SAMEER AHMAD MASOUD, Ph. D.

Curriculum Vitae

Contact		
Department of Biotechnology and Genetic Engineering, Faculty of Science, Philadelphia University, JORDAN	P. O. Box 6351, Amman 11118, JORDAN.	Mob.: + 962 79 552 1037 Tel.: + 962 6 479 9000 (Ext. 2265) smasoud@philadelphia.edu.jo samasoudjo@yahoo.com

EDUCATION

-**Ph. D.**, Kansas State University, Manhattan, Kansas, USA, 1992.
-**M. Sc**., Kansas State University, Manhattan, Kansas, USA, 1989.
-**B. Sc.**, University of Jordan, Amman, Jordan, 1982.

AREAS OF SPECIALTY: Associate Professor in Plant Molecular Biology and Biotechnology; *Molecular plant pathology (disease physiology, genetic variation and molecular diagnosis)genetic engineering, studies in regulation and enzymes of plant metabolic pathways, plant genetic variation, plant tissue culture, plant cytogenetics,.*

SUMMARIES OF EMPLOYMENT AND ACTIVITIES:

Associate Professor; Philadelphia University, Jordan (2007-present). Teaching and research in the Department of Biotechnology and Genetic Engineering.

Technical Consultant and Manager; Nafees and Masoud Medical Supplies, LLC, Dubai, UAE (2004-2007). *Promoting, marketing and training in the biotechnology products mainly for research and medical laboratories. The company exclusively distributes for well-known world producers including diagnostic products for human infectious and genetic diseases, general molecular and life science products and molecular instruments (Real Time PCR and others).*

Associate Professor; Mu'tah University, Jordan (2002-2004). *Research and teaching (graduate and undergraduate courses). Worked in funded research projects and graduate student supervisor in several subjects including characterizing DNA fingerprints of plants and pathogens, PCR-based detection of GMO (Genetically Modified Organisms), study of host-pathogen interactions (gene-for-gene hypothesis), taxonomy and molecular diagnosis of plant pathogens.*

Adminstrative Work; Mu'tah University, Jordan. *Vice-Dean (1999-2001) and Assistant Dean (1998-1999).*

Assistant Professor; Mu'tah University, Jordan (1996-2002). *Teaching, research and administrative responsibilities including Vice-Dean (1999-2001) and Assistant Dean (1998-1999).*

Assistant Professor; University of Jeresh, Jordan (1995-1996). *Teaching mainly in the fields of microbiology and plant protection.*

Postdoctoral Fellow; S. R. Noble Foundation, Plant Biology Division, Ardmore, Oklahoma, USA (1992-1995). *Research to understand and to modify host-pathogen interactions at the molecular level utilizing modern techniques including biotechnology and genetic engineering.*

Graduate Research Assistant; Kansas State University, Department of Plant Pathology, Manhattan, Kansas, USA (1987-1992). *Teaching a graduate laboratory in Plant Tissue Culture and research in the expression of foreign genes in transgenic tobacco plants (their molecular analysis, and their potential for improving plant defense), somatic hybridization between alfalfa and two annual* Medicago *species, optimization of PCR conditions for amplification of hard to amplify sequences, high recombinant expression in* E. coli *of defense related genes isolated from corn and biochemical analysis, cytoplasmic inheritance of organelles in alfalfa as shown by DNA restriction length polymorphic (RFLP) analysis, karyotype and C-banding of alfalfa chromosomes which was the first published report in alfalfa.*

Sale Agent; Eastern Company, Amman, Jordan (1984-1986). *Marketing products for International companies including Shell, Hoechst…etc.*

Obligate Military Service; Jordan (1982-1984). *Military training and one academic year teaching in a civil school for intermediate education.*

Scientific Societies:

- International Society of Plant Molecular Biology (member 1989-1996).
- American Phytopathological Society (member from 1990).

ACADEMIC EXPERIENCES

- Teaching lectures and laboratories for the following courses:

Biotechnology, Basic Biology, Biochemistry, Techniques and Others:

* Biology II (Department of Biology); Mu'tah University.
* Biochemistry (General and I); Philadelphia University.
* Protein Biotechnology; undergraduate course, Philadelphia University.
* Plant Biotechnology; graduate course, Mu'tah University.
* Plant Biotechnology, undergraduate course, Philadelphia University.
* Plant tissue culture and regeneration; Mu'tah University.
* Plant tissue culture (laboratory); graduate course, Teaching Assistant at KSU, USA.
* Principle of genetics; Mu'tah University.
* Plant genetics; Mu'tah University.
* Microbiology; Jeresh University.
* Seminars and student research projects; Philadelphia University, Mu'tah University and Jeresh University.

Plant Diseases and Control:

* Plant pathology; Mu'tah University and Jeresh University.
* Principle of plant protection; Jeresh University.
* Diseases of horticultural and field crops; Jeresh University and Mu'tah University.
* Pesticides; Mu'tah University and Jeresh University.

- Co-supervised the following graduate students at the University of Jordan:

* Mahmoud Elkhatib, **Ph. D.** Characterization of *F. oxysporum* f. sp. *lycopersici* races (2004).
* Muwaffaq Karajeh, **Ph. D.** Genetic variability of root-knot nematode (2004).
* Nidal Al-Majali, **Ph. D.** Host-pathogen interaction (2002).
* Hussein Mikdady, **Ph. D.** Genetic variations of *Aegilops spp.* (2001).

* Abear Al-nashash, **M. Sc.** Genetic variations (molecular and morphological) of barley (2002).
* Ibrahim Rawashdeh **M. Sc.** Genetic variations (molecular and morphological) of okra (1999).
* Sobhia Saifan **M. Sc.** Genetic variations (molecular and morphological) of eggplant (1999).

- Served in the final graduate examination committees for:
  * Seven Ph.D. Dissertations and fourteen M. Sc. Thesis's (including the previously mentioned graduate students) at the University of Jordan (1997-2004).
  * One M. Sc. Thesis at Department of Genetic Engineering, Jordan University of Science and Technology (2004).
  * One M. Sc. Thesis at Department of Biotechnology, Balqa University (2003).
  * One M. Sc. Thesis at Department of Biology, Mu''tah University (2004).

Other Committees and Consultations:

- National Consultant in Microbiology, biotechnology and biosafety in the "Biodiversity Strategy and Action Plan-Jordan" supported by UNDP (2001-2003).
- Member of the National Steering Committee for the development of Biosafety Framework (GMO regulations) in Jordan, administered by Ministry of Environment and funded by GEF (2003-2004).
- Member in the National Team established by the Minister Council (Jordan) to regulate importing and consuming genetically modified organisms (2002-2003).
- Member of the Editorial Board of Mu'tah Lil-Buhuth wad-Dirasat; Natural and Applied Science Series (1998-1999 and 2003-2004).
- Evaluated and referee for scientific papers for Plant Molecular Biology (international), Mu'tah Lil-Buhuth wad-Dirasat, Al-Najah University (Palestine) and Islamic University (Ghaza District).
- Evaluated and referee for research proposals submitted to the Badia Project (Jordan) and Shouman Fund.
- Member in several committees to prepare and evaluate study planes and course descriptions for several departments at Mu'tah University.
- Invited member in committees to develop study planes for Biotechnology at Balqa University and Biotechnology and Genetic Engineering at Philadelphia University (Jordan).

PUBLICATIONS (Refereed Journals):

1) Al-Nashash, A., Migdadi, H., Shatnawi, M. A., Saoub, H. and **Masoud, S.** (2007). Assessment of phenotypic diversity among Jordanian barley landraces (*Hordeum vulgare* L.). ***Biotechnology*** 6 (2): 232-238.

2) Shoumalia, L., Masoud, H., Khlaif, H., Migdadi, H. and **Masoud, S**. (2007). Serologic and molecular characterization of *Pseudomonas aeruginosa* Jordanian clinical isolates compared with the strains of International Antigenic Typing Scheme. ***Diagnostic Microbiology and Infectious Disease*** 58:393-398.

3) Al-Nashash, A., Migdadi, H., Shatnawi, M. A., Saoub, H. and **Masoud, S.** (2007). Assessment of genetic variation among Jordanian barley landraces (*Hordeum vulgare* L.) as reveled by molecular markers. ***American-Eurasian J. agric. & Environ. Sci.*** 2 (1): 68-74.

4) M. R. Karajeh and **S. A. Masoud** (2006) Molecular Detection of *Verticillium dahliae* Kleb. in Asymptomatic Olive Trees. ***J. Phytopathology*** 154, 496–499.

5) Karajeh, M.R., Abu-Gharbieh, W. I. and **Masoud, S.** (2006). A comparison among diagnostic means used to identify root-knot nematodes (Meloidogyne species and races) from Jordan. ***Pak. J. Nematol.*** 24(1): 27-38.

6) Karajeh, M., Abu-Gharbieh, W. and **Masoud, S.** (2005). First report of the root-knot nematode *Meloidogyne arenaria* Race 2 from several vegetable crops in Jordan. ***Plant Disease*** 89:206.

7) Abu-Gharbieh, W. I., Karajeh, M. and **Masoud, S.** (2005). Current distribution of the root-knot nematodes (Meloidogyne species and races) in Jordan. Jordan *Journal of Agriculture Sciences* 1(1): 43-47.

8) Karajeh, M., Abu-Gharbieh, W. and **Masoud, S.** (2005). Virulence of root-knot nematodes, Meloidogyne spp., on tomato bearing the Mi gene for resistance. ***Phytopathologia Mediterranea*** 44(1): 24-28.

9) Migdadi, H. M., Tell, A. M. and **Masoud, S. A.** (2004).Genetic diversity in some *Aegilops* species in Jordan revealed using RAPD. ***Plant Genetic Resources Newsletter*** 139:47-52.

10) Migdadi, H. M., **Masoud, S. A.** and Tell, A. M. (2004). Randomly amplified polymorphic DNA (RAPD) analysis of some species of *Aegilops*. ***Dirasat, Agriculture Sciences*** 31 (1):53-59.

11) **Masoud, S. A.** (2002). Specificity of different PCR primers for *Verticillium dahliae* isolated from olive trees in Jordan. ***Mu'tah Lil-Buhuth wad-Dirasat*** 17 (3): 89-104.

12) Migdadi, H., Tell, A. and **Masoud, S.** (2003). Performance of some *Aegilops* species under different water regimes (Research note). ***Dirasat, Agriculture Sciences*** 30 (2):166-177.

13) Blount, J.W., **Masoud, S.A.**, Sumner, L.W., Huhman, D. and Dixon, R.A. (2002) Over-expression of cinnamate 4-hydroxylase leads to increased accumulation of acetosyringone in elicited tobacco cell-suspension cultures. ***Planta*** 214:902-910.

14) Blount, J.W., Korth, K.L., **Masoud, S.A.**, Rasmussen, S., Lamb, C. and Dixon, R.A. (2000). Altering expression of cinnamic acid 4-hydroxylase in transgenic plants identifies a feedback loop at the entry point into the phenylpropanoid pathway. ***Plant Physiology*** 122:107-116.

15) Hazegh-Azam, M., Kim, S.S., **Masoud, S.**, Andersson, L., White, F., Johnson, L., Muthukrishnan, S. and Reeck, G. (1998). The corn inhibitor of activated Hageman factor: purification and properties of two recombinant forms of the protein. ***Protein Expression and Purification*** 13(2): 143-149.

16) Sewalt, V.J.H., Ni, W., Blount, J.B., Jung, H.G., **Masoud, S.A.,** Howles, P.A., Lamb, C. and Dixon, R.A. (1997). Reduced lignin content and altered lignin composition in transgenic tobacco down-regulated in expression of L-phenylalnine ammonia-lyase or cinnamate 4-hydroxylase. ***Plant Physiology*** 115:41-50.

17) **Masoud, S.A.**, Zhu, Q., Lamb, C.J. and Dixon, R.A. (1996). Constitutive expression of an inducible β-1,3-glucanase in alfalfa reduces disease severity caused by the oomycete pathogen *Phytopthora megasperma* f. sp. *medicaginis*, but does not reduce disease severity of chitin-containing fungi**.** ***Transgenic Research*** 5:313-323.

18) **Masoud, S.A.**, Ding, X., Johnson, L.B. and White, F.F. (1996). Expression of a corn bifunctional inhibitor of serine proteinase and insect alpha-amylase in transgenic tobacco plants. ***Plant Science*** 115:59-69.

19) Zhu, Q., Maher, E.A., **Masoud, S.**, Dixon, R.A. and Lamb, C.A. (1994). Enhanced protection against fungal attack by constitutive co-expression of chitinase and glucanase genes in transgenic tobacco. ***Bio/technology (Nature Biotechnology*)*** 12:807-812.

(*The new name of the Journal that is published by Nature)

20) **Masoud, S.A.**, Johnson, L.B., White, F.F. and Reeck, G.R. (1993). Expression of a cysteine proteinase inhibitor (oryzacystatin-I) in transgenic tobacco plants. ***Plant Molecular Biology*** 21:655-663.

21) **Masoud, S.A.**, Johnson, L.B. and White, F.F. (1992). The sequence within two primers influences the optimum concentration of dimethyl sulfoxide in the PCR. ***PCR Methods and Applications*** 2:89-90.

22) **Masoud, S.A.**, Gill, B.S. and Johnson, L.B. (1991). C-banding of alfalfa chromosomes: standard karyotype and analysis of a somaclonal variant. ***Journal of Heredity*** 82:335-338.

23) **Masoud, S.A.**, Johnson, L.B. and Sorensen, E.L. (1990). High transmission of paternal plastid DNA in alfalfa plants demonstrated by restriction fragment length polymorphic analysis. ***Theoretical and Applied Genetics*** 79: 49-55.

PUBLICATIONS (Reviews, book chapter, reports):

1) Howles, P., **Masoud, S.A**, Blount, J.W., Rasmussen, S., Lamb, C. and Dixon, R.A. (1999). Overexpression of L-phenylalanine ammonia-lyase and cinnamate 4-hydroxylase in tobacco cell suspension cultures. In: ***Plant Biotechnology and in vitro Biology in the 21st Century***. A. Altman *et al*. (eds), Kluwer Academic Publishers, The Netherlands. PP 297-301.

2) Dixon, R.A., Lamb, C.J., **Masoud, S.A.**, Sewalt, V.J.H. and Paiva, N.L. (1996). Metabolic engineering: Prospect for crop improvement through genetic manipulation of phenylpropanoid biosynthesis and defense responses. ***Gene*** 179:61-71.

3) Dixon, R.A., Lamb, C.J., Paiva, N.L. and **Masoud, S.A.** (1996). Improvement of natural defense responses. In: ***Engineering Plants for Commercial Products and Applications; Annals of the New York Academy of Sciences*** 792:126-139.

4) **Masoud, S. A.**, Karajeh, M. (2003) Diagnosis of *Verticillium dahliae* kleb. latent infection on olive using DNA-fingerprinting techniques in Jordan, ***The Higher Council of Science and Technology-Jordan.***

5) Anonomus. (2004) Microbiology, biotechnology and biosafety. In: Biodiversity Strategy and Action Plan-Jordan. UNDP.

PAPERS AND POSTERS PRESENTED

I have presented many research papers in international and local meetings such as the 3rd International Congress of International Society of Plant Molecular Biology, Tucson, Arizona (1991), the American Society of Plant Physiologists and the Canadian Society of Plant Physiologists, Minnesota (1993), the first (1997) and the second (1999) Biotechnology Conferences in Jordan, Al Balqa University Conference in Biotechnology (2000), American Phytopathological Society Annual Meeting, NM, USA (1994), the 4th International Congress of International Society of Plant Molecular Biology (1994) and the 34th North American Alfalfa Improvement Conference and the National Symposium and Workshop on Alfalfa Biotechnology (1994).

RESEARCH EXPERIENCES:

General

- Prepared and presented several seminars, posters and oral presentations in local and international scientific conferences.
- Contributed in initiating and running a molecular research lab. for the Unit of Genetic Resources/National Center for Agricultural Research and Technology Transfer-Ministry of Agriculture (1996-2000).
- Taught part of a workshop in "PCR Methods and Applications" organized by the Agricultural Arab Organization and National Center for Agricultural Research and Technology Transfer (1998).
- Scientific consultations in molecular biology and other subjects.

Laboratory Techniques

- **Molecular, Cellular Biology and Biochemistry**: isolation of DNA and RNA, Northern and Southern blotting, DNA cloning, polymerase chain reaction (end-point and real time PCR), oligonucleotide directed mutagenesis, genomic library screening, construction of expression vectors for plants and prokaryotes, retrieving and comparing DNA sequences from databases of gene bank, regulation of metabolic pathways, protein purification, liquid chromatography (including affinity, gel filtration and ion-exchange), isoelectric focusing, native and denaturing gel electrophoresis, isozyme analysis, *in vitro* translation, expression and purification of proteins in *E. coli*, and assays of different enzymes including cytochrome P450's and proteinases or their inhibitors.
- **Immunology**: production of rabbit polyclonal antibodies, IgG purification and secondary antibody labeling, affinity purification, optimizing and developing ELISA Assay, western blotting and tissue blotting.
- **Plant Tissue Culture and Transformation**: protoplast isolation, regeneration and fusion, *Agrobacterium*-mediated transformation of alfalfa and tobacco.
- **Microbiology and Plant Protection**: isolation and maintenance of plant pathogens, molecular diagnosis, molecular taxonomy of pathogens, evaluation of transgenic plants for enhanced resistance against phytopathogen attack and insect feeding, general plant pathology techniques, plant infection in the greenhouse with viruses, bacteria and fungal pathogens, and initiating and maintaining a colony of alfalfa weevils.
- **Secondary Metabolites**: isolation of plant phenolics and (iso)flavanoids and their analysis using HPLC and TLC.
- **Genetics Techniques:** plant sexual crosses and chromosome staining, banding and *in situ* hybridization.
- **General:** maintaining plants in growth chambers and green houses, black and white photography and using personal computer software's including DNA sequence and genetic programs, word processing, spread sheets, graphics, statistics and electronic mail and the Internet.

Mu'tah University (1996-2004)

- Initiated a research laboratory of molecular biology.
- Initiated research work in GMO detection funded by Shouman Fund.
- Training of researcher in molecular techniques for different applications.
- Conducted a research project "molecular diagnosis of Verticillium attacking olive trees" funded by the Higher Council for Science and Technology. The project was developed in the following areas:
  * PCR based molecular diagnosis including designing the primers and practical considerations.
  * Genetic diversity of Verticillium using DNA fingerprints.
  * Optimization a procedure for microbial DNA extraction from soil.
- Supervisor and contributed in establishing and development of the Central Laboratory for the Faculty of Agriculture.
- Contributed in a research proposal submitted to the World Bank.

Noble Foundation (1992-1995):

- Research work focused primarily on mechanisms of host resistance to pathogens and applications of biotechnology to enhance plant resistance to plant pathogens. Part of my research involved the re-introduction of isolated plant genes that are recognized to be involved in plant resistance into the same or other plant species. This approach, combined with molecular analysis of plant response to pathogen attack, can give insight into understanding plant-pathogen interaction.
- In cooperation with Dr. Christopher Lamb in the Salk Institute at La Jolla, California, we have successfully obtained synergistic interaction of two transgenes in tobacco plants against the fungal pathogen *Cercospora nicotianae*.
- I produced transgenic alfalfa plants that are protected against *Phytophthora megasperma* f. sp. *medicaginis*. I have analyzed these transgenic alfalfa plants both by molecular analysis and by screening for resistance against several alfalfa fungal pathogens.
- I initiated a project to over express a chimeric CA4H transgene, and to under- express the endogenous CA4H gene in transgenic tobacco plants. I have used an alfalfa cDNA coding for cinnamic acid 4-hydroxylase (CA4H), which is a cytochrome P450 enzyme that hydroxylates cinnamate to produce 4-coumarate. Manipulating the phenylpropanoid pathway, which leads to flavanoids, isoflavanoids, lignin and phytoalexins (involved in plant defense against pathogens), could result in better understanding of the host response to pathogen attack and testing regulation of metabolic pathways. I obtained several transgenic tobacco lines that exhibit a wide range of CA4H enzymatic activities and used these plants to study cinnamate as being a possible signal in regulating the flow of the phenylpropanoid pathway and as being a substrate for other enzymes in the pathway.
- I initiated cell cultures of the trnasgenic plants having different levels of CA4H activities and used them to induce host defense genes to better understand regulations of metabolic pathways.
- Member of the Laboratory Safety Committee at the Foundation.

Kansas State University (1986-1992):

- My doctoral dissertation (under the supervision of Dr. Lowell B. Johnson) involved the expression of a rice cystein proteinase inhibitor and a corn α-amylase/serine proteinase inhibitor in transgenic tobacco plants, their molecular analysis, and their potential for improving plant defense against pathogens and insects.
- Contributed in a project related to somatic hybridization between alfalfa and two annual *Medicago* species and characterization of the plants produced in order to improve alfalfa resistance to pathogens and pests.
- Worked in optimization of PCR conditions for amplification of several sequences.
- Produced high recombinant expression in *E. coli* a defense related gene isolated from corn.
- My Master's thesis focused on the cytoplasmic inheritance of organelles in alfalfa as shown by DNA restriction length polymorphic (RFLP) analysis. High transmission of paternal plastid DNA was demonstrated. Both the maternal and the paternal genomes appeared to influence the frequency of paternal plastid transmission in sexual crosses.
- I prepared in the laboratory of Dr. B. S. Gill during my graduate studies a C-banded karyotype of alfalfa chromosomes which was the first published report in alfalfa.