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Microbiology Section - Science College
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OBJECTIVES

To obtain a challenging and demanding job in Plant Pathology and Microbiology (fungi, bacteria, viruses) using advanced tools that will further enhance my knowledge and skills and to spread what I learned to the coming generations.

EDUCATION

North Dakota State University, Fargo, ND 58105, USA

Ph.D, Plant Pathology, Jan 2006 – Jan 2010.

- My research was entitled by “Studies on the population biology of *Colletotrichum coccodes* using AFLP and SCAR markers”. GPA = '3.83'.

I also had a Statistical Certificate for Non-majors in the NDSU (12 credits in Statistic Department, NDSU). This included:

- Advanced applied statistics
- Applied regression
- SAS programming
- Introduction to Experimental design
- Nonparametric Statistics

I would like to add that I took the following courses in Plant Science to enhance my knowledge and experience during my MSc and PhD:

- Advanced Plant Physiology
- Plant Tissue culture
- Professional Development
- Intermediate Genetics
- Field Design

Jordan University, Amman, Jordan

Master, Horticulture and Plant Protection, Sep 2000 - Feb 2003.

- Research entitled “Production of Oyster Mushroom *Pleurotus ostreatus* on Different Agricultural Wastes Available in Jordan”. With GPA= “3.65”.
- It has been conducted in Plant Pathology Department, Jordan University, Jordan. There are a lot of agricultural wastes available such as tomato tuff, banana leaves, and pine needles, wheat straw and olive cake. Agro wastes were collected, chopped if needed, boiled, and then used for mushroom cultivation.
- I prepared mushroom spawn (spores on millet or wheat grains) for cultivation, and analyzed protein, fiber, fat, ash, moisture, and minerals in mushroom.
- Analyzed protein, fiber, fat, ash, moisture, and minerals in mushroom.

Jordan University, Amman, Jordan

Bachelor, Plant protection, Sep 1995 - Jun 1999. GPA= “2.75”

Kufranjah Secondary School for Females, Ajloun, Jordan

High School, Scientific Stream, Oct 1994 - Jun 1995. GPA of 86%.

WORK EXPERIENCE

Sep 2015 – Present.

Assistant Professor

University of Jordan, Amman, Jordan

Sep 2011 – Present.

Assistant Professor

Taibah University, Al Madinah Al Munawwarah, Saudi Arabia

Responsibilities:

- Taught the following courses for the seventh and eighth level:
 1. Bacterial Physiology
 2. Biostatistics and Field Design
 3. Food Microbiology
 4. Genetic Engineering
 5. Graduation Research Topic
 6. Mycology
 7. Petroleum Microbiology and Mineralization
 8. Plant Pathology
 9. Special Topics
- Supervised three graduate students:
 1. “Evaluation of film-coating legume seeds with the fungicide thiram on nodulation and plant establishment against soil-borne diseases”.
 2. “Photodynamic inactivation of Dematiaceous phytopathogenic fungi with emphasis on *Alternaria spp.*, the causal agent of early blight of tomato”.
 3. “Study on microbial contamination of wastewater and their treatment with nanoparticles in Saudi Arabia”.
- Participated in King Abdulaziz and His Companions Foundation for Giftedness and Creativity (MAWHIBA) program for two years 2014-2015 (The path of scientific research).

- PI and Co-Investigator for the following projects (accepted):

No.	PI/COI	Investigators	Project title	Project number
1	PI	Kholoud Alananbeh Nahla Bouqellah	A study for microbial contamination in the air of Al Haram Al Nabawi in Medina during pilgrimage season in 2013	1796
2	Co-I	Nadia Al Kaff Kholoud Alananbeh Nahla Bouqellah	Characterization of DELLA genes of Al Madinah Al Munawwarah date palm and its relation with fungal diseases	6141
3	Co-I	Nadia Al Kaff Kholoud Alananbeh Nahla Bouqellah	Molecular genetics unit	6776
4	Co-I	Musa Afif Said Kholoud Alananbeh Nadia Al Kaff Nahla Bouqellah	Screening of green plants to clean up heavy metals from wastewater in Al Khilail area in Al Madinah Al Munawwarah	6144
5	Co-I	Sawsan Hamad Nadia Al Kaff Nahla Bouqellah Kholoud Alananbeh	Biominerlization of iron in cyanobacteria	6189
6	Co-I	Dalia Essamy Kholoud Alananbeh Nurah Abdel-Muhsen	Genetic and Dietary Risk Factors of Obesity Among Preparatory Year Female Students at Taibah University, Saudi Arabia	6087

- Responsible about organizing the department undergraduate courses for each semester, prepare and assign faculties and lecturers courses schedule, and enter the undergraduate courses online using the ORACLE registration system.
- Responsible about graduation project committee in the department (assigning students to doctors, solve any possible difficulties, writing guidelines for research project's writing and presentation.
- Academic advisor for undergraduate students.
- Member in the student affairs and extension committee.
- Course specifications for the following courses:

Level	Course code	Course name
Master		Molecular Genetics of Eukaryotes
		Molecular Systematic
		Genetic Engineering
		Genomics and Bioinformatics
		Molecular diagnostic
Bachelor (3rd Year)	BIOL312	Molecular biology and genetic engineering
	BIOL 314	Biostatistics and Experimental Design

June 2012 – August 2012.

Visiting Scientist

North Dakota State University, Fargo, North Dakota, USA

Responsibilities:

Writing manuscripts for publication with two professors.

Aug 2009 – Aug 2011.

Post Doc Research Fellow

North Dakota State University, Fargo, ND, United States of America

Worked on Verticillium wilt disease on sunflower and potato caused by the fungus *Verticillium dahliae* and funded by the National Sunflower Association (NSA).

Responsibilities:

- Field surveys to collect infected samples of sunflower for further testing for *Verticillium*, *Phomopsis*, *Phoma*, *Fusarium*, Sclerotinia stem and stalk rot, insect damage, charcoal rot, downy mildew and other diseases.
- Received, isolated, and identified *V. dahliae* and all the other fungi infecting Sunflower morphologically and molecularly using PCR amplification with specific primers and ITS region.
- Used Amplified Fragment Length polymorphism (AFLP) and Simple Sequence Repeats (SSR) to study the genetic diversity of *Verticillium dahliae* on different hosts including sunflower and potato, and studied the global genetic diversity.
- Identified the vegetative compatibility groups (VCG's) of the fungus using the molecular techniques.
- Identified the most aggressive VCG on sunflower using different inoculation methods.
- **Had side projects** on identifying the different species of *Fusarium*, *Phomopsis*, *Phoma*, *Microphamina*, and *Colletotrichum* morphologically and molecularly using different primers, tested their pathogenicity on sunflower, and run different molecular markers such as AFLP and rep-PCR on those fungi, as well as reporting new fungi on sunflower.
- Laboratory skills in preparation (merchandise necessary equipments and materials), student supervising, and had different laboratory techniques skills.

Jan 2006 – Jan-2010.

Research assistant

North Dakota state University, Fargo, ND, United States of America

Worked on the fungus *Colletotrichum coccodes*, the causal agent of black dot disease on potato plant.

- I worked with laboratory and greenhouse techniques including potato planting in green houses and field and scoring disease severity in potato fields.
- Isolated, cultured, identified and maintained different fungal cultures using different methods.
- Identified and counted germinated conidia of *Alternaria solani* on fungicides-supplemented media.
- Prepared different media types for fungal pathogens, and single sporing of *Colletotrichum coccodes* and other fungi.

- Conducted molecular work (DNA extraction, PCR-running, AFLP running and analysis by the traditional way and by using Li-COR, cloning, developing SCAR markers, designing primers), running different statistical softwares to analyze the binomial data such as PHYLIP, WINBOOT, POPGENE, MULTILOCUS, GENALEX, and STRUCTURE, BAPS, MEGA 5.1, AFLPsurv.
- Able to identify different fungal pathogens on potato plants visually, by culture, and molecularly.

Jun 2007 - Sep 2007.

Plant disease diagnostician

North Dakota state University, United States of America, Fargo, ND

Worked in the Plant Diagnostic Laboratory.

- Visual identification of some plant disease depending on the symptoms, then confirming the identification by culturing the samples on different media types.
- I helped in preparing potato tubers and stems for future testing for different potato diseases.

Apr 2003 - Jun 2005.

Mushroom cultivation trainer

Extension Department, Ministry of Agriculture, and through the Agro-Biodiversity project in NCARTT, Jordan, Amman.

Trainer in the Extension Department, Ministry of Agriculture, and through the Agro-Biodiversity project in national center for agricultural research and technology transfer (NCARTT) on Oyster mushroom Production for home level.

- Conducted workshops on oyster mushroom cultivation using simple methods.
- Presented topics regarding mushroom and spawn production.

Feb 2004 - Jan 2006.

Pesticide analyzer and agricultural engineer

Ministry of Agriculture , Jordan, Amman.

Worked on a project with Ministry of Agriculture and the National Center for Agricultural Research and Technology Transfer (Jordan) (NCARTT) in laboratories of pesticide and residue analysis called “Safety Use of Pesticide and Residue Analysis”.

In this project, I worked with a hard-working team in planting open field and green house for different vegetables (cucumber, tomato, squash, pepper, strawberry, eggplant, cabbage, lettuce, and other vegetables). Some of job duties were:

- Checked the plots for any possible diseases and pests and applied the necessary pesticides to control those diseases and pests.
- Supervised the application of the pesticides studied in that project in the right amount and method.
- Received and prepared samples for pesticide residue analysis,
- Analyzed pesticides residue using different chemicals.
- Calculated the residue amounts in the samples, worked on Gas Chromatograph. High Performance Liquid Chromatograph, and Mass spectrophotometer for finding the active ingredient concentration for different pesticides received at the Ministry of Agriculture

- Prepared pesticides stocks for different pesticides used in the study.

Feb 2002 - Feb 2004.

Teaching Assistant

Jordan University, Jordan, Amman.

- Taught the practical part of the following courses during and after my M. Sc degree:
 - Plant Nematology in 2004
 - Fungal Plant Diseases in 2002/2003.
- I got good experience in preparing the laboratory section for undergraduate students, good interaction with the students through helping them to diagnose and recognize different fungal diseases through symptoms and causal agents.
- Experienced collecting, picking and saving nematodes through different collecting techniques, and finally helped the students in differentiating the different nematode species through the microscope.

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2001 – 2002.

Research assistant

University of Jordan.

Worked on collecting diseased plants for *Eutypa* species affecting grape vines, scoring the disease, and data entry.

- Prepared and corrected the exams for the undergraduate students.

Oct 2000 - Feb 2002.

Part -time job in the insect museum

Jordan University, Jordan

- I had good ability in collecting, preserving, and identifying different types of insects.
- I helped some graduate students in collecting the insects for their researches through surveys around Jordan.

PUBLICATIONS

- Alananbeh, K.M. et al., Evaluation of aerial microbial pollutants in Al-Haram Al-Nabawi during pilgrimage of 2013. Saudi Journal of Biological Sciences (2015), <http://dx.doi.org/10.1016/j.sjbs.2015.08.003>
- Mathew, F. M., Alananbeh, K. M., Jordahl, J. G., Meyer, S. M., Castlebury, L. A., Gulya, T. J., and Markell, S. G. 2015. Phomopsis stem canker: A reemerging threat to sunflower (*Helianthus annuus*) in the United States. *Phytopathology* 105:990-997.
- Mathew, F. M., Castlebury, L. A., Alananbeh, K., Jordahl, J. G., Taylor, C. A., Meyer, S. M., Lamppa, R. S., Pasche, J. A., and Markell, S. G. 2015. Identification of *Diaporthe longicolla* on dry edible pea, dry edible bean, and soybean in North Dakota. *Plant Health Progress* doi:10.1094/PHP-RV-14-0045.
- Zakaria Al-Qodaha, Mohammad Al-Shannag, Eman Assirey, Wasim Orfali, Khalid Bani-Melhem, Kholoud Alananbeh, Nahla Bouqellah. 2015. Characteristics of a novel low density cell-immobilized magnetic supports in liquid magnetically stabilized beds. *Biochemical Engineering Journal*, 97: 40–49.

- Alananbeh, K.M., Bouqellah, N.A., Al Kaff, N.S. 2014. Cultivation of oyster mushroom *Pleurotus ostreatus* on date-palm leaves mixed with other agro-wastes in Saudi Arabia. Saudi Journal of Biological Sciences, 21: 616–625.
- Al-Qodah, Z., Al-Shannag, M., Bani-Melhem, M., Assirey, E., Alananbeh, K., Bouqellah, N. 2014. Biodegradation of olive mills wastewater using thermophilic bacteria. Desalination and Water Treatment, 1-10, DOI: 10.1080/19443994.2014.954148.
- Mohammad Al-Shannag, Zakaria Al-Qodah , Kholoud Alananbeh, Nahla Bouqellah, Eman Assirey, Khalid Bani-Melhem. 2014. COD reduction of baker's yeast wastewater using batch electrocoagulation. Environmental Engineering and Management Journal, 13(12): 3153-3160.
- Alananbeh, K. M., Tsrer (Lahkim), L., and Gudmestad, N. C. 2014. Genetic diversity of a global population of *Colletotrichum coccodes* using amplified fragment length polymorphism markers. American Journal of Potato Research, 91: 75-87.
- Al-Qodah, Z, Daghistani, H., Alananbeh, K. 2013. Isolation and characterization of thermostable protease producing *Bacillus pumilus* from thermal spring in Jordan. African Journal of Microbiology Research, 7(29): 3711-3719.
- Alananbeh, K. M., Pasche, J. S. and Gudmestad, N. C. 2011. Genetic diversity and population biology of *Colletotrichum coccodes* in the United States using amplified fragment length polymorphism analysis. Potato Res. 54:81-103.
- Al-Momany, A., and Ananbeh, K. 2011. Conversion of Agricultural Wastes into Value Added Product with High Protein Content by Growing *Pleurotus ostreatus*. Environmental Earth Sciences, Part 9, 1483-1490, DOI: 10.1007/978-3-540-95991-5_139.
- Alananbeh, K. M. and Gudmestad, N. C. Population biology study of *Colletotrichum coccodes* in North America using Amplified fragment Length Polymorphism. American Journal of Potato Research (In process).
- Alananbeh, K. M., Viviana-Rivera, V., Acuña, I., Secor, G., and Gudmestad, N. C. Genetic diversity of *Colletotrichum coccodes* isolates from Chile using amplified fragment length polymorphism markers. American Journal of Potato Research (In process).
- Alananbeh, K. M., Johnson, K., and Gudmestad, N. C. Phylogenetic study of *Colletotrichum coccodes*-different VCGs from different geographic origins using different gene sequences. American Journal of Potato Research (In process).
- Alananbeh, K., Mathew, F., Cohli, S., Gudmestad, N., Gulya, Y., and Markell, S. Determination of presumptive vegetative compatibility groups of *Verticillium dahliae* occurring on sunflower using molecular markers. (In process).
- Alananbeh, K., Mathew, F., Gudmestad, N., Gulya, Y., and Markell, S. Genetic diversity study of two asexual fungi infecting sunflower and potato in the United States using rep-PCR. (In process).
- Mathew, F., Alananbeh, K., Meyer, S., Jordahl, J., Bertero de Romano, A., Paoloni, P., Clemente, G., and Gudmestad, N. Identity and pathogenicity of *Fusarium* spp. isolated from sunflower. (In process).

- Alananbeh, K., Mathew, F., Taylor, C., Gudmestad, N., Gulya, Y., and Markell, S. Genetic diversity study of *Macrophamina phaseolina* infecting sunflower in the United States using rep-PCR. (In process).
- Ananbeh K. and Al-Momany, A. 2008. Production of Oyster Mushroom (*Pleurotus ostreatus*) on Tomato Tuff Agro waste. *Dirasat, Agricultural Sciences*. 35(3): 133-138.
- Abdel-Wali, M., Bahdousheh, M., Al-Awamleh, A., Shaderma, A., Arabyat, S., Ananbeh, K., Ayassreh, M., Frehat, A., Romiah, N., Alawneh, Y., Abu-Nab, N., Gharaybeh, A., Qbielat, S. and Edwan, M. 2007. Determining pesticides waiting periods and residues on vegetables under Jordan Valley conditions. *Acta Hort. (ISHS)* 741:87-107.
- Ananbeh, K.M, and Almomany, A.R. 2005. Production of Oyster mushroom *Pleurotus ostreatus* on olive cake agro waste. *Dirasat, Agricultural Sciences*, 32(1):64-70.

MEETINGS (ABSTRACTS and POSTERS)

- Salama A. Ouf, Kholoud M. Alananbeh, Mashael R. Al-Harbi. Photodynamic inactivation of dematiaceous phytopathogenic fungi with emphasis on *Alternaria spp.*, the causal agent of early blight of tomato. The 29 Meeting of Saudi Biological Society, 25-27 February 2014, Dammam, KSA (**Oral presentation**).
- Mathew, F., Alananbeh, K., Jordahl, J., Meyer, S., Gudmestad, N., Gulya, T., and Markell, S. 2014. *Fusarium* sp. associated with stem diseases on sunflowers. National Sunflower Association. (Oral presentation). Available online at http://www.sunflowerusa.com/uploads/resources/698/fusarium_mathew_2014.pdf.
- Mathew, F., Alananbeh, K., Balbyshev, N., Heitkamp, E., Castelbury, L., Gulya, T., and Markell, S. 2012. Reevaluation of *Phomopsis* species affecting sunflowers in the United States. 18th International Sunflower Conference, Mar Del Plata and Balcarce. Argentina February 27th -March 1st 2012. **Poster**.
- Mathew, F., Alananbeh, K., Meyer, S., Jordahl, J., Bertero de Romano, A., Paoloni, P., Clemente, G., and Gudmestad, N. Identity and pathogenicity of *Fusarium* spp. isolated from sunflower. Poster. National Plant Diagnostic Network, Third National Meeting, Berkeley, California, November 6-9, 2011. **Poster**.
- Alananbeh, K., Gudmestad, N., Gulya, Y., and Markell, S. 2011. Determination of presumptive vegetative compatibility groups of *Verticillium dahliae* occurring on sunflower using molecular markers. **Oral presentation**, APS 2011 meeting, Hawaii, USA. Aug 5-10, 2011.
- Mathew, F., Alananbeh, K., Gudmestad, N. C., Gulya, T., and Markell, S. Characterization of *Phomopsis* sp. affecting sunflowers in the United States. Poster, APS 2011 meeting, Hawaii, USA. Aug 05-10, 2011. **Poster**.
- Alananbeh, K., Mathew, F., Meyer, S., Jordahl, J., Gudmestad, N., Gulya, T., and Markell, S. 2011. Identification and pathogenic characterization of *Fusarium* spp. On sunflower in the United States. Poster, APS North Central Division 2011 Meeting, USA. June 06-08. **Poster**.
- Alananbeh, K., Gudmestad, N., Gulya, Y., and Markell, S. 2011. Preliminary Studies on the Vegetative Compatibility Groups of *Verticillium* on Sunflower. **Oral presentation**,

National Sunflower Association board spring meeting, Ramada Plaza Hotel, Fargo, ND. January 12-13, 2011.

- Alananbeh, K., Tsrer (Lahkim), L., and Gudmestad, N. C. 2010. Genetic diversity of global population of *Colletotrichum coccodes* using amplified fragment length polymorphism. **Poster**, APS North Central Division 2010 Meeting, Rapid City, SD, USA. June 06-08.
- Alananbeh, K., Gudmestad, N., Gulya, Y., and Markell, S. 2010. Determination of presumptive vegetative compatibility groups of *Verticillium dahliae* occurring on sunflower using molecular markers. **Oral presentation**, APS North Central Division 2010 Meeting, Rapid City, SD, USA. June 06-08.
- Alananbeh, K., Markell, S., Gulya, T., and Gudmestad, N. C. 2010. Determination of vegetative compatibility groups using molecular markers, and their aggressiveness of *Verticillium dahliae* occurring on sunflower. National Sunflower Association board spring meeting, USDA, ARS Northern Crop Science Laboratory, Fargo, ND. February 24-25, 2010. **Oral presentation.**
- Alananbeh, K., Markell, S., Gulya, T., and Gudmestad, N. C. 2010. Determination of vegetative compatibility groups using molecular markers, and their aggressiveness of *Verticillium dahliae* occurring on sunflower: Research Plan. 32nd National Sunflower Association Research Forum, Ramada Plaza Suites & Convention Center, January 13-14, 2010. **Oral presentation.**
- Alananbeh, K and Gudmestad, N.C. 2009. Genetic Diversity of *Colletotrichum coccodes* Vegetative Compatibility Groups Using Fluorescent Amplified Fragment Length Polymorphism Markers. APS North Central Division Meeting. June 21-23, 2009, Iowa State University, Reiman Gardens, Ames, Iowa, USA. **Oral presentation.**
- Al-Momany, A. and Ananbeh, K. 2007. Conversion of agricultural wastes into value added product with high protein content by growing *Pleurotus ostreatus*. Proc. of International Conference on Environment: Survival and Sustainability. Nicosia-Northern Cyprus. 19 -24Feb. 2007.
- Ananbeh, K. M., and Almomany, A. R. 2005. Production of Oyster mushroom *Pleurotus ostreatus* on olive cake agro waste. The 5th Agriculture Scientific Conference. 9-12 /5/2005, Albalqa' Faculty of Agricultural Technology, Applied University, Jordan.
- Almomany, A. R. and Ananbeh, K. M. 2004. Production of Oyster mushroom *Pleurotus ostreatus* on olive cake agro waste. The 44th Annual Science Week Conference on Environmental Sustainable Development, 22-25 November 2004, Al Baath University, Syria.

TRAINING COURSES GIVEN

Course name	Location	Date	Attendance as
Preparation of funded research projects	Deanship of Academic Development - Taibah University	5-8/11/2013	Trainer
MINITAB	Deanship of Academic Development - Taibah University	13/11/2013	Trainer
How to design scientific experiments	Deanship of Academic Development - Taibah University	12/9/2014	Trainer
National Olympiad for Science Innovation - The path of scientific research- School districts	King Abdul Aziz and his Companion Foundation for Giftedness and Creativity / Department of Education	2012-2013 2013-2014	Judge

TRAINING COURSES ATTENDED

Course name	Location	Date
Training the trainers	Deanship of Academic Development-Taibah University	6/9/2014
Documentation methodology in scientific research	Deanship of Academic Development-Taibah University	8/9/2014
International publication for Scientific Research	Deanship of Academic Development-Taibah University	25/11/2014
Management research team	Deanship of Academic Development-Taibah University	28/11/2014

COURSES I CAN TEACH

- Advanced Mycology
- Mycology
- Fungal Biology
- General Plant Pathology
- Host-Parasite Interaction
- Plant Disease Management

- Plant Disease Physiology
- Plant Disease Epidemiology
- Bacterial Physiology
- Fungal Physiology
- Food microbiology
- Field crop diseases
- Applied Statistics
- Applied Regression
- Non-Parametric tests

HONORS and AWARDS

Study achievements, Sep 2009

- Research assistants from (2007 until 2009) in Department of Plant Pathology, NDSU.
- Activity secretary and treasurer of Plant Pathology Student Organization, in Department of Plant Pathology at North Dakota State University, Fargo 58105, North Dakota USA, from 2007- 2008.
- Graduate Teaching Assistantship during the following Academic Semesters, Department of Plant Protection, University of Jordan, Amman, Jordan.
- Mango Research Assistant, Department of Plant Protection, University of Jordan, Amman. Jordan.

Travel Award, Jun 2009

- From the North Central American Phytopathological Society (NA-APS).

MEMBERSHIP

- Member of Saudi Biological Sciences in Saudi Arabia since 2013.
- Member of American Phytopathological Society (APS) in United States since November 2007, and member of APS North Central Division, United States, since 2009.
- Plant Pathology Organization, North Dakota State University since 2006-now.
- National Sunflower Association, United States. Since 2010.
- Agricultural Engineers Association in Jordan since 1999 till now.

ADDITIONAL SKILLS

- Reviewer in the following Journals:
 1. African Journal of Biotechnology
 2. Chiang Mai Journal of Science
- Microsoft Office (Word, Excel, Access), Microsoft Windows XP, Microsoft Internet Explorer, Microsoft Outlook Express (Email), Internet, SAS Programming, and MINITAB analysis program with interpreting their output.
- Work both independently and within a team.
- Create appropriate plans to test experimental hypotheses by identifying and organizing resources, including experimental materials, inoculums production, space, and time to biological experiments.
- Design and conduct plant disease control assays, including compound preparation and application methods, inoculation methods, and assessment methods.

- Collect, analyze statistically, and summarize data and deliver results, conclusions, and recommendations as oral and written reports
- Keep experimental records in Laboratory Notebooks.
- Develop new test protocols and align methods with project objectives.
- Support the plant pathogen culture collection of bacteria, fungi both in pure culture (non-obligate pathogens) and on plants (obligate pathogens) including cryogenic storage.
- Practical whole organism agricultural and plant pathological research experience.
- Knowledge of life histories and disease cycles of various bacterial, fungal, and plant pathogens.
- Knowledge of greenhouse plant production.
- Effective communication skills, both oral and written, with the ability to prepare concise, timely, and accurate research summaries.
- Ability to use PCR, AFLP machine (LiCOR), microscopes, balances, pH meters, lyophilizers, autoclaves, laminar hoods, and many other laboratory and greenhouse/field equipments.
- Bacterial identification using PHOENIX 100 system.
- Thorough understanding of laboratory and greenhouse safety practices.

Language skills

- Fluent in speaking, reading, and writing Arabic
- Fluent in speaking, reading, and writing English

SUMMARY

- Solid understanding of plant pathology concepts and host-pathogen interaction.
- Proficiency in a wide range of genetic statistical softwares such as PHYLIP, WINBOOT, TASSEL, POPGENE, MULTILOCUS, GENALEX, and STRUCTURE, BAPS, MEGA 5.1, AFLPsurv.
- Good in using statistical softwares such as SAS, SPSS, and MINITAB and interpreting their output.

REFERENCES

- Samuel Markell
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- Neil C. Gudmestad
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North Dakota State University

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