

## Yue Zhang

### Curriculum Vitae

Westlake University

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### EDUCATION

<b>Ph.D.</b> NanoEngineering, University of California San Diego	2019
<b>M.S.</b> NanoEngineering, University of California San Diego	2015
<b>B.S.</b> School of Pharmacy, Huazhong University of Science and Technology	2014

### PROFESSIONAL APPOINTMENTS

<b>Assistant Professor</b>	School of Engineering, Westlake University, China	2022
<b>Postdoctoral scholar</b>	Bioengineering, University of California, Los Angeles	2019

### PUBLICATIONS

1. **Zhang, Y.**, et al., "Viral afterlife: SARS-CoV-2 as a reservoir of immunomimetic peptides that re-assemble into pro-inflammatory supramolecular complexes", *Proceeding of National Academy of Science*, acceptance pending revision.
2. **Zhang, Y.**; Gao, W.; Chen, Y.; Escajadillo, T.; Ungerleider, J.; Fang, R.; Christman, K.; Nizet, V.; Zhang, L. "Self-assembled colloidal gel using cell membrane-coated nanosponges as building blocks", *ACS Nano* 2017, 11, 11923-11930.
3. **Zhang, Y.**; Chen, Y.; Lo, C.; Zhuang, J.; Angsantikul, P.; Zhang, Q.; Wei, X.; Zhou, Z.; Obonyo, M.; Fang, R.; Gao, W.; Zhang, L. "Inhibition of pathogen adhesion by bacterial outer membrane-coated nanoparticles", *Angewandte Chemie International Edition* 2019, 58, 11404-11408.
4. Karshalev, E.; **Zhang, Y.**; Bsteban-Fernandez de Avila, B.; Beltran-Gastelum, M.; Chen, Y.; Mundaca-Urbe, R.; Zhang, F.; Nguyen, B.; Tong, Y.; Fang, R.; Zhang, L., Wang, J. "Micromotors for active delivery of minerals toward the treatment of iron deficiency anemia", *Nano Letters* 2019, 19, 7816-7826. (co-first author)
5. **Zhang, Y.**; Zhang, J.; Chen, M.; Gong, H.; Thamphiwatana, S.; Eckmann, L.; Gao, W.; Zhang, L. "A bioadhesive nanoparticle-hydrogel hybrid system for localized antimicrobial drug delivery", *ACS Applied Materials & Interfaces* 2016, 8, 18367-18374.
6. **Zhang, Y.**; Zhang, J.; Chen, W.; Angsantikul, P.; Spiekermann, K.; Fang, R.; Gao, W.; Zhang, L. "Erythrocyte membrane-coated nanogel for combinatorial antivirulence and responsive antimicrobial delivery against Staphylococcus aureus infection", *Journal of Controlled Release* 2017, 263, 185-191.
7. **Zhang, Y.**; Miyamoto, Y.; Ihara, S.; Yang, J.; Zuill, D.; Angsantikul, P.; Zhang, Q.; Gao, W.; Zhang, L., Eckmann, L. "Composite thermoresponsive hydrogel with auranofin-loaded nanoparticles for topical treatment of vaginal trichomonad infection", *Advanced Therapeutics* 2019, 2, 1900157.

8. Zhang, Q.; Dehaini, D.; **Zhang, Y.**; Zhou, J.; Chen, X.; Zhang, L.; Fang, R.; Gao, W.; Zhang, L. "Neutrophil membrane-coated nanoparticles inhibit synovial inflammation and alleviate joint damage in inflammatory arthritis", *Nature Nanotechnology* 2018, 13, 1182-1190.
9. Chen, Y.; **Zhang, Y.**; Chen, M.; Zhuang, J.; Fang, R.; Gao, W.; Zhang, L. "Biomimetic nanosponges suppress the in vivo lethality induced by the whole secreted proteins of pathogenic bacteria", *Small* 2019, 15, 1804994.
10. Chen, Y.; **Zhang, Y.**; Zhuang, J.; Lee, J. H.; Wang, L.; Fang, R.; Gao, W.; Zhang, L. "Cell membrane-cloaked oil nanosponges enable dual-modal detoxification", *ACS Nano* 2019, 13, 7209-7215.
11. Gong, H.; Chen, F.; Huang, Z.; Gu, Y.; Zhang, Q.; Chen, Y.; **Zhang, Y.**; Zhuang, J.; Cho, Y.; Fang, R.; Gao, W.; Xu, S.; Zhang, L. "Biomembrane-modified field effect transistors for sensitive and quantitative detection of biological toxins and pathogens", *ACS Nano* 2019, 13, 3714-3722.
12. Zhuang, J.; Ying, M.; Spiekermann, K.; Holay, M.; **Zhang, Y.**; Chen, F.; Gong, H.; Lee, J-H.; Gao, W.; Fang, R.; Zhang, L. "Biomimetic nanoemulsions for oxygen delivery in vivo", *Advanced Materials* 2018, 30, 1805693.
13. Ying, M.; Zhuang, J.; Wei, X.; Zhang, X.; **Zhang, Y.**; Jiang, Y.; Dehaini, D.; Chen, M.; Gu, S.; Gao, W.; Lu, W.; Fang, R.; Zhang, L. "Remote-loaded platelet vesicles for disease-targeted delivery of therapeutics", *Advanced Functional Materials* 2018, 28, 1801032.
14. Chen, Y.; Chen, M.; **Zhang, Y.**; Lee, J. H.; Escajadillo, T.; Gong, H.; Fang, R.; Gao, W.; Nizet, V.; Zhang, L. "Broad-spectrum neutralization of pore-forming toxins with human erythrocyte membrane-coated nanosponges", *Advanced Healthcare Materials* 2018, 7, 1701366.
15. Gao, W.; Chen, Y.; **Zhang, Y.**; Zhang, Q.; Zhang, L. "Nanoparticle-based local antimicrobial drug delivery", *Advanced Drug Delivery Reviews* 2018, 127, 46-57.
16. Li, J.; Angsantikul, P.; Liu, W.; Esteban-Fernandez de Avila, B.; Chang, X.; Sandraz, E.; Liang, Y.; Zhu, S.; **Zhang, Y.**; Chen, C.; Gao, W.; Zhang, L., Wang, J. "Biomimetic platelet-camouflaged nanorobots for binding and isolation of biological threats", *Advanced Materials* 2018, 30, 1704800.
17. Zhang, X.; Angsantikul, P.; Ying, M.; Zhuang, J.; Zhang, Q.; Wei, X.; Jiang, Y.; **Zhang, Y.**; Dehaini, D.; Chen, M.; Chen, Y.; Gao, W.; Fang, R.; Zhang, L. "Remote loading of small molecule therapeutics into cholesterol-enriched cell membrane-derived vesicles", *Angewandte Chemie International Edition* 2017, 56, 14075-14079.
18. Chen, M.; **Zhang, Y.**; Zhang, L. "Fabrication and characterization of a 3D bioprinted nanoparticle-hydrogel hybrid device for biomimetic detoxification", *Nanoscale* 2017, 9, 14506-14511.
19. Dehaini, D.; Wei, X.; Fang, R.; Masson, S.; Angsantikul, P.; Luk, B.; **Zhang, Y.**; Ying, M.; Jiang, Y.; Kroll, A.; Gao, W.; Zhang, L. "Erythrocyte-platelet hybrid membrane coating for enhanced nanoparticle functionalization", *Advanced Materials* 2017, 29, 1606209.

20. Gao, W.; **Zhang, Y.**; Zhang, Q.; Zhang, L. "Nanoparticle-hydrogel: A hybrid biomaterial system for localized drug delivery", *Annals of Biomedical Engineering* 2016, 44, 2049-2061.
21. Zhang, F.; Mundaca-Urbe, R.; Gong, H.; Bsteban-Fernandez de Avila, B.; Beltran-Gastelum, M.; Karshalev, E.; Nourhani, A.; Tong, Y.; Nguyen, B.; Gallot, M.; **Zhang, Y.**; Zhang, L., Wang, J. "A macrophage-magnesium hybrid biomotor: Fabrication and characterization", *Advanced Materials* 2019, 31, 1901828

### AWARDS AND HONORS

- Keystone Symposia Scholarship, 2022
- Chinese Government Graduate Student Overseas Study Program Scholarship
- Chinese Government Undergraduate Student Scholarship
- Institute of Engineering in Medicine scholarship
- Nanoscale Horizons Poster Prize at Nanoscale Horizons Symposium, San Diego, 2018.
- Bester Poster Award at Research Expo, UC San Diego, 2017.
- 2nd Prize at Nanoexpo, Department of Nanoengineering, UC San Diego, 2017.

### INVITATED TALKS

- "Natural membrane protein-mediated targeted drug delivery platform", Nanjing University, 2023
- "Natural membrane protein-mediated targeted drug delivery platform", Symposium for nucleic acid delivery, Hangzhou, 2023.
- "Developing cell membrane-coated nanomaterials as bacterial virulence factors scavenger", The 15<sup>th</sup> China Pharmaceutical Conference, Shanghai, 2022.
- "Engineer Multi-dimensional Cell Membrane-coated Nanomaterials to Combat bacterial Infection", University of Kentucky, Lexington, KY, 2020.
- "Leveraging Cell Membrane-coated nanomaterials as a Novel Antimicrobial Strategy", Tufts University, Boston, MA, 2019.

### CONFERENCE ACTIVITY

- "Molecular biomimicry by the SARS-CoV-2 virus: consequences for severe inflammation and coagulation in COVID-19" Keystone Symposia: Respiratory Viruses: New Frontiers, Keystone, CO, 2021
- "RBC Nanosponge Colloidal Gel for Anti-virulence Treatment of GAS Infection", Gordon Research Conference: Streptococcal Biology, Newry, ME, 2018

### TEACHING EXPERIENCE

- **Senior design mentor** for undergraduate in Zhejiang University, 2023
- **Health{hacks} Virtual COVID-19 Innovation Event**, Biomed Mentor, 2020
- **University of California San Diego**, Nano243 Nanomedicine, Spring, 2018
- **University of California San Diego**, Graduate student mentor for Research Experiences for Undergraduates (REU) summer program, 2017

- **University of California San Diego**, Graduate student mentor for Tsinghua Xuetao summer exchange programs, summer, 2016-2018

## RESEARCH EXPERIENCE

### **Department of Bioengineering, University of California, Los Angeles**

*Postdoc Researcher* in Prof. Gerard Wong's lab 08/2019 – 08/2022

- Apply machine learning to discover the membrane-remodeling sequences in SARS-CoV-2 proteome.
- Use x-ray scattering to study the negative Gaussian curvature generation on lipid membrane by antimicrobial peptides, pore-forming toxins, viral-derived peptides etc.
- Study the structural basis of Toll-like receptor-mediated immune activation by cationic peptide-DNA or peptide-RNA complex.

### **Department of NanoEngineering, University of California San Diego**

*Graduate researcher* in Prof. Liangfang Zhang's lab. 09/2014 – 06/2019

- Engineered cell membrane-coated nanoparticles to clear virulence factors in bacteria infection, rheumatoid arthritis, organophosphate intoxication, etc.
- Developed new drug encapsulation methods into cell membrane vesicles for targeted drug delivery.
- Designed nanoparticle-hydrogel composite to treat infectious disease.

### **Department of pharmacology, Philipps University of Marburg**

*Undergraduate intern* in Prof. Moritz Bünemann lab 03/2014 – 06/2014

- Designed and synthesized fluorescent-recombinant proteins.
- Tracked *in situ* protein interaction under the influence of agonist/antagonist with FRET-coupled imaging system.

### **School of Pharmacy, Huazhong University of Science and Technology**

*Undergraduate intern* in Prof. Zhiping Zhang lab 09/2012-03/2014

- Developed drug-encapsulated nanoformulation.
- Performed series of characterization to evaluate drug encapsulation, release and biodistribution.

## SERVICE TO PROFESSION

- Junior editor, Asian Journal of Pharmaceutical Sciences (2023-2024)
- Guest editor, Frontiers in Nanoscience, Frontiers in Nanobiotechnology
- Reviewer, Acta Biomaterialia, Biomaterials, Current Opinion in Solid State & Materials Science.

## MEMBERSHIP

- AAAS (2023)
- Biophysical Society of China (2023)
- Chinese Pharmaceutical Association (2023)

## COMMUNITY OUTREACH

### Postdoc Association at UCLA

Los Angeles, CA

Vice-chair of Community Engagement

06/2021-06/2022

- Organize social events to help connecting the postdoc community in UCLA.
- Host monthly workshop with the focus in professional development.

### U.S. Southwestern Chinese Students and Scholars Association Los Angeles, CA

*Vice president*

04/2017 – 04/2018

- Trained key members from branched Chinese student associations in event planning, fundraising and advertising.
- Documented the first student handbook as a comprehensive guide for new members and organizations.

### UCSD Chinese Students and Scholars Association

La Jolla, CA

*President*

04/2015 – 04/2017

- Led a team of graduate students and organized four networking and social events with over 100 participants in each.
- Initiated 2 oversea recruiting fairs and secured multiple academic job opportunities for UCSD students and professionals.
- Awarded as “Best Chinese Student Association” in 2017

## MEDIA COVERAGE

- Nature Nanotechnology 2018, 13, 1098-1099.
- Nature Reviews Rheumatology 2018, 14, 622.
- Science Translational Medicine 2018, 10 (459), eaav0341.