Personal Information	
Name	Nehaya Al-Karablieh
Place and date of birth	Al Ruseifa, 22.04.1976
Faculty	School of Agriculture
Department	Dept. of Plant Protection
E-mail	n.alkarablieh@ju.edu.jo

Qualifications			
Qualification	**Specialization**	**University of Donor**	**Date**
Ph. D	Molecular Microbiology	Jacobs University Bremen, Germany.	2009
M. Sc	Plant Protection	The University of Jordan	2002
B. Sc	Plant Protection	The University of Jordan	1998

Specialization and domain of interest	
Specialization	Molecular Microbiology
Domain of interest	Phytobacteriology, Bacterial resistance mechanism

Title and abstract of the doctoral thesis

Title: Functional characterization of the outer membrane protein TolC in the fire blight pathogen Erwinia amylovora

Abstract: AcrAB-TolC is the major multidrug efflux system in Enterobacteriaceae recognizing various structurally diverse molecules including antibiotics, dyes, and detergents. The outer membrane protein, TolC, of Escherichia coli is involved in export of proteins beside it role in efflux of bile salts and antibiotics. In Erwinia amylovora, the causal agent of fire blight on important plant species such as apple and pear, AcrAB was shown to be essential for phytoalexin resistance. The E. amylovora outer membrane protein, TolC, might mediate phytoalexin resistance through its interaction with the AcrAB multidrug efflux pump. To prove this, mutational analyses of tolC and an acrB/tolC double mutant were conducted. Minimal inhibitory concentrations of diverse antimicrobials and phytoalexins, in planta survival, and virulence assays on apple plants were determined for all mutants and compared with data obtained for the wild type. The results showed that TolC plays an important role as a virulence and fitness factor of E. amylovora by mediating resistance towards phytoalexins through its exclusive interaction with AcrAB. Furthermore, exchange analysis of AcrAB-TolC was conducted by complementing generated mutants of both, E. coli and E. amylovora, defective in acrB or tolC with alleles from either species. Results of this study suggested that AcrAB and TolC of both species could interact. These protein-protein interactions did not yield in altered functions despite the divergent ecological niches, to which E. coli and E. amylovora have adopted phylogenetically. Comparison of extra-cellular protein profiles produced by E. amylovora wild type and its tolC mutant in vitro revealed absence of a ~55-kDa protein in the supernatant of the tolC mutant. This protein was identified as HsvB (Hrp systemic virulence), a proposed effector protein secreted by the Hrp type III secretion system. Incubation of E. amylovora with sub-lethal concentrations of the antibiotics, phloretin and novobiocin, respectively, revealed that under survival stress TolC is preferentially recruited for its antibiotics efflux activity and secreted significantly less of the HsvB protein.

Career Experience		
Job Title	**Place of work**	**Date**
Associate Professor	Dept. of Plant Protection, School of Agriculture, The University of Jordan.	Sept. 2018-
Associate Researcher	Hamdi Mango Center for Scientific Research, The University of Jordan.	Jan. 2018-Sept.2018
Assistant Researcher	Hamdi Mango Center for Scientific Research, The University of Jordan.	Sept. 2011- Jan.2018
Postdoctoral Fellow	Phytolutions company, Bremen, Germany	Nov. 2009-Aug.2011
Postdoctoral Fellow	Jacobs University Bremen, Germany	May 2009- Oct.2009

Administrative works and committees	
Administrative work and committee	**Date**

Publications (peer reviewed):

1. Obeidat A.I.M, Jaradat D.M.M, Al-Karablieh N, Wade J.D, Munir A. Al-Zeer M.A, Za'arir B.H.M, Fararjeh A. (2024). Short Synthetic Peptides as Efflux Pump Inhibitors Resensitising Multidrug-Resistant *Escherichia coli* TG1 and *Erwinia amylovora* 1189 bacteria. International Journal of Peptide Research and Therapeutics 30:50. https://doi.org/10.1007/s10989-024-10629-3.
2. Fararjeh A, Jaradat D.M.M, **Al-Karablieh N**, Al-fawares O, Obeidat A.I.M., Bashabsheh R.H.F, Al-Khreshieh R.O. (2024). Evaluation of Synergism Effect of Human glucose-dependent insulinotropic polypeptide (GIP) on Klebsiella pneumoniae Carbapenemases (KPC) producer Isolated from Clinical Samples, Microbial Pathogenesis, 106823,
3. **Al-Karablieh N.,** Al-Shomali I., Al-Elaumi L., Tabieh M., Al-Karablieh E., Al-Jaghbir M., Del Bubba M., (2024). The impact of treated wastewater irrigation on strawberry development, fruit quality parameters, and microbial and chemical contaminant transfer: A health risk assessment. Scientia Horticulturae 329, 113014
4. AlFaris M.E., **Al-Karablieh N**., Odat A.N., Rafei R. (2024). Carbapenem-resistant *Acinetobacter baumannii* from Jordan: Complicated carbapenemase combinations. *Jordan J Biol Sci.* (Just Accepted).
5. **Al-Karablieh N**., Abu Obeid I., Al-Elaumi L., Mutlaq I., Haddadin J., Al Omari R., Al-Jabaree A., Mazahreh S. (2023). *Xylella fastidiosa* Not Detected on Tree Crops After Five Years of Survey. Plant Health Progress. 24(3), 326-331. https://doi.org/10.1094/PHP-11-22-0120-RS
6. Al-Samydai, A. M., Al Azzam, K. M., Mayyas, A., Nsairat, H., Abu Hajleh, M. N., Al-Halaseh, L. K., **Al-Karablieh, N.**, Akour, A., Alshaer, W., Alshaik, F., Al Qaraleh, M., (2023), Formulating Co-loaded Nanoliposomes with Gallic acid and Quercetin for Enhanced Cancer Therapy. Heliyon, 9 (2023) e17267.
7. **Al-Karablieh, N**., Al-Shomali, I., Al-Elaumi, L. and Hasan, K. (2022) *Pseudomonas fluorescens* NK4 siderophore promotes plant growth and biocontrol in cucumber. J Appl Microbiol, 133, 1414– 1421. https://doi.org/10.1111/jam.15645
8. **Al-Karablieh, N.,** Al-Horani, F., Alnaimat, S. and Abu Zarga, M. (2022), Prevalence of *Vibrio coralliilyticus* in stony coral *Porites* sp. in the Gulf of Aqaba, Jordan. Lett Appl Microbiol, 75: 460-469. https://doi.org/10.1111/lam.13753

9. Al-Hadid KJ, **Al-Karablieh N**, Abu-Irmaileh B, Sharab A, Al-Jaafreh AM. (2022). Antibacterial, Antifungal, Antioxidant, and Anti-Proliferative Effects of Eucalyptus camaldulensis and Pistacia atlantica Ethanol Extracts. Trop J Nat Prod Res. 6(2):207-212. doi.org/10.26538/tjnpr/v6i2.7
10. Mayyas, A., Azzam, H., Tayseer, I., **Al-Karablieh, N**., Aburjai, A. (2021). Evaluation of the synergistic antimicrobial effect of folk medicinal plants with clindamycin against methicillin resistant Staphylococcus aureus strain. Lett Appl Microbiol. 73(6):735-740. doi: 10.1111/lam.13565.
11. Jaradat, D. M. M., **Al-Karablieh, N.**, Zaarer, B. H. M., Li, W., Saleh, K. K.Y., Rasras, A. J., Abu-Romman, S., O'Brien-Simpson, N. M., Wade, J. D. (2021). Human glucose-dependent insulinotropic polypeptide (GIP) is an antimicrobial adjuvant re-sensitising multidrug-resistant Gram-negative bacteria. Biological Chemistry 402 (4): 513-524. https://doi.org/10.1515/hsz-2020-0351
12. Tayseer I., Azzam H., **AL-Karablieh N**., Mayyas A., Aburjai T. (2020). Interaction of Folk Medicinal Plants with Levofloxacin against *Escherichia coli*. J. Pure Appl. Microbiol. 14(3):1855-1861. https://doi.org/10.22207/JPAM.14.3.24
13. Tayseer I., Aburjai T., Abu-Qatouseh L., **AL-Karablieh N**., Ahmed W., Al-Samydai A. (2020). *In vitro* Anti-*Helicobacter pylori* Activity of Capsaicin. J. Pure Appl. Microbiol. **14**(1): 279-286. https://doi.org/10.22207/JPAM.14.1.29
14. Abu Obeid I., **Al-Karablieh N.**, Haddadin J., Al Omari R., Al-Jabaree A., Al-Elaumi L., Mazahreh S. (2020). Survey on the presence of *Xylella fastidiosa*, the causal agent of Olive Quick Decline Syndrome (OQDS) on olives in Jordan. Archives Of Phytopathology And Plant Protection doi:10.1080/03235408.2020.1738764
15. Ahmad, W., Aburjai, T., Al-Hiari, Y., **Al-Karablieh, N.** (2020). Chemical composition comparison of essential oils hydrodistilled from aerial parts of *Achillea fragrantissima* (Forssk.) Sch. Bip. and *Achillea santolina* L. (Asteraceae) growing in Jordan. Journal of Essential Oil Bearing Plants. doi: 10.1080/0972060X.2020.1723442
16. Al-Hadid KJ, **Al-Karablieh N**, Sharab A, Mutlak I (2019) Phytochemical analyses and antibacterial activities *of Erodium*, *Euphorbia*, *Logoecia* and *Tamarix* species. J Infect Dev Ctries 13:1013-1020. doi: 10.3855/jidc.11776
17. **Al-Karablieh, N**. (2017). Antimicrobial activity of *Bacillus persicus* 24-DSM isolated from Dead Sea Mud. The open microbiology Journal. 11: 372-383. DOI: 10.2174/1874285801711010372.
18. **Al-Karablieh, N**., Al-Dokh, A., Mutlak, I. and Abdulhadi Z. (2017). *In vitro* Biological Control of *Pseudomonas viridiflava* by *Pseudomonas fluorescens* via Siderophore Competition. Jordan Journal of Agricultural Science. 13 (3): 629-644.
19. **Al-Karablieh, N**., Abu-Qatouseh, L., Aburjai, T. (2017). Detection of potential AcrAB-TolC multidrug efflux pump inhibitor in calyces extract of *Hibiscus sabdariffa*. Journal of Intercultural Ethnopharmacology. 6 (4), doi: 10.5455/jice.20170917062504
20. Abu-Sini, M., Mayyas, A., **Al-Karablieh, N**., Darwish, R., Al-Hiari, Y., Aburjai, T., Arabiyat, S., Abu-Qatouseh, L. (2017). Synthesis of 1,2,3-Triazolo[4,5-h]quinolone Derivatives with Novel Anti-Microbial Properties against Metronidazole Resistant *Helicobacter pylori*. Molecules 22, 841; doi:10.3390/molecules22050841
21. **Al-Karablieh, N**., Mutlak, I. and Al-Dokh, A. (2017). Isolation and identification of *Pseudomonas viridiflava*, the causal agent of fruit rotting of cucumis sativus. Jordan Journal of Agricultural Science. 13 (1); 79-91.

22. Mehmood, A., Abdallah, K., Khandekar, S., Zhurina, D., Srivastava, A., **Al-Karablieh, N.,** Alfaro-Espinoza, G., Pletzer, D. and Ullrich, M. S. (2015). Expression of extra-cellular levansucrase in Pseudomonas syringae is controlled by the in planta fitness-promoting metabolic repressor HexR. BMC Microbiology.
23. Rwehumbiza, V. M., Vennapusa, R. R., Gavara, P. R., Fernández-Lahore, Héctor M., **Al-Karablieh, N.**, Ullrich, M. S. and Thomsen, C. (2014). Potential of fibrous adsorbents for the binding and characterization of *Porphyridium purpureum* bioactive polysaccharides. J. Chem. Technol. Biotechnol.; 89: 65–72.
24. Coustets M., **Al-Karablieh N**, Thomsen C. and Teissié J. (2013). Flow Process for Electroextraction of Total Proteins from Microalgae. J. membrane bio. 10.1007/s00232-013-9542-y.
25. Srivastava A., **Al-Karablieh N**., Khandekar, S. Sharmin, A and Ullrich M. S. (2012). Genomic distribution and divergence of levansucrase-coding genes in *Pseudomonas syringae*. *Genes* 3, 115-137.
26. A Wensing, **N Al-Karablieh**, MS Ullrich, K Geider. (2010). Role of autoinducer 2 in the virulence of *Erwinia amylovor*a. Julius-Kühn-Archiv. Page 203. Julius Kühn Institut, Bundesforschungsinstitut für Kulturpflanzen.
27. **Al-Karablieh N**., Weingart H. and Ullrich M. S. (2009). Genetic exchange of multidrug efflux pumps among two enterobacterial species with distinctive ecological niches. *Int J Mol Sci* 10: 629–645.
28. **Al-Karablieh N**., Weingart H. and Ullrich M. S. (2009). The outer membrane protein TolC is required for phytoalexin resistance and virulence of the fire blight pathogen *Erwinia amylovora*. *Microb Biotech* 2: 465–475.
29. **Al-Karablieh, N**., Burse, A., Weingart, H. and Ullrich, M. S. (2008) AcrAB-TolC directs efflux-mediated resistance towards phytoalexins in the plant pathogen *Erwinia amylovora*. Acta Horticulture 793, 253-259. DOI: 10.17660/ActaHortic.2008.793.37.
30. Wensing, A., **Al-Karablieh, N**., Ullrich, M. S., Jakovljevic, V., Mohammadi, M. and Geider, K. (2008) Autoinducer in *Erwinia amylovora*. Acta Hortic. 793, 249-251. DOI: 10.17660/ActaHortic.2008.793.36.
31. **Al-Karablieh N**., Khalif H. and Al-Banna L. (2006). Identifcation of *Agrobacterium tumefaciens* strains by PCR-RFLP analysis of the 16S-rDNA. Jordan Journal of Agricultural Science 2, 209-220.
32. **Al-Karablieh N.** and Khlaif H. (2002). Occurrence and distribution of crown gall disease in Jordan. *Phytopathol. Mediter.* 41, 226-234.

Funded Projects:						
Name	**Participate**	**Support Date**		**Funded by**	**Amount of Fund**	**Status**
		M	Y			
The effect of combining of Azithromycin with Jordanian herbs to eradicate Streptococcus pneumoniae in-vitro	Co-I	06	2023	DSR\ UJ	8.800	On-going
Biological evaluation of Chaetomium species from Jordan: their genetic diversity and their use in agriculture, medicine, and industry.	Co-I	09	2022	Scientific Research and Innovation Support Fund	49.300	On-going
Detection of plant bacterial diseases caused by *Xylella fastidiosa* in Jordan	PI	04	2018	Abdul Hameed Shoman Foundation	20.000 JD	Closed
Siderophore-inspired nanoparticles as a bio-control agent and plan growth-promoting	PI	05	2018	DSR\ UJ	10.000	Closed
Survey, detection and identification of *Xylella fastidiosa*, the causal agent of Olive Quick Decline Syndrom (OQDS) on olive in Jordan	Co-I	02	2018	Scientific Research Support Fund	48.500	Closed
Accreditation of Ministry of Agriculture for Inspection for *Xylella fastidiosa* in the imported plant consignments to Jordan	PI	11	2017	Paid Service	300JD /samples	Closed
Memorandum of Understanding with Ministry of Agriculture for Inspection for *Xylella fastidiosa* in the imported plant consignments to Jordan	PI	11	2016	Paid Service	4500 JD	Closed
Assessing the chemical/microbiological contamination and productivity in the agricultural production chain of model fruit species grown under irrigation with different kinds of reclaimed wastewater	Co-I	04	2016	(EU-ERANETMED) HCST	20.000 €	Closed
Phylogenetic spectrum- analysis of antibiotic enhancers and antioxidant compounds of medicinal plant extracts.	PI	10	2015	DSR\ UJ	12.000 JD	Closed
Understanding the Bacterial Community Shift Associated with Coral Reefs in Gulf of Aqaba	PI	02	2014	Scientific Research Support Fund	131.037 JD	Closed

Siderophores competition between plant pathogenic bacteria Pseudomonas viridiflava and putative antagonistic bacteria.	PI	1	2014	HMCSR	5.000 JD	Closed
Isolation, Identification and Biological Control of Bacterial Fruit Rotting of Cucumber by Epiphytic Bacteria.	PI	5	2014	Abdul Hameed Shoman Foundation	15.000 JD	Closed
Detection, Identification and characterization of plant-borne bacterial efflux pump inhibitors	PI	1	2013	DSR\ UJ	10.000 JD	Closed
Water Reuse in Mediterranean Countries	Local Coordinator	11	2012	EU-Marie Curie-FP7	٤٣,٧٠٠٠ €	Closed

Conferences and workshops Participation
1. The 12th International Congress of Plant Pathology. 20-25 August 2023. Lyon, France.
2. The 16th Asian Apicultural Conference, Breeding the indigenous bees for sustainable beekeeping to cope up with climate changes. 7-9 August 2023/Al-Baha, the Kingdom of Saudi Arabia
3. The annual workshop of PIANO project "Pharmazeutische Initiative fur die Arzneipflanzen des Nahen Ostens in Forschung und Lehre". Amman 28th - 29th October 2022
4. The 13th Arab Congress of Plant Protection (ACPP-2022), 16- 21 October, 2022, Hammamet-Tunisia.
5. ACS-Chemistry conference: ACS Research conference, Chemistry, and Chemical engineering in MENA. 9-11.05-2022. Doha –Qatar.
6. The Twelfth Jordanian General Workshop for the Uses of Synchroton Light. Speaker: Nehaya Al-Karablieh – The University of Jordan: Tracing of efflux pump inhibition of MDR bacteria by Synchrotron IR Microscopy. Jordan- Al-Zarqa university. 17.03.2022.
7. Third European conference on *Xylella fastidiosa* and XF-ACTORS final meeting Virtual conference, 26-30 April 2021
8. Second European conference on *Xylella fastidiosa*: How research can support solutions. 29 October 2019 to 30 October 2019. Ajaccio, Corsica-France.
9. The Eighth Scientific Agricultural Conference (ESAC- 2018). 15-17 Oct. 2018. Karak, Jordan.
10. Managing Water Scarcity in River Basins: Innovation and Sustainable Development 4-6 October 2018, Agadir, Morocco
11. 4th World Congress and Expo on Applied Microbiology. Madrid, Spain. November 29-December 01, 2017.
12. 6th International Pharmaceutical Conference 2017. (ZTIPC2017). Al-Zaytoonah University of Jordan. Amman-Jordan. (29 Nov. 2017)
13. European Conference on Xylella 2017-Finding answers to a global problem. Palma de Mallorca-Spain. (13-15 November 2017)
14. The 6th International Jordanian Congress of Allergy and Immunology. July 2017. Amman-Jordan.
15. Jordanian Life Sciences for Sustainable Development. April 2017. Amman-Jordan.
16. ASU Pharmacy Third Conference. "Recent Trends in Postgraduate Research". April 2017. Amman-Jordan
17. International Conferences of Chemistry Biosciences and 15th Jordanian Chemical Conference. April 2017. Al-Mafraq-Jordan.
18. Seventh Conference for Scientific Research in Jordan. Nov. 2015. Amman-Jordan
19. Aqaba International Conference on Marine and Coastal Environment- Status and Challenge in the Arab Word. Aqaba- Jordan (2014)
20. 4th Global conference on Renewables and Energy Efficiency for Desert Region. Amman- Jordan (2013).
21. JOCHERA Symposium Conservation for Cultural Heritage in Jordan. Amman- Jordan (2012).
22. 11th International Fire Blight Workshop. Portland, Oregon-USA (2008).
23. Joint Annual Conference of the Association for General and Applied Microbiology /VAAM. Frankfurt- Germany (2008)
24. Annual conferences of the German Phytomedical Society. Erfurt-Germany (2008).

25. Joint Annual Conference of the Association for General and Applied Microbiology /VAAM. Osnabrück- Germany (2007).
26. Annual conferences of the German Phytomedical Society. Quedlinberg- Germany (2007).
27. 11th International Symposium on Microbial Ecology. Vienna- Austria (2006).
28. Molecular Life Science Retreat, Worpswede- Germany (2006).
29. Annual conferences of the German Phytomedical Society. Hannover- Germany (2006).
30. Annual conferences of the German Phytomedical Society. Weinsberg- Germany (2005).

Training courses and workshops
1. Latest updates on the diagnostic tools for the detection and identification of Xylella fastidiosa: validations, improvements and performances of different procedures. Webinar. 21 April 2020
2. Supervising postgraduate students, The University of Jordan. Amman, Jordan ٢٧. Aug. 2019.
3. Interactive learning and increasing student participation. The University of Jordan. Amman, Jordan 22-24.Jan. 2018.
4. Staff Development workshops, The University of Jordan. Amman, Jordan 15. Feb. 2018.
5. Diagnostic training workshop on Sampling and diagnostic tools for *Xylella fastidiosa*. Locorotondo, Italy. 19-22 Sept. 2017.
6. BioRisk Management. Jordan University of science & technology / Princess Haya biotechnology center. Irbid-Jordan, Oct. 2017.
7. Strengthening capacities to Preventive Measures for the Introduction and Spread of Xylella fastidiosa-Olive Quick Decline Syndrome in NENA Countries TCP/RAB/3601 project" funded by FAO. Amman- Jordan (Dec. 2016).
8. National Brokerage Event, Transferring Innovative Science into Business. SRTD-II Amman- Jordan (2016)
9. Proposal Writing for H2020 EU funding opportunities. SRTD-II. Amman- Jordan (2016)
10. Dies Prograant Proposal Writing for Research grant. Seminar II. Amman- Jordan (2015)
11. Dies Prograant Proposal Writing for Research grant- E-Learning Section. Amman- Jordan (2015)
12. Dies Prograant Proposal Writing for Research grant. Seminar I Amman- Jordan (2015)
13. The Comprehensive Course in Civil Defense. Amman- Jordan (2014)
14. Train-the Trainers Course for Biosafety and Biosecurity. International Council for the Life Science, Amman- Jordan (2013).
15. JOCHERA IPR and Technology Transfer Training. Hamdi Mango Center for Scientific Research, Amman- Jordan (2013)
16. Water Reuse in the Mediterranean Countries. Technical University Berlin, Berlin-Germany (2013)
17. JOCHERA FP7 Training. Hamdi Mango Center for Scientific Research, Amman-Jordan (2012)
18. Capacity Building of Jordanian Researcher. The Higher Council for Science and Technology, Amman- Jordan (2011)

Teaching activities

Taught Courses	Bachelor	Graduate
Campus Life and Ethics	X	
Principles of Plant Protection	X	
Phytopathogenic Bacteria	X	
Seminar in Plant Protection	X	
Special training in Plant Protection	X	
Field Training in Plant Protection	X	
Bacterial Identification and Taxonomy		X (MSc)
Diagnoses of Plant Diseases		X (MSc)
Seed Pathology		X (PhD)
Bacterial Environment and Genetics		X (PhD)

Training for Agricultural Engineers in collaboration with Agricultural Engineers Association	
Engineer Name	**Period**
Ihsan Mutlak	01/01/2015-30/06/2015
Yasmin Alkisouani	01/01/2015-30/06/2015
Amani Al-Dokh	01/08/2015-31/12/2015

Master Students Supervision				
Student Name	**Contribution**	**Faculty/ University**	**Semester /Year**	**Project title**
Rawan Mustafa	Co- Advisor	School of Science/ The University of Jordan	First 2023/2024	Investigating The Role of Pectin O-Acetylation During Pathogenic Infection in Arabidopsis
Abdallah Khalid	Co- Advisor	School of Agriculture/ The University of Jordan	Second 2022/2023	Identification, characterization and screening of entomopathogenic bacteria associated with fall army worm (Spodoptera frugiperda) in Jordan
Baylasan Emad	Main Advisor	School of Agriculture/ The University of Jordan	Second 2021/2022	The efficacy of *Pseudomonas fluorescens* NK4 on enhances alfalfa growth and acts as a biocontrol agent against the most prevalent pathogen of alfalfa in Jordan.
Eman almomani	Co- Advisor	Faculty of Science/ Al-Balqa' Applied University	Second 2021/2022	Studying The Role of Norwogonin and Terchebulin as an Antibiofilm and Antivirulence agents against *Acinetobacter baumannii* by using Gene Expression Analysis.
Abeer Obeidat	Co- Advisor	Faculty of Science/ Al-Balqa' Applied University	2019/2020	Synthetic Peptides as Inhibitors for Efflux Pumps of Multidrug-Resistant Bacteria.
Isra'a Al-Faris	Co- Advisor	Faculty of Science/ Al-Balqa' Applied University	First 2019/2020	Molecular Diagnosis and Analysis of Gene Expression of Acinetobacter baumannii In Jordanian Hospitals
Basma Zaareer	Trainer	Faculty of Science/ Al-Balqa' Applied University	Second 2018/2019	Biomimetic peptide synthesis of natural antimicrobial peptide
Anas Basher	Trainer	Faculty of Science/ Hashemite University	First 2016/2017	Genetic Correlation of Capsule and Biofilm Production in Clinical Isolates Methicillin-resistant Staphylococcus aureus (MRSA)
Wesam Shafeeq	Co- Advisor	Faculty of Pharmacy/ The	First 2016/2018	Anti-helicobacter pylori effect of essential oils of Achillea fragrantissima and Achillea

		University of Jordan		santolina and their major constitutes alone and in combination with conventional antibiotics
Isra'a Tayseer	Trainer	Faculty of Pharmacy/ The University of Jordan	First 2016/2017	Anti-Helicobacter effect of Capsaicin alone and in combination with conventional Therapy
Ruba Al-Masri	Trainer	Faculty of Science/ Yarmouk University	First 2014/2015	Bacterial Community Associated with Stylophora pistillata Coral Reefs in the contaminated area of Gulf of Aqaba

Thesis Committee member				
Thesis Committee member\ M.Sc				
Student Name	**Contribution**	**Faculty/ University**	**Date**	**Thesis title**
Imran Alsawalhah	External Examiner	Faculty of Agriculture/ University of Science and Technology	20/04/2024	Evaluation of Endophytic Bacteria from Durum Wheat on Fusarium Root and Crown Rot Disease (*Fusarium culmorum* (Wm.G.Sm) Sacc.) under Drought Stress
Abeer Obeidat	Co- Advisor	Faculty of Science/ Al-Balqa' Applied University	0/01/2022	Synthetic Peptides as Inhibitors for Efflux Pumps of Multidrug-Resistant Bacteria.
Isra'a Al-Faris	Co- Advisor	Faculty of Science/ Al-Balqa' Applied University	02/06/2020	Molecular Diagnosis and Analysis of Gene Expression of *Acinetobacter baumannii* In Jordanian Hospitals
Wesam Shafeeq	Co-Advisor	Faculty of Pharmacy/ The University of Jordan	31/07/2018	Anti-*helicobacter pylori* effect of essential oils of *Achillea fragrantissima* and *Achillea santolina* and their major constitutes alone and in combination with conventional antibiotics
Isra'a Tayseer	Committee member	Faculty of Pharmacy/ The University of Jordan	11/12/2017	*Anti-Helicobacter* effect of Capsaicin alone and in combination with conventional Therapy

B.Sc Student Supervision (Laboratory Graduation Projects)			
Student Name	**University**	**Semester**	**Project title**
Zainab Abdulhadi	Karolinska Institute	Spring 2013	Biological Control of Pseudomonas viridiflava by Epiphytic Bacteria
Mohammed Flayyih	Karolinska Institute	Spring 2013	Detection of plant-borne bacterial efflux pump inhibitors

School Student Supervision Laboratory Graduation Projects			
Student Name	**School**	**Semester**	**Project title**
Fayzah Wael	Canadian international School	Spring 2022	The antimicrobial effect of local medicinal plants on Phytopathogenic bacteria
Nancy Nazzal Maram Abu Mahfouth	Jubilee School	Spring 20٢٠	Inactivation of bacteria using manothermosonic sound waves
Aya Natheer	Jubilee School	Spring 20١٩	The impact of agricultural waste ash on soil borne diseases
Enas Sharkas	AlMujadedon School	Spring 2017	Pomegranate Peel Total Extract and Purified Tannin Extract Disinfectant Properties, an Experimental Study.
Saif Alsmadi Essa Alshara	Jubilee School	Spring 2017	Bacterial Consumption for Plastic
Mohammed Aljouhari Abed Alrahman Abu Zouhari Albara'a Baker Nather Abu Seam Anas Hatem Ibrahin Saied	Manshet Bani Hani/Male	Autumn/ winter 201٥-201٦	Studying the effect of some plant extracts cultivated with the aquatic and traditional culture system on human pathogenic bacteria
Sara MilKawi	Jubilee School	Autumn/ winter 2014-2015	Production of Plastic by bacteria
Masa Abu Baker	Jubilee School	Autumn/ winter 2013-2014	Angular Leaf Spot caused by *Pseudomonas syringae* pv. *lachrymans*

Membership in scientific and professional bodies and societies	
Name and place of scientific body and society	**Date**
Agricultural Engineers Association	2000
Arab Society for Plant Protection	٢٠٢٢
Applied Microbiology International	٢٠٢٢

Awards		
Name of Award	**Donor and place of award**	**Date**
DAAD Scholarship	DAAD, Germany	2005