



MOHAMED ALI FARRAG

ASSOCIATE PROFESSOR OF MICROBIOLOGY

MICROBIOLOGY DEPARTMENT,
COLLEGE OF SCIENCE, KING SAUD UNIVERSITY

OVERVIEW

Currently, I am working as associate professor of Microbiology at microbiology department, College of Science, KSU. My research interests focus on studying the circulation patterns of respiratory viruses in Saudi Arabia as well as their evolutionary mechanisms through sequence and phylogenetic analysis. Through twelve years of research, I have gained a great experience in the field of molecular biology and microbiology such as isolation and characterization of different microorganisms, tissue culture, ELISA, gene cloning, conventional PCR, and real time-PCR. I am teaching courses for both undergraduate and postgraduate students. In addition, I have participated in several projects and I have a number of publications in ISI journals.

Contact

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ACADEMIC QUALIFICATION

1. Ph. D in Microbiology (May/2017)

Title: Development of Novel Recombinant DNA Vaccine candidate for Human Respiratory Syncytial Viruses.



Botany and Microbiology Department, College of Science, King Saud University, Saudi Arabia.

2. Master of Science (April/2012)

Title: Isolation, Characterization and Sequence Analysis of Human Respiratory Syncytial Virus in Saudi Arabia.

Botany and Microbiology Department, College of Science, King Saud University, Saudi Arabia.

3. Preliminary master courses in the field of Microbiology (2010),

Botany and Microbiology Department, College of Science, King Saud University, Saudi Arabia. Preliminary master courses in the field of Microbiology 2008 El-Minia University, Egypt.



4. Bachelor of Science, Botany and Microbiology Dept., Faculty of Science, El-Minia University, Egypt (July 2004) Grade: very good with honor.

PROFESSIONAL EXPERIENCE

From 01/10/2018 “Until now”, Assistant Professor of molecular virology at Botany and Microbiology Department, College of Science, King Saud University, Saudi Arabia.



From 03/12/2023 “Until now”, Associate Professor of molecular virology at Botany and Microbiology Department, College of Science, King Saud University, Saudi Arabia.

From 14/10/2008 till 01/07/2018, Researcher at Botany and Microbiology Department, College of Science, King Saud University, Saudi Arabia.



From 24/03/2022, Professional Classification and Registration Record: Registered as Specialist-Laboratory – Microbiology.

IMPORTANT LINKS

1. Web of science

<https://publons.com/researcher/3878378/mohamed-farrag/>

2. Google scholar

<https://scholar.google.com/citations?user=aJa2zosAAAAJ>

3. Research gate

https://www.researchgate.net/profile/Mohamed_Farrag5

4. LinkedIn

<https://www.linkedin.com/in/mohamed-farrag-65559212b/>

TEACHING EXPERIENCE

Undergraduate Students

From 01/06/2017 till now

250 MBI (General Virology)

450 MBI (Medical Virology)

320 MBI (Microbial Diagnostics)

251 MBI (Microbial Genetics)

351 MBI (Molecular Biology)

Postgraduate Students

511 MBI (Advanced Virology)

555 MBI (Molecular Microbiology)

Teaching Practical Courses: From 1-11-2008 to 1-04-2017

250 MBI (General Virology)

451 MBI (Immunology)

450 MBI (Medical Virology)

344 MBI (Sanitation and Water Microbiology)

LABORATORY EXPERIENCE

| Virology | Bacteriology |
|--|---|
| Animal cell culture techniques (Reviving, Subculture, preservation and testing antimicrobial agents) | Preparation of different bacterial cultures |
| Virus isolation, propagation, titration, and concentration. | Isolation and molecular identification of different strains |
| Serological Assays | Immunology |
| ELISA, Haemagglutination test and Immunofluorescence Assay | Animal Immunization |
| Molecular techniques | ELISPOT Technique and |
| Western Blot Technique | Chromium Release Assay |

| | |
|-------------------------------------|---|
| Nucleic acid and plasmid extraction | Monoclonal antibodies production (Hybridoma-based technique) |
| PCR clean up and gel band recovery | |
| Conventional PCR | |
| Real-time PCR | |
| Gene Cloning techniques | |

COMMITTEE, MEMBERSHIP AND INTERNATIONAL COLLABORATION

- 1- **Virology Expert at International Atomic Energy Agency, Vienna, Austria.**
- 2- The Committee for Academic Evaluation and Accreditation for Postgraduate Studies, KSU, KSA. (**General Coordinator**)
- 3- Committee for Graduate Studies and Scientific Research, KSU, KSA. (**Member**)
- 4- Committee for academic accreditation and quality, KSU, KSA (**Member**).
- 5- Committee for assessing graduation projects of bachelor students, KSU, KSA. (**Committee Rapporteur**)
- 6- Scientific Committee at Center of Excellence in Biotechnology Research, KSU, KSA. (**Member**)
- 7- Committee for the creation of a higher diploma program in Biological Computing. (**Member**)

COMMUNITY SERVICES AND PUBLIC FORUMS

Lectures: I delivered and actively participated in the following events:

- June, 2017: **Biological Warfare.** Training workshop for Saudi Armed Forces.
- February, 11, 2020: **What you need to know about the novel coronavirus?** College of Science, King Saud University, Riyadh, Saudi Arabia.
- February, 13, 2020: **Novel Coronavirus-19: the virus, transmission and control measures,** Alqada School, Riyadh, Saudi Arabia.



- **February, 18, 2021: Webinar 4 (problem solving) to support molecular diagnostic laboratories on the basic configuration of the lab for COVID-19 detection.** Held by International Atomic Energy Agency, Vienna, Austria. <https://www.iaea.org/topics/health/infectious-diseases/covid-19/webinars>
- **March, 17, 2021: COVID-19: get the facts about the current vaccines.** Online lecture to the public via zoom. Link: <https://www.youtube.com/watch?v=wL7eq2EMF7c&t=348s>

SCIENTIFIC PROJECT AND RESEARCH GROUPS

- 1- Epidemiological characteristics and genetic factors affecting the circulation and evolution of respiratory viruses in Saudi Arabia (**Ongoing**).
- 2- Member of the Virology Research Group, College of Science, King Saud University.

SCIENTIFIC SUPERVISION

PhD students

1. **Student name:** Somaia Ali Saeed Al-Ghamdi (**University ID: 438202923**)
Thesis title: Natural gut bacteria in Aedes aegypti mosquito its correlation and susceptibility to Dengue fever virus in Saudi Arabia
2. **Student name:** Amal Fahad Alajman (**University ID: 442203414**)
Thesis title: The efficacy of bacteriophages isolated from sewage water against bacterial biofilm from soft tissue infection

Master students

3. **Student name:** Sally Ameen Almekhlafi (**University ID: 442204462**)
Thesis title: Investigating the Therapeutic Effect of Powder and Liquid Bacteriophage Formulations against some Human Pathogenic Bacteria

ARBITRATION OF SCIENTIFIC THESES

Master theses

- 1- **Thesis title:** Isolation and Molecular Characterization of Bacteriophages in Saudi Arabia and Study their Antibacterial Activities. (**April – 2022**)
- 2- **Thesis title:** Microbial analysis of wastewater collected from Riyadh City, Saudi Arabia. (**May – 2022**)
- 3- **Thesis title:** The Correlation between Bacterial Infections and Breast Stromal Fibroblasts Activation through Osteoprotegerin Gene Expression. (**May – 2022**)

SYMPOSIA, WORKSHOPS, WEBINARS AND CONFERENCES.

Symposia

1. 07-02-2015; Genetic diversity in the G protein gene of group A human respiratory syncytial viruses circulating in Riyadh, Saudi Arabia. **6th KSU Student Scientific Symposium**, King Saud University, KSA.
2. Group B strains of human respiratory syncytial virus in Saudi Arabia: molecular and phylogenetic analysis. **5th KSU Student Scientific Symposium**. King Saud University, KSA.

Workshops

1. **14-15/11/2015. MERS-CoV Vaccine Development**, Ministry of Health, KACST, Riyadh, Saudi Arabia.
2. Recent techniques for Diagnosis of Viral Infections. Department of Botany and Microbiology, College of Science, King Saud University. February 2015 (**Trainer**).
3. Polymerase chain Reaction and its Applications. Department of Botany and Microbiology, College of Science, King Saud University. May 2011 (**Trainer**).
4. DNA technology and its applications. Department of Botany and Microbiology, College of Science, King Saud University. March to June 2011 (**Trainer**).
5. 14-05-2014: applications of Gas Chromatography-mass spectrometry (GC-MS). Department of Botany and Microbiology, College of Science, King Saud University.
6. Distribution of Samsum ant in the Kingdom of Saudi Arabia and the use of its venom as a natural product for the treatment of breast cancer. Department of Zoology, College of Science, King Saud University. May 2010 (**Trainee**).

WEBINARS

1. **Antimicrobial Resistance Awareness – WAAW 2021** – Weqaya, that was presented by Itkan Training Platform and the Public Health Academy for the Saudi Public Health Authority. **Nov. 2021**

CONFERENCES

2. **Oral Presentation:** Development of Novel DNA vaccine Candidate to Human Respiratory Syncytial Viruses: Preclinical Evaluation of Immunogenicity and Protection Efficiency. **29/11-2/12/2016:** The Sixth international conference Egyptian society of Virology titled “Viral Risks and Environmental Changes, The Role of National and International Organizations”. Sharm AlSheikh- Egypt.
3. **Poster Presentation; The 5th international Conference of Virology.** Viruses and Their Potential Hazard to Human, Animal and plant” The Role of National & international Organizations. **09-12/12/2014; Hurghada, Egypt.**
4. **8th Annual Conference of Saudi Society of Medical Microbiology and Infectious Diseases “Building the Saudi Infectious Diseases Network”.** 8-10/04/2014; Jeddah, Saudi Arabia.
5. **Oral Presentation:** Sequence and Phylogenetic Analysis of Human Respiratory Syncytial Viruses Circulating in Saudi Arabia. **14-16/11/2012:** The fourth international conference Egyptian society of Virology titled “Towards strategy for control of virus pathogens”. Sharm AlShekh- Egypt.
6. **The first International Conference on Biotechnology.** 16-18-2-2009, Riyadh, Kingdom of Saudi Arabia.

BIOINFORMATICS

DNA/protein sequence and phylogenetic analysis software: Lasergene package, Bioedit sequence alignment editor, NetOglyc, NetNglyc servers, GeneMania.

PUBLICATIONS

1. Khaled, J. M., N. S. Alharbi, S. Kadaikunnan, A. S. Alobaidi, K. Nauman, A.-K. M.Ghilan, A. O. Almazyed, M. S. Aldosary, S. Al Rashedi, A. M. Alfalih, **Mohamed A. Farrag** and M. S. Alharbi (2023). "Distribution of Candida infections in patients and evaluation of the synergic interactions of some drugs against emerging fluconazole- and caspofungin-resistant *C. auris*." Journal of King Saud University - Science: 102617.

2. Alghamdi S , **Mohamed A. Farrag**, Rewaida Abdel-Gaber, Albandary Alrajeh, Saeed El-Ashram, Ommer Dafalla, Guillermo Tellez-Isaias, Mohammed Alkuriji, Reem Alajmi, Screening of the normal bacterial flora in the gut of Aedes aegypti Mosquito in Saudi Arabia, Journal of King Saud University - Science, Volume 35, Issue 5,2023.
3. Abdel-Maksoud MA, Hassan F, Mubarik U, Mubarak A, **Farrag MA**, Alghamdi S, et al. An in-silico approach leads to explore six genes as a molecular signatures of lung adenocarcinoma. Am J Cancer Res. 2023;13(3):727-57.
4. Alamri KA, **Farrag MA**, Aziz IM, Dudin GA, Mohammed AA, Almajhdi FN. Prevalence of Human Coronaviruses in Children and Phylogenetic Analysis of HCoV-OC43 during 2016–2022 in Riyadh, Saudi Arabia. Viruses. 2022; 14(12):2592. <https://doi.org/10.3390/v14122592>
5. Ahmed, B.M., Bayoumi, M.M., **Farrag, M.A.** et al. Emergence of equine influenza virus H3Nx Florida clade 2 in Arabian racehorses in Egypt. Virol J 19, 185 (2022). <https://doi.org/10.1186/s12985-022-01917-9>
6. Aziz, I.M.; **Farrag, M.A.**; Bhat, R.; Ahmed, A.; Alkubaisi, N.A.; Alzayed, R.M.; Dudin, G.A.; Almajhdi, F.N. Development and Validation of Rapid In-House Diagnostic ELISA Kits for Detection of Human Orthopneumovirus in Clinical Samples. Diagnostics 2022, 12, 912. <https://doi.org/10.3390/diagnostics12040912>.
7. Aziz IM, Bhat R, **Farrag MA**, Almajhdi FN. Oncolytic activity of Human Orthopneumovirus in cancer cell lines. Exp Oncol. 2022 Aug;44(2):113-120. doi: 10.32471/exp-oncology.2312-8852.vol-44-no-2.18084. PMID: 35964639.
8. Rauf Bhat, Ibrahim Mohammed, **Farrag MA**, Gani Asa-dudin, Noorah Alkubaisi, Fahad Almajhdi. The interplay within the adaptive immune response and immunotherapeutic strategies against RSV infection. Accepted for publication in International Archives of Allergy and Immunology.
9. Mubarak A, Alrfaei B, Aljurayyan A, Alqafil MM, **Farrag MA**, Hamed ME, Alosaimi B, Almajhdi F, Alturaiki W. In vivo and in vitro Evaluation of Cytokine Expression Profiles during Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Infection. J Inflamm Res. 2021;14:2121-2131 <https://doi.org/10.2147/JIR.S312337>
10. Abu Hamza, Zoya Shafat, Zahoor Ahmad Parray, Malik Hisamuddin, Wajihul Hasan Khan, Anwar Ahmed, Fahad N. Almajhdi, **Mohamed A. Farrag**, Arif Ahmed Mohammed, Asimul Islam, and Shama Parveen. Structural Characterization and Binding Studies of the Ectodomain G Protein of Respiratory Syncytial Virus Reveal the Crucial Role of pH with Possible Implications in Host–Pathogen Interactions. ACS Omega 2021, 6, 15, 10403–10414

11. **Farrag, M.A.**, Amer, H.M., Bhat, R. et al. Sequence and phylogenetic analysis of MERS-CoV in Saudi Arabia, 2012–2019. *Viol J* 18, 90 (2021). <https://doi.org/10.1186/s12985-021-01563-7>
12. Farrag **MA**, Amer HM, Bhat R, Hamed ME, Aziz IM, Mubarak A, Dawoud TM, Almalki SG, Alghofaili F, Alnemare AK, Al-Baradi RS, Alosaimi B, Alturaiki W. SARS-CoV-2: An Overview of Virus Genetics, Transmission, and Immunopathogenesis. *International Journal of Environmental Research and Public Health*. 2021; 18(12):6312. <https://doi.org/10.3390/ijerph18126312>
13. Gnanamangai, B. M., J. Philip Robinson, P. Ponmurugan, F. A. Al-mekhlafi, **Mohamed A. Farrag**, M. Maruthupandy, T. Selvankumar and C. Sudhakar (2022). "Molecular characterization of the phytopathogen *C. theae* (Petch) – Causative of birds eye spot infection in *Camellia sinensis* host through DNA polymorphism and proteome analysis." *Physiological and Molecular Plant Pathology* 118: 101809.
14. J. Kalaiarasia, D. Balakrishnana, Lamyia Ahmed Al-Keridisb, Fahd A. AL-mekhlafic, **Mohamed A. Farrag**, C. Chenthis Kanishae, Manavalan Muruganf, C. Pragathiswaran. Sensing and Antimicrobial Activity of Polyaniline Doped with TiO₂ Nanocomposite Synthesis and Characterization. *Journal of King Saud University – Science*, 2022.
15. Bhat R, **Farrag MA**, Almajhdi FN (2020) Double-edged role of natural killer cells during RSV infection. *International Reviews of Immunology* 1–12. <https://doi.org/10.1080/08830185.2020.1770748>
16. **Farrag MA**, Haitham M. Amer, Ebrahim Aziz, Asma Alsaleh, Fahad N. Almajhdi. The Emergence of Subgenotype ON-1 of Respiratory Syncytial Virus type A in Riyadh, Saudi Arabia: A New Episode of the Virus Epidemiological Dynamic: *J Med Virol*. 2019;1–8.
1. **Farrag MA**, Haitham M. Amer, Maaweya E. Hamed, Fahad N. Almajhdi. 2019. Epidemiology of Respiratory Viruses in Saudi Arabia: Toward a Complete Picture. *Arch Virol*. 2019 Aug;164(8):1981-1996.
17. Maaweya Hamad, Haitham Amer, Peter, **Farrag MA**, Fahad N. Almajhdi. Naked DNA Immunization with Full-Length Attachment Gene of Human Respiratory Syncytial Virus Saudi Strain Induces Protective Immune Response with No Enhancement of Pulmonary Inflammation. *Acta Virologica*, 2018; 62 (2).
18. **Farrag MA**, Haitham Amer, Peter Öhlschlager, Maaweya Hamad, Fahad N. Almajhdi. Novel Recombinant DNA Vaccine Candidates for Human Respiratory Syncytial Virus: Preclinical Evaluation of Immunogenicity and Protection Efficiency. Accepted for publication at *Human Vaccines & Immunotherapeutics*, 2017; Volume 13 Issue 6. DOI: 10.1080/21645515.2017.1295190.

19. **Farrag MA**, Fahad N. Almajhdi 2015. Mohamed A. Farrag, Fahad N. Almajhdi. Human Respiratory Syncytial Virus: Role of Innate Immunity in Clearance and Disease Progression. *Journal of Viral Immunology*. 2016; 29(1):1-16:DOI: 10.1089/vim.2015.0098.
20. Haitham M. Amer, Mohamed S. Alshaman, **Farrag MA**, Moawia E. Hamad, Alsaadi M. M and Fahad N. Almajhdi. Epidemiology of 11 Respiratory RNA Viruses in a Cohort of 2 Hospitalized Children in Riyadh, Saudi Arabia. *Journal of Medical Virology*. 2015; 88:1086–1091. DOI: 10.1002/jmv.24435.
21. Almajhdi FN, **Farrag MA**, Amer HM. Genetic diversity in the G protein gene of group A human respiratory syncytial viruses circulating in Riyadh, Saudi Arabia. *Archives of Virology*. 2014; 159:73–81 DOI 10.1007/s00705-013-1792-6.
22. Almajhdi FN, **Farrag MA**, Amer HM. Group B strains of human respiratory syncytial virus in Saudi Arabia: molecular and phylogenetic analysis. *Virus Genes*, 2014; 48:252–259. DOI 10.1007/s11262-013-1030-z.
23. Almajhdi F, Albrithen H, Alhadlaq H, **Farrag MA**, Abdel-Mageed A. Microorganisms' inactivation by microwaves irradiation in Riyadh Sewage Treatment Water Plant. *World Applied Sciences Journal*. 2009, 6 (5): 600-607.
24. Book (Master Thesis): **Farrag MA**, Amer HM, Almajhdi FN: Human Respiratory Syncytial Viruses in Saudi Arabia. LAP LAMBERT ACADEMIC PUBLISHING. ISBN: 978-3-659-33036-0.
25. Book (PhD thesis). Novel DNA Vaccine Candidates to Human Respiratory Syncytial Viruses. LAP LAMBERT ACADEMIC PUBLISHING ISBN: 978-613-9-5884-9.
26. Li X, Abdel-Maksoud MA, Iqbal I, Mubarak A, **Farrag MA**, Haris M, et al. Deciphering cervical cancer-associated biomarkers by integrated multi-omics approach. *Am J Transl Res*. 2022;14(12):8843-61.
27. Wu S, Ud Din I, Sadiq FM, Abdel-Maksoud MA, Haris M, Mubarak A, , **Farrag MA**, et al. Dysfunctional network of hub genes in hypertrophic cardiomyopathy patients. *Am J Transl Res*. 2022;14(12):8918-33.

GENE BANK SUBMISSIONS

Genes deposited at GeneBank database:

- 1- Human Respiratory Syncytial Virus (21 genes)
- 2- Human Coronavirus OC43 (4 genes)
- 3- Human metapneumovirus (26 genes)
- 4- Middle East Respiratory Syndrome Coronavirus (16 genes)

5- Human Bocavirus (10 genes)

6- Synthetic construct fusion-matrix 2 protein gene (2 genes)

REFERENCES

1. **Dr. Turki Mohammed Dawoud, Chairman of Botany and Microbiology** Department, Faculty of Science, King Saud University, Saudi Arabia, Tel.: +966-535727827, E-mail: tdawoud@ksu.edu.sa
2. **Prof. Haitham Mohamed Amer (Molecular Virology)**, Professor and Chairman, Virology Department, Faculty of Veterinary Medicine, Cairo University, 12211 Giza, Egypt, Tel.: +2-02-35710309 Fax: +966-11-4675833 Mobile: +2-0100-0637913. hamoamer@cu.edu.eg
3. **Prof. Hesham Elkomy (Bacteriology)**, Department of Botany and Microbiology, Faculty of Science, Minia University, Egypt, Phone: E-mail: heshamkomy@yahoo.com