

**Xing Chen, Ph.D.**

Department of Chemical Biology  
College of Chemistry and Molecular Engineering  
Peking University  
Beijing, 100871, China

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Email: xingchen@pku.edu.cn

**Education**

- 2007 Ph.D. in Chemistry, University of California, Berkeley  
*Advisors: Prof. Carolyn R. Bertozzi and Prof. Alex Zettl*
- 2002 B.S. in Chemistry, Tsinghua University  
*Advisor: Prof. Yadong Li*

**Professional Experience**

- 2015-present Vice Chairman, Department of Department of Chemical Biology, College of Chemistry and Molecular Engineering, Peking University
- 2011-present Principal Investigator, Synthetic and Functional Biomolecules Center, Peking University
- 2011-present Principal Investigator, Peking-Tsinghua Center for Life Sciences
- 2010-present Principal Investigator, Department of Chemical Biology, College of Chemistry and Molecular Engineering, Peking University
- 2007-2010 LSRF Postdoctoral Research Fellow, Immune Disease Institute, Harvard Medical School *Advisor: Prof. Timothy A. Springer*

**Honors and Awards**

- 2015 IGO Young Glycoscientist Award
- 2014 WuXi AppTech Life Science and Chemistry Award
- 2014 National Science Fund for Distinguished Young Scholars
- 2013 Chinese Chemical Society Prize for Young Scientists
- 2013 DuPont Young Professor Award
- 2012 SCOPUS Young Researcher Award
- 2009 Pfizer Fellow of the Life Science Research Foundation
- 2007 Chinese Government Award for Outstanding Self-financed Students Abroad
- 2006 Material Research Society Graduate Student Gold Medal Award

**Publications**

34. Du, J.; Hong, S.; Dong, L.; Cheng, B.; Lin, L.; Zhao, B.; Chen, Y.; Chen, X. "Dynamic Sialylation in Transforming Growth Factor- $\beta$ -Induced Epithelial to Mesenchymal Transition" *J. Biol. Chem.* DOI: 10.1074/jbc.M115.636969.
33. Lin, L.; Liu, L.; Zhao, B.; Xie, R.; Lin, W.; Li, H.; Shi, M.; Chen, Y.; Springer, T. A.; Chen, X. "Carbon Nanotube-Assisted Optical Activation of TGF- $\beta$  Signaling by Near-Infrared Light" *Nature Nanotech.* DOI: 10.1038/nnano.2015.28.
32. Wang, J.; Cheng, B.; Li, J.; Zhang, Z.; Hong, W.; Chen, X.; Chen, R. P. "Chemical Remodeling of Cell-Surface Sialic Acids via Palladium-Triggered Bioorthogonal Elimination Reactions" *Angew. Chem. Int. Ed* DOI: 10.1002/anie.201409145.

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31. Hong, S.; Lin, L.; Xiao, M.; Chen, X. "Live-Cell Bioorthogonal Raman Imaging" *Curr. Opin. Chem. Biol.* **24**, 91-96 (2015).
30. Xie, R.; Dong, L.; Huang, R.; Hong, S.; Lei, R.; Chen, X. "Targeted Imaging and Proteomic Analysis of Tumor-Associated Glycans in Living Animals" *Angew. Chem. Int. Ed.* **53**, 14082-14086 (2014).
29. Rong, J.; Han, J.; Dong, L.; Tan, Y.; Yang, H.; Feng, L.; Wang, Q.; Meng, R.; Zhao, J.; Wang, S.; Chen, X. "Glycan Imaging in Intact Rat Hearts and Glycoproteomic Analysis Reveal the Upregulation of Sialylation during Cardiac Hypertrophy" *J. Am. Chem. Soc.* **136**, 17468-17476 (2014).
28. Xiao, M.; Lin, L.; Li, Z.; Liu, J.; Hong, S.; Li, Y.; Zheng, M.; Duan, X.; Chen, X. "SERS Imaging of Cell-Surface Biomolecules Metabolically Labeled With Bioorthogonal Raman Reporters" *Chem. Asian J.* **9**, 2040-2044 (2014).
27. Hong, S.; Chen, T.; Zhu, Y.; Li, A.; Huang, Y.; Chen, X. "Live-Cell Stimulated Raman Scattering Imaging of Alkyne-Tagged Biomolecules" *Angew. Chem. Int. Ed.* **53**, 5827-5831 (2014).
26. Lin, W.; Du, Y.; Zhu, Y.; Chen, X. "A Cis-Membrane FRET-Based Method for Protein-specific Imaging of Cell-Surface Glycans" *J. Am. Chem. Soc.* **136**, 679-687 (2014).
25. Li, S.; Zhang, L.; Yao, Q.; Li, L.; Dong, N.; Rong, J.; Gao, W.; Ding, X.; Sun, L.; Chen, X.; Chen, S.; Shao, F. "Pathogen Blocks Host Death Receptor Signalling by Arginine GlcNAcylation of Death Domains" *Nature* **501**, 242-246 (2013).
24. Xie, R.; Hong, S.; Chen, X. "Cell-Selective Metabolic Labeling of Biomolecules with Bioorthogonal Functionalities" *Curr. Opin. Chem. Biol.* **17**, 747-752 (2013).
23. Feng, L.; Hong, S.; Rong, J.; You, Q.; Dai, P.; Huang, R.; Tan, Y.; Hong, W.; Xie, C.; Zhao, J.; Chen, X. "Bifunctional Unnatural Sialic Acids for Dual Metabolic Labeling of Cell-Surface Sialylated Glycans" *J. Am. Chem. Soc.* **135**, 9244-9247 (2013).
22. Lin, L.; Tian, X.; Hong, S.; Dai, P.; You, Q.; Wang, R.; Feng, L.; Xie, C.; Tian, Z.; Chen, X. "A Bioorthogonal Raman Reporter Strategy for SERS Detection of Glycans on Live Cells" *Angew. Chem. Int. Ed.* **52**, 7266-7271 (2013).
21. Zhang, C.; Yin, A.; Jiang, R.; Rong, J.; Dong, L.; Zhao, T.; Sun, L.; Wang, J.; Chen, X.; Yan, C.; "Time-Temperature Indicator for Perishable Products Based on Kinetically Programmable Ag Overgrowth on Au Nanorods" *ACS Nano* **7**, 4561-4568 (2012).
20. Rouhanifard, S. H.; Xie, R.; Zhang, G.; Sun, X.; Chen, X.; Wu, P. "Detection and Isolation of Dendritic Cells Using Lewis X-Functionalized Magnetic Nanoparticles" *Biomacromolecules* **13**, 3039-3045 (2012).
19. Xie, R.; Hong, S.; Feng, L.; Rong, J.; Chen, X. "Cell-Selective Metabolic Glycan Labeling Based on Ligand-Targeted Liposomes" *J. Am. Chem. Soc.* **134**, 9914-9917 (2012).
18. Chen, X.; Yu, Y.; Mi, L.; Walz, T.; Springer, T. A. "Molecular Basis for Complement Recognition by Integrin  $\alpha_X\beta_2$ " *Proc. Natl. Acad. Sci. USA* **109**, 4586-4591 (2012).
17. Wang, W.; Hong, S.; Tran, A.; Triano, R.; Jiang, H.; Liu, Y.; Chen, X.; Wu, P. "Sulfated Ligands for the Copper(I)-catalyzed Azide Alkyne Cycloaddition" *Chem. Asian J.* **6**, 2796-2802 (2011).
16. Hao, Z.; Hong, S.; Chen, X.; Chen, R. P. "Introducing Bioorthogonal Functionalities into Proteins in Living Cells" *Acc. Chem. Res.* **44**, 742-751 (2011).

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15. Shi, M.; Zhu, J.; Wang, R.; Chen, X.; Mi, L.; Walz, T.; Springer, T. A. "Latent TGF- $\beta$  Structure and Activation" *Nature* **474**, 343-349 (2011).
14. Chen, X.; Xie, C.; Nishida, N.; Li, Z.; Walz, T.; Springer, T. A. "Requirement of Open Headpiece Conformation for Activation of Leukocyte Integrin  $\alpha_X\beta_2$ " *Proc. Natl. Acad. Sci. USA* **107**, 14727-14732 (2010).
13. Xie, C.; Zhu, J.; Chen, X.; Lizhi Mi; Nishida, N.; Springer, T. A. "Structure of an integrin with an  $\alpha I$  domain, complement receptor type 4" *EMBO J.* **29**, 666-678 (2010).
12. Chang, P.; Chen, X.; Smyrniotis, C.; Xenakis, A.; Hu, T.; Bertozzi, C. R.; Wu, P.; "Metabolic Labeling of Sialic Acids in Living Animals with Alkynyl Sugars" *Angew. Chem. Int. Ed.* **48**, 4030-4033 (2009).
11. Chen, X.; Wu, P.; Rousseas, M.; Okawa, D.; Gartner, Z.; Zettl, A.; Bertozzi, C. R. "Boron Nitride Nanotubes Are Noncytotoxic and Can Be Functionalized for Interaction with Proteins and Cells" *J. Am. Chem. Soc.* **131**, 890-891 (2009).
10. Wu, P.; Chen, X.; Hu, N.; Tam, U. C.; Blixt, O.; Zettl, A.; Bertozzi, C. R. "Biocompatible Carbon Nanotubes Generated by Functionalization with Glycodendrimers" *Angew. Chem. Int. Ed.* **47**, 5022-5055 (2008).
09. Chen, X.; Kis, A.; Zettl, A.; Bertozzi, C. R. "A Cell Nanoinjector Based on Carbon Nanotubes" *Proc. Natl. Acad. Sci. USA* **104**, 8218-8222 (2007).
08. Rabuka, D.; Parthasarathy, R.; Lee, G. S.; Chen, X.; Groves, J. T.; Bertozzi, C. R. "Hierarchical Assembly of Model Cell Surfaces: Synthesis of Mucin Mimetic Polymers and their Display on Supported Bilayers" *J. Am. Chem. Soc.* **129**, 5462-5471 (2007).
07. Chen, X.; Tam, U. C.; Czapinski, J. L.; Lee G. S.; Rabuka, D.; Zettl, A.; Bertozzi, C. R. "Interfacing Carbon Nanotubes with Living Cells" *J. Am. Chem. Soc.* **128**, 6292-6293 (2006).
06. Chen, X.; Lee G. S.; Zettl A.; Bertozzi, C. R. "Biomimetic Engineering of Carbon Nanotubes Using Cell Surface Mucin Mimics" *Angew. Chem. Int. Ed.* **43**, 6111-6116 (2004).
05. Sun, X.; Chen, X.; Li, Y. "A CTAB-Assisted Hydrothermal Orientation Growth of ZnO Nanorods" *Mater. Chem. Phys.* **78**, 99-104 (2003).
04. Sun, X.; Chen, X.; Li, Y. "Large-Scale Synthesis of Sodium and Potassium Titanate" *Inorg. Chem.* **41**, 4996-4998 (2002).
03. Sun, X.; Chen, X.; Li, Y. "Evaporation Growth of Multipod ZnO Whisker Assisted by A  $\text{Cu}^{2+}$  Etching Technique" *J. Crystal. Growth.* **244**, 218-223 (2002).
02. Chen, X.; Sun, X.; Li, Y. "Self-Assembling Vanadium Oxide Nanotubes by Organic Molecular Templates" *Inorg. Chem.* **41**, 4524-4530 (2002).
01. Chen, X.; Deng, Z.; Li, Y.; Li, Y. "Hydrothermal Synthesis and Superparamagnetic Behaviors of A Series of Ferrite Nanoparticles" *Chin. J. Inorg. Chem.* **18**, 460-464 (2002).

**Grants**Active

Agency: National Natural Science Foundation of China (Grant No. 21425204)

National Science Fund for Distinguished Young Scholars

Role: PI

## Resume

### **Xing Chen, Ph.D.**

Amount: ¥ 4,000,000

Duration: 5 years (2015/01 – 2019/12)

Agency: Fok Ying Tung Foundation (project no. 142013)

Project title: Carbon nanotube-based cancer diagnosis and therapeutics

Role: Co-PI

Amount: \$ 20,000

Duration: 4 years (2014/03 – 2017/02)

Agency: National Natural Science Foundation of China (Grant No. 91313301)

Project title: Protein-based probes for probing specific signal transduction pathways

Role: Co-PI

Amount: ¥ 1,200,000

Duration: 2 years (2014/01 – 2015/12)

Agency: National Natural Science Foundation of China (Grant No. 21172013)

Project title: Chemical tools for probing the immunological roles of cell-surface glycans

Role: PI

Amount: ¥ 600,000

Duration: 4 years (2012/01 – 2015/12)

Agency: Ministry of Science and Technology of China (973 Program under Grant No. 2012CB917303)

Project title: Biogenesis, modifications, assembly and quality control of membrane proteins

Role: Co-PI

Amount: ¥ 2,000,000

Duration: 5 years (2012/01 – 2016/12)

Agency: Ministry of Science and Technology of China (the National Instrumentation Program under grant number 2011YQ030124)

Project title: Instrumentation and applications of plasmon-enhanced Raman spectroscopy

Role: Co-PI

Amount: ¥ 1,900,000

Duration: 4 years (2011/09 – 2015/08)

### Past

Agency: National Natural Science Foundation of China (Grant No. 21172013)

Project title: Self-assembly of living cells by oligosaccharide metabolic engineering and the applications in tissue engineering

Role: PI

Amount: ¥ 700,000

Duration: 3 years (2012/01 – 2014/12)

### **Presentations**

“Labeling and Visualizing Glycans with Specificity and Versatility” Asian Chemical Biology Conference 3, Singapore, December 15-17, 2014

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“Cell-Selective and Tissue-Specific Metabolic Glycan Labeling” International Symposium on New Tools in Chemical Biology, Beijing, China, December 6-7, 2014

“Labeling and Visualizing Glycans with Specificity and Versatility” Sino-Japan Chemical Biology Symposium, Beijing, China, October 10-13, 2014

“Labeling and Visualizing Glycans with Specificity and Versatility” 5<sup>th</sup> Sino-German Frontiers of Chemistry Symposium, Berlin, Germany, September 7-13, 2014

“Labeling and Visualizing Glycans with Specificity and Versatility” Asia-Canada Glycoscience Symposium, Vancouver, Canada, May 31, 2014

“Labeling and Visualizing Glycans with Specificity and Versatility” 247<sup>th</sup> ACS National Meeting, Dallas, Texas, USA, March 16-20, 2014.

“Labeling and Visualizing Glycans with Specificity and Versatility” The Croucher Advanced Study Institute on Chemical Biology, Hong Kong, China, December 15-17, 2013

“Labeling and Visualizing Glycans with Specificity and Versatility” The 8<sup>th</sup> National Conference on Chemical Biology, Shanghai, China, September 15-18, 2013

“Labeling and Visualizing Glycans with Specificity and Versatility” Dynamic Biology: The University of Chicago-Peking University Joint Meeting, Beijing, China, August 23-25, 2013

“Chemical Tools for Visualizing and Profiling Protein Glycosylation” DuPont Experimental Station, Wilmington, DE, USA, July 12, 2013.

“Bioorthogonal Raman Imaging of Cell-Surface Glycans” The 2013 International Symposium on Chemical Glycobiology, Shanghai, China, June 29-July 1, 2013

“Endowing Metabolic Glycan Labeling with Specificity” The 22<sup>nd</sup> International Glycoconjugate Symposium, Dalian, China, June 23-28, 2013

“Visualizing Glycosylation in Living Systems” The 3<sup>rd</sup> Annual Symposium on Frontiers at the Chemistry-Biology Interface, Beijing, China, June 24, 2013.

“Visualizing Glycosylation in Living Systems” 6<sup>th</sup> Sino-German Frontiers of Science Symposium, Merseburg, Germany, May 23-26, 2013.

“Endowing Metabolic Glycan Labeling with Specificity” Asian Chemical Biology Initiative 2013 Meeting, Bangkok, Thailand, January 25-28, 2013.

“Endowing Metabolic Glycan Labeling with Specificity” 4<sup>th</sup> Asian Communications of Glycobiology and Glycotechnology, Jeju, Korea, October 28-31, 2012.

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“Cell-Selective Probing of Glycosylation” Ninth IUPAC International Symposium on Biomolecular Chemistry & Eighth International Symposium for Chinese Medicinal Chemistry, Beijing, China, August 25-29, 2012.

“Cell-Selective Probing of Glycosylation” The 8<sup>th</sup> Sino-US Chemistry Professors Conference, Kunming, China, July 01-04, 2012

“Cell-Selective Probing of Glycosylation” The 2<sup>nd</sup> Annual Symposium on Frontiers at the Chemistry-Biology Interface, Beijing, China, June 25, 2012.

“Chemically Probing Glycosylation in Stem Cells” The CLS-iCeMS Joint Symposium, Beijing, China, April 20-22, 2012.

“Chemically Probing Glycosylation on Cardiomyocytes in Living Animals” The 28<sup>th</sup> Chinese Chemical Society Congress, Chengdu, China, April 13-16, 2012.

“Bring Proteins Across the Membrane” The 1<sup>st</sup> Annual Symposium on Frontiers at the Chemistry-Biology Interface, Beijing, China, August 20-21, 2011.

“Glycan-Mediated Intracellular Delivery” The 7<sup>th</sup> National Conference on Chemical Biology, Nanjing, China, August 26-29, 2011.

“Glycan-Mediated Intracellular Delivery” The 7<sup>th</sup> Sino-US Chemistry Professors Conference, Guiyang, China, June 27-30, 2011

“Getting Proteins Across the Membrane: Glycan-Mediated and Nanotube-Mediated” The Bilateral UC Davis/Peking University Workshop, Davis, CA, USA, May 5-6, 2011

**Services:**

CAPA-related

Attending The 7<sup>th</sup> Sino-US Chemistry Professors Conference (Guiyang, China, June 27-30, 2011); Talk title: “Glycan-Mediated Intracellular Delivery”

Attending The 8<sup>th</sup> Sino-US Chemistry Professors Conference, Kunming, China, July 01-04, 2012; Talk title: “Cell-Selective Probing of Glycosylation”

Other activities

2015 – present      Editorial advisory board member, *ACS Central Science*

Reviewer for scientific journals including *JACS*, *Angew. Chem.*, *Nature Methods*, and *PNAS*.

2011-present      Grant reviewer for NSFC

Organizing national and international conferences in chemical biology, including:

Resume

**Xing Chen, Ph.D.**

Chair, The 2<sup>nd</sup> Annual Symposium on Frontiers at the Chemistry-Biology Interface, Beijing, China, June 25, 2012.

Chair, International Symposium on New Tools in Chemical Biology, Beijing, China, December 6-7, 2014

Organizing committee member, 5<sup>th</sup> Sino-German Frontiers of Chemistry Symposium, Berlin, Germany, September 7-13, 2014

2012, 2013, 2014      Teaching Chemical Biology for summer camps (undergraduate students nationwide)