



## Cheng Liu

Postdoctoral Scholar, Molecular and Cellular Physiology

### CONTACT INFORMATION

- **Alternate Contact**

**Email** cheng.c.liu@stanford.edu

### Bio

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#### BIO

Currently, Cheng is working on light-sound molecular imaging technology and its applications to solve key science questions in medicine. His core expertise includes 1) the stimulation and imaging techniques using light & sound and 2) the design and synthesis of functional imaging contrast agents.

Cheng received his Ph.D. (2018) in biomedical engineering (BME) from HK PolyU under the supervision of Prof. Lei Sun. He was involved in the photoacoustic and ultrasound molecular imaging of the tumor microenvironment. After that, he moved to the Molecular Imaging Program at Stanford (MIPS) in the Department of Radiology and spent one year as a postdoc working with Prof. Katherine Ferrara, where he learned the in vivo gene (e.g., mRNA) delivery technology by using lipid nanoparticles. After that, he moved to Prof. Jianghong Rao's group in MIPS to develop background-free photoacoustic molecular imaging. From 2022 until now, Cheng has been working with Prof. Steven Chu (1997 Nobel Prize in Physics) in the Department of Physics and the Department of Molecular & Cellular Physiology. In Chu's lab, Cheng focuses more on molecular ultrasound imaging contrast agents and biophysical mechanisms.

Cheng has been presented with several research awards from the World Molecular Imaging Society (WMIS), including Shark Tank Competition Finalist (WMIC2018), Industry Selected Poster Award (WMIC2017), Student Travel Stipend Award (WMIC2018 & 2017).

### HONORS AND AWARDS

- Shark Tank Competition Finalist, World Molecular Imaging Society (WMIS) (2018)
- Student Travel Stipend Award (WMIC2018), World Molecular Imaging Society (WMIS) (2018)
- Chinese Students Poster Competition Gold Award, World Molecular Imaging Congress (WMIC) (2017)
- Industry Selected Poster Award (WMIC2017), World Molecular Imaging Society (WMIS) (2017)
- Student Travel Stipend Award (WMIC2017), World Molecular Imaging Society (WMIS) (2017)
- Best Poster Award, 2nd International Molecular Imaging Summit (IMIS), Xiamen, China PR (2015)
- Student Travel Stipend, IEEE International Ultrasonics Symposium (IUS), Chicago, USA (2014)
- Top Prize Student Research Award, Hong Kong Medical and Healthcare Device Industries Association (HKMHDIA) (2013)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, World Molecular Imaging Society (WMIC) (2016 - present)
- Member, IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC), Ultrasonics Society (2013 - present)

- Founding Chair, IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC), Ultrasonics Society, HK PolyU Student Branch (2016 - present)

## PROFESSIONAL EDUCATION

- Bachelor of Engineering, Southern Medical University , Biomedical Engineering (2009)
- Master of Philosophy, The Hong Kong Polytechnic University , Biomedical Engineering (2014)
- Doctor of Philosophy, The Hong Kong Polytechnic University , Biomedical Engineering (2018)

## STANFORD ADVISORS

- Steven Chu, Postdoctoral Faculty Sponsor

## PATENTS

- "United States Patent 62/640,101, Dkt. 2387-PRO ACTIVATABLE MULTISPECTRAL PHOTOACOUSTIC PROBES, METHODS OF MAKING PROBES, AND METHODS OF USE"

## LINKS

- Chu lab: <https://www.stevechulab.com/>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Fun & joy in open science

### LAB AFFILIATIONS

- Steven Chu, Chu lab (5/1/2022)

## Publications

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### PUBLICATIONS

- **Reversibly Photoswitching Upconversion Nanoparticles for Super-Sensitive Photoacoustic Molecular Imaging** *Angewandte Chemie International Edition (selected as the Very Important Paper (VIP))*  
Liu, C., Zheng, X., Dai, T., Wang, H., Chen, X., Chen, B., Sun, T., Wang, F., Chu, S., Rao, J.  
2022
- **Quantitative characterization of the colorectal cancer in a rabbit model using high-frequency endoscopic ultrasound** *Ultrasonics*  
Liu, C., Yang, Y., Qiu, W., Chen, Y., Dai, J., Sun, L.  
2021; 110
- **Multispectral Photoacoustic Imaging of Tumor Protease Activity with a Gold Nanocage-Based Activatable Probe** *Molecular Imaging and Biology*  
Liu, C., Li, S., Gu, Y., Xiong, H., Wong, W., Sun, L.  
2018; 20: 919–929
- **Real-time optical oximetry during FLASH radiotherapy using a phosphorescent nanoprobe.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Ha, B., Liang, K., Liu, C., Melemenidis, S., Manjappa, R., Viswanathan, V., Das, N., Ashraf, R., Lau, B., Soto, L., Graves, E. E., Rao, J., Loo, et al  
2022
- **Wrapping Porphyromonas gingivalis for tumor microenvironment immunomodulation and photothermal immunotherapy** *NANO TODAY*  
Chen, Q., Liu, C., Liu, C., Zhong, D., Hua, S., He, J., Wang, K., Zhou, M.  
2021; 41
- **Systemic Immunotherapy with Micellar Resiquimod-Polymer Conjugates Triggers a Robust Antitumor Response in a Breast Cancer Model.** *Advanced healthcare materials*  
Kakwere, H. n., Zhang, H. n., Ingham, E. S., Nura-Raie, M. n., Tumbale, S. K., Allen, R. n., Tam, S. M., Wu, B. n., Liu, C. n., Kheirloomoom, A. n., Fite, B. Z., Ilovitsh, A. n., Lewis, et al

2021: e2100008

- **InVivo Molecular Ultrasound Assessment of Glioblastoma Neovasculature with Endoglin-Targeted Microbubbles** *Contrast Media & Molecular Imaging*  
Liu, C., Yan, F., Xu, Y., Zheng, H., Sun, L.  
2018; 2018
- **A flexible annular-array imaging platform for micro-ultrasound** *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*  
Qiu, W., Yu, Y., Chabok, H. R., Liu, C., Tsang, F., Zhou, Q., Shung, K., Zheng, H., Sun, L.  
2013; 60 (1): 178 - 186