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

ADDRESS

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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

APPOITMENTS

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

AWARDS and HONORS

- 2024 "Early-Stage Innovation Award", USF
- 2020 "Excellence in Innovation Award", USF
- 2018 "Faculty Outstanding Research Achievement Award", USF
- 2014 "Tufts Institute for Innovation Inaugural Award" ($250K)", Tufts University (This institute is a major initiative of the Tufts's strategic plan for next 10 years)
- 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

TEACHING, LECTURE

- "MD Course 5" at the College of Medicine, USF, 2021
- **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
- "Molecular Basis of Disease" (BCH6627) with a focus on Infectious Disease, USF, since 2018
- "Drug Discovery" (PHC7935), USF, 2018 & 2022
- **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:

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

Thesis 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 – present)
- Emilee Mustor (2022 – present)
- Rachel Washburn (2023 – present)
- Alexis Rickman (2023 – present)
- Alisa Anderson (2023 – present)

- Patrick Consol (2023 – present)
- Adewale James (2023 - present)
- Erika Valdespino (2024 - 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 Adebowale (2023)

Master Students:

- Ramya Yada (May 2024 – present)
- Veronica Gosnell (Sept 2023 – present)
- Rajath Talpady (Sept 2023 – Jun 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 EI 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:

- 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:

- Juan Ulloa Arrieta (May 2024 –
- Ethan Wasserman (May 2024 –
- Marco Hanna (May 2023 – present)
- Justin Boumalhab (July 2023 – Jun 2024)
- 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)

Awards received by lab members:

- Clinical & Translational Science Award 2024, USF (Lubem Agbendeh)
- ICAAC Program Committee Award 2016 (Yuanguo Wang)
- Anaerobe 2016 Travel Award (Yuanguo Wang)
- ASM Infectious Disease Fellow Travel Award 2017 (Chunhui Li)
- ASM Infectious Disease Fellow Program 2018 (Chunhui Li)
- ASM 2019 Travel Award (Ishani Wickramage)

LECTURES by INVITATION

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1. 2024. “Surface layer proteins as effective vaccine candidates against *C. difficile* infection”. Invited Speaker at “Vaccine Congress 2024”. (June 24-25, 2024. Prague, Czech Republic)
2. 2024. “A novel peptidoglycan hydrolase, plays pleiotropic roles in Clostridioides difficile R20291”. Speaker at “22nd International Conference on Bacilli and Gram-positive Bacteria”. (June 18-21, 2024. Indiana University, USA)
3. 2023. “Mucosal Vaccine Strategies against *Clostridioides difficile* infection”. **Invited Speaker** at 8th International Conference on Vaccines Research & Development (Nov 6-8, 2023. Boston, MA)
4. 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).
5. 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).
6. 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)
7. 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).
8. 2023. “Clostridiodes 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).
9. 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).
10. 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).

11. 2022. “Multivalent vaccines against *Clostridioides difficile* infection”. **Invited speaker** at 7th International Conference on Vaccines Research & Development (November 7-9, 2022. Boston, USA).
12. 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)
13. 2022. “*Clostridioides difficile* infection: pathogenesis and designing novel approaches to blocking infection”. **Invited Speaker** in the course “Drug Discovery” (April 6, 2022, USF)
14. 2021. “Bacterial Pathogenesis” (Nov 24, 2021. **Invited Speaker** at Dankook University, South Korea.)
15. 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)
16. 2021. “*Clostridiodes 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)
17. 2021. “Vaccine development against *Clostridioides difficile* infection”. (**Invited Speaker** at Vaccines Conference-2021, Virtual Conference, Aug 26-28, 2021, Paris, France)
18. 2020. “Innate immunity”. (December 9, 2020. **Invited Speaker** at Dankook University, South Korea.)
19. 2020. “Adaptive immunity”. (December 10, 2020. **Invited Speaker** at Dankook University, South Korea,)
20. 2020. “*Clostridiodes difficile* infection: Understanding the host cell response”. (January 28, 2020. **Invited Speaker** at University of Florida)
21. 2019. “The role of Dendritic Cells in *Clostridium difficile* infection”. Speaker at Clostpath 11. (August 19-22, 2019. Leiden, The Netherlands)
22. 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)
23. 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)
24. 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)
25. 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)
26. 2018. “Chimeric protein vaccines against *Clostridium difficile* infection in mice”. Speaker at International Conference on Gram-positive Pathogens. (October 14-17, 2018. Omaha, USA).
27. 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)
28. 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)
29. 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).
30. 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).
31. 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).
32. 2018. “Innate immune response to *Clostridium difficile* infection (CDI) and vaccine development against CDI” (April 4, 2018. **Invited Speaker** at Colorado State University, USA).
33. 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)
34. 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).
35. 2017. “Multivalent mucosal vaccines against *Clostridium difficile* infection”. **Invited Speaker** at ASM

Southeastern Branch meeting. (November 10-12, 2017. Saint Petersburg, FL, USA).

36. 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).
37. 2016. “Vaccine development against *Clostridium difficile* infection”. (September 8, 2016. **Invited Speaker** at Dankook University, South Korea).
38. 2016. “The signaling events of TNF-alpha production in *Clostridium difficile* infection”. (September 7, 2016. **Invited Speaker** at Dankook University, South Korea).
39. 2016. “The host cell response to *Clostridium difficile* infection”. (September 9, 2016. **Invited Speaker** at Shanghai Jiao Tong University, China).
40. 2016. “The role of TNF-alpha in the pathogenies of *Clostridium difficile* infection”. (September 14, 2016. **Invited Speaker** at Chinese Academy of Agricultural Sciences, Lanzhou Veterinary Research Institute, China).
41. 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).
42. 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).
43. 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).
44. 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).
45. 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).
46. 2015. "Novel chimeric vaccines against *Clostridium difficile* infection”. **Invited Speaker** at the Immunology Summit 2015. (September 28-30, 2015. Houston, Texas).
47. 2015. “Novel multivalent mucosal/oral vaccines against *Clostridium difficile* infection”. (July 21, 2015. **Invited Speaker** at Tufts University, Institute of Innovation, Boston).
48. 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).
49. 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).
50. 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).
51. 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).
52. 2014. “Development of novel vaccines against *Clostridium difficile* infection”. (August 20, 2014. **Invited Speaker** at Tufts University, Tufts Institute for Innovation).
53. 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).
54. 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).
55. 2012. “TNF-alpha and *Clostridium difficile* infection”. Speaker at Campus-Wide Work-in-Progress. (February 14, 2012. Tufts University Cummings School of Veterinary Medicine.)
56. 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).
57. 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).

58. 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).
59. 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.).

SCHOLARLY ACTIVITY (grant history)

Current:

1. NIH 2R01 AI132711 (PI: **X. Sun**): 03/01/2024 – 03/31/2029
   Title: Multivalent vaccines against Clostridioides difficile infection.
   Percent effort: 25%. Total costs for project period: $3,702,781

2. NIH R21 AI168781 (PI: **X. Sun** / Y. Zhang): 06/01/2024 – 03/31/ 2026
   Title: Development of probiotic-based and Clostridioides difficile-targeted therapeutics.
   Percent effort: 5%. Total costs for project period: $356,251

3. NIH R01AI149852 (PI: J. Cai / **X. Sun**): 09/23/2019 – 08/31/2024
   Title: Novel polymer biomaterials combating C. difficile infection
   Percent effort: 15%. Direct costs per year: $250,000. Total costs for project period: $1,868,250

4. NIH R21 AI159745 (PI: J. Lin / **X. Sun**): 09/24/2021 – 08/31/2024
   Title: Bile acid salt inhibitors and Clostridioides difficile infection
   Percent effort: 5%. Direct costs per year: $226,745. Total costs for project period: $485,866

5. USF Early-Stage Innovation Award (PI: **X. Sun**) 04/01/2024 – 10/31/2024
   Title: Development of beneficial bacterium-based oral vaccines against *Clostridioides difficile* infection
   Percent effort: 0%. Total costs: $25,000

6. RVAC, Inc contract (PI: **X. Sun**): 06/15/2022 – 06/30/2024
   Title: Assessment of efficacies of mRNAs in mouse and hamster models of Clostridioides difficile infection.
   Percent effort: 5%. Total costs for project period: $436,906

7. 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.
   Percent effort: 0%. Total costs for project period: $40,000

8. USF Interdisciplinary Research Awards (IDRA) (PI: R. Jiang): 07/01/2024
   Title: USF Genomics – Bridging High Research Technological Gaps
   My role: **Co-Investigator**
   Percent effort: N/A. Total costs for project period: $500.000

9. 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**
   Percent effort: N/A. Total costs for project period: $450,500

10. Contract with Pan Theryx, Inc (PI: **X. SUN**): 06/01/2019 – current
    Title: N/A. Percent effort: 0%. Total costs for project period: $42,000

11. Anthony Gagliardi Foundation (PI: **X. Sun**): 08/30/2018 – current
    Title: N/A. Percent effort: 0%. Total costs for project period till 2023: $47,500
    NOTE: Yearly continuation for funding

Pending:

1. U19AI189338 (PI: **X. Sun** /J. Cai/ Y. Chen) 03/01/2025 – 02/25/2030
   Title: Integrative Strategies Combating *Clostridioides difficile* infection (ISC-CDI).
   Percent effort: 65%

2. NIH R01 AI69023 (**P**I: Y. Chen / **X. Sun /**J. Leahy): Resubmission in Oct 2023
   Title: Development of peptidoglycan transpeptidase inhibitors targeting *Clostridioides difficile* sporulation and growth. (**16 percentile**)

3. NIH R21 AI186032 (**PI: X. Sun** / F. Zhang): Submission in Oct 2023
   Title: Glycomic approaches toward drug discovery against *Clostridioides difficile* infection. (**Preliminary score of 40**)
4. USF CREATE (PI: L. Shaw): Submission on 03/30/2024
   Title: Center for Antimicrobial Resistance (CAMRA)
   My role: **Co-Investigator**
   Total costs of project period: $1000,000
5. USF CREATE (PI: R Jiang) Submission on 03/30/2024
   Title: Pushing the frontiers of precision medicine with interdisciplinary high-resolution research
   My role: **Co-PI**
   Total costs of project period: $1000,000
6. USF IDRA (PI: J. Cai / **X. Sun**): Submission on 03/08/2024
   Title: Synergistic strategies combating Clostridioides difficile
   Total costs of project period: $ 500,000

Completed:

1. NIH R01 AI132711 (**PI: X. Sun**): 06/20/2017 – 05/31/2023
   Title: Multivalent vaccines against *Clostridium difficile* infection
   Percent effort: 25%
   Total costs for project period: $1,923,721
2. 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
   Percent effort: 5%
   Total costs for project period: $155,598
3. 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
   Percent effort: 0%
   Total costs for project period: $100,000
4. NIH **–** K01DK092352 (**PI: X. Sun**): 04/01/2012 – 03/31/2018
   Title: Signaling pathway of TNF-α production and *C. difficile* infection
   Percent effort: 50%
   Total costs for project period: $469,625
5. NIH R21 AI113470 (**PI: X. Sun**): 05/01/2015 – 04/30/2018
   Title: Multivalent bacillus mucosal vaccines against *C. difficile* infection
   Percent effort: 25%
   Total costs for project period: $453,750
6. 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
   Percent effort: 0%
   Total costs for project period: $50,000
7. 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
   Percent effort: 0%
   Total costs for project period: $10,000
8. Tufts Institute for Innovation Award (**PI: X. Sun**): 10/01/2014 – 08/31/2015
   Title: Novel multivalent mucosal/oral vaccines against *C. difficile* infection
   Percent effort: 10%
   Total costs for project period: $250,000
9. 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
   Percent effort: 0%

Total costs for project period: $2000

10. Tufts Collaborates Award (**PI: X. Sun**): 07/01/2013 – 06/30/2015
    Title: A novel chimeric vaccine against *C. difficile* infection
    Percent effort: 5%
    Total costs for project period: $50,000
11. 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
    Percent effort: 0%
    Total costs for project period: $65,210
12. 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
    Percent effort: 5%
    Total costs for project period: $34,139

PUBLISHED BIBLIOGRAPH

Peer Reviewed Journal Articles:

1. 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. ***Corresponding author.** (IF=15.1).
2. 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**. (IF= 9.0)
3. 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.** (IF=3.62)
4. 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.** (IF= 7.39)
5. Joshua Heuler, Harish Chandra, **Sun X***. Mucosal Vaccination Strategies against Clostridioides difficile Infection. Vaccines. 2023;11(5), 887. ***Corresponding author.** (IF= 7.8)
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9. 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.**
10. 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.** (IF= 6.1)
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resistance and sporogenesis in Clostridioides difficile. **Nat Commun**. 2022;13(1):4370. PubMed PMID: 35902581. ***Co-corresponding author**. (IF=17.7)

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Book and Book Chapter:

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Manuscript Submission:

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Meeting Abstracts:

1. Chakraborty S, Roy A, **Sun X.** A Novel Multi-Epitope Vaccine against Clostridioides difficile surface proteins. Anaerobe 2024 Congress. July 8-11, 2024. Ann Arbor, USA
2. Agbendeh L, Chakraborty S, Tomatsidou A, Roy A, Wang S, **Sun X**. Development of Novel Multi-Epitope Fusion Vaccines Against Clostridioides Difficile Infection Using Reverse Vaccinology. Anaerobe 2024 Congress. July 8-11, 2024. Ann Arbor, USA
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9. Wang S, Zhu D, & **Sun X*.** Development of an Effective Nontoxigenic Clostridioides difficile–Based Oral Vaccine against C. difficile Infection. Vaccines Summit 2023. November 13-15, 2023. Boston, USA.
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12. Chakraborty S, Zhu D. & **Sun X***. Functional characterization of an OmpR family two-component system from Clostridioides difficile R20291. USF Research Day, March 3, 2023
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14. **Sun X*.** The challenges and status of vaccine development against *Clostridioides difficile* infection. International Conference and Expo on Applied Microbiology. Virtual Conference, June 17-18, 2022.
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from *Clostridioides difficile* R20291. International Conference on Gram-Positive Pathogens. October 9 - 12, 2022. Omaha, USA.

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24. Zhu D, Bullock J, He Y, & **Sun X***. "Cwp22, a novel peptidoglycan cross-linking enzyme, plays pleiotropic roles in Clostridioides difficile". American Society of Microbiology Annual Meeting 2019, June 20-24, San Francisco, USA.
25. Wickramage I, Peng Z, Harmanus C, Wang S, Alrabaa S, Smits W K, & **Sun X.***. "Genomic and phenotypic characterization and comparative genome analysis of three novel Clostridium difficile strains with respect to virulence and antibiotic resistance". American Society of Microbiology Annual Meeting 2019, June 20-24, San Francisco, USA.
26. Wang S, Wang Y, Cai Y, Kelly C P, & **Sun X***. "Novel Chimeric Protein Vaccines against Clostridium difficile Infection". Bacterial Infection & Host Defense. April 4-7, 2019, Suzhou, China.
27. Wang Y, Wang S, Kelly C P, Feng H, Greenberg A, & **Sun X*.** "TPL2 is a key regulator of intestinal inflammation in C. difficile infection". Bacterial Infection & Host Defense. April 4-7, 2019, Suzhou, China.
28. Peng Z, Wang S, Gide M, Zhu D, Li C, Cai J, & **Sun X*.** A Novel Bacteriophage Lysin-human Defensin Fusion Protein is Effective in Treatment of *Clostridioides difficile* Infection in Mice. Bacterial Infection & Host Defense. April 4 - 7, 2019. Suzhou, China.
29. Li C, Meng X, Zhu D, Duan J, Liu S, Liu R, Zhou P, Wu A, Peng S*, & **Sun X***. "A non-027 and non-078 binary toxin positive *Clostridium difficile* play a notable pathogenicity". American Society of Microbiology Annual Meeting 2018. June 7-11, Atlanta, USA.
30. Li C, Meng X, Duan J, Liu S, Liu R, Zhou P, Wu A*, & **Sun X***. "Emerging hypervirulent epidemic Clostridium difficile strain of ST37 type (Toxin A-B+) pose a potential threaten in China". American Society of Microbiology Annual Meeting 2018. June 7-11, Atlanta, USA.
31. Zhu D, He Y, & **Sun X***. "Cwp22, a novel peptidoglycan cross-linking enzyme, plays pleiotropic roles in Clostridium difficile pathogenesis". 2nd International Congress and Expo Bacteriology. November 15 -16, 2018. Dallas, USA.
32. Wang S, Wang Y, Cai Y, & **Sun X***. "Chimeric protein vaccines against *Clostridium difficile* infection in mice". International Conference on Gram-positive Pathogens, 14-17 October 2018, Omaha, USA.
33. Wu Z, Wang Y, Kim H. B, Zhuge R, & **Sun X***. "The role of dendritic cells in *Clostridium difficile* infection". International Conference on Gram-positive Pathogens, 14-17 October 2018, Omaha, USA.
34. Wu Z, Wang S, Li C, Nguyen T, Feng H, & **Sun X***. "Calcium signaling regulates the TcdA-induced activation of TNF-alpha release in MAPK pathway during Clostridium difficile infection". International Conference on Gram-positive Pathogens, 14-17 October 2018, Omaha, USA.
35. Nguyen T, Bullock J, & **Sun X***. "The Effects of Cytokines IL-β, IL-6, TNF-α and *Clostridium difficile* Toxins A & B on Tight Junction Barrier". University of South Florida Research Day 2018. Feb 23, 2018. Tampa, USA.
36. Wang S, Wang Y, Feng H, Greenberg A, & **Sun X***. "TPL2 and *Clostridium difficile*-caused inflammation". Single Cell Genomics Symposium. University of South Florida, March 16, 2018, Tampa, USA.
37. Wang Y, Bouillaut L, Cai Y, Li C, Wang S, Sonenshein A L, & **Sun X***. "Vaccines against *Clostridium difficile* infection". Single Cell Genomics Symposium. University of South Florida. March 16, 2018, Tampa.
38. Wang Y, Bouillaut L, Cai Y, Li C, Wang S, Sonenshein A L, & **Sun X***. "Mucosal vaccines against *Clostridium difficile* infection". University of South Florida Research Day, Feb 24, 2017.

39. Wang Y, Bouillaut L, Cai Y, Li C, Wang S, Wang S, Curtiss III R, Sonenshein A L, & **Sun X***. "Multivalent mucosal vaccines against *Clostridium difficile* infection". 10th International Conference on the Molecular Biology and Pathogenesis of the Clostridia, August 7-10, 2017. Ann Arbor, Michigan, USA.
40. Wang Y, Feng H, Greenberg A, & **Sun X***. "The key role of TPL2 in regulating *C. difficile* infection-mediated inflammation". "International Congress of Mucosal Immunology 2017", July 19-22, 2017, Washington DC, USA.
41. Peng Z, Wang Y, Wang S, Feng H, Greenberg A, & S**un X*.** "The critical of TPL2 in *Clostridium difficile*-caused inflammation". 10th International Conference on the Molecular Biology and Pathogenesis of the Clostridia, August 7-10, 2017, Ann Arbor, Michigan, USA.
42. Peng Z, Alrabaa S*, & **Sun X***. "Antibiotic resistance and toxin production of *Clostridium difficile* isolates from the hospitalized patients in a large hospital in Florida". 10th International Conference on the Molecular Biology and Pathogenesis of the Clostridia, August 7-10, 2017, Ann Arbor, Michigan, USA.
43. Peng Z, Alrabaa S*, & **Sun X***. "Antibiotic resistance and toxin production of *Clostridium difficile* isolates from the hospitalized patients in a large hospital in Florida". Keystone symposium; Antimicrobials and Resistance: Opportunities and Challenges (T4). Oct 29-Nov 1, 2017, Santa Fe, USA.
44. Li C, Peng Z, Duan J, Liu S, Meng X, **Sun X***, & Anhua Wu*. "Epidemiology of *Clostridium Difficile* Infection from the Hospitalized Patients in ICU in A Large Teaching Hospital of Central China, 2013-2014". 10th International Conference on the Molecular Biology and Pathogenesis of the Clostridia, August 7-10, 2017, Ann Arbor, Michigan, USA.
45. Wang S, Wang Y, Feng H, Greenberg A, & **Sun** X*. "The critical of TPL2 in *Clostridium difficile*-caused inflammation". ASM Southeastern Branch Annual Meeting, Nov 2017, Saint Petersburg, FL, USA.
46. **Sun X*.** Multivalent mucosal vaccines against *Clostridium difficile* infection. ASM Southeastern Branch Meeting. Nov 10 -12, 2017, St. Petersburg, USA.
47. Peng Z, Alrabaa S*, & **Sun X***. "Antibiotic resistance and toxin production of *Clostridium difficile* isolates from the hospitalized patients in a large hospital in Florida". ASM Southeastern Branch Annual Meeting, Nov 10-12, 2017, Saint Petersburg, FL, USA.
48. Wang Y, Bouillaut L, Ju X, Wang Y, Sonenshein A. L, & **Sun X***. "Oral immunization with non-toxic *C. difficile* strains expressing chimeric fragments of TcdA and TcdB elicit protective immunity against *C. difficile* infection in both mice and hamsters". American Society of Microbiology Annual Meeting 2016, June 16-20, 2016, Boston, USA.
49. Wang Y, Ju X, Tzipori S, Feng H, Greenberg A & **Sun X*.** "TPL-2 is a key regulator of inflammation in *C. difficile* infection". American Society of Microbiology Annual Meeting 2016, June 16-20, 2016, Boston, USA.
50. Wang Y, Bouillaut L, Ju X, Wang Y, Sonenshein A. L. & **Sun X***. "Non-toxic *C. difficile* strains expressing chimeric fragments of TcdA and TcdB protect protective immunity against *C. difficile* infection in both mice and hamsters". Anaerobe 2016, July 11-14, 2016, Nashville, USA.
51. Wang Y, Ju X, Tzipori S, Feng H, Greenberg A, & **Sun X***. "Regulation of intestinal inflammation in *Clostridium difficile* infection by TPL2". Anaerobe 2016, July 11-14, 2016, Nashville, USA.
52. Wang Y, Yan Y, Kim H, Schmidt D, Tzipori S, & **Sun X***. "A chimeric protein (mTcd138) comprising the glucosyltransferase and domains of toxin B and the receptor binding domain of toxin A provides full protection against *Clostridium difficile* infection in mice". 2nd International Congress on Bacteriology and Infectious Diseases. Nov 17-19, 2014, Chicago, USA.
53. **Sun X**, Wang Y, Nie W, Kim H. B, Schmidt D, Tzipori S. "A novel chimeric vaccine against *Clostridium difficile* infection". Tufts Research Day, Tufts University, Sept 20, 2013, Boston, USA.
54. **Sun X,** Wang H, Davis B, & Feng H. "A mouse relapse model of *C. difficile* infection and its application in evaluating immunotherapies against disease". 7th International Conference on the Molecular Biology and Pathogenesis of the Clostridia-Clospath 2011 (October 2011, Ames, IA, USA).
55. Wang, H, **Sun X,** Zhang Y, Tzipori S & Feng H. "Novel Vaccines". 7th International Conference on the Molecular Biology and Pathogenesis of the Clostridia-Clospath 2011 (October 2011, Ames, IA, USA).
56. Steele J, Chen K, **Sun X**, Zhang Y, Wang H, Tzipori S & Feng H. "Systemic dissemination of *C. difficile* toxins A and B is associated with severe fatal disease in the piglet and mouse models". 7th International Conference on the Molecular Biology and Pathogenesis of the Clostridia-Clospath 2011 (October 2011, Ames, IA, USA).
57. Li S, Shi L, **Sun X,** Feng H. "A neutralizing intrabody to study autocleavage of *Clostridium difficile* toxin B". 7th International Conference on the Molecular Biology and Pathogenesis of the Clostridia-Clospath 2011. (October 2011, Ames, IA, USA).
58. **Sun X,** Wang H, Davis B & Feng H. "A mouse relapse model of *Clostrridium difficile* infection". Digestive

Disease Week 2011. (May 2011, Chicago, IL, USA).

59. Wang H, **Sun X**, Zhang Y, Tzipori S & Feng H. "Development of vaccines against *Clostridium difficile* infection". Digestive Disease Week 2011. (May 2011, Chicago, IL, USA).
60. Steele J., Chen K, **Sun X**, Zhang Y, Wang H, Tzipori S & Feng H. "Toxemia is the cause of systemic disease in the piglet and mouse models of *Clostridium difficile* infection". Digestive Disease Week 2011. (May 2011, Chicago, IL, USA).
61. Wang H, **Sun X**, Zhang Y, Tzipori S, & Feng H. "Development of vaccines against *Clostridium difficile* infection". 110th ASM Annual Meeting. (May 2010, San Diego, CA, USA).
62. Wang H., **Sun** X, Zhang Y, Shi L, Tzipori S, & Feng H. "The Glucosyltransferase determines the major biological activities of *Clostridium difficile* toxins". 110th ASM Annual Meeting. (May 2010, San Diego, CA, USA).
63. Wang H, **Sun X**, Zhang Y, Tzipori S, & Feng H. "Evaluation of a glucosyltransferase-deficient holotoxin B of *Clostridium difficile* as a novel vaccine candidate". Second Greater Boston Symposium on Vaccine Science. (April 2010, Cambridge, MA, USA).
64. Zhang Y, Shi L, **Sun X**, Wang H, Tzipori S, Wang X, & Feng H. "A fragment of 97-amino-acids (D97) within the transmembrane domain is essential for the cellular activity of *Clostridium difficile* toxin B". 110th ASM Annual Meeting. (May 2010, San Diego, CA, USA).
65. **Sun X**, Tzipori S & Feng H. "Involvement of MAP kinases in *Clostridium difficile* toxin A-mediated TNF-alpha production by macrophages". 6th ClostPath International Conference: Clostridia: The impact of Genomics on Disease Control. (October 2009, Italy).
66. **Sun X,** Tzipori S & Feng H. "Combined activation of the ERK and p38 pathways by *Clostridium difficile* toxin A mediates TNF-α production by macrophages". (September 2009, San Francisco, USA).
67. He X, **Sun X**, Wang J, Zhang Q, Tzipori S & Feng H. "Antibody-mediated enhanced cytotoxcitiy of *Clostridium difficile* toxin: Application in Diagnosis". 6th ClostPath International Conference: Clostridia: The impact of Genomics on Disease Control. (October 2009, Italy).
68. Wang J, Chen M, Huang T, **Sun X**, Li S, Tzipori S, Wang X & Feng H. "Anti-tumor activity of *Clostridium difficile* toxin B". 6th ClostPath International Conference: Clostridia: The impact of Genomics on Disease Control. (October 2009, Italy).
69. **Sun X**, Tzipori S & Feng H. "Combined activation of the ERK and p38 pathways by *Clostridium difficile* toxin A mediates TNF-α production by macrophages". Food & Waterborne Diseases Integrated Research Network Meeting. (April 2009, Washington, DC. USA).
70. **Sun X**, He X, Tzipori S, Gerhard R & Feng H. "Mechanisms of the *Clostridium difficile* toxins-induced secretion of TNF-α by macrophages". Food & Waterborne Diseases Integrated Research Network Meeting. (April 2008, Atalanta, USA).
71. **Sun X**, He X, Tzipori S, Gerhard R & Feng H. "Mechanisms of the *Clostridium difficile* toxins-induced secretion of TNF-α by macrophages". 48th Annual Interscience Conference on Antimicrobial and Chemotherapy and the Infectious Disease Society of America 46th Annual Meeting. (October 2008, Washington, DC. USA).
72. **Sun X,** Mierke D. F, Biswas T, Lee S. Y, Landy A, & Radman-Livaja M. "Architecture of the 99 bp DNA – Six Protein Regulatory Complex of the λ *att* Site". Oxford Workshop on Site-specific recombination, transposition and DNA dynamics. (September 2006, Oxford, UK).
73. **Sun X,** Mierke D. F, Biswas T, Lee S. Y, Landy A, & Radman-Livaja M. **"**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". Nucleic Acids Conference. (June 2006, Salve Regina University, U.S.A.).
74. Neve H, **Sun X**, Heller K. J. "Phage TP-J34 gene products involved in altering the cell surface of lysogenic *Streptococcus thermophilus* strain J34". Workshop "Bacterial Cell Surfaces"**.** (March 2004, University of Tübingen, Germany).
75. **Sun X**, Neve H & Heller K.J. "Characterization of a lipoprotein encoded by the temperate *Streptococcus thermophilus* phage TP-J34 and its impact on phage resistance and lysogeny". XIIth International Congress of Virology. (July 27-Aug. 1, 2002, Paris, France).
76. **Sun X,** Heller K. J, & Neve H. "Characterization of a lipoprotein encoded by the temperate *Streptococcus thermophilus* phage TP-J34 and its impact on phage resistance and lysogeny". Seventh Symposium on Lactic Acid Bacteria**.** (September 2002, the Netherlands).
77. Neve H, **Sun X,** & Heller K J. "Impact of a lipoprotein encoded by the temperate *Streptococcus thermophilus* phage TP-J34 on phage resistance and lysogeny". Seventh Symposium on Lactic Acid Bacteria. (September 2002, the Netherlands).
78. Neve H, **Sun X,** & Keller K J. "Molecular and functional characterization of a temperate *Streptococcus*

thermophilus phage TP-J34 gene (*ltp*) encoding a membrane-bound lipoprotein". XIIth International Congress of Virolog*.* (July 27-Aug. 1, 2002, Paris, France).

79. Neve H, **Sun X,** & Heller K J. "Analysis of the temperate *Streptococcus thermophilus* bacteriophage TP-J34 coding for a unique lipoprotein and its phage/host relationship". Microbiology 2000. (March 2000, Munich, Germany).
80. Neve H, **Sun X** & Heller K J. "Analysis of the lysogeny module and the flanking regions of the temperate *Streptococcus thermophilus* bacteriophage TP-J34". FEMS 6# Symposium on lactic acid bacteria - genetics, metabolism and application. (1999, Netherlands).
81. **Sun X,** Neve H & Heller K J. **"**The lipoprotein determinant of the temperate *Streptococcus thermophilus* phage TP-J34: Expression in *E. coli* and subcloning in *S. thermophilus".* EU BIOTECH STARLAB Phage Meeting. (June 1999, Kiel, Germany).
82. **Sun X,** Neve H, Geis A, & Heller K J. "Cloning and overexpression of the lipoprotein gene of *Streptococcus thermophilus* phage TP-J34 in *E. coli".* Annual report of 1998. Federal Research Centre for Nutrition and Food, Kiel, Germany.

PROFESSIONAL SERVICE

- USF Health Microbiome faculty recruitment committee 2024
- MCOM PhD program interview and recruitment committee 2024
- NIH Immunology and Infectious Diseases A (IIDA)-ZRG1 IIDA-V Study Section Panel (July 17, 2024)
- Ad hoc Grant Reviewer for Canada Foundation for Innovation (Mar 2024)
- Ad hoc Grant Reviewer for Swiss National Science Foundation (Feb 2024)
- Ad hoc Grant Reviewer for German Research Foundation (Jan 2024)
- NIH Vaccines Against Infectious Diseases Study Section (VID) 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)
- Faculty Recruitment Committee for Microbiome Faculty Search (2023)
- Judger for USF Health Research Day (2023)
- **President** for USF Chapter of National Academy of Inventors, since 2023
- Review and Recruitment Committee for PhD program in the Morsani College of Medicine, USF (2023)
- NIH Small Business: Anti-infective Therapeutics Study Section Panel (ZRG1 DCAI) (Dec 7-8, 2022)
- **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)
- **Vice President** for USF Chapter of National Academy of Inventors (2022)
- 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)
- Judger for USF Health Research Day (2022)
- Review and Recruitment Committee for PhD program in the Morsani College of Medicine, USF (2022)
- Ad hoc grant reviewer for Oak Ridge Associated Universities (08/15/2022 – 10/01/2022)
- NIH Director's New Innovator Award (DP2) Review Panel ZRG1 CVRS-A70 (Oct 12 – Dec 10, 2021)
- **Convener** and speaker at ASM 2021 meeting (June 20-24,2021)
- 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)
- 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)
- **Secretary** for USF Chapter, National Academy of Inventors (2021)
- **The Nominating Committee** of the Morsani College of Medicine Faculty Council (Since 2021)
- Judge for Florida and Southeastern Branches ASM, Virtual Meeting (Mar 26, 2021)
- Judger for USF Health Research Day (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)
- **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)
- **IACUC Committee** of the University of South Florida (USF) (since 2020)
- Judger for USF Health Research Day 2020
- Review and Recruitment Committee for PhD program in the Morsani College of Medicine, USF (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.
- Review and recruitment Committee for PhD program in the Morsani College of Medicine, USF (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)
- Review and recruitment Committee for PhD program in the Morsani College of Medicine, USF (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 and recruitment Committee for PhD program in the Morsani College of Medicine, USF (2017)
- Review panel for Medical Research Council (MRC), UK (March 2016; October 2013)
- **Associate Editor** for "Molecular Medicine" (2019-present, IF 6.38)
- **Associate 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)
- Review Editor for "Frontiers in Microbiology" (2016- present, IF 5.08)
- Ad hoc reviewer for *Nature Communication, Lancet, Cell Reports, Gut Pathogen, Infection and Immunity, Applied and Environmental Microbiology, Journal of Bacteriology, 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, Microspectrum. Molecular Microbiology, mSphere, Science, Cell Reports, etc.,*
- **Organizing Committee** for "International Conference and Exhibition on Immunology" 2018, San Diego, USA
- **Chair** of Bacterial Pathogenesis Session, ASM Southeastern Branch Meeting (2017)
- **Institutional Biosafety Committee** (IBC) of the University of South Florida (USF) (since 2017)
- Departmental Representative of Faculty Council for the College of Medicine at USF (2017-2019)
- **Chair** of the 3rd Annual Symposia of Bacteriology and Infection, Wuhan, China (July 30–Aug 1, 2013)
- 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)
- Judger for USF Health Research Day in 2016, 2017, 2019, 2020, 2021, 2022

COMMUNITY SERVICE

- 2023. Lecture "Innovation for a better world" at Leto High School for the "USF Great American Teach-In" program (Dec 8, 2023. Leto High School, Tampa, USA).
- 2018. Invited Speaker at 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)

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

MEDIA REPORT

- 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/)
- 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/)
- A vaccine for Clostridium difficile? Dr. Sun shares what to consider. (http://www.contagionlive.com/videos/vaccine-for-clostridium-difficile-what-to-consider)
- Dr. Sun shares current progress on developing vaccine for Clostridium difficile infection at the ASM 2018 Conference. (http://www.contagionlive.com/videos/vaccine-for-clostridium-difficile-current-progress)
- 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/)
- 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)
- Scientists map structure of DNA-doctoring protein complex (Science Daily, Dec 29, 2006). (http://www.sciencedaily.com/releases/2006/12/061207160154.htm)