

MARWAN OSMAN, PH.D., D(ABMM), MPH, SM(ASCP)^{CM}

Department of Neurosurgery, Yale University School of Medicine
330 Cedar Street, TE-406, New Haven, CT 06510
United States
+1 607 262 4219
marwan.osman@yale.edu

SUMMARY OF QUALIFICATIONS

I am a medical microbiologist and molecular epidemiologist focused on infectious diseases and antimicrobial resistance, evidence-based medicine, and One Health interventions. I have practical knowledge in various diagnostic modalities, from traditional culture-based to an array of advanced molecular methods, including next-generation sequencing.

- **Associate Research Scientist Faculty at Yale University School of Medicine.**
- **Diplomate of the American Board of Medical Microbiology (ABMM)**
- **SM(ASCP)^{CM} certification (ID: 25834302)**
- **Ambassador, American Society for Microbiology (ASM).**
- **Six years of experience as Professor at the Lebanese University.**
- **Six years of experience as clinical microbiologist at a Lebanese tertiary care hospital.**
- **Strong active collaborations with scientists from the United States, Europe, Africa, Southeast Asia, and the Middle East.**
- **Supervision of more than 6 PhD and 15 master students.**
- **Trilingual:** English, French, and Arabic.
- **<https://orcid.org/0000-0002-6235-2760> (>120 published articles in peer-reviewed journals)**

PROFESSIONAL EXPERIENCE

Yale School of Medicine, Department of Neurosurgery, **Sep 2023 – Present**
New Haven, CT, United States

Associate Research Scientist Faculty Position (Non-tenure track) – Team leader: Dr. Steven J. Schiff
Infectious Diseases and Antimicrobial Resistance in Neonates with Sepsis and Infants with Postinfectious Hydrocephalus.

Cornell University, College of Veterinary Medicine and Cornell Atkinson Center **Mar 2021 – Aug 2023**
for Sustainability, Ithaca, NY, United States

Postdoctoral Associate – Team leaders: Dr. Kevin J. Cummings and Dr. Casey L. Cazer
Epidemiology of Infectious Diseases and Antimicrobial Resistance at the Human-Animal Interface.

Lebanese University, Faculty of Public Health, Beirut, Lebanon **Oct 2015 – Feb 2021**
Full Professor

Epidemiology, Clinical Microbiology, Antimicrobial Resistance, Public Health, One Health.

El Youssef Hospital Center, Halba, Lebanon **Apr 2015 – Feb 2021**

Clinical Microbiologist at the department of clinical laboratory and member of the infection control committee

EDUCATION

World Education Services (WES) equivalency (USA Ref#5361564 and Canada Ref#4561079)

University of Paris-Saclay, France and Lebanese University, Lebanon **2022-2023**
Master of Public Health

Paris-Diderot University, France **2016**
University Diploma in Tuberculosis

Paris-Diderot University, France **2015**
University Diploma in General Microbiology

Lille University, France

2015

Ph.D. in Immunology, Microbiology, Virology, and Parasitology

Dissertation: "Genetic and phenotypic characterization of Cryptosporidium: from mice to humans"

Lebanese University, Lebanon

2012

Master of Medical Microbiology

Lebanese University, Lebanon

2009

Bachelor of Medical Laboratory Sciences

PROFESSIONAL CERTIFICATIONS

American Board of Medical Microbiology (ABMM) Certification

2025

American Society for Microbiology

SM(ASCP)¹CM Certification – ID: 25834302

2023

American Society for Clinical Pathology

TEACHING EXPERIENCE

University of Science and Technology of Hanoi Hanoi, Vietnam

2025

Medical Parasitology and Mycology (Bachelor level - 40h)

Cornell University Ithaca, USA

2022

Parasitic and Mycotic Zoonoses (Bachelor level – 2h)

Lebanese University Beirut, Lebanon

2015-2021

Antibiotics and antimicrobial resistance (Master level – 46h)

General, systematic, and clinical bacteriology (Bachelor level – 60h)

Medical parasitology and mycology (Bachelor level – 40h)

Virology (Bachelor level – 20h)

Infectious diseases (Bachelor level – 24h)

Basics in epidemiology and biostatistics (Bachelor level – 24h)

PUBLICATIONS (127 ARTICLES ; H-INDEX = 28 ; CITATIONS = 2819)

<https://orcid.org/0000-0002-6235-2760>:

**Corresponding author*

1. Hassan J, **Osman M**, Xu T, Naas T, Schiff SJ, Mann D, Esseili MA, Deng X, Kassem II. Monitoring sewage and effluent water is an effective approach for the detection of the mobile colistin resistance genes (*mcr*) and associated bacterial hosts in the human population and environment in the USA. **Environ Pollut.** 2025; 366:125515.
2. Abbara A, Shortall C, Sullivan R, Zwijsenburg W, Moussally K, Aboshamr R, Naim C, Uyen A, Zaman MH, Karah N, Kejah A, **Osman M**, Fayad AA, Dewachi O. Unravelling the linkages between conflict and antimicrobial resistance. **NPJ Antimicrob Resist.** 2025; 3(1):29.
3. Fayad S, Daaboul D, Abbara A, Cazer CL, Fiorella KJ, Cummings KJ, Yassine I, Hamze M, El Omari K, Dabboussi F, Oueslati S, Kassem II, Naas T, **Osman M***. Evidence of transmission and dissemination of diverse *bla*_{NDM-5}-producing *Escherichia coli* clones between refugee and host communities and their environment: A multicenter cross-sectional study. **Appl Environ Microbiol.** *Minor Revision.*
4. Hassan J, Xu T, **Osman M**, Schiff SJ, Mann D, Deng X, LeJeune JT, Kassem II. Introduction of the transmissible mobile colistin resistance genes *mcr-3* and *mcr-9* to the USA via imported seafood. **mSphere.** 2025; 10(7):e002532.
5. **Osman M***, Yassine I, Hassan J, Ericson J, Schiff S, Ghorbani Tajani A, Bisha B, Hamze M, Kassem II. Critical genomic insights into vancomycin-resistant *Enterococcus faecium* in Lebanon. **Microbiol Spectr.** 2025; 13(9):e0017125.

6. Rafei R, **Osman M***, Barake BA, Mallat H, Dabboussi F, Hamze M. Shifting respiratory pathogens: Post-COVID-19 trends in community-acquired infections in underserved communities. **PLoS One**. 2025; 20(8):e0329481.
7. Smith D, Bastug K, Burgoine K, Broach JR, Hehnly C, Morton SU, **Osman M**, Schiff SJ, Ericson JE. Human *Paenibacillus* infections: A systematic review with comparison of adult and infant cases. **Pediatr Infect Dis J**. 2025; 44(5):455-461.
8. Angel P, Greig M, **Osman M**, Cummings KJ, Cazer CL. Antimicrobial use regulations are associated with increased susceptibility among bovine *Salmonella* isolates from a U.S surveillance system. **One Health**. 2025; 20:100983.
9. Kilani M, Al-Jamal H, Kasir D, Daaboul D, Hassoun N, Fayad S, Yassine A, Osman N, Salma R, El Omari K, Mallat H, Yassine I, Karah N, Dabboussi F, Kassem II, **Osman M***. Exploring risk factors and antimicrobial susceptibility patterns associated with bacteriuria among Syrian refugees in makeshift camps. **J Hosp Infect**. 2025; 157:45-55.
10. Hammoudi Halat D, Kassem II, **Osman M**, Manageiro V. Editorial: World antimicrobial awareness week. **Front Public Health**. 2025; 12:1543642.
11. Rafei R, Zaylaa M, Diab M, Kassem II, El Moujaber G, Halimeh FB, Achour A, El Omari K, Mallat H, Hamze M, Dabboussi F, **Osman M***. Nasal carriage, antimicrobial resistance, and serotype distribution of *Streptococcus pneumoniae* in children under five in Lebanon: Baseline data prior to PCV13 introduction. **Antibiotics**. 2025; 14(2), 168.
12. Khalife S, **Osman M***, Moubayed S, Kassem II, El Safadi D. Risk factors and hospitalizations associated with pediatric adenovirus and rotavirus infections in northern Lebanon. **Medicina**. 2025; 61(2), 296.
13. Shahin HH, Baroudi M, Dabboussi F, Ismail B, Salma R, **Osman M***, El Omari K. Synergistic Antibacterial Effects of Plant Extracts and Essential Oils Against Drug-Resistant Bacteria of Clinical Interest. **Pathogens**. 2025; 14(4):348.
14. Dakroub F, Akl F, Zaghlout A, Gerges JR, Hourani N, Boutros CF, Araj GF, Matar GM, Abou Fayad A, Dbaiibo GS; Lebanese Inter-Hospital Pneumococcal Surveillance Program investigators [**Osman M**]. Comparison of Illumina and Oxford Nanopore Technology systems for the genomic characterization of *Streptococcus pneumoniae*. **Microbiol Spectr**. 2025; 13(7):e0129424.
15. Daaboul D, Kassem II, El Omari K, Hamze M, Dabboussi F, Oueslati S, Naas T, **Osman M***. Emergence of *bla*_{NDM-5}-harboring *Escherichia coli* ST617 in refugee and host communities and their environment. **J Travel Med**. 2024; 31:taad141.
16. Daaboul D, **Osman M**, Kassem II, Yassine I, Girlich D, Proust A, Mounir C, Zerouali K, Raymond J, Naas T, Oueslati S. Neonatal sepsis due to NDM-1 and VIM-2 co-producing *Pseudomonas aeruginosa* in Morocco. **J Antimicrob Chemother**. 2024; 79:923-925.
17. Daaboul D, Kassem II, Yassine I, Hamze M, Dabboussi F, Girlich D, Oueslati S, Naas T, **Osman M***. Emergence of NDM-1, VIM-4, and CTX-M-15-co-harboring *Enterobacter xiangfangensis* in bloodstream infection. **J Antimicrob Chemother**. 2024; dkae008.
18. Nasser N, **Osman M**, Hassan J, Xu T, Mann D, Deng X, Kassem II. A novel multidrug-resistant *Enterobacter hormaechei* ST2755 isolated from a wild-caught oyster in Georgia, USA. **New Microbes New Infect**. 2024; 62:101546.
19. **Osman M***, Yassine I, Hamze M, Al Mir H, Ghorbani Tajani A, Bisha B, Cummings KJ, Madec JY, Haenni M, Kassem II. Emergence of extended-spectrum cephalosporin- and colistin-resistant Enterobacterales in otherwise healthy university students. **Microb Drug Resist**. 2024; 30:101-107.
20. Kassem II, Wang J, Gorbani Tajani A, Esseili MA, Hassan J, **Osman M**, Bisha B. Draft genome sequences of antibiotic resistant *Serratia* and *Enterobacter* species isolated from imported fresh produce in Georgia, USA. **Microbiol Resour Announc**. 2024; 13:e0113923.
21. Wass LM, O'Keeffe Hoare D, Smits GE, **Osman M**, Zhang N, Klepack W, Parrilla L, Busche JM, Clarkberg ME, Basu S, Cazer CL. Syndromic Surveillance Tracks COVID-19 Cases in University and County Settings: Retrospective Observational Study. **JMIR Public Health Surveill**. 2024; 10:e54551.
22. Rafei R, **Osman M**, Kassem II, Dabboussi F, Weill FX, Hamze M. Spotlight on the epidemiology and antimicrobial susceptibility profiles of *Vibrio* species in the MENA region, 2000-2023. **Future Microbiol**. 2024; 1-21.
23. Nour D, Ismail MB, **Osman M***, Rafei R, Kasir D, Dabboussi F, Colson P, Hamze M. Evaluation of SARS-CoV-2 anti-Spike antibody levels and breakthrough infection risk among vaccinated adults in North Lebanon. **PLoS One**. 2024; 19(5):e0302579.
24. Rafei R, Tajer L, Nour D, Abboud K, Ankoud D, **Osman M***, Bedotto M, Ismail MB, Dabboussi F, Colson P, Hamze M. A Cross-Sectional Study Revealed a Low Prevalence of SARS-CoV-2 Infection among Asymptomatic University Students in Tripoli, North Lebanon. **Pathogens**. 2024;13(10):872.
25. Daaboul D, Kassem II, El Omari K, Eltai NO, Hassan J, Al Jamal H, Fayad S, Salma R, Gorbani Tajani A, Bisha B, Hamze

- M, Oueslati S, Cummings KJ, Dabboussi F, Naas T, **Osman M***. Genomic characterization of plasmid-borne colistin resistance variants, *mcr-1.1* and *mcr-1.26*, in multidrug-resistant *Escherichia coli* isolated from backyard farm animals. **J Glob Antimicrob Resist.** 2024; 38:194-197.
26. **Osman M***, Daaboul D, Ghorbani Tajani A, El Omari K, Bisha B, Hassan J, Cazer CL, Fiorella KJ, Karah N, Abbara A, Hamze M, Cummings KJ, Naas T, Kassem II. Multidrug-resistant pathogens contaminate river water used in irrigation in disenfranchised communities. **J Glob Antimicrob Resist.** 2024; 36:175-180.
27. Daaboul D, Kassem II, El Omari K, Dabboussi F, Oueslati S, Naas T, **Osman M***. The occurrence of the carbapenemase gene, *bla*NDM-5, on a transmissible IncX3 plasmid in multidrug-resistant *Escherichia coli* isolated from a farm dog. **J Glob Antimicrob Resist.** 2024; 36:59-61.
28. Daaboul D, Oueslati S, Rima M, Kassem II, Mallat H, Birer A, Girlich D, Hamze M, Dabboussi F, **Osman M***, Naas T. The emergence of carbapenemase-producing Enterobacterales in hospitals: A major challenge for a debilitated healthcare system in Lebanon. **Front Public Health.** 2023; 11:1290912.
29. Yassine I, Rafei R, Pardos de la Gandara M, **Osman M**, Fabre L, Dabboussi F, Hamze M, Weill FX. Genomic analysis of *Shigella* isolates from Lebanon reveals marked genetic diversity and antimicrobial resistance. **Microb. Genom.** 2023; 9:001157.
30. **Osman M**, Kassem II, Dabboussi F, Cummings KJ, Hamze M. The indelible toll of enteric pathogens: Prevalence, clinical characterization, and seasonal trends in patients with acute community-acquired diarrhea in disenfranchised communities. **PLoS ONE.** 2023; 18(3):e0282844.
31. Khoder M, **Osman M***, Kassem II, Rafei R, Shahin A, Diene SM, Rolain JM, Hamze M. Genomic analysis of *Neisseria meningitidis* ST23 serogroup Y isolated from the semen. **New Microbes New Infect.** 2023;53:101129.
32. Kassem II, **Osman M**, Jaafar H, El Omari K. Refugee settlements, COVID-19, pollution, and the unfolding cholera outbreak in Lebanon. **J Travel Med.** 2022; taac142.
33. Wan J, Cazer C, Clarkberg M, Henderson S, Lee S, Meredith G, **Osman M**, Shmoys D, Frazier P. Boosters protect against SARS-CoV-2 Omicron infections in young adults. **PLoS Med.** 2023; 20(1):e1004153.
34. **Osman M***, Altier C, Cazer C. Antimicrobial Resistance among Canine Enterococci in the Northeastern United States, 2007-2020. **Front. Microbiol.** 2023; 13:1025242.
35. Elankumuran P, Browning G, Marenda M, Kidsley A, **Osman M**, Haenni M, Johnson J, Trott D, Reid C, Djordjevic S. Identification of genes influencing the evolution of *Escherichia coli* ST372 in dogs and humans. **Microb. Genom.** 2023; 9(2):mgen000930.
36. Hassoun N, Kassem II, Hamze M, El Tom J, Papon N, **Osman M***. Antifungal use and resistance in a lower-middle-income country: The case of Lebanon. **Antibiotics (Basel).** 2023 Sep 6;12(9):1413.
37. El Safadi D, **Osman M***, Hanna A, Hajar I, Kassem II, Khalife S, Dabboussi F, Hamze M. Parasitic Contamination of Fresh Leafy Green Vegetables Sold in Northern Lebanon. **Pathogens.** 12(8):1014.
38. **Osman M***, Al Kassaa I, El Omari K, Kassem II. Editorial: Antimicrobial resistance and antimicrobial alternatives. **Front Med (Lausanne).** 2023; 10:1171283.
39. Kassem II, **Osman M**, Hassan J, Sulaiman A, Mann D, Esseilia M, Naas T, Deng X. First report of the mobile colistin resistance gene, *mcr-1.26*, in multidrug-resistant *Escherichia coli* isolated from retail chicken meat. **J Glob Antimicrob Resist.** 2023; 34:176-178.
40. Jin M, **Osman M**, Green BA, Yang Y, Ahuja A, Lu Z, Cazer C. Evidence for the transmission of antimicrobial resistant bacteria between humans and companion animals: A scoping review. **One Health.** 2023; 17:100593.
41. Hussein ND, Hassan JW, **Osman M**, El Omari K, Kharroubi SA, Toufeili I, Kassem II. Assessment of the Microbiological Acceptability of White Cheese (Akkawi) in Lebanon and the Antimicrobial Resistance Profiles of Associated *Escherichia coli*. **Antibiotics (Basel).** 2023; 12(3):610.
42. Smith D, Bastug K, Burgoine K, Broach JR, Hehnly C, Morton SU, **Osman M**, Schiff SJ, Ericson JE. Human *Paenibacillus* infections: A systematic review with comparison of adult and infant cases. **medRxiv** [Preprint]. 2023 20:2023.09.19.23295794.
43. Kasir D, Osman N, Awik A, El Ratel I, Rafei R, Al Kassaa I, El Safadi D, Salma R, El Omari K, Cummings KJ, Kassem II, **Osman M***. Zoonotic tuberculosis: A neglected disease in the Middle East and North Africa (MENA) region. **Diseases.** 2023; 11(1):39.
44. Ismail MB, Zarriaa N, **Osman M***, Helfawi S, Kabbara N, Chatah AN, Kamaledine A, Alameddine R, Dabboussi F, Hamze M. Initial data on latent tuberculosis infection among hemodialysis patients in Northern Lebanon. **Medicina.**

2023; 59(4):654.

45. **Osman M***, Albarracin B, Altier C, Gröhn Y, Cazer C. Antimicrobial resistance trends among canine *Escherichia coli* isolated at a New York veterinary diagnostic laboratory between 2007 and 2020. **Prev Vet Med.** 2022; 208:105767.
46. Khoder M, **Osman M***, Kassem II, Rafei R, Shahin A, Fournier PE, Rolain JM, Hamze M. Whole Genome Analyses Accurately Identify *Neisseria* spp. and Limit Taxonomic Ambiguity. **Int J Mol Sci.** 2022; 23(21):13456.
47. Meredith G, **Osman M**, Cazer C, Cummings KJ, Hecht J, Madsen C, Santacrose L, Dubovi A, Clarkberg M, Johnson T, Fitzpatrick M, Parrilla L, Li Y, Francis L, Weisfuse I, Travis A, Warnick L, Koretzky G. Integrated surveillance system for controlling COVID-19 on a university campus. **Am J Public Health.** 2022; 112(7):980-984.
48. **Osman M***, Cummings KJ, El Omari K, Kassem II. Catch-22: War, Refugees, COVID-19, and the Scourge of Antimicrobial Resistance. **Front. Med. (Lausanne)** 2022; 9:921921.
49. Kassem, II, **Osman M**. A brewing storm: The impact of economic collapse on the access to antimicrobials in Lebanon. **J Glob Antimicrob Resist.** 2022; 29:313-315.
50. Rima M, Oueslati S, Dabos L, Daaboul D, Mallat H, Bou Raad E, Achkar M, Mawlawi O, Bernabeu S, Bonnin R, Girlich D, **Osman M**, Hamze M, Naas T. Prevalence and molecular mechanisms of carbapenem resistance among Gram-negative bacilli in three hospitals of northern Lebanon. **Antibiotics (Basel).** 2022; 11(10):1295.
51. Hassan J, Esseili M, Mann D, **Osman M**, Li S, Deng X, Kassem II. Draft genome sequences of antibiotic resistant *Serratia* sp. isolated from raw sewage and sediment sludge in Georgia, USA. **Microbiol Resour Announc.** 2022; e0096522.
52. Kassem II, Hassan J, Esseili M, Mann D, **Osman M**, Li S, Deng X. Draft genome sequences of multidrug-resistant *Escherichia coli* isolated from river water. **Microbiol Resour Announc.** 2022; e0082722.
53. Reslan R, Youssef N, Boutros CF, Assaf-Casals A, Fayad D, Khafaja D, Akl F, Finianos M, Rizk AA, Shaker R, Zaghlout A, Lteif M, El Hafi B, Moumneh MB, Feghali R, Ghanem S, Jisr T, Karayakoupoglou G, Naboulsi M, Hamze M, Samad S, Khoury E, Sarraf R, **Osman M**, Bou Raad E, El Amin H, Abadi I, Abdo H, Chedid M, Chamseddine F, Barakat A, Houmani M, Haddad A, Abdel Nour G, Mokhbat JE, Daoud Z, El-Zaatari M, Sokhn ES, Ghosn N, Ammar W, Hamadeh R, Matar GM, Araj GF, Dbaiibo GS. The impact of vaccination on the burden of invasive pneumococcal disease from a nationwide surveillance program in Lebanon: an unexpected increase in mortality driven by non-vaccine serotypes. **Expert Rev. Vaccines.** 2022; 21(12):1905-1921.
54. Rafei R, Koong J, **Osman M**, Al Atrouni A, Hamze M, Hamidian M. Analysis of pCl107 a large plasmid carried by a ST25 *A. baumannii* strain reveals a complex evolutionary history and links to multiple antibiotic resistance and metabolic pathways. **FEMS Microbes.** 2022;3:xtac027.
55. Nour D, Rafei R, Lamarca A, De Almeida L, **Osman M**, Ismail MB, Mallat H, Berry A, Burfin G, Semanas Q, Josset L, Hassan H, Dabboussi F, Lina B, Colson P, de Vasconcelos A, Hamze M. The role of Lebanon in COVID-19 butterfly effect: The B.1.398 example. **Viruses.** 2022; 14(8):1640.
56. Dabbousi A, Dabboussi F, Hamze M, **Osman M***, Kassem II. The Emergence and Dissemination of Multidrug Resistant *Pseudomonas aeruginosa* in Lebanon: Current Status and Challenges during the Economic Crisis. **Antibiotics (Basel).** 2022; 11(5), 687.
57. **Osman M**, Mahieu R, Eveillard M. Machine learning approaches prevent posttreatment resistance-gaining bacterial recurrences. **Trends Microbiol.** 2022; 30(7):612-614.
58. Khoder M, Rafei R, **Osman M**, Kassem II, Shahin A, Hamze M, Rolain JM. Emergence of a *Neisseria flavescens* clinical strain with a high level of third-generation cephalosporins resistance in Lebanon. **Diagn Microbiol Infect Dis.** 2022; 103(1):115660.
59. Kassem, II, Assi A, **Osman M**, Mann D, Li S, Deng X. First report of the detection of the plasmid-borne colistin resistance gene, *mcr-1.26*, in multi-drug resistant *E. coli* isolated from a domesticated pigeon. **Microb Drug Resist.** 2022; 28(7):821-823.
60. Dabbousi A, **Osman M**, Dabboussi F, Hamze M. High rates of macrolide and fluoroquinolone resistance in human campylobacteriosis in the Middle East and North Africa. **Future Microbiol.** 2022; 7;0. doi: 10.2217/fmb-2021-0302.
61. Rafei R, AL Iaali R, **Osman M**, Dabboussi F, Hamze M. A global snapshot on the prevalent macrolide-resistant *emm* types of Group A *Streptococcus* worldwide, their phenotypes and their resistance marker genotypes during the last two decades: A systematic review. **Infect Genet Evol.** 2022; 99:105258.
62. Ismail MB, **Osman M***, Bou Raad E, Achkar M, Hamze M. Seroprevalence of *Helicobacter pylori* among dyspeptic patients in Northern Lebanon: A 6-year retrospective study in two tertiary hospitals. **Access Microbiol.** 2022;

27;4(4):000337.

63. **Osman M***, Rafei R, Ismail MB, Al Omari S, Mallat H, Dabboussi F, Cazer C, Karah N, Abbara A, Hamze M. Antimicrobial resistance in the protracted Syrian conflict: halting a war in the war? **Future Microbiol.** 2021;16:825-845.
64. Al Mir H, **Osman M**, Drapeau A, Hamze M, Madec JY, Haenni M. Spread of ESC-, carbapenem- and colistin-resistant *Escherichia coli* clones and plasmids within and between food workers in Lebanon. **J Antimicrob Chemother.** 2021; dkab327.
65. Al Kassaa I, El Omari S, Abbas N, Papon N, Drider D, Kassem II, **Osman M***. High association of COVID-19 severity with poor gut health score in Lebanese patients. **PLoS One.** 2021;16(10):e0258913.
66. **Osman M***, Kasir D, Rafei R, Kassem II, Ismail MB, El Omari K, Dabboussi F, Cazer C, Papon N, Bouchara JP, Hamze M. Trends in the Epidemiology of Dermatophytosis in the Middle East and North Africa region. **Int J Dermatol.** 2021. doi: 10.1111/ijd.15967.
67. **Osman M***, Kasir D, Kassem II, Hamze M. Shortage in Appropriate Diagnostics of Antimicrobial Resistance in Lebanese Clinical Settings: A Crisis Amplified by COVID-19 and Economic Collapse. **J Glob Antimicrob Resist.** 2021; S2213-7165(21)00200-9.
68. Liepa R, Mann R, **Osman M**, Hamze M, Gunawan C, Hamidian M. Cl415, a carbapenem resistant *Acinetobacter baumannii* isolate containing four AbaR4 and a new variant of AbGRI2 represents a novel global clone 2 strain. **J. Antimicrob. Chemother.** 2021. dkab399. doi: 10.1093/jac/dkab399.
69. **Osman M**, Papon N. Smoking-aggravated oral candidiasis: Nrf2 pathway dampens NLRP3 inflammasome. **J Cell Mol Med.** 2021. 25(19):9473-9475.
70. **Osman M**, Papon N, Weill FX. Endocannabinoids Attenuate the Virulence of Certain Enteropathogenic Bacteria. **Trends Microbiol.** 2021;29(3):185-187.
71. Halimeh FB, Rafei R, Diene SM, **Osman M**, Kassem II, Jamal-Akoum R, Moudani W, Hamze M, Rolain JM. Genome sequence of a multidrug-resistant *Campylobacter coli* strain isolated from a newborn with severe diarrhea in Lebanon. **Folia Microbiol (Praha).** 2022; 67(2):319-328.
72. Al Mir H, **Osman M**, Drapeau A, Hamze M, Madec JY, Haenni M. WGS analysis of clonal and plasmidic epidemiology of colistin-resistance mediated by *mcr* genes in the poultry sector in Lebanon. **Front Microbiol.** 2021 Feb; 12:624194.
73. Ismail MB, **Osman M**, Rafei R, Dabboussi F, Hamze M. COVID-19 and refugee camps. **Travel Med Infect Dis.** 2021 May 6:102083.
74. Abboud Z, Galuppo L, Tolone M, Vitale M, Puleio R, **Osman M**, Loria GR, Hamze M. Molecular Characterization of Antimicrobial Resistance and Virulence Genes of Bacterial Pathogens from Bovine and Caprine Mastitis in Northern Lebanon. **Microorganisms.** 2021 May 27;9(6):1148.
75. Halimeh FB, Rafei R, **Osman M**, Kassem II, Diene SM, Dabboussi F, Rolain JM, Hamze M. Historical, current, and emerging tools for identification and serotyping of *Shigella*. **Braz J Microbiol.** 2021; 52(4):2043-2055.
76. Reslan, L, Finianos M, Bitar I, Moumneh M, Araj G, Zaghlout A, Boutros C, Jisr T, Nabulsi M, Karayaccoub G, Hamze M, **Osman M**, Bou Raad E, Hrabak J, Matar G, Dbaiho G. The Emergence of Invasive *Streptococcus pneumoniae* Serotype 24F in Lebanon: Complete Genome Sequencing Reveals High Virulence and Antimicrobial Resistance Characteristics. **Front Microbiol.** 2021 Feb; 12:637813.
77. **Osman M**, Bidon B, Abboud C, Zakaria A, Hamze B, Achcar ME, Mallat H, Dannaoui E, Dabboussi F, Papon N, Bouchara JP, Hamze M. Species distribution and antifungal susceptibility of *Aspergillus* clinical isolates in Lebanon. **Future Microbiol.** 2021 Jan; 16:13-26.
78. **Osman M**, B Halimeh F, Rafei R, Mallat H, Tom JE, Raad EB, M Diene S, Jamal S, Atrouni AA, Dabboussi F, Moudani W, Madec JY, Saras E, Lupo A, Haenni M, Rolain JM, Hamze M. Investigation of an XDR-*Acinetobacter baumannii* ST2 outbreak in an intensive care unit of a Lebanese tertiary care hospital. **Future Microbiol.** 2020; 15:1535-1542.
79. Ismail MB, Nour D, Raad G, **Osman M**, Rafei R, Mallat H, Dabboussi F, Hamze M. First data on latent tuberculosis infection in Syrian refugees with diabetes in Lebanon. **Public Health.** 2020; 189:97-100.
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92. **Osman M**, Kamal-Dine K, El Omari K, Rafei R, Dabboussi F, Hamze M. Prevalence of *Staphylococcus aureus* methicillin-sensitive and methicillin-resistant nasal carriage in food handlers in Lebanon: a potential source of transmission of virulent strains in the community. **Access Microbiol**. 2019; 1(6).
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100. Kabbara S, Hérivaux A, Dugé de Bernonville T, Courdavault V, Clastre M, Gastebois A, **Osman M**, Hamze M, Cock JM, Schaap P, Papon N. Diversity and Evolution of Sensor Histidine Kinases in Eukaryotes. **Genome Biol Evol**. 2019; 11(1):86-108.
101. Al Omari S, Al Mir H, Wrayde S, Merhabi S, Jamal S, Chahine M, Bayaa R, Tourba F, Tantawi H, Al Atrouni A, El Omari K, Ayash O, Zeidan NS, Mallat M, Dabboussi F, Hamze M, **Osman M**. First Antibiotic Awareness Week Nationwide Initiative in Lebanon: Knowledge, Attitude and Practice towards Antibiotics. **J Hosp Infect**. 2019; 101(4):475-9.

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107. Rafei R, **Osman M**, Boutros J, Al Kassaa I, Dabboussi F, Hamze M. Distribution and antibiotic susceptibility profiles of *Aeromonas* spp. from different aquatic environments in north Lebanon. **J Infect Dev Ctries**. 2018; 12(2S):6S.
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111. Moujaber G, **Osman M**, Rafei R, Dabboussi F, Hamze M. Molecular Mechanisms and Epidemiology of Resistance in *Streptococcus pneumoniae* in Middle East Region. **J Med Microbiol**. 2017; 66(7):847-858.
112. Cian A, El Safadi D, **Osman M**, Moriniere R, Gantois N, et al. Molecular Epidemiology of *Blastocystis* sp. in Various Animal Groups from Two French Zoos and Evaluation of Potential Zoonotic Risk. **PLoS One**. 2017; 12: e0169659.
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115. Hamze M, **Osman M**, Mallat H, Achkar M. Prevalence and Antibiotic Susceptibility of Ear Pathogens isolated from Patients in Tripoli, North Lebanon. **Int Arab J Antimicrob Agents**. 2017; Vol. 7 No. 1:1.
116. **Osman M**, Mallat H, Hamze M, BouRaad E. Prevalence and Antibiotic Susceptibility Patterns of Urinary Tract Infections in Patients Referred to Youssef Hospital Center: First Report from Akkar Governorate, North Lebanon. **Int Arab J Antimicrob Agents**. Vol. 7 No. 1:2.
117. **Osman M**, El Safadi D, A. Cian A, Benamrouz S, Nourrisson C, et al. Prevalence and Risk Factors for Intestinal Protozoan Infections with *Cryptosporidium*, *Giardia*, *Blastocystis* and *Dientamoeba* among Schoolchildren in Tripoli, Lebanon. **PLoS Negl Trop Dis**. 2016; 10(3): e0004496.
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119. Hamze M, **Osman M**, Mallat H, Achkar M. Antibiotic Susceptibility of *Salmonella* spp., *Shigella* spp. and enteropathogenic *Escherichia coli* strains isolated from diarrheic children in Tripoli, North Lebanon. **Int Arab J Antimicrob Agents**. 2016; 6(2:2).
120. **Osman M**, El Safadi D, Benamrouz S, Guyot K, Dei-Cas E, et al. Initial data on the molecular epidemiology of cryptosporidiosis in Lebanon. **PLoS One**. 2015 ;10(5):e0125129.
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- parasites *Blastocystis* sp. and *Cryptosporidium* spp. in household dogs in France and evaluation of zoonotic transmission risk. **Vet Parasitol.** 2015 ;214(1-2):167-70.
122. **Osman M**, Al Nasbeh A, Rafei R, Mallat H, Achkar M, Dabboussi F, Hamze M. Characterization of resistance genes to macrolides, lincosamides and streptogramins (MLS) among clinical isolates of *Staphylococcus aureus* in North Lebanon. **Int Arab J Antimicrob Agents.** 2015; Vol. 5 No. 4:3.
123. Certad G, Dupouy-Camet J, Gantois N, Hammouma-Ghelboun O, Pottier M, Guyot K, Benamrouz S, **Osman M**, Delaire B, Creusy C, Viscogliosi E, Dei-Cas E, Aliouat-Denis CM, Follet J. Identification of *Cryptosporidium* species in Fish from Lake Geneva (Lac Léman) in France. **PLoS One.** 2015; 10(7):e0133047.
124. Fréal E, El Safadi D, Cian A, Aubry E, Certad G, **Osman M**, et al. Acute *Blastocystis*-associated appendicular peritonitis in a child, Casablanca, Morocco. **Emerg Infect Dis.** 2015; 21(1), 91-4.
125. Wawrzyniak I, Courtine D, **Osman M**, Hubans-Pierlot C, Cian A, et al. Genome sequence of the intestinal parasite *Blastocystis* subtype 4-isolate WR1. **Genomics Data.** 2015; (4), 22–23.
126. Benamrouz S, Conseil V, Chabe M, Praet M, Audebert C, Blervaque R, Guyot K, Gazzola S, Mouray A, Chassat T, Delaire B, Goetinck N, Gantois N, **Osman M**, Slomianny C, Dehennaut V, Lefebvre T, Viscogliosi E, Cuvelier C, Dei-Cas E, Creusy C, Certad G. *Cryptosporidium parvum*-induced ileo-caecal adenocarcinoma and WNT signaling in a rodent model. **Dis Model Mech.** 2014; 7(6), 693-700.
127. El Safadi D, Meloni D, Poirier P, **Osman M**, Cian A, et al. Molecular Epidemiology of *Blastocystis* in Lebanon and correlation between subtype 1 and Gastrointestinal Symptoms. **Am J Trop Med Hyg.** 2013; 88(6),1203-6.

RESEARCH GRANTS

Yale Institute for Global Health - Global Health Spark Award (PI ~\$10K)	2025-2026
Uncovering Genomic Determinants of Neonatal <i>Paenibacillus</i> Infections in East Africa.	
Center for Brain & Mind Health (CBMH) Pilot Award (Co-PI ~\$100K)	2025-2027
Manipulating Charge Interactions Between Bacterial Type-IV Pili and Host Cells to Treat Brain Infections.	
5 R01 HD085853-11; NIH - ClinicalTrials.gov registration number NCT01936272	2021-2026
(Investigator [PIs - Steven Schiff, Benjamin Warf, Abhaya Kulkarni] ~\$4M) Neurocognitive outcomes and changes in brain and CSF volume after treatment of post-infectious hydrocephalus in Ugandan infants by shunting or ETV/CPC: a randomized prospective trial.	
Cornell Atkinson Postdoctoral Fellowship (PI ~\$154K)	2022-2024
The Emerging Threat of Multidrug-Resistant <i>Enterobacterales</i> in Refugee Camps.	
Cornell University (Seed grants – [PI: Dr. Casey Cazer] ~\$75K)	2022-2023
An Integrated Antimicrobial Surveillance and Stewardship Program to Combat Multidrug Resistance.	
Lebanese University (Co-PI – Grant from the Lebanese University and Lebanese CNRS ~\$27K)	2020-2022
Characterization of SARS-CoV-2 circulating lineages and determination of COVID-19 seroepidemiology among Lebanese citizens and Syrian refugees in North Lebanon.	
Lebanese University (Co-PI – Grant from the Merieux Foundation ~\$70K)	2020-2022
Evaluation of the expression of catalase-peroxidase, an isoniazid-drug activating enzyme, and drug efflux pumps in clinical drug resistant and susceptible <i>Mycobacterium tuberculosis</i> isolates.	
Lebanese University	2018-2020
(Co-I – Grant from the Merieux Foundation - Bill & Melinda Gates Foundation ~\$60K) PEARL - Pneumonias' Etiology Among Refugees and Lebanese population.	
Lebanese University	2017-2018

RESEARCH SCHOLARS

Association Universitaire de la Francophonie (Internship fellowship at Angers University, France) – **2020**

American Society for Microbiology (Travel Award to ASM Microbe Conference, San Francisco, U.S.) – **2019**

TDR in collaboration with WHO/EMRO (Capacity Building in Research Methods and Ethics: Good Health Research Practice (GHRP), Hammamet, Tunisia) – **2019**

Merieux Foundation (1st Antimicrobial Resistance Course (AMR) – A One Health Challenge, Annecy, France) – **2019**

SQUAD-2 Foundation (Internship fellowship at ANSES, Lyon, France) – **2018**

TDR in collaboration with WHO/EMRO (Capacity Building in Tropical Disease Implementation Research, Hammamet, Tunisia) – **2018**

ESCMID (ESCMID Summer School, Borstel, Germany) – **2017**

Merieux Foundation (Advanced Course on Antibiotics, Annecy, France) – **2016**

Campus France (Internship fellowship at ANSES, Lyon, France) – **2015**

MENTORSHIP

Ph.D. Students

- Souad Fayad (in progress, 2 papers)
- Dina Daaboul (graduated, 8 papers)
- Hiba Al Mir (graduated, 6 papers)
- May Khoder (graduated, 4 papers)
- Salam Al Ashkar (graduated, 3 papers)
- Stephanie Greige (graduated, 2 papers)

Master and Undergraduate Students

- Lily Wass (graduated, 1 paper)
- Nesrine Hassoun (graduated, 2 papers)
- Souad Fayad (graduated, 2 papers)
- Aya Rafei (graduated, 1 paper)
- Nour Osman (graduated, 2 papers)
- Dalal Kasir (graduated, 5 papers and 1 book chapter)
- Aicha Awik (graduated, 1 paper)
- Aicha Bikai (graduated, 2 papers)
- Ayate Zakaria (graduated, 2 papers)
- Rita El Chaar (graduated)
- Nahla Ajaj (graduated)
- Sabah Jamal (graduated, 3 papers)
- Samar Kabbara (graduated, 2 papers)
- Sarah Al Omari (graduated, 2 papers)
- Grace El Moujaber (graduated, 1 paper)
- Tahani Khawla (graduated)

PROFESSIONAL MEMBERSHIP ASSOCIATION

Ambassador (American Society for Microbiology [2024-2026])

Academic Editor (PLoS ONE [2023-Present] and PLoS Neglected Tropical Diseases [2025-Present])

Associate Editor (Frontiers in Medicine and Frontiers in Public Health [2020-Present])

Associate Editor (Frontiers in Microbiology [2024-Present]))

Associate Editor (BMC Microbiology [2024-Present]))

Associate Editor (Journal of Medical Microbiology [2020-2021])

Guest Editor (Genes [Basel], Biology [Basel], and Antibiotics [Basel])

Active Reviewer (The Lancet Microbe, Bulletin of the World Health Organization, Journal of Antimicrobial Chemotherapy, Journal of Global Antimicrobial Resistance, Frontiers in Cellular and Infection Microbiology, BMC Infectious Diseases, Journal of Infection and Public Health, PLoS Neglected Tropical Diseases, PLoS One, Agriculture, Journal of Infection in Developing Countries, and Access Microbiology) ~10 papers/year.

Member in the American Society for Microbiology (ASM), Infectious Diseases Society of America (IDSA), Clinical and Laboratory Standards Institute (CLSI), American Society of Clinical Pathology (ASCP), Pan American Society for Clinical Virology (PASCV), National Institute of Antimicrobial Resistance Research and Education (NIAMRRE), Hydrocephalus Association, British Society for Antimicrobial Chemotherapy (BSAC), and Société Française de Microbiologie (SFM).

RESEARCH TOPICS

BMC Microbiology (One Health Approach: Zoonotic Disease and Microbiome Research)

<https://link.springer.com/collections/beccdbfcad>

Frontiers in Medicine (Addressing Antimicrobial Resistance: Multimodal Strategies for Low-Resource Environments)

<https://www.frontiersin.org/research-topics/65847/addressing-antimicrobial-resistance-multimodal-strategies-for-low-resource-environments>

Frontiers in Medicine (Antimicrobial Resistance and Antimicrobial Alternatives - Submission closed)

<https://www.frontiersin.org/research-topics/34183/antimicrobial-resistance-and-antimicrobial-alternatives>

Frontiers in Public Health (World Antimicrobial Awareness Week - Submission closed)

<https://www.frontiersin.org/research-topics/50197/world-antimicrobial-awareness-week>

Genes (Basel) (Mobile Genetic Elements and Microbial Multidrug Resistance - Submission closed)

https://www.mdpi.com/journal/genes/special_issues/7ABE0VF975

Antibiotics (Basel) (The Emergence of Multidrug Resistance: Genetic Mechanisms, Fitness Cost, and Dissemination in the Human-Environment Continuum - Submission closed)

https://www.mdpi.com/journal/antibiotics/special_issues/6EU0DLGOD3

BOOKS AND BOOK CHAPTERS

1. Kasir D, Besseau S, Clastre M, Oudin A, Hamze M, Courdavault V, **Osman M**, Papon N. Synthetic Biology in the *Candida* (CTG) Clade. In: Darvishi Harzevili, F. (eds) Synthetic Biology of Yeasts. **2022**; Springer, Cham. https://doi.org/10.1007/978-3-030-89680-5_12.
2. Hamze M, Bouchara JP, **Osman M**, Pihet M, Ismail MB. Guide Pratique de Diagnostic en Mycologie Médicale. **2021**.
3. Certad G, **Osman M**, Benamrouz S. Pathogenesis of *Cryptosporidium* in humans. Emerging and Re-Emerging Human Infections. Edited by John Wiley & Sons/Wiley Blackwell Press. **2015**; Chapter 20, 371-392.
4. **Osman M**. Genetic and phenotypic characterization of *Cryptosporidium*: from mice to humans. LAP Lambert Academic Publishing. **2016**; ISBN-13: 978-3-330-00518-1.

MEETINGS PARTICIPATION (LAST 5 YEARS)

1. Osman M et al. (Poster communication). **ASM Microbe 2025 Conference**, Los Angeles, USA. (June 19-23, 2025).
2. Osman M et al. (Oral communication). **2025 NIAMRRE Annual Conference**, Raleigh, USA. (May 13-15, 2025).
3. Osman M et al. (Poster communication). **2025 PASCV Annual Meeting**, Clearwater, USA. (May 7-9, 2025).

4. Osman M et al. (Two poster communications). **ASM Microbe 2024 Conference**, Atlanta, USA. (June 19-23, 2024).
5. Osman M et al. (Oral and poster communications). **2024 NIAMRRE Annual Conference**, Columbus, USA. (May 14-16, 2024).
6. Osman M et al. (Two poster communications). **ASM Microbe 2023 Conference**, Houston, USA. (June 15-19, 2023).
7. Osman et al. (Oral and Poster communications). **16th International Symposium of Veterinary Epidemiology and Economics (ISVEE 16)**, Halifax, Canada. (August 6-11, 2022).
8. Osman et al. (Three oral communications). **Conference of Research Workers in Animal Diseases (CRWAD)**, Chicago, USA. (December 3-7, 2021).
9. Al Mir H, Osman M et al, 2019 (Poster communication). **15^{ème} Congrès National de la Société Française de Microbiologie**, Paris, France. (September 30 - October 2, 2019).
10. Osman M et al, 2019 (Two poster communications). **ASM Microbe 2019 Conference**, San Francisco, USA. (June 20-24, 2019).
11. Osman M et al, 2019 (Oral communication – **Invited speaker**). **44th Annual Pan-Arab International Medical Congress**, Tripoli, Lebanon. (March 1-2, 2019).
12. Osman M et al, 2018 (Oral communication – **Invited speaker**). **17^{ème} Congrès du CLIN de l'Hotel-Dieu de France**, Beirut, Lebanon. (October 26-27, 2018).
13. Osman M et al, 2018 (Poster communication). **14^{ème} Congrès National de la Société Française de Microbiologie**, Paris, France. (October 1-3, 2018).
14. Osman M et al, 2018 (Oral communication – **Invited speaker**). **SQUAD-2 International Conference**, Tripoli, Lebanon. (April 12-14, 2018).
15. Osman M et al, 2018 (Oral communication). **19th Annual Congress of the Lebanese Society of Infectious Diseases and Clinical Microbiology**, Beirut, Lebanon. (February 22-24, 2018).