

CURRICULUM VITAE: **Xingmin Sun, Ph.D.**

Professor of Microbiology and Immunology

ADDRESS

Department of Molecular Medicine
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CITIZENSHIP

U.S.A Citizen

NARRATIVE

Dr. Sun is a tenured professor with early promotion in the Department of Molecular Medicine at the Morsani College of Medicine, University of South Florida (USF). His research focuses on microbial pathogenesis, host immune responses, vaccine development, and antibiotic resistance, with a particular emphasis on *Clostridioides difficile* pathogenesis and novel therapeutics, including vaccines for *C. difficile* infection (CDI). He is nationally and internationally recognized for his contributions to CDI vaccine and therapeutic development, as well as advancing understanding of *C. difficile* pathogenesis. His research has been continuously funded by the NIH since 2012. Dr. Sun has served on 24 NIH study section panels, including as chair, and reviewed grants for major funding agencies in the UK, France, Germany, Canada, and Switzerland. He is an Associate Editor for *Microbiological Research*, *Molecular Medicine*, and *Frontiers in Immunology*, and serves on the editorial boards of *Infection and Immunity* and *Applied and Environmental Microbiology*. Dr. Sun received the Tufts Institute for Innovation Inaugural Award (2014), the Faculty Outstanding Research Achievement Award (2018, 2025), and the Excellence in Innovation Award (2020) at USF. He chaired the Research Committee at the USF College of Medicine (2019–2020) and, since 2021, has held leadership roles, including President, Vice President, Secretary, and Executive Committee member, in the USF Chapter of the National Academy of Inventors (NAI). In 2025, he was elected a Senior Member of the NAI.

EDUCATION

Postdoctoral Fellow in Molecular Microbiology and Biochemistry:	Brown University, USA, 2003-2007
Ph.D. in Nature Sciences (magna cum laude):	University of Kiel, Germany, 2002
M.S. in Veterinary Microbiology & Immunology:	Nanjing Agricultural University, China, 1994
B.S. in Food Science and Microbiology:	Nanjing Agricultural University, China, 1991

APPOINTMENTS

Jun 2024 – Present:	<u>Professor with tenure</u> , Department of Molecular Medicine, Morsani College of Medicine, University of South Florida (USF)
Jun 2019 – May 2024:	<u>Associate Professor with tenure</u> , Department of Molecular Medicine, Morsani College of Medicine, USF
Aug 2015 – May 2019:	<u>Assistant Professor</u> (tenure track), Department of Molecular Medicine, Morsani College of Medicine, USF
Aug 2016 – Present:	<u>Courtesy / affiliated faculty appointments</u> in the Department of Internal Medicine, Department of Molecular Biosciences, and Department of Chemistry, USF
Apr 2012 – Aug 2015:	<u>Research Assistant Professor</u> , Department of Infectious Disease and Global Health, Tufts University, Cummings School of Veterinary Medicine, MA
Aug 2007 – Mar 2012:	<u>Research Associate</u> , Tufts University, Cummings School of Veterinary Medicine
Apr 2003 – Aug 2007:	<u>Postdoctoral Fellow</u> , Brown University, Department of Molecular Biology, Cell Biology, and Biochemistry, Providence, RI
May 2002 – Mar 2003:	<u>Visiting Scholar</u> , University of Konstanz, Department of Biology, Germany
May 1998 – Apr 2002:	<u>PhD candidate</u> , University of Kiel, Germany
Aug 1994 – Apr 1998:	<u>Lecturer in Microbiology</u> , Shanghai Ocean University, Shanghai, China

AWARDS and HONORS

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- **2025** "Faculty Outstanding Research Achievement Award", USF
 - **2025** "Senior Member" of National Academy of Inventors, USA
 - **2024** "Florida High Tech Corridor Early-Stage Innovation Fund", USF
 - **2020** "Excellence in Innovation Award", USF
 - **2018** "Faculty Outstanding Research Achievement Award", USF
 - **2014** "Inaugural Award from Tufts Institute for Innovation", Tufts University, USA
 - **2012** "NIH/NIDDK K01 Mentored Research Scientist Development Award" (2012-2017)
 - **2009** "ESCMID (European Society of Clinical Microbiology and Infectious Diseases) Award" for the "6th ClostPath International Conference", Rome, Italy
 - **2008** "Fellows Award for Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) Infectious Diseases", 48th Annual ICAAC/46th IDSA Annual Meeting in Washington, DC
 - **2007** "Postdoctoral Travel Award", American Society for Biochemistry and Molecular Biology
 - **2002** "Young Scientist Award", Federation of European Microbiological Societies for the 7th Symposium on Lactic Acid Bacteria, Netherland
 - **1993** "Outstanding Graduate Student Award", Nanjing Agricultural University, China
 - **1992** "Outstanding Graduate Student Award", Nanjing Agricultural University, China

SCHOLARLY ACTIVITY (grant history)

Current:

1. NIH 2R01 AI132711 (**PI: X. Sun**; funded at **6** percentile): 04/01/2024 – 03/31/2029
Title: Multivalent vaccines against *Clostridioides difficile* infection.
Total costs for project period: \$3,702,781
2. NIH R01 AI185760 (**PI: Y. Chen / X. Sun**; funded at **7** percentile): 08/01/2025 – 07/31/2030
Title: Clostridioides difficile Zinc-binding PBPs as anti-sporulation targets
Total costs for project period: \$3,702,030
3. NIH R21 AI168781 (**PI: X. Sun / Y. Zhang**): 04/01/2024 – 03/31/ 2026
Title: Development of probiotic-based and Clostridioides difficile-targeted therapeutics.
Total costs for project period: \$356,251
4. USF CREATE (PI: R. Jiang): 06/01/2024 – 05/31/ 2027
Title: Pushing the frontiers of precision medicine with interdisciplinary high-resolution research.
My role: **Co-PI**
Total costs for project period: \$500,000
5. RVAC, Inc contract (**PI: X. Sun**): 06/15/2022 – current
Title: Assessment of efficacies of mRNAs in mouse and hamster models of Clostridioides difficile infection
Total costs for project period: \$436,906
6. USF CREATE (PI: L. Shaw / K. Kim / J. Adams): 06/01/2024 – 05/31/ 2027
Title: USF Center for Antimicrobial Resistance.
My role: **Co-Investigator**
Total costs for project period: \$500,000
7. NIH S10OD030346 (PI: G. Thinakaran): 02/01/2021 – current
Title: High-plex protein and gene expression digital spatial profiler for core facility
My role: **Co-Investigator**
Total costs for project period: \$450,500
8. Contract with Pan Theryx, Inc (**PI: X. Sun**): 06/01/2019 – current
Title: mRNA therapeutics against Clostridioides difficile infection
Total costs for project period: \$42,000
9. Anthony Gagliardi Foundation (**PI: X. Sun**): 08/30/2018 – current
Title: Support for research on *C. difficile*
Total costs for project period till 2023: \$47,500
10. Outstanding Research Achievement Awards by USF (**PI: X. Sun**): 05/01/2025

Total costs: \$7000.

Pending:

1. NIH R01 AI15314 (**PI: J. Cai / X. Sun**): 10/01/2025 – 09/30/2030
Title: Novel biodegradable polymer biomaterials combating *Clostridioides difficile* infection.
Total costs for project period: \$3,450,000
2. NIH R21 AI186032 (**PI: X. Sun / B. Belitsky**): 03/31/2026 – 02/28/2028
Title: Novel two-component systems mediating vancomycin resistance in *Clostridioides difficile*.
3. NIH P01 (PI: Y. Chen) 03/31/2026 – 02/28/2031
Title: Identification of Novel Covalent Inhibitors of *Clostridioides difficile* Penicillin Binding Proteins
My role: **Co-investigator**; My subcontract budget: direct cost of \$100, 000 per year.

Completed:

1. NIH R01AI149852 (PI: J. Cai / **X. Sun**; funded at 4 percentile): 09/23/2019 – 08/31/2025
Title: Novel polymer biomaterials combating C. difficile infection
Total costs for project period: \$1,868,250
2. NIH R01 AI132711 (**PI: X. Sun**; funded at 7 percentile): 06/20/2017 – 05/31/2023
Title: Multivalent vaccines against *Clostridium difficile* infection
Total costs for project period: \$1,923,721
3. NIH R21 AI159745 (**PI: J. Lin / X. Sun**): 09/24/2021 – 08/31/2024
Title: Bile acid salt inhibitors and *Clostridioides difficile* infection
Total costs for project period: \$485,866
4. USF Microbiome Research Award (**PI: R. Jiang / X. Sun**): 06/30/2023 – 6/30/2024
Title: Unleashing the power of the gut: a new approach to combat *Clostridioides difficile* infection
Total costs for project period: \$40,000
5. Florida High Tech Corridor Early-Stage Innovation Fund (**PI: X. Sun**) 03/01/2024 – 08/31/2024
Title: Development of Probiotic-Based Vaccines Delivery System Against *Clostridioides Difficile* Infection
Total costs for project period: \$25,000
6. NIH R03 DK112004 (**PI: X. Sun**): 04/14/2017 – 03/31/2019
Title: The role of tumor progression locus 2 (TPL2) in the pathogenesis of C. *difficile* infection
Total costs for project period: \$155,598
7. USF Internal grant (PI: R. Jiang): 03/01/2019 – 03/01/2020
Title: Decoding gut microbiome-host interactions at single-cell resolution during C. *difficile* infection
My role: **Co-Investigator**
Total costs for project period: \$100,000
8. NIH – K01DK092352 (**PI: X. Sun**): 04/01/2012 – 03/31/2018
Title: Signaling pathway of TNF- α production and C. *difficile* infection
Total costs for project period: \$469,625
9. NIH R21 AI113470 (**PI: X. Sun**): 05/01/2015 – 04/30/2018
Title: Multivalent bacillus mucosal vaccines against C. *difficile* infection
Total costs for project period: \$453,750
10. USF Interdisciplinary Seed Grant Award (**PI: X. Sun & B. Baker**): 02/15/2017 – 02/15/2018
Title: Bioprospecting antibiotics in the fungal metabolome to combat C. *difficile* infection
Total costs for project period: \$50,000
11. Sub-contract with HEPCO LLC Medical (**PI: My Lien Dao/X. Sun**): 07/01/2017 – 08/31/2018
Title: Antimicrobial activity of GEMS sole mate
Total costs for project period: \$10,000
12. Tufts Institute for Innovation Award (**PI: X. Sun**): 10/01/2014 – 08/31/2015
Title: Novel multivalent mucosal/oral vaccines against C. *difficile* infection
Total costs for project period: \$250,000

13. Tufts Technology Access Award (PI: **X. Sun**): 09/30/2013 – 08/31/2014
 Title: Imaging of the dynamic distribution of *C. difficile* toxins and dendritic cells in live mice using *in vivo* imaging system
 Total costs for project period: \$2000
14. Tufts Collaborates Award (PI: **X. Sun**): 07/01/2013 – 06/30/2015
 Title: A novel chimeric vaccine against *C. difficile* infection
 Total costs for project period: \$50,000
15. Contract with Jaguar Animal Health (PI: **X. Sun**): 04/01/2014 – 06/30/2015
 Title: Evaluation of SP303 for treatment of *C. difficile* infection in hamsters
 Total costs for project period: \$65,210
16. Tufts Collaborates (PI: **X. Sun**): 07/01/2014 – 07/31/2015
 Title: The role of colonic progenitor cells in the pathogenesis of *C. difficile* infection
 Total costs for project period: \$34,139

PUBLISHED BIBLIOGRAPHY

Peer Reviewed Journal Articles:

1. Chakraborty S, Heuler J, Wang S, Roy A, and **Sun X*** (2025). Bioinformatic and experimental identification of *Clostridioides difficile* R20291 lipoproteins as potential vaccine candidates. Accepted by Frontiers in Immunology.
2. Keum GB, Doo H, Jinok, Kwak J, **Sun X**, Cho J, Kim HB (2025). Effects of phytobiotics on intestinal barrier function and gut microbiome in weaned piglets challenged with enterotoxigenic Escherichia coli. J Anim Sci Technol. DOI: <https://doi.org/10.5187/jast.2500128>.
3. Azimirad M., Noori M., Mazhari S., S. K. A. Raftar, Ghorbaninejad M., Meyfour A., Mortazavi P., Zali M. R., Bella S. D., **Sun X.**, Baghaei K., Yadegar A (2025). Membrane vesicles derived from toxigenic *Clostridioides difficile* induce epithelial-mesenchymal transition in colonic epithelial cells: insights from in vitro and in vivo studies. Microb Pathog. 2025 Aug 14;208:107988. PMID: 40816603.
4. Choi Y, Keum GB, Kang J, Doo H, Kwak J, Kim H, Chae Y, Kim S, Yang H, Lee S, **Sun X**, Kim HB, Yoo J (2025). Evaluation of kefir consumption on gut microbial diversity in a healthy young population using full-length 16S rRNA gene sequencing. Front Microbiol. 2025 May 21;16:1587831. PMID: 40469719.
5. Kang J, Choi Y, Keum GB, Doo H, Kwak J, Kim H, Chae Y, Lee S, Yang H, Kim S, **Sun X**, Kim HB, Yoo SJ. Effect of diet and lifestyle changes on gut microbial diversity in healthy adolescents. J Microbiol Biotechnol. 2025 Jun 12;35:e2503018. PMID: 40537892.
6. Zhu D, Wozniak KJ, Midani F, Wang S, **Sun X**, Britton RA. Control of *Clostridioides difficile* virulence and physiology by the flagellin homeostasis checkpoint FliC-FliW-CsrA in the absence of motility. mBio. 2025;16(3):e0380124. PubMed PMID: 39882902; PMCID: PMC11898703.
7. Zhang F, Wang S, Yang J, Fraser K, Gibson JM, Wang C, Dordick JS, Tomatsidou A, Linhardt RJ, Wang L, **Sun X***. Characterization of heparin interactions with *Clostridioides difficile* toxins and its potential as anti-CDI therapeutics. Carbohydr Polym. 2025;351:123143. PubMed PMID: 39779041; PMCID: PMC11783924. **Corresponding author.**
8. Huang B, Gregory-Lottb E, Li B. X, Tran T. H, Li S, Xue M, Wang S, Asokan A, Shen N, **Sun X**, Cao C, Xiao X, Daughdrillb G, Cai J (2025). Discovery of peptidomimetic inhibitors of CREB/CBP by targeting hydrophobic grooves on the surface of the CBP KIX domain. Accepted by Acta Pharmaceutica Sinica B.
9. Wang S, Heuler J, Bullock J, Qin J, Chakraborty S, Nathaniel AL, Wang S, **Sun X***. Cell Wall Protein 2 as a Vaccine Candidate Protects Mice Against *Clostridioides difficile* Infection. Vaccines (Basel). 2024 Dec 30;13(1):21. PMID: 39852800. **Corresponding author.**
10. Wang, Y.; Hu, X.; Pandey, S.; Khatri, U.; Shen, T.; Subbiah, V.; Mooers, B. H. M.; Chao, T.; Wang, S.; Yu, H.; **Sun, X.**; Wu, J.; Cai, J., Targeting Oncogenic RET Kinase by Simultaneously Inhibiting Kinase Activity and Degrading the Protein. *J Med Chem*. Published on Dec 11, 2024.
11. Li, C.; Heuler, J.; Zhu, D.; Meng, X.; Chakraborty, S.; Harmanus, C.; Wang, S.; Peng, Z.; Smits, W. K.; Wu, A.; **Sun, X***, Genomic and phenotypic characterization of a *Clostridioides difficile* strain of the epidemic ST37 type from China. Front Cell Infect Microbiol 2024, 14, 1412408. **Corresponding author.**
12. Xue M, Chakraborty S, Gao R, Wang S, Gu M, Shen N, Wei L, Cao C, **Sun X***, Cai J*. Antimicrobial Guanidinylate Polycarbonates Show Oral In Vivo Efficacy Against *Clostridioides Difficile*. Adv Healthc Mater. 2024:e2303295. PubMed PMID: 38321619. **Corresponding author.**
13. Wickramage I, Peng Z, Chakraborty S, Harmanus C, Kuijper EJ, Alrabaa S, Smits WK, **Sun X***. The

- vanR(Cd) Mutation 343A>G, Resulting in a Thr115Ala Substitution, Is Associated with an Elevated Minimum Inhibitory Concentration (MIC) of Vancomycin in *Clostridioides difficile* Clinical Isolates from Florida. *Microbiol Spectr.* 2023:e0377722. PubMed PMID: 37125917. ***Corresponding author.**
14. Wang S, Ju X, Heuler J, Zhang K, Duan Z, Warnakulasuriya Patabendige HML, Zhao S, **Sun X***. Recombinant Fusion Protein Vaccine Containing *Clostridioides difficile* FliC and FliD Protects Mice against *C. difficile* Infection. *Infect Immun.* 2023:e0016922. PubMed PMID: 36939332. ***Corresponding author.**
 15. Chandra H, Sorg JA, Hassett DJ, **Sun X***. Regulatory transcription factors of *Clostridioides difficile* pathogenesis with a focus on toxin regulation. *Crit Rev Microbiol.* 2023;49(3):334-49. PubMed PMID: 35389761. ***Corresponding author.**
 16. Joshua Heuler, Harish Chandra, **Sun X***. Mucosal Vaccination Strategies against *Clostridioides difficile* Infection. *Vaccines.* 2023;11(5), 887. ***Corresponding author.**
 17. Chandra H, Kovall RA, Yadav JS, **Sun X***. Host Immune Responses to Surface S-Layer Proteins (SLPs) of *Clostridioides difficile*. *Microorganisms.* 2023;11(2). PubMed PMID: 36838345. ***Corresponding author.**
 18. Wang Y, Xue M, Gao R, Chakraborty S, Wang S, Zhao X, Gu M, Cao C, **Sun X**, Cai J. Short, Lipidated Dendrimeric gamma-AApeptides as New Antimicrobial Peptidomimetics. *Int J Mol Sci.* 2023;24(7). PubMed PMID: 37047380.
 19. Xue S, Xu W, Wang L, Wang X, Duan Q, Calcul L, Wang S, Liu W, **Sun X**, Lu L, Jiang S, Cai J. An HR2- Mimicking Sulfonyl-gamma-AApeptide Is a Potent Pan-coronavirus Fusion Inhibitor with Strong Blood-Brain Barrier Permeability, Long Half-Life, and Promising Oral Bioavailability. *ACS Cent Sci.* 2023;9(5):1046-58. PubMed PMID: 37252367; PMCID: PMC10184535.
 20. Wickramage I, Heuler J, Peng Z, Alrabaa S, **Sun X***. Draft Genome Sequences and Genome Characterization of Three Toxigenic and Two Nontoxigenic *Clostridioides difficile* Clinical Isolates from Florida, USA. *Microbiol Resour Announc.* 2023:e0015123. PubMed PMID: 37067425. ***Corresponding author.**
 21. Sun D*, **Sun X***, Hu Y*, Yamaichi Y*. Editorial: Horizontal gene transfer mediated bacterial antibiotic resistance, volume II. *Front Microbiol.* 2023;14:1221606. PubMed PMID: 37425999; PMCID: PMC10327596. ***Corresponding author.**
 22. Jiang W, Abdulkadir S, Zhao X, Sang P, Tomatsidou A, Zhang X, Chen Y, Calcul L, **Sun X**, Cheng F, Hu Y, Cai J. Inhibition of Hypoxia-Inducible Transcription Factor (HIF-1 α) Signaling with Sulfonyl-gamma-AApeptide Helices. *J Am Chem Soc.* 2023;145(36):20009-20. PubMed PMID: 37665648.
 23. Sacco MD, Wang S, Adapa SR, Zhang X, Lewandowski EM, Gongora MV, Keramisanou D, Atlas ZD, Townsend JA, Gatdula JR, Morgan RT, Hammond LR, Marty MT, Wang J, Eswara PJ, Gelis I, Jiang RHY, **Sun X***, Chen Y*. A unique class of Zn(2+)-binding serine-based PBPs underlies cephalosporin resistance and sporogenesis in *Clostridioides difficile*. **Nat Commun.** 2022;13(1):4370. PubMed PMID: 35902581. ***Co-corresponding author.**
 24. Wang S, Zhu D, **Sun X***. Development of an Effective Nontoxigenic *Clostridioides difficile*-Based Oral Vaccine against *C. difficile* Infection. *Microbiol Spectr.* 2022:e0026322. PubMed PMID: 35583336. ***Corresponding author.** Wang S, Heuler J, Wickramage I, **Sun X***. Genomic and Phenotypic Characterization of the Nontoxigenic *Clostridioides difficile* Strain CCUG37785 and Demonstration of Its Therapeutic Potential for the Prevention of *C. difficile* Infection. *Microbiol Spectr.* 2022:e0178821. PubMed PMID: 35315695. ***Corresponding author.**
 25. El Hadidy N, Uversky VN*, **Sun X***. On the Potential Significance of the Intrinsically Disordered Regions in the *Clostridioides difficile* Toxins A and B. *Curr Protein Pept Sci.* 2022;23(3):192-209. PubMed PMID: 35585826. ***Co-corresponding author.**
 26. Xue S, Wang X, Wang L, Xu W, Xia S, Sun L, Wang S, Shen N, Yang Z, Huang B, Li S, Cao C, Calcul L, **Sun X**, Lu L, Cai J, Jiang S. A novel cyclic gamma-AApeptide-based long-acting pan-coronavirus fusion inhibitor with potential oral bioavailability by targeting two sites in spike protein. *Cell Discov.* 2022;8(1):88. PubMed PMID: 36075899.
 27. Singh Y, Beamer G, **Sun X**, Shukla P. Recent developments in systems biology and genetic engineering toward design of vaccines for TB. *Crit Rev Biotechnol.* 2022;42(4):532-47. PubMed PMID: 34641752.
 28. Limon AD, Patabendige H, Azhari A, **Sun X**, Kyle DE, Wilson NG, Baker BJ. Chemistry and Bioactivity of the Deep-Water Antarctic Octocoral *Alcyonium* sp. *Mar Drugs.* 2022;20(9). PubMed PMID: 36135765.
 29. Zhu D, Wang S, **Sun X***. FliW and CsrA Govern Flagellin (FliC) Synthesis and Play Pleiotropic Roles in Virulence and Physiology of *Clostridioides difficile* R20291. *Front Microbiol.* 2021;12:735616. PubMed PMID: 34675903. ***Corresponding author.**
 30. Zhu D, Patabendige H, Tomlinson BR, Wang S, Hussain S, Flores D, He Y, Shaw LN, **Sun X***. Cwl0971, a novel peptidoglycan hydrolase, plays pleiotropic roles in *Clostridioides difficile* R20291. *Environ Microbiol.* 2021;23(9):5222-38. PubMed PMID: 33893759. ***Corresponding author.**

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32. Chandra H, Sharma KK, Tuovinen OH, **Sun X***, Shukla P*. Pathobionts: mechanisms of survival, expansion, and interaction with host with a focus on Clostridioides difficile. Gut Microbes. 2021;13(1):1979882. PubMed PMID: 34724858. ***Co-corresponding author.**
33. Wickramage I, Spigaglia P, **Sun X***. Mechanisms of antibiotic resistance of Clostridioides difficile. J Antimicrob Chemother. 2021;76(12):3077-90. PubMed PMID: 34297842. ***Corresponding author.**
34. Zheng M, Li C, Zhou M, Jia R, Cai G, She F, Wei L, Wang S, Yu J, Wang D, Calcul L, **Sun X**, Luo X, Cheng F, Li Q, Wang Y, Cai J. Discovery of Cyclic Peptidomimetic Ligands Targeting the Extracellular Domain of EGFR. J Med Chem. 2021;64(15):11219-28. PubMed PMID: 34297567.
35. Zhu D, Bullock J, He Y, **Sun X***. Cwp22, a novel peptidoglycan cross-linking enzyme, plays pleiotropic roles in Clostridioides difficile. Environ Microbiol. 2019;21(8):3076-90. PubMed PMID: 31173438. ***Corresponding author.**
36. Daou N, Wang Y, Levnikov VM, Nandakumar M, Livny J, Bouillaut L, Blagova E, Zhang K, Belitsky BR, Rhee K, Wilkinson AJ, **Sun X**, Sonenshein AL. Impact of CodY protein on metabolism, sporulation and virulence in Clostridioides difficile ribotype 027. PLoS One. 2019;14(1):e0206896. PubMed PMID: 30699117; PMCID: PMC6353076.
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38. Xu D, Han L, Li C, Cao Q, Zhu D, Barrett NH, Harmody D, Chen J, Zhu H, McCarthy PJ, **Sun X***, Wang G*. Bioprospecting Deep-Sea Actinobacteria for Novel Anti-infective Natural Products. Front Microbiol. 2018;9:787. PubMed PMID: 29760684; PMCID: PMC5936781. ***Corresponding author.**
39. Wang Y, Wang S, Kelly CP, Feng H, Greenberg A, **Sun X***. TPL2 Is a Key Regulator of Intestinal Inflammation in Clostridium difficile Infection. Infect Immun. 2018;86(8). PubMed PMID: 29844241; PMCID: PMC6056850. ***Corresponding author.**
40. Wang Y, Wang S, Bouillaut L, Li C, Duan Z, Zhang K, Ju X, Tzipori S, Sonenshein AL, **Sun X***. Oral Immunization with Nontoxigenic Clostridium difficile Strains Expressing Chimeric Fragments of TcdA and TcdB Elicits Protective Immunity against C. difficile Infection in Both Mice and Hamsters. Infect Immun. 2018;86(11). PubMed PMID: 30150259; PMCID: PMC6204701. ***Corresponding author.**
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45. Li C, Harmanus C, Zhu D, Meng X, Wang S, Duan J, Liu S, Fu C, Zhou P, Liu R, Wu A, Kuijper EJ, Smits WK, Fu L, **Sun X***. Characterization of the virulence of a non-RT027, non-RT078 and binary toxin-positive Clostridium difficile strain associated with severe diarrhea. Emerg Microbes Infect. 2018;7(1):211. PubMed PMID: 30542069; PMCID: PMC6291415. ***Corresponding author.**
46. Peng Z, Jin D, Kim HB, Stratton CW, Wu B, Tang YW, **Sun X***. Update on Antimicrobial Resistance in Clostridium difficile: Resistance Mechanisms and Antimicrobial Susceptibility Testing. J Clin Microbiol. 2017;55(7):1998-2008. PubMed PMID: 28404671; PMCID: PMC5483901. ***Corresponding author.**
47. Peng Z, Addisu A, Arabaa S*, **Sun X***. Antibiotic Resistance and Toxin Production of Clostridium difficile Isolates from the Hospitalized Patients in a Large Hospital in Florida. Front Microbiol. 2017;8:2584. PubMed PMID: 29312258; PMCID: PMC5744170. ***Corresponding author.**
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- Clostridium difficile Infection in Association with a Gastrointestinal Microbial Shift. J Microbiol Biotechnol. 2016;26(3):567-71. PubMed PMID: 26809802; PMCID: PMC4832933. ***Corresponding author.**
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 57. **Sun X***, Hirota SA. The roles of host and pathogen factors and the innate immune response in the pathogenesis of Clostridium difficile infection. Mol Immunol. 2015;63(2):193-202. PubMed PMID: 25242213; PMCID: PMC4254213. ***Corresponding author.**
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 60. Zhao S, Ghose-Paul C, Zhang K, Tzipori S, **Sun X***. Immune-based treatment and prevention of Clostridium difficile infection. Hum Vaccin Immunother. 2014;10(12):3522-30. PubMed PMID: 25668664; PMCID: PMC4514135. ***Corresponding author.**
 61. Kim HB, Zhang Q, **Sun X**, Beamer G, Wang Y, Tzipori S. Beneficial effect of oral tigecycline treatment on Clostridium difficile infection in gnotobiotic piglets. Antimicrob Agents Chemother. 2014;58(12):7560-4. PubMed PMID: 25267665; PMCID: PMC4249528.
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 63. Zhang J, Rui X, Wang L, Guan Y, **Sun X**, Dong M. Polyphenolic extract from Rosa rugosa tea inhibits bacterial quorum sensing and biofilm formation. Food Control. 2014;42:125-131.
 64. Chen X, Dong M, and **Sun X*** (2013). Mechanisms of action and applications of probiotics for the treatment of Clostridium difficile infection. (a chapter in "Microbial pathogens and strategies for combating them: science, technology and education", Formatex Research Center, Zurbarán, Spain). ***Corresponding author.**
 65. Zhang H, Li W, Rui X, **Sun X**, Dong M. Lactobacillus plantarum 70810 from Chinese paocai as a potential source of β -galactosidase for prebiotic galactooligosaccharides synthesis. Eur Food Res Technol. 2013; 236:817-826.
 66. Wu J, Lu Z, Nie M, Zhou H, **Sun X**, Xue X, Bi J, Fang G. Optimization of cryopreservation procedures for porcine endothelial progenitor cells. J Biosci Bioeng. 2012;113(1):117-23. PubMed PMID: 22036230.
 67. Wang H, **Sun X**, Zhang Y, Li S, Chen K, Shi L, Nie W, Kumar R, Tzipori S, Wang J, Savidge T, Feng H. A chimeric toxin vaccine protects against primary and recurrent Clostridium difficile infection. Infect Immun. 2012;80(8):2678-88. PubMed PMID: 22615245; PMCID: PMC3434558.
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- Infect Immun. 2011;79(7):2856-64. PubMed PMID: 21576341; PMCID: PMC3191975.
69. **Sun X**, Savidge T, Feng H. The enterotoxicity of *Clostridium difficile* toxins. *Toxins* (Basel). 2010;2(7):1848-80. PubMed PMID: 22069662; PMCID: PMC3153265.
 70. **Sun X**, He X, Tzipori S, Gerhard R, Feng H. Essential role of the glucosyltransferase activity in *Clostridium difficile* toxin-induced secretion of TNF- α by macrophages. *Microb Pathog*. 2009;46(6):298-305. PubMed PMID: 19324080; PMCID: PMC2692465.
 71. He X, Wang J, Steele J, **Sun X**, Nie W, Tzipori S, Feng H. An ultrasensitive rapid immunocytotoxicity assay for detecting *Clostridium difficile* toxins. *J Microbiol Methods*. 2009;78(1):97-100. PubMed PMID: 19393695; PMCID: PMC2740367.
 72. He X, **Sun X**, Wang J, Wang X, Zhang Q, Tzipori S, Feng H. Antibody-enhanced, Fc gamma receptor-mediated endocytosis of *Clostridium difficile* toxin A. *Infect Immun*. 2009;77(6):2294-303. PubMed PMID: 19307220; PMCID: PMC2687358. **Co-first**
 73. Yang G, Zhou B, Wang J, He X, **Sun X**, Nie W, Tzipori S, Feng H. Expression of recombinant *Clostridium difficile* toxin A and B in *Bacillus megaterium*. *BMC Microbiol*. 2008;8:192. PubMed PMID: 18990232; PMCID: PMC2586027.
 74. **Sun X**, Mierke DF, Biswas T, Lee SY, Landy A, Radman-Livaja M. Architecture of the 99 bp DNA-six-protein regulatory complex of the lambda att site. *Mol Cell*. 2006;24(4):569-80. PubMed PMID: 17114059; PMCID: PMC1866956.
 75. **Sun X**, Gohler A, Heller KJ, Neve H. The *ltp* gene of temperate *Streptococcus thermophilus* phage TP-J34 confers superinfection exclusion to *Streptococcus thermophilus* and *Lactococcus lactis*. *Virology*. 2006;350(1):146-57. PubMed PMID: 16643978.

Book and Book Chapter:

1. **Sun X**, Sinderen D V, Moineau S, & Heller K J. Impact of lysogeny on bacteria with a focus on lactic acid bacteria. (a chapter in "*Contemporary Trend in Bacteriophage Research*", Nova Science Publisher, New York, 2009, ISBN: 978-1-6-692-181-4).
2. **Sun X**, Neve H, & Heller K J. Fighting fire by fire- applying temperate phage for preventing phage infection in food fermentations. (a chapter in "*Contemporary Trend in Bacteriophage Research*", Nova Science Publisher, New York, 2009, ISBN: 978-1-6-692-181-4).
3. **Sun X** (2002). Molecular and functional characterization of a temperate *Streptococcus thermophilus* phage TP-J34 gene (*ltp*) encoding a membrane-bound lipoprotein, Shaker Verlag, 2002, ISBN 3-8322-0190-4. Book

Manuscript Submitted:

1. Azimirad M, Salahi-Niri A, Zali M. R, Di Bella S, Monaghan T M, Smits W K, **Sun X**, Kuijper E J, Yadegar A (2025). Harnessing host immunity against *Clostridioides difficile* infection: implications for vaccine innovation and development.

TEACHING, LECTURE

-
- **Course Director** for "Molecular Basis of Disease" (BCH6627), USF, since 2025
 - **Course Director** for "Vaccines and Applied Immunology" (GMS6114), USF, since 2019
 - "Foundations in Biomedical Sciences" (GMS 6001), USF, since 2015
 - "Foundations in Medical Microbiology and Immunology" (GMS 6103), USF, since 2016
 - "Introduction to Biotechnology" (BSC6436) with a focus on Microbiome, USF, since 2017
 - Infectious Disease Unit Director for "Molecular Basis of Disease" (BCH6627), USF, since 2018
 - "Drug Discovery" (PHC7935), USF, 2018 & 2022
 - "MD Course 5", USF, 2021
 - **Course Director** for "Microbiology", Shanghai Ocean University, Shanghai, China, 1994-1998
 - **Course Director** for "Experimental Microbiology", Shanghai Ocean University, China, 1994-1998
 - **Course Director** for "Principles and Technologies of Industrial Fermentation", Shanghai Ocean University, China, 1994-1998

TEACHING, SUPERVISORY

Junior Faculty:

- Shaohui Wang (PhD, Research Assistant Professor) (Aug 2022 – present)

- Mentoring committee for Dr. Tina Ho (Assistant Professor) in the College of Nursing, USF Health 2018.

Postdoctoral Researchers:

- Junling Qin (June 2024 – present)
- Anastasia Tomatsidou (Mar 2022 – Feb 2024)
- Soumyadeep Chakraborty (Apr 2021 – present)
- Shaohui Wang (Mar 2017 – Jul 2022)
- Duolong Zhu (July 2017 – Nov 2019)
- Yuanguo Wang (Nov 2014 – Mar 2017)
- Ying Cai (Mar 2015 – Mar 2017)
- Zhen Wu (Apr 2018 – Apr 2019)

MD Resident:

- Aimen Ben Ayad (July 2016 – July 2017)

PhD Students:

- Lubem Nathaniel Agbendeh (Dec 2021 – present)
- Ishani Wickramage (Aug 2017 – Feb 2020)
- Zhong Peng (PhD exchange program) (Mar 2016 – Mar 2018)
- Yuankai Wang (PhD exchange program) (Feb 2013 – Feb 2014)

Mentoring Committees for PhD Students at USF:

- Afroza Akhtar (2015 – 2020)
- Udoka Okaro (2015 – 2020)
- Brooke Nemec (2016 – 2021)
- Rohini Nimbalkar (2017 – 2022)
- Andrew McGill (2017 – 2019)
- Lulu Wei (2016 – 2020)
- Ma Su (2016 – 2021)
- Sylvia Singh (2016 – 2019)
- Michael Kemp (2016 – 2022)
- Stephanie Marroquim (2018 – 2021)
- Melissa Bikowitz (2019 – 2022)
- Mary-Elizabeth Jobson (2021 – present)
- Yerman Munoz (2021 – 2022)
- Emilee Mustor (2022 – present)
- Rachel Washburn (2023 – present)
- Alexis Rickman (2023 – present)
- Alisa Anderson (2023 – present)
- Patrick Consol (2023 – present)
- Erika Valdespino (2023 - present)
- Caroline Miller (2024 - present)
- Adewale James (2023 - present)
- Nichol John-Lewis Edwards (2023 - present)
- Pooya Mahdavi (2025 – present)

Thesis Committee Chair for PhD students at USF:

- Brooke Nemec (June 14, 2021)
- Lulu Wei (Nov 4, 2020)
- Sylvia Singh (Nov 12, 2019)
- Anne-Claire D. Limon (Nov 7, 2019)

Rotation PhD Students at USF:

- Chao Zhang (2015)
- Christopher Hinojo (2015)
- Afroza Akhtar (2015)
- Michael Kemp (2016)
- Caroline Simmons (2017)

- Ishani Wickramage (2017)
- Justin Nicholas (2017)
- Garrett Enten (2018)
- Oluwasei Oluwatola (2021)
- Abiral Hasib Shourav (2022)
- Clem Marsilia (2023)
- Marvelous Adebawale (2023)
- Md. Abu Rahat (2024)
- Ken Chen (2024)
- Georgina Agyekum (2024)
- Krystin Marlin (2025)

Master Students:

- Alondra Rivera Ramos (Sept 2025 – present)
- Brianna Mumford (Oct 2024 – present)
- Veronica Gosnell (Sept 2023 – present)
- Ramya Yada (May 2024- Aug 2024)
- Rajath Talpady (Sept 2023 – May 2024)
- Jonathon Bland (Oct 2022 – July 2023)
- Hassan Haidar (Oct 2021 – May 2023)
- Irene Arias (Oct 2021 – Aug 2022)
- Brittney Owens (Oct 2021 – May 2022)
- Zil iang Lim (Oct 2021 – May 2022)
- Nashwa El Hadidy (Oct 2020 – July 2021)
- Lauren Lapeter (Aug 2020 – Aug 2021)
- Syed Hussain (Aug 2020 – Aug 2021)
- Kristina Valladares (Aug 2019 – Aug 2020)
- Thuy Nguyen (Aug 2018 – July 2019)
- Holly Branthoover (Sept 2018 – June 2019)
- Trang Nguyen (Aug 2016 – July 2017)

Research Assistant:

- Maryam Yusuph (Aug 2024 – present)
- Hiran Malinda (Oct 2017 – June 2021)

Visiting Scholars:

- Keshan Zhang (PhD, Associate Professor, Lanzhou Veterinary Research Institute, Academy of Agricultural Science; Nov 2013 – Nov 2014).
- Song Zhao (MD, Associate Professor, Department of Gastroenterology, Jiangsu Province Hospital of Traditional Chinese Medicine, China; June 2014 – June 2015).
- Xianghong Ju (PhD, Professor, Guangdong Ocean University, Guangdong, China; Nov 2014 – Nov 2015).
- Yang Wang (PhD, Associate Professor, College of Animal Science and Technology, Henan University of Science and Technology; May 2015 – May 2016)
- Zhibian Duan (PhD, Professor, College of Animal Science, Shanxi Agricultural University, Sept – Dec 2016)
- Chunhui Li (MD, Associate Professor, Healthcare-associated Infection Control Center of Xiangya Hospital Central South University, China; Nov 2016 – Nov 2017).

Undergraduate Students:

- Rishi Mudiganti (April 2025 – present)
- Marco Hanna (May 2023 – present)
- Justin Boumalhab (July 2023 – present)
- Adrit Roy (May 2023 – present)
- Bharath Subramanian (June 2022 – May 2023)
- Amreen Naveen (June 2022 – Dec 2022)
- Alexandra Rodier (Aug 2021 – May 2022)
- Joshua Heuler (June 2019 – May 2020)

- Ann Mathew (June 2019 – May 2020)
- Amy Amoah (June 2020 – May 2021)
- Domenica Flores (Aug 2019 – Aug 2020)
- Logan Suits (Aug 2018 – May 2019)
- Firras Khan (Aug 2018 – May 2019)
- Manushi Shan (Aug 2018 – May 2019)
- Ruhan Gagnani (Aug 2018 – May 2019)
- Jessica Bullock (Sept 2016 – May 2017)
- Angela Zhu (Sep 2016 – July 2017)
- Anisha Paulson (Sept 2016 – May 2017)
- Admir Krivdic (Sept 2016 – July 2017)

High School Students:

- Shreya Chatterjee (2025 summer)
- Alex Sun (2025 summer)
- Leahy Wan (2024 summer)
- Anastasia Achziger (2022 summer)

Awards received by lab members:

- “Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) Program Committee Award”, USA. 2016 (Yuanguo Wang)
- “Anaerobe Travel Award”. USA. 2016 (Yuanguo Wang)
- “ASM (American Society of Microbiology) Infectious Disease Fellow Travel Award”, 2017 (Chunhui Li)
- “ASM Infectious Disease Fellow Program”, 2018 (Chunhui Li)
- “ASM Travel Award”, 2019 (Ishani Wickramage)
- “Clinical & Translational Science Award Doctoral Student Research”. USF Health Research Day, Mar 2024 (Lubem Nathaniel Agbendeh)
- “Advancing Science Conference Grant”. National Organization for the Professional Advancement of Black Chemist and Chemical Engineers (NOBCChE), USA. Jun 2024 (Lubem Nathaniel Agbendeh)
- “USF Fellowship” (Fall 2025 – Fall 2027 worth \$40,000). University of South Florida Signature Research Doctoral Fellowship, Mar 2025 (Lubem Nathaniel Agbendeh)
- “2025 Northeast-Southeast Regional NOBCChE Conference Travel Award and Outstanding Presentation Award”. National Organization for the Professional Advancement of Black Chemist and Chemical Engineers (NOBCChE), USA. Mar 2025 (Lubem Nathaniel Agbendeh)
- “FLMF Fellow (2025-2027)”. ASM 2025 Future Leaders Mentorship Fellowship (FLMF) Program (Lubem Nathaniel Agbendeh)
- “Graduate Student Research Award (\$500 travel grant)”; 2025 Oral Presentation Winner in Health and Life Sciences at Annual Graduate Student Research Symposium. USF Office of Graduate Studies Mar 2025 (Lubem Nathaniel Agbendeh)
- “1st Place Winner in the Physical Sciences, Mathematics, and Environmental Studies Category”. 2025 Conference of Florida Graduate Schools - Statewide Graduate Research Poster Symposium. (Lubem Nathaniel Agbendeh).
- “2025 Provost’s Awards for Honorable Mention Award”. Honorable Mention Award for Outstanding Teaching by a Graduate Teaching Assistant in STEM category (Lubem Nathaniel Agbendeh).

CONFERENCE / INVITED TALKS

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1. 2025. **Invited Speaker** in the Department of Immunology & Microbial Disease at Albany Medical College, Nov 13-14.
 2. 2025. “The Receptor binding domain 2 (RBD2) of binary toxin (CDI) as a promising vaccine candidate protects both mice and hamsters against CDT challenge”. Speaker at “14th International Conference on the Molecular Biology and Pathogenesis of Clostridia (ClostPath 2025)” (Sept 1-4, 2025. Institut Pasteur, Paris, France)
 3. 2025. “Vaccine development for C. difficile infection”. **Invited speaker** at “Vaccine Congress 2025” (July 10-11, 2025. Vienna, Austria (Hybrid Event))
 4. 2025. “Cell wall protein 2 as a vaccine candidate protects mice against Clostridioides difficile infection”.

Speaker at the “American Society of Microbiology Annual Meeting” (June 19-23, 2025. Los Angeles, USA)

5. 2025 “Surface layer proteins as potential vaccine candidates against *C. difficile* infection”. **Keynote Speaker and Session Chair** at the “6th International Virtual Conference on Vaccines and Infectious Disease” (June 14-15, 2025)
6. 2025. “Peptidoglycan hydrolase in *C. difficile*”. Speaker at the “Florida Branch of the American Society for Microbiology 2025” (Mar 29-30, 2025. Ft. Myers, FL, USA)
7. 2024. “A novel peptidoglycan hydrolase plays pleiotropic roles in *C. difficile*”. Speaker at 22nd International Conference on Bacilli and Gram-positive Bacteria” (Jun 18-21, 2024. Indiana University, USA).
8. 2024. “A novel peptidoglycan hydrolase plays pleiotropic roles in *C. difficile*”. Speaker at “International Conference on Gram-positive Pathogens” (Oct 13-16, 2024. Omaha, Nebraska, USA)
9. 2024. “Cwp2 as a vaccine candidate protects mice against *Clostridioides difficile* infection”. **Invited Speaker** at “Vaccines Research & Development” (Nov 11-13, 2024. Boston, MA)
10. 2024. “Receptor binding domain 2 (RBD2) as an effective vaccine antigen against *Clostridioides difficile* binary toxin (CDT)”. **Invited Speaker** at “Vaccines Summit 2024” (Nov 13-15, 2024. Boston, MA)
11. 2023. “Mucosal Vaccine Strategies against *Clostridioides difficile* infection”. **Invited Speaker** at 8th International Conference on Vaccines Research & Development (Nov 6-8, 2023. Boston, MA)
12. 2023. “Novel multivalent vaccines against *Clostridioides difficile* infection. **Keynote Speaker** at International Summit on Vaccines research and Development (Sept 11-13, 2023. San Francisco, USA).
13. 2023. “Development of an effective nontoxigenic *Clostridioides difficile*-based oral vaccine against *C. difficile* Infection”. **Invited Speaker** at Vaccines Summit 2023 (Nov 13-15, 2023. Boston, MA).
14. 2023. “Recombinant fusion protein vaccine containing *Clostridioides difficile* FliC and FliD protects mice against *C. difficile* Infection”. **Invited Speaker** at Immunoforum 2023 (August 21-23, 2023. Vancouver, Canada)
15. 2023. “The challenges and status of vaccine development against *Clostridioides difficile* infection”. **Lead Speaker** at Exploring New Horizons in Biotechnology (ENB-2023), Banaras Hindu University (Feb 10-12, 2023. Virtual attending. Varanasi, India).
16. 2023. “*Clostridioides difficile* infection: Understanding its pathogenesis and designing novel approaches to blocking infection”. Speaker at “PhD program recruitment visit” (Feb 10 and Mar 17, 2023. USF).
17. 2022. “Development of effective vaccines against *Clostridioides difficile* infection”. **Convener and speaker** at American Society of Microbiology (ASM) 2022 meeting (June 9-13, 2022. Washington DC).
18. 2022. “The challenges and status of vaccine development against *Clostridioides difficile* infection” **Keynote Speaker** at International Conference and Expo on Applied Microbiology (Virtual Conference June 17-18, 2022).
19. 2022. “Multivalent vaccines against *Clostridioides difficile* infection”. **Invited speaker** at 7th International Conference on Vaccines Research & Development (November 7-9, 2022. Boston, USA).
20. 2022. “FliW and CsrA govern flagellin (FliC) synthesis and play pleiotropic roles in virulence and physiology of *Clostridioides difficile* R20291”. Speaker at Anaerobe 2022 (July 28-31, 2022. Seattle, USA)
21. 2022. “*Clostridioides difficile* infection: pathogenesis and designing novel approaches to blocking infection”. **Invited Speaker** in the course “Drug Discovery” (April 6, 2022, USF)
22. 2021. “Bacterial Pathogenesis” (Nov 24, 2021. **Invited Speaker** at Dankook University, South Korea.)
23. 2021. “The nontoxigenic *Clostridioides difficile* CCUG33785 protects mice against infection with an epidemic *C. difficile* strain”. **Convener and speaker** at World Microbe Forum, ASM and FEMS (June 20-24, 2021. Virtual Conference)
24. 2021. “*Clostridioides difficile* infection: understanding the host immune response and designing novel approaches to blocking infection”. (**Invited Speaker** in the Department of Chemistry, University of South Florida. Mar 31, 2021)
25. 2021. “Vaccine development against *Clostridioides difficile* infection”. (**Invited Speaker** at Vaccines Conference-2021, Virtual Conference, Aug 26-28, 2021, Paris, France)
26. 2020. “Innate immunity”. (December 9, 2020. **Invited Speaker** at Dankook University, South Korea.)
27. 2020. “Adaptive immunity”. (December 10, 2020. **Invited Speaker** at Dankook University, South Korea.)
28. 2020. “*Clostridioides difficile* infection: Understanding the host cell response”. (January 28, 2020. **Invited Speaker** at University of Florida)
29. 2019. “The role of Dendritic Cells in *Clostridium difficile* infection”. Speaker at Clostpath 11. (August 19-22, 2019. Leiden, The Netherlands)
30. 2019. “A Novel Bacteriophage Lysin-human Defensin Fusion Protein is Effective in Treatment of

Clostridioides difficile Infection in Mice". Speaker at Bacterial Infection & Host Defense. (April 4-7, 2019. Suzhou, China)

31. 2019. "*Clostridium difficile* infection: Understanding the host cell response, antibiotic resistance and designing novel approaches to blocking infection". (**Invited Speaker** at Nanjing University of Traditional Chinese Medicine. April 17, 2019. Nanjing, China)
32. 2019. "*Clostridium difficile* infection: Understanding the host cell response, antibiotic resistance and designing novel approaches to blocking infection". (**Invited Speaker** at Hangzhou Medical College. April 19, 2019. Hangzhou, China)
33. 2019. "*Clostridium difficile* infection: Understanding the host cell response, antibiotic resistance and designing novel approaches to blocking infection". **Invited Speaker** in the Infectious Disease Symposium. (January 14, 2019, USF)
34. 2018. "Chimeric protein vaccines against *Clostridium difficile* infection in mice". Speaker at International Conference on Gram-positive Pathogens. (October 14-17, 2018. Omaha, USA).
35. 2018. **Invited Speaker** on the "5th Annual Anthony Galiardi Memorial Foundation Fundraising Event" to provide community education and knowledge on epidemiology, prevention, and treatment of *Clostridium difficile* infection. (December 22, 2018. Clearwater, FL)
36. 2018. "*Clostridium difficile* infection: Understanding the host cell response, antibiotic resistance and designing novel approaches to blocking infection". Speaker at USF-Irish Marine Biodiscovery Consortium. November 20, 2018. USF)
37. 2018. "Cwp22, a novel peptidoglycan cross-linking enzyme, plays pleiotropic roles in *Clostridium difficile* pathogenesis". **Invited Speaker** at 2nd International Congress and Expo Bacteriology. (November 15-16, 2018. Dallas, USA).
38. 2018. "Intestinal inflammation in *C. difficile* infection is regulated by Tpl2". **Invited Speaker** at International Conference and Exhibition on Immunology. (Nov 26-28, 2018. San Diego, USA).
39. 2018. "Emerging hypervirulent epidemic *Clostridium difficile* strains of St37 type (toxin A-B+) pose a potential threat in China". ASM meeting. (July 7-11, 2018. Atlanta, USA).
40. 2018. "Innate immune response to *Clostridium difficile* infection (CDI) and vaccine development against CDI" (April 4, 2018. **Invited Speaker** at Colorado State University, USA).
41. 2018. "*Clostridium difficile* infection: Understanding the host cell response and designing novel approaches to blocking infection". **Invited Speaker** in the course "Drug Discovery" (March 21, 2018. USF)
42. 2018 "*Clostridium difficile* infection: Understanding the host cell response and designing novel approaches to blocking infection". (March 1, 2018. **Invited Speaker** at Georgia State University, USA).
43. 2017. "Multivalent mucosal vaccines against *Clostridium difficile* infection". **Invited Speaker** at ASM Southeastern Branch meeting. (November 10-12, 2017. Saint Petersburg, FL, USA).
44. 2017. "TPL2 is a key regulator of inflammation in *C. difficile* infection". 10th International Conference on Molecular Biology and Pathogenesis of Clostridia. (August 7-10, 2017. Ann Arbor, Michigan, USA).
45. 2016. "Vaccine development against *Clostridium difficile* infection". (September 8, 2016. **Invited Speaker** at Dankook University, South Korea).
46. 2016. "The signaling events of TNF-alpha production in *Clostridium difficile* infection". (September 7, 2016. **Invited Speaker** at Dankook University, South Korea).
47. 2016. "The host cell response to *Clostridium difficile* infection". (September 9, 2016. **Invited Speaker** at Shanghai Jiao Tong University, China).
48. 2016. "The role of TNF-alpha in the pathogenesis of *Clostridium difficile* infection". (September 14, 2016. **Invited Speaker** at Chinese Academy of Agricultural Sciences, Lanzhou Veterinary Research Institute, China).
49. 2016. "Oral immunization with non-toxigenic *C. difficile* strains expressing chimeric toxin fragments elicits protective immunity against *C. difficile* infection in both mice and hamsters". Speaker at Anaerobe 2016. (July 11-14, Nashville, TN).
50. 2016. "The critical role of RhoA in *Clostridium difficile* toxin-induced TNF-alpha production". (April 15, 2016. **Invited Speaker** in the Department of Cell Biology, Microbiology & Molecular Biology, University of South Florida).
51. 2016. "*Clostridium difficile* infection: Understanding the host cell response and developing novel vaccines to prevent infection". **Invited Speaker** in the Bacteriologist Group Meeting. (May 4, 2016. University of South Florida).
52. 2016. "*Clostridium difficile* infection: Understanding the host cell response and developing novel vaccines to prevent infection". (March 9, 2016. **Invited Speaker** in the College of Medicine, University of South Florida).

53. 2016. "*Clostridium difficile* infection: progress in vaccine development". **Invited Speaker** in the Signature Interdisciplinary Program in Allergy, Immunology, and Infectious Disease program. (January 21, 2016. University of South Florida).
54. 2015. "Novel chimeric vaccines against *Clostridium difficile* infection". **Invited Speaker** at the Immunology Summit 2015. (September 28-30, 2015. Houston, Texas).
55. 2015. "Novel multivalent mucosal/oral vaccines against *Clostridium difficile* infection". (July 21, 2015. **Invited Speaker** at Tufts University, Institute of Innovation, Boston).
56. 2015. "*Clostridium difficile* infection: Understanding the host cell response and designing novel approaches to blocking infection". (February 26, 2015. **Invited Speaker** at the University of South Florida).
57. 2015. "*Clostridium difficile* infection: Understanding the host cell response and designing novel approaches to blocking infection". Speaker at Sino-Micro Symposium 2015. (June 2, 2015. New Orleans, USA).
58. 2015. "Development of novel vaccines against *Clostridium difficile* infection". (January 26, 2015. **Invited Speaker** in the Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts).
59. 2014. "A recombinant fusion protein (mTcd138) comprising the N-terminus of *Clostridium difficile* toxin B (TcdB) and the receptor binding domain of *C. difficile* toxin A (TcdA) provides full protection against *C. difficile* infection". Speaker at 2nd International Congress on Bacteriology and Infectious Diseases. (November 17-19, 2014. Chicago, USA).
60. 2014. "Development of novel vaccines against *Clostridium difficile* infection". (August 20, 2014. **Invited Speaker** at Tufts University, Tufts Institute for Innovation).
61. 2014. "Involvement of MAP kinases and RhoA in *Clostridium difficile* toxin A-induced TNF-alpha production by Macrophages". (January 13, 2014. **Invited Speaker** in the Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts).
62. 2013. "*Clostridium difficile* infection: pathogenesis and development of immune-based prevention and therapy". **Invited Speaker** at the BIT's 3rd Annual World Congress of Microbes. (2013, Wuhan, China).
63. 2012. "TNF-alpha and *Clostridium difficile* infection". Speaker at Campus-Wide Work-in-Progress. (February 14, 2012. Tufts University Cummings School of Veterinary Medicine.)
64. 2011, "A mouse relapse model of *C. difficile* infection and its application in evaluating immunotherapies against disease". Speaker at the 7th International Conference on the Molecular Biology and Pathogenesis of the Clostridia. (October 25-29, 2011. Ames, IA, USA).
65. 2011, "A chimeric vaccine prevents primary and recurrent *Clostridium difficile* infection". Speaker at the Fourteenth Annual Conference on Vaccine Research. (May 16-18, 2011. Baltimore, USA).
66. 2007, "Architecture of the 99 bp DNA – Six Protein Regulatory Complex of the λ *att* Site". Speaker at the American Society for Biochemistry and Molecular Biology Annual Conference. (April 28-May 2, 2007. Washington, DC. USA).
67. 2006, "Accessory DNA-bending proteins confer a complex contour on the 99 bp regulatory DNA of bacteriophage lambda *att* site as determined by triangulation of FRET distances". Speaker at the Nucleic Acids Conference. (June 4-9, 2006. Salve Regina University, RI, USA.).

ACADEMIC SERVICES

Services for National and International Grant Review Panels

- NIH Drug Discovery and Molecular Pharmacology A (DMPA) Study Section Panel (Nov 4-5, 2025)
- NIH Drug Discovery and Molecular Pharmacology A (DMPA) Study Section Panel (June 26-27, 2025)
- NIH Immunity and Host Defense (IHD) Study Section Panel (April 23-25, 2025)
- Auburn University's Research Support Program (RSP). March 2025
- UK Research and Innovation (UKRI). March 24, 2025
- NIH Drug Discovery and Molecular Pharmacology A (DMPA) Study Section Panel (Nov 5-6, 2024)
- Grant Review panel for UK Research and Innovation (Nov 2024)
- Grant Review panel for Canada Foundation for Innovation (March 2024)
- Grant Review panel for Swiss National Science Foundation (Feb 2024)
- Grant Review panel for German Research Foundation (Jan 2024)
- **Co-Chair** for NIH Center for Scientific Review Special Emphasis Panel (ZRG1 IIDA-V (02) (Jul 17, 2024)
- NIH Vaccines Against Infectious Diseases (VID) Study Section Panel (Feb 29 -Mar 1, 2024)

- NIH Bacterial-Host Interactions (BHI) Study Section Panel (Nov 2-3, 2023)
- NIH Digestive System Host Defense, Microbial Interactions and Immune and Inflammatory Diseases (DHMI) Study Section Panel (June 29-30, 2023)
- NIH Topics in Bacterial Pathogenesis ZRG1 IIDB-k (90) Study Section Panel (Mar 29, 2023)
- Ad hoc Reviewer for French National Research Agency (May 2023)
- NIH Small Business: Anti-infective Therapeutics Study Section Panel (ZRG1 DCAI) (Dec 7-8, 2022)
- NIH Host Interactions with Bacterial Pathogens (HIBP) Study Section Panel (June 29-30, 2022)
- NIH Digestive System Host Defense, Microbial Interactions and Immune and Inflammatory Diseases (DHMI) Study Section Panel (Feb 24-25, 2022)
- NIH Director's New Innovator Award (DP2) Review Panel ZRG1 CVRS-A70 (Oct 12 – Dec 10, 2021)
- Ad hoc grant reviewer for Oak Ridge Associated Universities (08/15/2022 – 10/01/2022)
- NIH Innate Immunity and Inflammation Study Section Panel (June 23-25, 2021)
- Ad hoc grant review for Hong Kong Research Grants Council (RGC) (Mar 2021)
- NIH Director's New Innovator Award (DP2) Review Panel ZRG1 CVRS-A70 (Mar 16-17, 2021)
- **Chair** for NIH Study Section Panel (NIAID R34 and U01) (July 16, 2020)
- NIH Study Section Panel (IDM-B 81) (June 30, 2020)
- NIH Study Section Panel (Gastrointestinal Mucosal Pathobiology Study Section) (Feb 27-28, 2020)
- Ad hoc grant review for Medical Research Council, UK (Sept 2020)
- NIH Study Section Panel (Topics in Bacterial Pathogenesis study section) (July 18, 2019)
- NIH Study Section Panel (Topics in Bacterial Pathogenesis study section) (Mar 20, 2019)
- Ad hoc grant review panel for Cancer Research UK, Jan 16, 2019
- Ad hoc grant reviewer for Oak Ridge Associated Universities 07/31/2019 – 08/22/2019.
- NIH Study Section Panel (IDM-B 81) (Nov 6, 2018)
- NIH Study Section Panel (Innate Immunity and Inflammation III) (Feb 15-16, 2018)
- NIH Study Section Panel (IDM-B 81) (Mar 23, 2018)
- Grant Review for FINOVI (France) (Oct 15, 2018)
- NIH Study Section Panel (IDM-B 81) (Bethesda, NIH, Nov 13, 2017)
- NIH Study Section Panel (IDM-B 80s) (Bethesda, NIH, July 11, 2016)
- Discovery Awards Gastrointestinal Diseases (DIS-GID) Panel of the Peer Reviewed Medical Research Program (PRMRP) of the Department of Defense Congressionally Directed Medical Research Programs (CDMRP) (2017)
- Review panel for Medical Research Council (MRC), UK (March 2016; October 2013)

Services for Scientific Journals and Conferences

- Session Chair for “6th International Virtual Conference on Vaccines & Infectious Disease”, June 14-15, 2025
- Scientific Committee Member of “Vaccine Congress 2025,” Vienna, Austria. July 10-11, 2025
- Scientific Committee Member of the “3rd International Online Conference on Toxins”, Sept 10-12, 2025
- Judge for ASM Florida Branch meeting (Mar 29-30, 2025. Ft. Myers, FL, USA)
- Judge for ASM Southeast Branch meeting (Sept 6-8, 2024. Tampa, FL, USA)
- Special Issue Editor for “Vaccines” (2024 -present, IF 5.2)
- Associate Editor for “Microbiological Research” (2024-present, IF 6.1)
- Associate Editor for “Molecular Medicine” (2019-present, IF 6.38)
- Associate and Topic Editor for “Frontiers in Microbiology” (2019-present, IF 5.08)
- Associate Editor for “Frontiers in Immunology” (2023-present, IF 7.3)
- Editorial Board for “Infection and Immunity” (2016-present, IF 3.94)
- Editorial Board for “Applied and Environmental Microbiology” (2019-present, IF 5.00)
- Editorial Board for “Animal Diseases” (2024-present)
- Ad hoc reviewer for **70 journals**: *Science*, *Nature Communication*, *Lancet*, *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, *mBio*, *Cell Reports*, *Gut Pathogen*, *Infection and Immunity*, *Applied and Environmental Microbiology*, *Journal of Bacteriology*, *Molecular Microbiology*, *Journal of Clinical Microbiology*, *Antimicrobial Agents and Chemotherapy*, *New England Journal of Medicine*, *Proteomics*, *Plos One*, *Beneficial Microbes*, *Pathogens and Disease*, *Frontiers in Immunology*, *Scientific Reports*, *Microbiol. Spectr*, *mSystems*, *npj Vaccines*, *Vaccines*, *Journal of*

Functional Biomaterials, Trends in Pharmacological Sciences, Journal of Inflammation, International Journal of Biological Macromolecules, Emerging Microbes and Infections, Probiotics and Antimicrobial Proteins, iScience, Engineering, Communications Biology, Anaerobe, Infection, Genetics and Evolution, Expert Review in Drug Discovery, Nanomaterials, Informatics in Medicine Unlocked, Cell Reports, Genes, BMC Microbiology, Toxins, European Journal of Inflammation, Cells, Gene Therapy, Digestive Diseases and Sciences, Molecular Medicine, Acta Biochimica et Biophysica Sinica, Plos Pathogens, Bioorganic Chemistry, life Sciences, Biomedical Journal, Annals of Translational Medicine, Infection and Drug Resistance, Journal of Clinical Medicine, Expert Opinion on Biological Therapy, Infection and Microbe, Clinical Microbiology and Infections, Human Vaccines and Immunotherapeutics, Stem Cells International, Current Medicinal Chemistry, mSphereDirect, Pediatric Research, Kuwait Journal of Science, Genes and Genomics, Future Microbiology, Current Medical Research and Opinion, JOVE, Beneficial Microbes, Microbiome, Pathogens and Disease, eBioMedicine, Proteomics,

- Session chair for Vaccines Summit 2024 (Nov 13-15, Boston, USA)
- Judge for USF Health Research Day (2016, 2017, 2019, 2020, 2021, 2022, 2023)
- Convener and speaker at American Society of Microbiology (ASM) 2022 meeting (June 9-13, 2022)
- Organizing Committee for the Global Experts Meeting on Toxicology (July 14-16, 2022)
- Convener and speaker at ASM 2021 meeting (June 20-24, 2021)
- Judge for iPosters at ASM 2021 meeting (June 20-24, 2021)
- Moderator for 12th International Conference on the Molecular Biology & Pathogenesis of the Clostridia (Sept 13-16, 2021)
- Judge for Florida and Southeastern Branches ASM, Virtual Meeting (Mar 26, 2021)
- Organizing Committee for “International Conference and Exhibition on Immunology” 2018, San Diego, USA
- Chair of Bacterial Pathogenesis Session, ASM Southeastern Branch Meeting (2017)
- Chair of the 3rd Annual Symposia of Bacteriology and Infection, Wuhan, China (July 30–Aug 1, 2013)

Services for University of South Florida (USF), Academic Societies and Community

- Mentor for “Global Academic Inventors Network” for NAI (National Academy of Inventors) since 2025
- Mentor for “ASM future Leaders Mentorship Fellowship (FLMF), May 1, 2025 – April 30, 2027
- Faculty Recruitment Committee for Immunology Faculty Search (2025)
- Judge for Invention Convention Florida Competition (April 12, 2025)
- Judge for USF Graduate symposium (March 26, 2025)
- Judge for high-school student debate tournament, Florida Gulf Coast Catholic Forensics league (FGCCFL) (Jan 16, 2025)
- Judge for high-school student debate tournament, Florida Gulf Coast Catholic Forensics league (FGCCFL) (Nov 9, 2024)
- Speaker for “Great American Teach-In” program at Young Middle Magnet School, Tampa, FL (Nov 25, 2024)
- Interview and Recruitment Committee for PhD program in the Morsani College of Medicine, USF (2017, 2018, 2019, 2020, 2022, 2023, 2024)
- USF Faculty Senate (Since Sept 2024)
- Faculty Recruitment Committee for Microbiome Faculty Search (2024)
- Faculty Recruitment Committee for Microbe and Infection Faculty Search (2024)
- Faculty Recruitment Committee for Microbiome Faculty Search (2023)
- Executive Committee Member of USF Chapter of National Academy of Inventors, since 2023
- President for USF Chapter of National Academy of Inventors, since 2023
- Speaker for “Great American Teach-In” program, Leto High School, Tampa, FL. Dec 8, 2023
- Vice President for USF Chapter of National Academy of Inventors (2022)
- Speaker at 9th Annual Anthony Gagliardi Memorial Foundation Fundraising to support research on *Clostridioides difficile* (Dec 17, 2022. Clearwater, FL)
- Secretary for USF Chapter, National Academy of Inventors (2021)
- The Nominating Committee of the Morsani College of Medicine Faculty Council (Since 2021)
- Council Committee on Faculty Issues at USF, since 2020
- Member of the Research Committee, College of Medicine at USF (2017-2021)
- Chair of Research Committee of College of Medicine at USF (2019-2020)
- IACUC Committee Member of the University of South Florida (USF) (since 2020)

- Institutional Biosafety Committee (IBC) Member of the University of South Florida (USF) (since 2017)
- Departmental Representative of Faculty Council for the College of Medicine at USF (2017-2019)
- Outstanding Service as an Online Mentor of the ASM Minority Mentoring Program 2011
- Search Committees for faculty positions in the Department of Molecular Medicine, USF (2017 and 2018)

PROFESSIONAL MEMBERSHIP

- American Society for Microbiology
- Anaerobe Society of the Americas
- Society for Mucosal Immunology
- The American Association of Immunologists
- American Association for the Advancement of Science (AAAS)
- American Society for Microbiology Southeast Branch
- National Academy of Inventors (NAI)
- International Society for Vaccines (ISV)

MEDIA REPORT

- **2025:** Xingmin Sun was recognized with research achievement and innovation excellence awards. (<https://www.usf.edu/research-innovation/news/2025/eleven-usf-faculty-being-recognized-with-research-achievement-and-innovation-excellence-awards.aspx>)
- **2025:** Xingmin Sun was named senior members of National Academy of Inventors. (<https://www.usf.edu/research-innovation/news/2025/nine-usf-faculty-named-senior-members-of-national-academy-of-inventors.aspx>)
- **2024:** USF Tech Tour featuring Dr. Xingmin Sun. (<https://www.youtube.com/watch?v=vt0ecITxv90>)
- **2024:** USF, Corridor collaboration supports infrastructure innovation, vaccine development and infection fighting strategies. (<https://www.usf.edu/research-innovation/news/2024/usf-corridor-collaboration-supports-infrastructure-innovation-vaccine.aspx>)
- **2023:** Bereaved son takes a swing at deadly infection. (<https://giving.usf.edu/impact/bereaved-son-takes-swing-deadly-infection>)
- **2022:** Antibiotics intended to heal can actually encourage resistance of life-threatening C. difficile infection. (<https://hscweb3.hsc.usf.edu/blog/2022/10/12/antibiotics-intended-to-heal-can-actually-encourage-resistance-of-life-threatening-c-difficile-infection/>)
- **2020:** Five USF Faculty Members Recognized with Excellence in Innovation Awards (<https://www.usf.edu/news/2020/five-faculty-members-recognized-with-excellence-in-innovation-awards.aspx>)
- **2018:** Media interview at the American Society of Microbiology Meeting 2018 (USF Health microbiologist shares team's progress on vaccine for C. difficile infection). (<https://hscweb3.hsc.usf.edu/blog/2018/06/13/usf-health-microbiologist-shares-teams-progress-on-vaccine-for-c-diff-infection/>)
- **2018:** A vaccine for Clostridium difficile? Dr. Sun shares what to consider. (<https://www.contagionlive.com/videos/vaccine-for-clostridium-difficile-what-to-consider>)
- **2018:** Dr. Sun shares current progress on developing vaccine for Clostridium difficile infection at the ASM 2018 Conference. (<https://www.contagionlive.com/view/vaccine-for-clostridium-difficile-current-progress>)
- **2018:** Xingmin Sun was recognized in 2018 Outstanding Research Achievement Awards. (<https://www.research.usf.edu/absolute-news/templates/usfri-template.aspx?articleid=7255&zoneid=1>)
- **2018:** Anthony Gagliardi Foundation donates \$15,000 to Clostridium difficile research at USF Health. (<https://hscweb3.hsc.usf.edu/giving/2018/10/26/anthony-gagliardi-foundation-donates-15000-to-c-diff-research-at-usf-health/>)
- **2014:** Tufts Institute for Innovation has great expectations for tackling some of the world's formidable public health problems. (http://now.tufts.edu/articles/discovery-impact?utm_source)

- **2006:** Scientists map structure of DNA-doctoring protein complex (Science Daily, Dec 29, 2006). (<http://www.sciencedaily.com/releases/2006/12/061207160154.htm>)