

Jianfeng Cai

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Preeminent and Distinguished University Professor
Julie Harmon Endowed Chair in Chemistry
Department of Chemistry
University of South Florida
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EDUCATION

- **Postdoctoral Associate**, Bioorganic Chemistry, Yale University, **2007-2009**
Advisor: **Professor Andrew D. Hamilton**
- **PhD**, Bioorganic Chemistry, Washington University in St. Louis, **2002-2006**
Advisor: **Professor John-Stephen Taylor**
Thesis Title: *Design and Synthesis of Nucleic Acid Templated and Targeted Drugs and Probes*
- **MS**, Nanjing University, **China, 2000**
- **BS**, Nanjing University, **China, 1997**

POSITIONS AND EMPLOYMENT

- 2007-2009 Postdoctoral Associate, Yale University, New Haven, CT
- 2009-2015 Assistant Professor, University of South Florida, Tampa, FL
- 2015-2018 Associate Professor, University of South Florida, Tampa, FL
- 2018-Present Professor, University of South Florida, Tampa, FL
- 2020-Present USF Preeminent Professor, University of South Florida, Tampa, FL
- 2024-Present Distinguished University Professor, University of South Florida, Tampa, FL
- 2025-Present Julie Harmon Endowed Chair in Chemistry
- 2009-Present Member, Drug Discovery Program, Moffitt Cancer Center, Tampa, FL
- 2019-Present Director, Center for Molecular Diversity in Drug Design, Discovery and Development (CMD5)

RESEARCH INTEREST

Research Area: Bioorganic, Chemical Biology, Medicinal Chemistry, Biophysics, and Biomaterials

Research Focus: Design, synthesis and investigation of AApeptide-based bioactive peptidomimetics; development of novel biomaterials

AWARDS AND RECOGNITIONS

- 2025 Julie Harmon Endowed Chair in Chemistry
- 2025 Fellow of the American Association for the Advancement of Science (AAAS)
- 2024 Fellow of National Academy of Inventors (NAI)
- 2024 World's Top 2% Scientists, Stanford/Elsevier
- 2024 USF Faculty Outstanding Research Achievement Award
- 2024 Distinguished University Professor
- 2024 OKeanos-CAPA Senior Investigator Award at the Chemical and Biology Interface
- 2023 World's Top 2% Scientists, Stanford/Elsevier

2023	The Huber and Helen Croft Lectureship, University of Missouri
2023	Fellow of American Institute for Medical and Biological Engineering (AIMBE)
2021	Outstanding Faculty Award, USF
2020	Outstanding Graduate Faculty Mentor Award, USF
2020	USF Faculty Outstanding Research Achievement Award
2020	USF Preeminent Professor
2020	Fellow of Royal Society of Chemistry (FRSC)
2018	USF Faculty Outstanding Research Achievement Award
2015	USF Faculty Outstanding Research Achievement Award
2015	Biomatik Distinguished Junior Faculty Award, the Chinese-American Chemistry & Chemical Biology Professors Association (CAPA)
2014	NSF Career Award
2014	ChemComm Emerging Investigator
2012	New Investigator award, Florida Bankhead Coley Cancer Research Program
2011	Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities

PROFESSIONAL MEMBERSHIPS

Member, American Chemical Society (Organic Chemistry and Medicinal Chemistry Division)

Member, American Peptide Society

Member, National Academy of Inventors, USF Chapter

PROFESSIONAL SERVICES

Editorial and Consulting Services:

2015-	Editorial Board member, <i>ChemistrySelect</i>
2017-	Editorial Advisory Board member, <i>ChemistryOpen</i>
2018-	Associate Editor, Chemical Biology Section, <i>Molecules</i>
2020-2023	Associate Editor-in-Chief, <i>Acta Pharmaceutica Sinica B</i>
2023-	Consultant, Fulgent Pharma LLC
2024-	Executive Board member and Vice President, USF Chapter of National Academy of Inventors
2024-	Associate Editor, <i>J. Enzyme Inhib. Med. Chem.</i>

Grant Review Services:

2015.4	Panelist, CHEM-CLP, National Science Foundation
2015.6	Ad hoc member, BMBI, National Institute of Health
2017.2	Ad hoc member, SBCB, National Institute of Health
2017.7	Ad hoc member, Special Emphasis Panel, ZRG1 IDM-S (02) M, National Institute of Health
2017.11	Ad hoc member, Special Emphasis Panel, ZAI1 LG-M (J1), 1 National Institute of Health
2017.11	Ad hoc member, BMBI, ZRG1 BST-M (90) S, National Institute of Health
2018.3	Ad hoc member, Special Emphasis Panel, ZRG1 IDM-Y 82, National Institute of Health
2018. 9	Panelist, CHEM-CLP, National Science Foundation
2018. 10	Ad hoc member, Special Emphasis Panel, ZAG1 ZIJ-7 (J1), National Institute of Health
2018.11	Ad hoc member, Special Emphasis Panel, ZRG1 IDM-Y 82, National Institute of Health
2019.2	Ad hoc member, EBIT, National Institute of Health
2020.1	Ad hoc member, BMBI, National Institute of Health
2020.2	Ad hoc member, EBIT, National Institute of Health

2020.3	Panelist, BMAT, National Science Foundation
2020.6-2024	Standing member, BMBI, National Institute of Health
2021.4	Panelist, BMAT, National Science Foundation
2022.2	NIH Avidd study section
2023.1	NSF ad hoc reviewer
2023.4	NSF ad hoc reviewer
2023.10	NSF ad hoc reviewer
2024. 8	NIH ad hoc reviewer

PUBLICATIONS

Selected representative publications:

16. Bo Huang, Sihao Li, Cong Pan, Fangzhou Li, Lukasz Wojtas, Qiao Qiao, Timothy H. Tran, Laurent Calcul, Wenqi Liu, Chenfeng Ke,* **Jianfeng Cai**.* Proline-Based Tripodal Cages with Guest-Adaptive Features for Capturing Hydrophilic and Amphiphilic Fluoride Substances. *Nat. Commun.* 2025, 16, 3226.
15. Heng Liu, Yunpeng Cui, Xue Zhao, Lulu Wei, Xudong Wang, Ning Shen, Timothy Odom, Xuming Li, William Lawless, Kanchana Karunaratne, Martin Muschol, Wayne Guida, Chuanhai Cao, Libin Ye, and **Jianfeng Cai**.* Helical sulfonyl- γ -AApeptides modulating A β oligomerization and cytotoxicity by recognizing A β helix. *Proc. Natl. Acad. Sci. U. S. A.* 2024, 121, 6, e2311733121.
14. Wei Jiang,+ Sami Abdulkadir,+ Xue Zhao, Peng Sang, Laurent Calcul, Feng Cheng, * Yong Hu, * and **Jianfeng Cai**.* Inhibition of Hypoxia-Inducible Transcription Factor (HIF-1 α) with Sulfonyl- γ -AApeptide Helices. *J. Am. Chem. Soc.*, 2023, 145, 36, 20009-20020.
13. Songyi Xue,+ Wei Xu,+* Lei Wang, Xinling Wang, Qianyu Duan, Laurent Calcul, Shaohui Wang, Wenqi Liu, Xingmin Sun, Lu Lu,* Shibo Jiang, *, and **Jianfeng Cai**.* An HR2-mimicking sulfonyl- γ -AApeptide is a potent pan-coronavirus fusion inhibitor with strong blood-brain barrier permeability, long half-life and promising oral bioavailability. *ACS Central. Sci.* 2023, 9 1046-1058.
12. Sami Abdulkadir,+ Chunpu Li,+ Wei Jiang,+ Xue Zhao, Peng Sang, Lulu Wei, Yong Hu,* Qi Li,* and **Jianfeng Cai**.* Modulating Angiogenesis by Proteomimetics of Vascular Endothelial Growth Factor. *J. Am. Chem. Soc.*, 2022, 144, 1, 270–281.
11. Songyi Xue,+ Xinling Wang,+ Lei Wang, Wei Xu, Shuai Xia, Lujia Sun, Shaohui Wang, Ning Shen, Ziqi Yang, Bo Huang, Sihao Li, Chuanhai Cao, Laurent Calcul, Xingmin Sun, Lu Lu,* **Jianfeng Cai**,* and Shibo Jiang.* A novel cyclic $\hat{\text{I}}^3$ -AApeptide-based long-acting pan-coronavirus fusion inhibitor with potential oral bioavailability by targeting two sites in spike protein. *Cell. Dis.* 2022, 8, 88.
10. Peng Sang,+ Yan Shi,+ Bo Huang, Songyi Xue, Timothy Odom, and **Jianfeng Cai**.* Sulfono- γ -AApeptides as helical mimetics: Crystal structures and applications. *Acc. Chem. Res.* 2020, 53, 10, 2425–2442.
9. Peng Sang,+ Zhihong Zhou,+ Yan Shi, Candy Lee, Zaid Amso, David Huang, Timothy Odom, V $\hat{\text{a}}$ n T.B. Nguyen-Tran, Weijun Shen,* and **Jianfeng Cai**.* The Activity of Sulfono- γ -AApeptide Helical Foldamers That Mimic GLP-1. *Sci. Adv.* 2020, 6, 20, eaaz4988.
8. Yan Shi,+ Guangqiang Yin,+ Zhiping Yan, Peng Sang, Minghui Wang, Robert Brzozowski, Prahathes Eswara, Lukasz Wojtas, Youxuan Zheng,* Xiaopeng Li,* and **Jianfeng Cai**.* Helical Sulfono- γ -AApeptides with Aggregation-Induced Emission and Circularly Polarized Luminescence. *J. Am. Chem. Soc.*, 2019, 141, 12697-12706.

7. Peng Sang,+ Min Zhang,+ Yan Shi,+ Chunpu Li, Sami Abdulkadir, Qi Li,* Haitao Ji,* and **Jianfeng Cai*** Inhibition of β -Catenin/ B-Cell Lymphoma 9 Protein-Protein Interaction Using α -Helix-Mimicking Sulfono- γ -AApeptide Inhibitors. *Proc. Natl. Acad. Sci. U. S. A.*, 2019, 116, 10757-10762.
6. Yan Shi, Sajjan Parag, Rekha Patel, Ashley Lui, Michel Murr, **Jianfeng Cai***, and Niketa A. Patel*. Stabilization of lncRNA GAS5 by a small molecule and its implications in diabetic adipocytes. *Cell. Chem. Biol.*, 2019, 26, 319-330.
5. Peng Teng, Geoffrey M. Gray, Mengmeng Zheng, Sylvia Singh, Xiaopeng Li, Lukasz Wojtas, Arjan van der Vaart, and **Jianfeng Cai*** Orthogonal Halogen Bonding Driven 3D Supramolecular Assembly of Right-Handed Synthetic Helical Peptides. *Angew. Chem. Int. Ed.*, 2019, 58, 7778-7782.
4. Fengyu She, Peng Teng, Alfredo Peguero-Tejada, Minghui Wang, Ning Ma, Timothy Odom, Mi Zhou, Erald Gjonaj, Lukasz Wojtas, Arjan van der Vaart, and **Jianfeng Cai*** De novo Left-Handed Synthetic Peptidomimetic Foldamers, *Angew. Chem. Int. Ed.*, 2018, 9916-9920.
3. Peng Teng, Zheng Niu, Fengyu She, Mi Zhou, Peng Sang, Geoffrey M. Gray, Gaurav Verma, Lukasz Wojtas, Arjan van der Vaart, Shengqian Ma,* and **Jianfeng Cai*** Hydrogen-Bonding-Driven 3D Supramolecular Assembly of Peptidomimetic Zipper, *J. Am. Chem. Soc.*, 2018, 140, 5661-5665.
2. Peng Teng, Ning Ma, Darrell Cole Cerrato, Fengyu She, Timothy Odom, Xiang Wang, Li-June Ming, Arjan van der Vaart, Lukasz Wojtas, Hai Xu,* and **Jianfeng Cai*** Right-Handed Helical Foldamers Consisting of de novo D-AApeptides, *J. Am. Chem. Soc.*, 2017, 139, 7363-7369.
1. Yan Shi, Peng Teng, Peng Sang, Fengyu She, Lulu Wei, and **Jianfeng Cai*** γ -AApeptides: design, structure, and applications. *Acc. Chem. Res.*, 2016, 49, 428-441.

Full List

Work from Independent Career at the University of South Florida:

219. Canjia Zhai, Chengkai Xu, Yunpeng Cui, Lukasz Wojtas, **Jianfeng Cai**, Wenqi Liu.* A Synthetic Lectin for Glucuronate. *ACS Central Sci.* 2025, accepted.
218. Bo Huang,+ Emily Gregory-Lott,+ Bingbing X. Li,+ Timothy H. Tran, Sihao Li, Menglin Xue, Shaohui Wang, Anabanadam Asokan, Ning Shen, Xingming Sun, Chuanhai Cao, Xiangshu Xiao,* Gary Daughdrill,* **Jianfeng Cai*** Discovery of peptidomimetic inhibitors of CREB/CBP by targeting hydrophobic grooves on the surface of the CBP KIX domain. *Acta Pharmaceutica Sinica B.* 2025, accepted.
217. Bo Huang+ Minghui Wang,+ Emily Gregory-Lott,+ Bingbing X. Li,+ Yu Yu Win, Ning Shen, Jianyu Chen, Sihao Li, Chuanhai Cao, Xiangshu Xiao,* Gary W. Daughdrill,* **Jianfeng Cai*** Recognition of CBP/MLL Interface by Sulfonyl- γ -AApeptides – Beyond Mimicry of MLL. *J. Med. Chem.* 2025, 68, 12272-12283.
216. Yizhan Zhai and **Jianfeng Cai*** Innovative discovery and mechanistic validation of HyT-PD ligands for selective CDK9-targeted protein degradation. *Acta Pharmaceutica Sinica B.* 2025, 15, 2808-2809.
215. Zejun Xu, Jiaying Chi, Fei Qin, Dongyan Liu, Yecai Lai, Yingxia Bao, Ruizhi Guo, Yiqiu liao, Zhoufan Xie, Jieqiong Jiang, Juyan Liu, **Jianfeng Cai**, Chao Lu, Jiansong Wang, Chuanbin Wu. Nanoparticles-incorporated hydrogel microneedle for biomedical applications: fabrication strategies, emerging trends and future prospects. *Asian J. Pharm. Sci.* 2025, 20, 101069.
214. Anna Kharitonova, Rekha S Patel, Brenna Osborne, Meredith Krause-Hauch, Ashley Lui, Gitanjali Vidarthi, Sihao Li, **Jianfeng Cai**, Niketa A Patel.* NPC86 Increases lncRNA Gas5 in vivo to Improve Insulin Sensitivity and Metabolic Function in Diet-Induced Obese Diabetic Mouse Model. *Int. J. Mol. Sci.* 2025, 26, 8, 3695.
213. Bo Huang, Sihao Li, Cong Pan, Fangzhou Li, Lukasz Wojtas, Qiao Qiao, Timothy H. Tran, Laurent Calcul, Wenqi Liu, Chenfeng Ke,* **Jianfeng Cai*** Proline-Based Tripodal Cages with Guest-Adaptive

- Features for Capturing Hydrophilic and Amphiphilic Fluoride Substances. *Nat. Commun.* 2025, 16, 3226.
212. Heng Liu, Xue Zhao, Jianyu Chen, Yu Yu Win, and **Jianfeng Cai**.^{*} Unnatural foldamers as inhibitors of A β aggregation via stabilizing A β helix. *Chem. Commun.* 2025, 61, 4586–4594.
 211. Jarais Fontaine and **Jianfeng Cai**.^{*} Recent exploration of γ -AApeptide based antimicrobial peptide mimics as potential therapeutics towards drug-resistant bacteria. *Exploration Drug Sci.* 2025, 3:100888.
 210. Yafeng Wang,+ Xueqing Hu,+ Shriya Pandey,+ Ujjwol Khatri, Tao Shen, Vivek Subbiah, Blaine H. M. Mooers, Ting Chao, Shaohui Wang, Huaxuan Yu, Xingmin Sun, Jie Wu,^{*} and **Jianfeng Cai**.^{*} Targeting oncogenic RET kinase by simultaneously inhibiting kinase activity and degrading the protein. *J. Med. Chem.* 2025, 68, 1, 81–94
 209. Haohui Ye and **Jianfeng Cai**.^{*} Cationic Catalysts as a New Strategy to Catalyze *N*-Carboxyanhydrides Polymerization. *ACS Central Sci.* 2025, 11, 3, 376-378.
 208. Jinhua Xie,+ Shahedul Islam,+ Le Wang,^{*} Xiaojing Zheng, Mengsheng Xu, Xiqi Su, Shaohua Huang, Logan Suits, Guang Yang, Prahathees Eswara, **Jianfeng Cai**, Li-June Ming.^{*} A tale of two old drugs tetracycline and salicylic acid with new perspectives—Coordination chemistry of their Co(II) and Ni(II) complexes, redox activity of Cu(II) complex, and molecular interactions. *J. Inorg. Biochem.* 2025, 262, 112757.
 207. Zhikai Li, Yu Yan, Zhi Chen, Runxu Tang, Ningxu Han, Runlin Han, Fang Fang, Jichun Jiang, Lei Hua, Xiujun Yu, Ming Wang, **Jianfeng Cai**, Haiyang Li, Heng Wang^{*} and Xiaopeng Li.^{*} Multi-Dimensional Decryption of Metallopolymer at Single-Chain Level. *CCS Chem.* 2025, 7, 2381-2393.
 206. Wei Jiang, Jiayan Chen, Haifeng Wang, Aiqi Xue, Xinyang Zhang, Jichi Guan, Lulu Wei, **Jianfeng Cai**.^{*} Yong Hu,^{*} and Dan Liu.^{*} Design, Synthesis and Pharmacological Evaluation of Novel 4-Phenoxyquinoline Derivatives as VEGFR2 Kinase Inhibitors for Tumor Treatment. *Chem. Res. Chin. Univ.* 2025, 41, 66-78.
 205. Canjia Zhai, Ethan Cross Zulueta, Alexander Mariscal, Chengkai Xu, Yunpeng Cui, Xudong Wang, Huang Wu, Carson Doan, Lukasz Wojtas, Haixin Zhang, **Jianfeng Cai**, Libin Ye, Kun Wang, Wenqi Liu.^{*} From Small Changes to Big Gains: Pyridinium-Based Tetralactam Macrocyclic for Enhanced Sugar Recognition in Water. *Chem. Sci.* 2024, 15, 19588-19598.
 204. Ruixuan Gao, Menglin Xue, Ning Shen, Xue Zhao, Justin C. Zhang, Chuanhai Cao, and **Jianfeng Cai**.^{*} Development of low-toxicity antimicrobial polycarbonates bearing lysine residues. *Chem. Eur. J.* 2024, e202402302.
 203. Ying Feng, Yongchao Zhu, Tian Chen, Pengcheng Li, Bingjie Liu, **Jianfeng Cai**.^{*} Wenjie Liang,^{*} and Hai Xu.^{*} Green and efficient preparation and application of weakly crystalline TiO₂ with high catalytic activity. *New J. Chem.*, 2024, 48, 515-519.
 202. Yuwei Zheng, Jiaying Chi, Jiayu Ou, Ling Jiang, Liqing Wang, Rui Luo, Yilang Yan, Zejun Xu, Tingting Peng, **Jianfeng Cai**, Chuanbin Wu, Peng Teng,^{*} Guilan Quan,^{*} Chao Lu.^{*} Imidazole-Rich, Four-Armed Host-Defense Peptidomimetics as Promising Narrow-Spectrum Antibacterial Agents and Adjuvants against *Pseudomonas Aeruginosa* Infections. *Adv. Healthcare Mater.*, 2024, 2400664.
 201. Tengyue Jian,+ Minghui Wang,+ Jeevapani Hettige, Yuhao Li, Lei Wang, Ruixuan Gao, Wenchao Yang, Renyu Zheng, Shengliang Zhong, Marcel D. Baer, Aleksandr Noy, James. J. De Yoreo, **Jianfeng Cai**.^{*} Chun-Long Chen.^{*} Self-assembling and pore-forming peptoids as novel antimicrobial biomaterials. *ACS Nano*, 2024, 18, 34, 23077–23089.
 200. Shannon J. Ho, Dale Chaput, Rachel G. Sinkey, Amanda H. Garces, Erika P. New, Maja Okuka, Peng Sang, Sefa Arlier, Nihan Semerci, Thora S. Steffensen, Thomas J. Rutherford, Angel E. Alsina, **Jianfeng Cai**, Matthew L. Anderson, Ronald R. Magness, Vladimir N. Uversky, Derek A. T. Cummings & John C. M. Tsibris. *Cell Commun. Signaling* 2024, 22, 221.

199. Xue Zhao, Heng Liu, Justin C. Zhang, **Jianfeng Cai**.^{*} Helical Sulfonyl- γ -AApeptides in the Inhibition of HIV-1 Fusion and HIF-1 α Signaling. *RSC Med. Chem.* 2024, 15, 1418-1423.
198. Heng Liu, Yunpeng Cui, Xue Zhao, Lulu Wei, Xudong Wang, Ning Shen, Timothy Odom, Xuming Li, William Lawless, Kanchana Karunaratne, Martin Muschol, Wayne Guida, Chuanhai Cao, Libin Ye, and **Jianfeng Cai**.^{*} Helical sulfonyl- γ -AApeptides modulating A β oligomerization and cytotoxicity by recognizing A β helix. *Proc. Natl. Acad. Sci. U. S. A.* 2024, 121, 6, e2311733121.
197. Menglin Xue,+ Soumyadeep Chakraborty,+ Ruixuan Gao,+ Shaohui Wang, Meng Gu, Ning Shen, Lulu Wei, Chuanhai Cao, Xingmin Sun,^{*} and **Jianfeng Cai**.^{*} Antimicrobial Guanidinylate Polycarbonates Show Oral In Vivo Efficacy Against *Clostridioides difficile*. *Adv. Healthcare Mater.* 2024, 2303295.
196. Prakash Jadhav,+ Bo Huang,+ Jerzy Osipiuk,+ Xiaoming Zhang, Haozhou Tan, Christine Tesar, Michael Endres, Robert Jedrzejczak, Bin Tan, Xufang Deng, Andrzej Joachimiak,^{*} **Jianfeng Cai**.^{*} Jun Wang.^{*} Structure-based design of SARS-CoV-2 papain-like protease inhibitors. *Eur. J. Med. Chem.* 2024, 264, 116011.
195. Xiaomin Guo,+ Xiaokang Miao,+ Yingying An, Tiantian Yan, Yue Jia, Bochuan Deng, **Jianfeng Cai**, Wenle Yang, Wangsheng Sun,^{*} Rui Wang,^{*} Junqiu Xie.^{*} Novel antimicrobial peptides modified with fluorinated sulfono- γ -AA having high stability and targeting multidrug-resistant bacteria infections. *Eur. J. Med. Chem.* 2024, 116001.
194. Wenhao Wang, Chao Lu,^{*}, Zhengwei Huang,^{*}, Lei Shu, **Jianfeng Cai**, Chuanbin Wu and Xin Pan. A Bibliometric Study on Nanomedicines as Melanoma Therapeutics: Clinical Translation is Urgent. *Oncol. Adv.* 2023, 1, 25-30.
193. Zhanpeng Zhang, Shuai Lu,^{*} Xiujun Yu, Lei Hua, Weiguo Wang, Menglin Xue, **Jianfeng Cai**, Heng Wang,^{*} Xiaopeng Li. Construction of Metallo-Helicoids via Intermolecular Coordination with High Antimicrobial Activity. *Chem. Commun.* 2023, 59, 13022.
192. Yuqing Tong,+ Meng Gu,+ Xingyu Luo, Haifeng Qi, Wei Jiang, Yu Deng, Lulu Wei, Jun Liu, Yin Ding,^{*} **Jianfeng Cai**.^{*} Yong Hu.^{*} An engineered nanoplatfrom cascade to relieve extracellular acidity and enhance resistance-free chemotherapy. *J. Control. Release.* 2023, 363, 562-573.
191. Wei Jiang,+ Sami Abdulkadir,+ Xue Zhao,+ Peng Sang, Anastasia Tomatsidou, Xiujun Zhang, Yu Chen, Laurent Calcul, Xingmin Sun, Feng Cheng,^{*} Yong Hu,^{*} **Jianfeng Cai**.^{*} Inhibition of Hypoxia-Inducible Transcription Factor (HIF-1 α) Signaling with Sulfonyl- γ -AApeptide Helices. *J. Am. Chem. Soc.* 2023, 145, 36, 20009-20020.
190. Songyi Xue,+ Wei Xu,+^{*} Lei Wang, Ling Xu, Laurent Calcul, Peng Teng, Lu Lu, Shibo Jiang,^{*} and **Jianfeng Cai**.^{*} Rational Design of Sulfonyl- γ -AApeptides as Highly Potent HIV-1 Fusion Inhibitors with Broad-spectrum Activity. *J. Med. Chem.* 2023, 66, 18, 13319–13331.
189. Ali Azmy,+ Xue Zhao,+ Giasemi K. Angeli, Claire Welton, Parth Raval, Lukasz Wojtas, Nouridine Zibouche, G. N. Manjunatha Reddy, Pantelis N. Trikalitis, **Jianfeng Cai**, and Ioannis Spanopoulos.^{*} One Year Water Stable and Porous Bi(III) Halide Semiconductor with Broad Spectrum Antibacterial Performance. *ACS App. Mater. Inter.* 2023, 15, 36, 42717–42729.
188. Peng Sang^{*} and **Jianfeng Cai**.^{*} Unnatural Helical Peptidic Foldamers as Protein Segment Mimics. *Chem. Soc. Rev.* 2023, 52, 4843-4877.
187. Seid Yimer Abate,+ Ziqi Yang,+ Surabhi Jha, Jada Emodogo, Guorong Ma, Zhongliang Ouyang, Shafi Muhammad, Nihar Pradhan, Xiaodan Gu, Derek Patton, Dawen Li, **Jianfeng Cai**.^{*} and Qilin Dai.^{*} Promoting large area slot-die coated perovskite solar cells performance and reproducibility by acid-based sulfono- γ -AApeptide. *ACS Appl. Mater. Inter.* 2023, 15, 36, 42717–42729.
186. Hongtao Kong,+ Shangshang Qin,+ Dachao Yan, Boyuan Shen, Tingting Zhang, Meng Wang, Sen Li, Maxwell Ampomah-Wireko, Mengmeng Bai, En Zhang,^{*} **Jianfeng Cai**.^{*} Development of aromatic-linked diamino acid antimicrobial peptide mimics with low hemolytic toxicity and excellent activity against methicillin-resistant *Staphylococcus aureus* (MRSA). *J. Med. Chem.* 2023, 66, 12, 7756–7771.

185. Songyi Xue,+ Wei Xu,+* Lei Wang, Xinling Wang, Qianyu Duan, Laurent Calcul, Shaohui Wang, Wenqi Liu, Xingmin Sun, Lu Lu,* Shibo Jiang,* and **Jianfeng Cai**.* An HR2-mimicking sulfonyl- γ -AApeptide is a potent pan-coronavirus fusion inhibitor with strong blood-brain barrier permeability, long half-life and promising oral bioavailability. *ACS Central. Sci.* 2023, 9 1046-1058.
184. Diego Alem, Xinrui Yang, Francisca Beato, Bhaswati Sarcar, Alexandra F. Tassielli, Ruifan Dai, Tara L. Hogenson, Margaret A. Park, Kun Jiang, **Jianfeng Cai**, Yu Yuan, Martin E. Fernandez-Zapico, Aik Choon Tan, Jason B. Fleming, Hao Xie.* Translational relevance of SOS1 targeting for KRAS - mutant colorectal cancer. *Mol. Carcinogenesis*, 2023, 62, 1025-1037.
183. Yafeng Wang, Menglin Xue, Ruixuan Gao, Soumyadeep Chakraborty, Shaohui Wang, Xue Zhao, Meng Gu, Chuanhai Cao, Xinmin Sun, **Jianfeng Cai**.* Short lipidated dendrimeric γ -AApeptides as new antimicrobial peptidomimetics. *Int. J. Mol. Sci.*, 2023, 24, 7, 6407.
182. Lei Wang,+ Chunlong Ma,+ Michael Dominic Sacco,+ Songyi Xue, Mentalla Mahmoud, Laurent Calcul, Yu Chen,* Jun Wang,* and **Jianfeng Cai**.* Development of the Safe and Broad-Spectrum Aldehyde and Ketoamide Mpro inhibitors Derived from the Constrained α , γ -AA Peptide Scaffold. *Chem. Eur. J.* 2023, e202300476.
181. Meng Gu,+ Ying Yu,+ Menglin Xue, Jianxiong Jiang,* **Jianfeng Cai**.* The discovery of cyclic γ -AApeptides as the promising ligands targeting EP2. *Bioorg. Med. Chem. Lett.* 2023, 87, 129255.
180. Peng Teng,* Haodong Shao, Bo Huang, Junqiu Xie, Sunliang Cui,* Kairong Wang,* **Jianfeng Cai**.* Small Molecular Mimetics of Antimicrobial Peptides as a Promising Therapy to Combat Bacterial Resistance. *J. Med. Chem.* 2023, 66, 4, 2211–2234.
179. Oksana Fihurka, Yanhong Wang, Yuzhu Hong, Xiaoyang Lin, Ning Shen, Haiqiang Yang, Breanna Brown, Marcus Mommer, Tarek Zieneldien, Yitong Li, Janice Kim, Minghua Li, **Jianfeng Cai**, Qingyu Zhou,* Chuanhai Cao.* Multi-targeting intranasal nanoformulation as a therapeutic for Alzheimer's disease. *Biomolecules*, 2023, 13, 232.
178. Ruixuan Gao, Xuming Li, Menglin Xue, Ning Shen, Minghui Wang, Jingyao Zhang, Chuanhai Cao, and **Jianfeng Cai**.* Development of Lipidated Polycarbonates with Broad-Spectrum Antimicrobial Activity. *Biomater. Sci.* 2023, 11, 1840-1852
177. Xiaoqian Feng, Dongyi Xiana, Jintao Fu, Rui Luo, Wenhao Wang, Yuwei Zheng, Qing He, Zhan Ouyang, Shaobin Fang, Wancong Zhang, Daojun Liu, Shijie Tang, Guilan Quan, **Jianfeng Cai**, Chuanbin Wu, Chao Lu,* Xin Pan.* Four-armed host-defense peptidomimetics-augmented vanadium carbide MXene-based microneedle array for efficient photo-excited bacteria-killing. *Chem. Eng. J.* 2023, 456, 141121.
176. Rekha S. Patel, Ashley Lui, Charles Hudson, Lauren Moss, Robert Sparks, Shannon E. Hill, Yan Shi, **Jianfeng Cai**, Laura J. Blair, Paula Bickford, Niketa A. Patel. Small molecule targeting long noncoding RNA GAS5 administered intranasally improves neuronal insulin signaling and decreases neuroinflammation in an aged mouse model. *Sci. Rep.* 2023, 13, 373.
175. Seid Yimer Abate,+ Ziqi Yang,+ Surabhi Jha, Guorong Ma, Zhongliang Ouyang, Haixin Zhang, Shafi Muhammad, Nihar Pradhan, Xiaodan Gu, Derek Patton, Kun Wang, Dawen Li, **Jianfeng Cai**.* Qilin Dai.* Room Temperature Slot-Die Coated Perovskite Layer Modified with sulfonyl- γ -AApeptide for High Performance Perovskite Solar Devices. *Chem. Eng. J.* 2023, 457, 141199.
174. Li Zhou,+ In Ho Jeong,+ Songyi Xue, Menglin Xue, Lei Wang, Sihao Li, Ruochuan Liu, Geon Ho Jeong, Xiaoyu Wang, **Jianfeng Cai**.* Jun Yin,* Bo Huang.* Inhibition of the ubiquitin transfer cascade by peptidomimetic foldamer mimicking E2 N-terminal-helix. *J. Med. Chem.* 2023, 66, 1, 491-502.
173. Xueying Ge, Fangchao Jiang, Minghui Wang, Meng Chen, Yiming Li, Joshua Phipps, **Jianfeng Cai**, Jin Xie, Jane Ong, Viktor Dubovoy, James G. Masters, Long Pan,* Shengqian Ma.* Naringin@Metal-Organic Framework as a Multifunctional Bio-platform. *ACS Applied Mater. Interface.* 2023, 15, 1, 677-683.

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8. **Jianfeng Cai**, Ma Su, Alekhya Nimmagadda, Peng Teng. Cationic hydantoin compounds and the use of, **2016**, 62/426,698
7. **Jianfeng Cai**, Youhong Niu, Weibo Cai, and Hao Hong. RGD mimetic γ -AApeptides and methods of use. **2016**, US 9,234,007 B2, **issued**
6. **Jianfeng Cai**, Youhong Niu, Haifan Wu, Shruti Padhee. Identification of γ -AApeptides with potent and broad-spectrum antimicrobial activity. **2016**, US 9,499,587 B2.
5. Niketa A. Patel, **Jianfeng Cai**. Gas5 binding compounds, formulations, and uses thereof, 62/398,624, **2016**.
4. Said M. Sebt and **Jianfeng Cai**. Stapled peptides designed to inhibit the mutant KRas/ Raf interaction, **2016**, WO 172,187 A1.
3. **Jianfeng Cai**, Chuanhai Cao, Haifan Wu, Yaqiong Li, and Ge Bai. Methods of Synthesizing γ -AApeptides, γ -AApeptide Building Blocks, γ -AApeptide Libraries, and γ -AApeptide Inhibitors of Abeta40 Aggregates, **2016**, 0209422 A1.
2. Said M. Sebt, and **Jianfeng Cai**. Identification of Novel Inhibitors that Disrupt STAT3/DNA Interaction from γ -peptide OBOC Combinatorial Library, **2014**, Application No. 61/984179.
1. Nathan J. Rice, Lennox Hoyte, and **Jianfeng Cai**. Materials and methods for reliable measurement of blood volume. **2011**, PCT Int. Appl. WO 2011130304.

BOOK CHAPTERS

6. Jarais Fontaine, Jianfeng Cai.* Sulfonyl- γ -AApeptide tools for modulating biology. *Methods in Enzymology*, 2024.
5. Olapeju Oyesiku and **Jianfeng Cai**.* Peptidomimetic agents targeting bacteria. *Comprehensive Supramolecular Chemistry II*. Elsevier, 2017.
4. Peng Teng, Haifan Wu and **Jianfeng Cai**.* Peptidomimetics as antimicrobial agents. *Novel Antimicrobial Agents and Strategies*. Wiley, 2014.
3. Haifan Wu and **Jianfeng Cai**.* Engineering AApeptides for Translational Medicine. *Engineering in Translational Medicine*, 2013, ISBN: 978-1-62703-651-1.
2. Youhong Niu, Yaogang Hu, Haifan Wu, and **Jianfeng Cai**.* Synthesis of AApeptides. *Peptide Modifications to Increase Metabolic Stability and Activity*, 2013, ISBN: 978-1-62703-651-1.
1. Youhong Niu, Yaogang Hu, Rongsheng E. Wang, Xiaolong Li, Haifan Wu, Jiandong Chen* and **Jianfeng Cai**.* AApeptides as a New Class of Peptidomimetics to Regulate Protein-Protein Interactions. *Protein Interactions*, 2012, ISBN: 978-953-51-0244-1.

ORAL TALKS AND SEMINARS

1. Florida Organic Day, Florida Southern College, 03/12/2012
2. Florida ACS meeting, Tampa, FL, 05/09/2012
3. Kimberly-Clark, Appleton, WI, 06/02/2012
4. Department of Chemistry, University of Oxford, Oxford, England, 06/07/2012
5. Interventional Cancer Institute of Integrative Medicine, Putuo Hospital, Shanghai, China, 12/12/2012
6. Department of Chemistry, University of Florida, Gainesville, FL, 11/15/2013
7. Department of Chemistry and Biochemistry, University of California-Santa Barbara, Santa Barbara, CA, 2/27/2014
8. Department of Chemistry, University of California-Irvine, Irvine, CA, 2/28/2014

9. Department of Chemistry and Biochemistry, Georgia Institute of Technology, GA, 3/10/2014
10. Department of Chemistry, Georgia State University, Atlanta, GA, 3/11/2014
11. Department of Chemistry, University of South Florida, GA, 3/13/2014
12. 247th ACS national meeting, Organic section, Dallas, TX, 3/17/2014
13. Department of Chemistry, Florida State University, Tallahassee, FL, 3/27/2014
14. Department of Chemistry, University of Wisconsin-Madison, Madison, WI, 4/3/2014
15. Kimberly-Clark, Appleton, WI, 4/4/2014
16. Department of Chemistry, Scripps Florida, Jupiter, FL, 4/17/2014
17. Innovative Drug Research Center, Chongqing University, Chongqing, China, 5/6/2014
18. Department of Chemistry, Nanjing University, Nanjing, China, 5/7/2014
19. College of Pharmacy, Shanghai Jiaotong University, Shanghai, China, 5/8/2014
20. Department of Medical Oncology, Shuguang Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai, China, 5/9/2014
21. Bioorganic Gordon Conference, Andover, NH, 6/11/2014
22. Department of Chemistry, Washington University in St. Louis, MO, 4/23/2015
23. Department of Chemistry, University of Missouri-St. Louis, 4/24/2015
24. Department of Chemistry, Southeast University, China, 6/25/2015
25. College of Pharmacy, Zhejiang University, China, 6/26/2015
26. Department of Chemistry, Central South University, China, 7/1/2015
27. Lawrence Berkeley National Laboratory, San Francisco, 8/6/2015
28. College of Medicine, University of South Florida, 9/16/2015
29. Department of Chemistry, UC-Riverside, 2/25/2016
30. Department of Chemistry, Dartmouth College, 4/14/2016
31. FAME 2016-Florida Annual meeting and Exposition, FL, 5/6/2016
32. Department of Chemistry, University of South Carolina, 3/30/2017
33. Department of Chemistry, University of South Dakota, 4/11/2017
34. FAME 2016-Florida Annual meeting and Exposition, FL, 5/6/2017
35. Department of Chemistry, Zhengzhou University, China, 5/9/2017
36. Department of Chemistry, Zhengzhou University of Light Industry, China, 5/9/2017
37. Department of Chemistry, Nanjing University, China, 5/10/2017
38. Department of Chemistry, China Pharmaceutical University, China, 5/11/2017
39. Department of Chemistry, Southeastern University, China, 5/12/2017
40. Department of Chemistry, Fudan University, China, 5/15/2017
41. Department of Chemistry, East China University of Science and Technology University, China, 5/16/2017
42. Department of Chemistry, Soochow University, China, 5/17/2017
43. Department of Chemistry, Central South University, China, 5/19/2017
44. Department of Chemistry, Hunan University, China, 5/22/2017
45. Department of Chemistry, Hunan Normal University, China, 5/22/2017
46. Department of Chemistry, Wuhan University, China, 5/23/2017
47. College of Pharmacy, Wuhan University, China, 5/24/2017
48. Department of Chemistry, Central China Normal University, China, 5/26/2017
49. Department of Chemistry, Shanxi Normal University, China, 5/17/2018
50. Department of Chemistry, Xi'an Jiaotong University, China, 5/18/2018
51. Department of Chemistry, Northwest University, China, 5/19/2018
52. Department of Chemistry, University at Buffalo, 9/12/2019
53. Department of Chemistry, Case Western Reserve University, 4/10/2019

54. Department of Chemistry, University at Albany, 9/10/2019
55. College of Pharmacy, University of Arizona, 1/8/2020
56. Department of Chemistry, Tulane University, 3/15/2021
57. Pacificchem 2021, Advancing Frontiers in Peptide and Protein Science with Nano- to-Macro Molecular Solutions, New Technologies in Polyamide Synthesis and Applications (056), 12/18/2021
58. Pacificchem 2021, Design of Functional Proteins, Peptides, and Peptidomimetics (061), 12/20/2021
59. Department of Chemistry, University of New Mexico, 04/29/2022
60. 28th American Peptide Symposium, Scottsdale, AZ, 06/26/2023
61. Foldamer 2023 symposium, Munich, 09/04/2023
62. The Huber and Helen Croft Lectureship, University of Missouri-Columbia, 09/22/2023
63. Virginia Commonwealth University, 12/14/2023
64. College of Pharmacy, University of Maryland, 03/06/2024
65. University of Texas-Arlington, 04/04/2024
66. College of Pharmacy, Purdue University, 04/25/2024
67. Pharmacology Program, Mayo Clinic, 05/11/2024

ACTIVE GRANTS

As the PI:

1. PI, NIH 9R01AI152416-06, \$1,868,750, 05/01/2020 – 04/30/2026, Antimicrobial agents derived from AApeptide biomaterials.
2. PI, NIH 2R01AG056569-06, \$2,902,465, 03/01/2023-12/31/2027, Recognition of Abeta monomeric helix.
3. PI, NIH 1R01GM150196, \$1,661,240, 04/01/2023-03/31/2027, Targeting Wnt signaling pathway.