

# Tian Qiu (邱天)

Stanford Cancer Institute, Stanford University

N335 • 290 Jane Stanford Way • Stanford, CA 94305 • 773-219-4816 • [tianqiu@stanford.edu](mailto:tianqiu@stanford.edu)

## Summary

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My research spans synthetic organic chemistry and protein engineering, along with the interrogation of these chemical tools in living systems, to enable biological discovery and the development of novel therapeutic modalities. My current research interests center on: 1) chemical approaches to probe and manipulate the regulation of protein post-translational modification, including *S*-palmitoylation; 2) the development of non-radical based proximity labeling platforms for mapping biomolecular (RNA and protein) interactions; and 3) chemical-induced proximity-based therapeutic strategies that expand beyond traditional inhibition and degradation paradigms.

To date, I have published 20 peer-reviewed papers, with 7 research articles as first/co-first author, including *Nature Chemistry*, *Nature Chemical Biology*, *Journal of the American Chemical Society* (2), *Cell Chemical Biology*, and *ACS Chemical Biology*. I hope this multi-disciplinary approach can create chemical tools and functional molecules through both rational and screening approaches can drive transformative advances in biology and medicine.

## Education

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<b>Ph.D. in Chemistry, University of Chicago</b>	2016-2022
<b>B.S. in Fundamental Sciences (Chemical Biology), Tsinghua University</b>	2009-2013
<b>B.S. in Economics (For Second bachelor's degree), Tsinghua University</b>	2011-2013

## Research Experience

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<b>Postdoctoral Scholar, Stanford University</b>	2022-present
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*Advisor: Nathanael Gray*

- Developed DNA damage inducer of proximity (DD-CIP), bivalent molecules that can amplify DNA damage response in cancer cells (*JACS*, 2026)
- Utilized chemical biology tools to uncover the role of E3 ligase FBXO22, and development of new recruitment ligand for FBXO22 dependent target protein degradation. (*JACS*, 2025)
- Developing the first-in-class APT1/2 (*S*-palmitoylation eraser) degrader to profile dependency between protein stability and protein *S*-palmitoylation.
- Developing proximity-based therapeutic strategies to utilize protein-protein interaction to boost kinase inhibitor potency and selectivity

<b>Postdoctoral Scholar, University of Chicago</b>	2022
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*Advisor: Bryan Dickinson*

- Designed and synthesized the red shift fluorescent probe for measuring the activity of *S*-palmitoylation eraser enzyme (APT) in live cells; Uncovered *S*-palmitoylation of peroxiredoxin family protein. (*Cell Chemical Biology*, 2025)

<b>Graduate Research, University of Chicago</b>	2016-2022
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*Advisor: Bryan Dickinson*

- Developed a novel chemical, acylation-based proximity labeling approach to study RNA subcellular localization (*Nature Chemistry*, 2024)
- Identified ABHD10 as a novel mitochondrial APT that regulates mitochondrial redox homeostasis through PRDX5 activation; Developed a mitochondrial-targeted APT inhibitor to elucidate mitochondrial APT regulates mitochondrial antioxidant buffering (*Nature Chemical Biology*, 2019)
- Designed and synthesized the first water soluble probe for measuring the activity of *S*-palmitoylation eraser (APT) enzymes in live cells (*Biochemistry*, 2018)
- Develop an HTS assay for palmitoyl transferase (DHHC) inhibitor screening (*ACS Chemical Biology*, 2022)

## **Post bachelor Research, Tsinghua University**

2013-2016

*Advisor: Yan-Mei Li*

- Designed a target protein degradation system by conjugating a ligand of the protein of interest and ROS-responsive amide bond cleavage group
- Discovered a fast and selective thiazolidine formation reaction between 2-formyl phenylboronic acid and N-terminal cysteines

## **Undergraduate Research, Tsinghua University**

2011-2013

*Advisor: Yan-Mei Li*

- Designed and synthesized metal-binding peptides engineered from the A $\beta$ 42 recognition fragment and the Lys-Lys-His hydrolase motif

## **Honors and Awards**

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- 2022 **Windt Graduate Student Travel Award**, University of Chicago  
2018 **The Herman Samuel Bloch Lecture Graduate Fellowship**, University of Chicago  
2012 **Third Prize Scholarship for excellent class standing**, Tsinghua University  
2009 **Second Prize Freshman Scholarship**, Tsinghua University  
2009 **Sun Zeng Jue Memorial Freshman Scholarship**, Tsinghua University

## **Publications**

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\*Denotes Equal Contribution

22. **Qiu, T.\***; Maiwald, S.\*; Duong, L.\* , et al., *In preparation*
21. Wang, Y.\* , **Qiu, T.\***, Dwyer, B. G.\* , et al., *In preparation*
- 20. Qiu, T.\***; Lee, Y. T.\*; Dwyer, B. G.; Tan, Y. J.; Chen, T.; Romero, B. A.; Wang, Y.; Deng, J.; Zhang, T.; Crabtree, G. R.; Hinshaw, S. M.; Wong, K. K.; Gray, N. S. “Design and Development of DNA Damage Chemical Inducers of Proximity (DD-CIP) for Targeted Cancer Therapy.” *J. Am. Chem. Soc.*, 148, 1, 1153–1163 (2026).
19. Li, Z.\*; Martinez, M.\*; Byun, W. S.; Thathireddy, A.; **Qiu, T.**; Wang, Y.; Katzengruber, L.; Chouldjian, A.; Lu, W.; Ji, W.; Che, J.; Zhang, T.; Hinshaw, S. M.; Gray, N. S. “An AKR1C3-activated kinase inhibitor prodrug.” *RSC Chem. Biol.*, Advance Article (2026). doi.org/10.1039/D5CB00219B
18. Yuan, L.\*; Ji, W.\*; Dwyer, B. G.\*; Lu, J.; Bian, J.; Colombo, G. M.; Martinez, M. J.; Fernandez, D.; Phillips, N. A.; Tang, M. T.; Zhou, C. W.; Quispe Calla, N. E.; Guzman Huancas, C.; Eckart, M.; Tran, J.; Jones, H. M.; **Qiu, T.**; Doench, J. G.; Rees, M. G.; Roth, J. A.; Cameron, M.D.; Charville, G.W.; Kuo, C.J.; Dixon, S.J.; Zhang, T.; Hinshaw, S.M., Gray, N.S.; Corsello, S. M. “Defining the Antitumor Mechanism of Action of a Clinical-stage Compound as a Selective Degrader of the Nuclear Pore Complex.” *Cancer discovery*, 15(12), 2505–2529 (2025).
- 17. Qiu, T.\***; Zhuang, Z.\*; Byun, W.S.\*; Kozicka, Z.\*; Baek, K.; Zhong, J.; Thornhill, A.M.; Ryan, J.K.; Donovan, K.A.; Fischer, E.S.; Ebert, B.L.; Gray, N.S. “Development of FBXO22 Degraders and the Recruitment Ligand 2-Pyridinecarboxyaldehyde (2-PCA).” *J. Am. Chem. Soc.*, 147, 49, 45132–45144 (2025).
16. Zhu, X.J.\*; Byun, W.S.\*; Pieńkowska, D.E.; Nguyen, K.T.; Gerhardt, J.; Geng, Q.X.; **Qiu, T.**; Zhong, J.N.; Jiang, Z.X.; Wang, M.X.; Sarott, R.C.; Hinshaw, S.M.; Zhang, T.H.; Attardi, L.D.; Nowak, R.P.; Gray, N.S. “Activating p53Y220C with a Mutant-Specific Small Molecule.” *in revision*.
- 15. Qiu, T.\***; Azizi, S.-A.\*; Pani, S.; Dickinson, B.C. “Dynamic PRDX S-acylation modulates ROS stress and signaling.” *Cell. Chem. Bio.*, 32, 511–519 (2025).
- 14. Pani, S.\*; Qiu, T.\***; Kentala, K.; Azizi, S.-A.; Dickinson, B.C. “Biorthogonal masked acylating agents for proximity-dependent RNA labeling.” *Nat. Chem.*, 16, 717–726 (2024).
13. Azizi, S.-A.; **Qiu, T.**; Brookes, N.; Dickinson, B.C. "Regulation of ERK2 activity by dynamic S-acylation." *Cell Rep.*, 42, 113135 (2023).
12. Abazari, D.; Wild, A.R.; **Qiu, T.**; Dickinson, B.C.; Bamji, S.X. “Activity-dependent post-translational regulation of palmitoylating and depalmitoylating enzymes in the hippocampus” *J. Cell Sci.*, 136, jcs260629 (2023).

11. Azizi, S.-A.\*; Delalande, C.\*; Lan, T.; **Qiu, T.**; Dickinson, B.C. "Charting the Chemical Space of Acrylamide-Based Inhibitors of zDHHC20." *ACS Med. Chem. Lett.*, 13 (10), 1648-1654 (2022).
- 10. Qiu, T.\***; Azizi, S.-A.\*; Brookes, N.; Lan, T.; Dickinson, B.C. "A high-throughput fluorescent turn-on assay for inhibitors of DHHC family proteins." *ACS Chem. Biol.*, 17 (8), 2018-2023 (2022).
9. Lüebben, A.V.; Bender, D.; Becker, S.; Crowther, L.M.; Erwen, I.; Hofmann, K.; Söding, J.; Klemp, H.; Bellotti, C.; Stäuble, A.; **Qiu, T.**; Kathayat, R.S.; Dickinson, B.C.; Gärtner, J.; Sheldrick, G.M.; Krätzner, R.; Steinfeld, R. "Cln5 represents a new type of cysteine-based S-depalmitoylase linked to neurodegeneration." *Science Advances*, 8 eabj8633 (2022).
8. **Qiu, T.** and Dickinson, B.C. "A stop sign for RAS trafficking." *Nat. Chem. Biol.*, 17, 840-841 (2021). (News & Views)
7. Cao, Y.\*; **Qiu, T.\***; Kathayat, R.\*; Azizi, S.-A.; Thorne, A.K.; Ahn, D.; Fukata, Y.; Fukata, M.; Rice, P.; Dickinson, B.C. "ABHD10 is an S-depalmitoylase affecting redox homeostasis through peroxiredoxin-5." *Nat. Chem. Biol.*, 15, 1232-1240 (2019).
6. **Qiu, T.\***; Kathayat, R.S.\*; Cao, Y.\*; Beck, M.; Dickinson, B.C. "A fluorescent probe with improved water solubility permits the analysis of protein S-depalmitoylation activity in live cells." *Biochemistry*, 57, 221-225 (2018).
5. Gao, N.; Chu, T.T.; Li, Q.Q.; Lim, Y.J.; **Qiu, T.**; Ma, M.R.; Hu, Z.W. Yang, X.F.; Chen, Y.X.; Zhao, Y.F.; Li, Y.M. "Hydrophobic tagging-mediated degradation of Alzheimer's disease related Tau." *RSC Adv.*, 7, 40362-40366 (2017).
4. Wang, Z.P.; **Qiu, T.**; Yuan, J.Y. "Discussion on Functional Mechanism and Selection Principles of Metal Elements in Biological Systems." *Chinese Journal of Chemical Education*, 37 (6), 1-6 (2016).
3. **Qiu T.**; Liu Q.; Chen Y.X.; Zhao Y.F.; Li Y.M. "A $\beta$ 42 and A $\beta$ 40: similarities and differences." *J. Pept. Sci.*, 21(7), 522-529 (2015).
2. Chu, T.T.; Li, Q.Q.; **Qiu, T.**; Sun, Z.Y.; Hu, Z.W.; Chen, Y.X.; Zhao, Y.F.; Li, Y.M. "Clearance of the intracellular high level of the Tau protein directed by an artificial synthetic hydrolase." *Mol. BioSyst.*, 10, 3081-3085 (2014).
1. Wang, Z.P.; **Qiu, T.**; Sha, Y.W. "关于多维穴醚类似结构的构想." *University Chemistry*, 28 (6), 75-79 (2013).

## Presentations

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- 2025/04/28 AACR 2025 (poster)
- 2024/09/11 Promega 3rd Annual TPD Symposium (presentation)
- 2022/04/28 Chemical Biology & Physiology 21|22 (flash talk, poster)
- 2021/05/07 The 13<sup>th</sup> Frontiers in Chemistry and Biology Interface Symposium (FCBIS), online (short talk)
- 2020/11/05 The 4<sup>th</sup> Annual UCLA Mitochondria Symposium, online (poster)

## Teaching Experience

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- 2016-2017 Teaching assistant – Chemistry 22000/22100, *University of Chicago*  
2014-2015 Teaching assistant – Organic Chemistry (MOOC), *Tsinghua University*

## Google Scholar

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