

Dr. Baker M. Al Shara

Contact Information:

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Address: Q Zain Al-Sharaf street, Hawwara, Irbid, Jordan.

Date of Birth: 1982.

Nationality: Jordanian.

Marital Status: Single.



Education:

2020 **Ph.D. Plant Biotechnology**
University of Malaya
Kuala Lumpur, Malaysia.

Thesis Title: *In vitro* Propagation of *Carica papaya* L. cv. Eksotika Via Somatic Embryogenesis

2009 **M.Sc. Biological Science**
Yarmouk University
Irbid, Jordan.
Very Good rating.

2006 **B.Sc. Biological Science**
Yarmouk University
Irbid, Jordan.
Good rating.

Professional Experience:

1th Sep 2014 till 1st January 2019

PhD student (Researcher) in Plant Biotechnology
University of Malaya
Kuala Lumpur, Malaysia Department

Duties:

Preparing different stock solutions (macronutrient, micronutrient, plant growth regulators, vitamins, iron and other organic supplements such as amino acid).

Preparing different types of media

Sterilization different parts of plant such as seeds and leaves

Culturing different parts of plant *in vitro*

Monitoring and reading results

Teaching labs with my supervisor

**17th Sep 2011 till 1st August 2014 Lecturer in Biology Department
University of Hail
Hail, Saudi Arabia.**

Duties:

Plant taxonomy lab, helping student to understand the basics of taxonomy, vegetative and reproductive features, and useful terminology for the identification of flowering plants. Helping student to recognize some of the common and unusual families of flowering plants in Saudi Arabia. Also, helping them to draw floral diagram and longitudinal section (LS) from different families of flowering plants.

Plant anatomy lab, helping student to understand the arrangement of tissues and cells types within the dermal, ground, and vascular tissue systems in vascular plants. Helping student to recognized specialized cells and their components. helping student to identifying the five differences between monocots and eudicots and be able to recognize these key features (macroscopically and microscopically) in the plants and prepared slides you observe in lab. Also, helping student to identify a cross section and the specific tissues of herbaceous eudicot, herbaceous monocot, and woody eudicot and be able to state the functions of those tissues

Plant microtechnique, helping students to prepare fixative in order to preserved plant samples and to prepare slides for different parts of plant (dehydration and clearing, mounting, Embedding and sectioning). Helping students to optimize the different staining protocols.

Plant Physiology, helping student to understand the main physiological processes in plant such as; photosynthesis, ceullar respiration, diffusion, osmosis, ...etc

**1st April 2009 till 10th August 2011 Researcher in Plant Tissue Culture Lab,
Biology Department,
Yarmouk University
Irbid, Jordan.**

Duties:

Preparing different stock solutions (macronutrient, micronutrient, plant growth regulators, vitamins, iron and other organic supplements such as amino acid).

Preparing different types of media

Sterilization different parts of plant such as seeds and leaves

Culturing different parts of plant *in vitro*

Monitoring and reading results

**16th Feb 2009 till 11th Sep 2011 Biology Teacher
Ministry of Education
Irbid, Jordan.**

Duties:

Teaching biology and science for secondary stage student in public schools.

1st Oct 2008 till 1st May 2010

**Researcher in Histology and Physiology Lab,
Biology Department,
Yarmouk University.**

Duties**Preparation samples for light microscopy**

Fixation, samples fixation from different tissues (plant and animal tissues) by using different fixatives glutaraldehyde and formalin alcohol acetic acid (FAA) for plant tissues. Bouin's, osmium tetroxide and phosphate buffers for animals' tissues
Dehydration process, using different gradient of acetone and tertiary butyl alcohol for dehydration plant tissues and ethanol for dehydration animal tissues
Infiltration and embedding by using Xylene and Toluene for infiltration and wax (Easter wax, paraffine) for embedding
Sectioning process, by using microtome
Staining process, using different type of stain such as toluidine blue stain, safranin and fast green for plant tissues and eosin and hematoxylin for animals' tissues.

Preparation samples for scanning and transmission electron microscopy

Fixation, samples fixation from different tissues (plant and animal tissues) by using different fixatives glutaraldehyde for plant tissues. osmium tetroxide and phosphate buffers for animals' tissues
Dehydration process, using different gradient of acetone for dehydration plant tissues and animal tissues
Infiltration and embedding by using Xylene and Toluene for infiltration and resin for embedding
Sectioning process, by using ultramicrotome (diamond knife)
Staining process, using lead citrate stain

2007 till 2009

**Teaching Assistant
Biology Department,
Yarmouk University.**

Duties

Teaching labs (BIO 105, BIO 106 and plant physiology)

Research Projects:

In vitro propagation of *Carica papaya* L. cv. Eksotika via somatic embryogenesis

Duties:

Root formation problems during *in vitro* propagation of *Carica papaya* using somatic embryogenesis from immature zygotic embryos was studied. Firstly, I was standardized the protocol for fruits and seeds sterilization. Then I was standardized the induction, maturation, germination (shoot formation) media by examined different media type, auxin (2,4-D) concentrations, other additives such as polyethylene glycol, phloroglucinol, activated charcoal. For root formation phloroglucinol and riboflavin I was used with vermiculate to supporting media. Finally, I was transferred the explants for acclimatization. Also, the synthetic seed formation was standardized by examined different concentrations of sodium alginate with different solvents, calcium chloride concentration and different time of exposing sodium alginate matrix to calcium chloride. After that I was studied the developmental stages of somatic embryogenesis by using light microscope to describe and tracking the root formation in early stage. In conjunction with histological study I was studied the genes expression level for *LAX2*, *LAX3* and *PIN4* genes during development of somatic embryos. These genes play acritical role in transfer auxin (2,4-D) during root development of somatic embryos. This project presents some publication some of these papers was published other still under process:

1. **Al-Shara, B.**, Taha, R. M., & Rashid, K. (2018). Biotechnological methods and limitations of micropropagation in papaya (*Carica papaya* L.) production: a review. *Journal of Animal and Plant Sciences*, 28(5), 1208-1226.
2. **Baker Al-Shara**, Rosna Mat Taha, Jamaludin Mohamad Hashimah Elias and Asif Khan (2020). Somatic embryogenesis and plantlet regeneration in the *Carica papaya* L. cv. Eksotika. *Plants*, accepted will publish next issue.
3. **Baker Al-Shara**, Jamaludin Mohamad, Rosna Mat Taha, Wesam Al-Khateeb, Hashimah Elias (2018). Histological changes and expression patterns of CpLAX2, CpLAX3 and CpPIN4 genes during somatic embryogenesis of *Carica papaya*. *Under review*.

***In vitro* propagation and characterization of phenolic content along with antioxidant and antimicrobial activities of *Cichorium pumilum* Jacq.**

In this project the *Cichorium pumilum* was studied, it's a member of Asteraceae, *Cichorium pumilum* is widely used as a traditional medicinal herb. An efficient protocol for callus formation and whole plant propagation has been developed. The antibacterial activity of *C. pumilum* extracts was assayed *in vitro* by agar disc diffusion and agar well diffusion methods against 10 different bacterial species. Also, the antioxidant activity and total phenol content of callus cultures and *in vitro* plantlets were studied. The results of this project were published in *Plant Cell, Tissue and Organ Culture* Journal.

1. Al Khateeb, W., Hussein, E., Qouta, L., Alu'datt, M., **Al-Shara, B.**, & Abu-Zaiton, A. (2012). *In vitro* propagation and characterization of phenolic content along with antioxidant and antimicrobial activities of *Cichorium pumilum* Jacq. *Plant Cell, Tissue and Organ Culture (PCTOC)*, 110(1), 103-110.

Histological and Ultrastructural Analyses of Male Mice Exposed to Mobile Phone Radiation

In this project the possible toxicological effects of exposure to 900 MHz Global System for Mobile Communications (GSM) like radio frequency radiation (RFR) on the histology and ultrastructure of brain, liver, ear skin, spleen, testes, kidney and retina tissues of *Balb/c* mice were evaluated. The results of this project were published in *Journal of toxicology review*

1. Khalil, A., Al-Adhammi, M., **Al-Shara, B.**, Gagaa, M., Rawshdeh, A., & Alshamli, A. (2012). Histological and ultrastructural analyses of male mice exposed to mobile phone radiation. *J. of Toxicology Review*, 1(1), 1-6.

Skills:

Excellent research skills

Excellent communication and presentation skills

Fluency in Arabic, Excellent in English language and good in Malay language.

Advance computer skills.

Excellent in collections data (literature reviews) using different data libraries.

Excellent in microtechnique (preparation plant and animal slides).

Excellent in plant tissue culture (micropropagation, somatic embryogenesis and synthetic seeds).

Excellent in molecular biology (Pipetting, DNA isolation, RNA isolation, electrophoresis, PCR, cDNA, and qPCR).

Very good in extract information from (NCBI) and another program.

Very good statistical analysis (SPSS and Excel) skills.

Certificates of Courses:

19 Nov 2012	Hail University Advanced analytical instrumentation and solution for academia
21 April 2013	Hail University Recent advances in scientific instrumentation and its application in scientific and applied research.
10 April 2014	University of Hail Recent trends in the chromatography, spectroscopy and metal separation and their scientific, industrial, environmental and medical application cooperated Agilent technologies (USA)
28 March 2015	University of Malaya UM Cares capacity building.

Publication:

1. Khalil, A., Al-Adhammi, M., **Al-Shara, B.**, Gagaa, M., Rawshdeh, A., & Alshamli, A. (2012). Histological and ultrastructural analyses of male mice exposed to mobile phone radiation. *J. of Toxicology Review*, 1(1), 1-6.
2. Al Khateeb, W., Hussein, E., Qouta, L., Alu'datt, M., **Al-Shara, B.**, & Abu-Zaiton, A. (2012). *In vitro* propagation and characterization of phenolic content along with antioxidant and antimicrobial activities of *Cichorium pumilum* Jacq. *Plant Cell, Tissue and Organ Culture (PCTOC)*, 110(1), 103-110.
3. **Al-Shara, B.**, Taha, R. M., & Rashid, K. (2018). Biotechnological methods and limitations of micropropagation in papaya (*Carica papaya* L.) production: a review. *Journal of Animal and Plant Sciences*, 28(5), 1208-1226.
4. **Baker Al-Shara**, Rosna Mat Taha, Jamaludin Mohamad Hashimah Elias and Asif Khan (2020). Somatic embryogenesis and plantlet regeneration in the *Carica papaya* L. cv. Eksotika. *Plants*, accepted will publish next issue.
5. **Baker Al-Shara**, Jamaludin Mohamad, Rosna Mat Taha, Wesam Al-Khateeb, Hashimah Elias (2018). Histological changes and expression patterns of *CpLAX2*, *CpLAX3* and *CpPIN4* genes during somatic embryogenesis of *Carica papaya*. *Under review*.

Presented Papers:

1. Efficient *in vitro* surface sterilization protocols and callus formation from seed explants of *Carica papaya*. L (Eksotika I). International Postgraduate Research Awarded Seminar (In PRAS) 2016, Oral presentation, University of Malaya, 6-7 April 2016.
2. Effect of environmental and agronomic factors on growth and flowering of saffron (*Crocus sativus* L.). 22nd Biological sciences graduate congress. Oral presentation University town, NUS, Singapore, 19-21.

References:

1. **Prof. Dr. Rosna Mat Taha**
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Faculty of Science, University Malaya,
50603 Kuala Lumpur, Malaysia.
2. **Associate Professor Dr. Jamaludin Mohamad**
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Institute of Biological Sciences,
Faculty of Science, University Malaya,
50603 Kuala Lumpur, Malaysia.
3. **Prof. Dr. Wesam Al Khateeb**

Associate Professor of Plant Molecular Genetics and Biotechnology,
Email: wesamyu@gmail.com
Biological Department,
faculty of Science, Yarmouk University.
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