

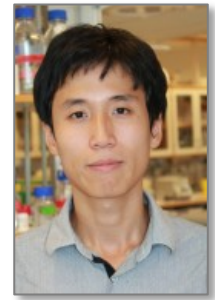
PROFILE

Biologist seeking to systematically and physically understand epigenetic regulation

Place of Birth: Fuzhou, China

Date of Birth: 25 Dec 1984

Date of PhD Thesis Defense: 2013-8-5



EDUCATION & WORK

- 2020– | **Professor**, Haixia Institute, Fujian Agriculture and Forestry University, Fuzhou, China
- 2018–2020 | **Research Associate**, Department of Biochemistry, University of Cambridge, Cambridge, UK
Field: Systems Biology
- 2014–2018 | **Postdoc**, Department of Medical Biochemistry and Biophysics, Karolinska Institutet, Stockholm, Sweden
Field: Systems Biology
- 2010–2013 | **Ph.D.**, Department of Chemistry and Biotechnology, The University of Tokyo, Tokyo, Japan
Field: Supramolecular Chemistry / Materials Chemistry
- 2008–2010 | **M.Sc.**, School of Life Science, Tsinghua University, Beijing, China P.R.
Field: Biochemistry / Molecular Biology
- 2003–2008 | **B.Sc.**, School of Life Science, Tsinghua University, Beijing, China P.R.

RESEARCH EXPERIENCES

- 2018.6– | Research Associate
current | Department of Biochemistry, Cambridge Univ., Advisor: *Jussi Taipale*
 - Effects of chromatin structure proteins on transcription factor-nucleosome interactions
 - Systematic decomposition of the physical mechanisms of transcription factor binding
- 2014.9– | Postdoc Research Fellow
2018.5 | Department of Medical Biochemistry and Biophysics, Karolinska Institutet, Advisor: *Jussi Taipale*
 - Systematic study of the binding of human transcription factors to nucleosomal DNA
 - High-throughput quantitative measurement of transcription factor-DNA affinities
- 2010.10– | Doctor Research Fellow
2013.9 | Department of Chemistry and Biotechnology, Tokyo Univ., Advisors: *Tatsuya Nishimura & Takashi Kato*
 - Preparation of aragonite thin films on poly(vinyl alcohol) matrices with Mg²⁺-stabilized precursors
 - Morphology control of CaCO₃ thin films using supramolecular polymers (polyrotaxane)
 - Preparation of functional thin-film CaCO₃/poly(cyclodextrin) hybrid materials*Thesis: Morphology Control and Functionalization of Polymer/CaCO₃ Thin Film Hybrids*
- 2008.9– | Master Research Assistant
2010.8 | School of Life Science, Tsinghua Univ., Advisors: *Liping Xie and Rongqing Zhang*
 - Cloning and expression of Smad3 of pearl oyster *Pinctada fucata*
 - Immunolocalization of calcineurin
 - Biomimetic crystallization of CaCO₃ in presence of soluble shell matrices*Thesis: Tuning the Magnesium Content of Mg-Calcite by Shell Matrix Macromolecules of Pinctada Fucata*
- 2007.9– | Undergraduate Research Assistant
2008.8 | School of Life Science, Tsinghua Univ., Advisors: *Liping Xie and Rongqing Zhang*
 - Purification of alkaline phosphatase from *Pinctada fucata*
 - Enzyme kinetics study of the alkaline phosphatase by UV and Fluorescent Spectroscopy*Thesis: Purification and Heat Stability Studies of Alkaline Phosphatase from Pearl Oyster Pinctada Fucata*

RESEARCH SKILLS

- **High-throughput Technologies and Data Analysis**
 - Programming robotics for high-throughput automation
 - Next-generation sequencing-based technologies: SELEX, NCAP-SELEX, methyl-SELEX, active TF identification (ATI), ChIP-seq, MNase-seq, MNase-ChIP, scRNA-seq, and their data analysis
- **Programming, Machine Learning, Bioinformatics**
 - Proficient with Linux, R
 - Familiar with C++, Perl, PHP, HTML
 - Analysis of NGS data
 - Experiences with python, JSP, VB, MySQL, HTML, Javascript
 - Machine learning, Deep learning with GPU
 - Understand Data structure, Physics, Statistics, and Math
- **Materials Engineering and Chemistry**
 - Crystal engineering
 - Characterization of inorganic materials and organic compounds (XRD, NMR, IR, Raman, CD, MALDI-Mass, HPLC, Polarized microscopy, SEM, TEM, DLS, DSC...)
 - Organic synthesis
- **Biochemistry, Molecular Biology, Cell Biology**
 - CRISPR, Protein purification, Electrophoresis, Western blot, Immunolocalization, PCR, Molecular cloning, Enzyme kinetics, Cell cultivation, FACS, 10x Chromium

LANGUAGES

Chinese (native), English (fluent), and Japanese (fluent)

Certifications: -- TOEFL iBT Score: 103 Total: 120
-- IELTS Score: 7.5 Total: 10
-- Japanese Language Proficiency Test N1 (highest level) Score: 353 Total: 400

PUBLICATIONS

ResearchGate: www.researchgate.net/profile/Fangjie_Zhu/contributions

Google Scholar: scholar.google.com/citations?user=zZ5oRzUAAAAJ&hl=en

- F. Zhu, L. Farnung, E. Kaasinen, B. Sahu, Y. Yin, Bei. Wei, S.O. Dodonova, K.R. Nitta, E. Morgunova, M. Taipale, P. Cramer, J. Taipale, The interaction landscape between transcription factors and the nucleosome. *Nature* (IF = 41.577), 2018, 562, p76. (single 1st author)
- F. Zhu, T. Nishimura and T. Kato, Organic/inorganic fusion materials: cyclodextrin-based polymer/CaCO₃ hybrids incorporating dye molecules through host-guest interactions. *Polym. J.* (IF = 1.653), 2015, 47, p122.
- F. Zhu, T. Nishimura, H. Eimura, and T. Kato, Supramolecular effects on formation of CaCO₃ thin films on a polymer matrix. *CrystEngComm* (IF = 3.304), 2014, 16, p1496.
- F. Zhu, T. Nishimura, T. Sakamoto, H. Tomono, H. Nada, Y. Okumura, H. Kikuchi, and T. Kato, Tuning the stability of CaCO₃ crystals with magnesium ions for formation of aragonite thin films on organic polymer templates. *Chem. Asian J.* (IF = 3.692), 2013, 8, p3232.
- F. Zhu, Y. Kong, J. Liang, C. Li, Y. Hu, Y. Zhou, X. Liu, L. Xie, and R. Zhang, Tuning calcite magnesium content by soluble shell matrices: Insights into biomineral impurity control. *Mater. Sci. Eng. C* (IF = 5.080), 2010, 30, p963.
- A. Jolma, J. Zhang, E. Mondragon, E. Morgunova, T. Kivioja, K.U. Lavery, Y. Yin, F. Zhu, G. Bourenkov, Q. Morris, T.R. Hughes, L.J.III Maher, J. Taipale, Binding specificities of human RNA-binding proteins toward structured and linear RNA sequences. *Genome Res* 2020, 30, p962.
- S.O. Dodonova, F. Zhu, C. Dienemann, J. Taipale, P. Cramer, Nucleosome-bound SOX2 and SOX11 structures elucidate pioneer factor function. *Nature* 2020, 580, p669.
- B. Wei, A. Jolma, B. Sahu, L.M. Orre, F. Zhong, F. Zhu, T. Kivioja, I. Sur, J. Lehtio, M. Taipale, J. Taipale, A protein

activity assay to measure global transcription factor activity reveals determinants of chromatin accessibility. *Nat. Biotechnol.* 2018, 36, p521.

- E. Morgunova, Y. Yin, P.K. Das, A. Jolma, **F. Zhu**, A. Popov, Y. Xu, L. Nilsson, J. Taipale, Two distinct DNA sequences recognized by transcription factors represent enthalpy and entropy optima. *Elife* 2018, 7.
- J. Su, **F. Zhu**, G. Zhang, H. Wang, L. Xie and R. Zhang, Transformation of amorphous calcium carbonate nanoparticles into aragonite controlled by ACCBP. *CrystEngComm*, 2016, 18, p2125.
- T. Nishimura, **F. Zhu**, H. Tomono, H. Nada, T. Kato, バイオミネラリゼーションに学ぶ有機/無機複合体の設計と合成：高分子およびマグネシウムイオンによる炭酸カルシウムのモルホロジー制御, *オレオサイエンス*, 2014, 14, p417.
- H. Tomono, H. Nada, **F. Zhu**, T. Sakamoto, T. Nishimura, and T. Kato, Effects of magnesium ions and water molecules on the structure of amorphous calcium carbonate: a molecular dynamics study. *J. Phys. Chem. B*, 2013, 117, p14849.
- Y. Lin, W. Zhang, **F. Zhu**, J. Su, D. Fang, Y. Yang, G. Zhang, L. Xie, R. Zhang, and H. Wang, Subcellular localization of N-deoxyribosyltransferase in *Lactobacillus fermentum*: cell surface association of an intracellular nucleotide metabolic enzyme. *FEMS Microbiol. Lett.*, 2011, 323, p132.
- L. Xie, **F. Zhu**, Y. Zhou, C. Yang, and R. Zhang, Molecular approaches to understand biomineralization of shell nacreous layer. *Prog. Mol. Subcell. Biol.*, 2011, 52, p331.
- Y. Zhou, Z. He, C. Li, L. Xiang, **F. Zhu**, G. Zhang, L. Xie, and R. Zhang, Correlations among mRNA expression levels of Engrailed, BMP2 and Smad3 in mantle cells of pearl oyster *Pinctada fucata*. *Prog. Biochem. Biophys.*, 2010, 37, p737.
- C. Li, J. Huang, S. Li, W. Fan, Y. Hu, Q. Wang, **F. Zhu**, L. Xie, and R. Zhang, Cloning, characterization and immunolocalization of two subunits of calcineurin from pearl oyster (*Pinctada fucata*). *Comp. Biochem. Physiol. B: Biochem. Mol. Biol.*, 2009, 153, p43.
- Y. Kong, G. Jing, Z. Yan, C. Li, N. Gong, **F. Zhu**, D. Li, Y. Zhang, G. Zheng, H. Wang, L. Xie, and R. Zhang, Cloning and characterization of Prsilkin-39, a novel matrix protein serving a dual role in the prismatic layer formation from the oyster *pinctada fucata*. *J. Biol. Chem.*, 2009, 284, p10841.

SCOLARSHIPS AND AWARDS

2010–2013		Dean's Scholarship of Engineering School (The University of Tokyo)
2003		Scholarship for First-Year Student (Tsinghua University)
2002		First Price (National) Biology Olympiad
2001		First Price (Provincial) Adolescent Biology Project Competition
2000		Second Price (National) China Adolescents Science and Technology Innovation Contest

CONFERENCES

Poster presentations

2018-03-20		Systems Biology: Global Regulation of Gene Expression (Cold Spring Harbor Meeting), New York
2016-11-20		Molecular Machines: Integrative Structural and Molecular Biology (EMBO Conference), Heidelberg
2016-03-15		Systems Biology: Global Regulation of Gene Expression (Cold Spring Harbor Meeting), New York
2012-10-17		The 2 nd Chemistry Festival, Tokyo
2012-06-08		The 5 th Open Symposium of Fusion Materials, Tokyo
2012-03-27		92 nd Annual Meeting of the Japanese Chemical Society, Tokyo
2012-01-27		Teijin Forum 2012, Tokyo
2011-12-19		The 21 st Academic Symposium of Materials Research Society of Japan, Yokohama
2011-12-03		The 6 th Workshop of Biomineralization, Tokyo

Oral presentations

2017-08-30		The Nucleosome: From Atoms to Genomes (EMBO Conference), Heidelberg
2017-02-26		Systems Biology: Global Regulation of Gene Expression (Cold Spring Harbor Meeting), New York
2012-01-27		Teijin Forum 2012, Tokyo

SOCIAL ACTIVITIES

- 2003–2008 | Trumpeter in Wind Band of Tsinghua Student Art Group
- 2005–2006 | Literature and Art Department of Student Union (School of Life Science)
- 2004 | Summer Social Practice Program “Study on Fishing Resource of Zhoushan isles”
- 2004 | Member of Tsinghua Student TV
- 2003–2004 | Propaganda Department of Student Union (School of Life Science)
- 2004 | Beijing International Marathon (Full-Marathon)
- 2003 | Beijing International Marathon (Half-Marathon)