

## CURRICULUM VITAE OF KAREEM A. MOSA

### Personal Information

- **Name :** *Kareem A. Mosa*
- **Address:** Applied Biology Department, College of Sciences, University of Sharjah, Sharjah, P. O. Box 27272, UAE - Building W8- Room 111
- Tel: +971-6-505 3838, Fax: +971-6-505 3814
- **Nationality:** Egyptian
- **Date of birth :** (dd/mm/yy ) 01 / 07/ 1980
- **Place of Birth:** Cairo – Egypt
- **E-Mail :** [kmosa@sharjah.ac.ae](mailto:kmosa@sharjah.ac.ae) , [karemomda@yahoo.com](mailto:karemomda@yahoo.com)
- **Google Scholar Profile:**  
<http://scholar.google.ae/citations?user=6D2nM78AAAAJ&hl=en>

### Educations

- **(2012)** Dept. of Plant, Soil and Insect sciences ,University of Massachusetts , Amherst MA 01003 , **USA**
  - **PhD degree** (Plant genetic engineering & biotechnology), **May, 2012**
- **(2002)** Al-Azhar University – Faculty of Agriculture, Cairo, **Egypt**
  - **Bachelor degree** on Agricultural sciences – Dept. of Biotechnology.
- Grade: Excellent, (First Class Honours)- the second of the batch.

### Professional Experience

- **(September 2014- present)** Applied Biology Department, College of Sciences, University of Sharjah, **UAE**
  - **Assistant professor**
- **(February 2013- February 2014)** Plant Science Department , McGill University, **Canada**
  - **Postdoctoral fellow** (prof. *Ajjamada C. Kushalappa* lab)
- **(May 2012- present, on leave)** Dept. of Biotechnology - Faculty of Agriculture– Al-Azhar University , Cairo , **Egypt**
  - **Assistant professor of Biotechnology**
- **(Fall 2007 – May 2012)** Dept. of Plant, Soil and Insect sciences ,University of Massachusetts , Amherst MA 01003 , **USA**
  - **PhD student and research assistant** (prof. *Om Parkash Dhankher* lab).
- **(2004 – 2007)** Dept. of Biotechnology - Faculty of Agriculture– Al-Azhar University , Cairo , **Egypt**
  - **Teaching and research assistant.**

**Publications**    **Articles in Peer Reviewed Journals:**

(\* Corresponding author , \$ Equal First Author )

1. Ankush Ashok Saddhe, Shweta, **Kareem A. Mosa**, Kundan Kumar, Manoj Prasad and Om Parkash Dhankher (2017). Genome-wide characterization of Major Intrinsic Protein (MIP) gene family in *Brachypodium distachyon*. ***Current Bioinformatics***. 12, 2017. doi : 10.2174/1574893612666171023152558
2. Sameh Soliman, Dina Alnajdy, Ali A. El-Keblawy, **Kareem A. Mosa**, Ghalia Khoder, Ayman M. Noreddin (2017). Plants' Natural Products as Alternative Promising Anti-Candida Drugs. ***Pharmacognosy Reviews***, 11(22),104
3. Sameh S. M. Soliman, **Kareem A. Mosa**, Ali A. El-Keblawy, Mohamed I. Hussein (2017). Exogenous and endogenous increase in fungal GGPP increased fungal Taxol production. ***Applied Microbiology and Biotechnology***, 101: 7523. doi: 10.1007/s00253-017-8509-9
4. Mohamed Awad, Ragab M. Fahmy, **Kareem A. Mosa\***, Mohamed Helmy, Fawzy A. El-Feky (2017). Identifying Effective DNA Barcodes for *Triticum* Plants through Chloroplast Genome-wide Analysis. ***Computational Biology and Chemistry***. 2017 Sep 12;71:20-31. doi: 10.1016/j.compbiolchem.2017.09.003
5. Arun Kumar, **Kareem A. Mosa**, Liyao Ji, Udaykumar Kage, Dhananjay Dhokane, Shailesh Karre, Deepa Madalageri, Neemisha Pathania (2017). Metabolomics assisted biotechnological interventions for developing plant-based functional foods and nutraceuticals. ***Critical Reviews in Food Science and Nutrition***. Mar 8:0. doi: 10.1080/10408398.2017.1285752
6. Eslam A. Heb El-din, Fawzy A. El- Feky, Ali M. El-Refy, Ahmed I. Ismail, and **Kareem A. Mosa\*** (2017). Molecular characterization of two AP2/ERF transcription factor genes from Egyptian tomato cultivar (Edkawy). ***Plant Science Today***, 4(1): 12-20, doi: 10.14719/pst.2017.4.1.269
7. **Kareem A Mosa\***, Ismail Saadoun, Kundan Kumar, Mohamed Helmy, Om Parkash Dhankher (2016). Potential Biotechnological Strategies for the Cleanup of Heavy Metals and Metalloids. ***Frontiers in Plant Science***, 7 : 303, doi: 10.3389/fpls.2016.00303
8. Mohamed Helmy, Mohamed Awad, **Kareem A. Mosa\*** (2016). Limited Resources of Genome Sequencing in Developing Countries: Challenges and Solutions. ***Applied & Translational Genomics***, March 2016. doi:10.1016/j.atg.2016.03.003
9. **Kareem A. Mosa**, Kundan Kumar, Sudesh Chhikara, Craig Musante, Jason C. White, and Om Parkash Dhankher (2016). Enhanced Boron Toxicity Tolerance in Plants Mediated by a Bidirectional Transport through Plasma Membrane Intrinsic Proteins. ***Scientific Reports, Nature Publishing Group***, 6, 21640; doi: 10.1038/srep21640
10. Liyao Ji, Kalenahalli Yogendra, **Kareem A. Mosa**, Ajjamada Kushalappa, Clara Peneros, Teresa Mosquera, Carlos Narvaez (2016). Hydroxycinnamic acid functional ingredients and their biosynthetic genes in tubers of *Solanum tuberosum* Group Phureja. ***Cogent Food & Agriculture***, 1138595, DOI:

Resume

[Kareem A. Mosa, PhD]

10.1080/23311932.2016.1138595

11. Mohamed Awad, Osama Ouda, Ali M. El-Refy and Fawzy A. El-Feky, **Kareem A. Mosa**, Mohamed Helmy (2015). FN-Identify: Novel Restriction Enzymes-Based Method for Bacterial Identification in Absence of Genome Sequencing. *Advances in Bioinformatics*, 303605, 14, DOI: 10.1155/2015/303605
12. Kalenahalli N. Yogendra, Arun Kumar, Kobir Sarkar, Yunliang Li, Doddaraju Pushpa, **Kareem A. Mosa**, Raj Duggavathi and Ajjamada C. Kushalappa (2015). Transcription factor StWRKY1 regulates phenylpropanoid metabolites conferring late blight resistance in potato. *Journal of Experimental Botany*, 66 (22), 7377-7389, doi: 10.1093/jxb/erv434
13. Arun Kumar, Udaykumar Kage, **Kareem A. Mosa**, Dhananjay Dhokane (2014). Metabolomics: A Novel Tool to Bridge Phenome to Genome under Changing Climate to Ensure Food Security. *Medicinal & Aromatic Plants*, DOI: 10.4172/2167-0412.1000e154
14. Kalenahalli N. Yogendra, Doddaraju Pushpa, **Kareem A. Mosa**, Ajjamada C. Kushalappa, Agnes Murphy, and Teresa Mosquera (2014). Quantitative resistance in potato leaves to late blight associated with induced hydroxycinnamic acid amides. *Functional & Integrative Genomics*, 14(2):285-98. doi: 10.1007/s10142-013-0358-8
15. Kundan Kumar, **Kareem A. Mosa**<sup>§</sup>, Sudesh Chhikara, Craig Musante, Jason C. White, and Om Parkash Dhankher (2014). Two Rice Plasma Membrane Intrinsic Proteins, OsPIP2;4 and OsPIP2;7, are Involved in Transport and Providing Tolerance to Boron Toxicity. *Planta*, 239(1):187-98. doi: 10.1007/s00425-013-1969-y.
16. Alaa Al-Din Helaly, Ali El-Refy, Emad Mady, **Kareem A. Mosa**, Lyle Craker (2013). Morphological and Molecular Analysis of Three Celery Accessions. *Journal of Medicinally Active Plants*, 2 (3):27-32.
17. **Kareem A. Mosa**, Kundan Kumar, Sudesh Chhikara, Joseph Mcdermott, Zijuan Liu, Craig Musante, Jason C. White, and Om Parkash Dhankher (2012). Members of Rice Plasma Membrane Intrinsic Proteins Subfamily are Involved in Arsenite Permeability and Tolerance in Plants. *Transgenic Research*, 21:1265–1277

#### **Book Chapters:**

18. Sameh Soliman, Ali El-Keblawy, **Kareem A. Mosa**<sup>\*</sup>, Mohamed Helmy, Shabir Hussain Wani (2018). Understanding the Phytohormones Biosynthetic Pathways for Developing Engineered Environmental Stress-Tolerant Crops. IN: Satbir Singh Gosal and Shabir Hussain Wani(Eds.), *Biotechnologies of Crop Improvement, Volume 2: Transgenic Approaches*. Springer, PA, USA (In Press)
19. Kundan Kumar & **Kareem A. Mosa** (2015). Ion Transporters: A Decisive

Resume

[Kareem A. Mosa, PhD]

Component of Salt Stress Tolerance in Plants. IN: Shabir Hussain Wani and Anwar Hossain (Eds.), *Managing Salt Tolerance in Plants: Molecular and Genomic Perspectives*. CRC Press, Taylor & Francis Group, USA

### **Books:**

20. **Kareem A. Mosa**, Ahmed Ismail, and Mohamed Helmy (2017). *Plant Stress Tolerance: An Integrated Omics Approaches*. **Springer Briefs in Systems Biology**. Springer, PA, USA

### **PhD Thesis:**

- **Kareem A. Mosa** (2012). *Functional Characterization of Members of Plasma Membrane Intrinsic Protein Subfamily and their Involvement in Metalloids Transport in Plants*. University of Massachusetts Amherst. Advisor: Dr. Om Parkash Dhankher.

### **B.Sc Graduation Mini Thesis :**

- **Kareem A. Mosa** (2002). *Micro propagation of Banana by using tissue culture technique. (mini thesis ) - Graduation research project (as a part of the requirements of the bachelor degree).*

### **Gene Sequences Submitted to NCBI GenBank Database**

- Mohamed A. Awad, **Kareem A. Mosa**, Ahmed M. Hashem, and Fawzy A. El-Feky (2016). *Cenchrus americanus* cultivar shandaweel 1 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcl) gene, partial cds; chloroplast. Accession KT852570
- Mohamed A. Awad, **Kareem A. Mosa**, Ahmed M. Hashem, and Fawzy A. El-Feky (2016). *Oryza sativa* cultivar Giza 178 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcl) gene, partial cds; chloroplast. Accession KT852569
- Mohamed A. Awad, Ragab M. Fahmy, **Kareem A. Mosa**, Ahmed M. Hashem, and Fawzy A. El-Feky (2016). *Cenchrus americanus* cultivar shandaweel 1 maturase K (matK) gene, partial cds; chloroplast. Accession KT351783
- Mohamed A. Awad, Ragab M. Fahmy, **Kareem A. Mosa**, Ahmed M. Hashem, and Fawzy A. El-Feky (2016). *Oryza sativa* cultivar Giza 178 maturase K (matK) gene, partial cds; chloroplast. Accession KT351782
- **Kareem A.Mosa**, Ali El-Keblawy, Fatima S. Abdalla, Noor A. Aldayel, Fatma A. Aljarwan, Fatima A. Haroun, and Amna S. Marshoud. (2015) *Cyperus conglomeratus* DNAJ heat shock protein mRNA, partial cds. Accession KT004438
- Eslam Hebeldein, Ali M. El-Refy, **Kareem A. Mosa**, and Fawzy A. El-Feky (2015). *Solanum lycopersicum* cultivar Edkawy ethylene-responsive factor 1 (ERF1) gene, partial cds. Accession KP780206

- Eslam Hebeldein, Fawzy A. El-Feky, **Kareem A. Mosa**, and Ali M. El-Refy (2015). *Solanum lycopersicum* cultivar Edkawy ethylene response factor 5 (ERF5) gene, partial cds. Accession KP835548
- Mohamed A. Awad, Ragab M. Fahmy, **Kareem A. Mosa**, and Fawzy A. El-Feky (2015). *Triticum aestivum* maturase K (matK) gene, partial cds; chloroplast. Accession KM649683.1
- Mohamed A. Awad, Ragab M. Fahmy, **Kareem A. Mosa**, and Fawzy A. El-Feky (2015). *Triticum aestivum* ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcl) gene, partial cds; chloroplast. Accession KM668209.1
- **Kareem A. Mosa**, Kalenahalli N. Yogendra, Doddaraju Pushpa, Ajjamada C. Kushalappa (2014). *Solanum tuberosum* genotype F06025 tyramine hydroxycinnamoyl transferase mRNA, complete cds. Accession KF943628.1
- **Kareem A. Mosa**, Kalenahalli N. Yogendra, Doddaraju Pushpa, Ajjamada C. Kushalappa (2014). *Solanum tuberosum* genotype F06037 tyramine hydroxycinnamoyl transferase mRNA, complete cds. Accession KF943629.1
- Kalenahalli N. Yogendra, **Kareem A. Mosa**, Doddaraju Pushpa, Ajjamada C. Kushalappa (2014). *Solanum tuberosum* cultivar Shepody tyramine hydroxycinnamoyl transferase mRNA, complete cds. Accession KF943630.1
- **Kareem A. Mosa**, Kalenahalli N. Yogendra, Doddaraju Pushpa, Ajjamada C. Kushalappa (2014). *Solanum tuberosum* cultivar Shepody 4-coumarate:coenzyme A ligase mRNA, complete cds. Accession KF943627.1
- **Kareem A. Mosa**, Kalenahalli N. Yogendra, Doddaraju Pushpa, Ajjamada C. Kushalappa (2014). *Solanum tuberosum* genotype F06025 4-coumarate:coenzyme A ligase mRNA, complete cds. Accession KF943625.
- **Kareem A. Mosa**, Kalenahalli N. Yogendra, Doddaraju Pushpa, Ajjamada C. Kushalappa (2014). *Solanum tuberosum* genotype F06037 4-coumarate:coenzyme A ligase mRNA, complete cds. Accession KF943626.1
- Kalenahalli N. Yogendra, **Kareem A. Mosa**, Ajjamada C. Kushalappa, Agnes Murphy (2014). *Solanum tuberosum* cultivar F06025 tyrosine decarboxylase mRNA, complete cds. Accession KF819806.1
- Kalenahalli N. Yogendra, **Kareem A. Mosa**, Ajjamada C. Kushalappa, Agnes Murphy (2014). *Solanum tuberosum* cultivar Shepody tyrosine decarboxylase mRNA, complete cds. Accession KF819807.1
- Mohamed A. Attia, **Kareem A. Mosa**, Ali M. El-Refy and Fawzy A. El-Feky (2014). *Phragmites mauritanus* transcription factor (myb15) gene, complete cds. Accession KJ020102.1

**Conferences & Oral Presentations:****Academic Presentations**

- Om Parkash Dhankher, **Kareem A. Mosa**, Kundan Kumar, Ahmed Meselhy Ali Gameel (2017). Rice Plasma Membrane Intrinsic Proteins Play Critical Role in Arsenite and Boron Transport and Providing Tolerance in Plants. Managing Global Resources for a Secure Future, ASA, CSSA and SSSA International Annual Meetings, Florida, **USA**, October 22- 25, 2017.
- **Kareem A. Mosa**, Ali El-Keblawy, Attiat El-Najar (2017). *Calotropis procera* seedlings could be used as a rapid cost effective bioindicator for measuring aluminum environmental pollution. European Geoscience Union General Assembly, EUG 2017, Vienna, **Austria**, April 23- 28, 2017.
- Ismail Saadoun, **Kareem A. Mosa** (2017). Awareness of Higher Education Institutes' Students (University of Sharjah, UAE) about Global Warming and Climate Change. 4th International Conference on Global Warming: EcoSystem Productivity, Ras Al Khaimah, **UAE**, April 3- 5, 2017.
- Om Parkash Dhankher, **Kareem A. Mosa** and Kundan Kumar (2015). Rice Plasma Membrane Intrinsic Proteins (PIPs) Play Critical Role in Arsenite and Boron Transport and Tolerance Transport in Plants. 12th Phytotechnology Conference, Manhattan, Kansas, **USA**, September 26-29, 2015.
- Om Parkash Dhankher, Sudesh Chhikara, Bibin Paulose, Kundan Kumar, **Kareem A. Mosa** and Jason C. White (2013). Biotechnological Approaches for Mitigating Arsenic Threat in the Environment and Developing Arsenic Free Food Crops. Water, Food, Energy& Innovation for a Sustainable World, ASA, CSSA, SSSA Annual Meetings, Tampa, Florida, **USA**, November 3-6, 2013
- Ajjamada C. Kushalappa, Kalenahalli N Yogendra, Doddaraju Pushpa, **Kareem A. Mosa**, Luis Ernesto Rodriguez and Teresa Mosquera (2013). Metabolo-genomics and cisgenics to improve resistance in potato to late blight. international workshop on food security through potato production and human nutrition, Bogotá, **Colombia**, June 24-25, 2013
- **Kareem A. Mosa**, Kundan Kumar, and Om Parkash Dhankher (2011). Arsenite and boron permeability of PIP aquaporins in plants. University of Massachusetts First Annual Life Sciences Graduate Research Symposium, **USA**, November 18th, 2011
- Kundan Kumar, **Kareem A. Mosa**, Sudesh Chhikara, and Om Parkash Dhankher (2011). Rice plasma membrane intrinsic proteins AQP9-1 and AQP9-16 are involved in arsenite and boron transport. 75th Annual Meeting of the Northeast Section of the American Society of Plant Biologists (2011) , University of New Hampshire Durham,NH, **USA** , May 6-7, 2011
- Om Parkash Dhankher, Bibin Paulose, Sudesh Chhikara, Kundan Kumar and **Kareem A. Mosa** (2010). Engineering plants for arsenic containment: what we know and where should we go? The International Conference on Green Remediation (Environment, Energy, Economics), University of Massachusetts

Amherst, Massachusetts, **USA**, June 15 - 17, 2010

**Poster Presentations:**

- Mohamed Awad, Mohamed Helmy, **Kareem A. Mosa\***, and Fawzy A. El-feky (2017). *In-silico* assessment of five chloroplast intergenic regions in *Poaceae* family for DNA barcoding. 7th International Barcode of Life Conference, Skukuza, **South Africa**, November 20 - 24, 2017
- Mohamed Awad, Mohamed Helmy, **Kareem A. Mosa\*** and Fawzy A. El-Feky (2016). Chloroplast Genome-wide in silico analysis of Triticum species for highly variable chloroplast loci using as DNA barcode. BioVision, Bibliotheca Alexandrina, Alexandria, **Egypt**, April 12- 14, 2016
- Eslam A. Heb El-din, Fawzy A. El- Feky, Ali M. El-Refy, **Kareem A Mosa\*** (2016). Identification and isolation of Two AP2/ERF transcription factor genes from Egyptian tomato cultivar (Edkawy). 13<sup>th</sup> National Conference “Advances in Biochemistry and Molecular Biology in Diagnosis and Treatment”. Academy of Scientific Research and Technology (ASRT) in Egypt. Cairo, **Egypt**, March 23 – 24, 2016
- Mohamed Awad, Ragab M. Fahmy, **Kareem A. Mosa\***, Mohamed Helmy, Fawzy A. El-Feky (2015). Assessment of candidate DNA Barcoding loci for wheat and grass family (poaceae) in Egypt. 6th international Barcode of life conference, At Guelph University- **Canada**, August 18 – 21, 2015
- Mohamed A. Attia, **Kareem A. Mosa**, Ali M. El-Refy and Fawzy A. El-Feky (2014). Isolation and identification of MYB15 transcription factor sequence from Egyptian neglected plant *Phragmites mauritianus* for drought tolerance. 11<sup>th</sup> National Conference of Biochemistry and Molecular Biology. Academy of Scientific Research and Technology (ASRT) in Egypt. Cairo, **Egypt**, March 30 – April 1, 2014
- **Kareem A. Mosa**, Kalenahalli N Yogendra, Ajjamada C. Kushalappa, Stan Kubow, Clara Pineros, Luz Patricia Restrepo, Luis Ernesto Rodriguez and Teresa Mosquera (2013). Identification of functional foods compounds in potato based on non-targeted metabolomics. international workshop on food security through potato production and human nutrition, Bogotá, **Colombia**, June 24-25, 2013
- Kundan Kumar, **Kareem A. Mosa**, Sudesh Chhikara and Om Parkash Dhankher (2012). Rice plasma membrane intrinsic proteins, are involved in transport and providing tolerance to boron toxicity. 10th International Symposium on Rice Functional Genomics (ISRF10), Chiang mai, **Thailand**, November 26-29, 2012
- **Kareem A. Mosa**, Kundan Kumar, Sudesh Chhikara, and Om Parkash Dhankher (2012). A bidirectional arsenite permeability of rice plasma membrane intrinsic proteins (PIPs) subfamily in plants. 76th Annual Meeting of the Northeast Section of the American Society of Plant Biologists,

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[Kareem A. Mosa, PhD]

Worcester Polytechnic Institute, MA, **USA**, May 4-5, 2012

- **Kareem A. Mosa**, Kundan Kumar, Sudesh Chhikara, and Om Parkash Dhankher (2011). The Role of Rice Plasma Membrane Intrinsic Proteins in Boron Transport. The 2011 In Vitro Biology Meeting (2011), Raleigh, North Carolina, **USA**, June 4-8, 2011
- **Kareem A. Mosa**, Kundan Kumar, Sudesh Chhikara, and Om Parkash Dhankher (2011). The involvement of rice plasma membrane intrinsic proteins in arsenite transport. 75th Annual Meeting of the Northeast Section of the American Society of Plant Biologists (2011) , University of New Hampshire Durham, NH, **USA** , May 6-7, 2011
- Om Parkash Dhankher, Sudesh Chhikara, and **Kareem A. Mosa** (2010). Engineering arsenic free rice: what do we know and where should we go? Plant Biology 2010, Montreal, **Canada**, July 31 – August 4, 2010
- **Kareem A. Mosa**, Sudesh Chhikara, Kundan Kumar, Zijuan Liu, and Om Parkash Dhankher (2010). Members of plasma membrane intrinsic protein (PIP) subfamily are involved in arsenite transport in rice. Plant Biology 2010, Montreal, **Canada**, July 31 – August 4, 2010
- **Kareem A. Mosa**, Sudesh Chhikara, and Om Parkash Dhankher (2009). Analysis of rice aquaglyceroporin genes for arsenite transport. 7<sup>th</sup> Annual Symposium in Plant Biology, University of Massachusetts Amherst, Massachusetts, **USA**, October 3, 2009
- **Kareem A. Mosa**, Sudesh Chhikara, and Om Parkash Dhankher (2009). Analysis of rice aquaglyceroporin genes for arsenite regulation. 73<sup>rd</sup> Annual Meeting of the Northeast Section of the American Society of Plant Biologists (2009) , State University of New York at Plattsburgh , New York, **USA** , May 1-2, 2009

#### **Invited presentations and workshops:**

- **Kareem A. Mosa (2017)** presented lectures on biology for the "Professional Diploma in Environmental Inspection", organized by "The Center for Continuing Education and Professional Development", University of Sharjah October, 22, 2017- November 26, 2017
- **Kareem A. Mosa (2014)** “Omics of plant stress tolerance”, Plant Biotechnology Department, Genetic Engineering and Biotechnology Division, National Research Center, Cairo, **Egypt**, April, 2014. Host: Dr. Hattem M. El-Shabrawi
- **Kareem A. Mosa (2012)** “Proteomics and its applications in biology”, workshop organized by Al-Azhar University Computer Center (Girls Branch), Cairo, **Egypt**, October 8 –10, 2012.
- **Kareem A. Mosa (2012)** “Metalloid transport in plants; the role of aquaporins”,



Al-Azhar University, Department of Biotechnology, Cairo, **Egypt**, September, 2012. Host: Professor Fawzy El-Fiky, Head of the department

- **Kareem A. Mosa (2012)** “Bioinformatics for molecular biologists”, workshop organized by Al-Azhar University Computer Center (Girls Branch), Cairo, **Egypt**, 24th – 26th June 2012

### Teaching Experience

- **(2014 - present) University of Sharjah, UAE- Assistant professor for the following courses:** Basic Biotechnology, Environmental Biotechnology, Selected Topics of Biotechnology A, General Biology I, Plant Biotechnology, Pharmaceutical Biotechnology, Seminar, Research Project.
- **(2012 - 2014) Al-Azhar University, Egypt- Assistant professor for the following courses:** Principles of Biotechnology, Molecular Biology, Genome and Maps, Principles of Genetic Engineering, Indicators of Genetic Modified Organisms(GMO) in Environment.
- **(2004 - 2007) Assist in teaching the following courses as a T.A:** Principles of Biotechnology , Molecular Biology , Principles of Genetic Engineering , Biosafety Regulations , Plant cell and Tissue culture Technology , Genome and Maps ,Biotechnology in Plant Pathology, Indicators of Genetic Modified Organisms(GMO) in Environment , Genetic Modified Organisms(GMO) In Agricultural Industry .

### Research Experience

- My research work at the department of Applied Biology, University of Sharjah, UAE lie generally in the area of plant molecular biology and biotechnology, genetic engineering, and environmental biotechnology with a focus on developing plants with significant health benefits to human and developing environmental stress tolerant crops using advanced molecular biology and Omics tools such as genomics, proteomics and metabolomics. A special interest includes the use of DNA barcoding for plant biodiversity conservation.
- My research work as a postdoctoral fellow at McGill University, Canada focused on identifying the important metabolites which have a beneficial biological role in human health as functional foods in different potato genotypes using metabolomics, and genomics approaches which will be highly useful for designing strategies to improve the candidate potato genotypes for functional foods with significant health benefits using cisgenic and transgenic technologies. Also I was involved on another project to identify resistance related metabolites, in late blight resistant potato genotypes, based on non-target metabolomics and genomic approaches. These metabolites can be used as resistance biomarkers for screening cultivars against late blight.
- My research work at the department of biotechnology at Al-Azhar University, Egypt focused on plant genetic diversity and phylogeny. Different celery genotypes were screened for polymorphic RAPD (Random Amplified

Polymorphic DNA) markers. Celery Accessions were found to differ in fresh and dry weight. The study demonstrated that RAPD technique could be a suitable tool for genotypes identification and classification in celery.

- My research work as a PhD student at the University of Massachusetts Amherst, USA focused on the role of Plasma Membrane Intrinsic Protein (PIPs) subfamily in metalloids transport in plants. Regulation of rice PIP genes in response to arsenite and boron was tested by qRT-PCR. The PIPs were heterologously expressed (in *Xenopus laevis* and Yeast) and metalloids transport activity was determined. Rice PIPs were constitutively overexpressed in *Arabidopsis* and the transgenic plants were highly tolerant to metalloids, these transgenic plants showed no significant accumulation of As and B in shoot and root tissues in long term uptake assays. Whereas, short duration exposure to arsenite caused both active influx and efflux of metalloids in the roots. Knockdown studies are carried out by RNAi in rice. Embryogenic rice callus were infected with the EHA105 *Agrobacterium* strain expressing the OsPIP RNAi constructs. Selected Independent transgenic RNAi lines produced from rice tissue culture process were analyzed for metalloids phenotype and accumulation. The work also involved the functional characterization of *Arabidopsis* PIPs by screening available TDNA lines on metalloids.
- My research work as a teaching and researcher assistant at Al-Azhar University, Egypt focused on Molecular and biochemical studies for some Egyptian barley varieties. DNA fingerprinting was performed using different molecular markers (RAPD, AFLP, SSR). Protein fingerprinting was conducted using SDS-PAGE.
- My research on my B.Sc graduation project at Al-Azhar University, Egypt focused on the micro propagation of banana by using tissue culture technique.

**Bioinformatics techniques:** such as- BioPerl, , DNA and protein sequence analysis, alignment, and phylogenetic construction software, protein structure prediction, Nucleotides Primer design for PCR, Protein sequence analysis, Cytoscape software, MZmine-2 software..... etc

### Funded Research Projects

- Master research project, Supervisor: **Kareem A. Mosa**. Green biosynthesis of silver nanoparticles using UAE native plants and its possible biomedical applications (2017- 2018). Funded by University of Sharjah **(5,000 AED)**
- Master research project, Supervisor: **Kareem A. Mosa**. Assessment of metal nanoparticles phytotoxicity on Coriander (*Coriandrum sativum*) plants (2017-2018). Funded by University of Sharjah **(5,000 AED)**
- **PI: Kareem A. Mosa**, Co-PIs: Ali El-Keblawy, Ana Martins, Mohamed Helmy. DNA Barcoding of Important Medicinal Plants in UAE (2017- 2019). Funded by University of Sharjah and Sharjah Research Academy **(400,000 AED)**
- **PI: Kareem A. Mosa**, Co-PIs: Ali El-Keblawy, Mohamed El-Naggar, Ihsan Ahmed Shehadi, Miguel Angel Botella Mesa, Victoriano Valpuesta.

Transcriptomics and Metabolomics analysis to Reveal Salt and Heat Stress Related Genes, Phytohormones, and Osmolytes in Facultative Halophytes plant of the UAE (2017- 2019). Funded by University of Sharjah (**196,000 AED**)

- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Green Synthesis Of Silver Nanoparticles Using UAE Native Plants (2016- 2017). Funded by University of Sharjah (**5,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Using DNA barcoding to detect market fraud for various plant based products in the UAE (2016- 2017). Funded by University of Sharjah (**5,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Phytotoxicity assessment of metal nanoparticles on some edible plants (2016- 2017). Funded by University of Sharjah (**5,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Green Synthesis of Gold Nanoparticles Using UAE Native Plants (2015- 2016). Funded by University of Sharjah (**5,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Assessment of some UAE native plants for phytoremediation of heavy metals (2015- 2016). Funded by University of Sharjah (**4,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Development of DNA Barcodes for Some Medicinal Plants in UAE (2015- 2016). Funded by University of Sharjah (**5,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Isolation and Identification of Drought Resistance Genes from *Cyperus Conglomeratus* plants growing in UAE (2014- 2015). Funded by University of Sharjah (**2,000 AED**)
- Undergraduate research project, Supervisor: **Kareem A. Mosa**. Isolation and characterization of genes encoding for heat shock proteins from *Cyperus conglomeratus* plants growing in UAE (2014- 2015). Funded by University of Sharjah (**2,000 AED**)
- PIs: Kushalappa, Ajjamada; Kubow, Stan; Oxhorn, Philip; Ramaswamy, Hosahalli; Raghavan. Research team: Vijaya; Yogendra, Kalenahalli; **Mosa, Kareem**; Pushpa, Doddaraju; Mosquera, Teresa; Del Castillo, Sara; Cuéllar, David; Rodríguez, Ernesto; Patricia Restrepo; Carlos Eduardo Narváez; Leonor Perilla; Felipe Sarmiento. Improving Potato Production for Increased Food Security of Indigenous Communities in Colombia. Funded by Canadian International Food Security Research Fund (CIFSRF) (**Ca\$2.8 million**)
- PI: Om Parkah Dhankher. PhD student: **Kareem A. Mosa**. PhD scholarship. Molecular and biochemical characterization of a family of arsenite transporters in rice (2007- 2012). Funded by Egyptian Education and Cultural Bureau (**\$206,800**)

### Academic Honors & Awards

- **(2017) 3rd position at the national level on the category of Universities-Applied Chemistry and Biochemistry, Think Science, UAE**
- **(2016) Sharjah Islamic Bank award for distinguished research, 2015-2016**
- **(2011) Travel Grant Award** - from the University of Massachusetts Amherst to present my work at the 2011 In Vitro Biology Meeting, Raleigh, North Carolina, USA, June 4-8, 2011.
- **(2010) Travel Grant Award** - from the American Society of Plant Biologists (ASPB) to present my work in Plant Biology 2010 meeting, Montreal, Canada, July 31 – August 4, 2010 Plant Biology.
- **( 2007 – 2011 ) Governmental Mission**, full funded Scholarship by the Egyptian Ministry of Higher Education to obtain PhD from the University of Massachusetts Amherst, USA.
- **(2002)** Graduated with the first honored degree, excellent grade - the second of the batch (bachelor degree on Agricultural sciences, Biotechnology major).
- **(1998 – 2002) Undergraduate Student Awards**, Annual financial support from Al-Azhar University, Egypt for obtaining highest grades.

### Academic administrative and services activities

- **(2015- Present)** Chair of “ Examination & Library” committee, Department of Applied Biology, College of Sciences, University of Sharjah
- **(2015- 2016)** Member in “Recruitment committee”, Department of Applied Biology, College of Sciences, University of Sharjah
- **(2014- 2016)** Secretary general, Department of Applied Biology council meeting, College of Sciences, University of Sharjah
- **(2014- Present)** Member in “Academic Advising” committee, College of Science, University of Sharjah.
- **(2014- Present)** Member in “Conferences and Scientific committee”, Department of Applied Biology, College of Sciences, University of Sharjah
- **(2014- Present)** Member in “Laboratories and Safety committee”, Department of Applied Biology, College of Sciences, University of Sharjah
- **(2004- 2007, 2012- 2014)** Member in “Library Committee”, Department of Biotechnology, Al-Azhar University.
- **(2004- 2007, 2012- 2014)** Member in “Graduate and undergraduate Admissions Committee”, Department of Biotechnology, Al-Azhar University.
- **(2004- 2007, 2012- 2014)** Member in “Supplies ordering committee”, Department of Biotechnology, Al-Azhar University.
- **(2012- 2013)** Graduate seminar coordinator, Department of Biotechnology, Al-Azhar University.
- **(2013)** Consultant, “Misr El Kheir Qualifying Program for Postgraduate

Student", Misr El-Kheir Foundation (MEK), Egypt.

### Academic supervisions

- **(2017- 2018)** Supervisor of the Master research project " Assessment of metal nanoparticles phytotoxicity on Coriander (*Coriandrum sativum*) plants ". Student: Alya Omran Abdalla AlQuraidi AlShamsi
- **(2017- 2018)** Supervisor of the Master research project "Green biosynthesis of silver nanoparticles using UAE native plants and its possible biomedical applications". Student: Amani Ghassan Fahmi
- **(Spring, 2016/ 2017)** Supervisor of the undergraduate research project "Green Synthesis Of Silver Nanoparticles Using UAE Native Plants". Students: Sana Alrouh, Samar Arafat, Shahd Mohamed
- **(Spring, 2016/ 2017)** Supervisor of the undergraduate research project Undergraduate research project "Using DNA barcoding to detect market fraud for various plant based products in the UAE". Students: Aysha Ali Bin Tamim, Hessa Ali Hassan, Moza Mohamed Al-Ali, Muna Abdalla Ali
- **(Spring, 2016/ 2017)** Supervisor of the undergraduate research project Undergraduate research project "Phytotoxicity assessment of metal nanoparticles on some edible plants". Students: Hala Hani Awad, Emy Ibrahim, Sylvie Wartanian
- **(Spring, 2015/ 2016)** Supervisor of the undergraduate research project "Using *Calotropis procera*, a native plant of the UAE, as a cost effective bio indicator for assessing heavy metals". Students: Alya Omran AlShamsi, Shamma AlMuhairi, Sara Mohamed, Jawaher Ali AlRasheed, Manal Hussain, Noora AlZaabi
- **(Spring, 2015/ 2016)** Supervisor of the undergraduate research project "Green Synthesis of Gold Nanoparticles Using UAE Native Plants". Students: Maab Babiker, Nadia Abusamra, Nuha Salim, Duaa Salaheldin, Rihaa Mohamed
- **(Fall, 2015/ 2016)** Supervisor of the undergraduate research project "Development of DNA Barcodes for Some Medicinal Plants in UAE". Students: Noora Alnoaimi, Saeeda Ahmed Salim, Dana Amin, Lama M R Abed Rabu, Mansoura Abdelmajid, Fatma M. Alghalban
- **(Spring, 2014/ 2015)** Supervisor of the undergraduate research project" Isolation and Identification of Drought Resistance Genes from *Cyperus Conglomeratus* plants growing in UAE". Students: Fatima Alkhoudary, Nesreen Al-khofash, Tasneem Amrou, Kholoud Al Mahdy, Yara Karaman
- **(Spring, 2014/ 2015)** Supervisor of the undergraduate research project" Isolation and characterization of genes encoding for heat shock proteins from *Cyperus conglomeratus* plants growing in UAE" . Students: Fatima Shaheen, Fatma Aljarwan, Noor Aldayel, Fatima Haroun, Amna Marshoud,
- **(2014- present)** Member in the supervision committee of three PhD students: Mohamed Attia, Ahmed Gameel, and Ahmed Hashem. Department of Biotechnology, Al-Azhar University, Egypt.
- **(2014- present)** Member in the supervision committee of four master students:

Resume

[Kareem A. Mosa, PhD]

Alhassan Aly, Eslam Hebeldeen, Hytham Shora, Mohamed Awad. Department of Biotechnology, Al-Azhar University, Egypt.

- **(2014)** co-supervised the graduate student Liyao Ji, Master student at McGill University, Canada.
  - **(2011-2012)** co-supervised the undergraduate students: Janelle Hayes and Mike Esposito during their research scholarship at the University of Massachusetts Amherst, USA.
- Trainings & Workshops**
- **(2016)** Participated in the International Workshop (Biodiversity of the Arabian peninsula and its conservation: A multidisciplinary approach), March 27-30, 2016, the Sharjah Research Academy, Sharjah, UAE
  - **(2016)** Participated in the 17th Annual International Conservation Workshop for Arabia's Biodiversity, organized by the Environment and Protected Areas Authority of Sharjah (EPAA), February 08-11, 2016, UAE
  - **(2013)** McGill University, Canada
    - Attended a training course titled "Workplace hazardous materials information system (W.H.M.I.S)" May 21, 2013
  - **(2010)** University of Massachusetts, Amherst, USA
    - Participated in workshop on "Practical Macromolecular 3D Structure Visualization & Structural Bioinformatics" May 26-27, 2010.
  - **(2008)** The Department of Environmental Health & Safety, University of Massachusetts, Amherst, USA
    - Attended the biological safety training course.
  - **(2007)** Genetic Engineering and Biotechnology Research Institute, Minufiya University, Egypt
    - Participated in the American Egyptian workshop: "the practical approach to DNA sequencing and Bioinformatics workshop" and "the advanced molecular techniques and practical approaches to DNA analysis workshop" January 9-16, 2007.
  - **(2006)** International Computer Driving Licence
    - Got the ICDL Certificate, March 16, 2006.
  - **(2006)** AMIDEAST
    - Got a training course on "Pre Academic English", April 9 - May 4, 2006.
    - Got a training course on "TOEFL preparation", May 6 – May 22, 2006.
    - Got a training course on "GRE preparation".
  - **(2005)** The Central laboratory for agricultural expert systems, supervised by the Ministry of Agriculture and Land reclamation, Egypt
    - Invited to workshop session to discuss some agricultural software prepared by the "Central laboratory for agricultural expert systems".

- **(2004)** The Agricultural Genetic Engineering Research Institute (AGERI )
  - Got a training course on: “introduction to molecular biology techniques “by the Agricultural Genetic Engineering Research Institute (AGERI) sponsored by AERI institutional linkage project (MUCIA), April 17– 28, 2004.
- **(2004)** NGO Service Center
  - Got a training course on “Strategic Planning “, Sept. 20– 23, 2004.
- **(2002)** Al-Azhar University – “ Regional center of mycology and biotechnology”
  - Attended a training course in the computer applications and software in biology.
- **(2002)** Sadat academy ,Cairo – Egypt
  - Got some courses in English language.
- **(2002)** National Research Center in Egypt
  - Attended a summer courses on “Genetic engineering &Molecular Biology " by National Research Center in Egypt.
- **(2001)** The Agricultural Research Center in Egypt
- Got training on “Plant Tissue Culture Techniques

## Memberships

- **(2017- present)** Member in the " European Geosciences Union (EGU)", **European Union**
- **(2013- present)** Member in the “Canadian Society of Plant Biologists”, **Canada.**
- **(2008 – present )** Member in the “American Society of Plant Biologists”, **USA.**
- **(2007- Present)** Founder member in “Bioinformatics & Biotechnology” association, **Egypt.**
- **(2006- 2007)** Board Member in the “Federation of Egyptian Youth NGOs “, **Egypt.**
- **(2003-2007)** Founder member and Secretary General of “Development no borders “association, **Egypt.**

## Languages

- Arabic: Mother language
- English: Fluent spoken and written

## Refereeing Research Papers

- **I am a reviewer for the following journals:** Nature Scientific Reports, PLOS ONE, Acta Physiologiae Plantarum, Journal of Hazardous Materials, Applied & Translational Genomics, International Journal of Phytoremediation, Plant Omics Journal, Journal of Genetic Engineering and Biotechnology, Plant Science Today.

### Community & Voluntary Activities

- **(2014- 2018)** Participated in different community and voluntary activities organized by University of Sharjah, UAE
  - **(2014)** Member of the Exhibition Committee organized the exhibition associated with the Second International Conference on Arabs' and Muslims' History of Sciences, Sharjah, UAE
  - **(2014- 2015)** Jury member, High school students projects, Minaret AL Sharjah School, Sharjah, UAE
  - **(2013- 2014)** Participated in different community and voluntary activities organized by McGill University, Canada
  - **(2007- 2012)** Participated in different community and voluntary activities organized by University of Massachusetts Amherst, USA
  - **(2002- 2006)** Participated in various Voluntary services in "Development no borders "association &"fathet khar "association, Egypt.
  - **(2001- 2006)** Participated in organizing some international youth exchange programs by "Loghat alasr family"& "Development no borders" association supervised by the ministry of youth, Egypt.
- (2003)** Participated in campaigns for vaccination against polio supervised by the ministry of health, Egypt.

### Extracurricular Activities

- **(2004 – 2007)**
  - Participated in a Euromed youth exchange in Barcelona – Spain, take the title ( FOR A GREENER WORLD )
  - Participated in a Euromed youth exchange in Rovaniemi – Finland , take the title ( CHALLENGE IN FINLAND )
  - Attended a Euromed meeting in Amana - Jordan, take the title ( UNITED WITH MOTHERNATURE )
  - Participated in a youth exchange in Olomouc - Czech Republic, take the title ( DEPENDANCY & FREEDOM )
  - Attended a conference in Larnaka –Cyprus, take the title (TRY AN AGRICULTURE LIFE FOR A WHILE )
  - Participated in a Euromed youth exchange in Hallstahammar – Sweden, take the title (YOUTH CROSSIN BORDERS )
  - Participated in a Euromed youth exchange in Amboise –France, take the title (CULTURAL DIVERSITY :PREJUDICE AND INTEGRATION OF MINORITIES )
  - Attended a short study visit in Krakow – Poland, take the title (VOLUNTARY SERVICE – WHY NOT?)



**Academic  
References**

**1- Dr. Om Parkash Dhankher**, Professor,  
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MA-01003, **USA**  
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**2- Prof. Dr. Fawzy El-feky**, Professor,  
Head of Biotechnology Department  
Faculty of Agriculture , Al-Azhar University,  
Nasr City, Cairo, **Egypt**  
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Phone: +201006609072

**3- Dr. Ajjamada C. Kushalappa**, Professor,  
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McGill University  
Raymond Building, 21111 Lakeshore Road  
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