

# 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

## AWARDS AND RECOGNITIONS

- 2016 Outstanding reviewer, Journal of Medicinal Chemistry
- 2015 Outstanding reviewer, Journal of Medicinal Chemistry
- 2015 USF Faculty Outstanding Research Achievement Award
- 2015 Biomatik Distinguished Junior Faculty Award, the Chinese-American Chemistry & Chemical Biology Professors Association (CAPA)
- 2014 Excellence in reviewing, European Journal of Medicinal Chemistry
- 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 (ORAU)

## PROFESSIONAL MEMBERSHIPS

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

## PROFESSIONAL SERVICES

- 2015.4 Panelist, CHEM-CLP, National Science Foundation
- 2015.6 Ad hoc member, BMBI, National Institute of Health
- 2015- Editorial Board member, *ChemistrySelect*
- 2016- Editorial Advisory Board member, *ChemistryOpen*

- 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

## **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:**

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  $\gamma$ -AApeptide Screening Library against EphA2, *J. Med. Chem.*, **2017**, Accepted.
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**, Accepted.
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**, accepted.
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  $\beta$ -catenin/VEGF-mediated angiogenesis by targeting TGF- $\beta$ 1 in normoxic and HIF-1 $\alpha$ 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**\*  $\gamma$ -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  $\alpha$ /sulfonyl- $\gamma$ -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  $\gamma$ -AApeptides. *Future Med. Chem.*, **2016**, 8, 1101.
73. Chian Sing Ho, Nawal K. Khakda, 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  $\gamma$ -AApeptide Defined by EPR Spectroscopy. *Biophys. J.*, **2016**, 110, 1789-1799.
71. Peng Teng, Yan Shi, Peng Sang, and **Jianfeng Cai**\*  $\gamma$ -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**\*  $\gamma$ -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 $\beta$  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  $\gamma$ -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.
63. Hua Sui, Hanchen Xu, Qing Ji, Xuan Liu, Lihong Zhou, Haiyan Song, Xiqiu Zhou, Yangxian Xu, Zhesheng Chen, **Jianfeng Cai**, Guang Ji, Qi Li.\* 5-hydroxytryptamine receptor (5-HT<sub>1DR</sub>) promotes colorectal cancer metastasis by regulating Axin1/β-catenin/MMP-7 signaling pathway. *Oncotarget*. **2015**, 25975-25987.
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 SulfonoγAApeptides. *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-β1/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.
  46. Yan Wang, Daqian Song, Frankie Costanza, Huirong Zhu, Zhongze Fan,\* **Jianfeng Cai\*** and Qi Li.\* Targeted Delivery of Tanshinone IIA-conjugated mPEG-PLGA-PLL-cRGD Nanoparticles to Hepatocellular Carcinoma. *J. Biomed. Nanotechnol.* **2014**, 3244-3252.
  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 CO<sub>2</sub> 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  $\gamma$ -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  $\gamma$ -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  $\gamma$ -AApeptides display both antimicrobial and anti-inflammatory activity. *ACS Chem. Biol.*, **2014**, 9, 211-217.
  41. Haifan Wu, Yaqiong Li, Ge Bai, Youhong Niu, Qiao Qiao, Jeremiah Tipton, Chuanhai Cao,\* **Jianfeng Cai.\***  $\gamma$ -AApeptide-based small-molecule ligands that inhibit A $\beta$  aggregation. *Chem. Commun.*, **2014**, 50, 5206-208.
  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/ $\beta$ -Catenin Signal Pathway. *PLOS One*, **2013**, 8, 11, e78700.
  37. Yaqiong Li, Haifan Wu, Youhong Niu, Yaogang Hu, Qi Li, Chuanhai Cao, **Jianfeng Cai.\*** Development of RNA Aptamer-Based Therapeutic Agents. *Curr. Med. Chem.*, **2013**, 20, 3655-3663.
  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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29. Haifan Wu, Mohamad Nassir Amin, Youhong Niu, Qiao Qiao, Nassier Harfouch, Abdelfattah Nimer, **Jianfeng Cai\***. Solid Phase Synthesis of  $\gamma$ -AApeptides Using a Novel Submonomeric Approach. *Org. Lett.* **2012**, 14, 3446-3449.
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27. Haifan Wu, Youhong Niu, Shruti Padhee, Rongsheng E Wang, Yaogang Li, Qiao Qiao, Ge Bai, Chuanhai Cao, and **Jianfeng Cai\***. Design and synthesis of unprecedented cyclic  $\gamma$ -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  $\beta$ -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 CO<sub>2</sub> Uptake. *CrystEngComm*, **2012**, 14, 6115-6117.
24. Youhong Niu, Shruti Padhee, Haifan Wu, Ge Bai, Qiao Qiao, Yaogang Hu, Lacey Harrington, Whitney N. Burda, Lindsey N. Shaw, Chuanhai Cao, and **Jianfeng Cai\***. Lipo- $\gamma$ -AApeptides as a new class of potent and broad-spectrum antimicrobial agents. *J. Med. Chem.* **2012**, 55(8), 4003–4009.
23. Chuanhai Cao\*, David A. Loewenstein, Xiaoyang Lin, Chi Zhang, Li Wang, Ranjan Duara, Yougui Wu, Alessandra Giannini, Ge Bai, **Jianfeng Cai**, Maria Greig, Elizabeth Schofield, Raj Ashok, Brent Small, Huntington Potter and Gary W. Arendash\*. High Blood Caffeine Levels in MCI Linked to Lack of Progression to Dementia. *J. Alz. Dis.* **2012**, 30, 559-572.
22. Youhong Niu, Ge Bai, Haifan Wu, Rongsheng E. Wang, Qiao Qiao, Shruti Padhee, Robert Buzzeo, Chuanhai Cao\*, and **Jianfeng Cai\***. Cellular translocation of a  $\gamma$ -AApeptide mimetic of Tat peptide. *Mol. Pharmaceutics.* **2012**, 9(5), 1529–1534
21. Ge Bai, Shruti Padhee, Youhong Niu, Rongsheng E. Wang, Robert Buzzeo, Chuanhai Cao\*, and **Jianfeng Cai\***. Cellular uptake of an  $\alpha$ -AApeptide. *Org. Biomol. Chem.* **2012**, 10 (6), 1149 - 1153.
20. Rongsheng E. Wang,\* Frankie Costanza, Youhong Niu, Haifan Wu, Yaogang Hu, Whitney Hang, Yiqun Sun, **Jianfeng Cai\***. Development of self-immolative dendrimers for drug delivery and sensing. *J. Control. Release.* **2012**, 159, 154-163.
19. Rongsheng E. Wang, Youhong Niu, Haifan Wu, Yaogang Hu, **Jianfeng Cai\***. Development of NGRBased Anti-Cancer Agents for Targeted Therapeutics and Imaging. *Anticancer Agents Med. Chem.* **2012**, 12 (1), 76-86.
18. Youhong Niu, Shruti Padhee, Haifan Wu, Ge Bai, Lacey Harrington, Whitney N. Burda, Lindsey N. Shaw, Chuanhai Cao, and **Jianfeng Cai\***. Identification of  $\gamma$ -AApeptides with potent and broadspectrum antimicrobial activity. *Chem. Commun.* **2011**, 47 (44), 12197 - 12199.
17. Rongsheng E. Wang, Yin Zhang, **Jianfeng Cai**, Weibo Cai, Ting Gao\*. Aptamer-Based Fluorescent Biosensors. *Curr. Med. Chem.* **2011**, 18, 4175-4184.

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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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13. Youhong Niu, Alisha “Jonesy” Jones, Haifan Wu, Gabriele Varani,\* and **Jianfeng Cai**\*.  $\gamma$ -AApeptides bind to RNA by mimicking RNA-binding proteins. *Org. Biomol. Chem.*, **2011**, *9* (19), 6604 - 6609.
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11. Yaogang Hu, Xiaolong Li, Said M. Sebti, Jiandong Chen, and **Jianfeng Cai**\*. Design and Synthesis of AApeptides: A New Class of Peptide Mimics. *Bioorg. Med. Chem. Lett.*, **2011**, *21*, 1469-1471.

#### 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.
9. Sourav Saha, **Jianfeng Cai**, Daniel Eiler and **Andrew D. Hamilton**\*. Programing the formation of DNA and PNA quadruplexes by pi-pi stacking interactions. *Chem. Commun.*, **2010**, *46*, 1685-1687.
8. Yao Cheng, Lun K. Tsou, **Jianfeng Cai**, Toshihiro Aya, Ginger E. Dutschman, Elizabeth A. Gullen, Susan P. Grill, Annie Pei-Chun Chen, Brett D. Lindenbach, Andrew D. Hamilton, Yung-chi Cheng\*. 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.
7. **Jianfeng Cai**, Dariusz Niedzwiedzki, Harry A. Frank\*,and Andrew D. Hamilton\*. Ultrafast energy transfer within pyropheophorbide-a tethered to self-assembling DNA Quadruplex. *Chem. Commun.* **2010**, *46*, 544 - 546.
6. **Jianfeng Cai**, Brooke Rosenzweig, and Andrew D. Hamilton\*. Inhibition of Chymotrypsin by a selfassembled DNA quadruplex functionalized with cyclic peptide binding fragments. *Chem. Eur. J.*, **2009**, *15*(2), 328-332.
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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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2. Yun Lu\*, **Jianfeng Cai** and Gi Xue. Molecular design of a soft interphase and its role in the reinforcement and toughening of aluminum powder-filled polyurethane. *J. Adhes. Sci. Technol.*, **2001**, *15*, 71-82.
1. **Jianfeng Cai**, Yun Lu\*, Gi Xue and Wei Zhang. The reinforcement of Al filled Polyurethane system. *Mod. Plastics Proc. Appl.*, **1999**, *11* (6), 10.

## **PATENTS (ISSUED and APPLICATIONS)** (at USF)

11. **Jianfeng Cai**, Peng Teng, Alekhya Nimmagadda. Novel bis-cyclic guanidines as antibacterial agents, **2017**, 62/536,295.
10. **Jianfeng Cai**, Yan Shi. One-Bead-Two-Compound Macrocyclic Library and Methods of Preparation and Use, **2017**, 62/483,038.
9. Vrushank Dave, **Jianfeng Cai**. PTEN Binding Compounds, Formulations, and Uses Thereof, **2017**, 62/460,324.
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  $\gamma$ -AApeptides and methods of use. **2016**, US 9,234,007 B2, **issued**
6. **Jianfeng Cai**, Youhong Niu, Haifan Wu, Shruti Padhee. Identification of  $\gamma$ -AApeptides with potent and broad-spectrum antimicrobial activity. **2016**, US 9,499,587 B2, **issued**
5. Niketa A. Patel, **Jianfeng Cai**. Gas5 binding compounds, formulations, and uses thereof, 62/398,624, **2016**.
4. Said M. Sebti 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  $\gamma$ -AApeptides,  $\gamma$ -AApeptide Building Blocks,  $\gamma$ -AApeptide Libraries, and  $\gamma$ -AApeptide Inhibitors of Abeta40 Aggregates, **2016**, 0209422 A1.
2. Said M. Sebti, and **Jianfeng Cai**. Identification of Novel Inhibitors that Disrupt STAT3/DNA Interaction from  $\gamma$ -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**

5. Olapeju Oyesiku and **Jianfeng Cai**\*. Peptidomimetic agents targeting bacteria. Comprehensive Supramolecular Chemistry II. Elsevier, 2016.
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, 5/26/2017

### **ACTIVE GRANTS**

1. PI, NSF CAREER award (1351265). 07/01/2014-06/30/2019, \$500,000. CAREER: Lipo-Cyclic Antimicrobial Peptidomimetics that Disrupt Bacterial Membrane.
2. PI, NIH 1R01GM112652-01A1, \$1,475,750, 07/01/2015-04/30/2020, Alpha-AApeptides as a novel class of antimicrobial biomaterials.
3. PI, NSF 1708500, \$390,000, 08/01/2017-07/31/2020, Development of unimolecular antibacterial nanomaterials.
4. PI, NIH 1R01AG056569-01, \$1,799,703, 09/01/2017-5/31/2022. Gamma-AApeptides as novel biomaterials inhibiting Abeta peptide aggregation.
5. Co-I, NIH 1R15GM117531-01 (PI: Jianjun Pan), \$112,125 to J. Cai, 12/01/2015-11/31/2018, Characterizing Interactions between Bacterial Membranes and Peptidomimetics for the Development of Antibiotics Targeting Multidrug Resistant Bacteria
6. Co-I, NIH NCI 1R35CA197731-01 (PI: Said Sebti), \$453,600 to J. Cai, 03/01/2016 -02/28/2023. Targeting Mutant KRas for Cancer Therapy.