

Jianfeng Cai

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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, **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
- 2009-present Member, Drug Discovery Program, Moffitt Cancer Center, Tampa, FL
- 2015-Present Associate Professor, University of South Florida, Tampa, FL

RESEARCH INTEREST

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

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

PUBLICATIONS

Work from Independent Career at University of South Florida:

91. Xiaojun Sun, Yuan Ren, Steven Gunawan, Peng Teng, Zhengming Chen, Harshani Lawrence, **Jianfeng Cai**, Nicholas Lawrence, and Jie Wu.* Selective inhibition of leukemia-associated SHP2E69K mutant by the allosteric SHP2 inhibitor SHP099, *Leukemia*, 2018, accepted.
90. Yan Shi, Sridevi Challa, Peng Sang, Fengyu She, Chunpu Li, Geoffrey M. Gray, Alekhya Nimmagadda, Peng Teng, Timothy Odom, Yan Wang, Arjan van der Vaart, Qi Li,* and **Jianfeng Cai**.* One-Bead-Two-Compound Thioether Bridged Macrocyclic γ -AApeptide Screening Library against EphA2, *J. Med. Chem.*, **2017**, 60, 9290-9298.
89. Peng Teng, Alekhya Nimmagadda, Ma Su, Yuzhu Hong, Ning Shen, Chunpu Li, Ling-Yu Tsai, Jessica Cao, Qi Li,* and **Jianfeng Cai**.* Novel Bis-Cyclic Guanidines as Potent Membrane-Active Antibacterial Agents with Therapeutic Potential, *Chem. Commun.*, **2017**, 53, 11948-11951.

88. Chao Zhang, Xiao cheng, Mengkun Chen, Jie Sheng, Jing Ren, Zhongying Jiang,* **Jianfeng Cai**,* and Yong Hu.* Fluorescence guided photothermal/photodynamic ablation of tumours using pH-responsive chlorin e6-conjugated gold nanorods, *Colloids Surfaces B: Biointerfaces*, **2017**, 160, 345-354.
87. Ma Su, Donglin Xia, Peng Teng, Alekhya Nimmagadda, Chao Zhang, Timothy Odom, Annie Cao, Yong Hu, and **Jianfeng Cai**.* Membrane-Active Hydantoin Derivatives as Antibiotic Agents, *J. Med. Chem.*, **2017**, 60, 8456-8465.
86. Hua Sui, Jihui Zhao, Lihong Zhou, Haotian Wen, Wanli Deng, Chunpu Li, Qing Ji, Xuan Liu, Yuanyuan Feng, Ni Chai, Qibo Zhang, **Jianfeng Cai**, Qi Li.* Tanshinone IIA inhibits β -catenin/VEGF-mediated angiogenesis by targeting TGF- β 1 in normoxic and HIF-1 α in hypoxic microenvironments in human colorectal cancer, *Cancer Lett.*, **2017**, 403, 86-97.
85. Zhe Zhang, Heng Wang, Xu Wang, Yiming Li, Bo Song, Olapeju Bolarinwa, R. Alexander Reese, Tong Zhang, Xu-Qing Wang, **Jianfeng Cai**, Bingqian Xu, Ming Wang,* Changlin Liu,* Hai-Bo Yang, and Xiaopeng Li.* Super Snowflakes: Step-Wise Self-Assembly and Dynamic Exchange of Rhombus Star-Shaped Supramolecules, *J. Am. Chem. Soc.*, **2017**, 139, 8174-8185.
84. 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.
83. Jianjun Pan,* Prasana K. Sahoo, Annalisa Dalzini, Zahra Hayati, Chinta M. Aryal, Peng Teng, **Jianfeng Cai**, Humberto Rodriguez Gutierrez, Likai Song.* Membrane Disruption Mechanism of a Prion Peptide (106-126) Investigated by Atomic Force Microscopy, Raman and Electron Paramagnetic Resonance Spectroscopy, *J. Phys. Chem. B.*, **2017**, 121, 5058-5071.
82. Hai Xu,* Siqi Zhao, Xiang Xiong, Jinzhi Jiang, Wei Xu, Daoben Zhu, Yi Zhang, Wenjie Liang, **Jianfeng Cai**.* Atomic Force Microscope characterization of self-assembly behaviors of cyclo[8]pyrrole on solid substrates, *Chem. Phys. Lett.*, **2017**, 647, 151.
81. Nawal K Khadka; Peng Teng, **Jianfeng Cai**, and Jianjun Pan.* Modulation of Lipid Membrane Structural and Mechanical Properties by a Peptidomimetic Derived from Reduced Amide Scaffold. *Biochim. Biophys. Acta.*, **2017**, 1859, 734-744.
80. Alekhya Nimmagadda, Yan Shi and **Jianfeng Cai**.* γ -AApeptides as a new strategy for therapeutic development. *Curr. Med. Chem.*, **2017**, Accepted.
79. Olapeju Bolarinwa, Alekhya Nimmagadda, Ma Su, and **Jianfeng Cai**.* Structure and Function of AApeptides. *Biochemistry*, **2017**, 445-457.
78. Alekhya Nimmagadda, Xuan Liu, Peng Teng, Ma Su, Yaqiong Li, Qiao Qiao, Nawal K Khadka, Xiaoting Sun, Jianjun Pan, Hai Xu,* Qi Li,* and **Jianfeng Cai**.* Polycarbonates with Potent and Selective Antimicrobial Activity toward Gram-Positive Bacteria. *Biomacromolecules*, **2017**, 18, 87-95.
77. Peng Sang, Yan Shi, Peng Teng, Annie Cao, Hai Xu, Qi Li, and **Jianfeng Cai**.* Antimicrobial AApeptides. *Curr. Top. Med. Chem.*, **2017**, 17, 1266-1279.
76. Peng Teng, Da Huo, Alekhya Nimmagadda, Jianfeng Wu, Fengyu She, Ma Su, Xiaoyang Lin, Jiyu Yan, Annie Cao, Chuanwu Xi,* Yong Hu,* and **Jianfeng Cai**.* Small antimicrobial agents based on acylated reduced amide scaffold. *J. Med. Chem.*, **2016**, 59, 7877-7887.
75. Fengyu She, Alekhya Nimmagadda, Peng Teng, Ma Su, Xiaobing Zuo, and **Jianfeng Cai**.* Helical 1:1 α /sulfonyl- γ -AA heterogeneous peptides with antibacterial activity. *Biomacromolecules*, **2016**, 17, 1854-1859.
74. Fengyu She, Olapeju Oyesiku, Peiguang Zhou, Shiming Zhuang, David W. Koenig, and **Jianfeng Cai**.* The development of Antimicrobial γ -AApeptides. *Future Med. Chem.*, **2016**, 8, 1101.
73. Chian Sing Ho, Nawal K. Khadka, Fengyu She, **Jianfeng Cai**, and Jianjun Pan.* Influenza M2 Transmembrane Domain Senses Membrane Heterogeneity and Enhances Membrane Curvature. *Langmuir*, **2016**, 32, 6730-6738.

72. Pavanjeet Kaur, Yaqiong Li, **Jianfeng Cai**,* and Likai Song.* Selective Membrane Disruption Mechanism of an Antibacterial γ -AApeptide Defined by EPR Spectroscopy. *Biophys. J.*, **2016**, 110, 1789-1799.
71. Peng Teng, Yan Shi, Peng Sang, and **Jianfeng Cai**.* γ -AApeptides as a new class of peptidomimetics. *Chem. Eur. J.*, **2016**, 22, 2-11.
70. 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.
69. Hai Xu,* Siqi Zhao, Yang Ren, Wei Xu, Daoben Zhu, Jinzhi Jiang and **Jianfeng Cai**.* Primary Investigation of optical limiting performance of Cyclo [8] pyrrole with wide optical limiting window. *RSC Advances*, **2016**, 6, 21067-21071.
68. Chian Sing Ho, Nawal K Khakda, Fengyu She, **Jianfeng Cai**, and Jianjun Pan.* Polyglutamine Aggregates Impair Lipid Membrane Integrity and Enhance Lipid Membrane Rigidity. *Biochim. Biophys. Acta.*, **2016**, 1858, 661-670.
67. Yan Wang, Frankie Costanza, Alekhya Nimmagadda, Daqian Song, **Jianfeng Cai**,* and Qi Li.* PEGpoly (amino acid)s/MicroRNA complex nanoparticles effectively arrest the growth and metastasis of colorectal cancer, *J. Biomed. Nanotechnol.*, **2016**, 12, 1510-1519.
66. Xiaoyang Lin, Ge Bai, Kyle Sutherland, Frankie Costanza, Kurt Breitenkamp, Kevin Sill, **Jianfeng Cai**,* and Chuanhai Cao.* Polymer-Encapsulated A β Peptide Fragments as an Oligomeric-Specific Vaccine for Alzheimer's disease" *J. Biomed. Nanotechnol.*, **2016**, 12, 1421-1430.
65. Haifan Wu, Jinzhi Jiang, Hai Xu, Qi Li, **Jianfeng Cai**.* RGD mimetic γ -AApeptides and methods of use us 20140004039 a1: a patent evaluation. *Expert Opin. Ther. Pat.*, **2016**, 26, 131-137.
64. Fan Chao, Lu Chen, Qingling Huang, Tao Shen, Eric A. Welsh, Jamie K. Teer, **Jianfeng Cai**, W. Douglas Cress, and Jie Wu.* Overexpression of major CDKN3 transcripts is associated with poor survival in lung adenocarcinoma. *Br. J. Cancer*, **2015**, ASAP.
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62. Haifan Wu, Qiao Qiao, Peng Teng, Yaogang Hu, Dimitrios Antoniadis, Xiaobing Zuo, and **Jianfeng Cai**.* A new class of heterogeneous helical peptidomimetics. *Org. Lett.*, **2015**, 17 (14), 3524–3527.
61. Yaqiong Li, Haifan Wu, Peng Teng, Ge Bai, Xiaoyang Lin, Xiaobing Zuo, Chuanhai Cao, **Jianfeng Cai**.* Helical antimicrobial sulfono- γ -AApeptides. *J. Med. Chem.*, **2015**, 58, 4802-4811.
60. Yuxia Hao, Ge Bai, Junping Wang, Longfeng Zhao, Kyle Sutherland, **Jianfeng Cai** and Chuanhai Cao.* Identifiable biomarker and treatment development using HIV-1 long term non-progressor sera. *BMC Immunol*, **2015**, 16:25.
59. Shruti Padhee, Yaqiong Li, **Jianfeng Cai**.* Activity of lipo-cyclic γ -AApeptides against biofilms of staphylococcus epidermidis and pseudomonas aeruginosa. *Bioorg. Med. Chem. Lett.*, **2015**, 25, 2565–2569.
58. Haifan Wu, Fengyu She, Wen-Yang Gao, Austin Prince, Yaqiong Li, Lulu Wei, Allison Mercer, Lukasz Wojtas, Shengqian Ma, and **Jianfeng Cai**.* The Synthesis of Head-to-Tail Cyclic Sulfono γ AApeptides. *Org. Biomol. Chem.*, **2015**, 13, 672-676.
57. Haifan Wu, Qiao Qiao, Yaogang Hu, Peng Teng, Wenyang Gao, Xiaobing Zuo, Lukasz Wojtas, Randy W. Larsen, Shengqian Ma, and **Jianfeng Cai**.* Sulfono- γ -AApeptides as a new class of unnatural helical foldamer. *Chem. Eur. J.*, **2015**, 21, 2501-2507.

56. Qing Ji, Xuan Liu, Zhifen Han, Lihong Zhou, Hua Sui, Linlin Yan, Haili Jiang, Jianlin Ren, **Jianfeng Cai**, and Qi Li.* Resveratrol suppresses epithelial-to-mesenchymal transition in colorectal cancer through TGF- β 1/Smads signaling pathway mediated Snail/E-cadherin expression. *BMC Cancer*, **2015**, 15:97.
55. Xuan Liu, Qing, Ji, Naijing Ye, Hua Sui, Lihong Zhou, Huirong Zhu, Zhongze Fan, **Jianfeng Cai**, and Qi Li.* Berberine Inhibits Invasion and Metastasis of Colorectal Cancer Cells via COX-2/PGE2 Mediated JAK2/STAT3 Signaling Pathway. *PLoS One*, **2015**, 10(5): e0123478.
54. Kenneth E. Ugen, Xiaoyang Lin, Ge Bai, Zhanhua Liang, **Jianfeng Cai**, Kunyun Li, Shijie Song, Chuanhai Cao* and Juan Sanchez-Ramos. Evaluation of an alpha synuclein sensitized dendritic cell based vaccine in a transgenic mouse model of Parkinson's disease. *Hum. Vaccin. Immunother.*, **2015**, 11, 922-930.
53. Peng Teng, Haifan Wu, Lili Lin and **Jianfeng Cai**.* Antimicrobial γ -AApeptides (WO2013112548)-a patent evaluation. *Expert Opin. Ther. Pat.*, **2015**, 25, 111-118.
52. Yaogang Hu, Ni Cheng, Haifan Wu, Samuel Kang, Richard D. Ye,* and **Jianfeng Cai**.* Design, synthesis and characterization of fMLF-mimicking AApeptides. *ChemBioChem*, **2014**, 15, 2420-2426.
51. Yaqiong Li, Christina Smith, Haifan Wu, Peng Teng, Yan Shi, Shruti Padhee, Torey Jones, Anh-My Nguyen, Chuanhai Cao, Hang Yin,* and **Jianfeng Cai**.* Short antimicrobial lipo- α/γ -AA hybrid peptides. *ChemBioChem*, **2014**, 2074-2280.
50. Peng Teng, Xiaolei Zhang, Haifan Wu, Qiao Qiao, Said M Sebti* and **Jianfeng Cai**.* Identification of novel inhibitors that disrupt STAT3/DNA interaction from γ -AApeptide OBOC combinatorial library. *Chem. Commun.* **2014**, 50, 8739 - 8742.
49. Xiaoyang Lin, Ge Bai, Linda Lin, Hengyi Wu, **Jianfeng Cai**, Kenneth E Ugen*, Chuanhai Cao*. Vaccination induced changes in pro-inflammatory cytokine levels as an early putative biomarker for cognitive improvement in a transgenic mouse model for Alzheimer disease. *Hum. Vaccin. Immunother.* **2014**, 10(7), 2024-2031.
48. Chuanhai Cao*, Yaqiong Li, Hui Liu, Ge Bai, Xiaoyang Lin, Kyle Sutherland, Jonathan Myal, Neel Nabar, **Jianfeng Cai**.* The potential therapeutic effects of THC on Alzheimer's disease. *J. Alz. Dis.* **2014**, 973-984.
47. Yan Wang, Frankie Costanza, Haifan Wu, Daqian Song, **Jianfeng Cai*** and Qi Li*. PEG-poly (amino acid)s-encapsulated Tanshinone IIA as potential therapeutics for the treatment of hepatoma. *J. Mat. Chem. B.* **2014**, 3115-3112.
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45. Wen-Yang Gao, Yao Chen, Youhong Niu, Kia Williams, Lindsay Cash, Pastor Perez, Lukasz Wojtas , **Jianfeng Cai**, Yu-Sheng Chen and Shengqian Ma*. Crystal engineering of an nbo topology MOF for chemical fixation of CO₂ under ambient conditions. *Angew Chem. Int. Ed.*, **2014**, 53, 2615-2619.
44. Shruti Padhee, Christina Smith, Haifan Wu, Yaqiong Li, Namitha Manoj, Qiao Qiao, Zoya Khan, Chuanhai Cao, Hang Yin,* and **Jianfeng Cai**.* The development of antimicrobial γ -AApeptides that suppress pro-inflammatory immune responses. *ChemBioChem*, **2014**, 688-694.
43. Haifan Wu, Peng Teng and **Jianfeng Cai**.* Quick access to multiple classes of peptidomimetics from common γ -AApeptide building blocks. *Eur. J. Org.*, **2014**, 1760-1765.
42. Yaqiong Li, Christina Smith, Haifan Wu, Shruti Padhee, Namitha Manoj, Joseph Cardiello, Qiao Qiao, Chuanhai Cao, Hang Yin,* and **Jianfeng Cai**.* Lipidated cyclic γ -AApeptides display both antimicrobial and anti-inflammatory activity. *ACS Chem. Biol.*, **2014**, 9, 211-217.

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40. Frankie Costanza, Shruti Padhee, Haifan Wu, Yan Wang, Jesse Revenis, Chuanhai Cao, Qi Li* and **Jianfeng Cai**.^{*} Investigation of antimicrobial PEG-poly(amino acid)s. *RSC Advances*, **2014**, 4, 20892095.
39. Rongsheng E. Wang,* Yin Zhang, Ling Tian, Weibo Cai* and **Jianfeng Cai**. Antibody-Based Imaging of HER-2: Moving into the Clinic. *Curr. Mol. Med.*, **2013**, 13, 1523-1537.
38. Qing Ji, Xuan Liu, Xiaoling Fu, Long Zhang, Hua Sui, Lihong Zhou, Jian Sun, **Jianfeng Cai**, Jianmin Qin, Jianlin Ren*, Qi Li*. Resveratrol Inhibits Invasion and Metastasis of Colorectal Cancer Cells via MALAT1 Mediated Wnt/ β -Catenin Signal Pathway. *PLOS One*, **2013**, 8, 11, e78700.
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36. Haifan Wu, Peng Teng, Youhong Niu, Qi Li, **Jianfeng Cai**.^{*} Polymyxin derivatives: a patent evaluation (WO2012168820). *Expert Opin. Ther. Pat.*, **2013**, 1075-81.
35. Youhong Niu, Haifan Wu, Yaqiong Li, Yaogang Hu, Shruti Padhee, Qi Li, Chuanhai Cao and **Jianfeng Cai**.^{*} AApeptides as a new class of antimicrobial agents. *Org. Biomol. Chem.* **2013**, 11, 4283-4290.
34. Long Zhang, Qing Ji, Xuan Liu, Xingzhu Chen, Zhaohua Chen, Yanyan Qiu, Jian Sun, **Jianfeng Cai**, Huirong Zhu, and Qi Li. Norcantharidin inhibits tumor angiogenesis via blocking VEGFR2/MEK/ERK signaling pathways. *Cancer Sci.*, **2013**, 104, 604-610.
33. Neel R. Nabar, Fang Yuan, Xiaoyang Lin, Li Wang, Ge Bai, Jonathan Mayl, Yaqiong Li, Shu-Feng Zhou, Jinhuan Wang, **Jianfeng Cai**, Chuanhai Cao*. Cell Therapy: A Safe and Efficacious Therapeutic Treatment for Alzheimer's Disease in APP+PS1 Mice. *PLoS One*, **2012**, 7, 12, e49468.
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28. Yunan Yang, Youhong Niu, Hao Hong, Haifan Wu, Yin Zhang, Jonathan W. Engle, Todd E. Barnhart, **Jianfeng Cai**.^{*} and Weibo Cai*. Radiolabeled γ -AApeptides: A New Class of Tracers for Positron Emission Tomography. *Chem. Commun.* **2012**, 48, 7850-7852.
27. Haifan Wu, Youhong Niu, Shruti Padhee, Rongsheng E Wang, Yaqiong Li, Qiao Qiao, Ge Bai, Chuanhai Cao, and **Jianfeng Cai**.^{*} Design and synthesis of unprecedented cyclic γ -AApeptides for antimicrobial development. *Chem. Sci.*, **2012**, 3, 2570-2575.
26. Zhongqiu Luo, Jialin Li, Neel R. Nabar, Xiaoyang Lin, Ge Bai, **Jianfeng Cai**, Shu-Feng Zhou, Chuanhai Cao*, Jinhuan Wang*. Efficacy of a Therapeutic Vaccine Using Mutated β -amyloid Sensitized Dendritic Cells in Alzheimer's Mice. *J. Neuroimmune Pharmacol.*, **2012**, 7, 640-645.
25. Wen-Yang Gao , Youhong Niu , Yao Chen , Lukasz Wojtas , **Jianfeng Cai**, Yu-Sheng Chen and Shengqian Ma*. Porous Metal-Organic Framework Based on a Macrocyclic Tetracarboxylate Ligand Exhibiting Selective CO₂ Uptake. *CrystEngComm*, **2012**, 14, 6115-6117.
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 15. Rongsheng E. Wang, Youhong Niu, Haifan Wu, Mohamad Nassir Amin, and **Jianfeng Cai***. Development of NGR peptide-based agents for tumor imaging. *Am. J. Nucl. Med. Mol. Imaging* **2011**, 1(1), 36-46.
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Work from Graduate and Postdoc.

10. Rongsheng E. Wang, Raj K. Pandita, **Jianfeng Cai**, Clayton R. Hunt, John-Stephen Taylor*. Inhibition of Heat Shock Transcription Factor Binding by a Linear Polyamide Binding in an Unusual 1:1 Mode. *ChemBioChem*, **2012**, 13(1), 97-104.
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A novel class of meso-tetrakis-porphyrin derivatives exhibit potent activities against hepatitis C virus genotype 1b replicons *in vitro*. *Antimicrob. Agents Chemother.* **2010**, 54(1), 197-206.

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4. **Jianfeng Cai**, Xiaoxu Li, and John Stephen Taylor*. Improved nucleic acid triggered probe activation through the use of a 5-thiomethyluracil peptide nucleic acid building block. *Org. Lett.*, **2005**, 7(5), 751754.
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