Shi, H.; Huang, C.; Mei, L.; Guo, Q.; **Cheng, K.**; Wu, P.; Su, D.; Chen, Q.; Gan, S.; Wing Chan, C. K.; Shi, J.; Chen, J. L.; Jonathan Choi, C. H.; Yao, S. Q.; Chen, X.-K.; Tang, B. Z.; He, J.; Sun, H., De Novo Designed Self-Assembling Rhodamine Probe for Real-Time, Long-Term and Quantitative Live-Cell Nanoscopy. *ACS Nano* 2023, 17(4), 3632–3644.
14. Wei, W.; Zhang, J.; Xu, Z.; Liu, Z.; Huang, C.; **Cheng, K.**; Meng, L.; Matsuda, Y.; Hao, Q.; Zhang, H.; Sun, H., Universal Strategy to Develop Fluorogenic Probes for Lysine Deacylase/Demethylase Activity and Application in Discriminating Demethylation States. *ACS Sens.* 2023, 8(1), 28-39.
15. Li, H.; Guan, C.; Zhang, J.; **Cheng, K.**; Chen, Q.; He, L.; Ge, X.; Lai, Y.; Sun, H.; Zhang, Z., Robust Artificial Interphases Constructed by a Versatile Protein-Based Binder for High-Voltage Na-Ion Battery Cathodes. *Adv. Mater.* 2022, 34 (29), 2202624.
16. Li, H.; Guan, C.; Xu, M.; Guo, J.; Yuan, K.; **Cheng, K.**; Xie, Y.; Zhang, L.; Zheng, J.; Lai, Y., Organic/Inorganic Anions Coupling Enabled Reversible High-valent Redox in Vanadium-Based Polyanionic Compound. *Energy Storage Mater.* 2022, 47, 526-533.
17. Meng, L.; Chan, W. S.; Huang, L.; Liu, L.; Chen, X.; Zhang, W.; Wang, F.; **Cheng, K.**; Sun, H.; Wong, K. C., Mini-review: Recent Advances in Post-translational Modification Site Prediction Based on Deep Learning. *Comput. Struct. Biotechnol. J.* 2022, 20, 3522-3532.
18. Li, H.; Zhang, W.; Han, Z.; Sun, K.; Gao, C.; **Cheng, K.**; Liu, Z.; Chen, Q.; Zhang, J.; Lai, Y., Pseudocapacitance Enhanced by N-defects in Na₃MnTi(PO₄)₃/N-doped Carbon Composite for Symmetric Full Sodium-ion Batteries. *Mater. Today Energy* 2021, 21, 100754.
19. Qi, J.; Xiong, Y.; **Cheng, K.**; Huang, Q.; Cao, J.; He, F.; Mei, L.; Liu, G.; Deng, W., Heterobifunctional PEG-Grafted Black Phosphorus Quantum Dots: “Three-in-One” Nano-platforms for Mitochondria-targeted Photothermal Cancer Therapy. *Asian J. Pharm. Sci.* 2021, 16 (2), 222-235.
20. Chen, Q.; **Cheng, K.**; Wang, W.; Yang, L.; Xie, Y.; Feng, L.; Zhang, J.; Zhang, H.; Sun, H., A Pyrene-Based Ratiometric Fluorescent Probe with a Large Stokes Shift for Selective Detection of Hydrogen Peroxide in Living Cells. *J. Pharm. Anal.* 2020, 10 (5), 490-497.
21. Zhang, J.; Wen, G.; Wang, W.; **Cheng, K.**; Guo, Q.; Tian, S.; Liu, C.; Hu, H.; Zhang, Y.; Zhang, H., Controllable Cleavage of C–N Bond-Based Fluorescent and Photoacoustic Dual-modal Probes for the Detection of H₂S in Living Mice. *ACS Appl. Bio Mater.* 2020, 4 (3), 2020-2025.
22. Zheng, G.; Li, Z.; Duan, Q.; **Cheng, K.**; He, Y.; Huang, S.; Zhang, H.; Jiang, Y.; Jia, Y.; Sun, H., Two Quenching Groups are Better Than One: a Robust Strategy for Constructing HOCl Fluorescent Probe with Minimized Background Fluorescence and Ultra-High Sensitivity and its Application of HOCl Imaging in Living Cells and Tissues. *Sens. Actuators B Chem.* 2020, 310, 127890.
23. Ma, N.; Zhang, Z.; Lee, J.-S.; **Cheng, K.**; Lin, L.; Zhang, D.; Hao, P.; Ding, K.; Ye, W.-C.; Li, Z., Affinity-Based Protein Profiling Reveals Cellular Targets of Photoreactive Anticancer Inhibitors. *ACS Chem. Biol.* 2019, 14 (12), 2546-2552.
24. Duan, Q.; Zheng, G.; Li, Z.; **Cheng, K.**; Zhang, J.; Yang, L.; Jiang, Y.; Zhang, H.; He, J.; Sun, H., An Ultra-Sensitive Ratiometric Fluorescent Probe for Hypochlorous Acid Detection by the Synergistic Effect of AIE and TBET and its Application of Detecting Exogenous/Endogenous HOCl in Living Cells. *J. Mater. Chem. B* 2019, 7 (33), 5125-5131.

Patents

1. Deng, W.; Xiong, Y.; Deng, G.; Qi, J.; **Cheng, K.**, New Application of Black Phosphorus Nano-Sheet in Tumor Treatment. *CN Patent*, 2024, **CN117924312A**
2. **Cheng, K.**; Zhang, J.; Wei, W.; Sun, H., Tumor-Targeting Self-Assembled Molecule Based on Methylene Blue: Preparation Method and Pharmaceutical Applications. *CN Patent*, 2022, **CN117924312A**
3. Wei W.; Zhang, J.; **Cheng, K.**; Meng, L.; Sun, H., Fluorescent Probe for Detecting Deacylation and/or Demethylase Activity: Preparation Method and Applications. *CN Patent*, 2022, **CN117903245A**
4. Ding, K; Li, Z; **Cheng, K.**, Tetrazole Molecular Probe Compound or Composition and its Application. *CN Patent*, 2017, **CN109593067B**