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Research Interests and specialization:

- Plant stress molecular physiology
- Microbial genomics and microbiome sequencing and analysis
- Bioinformatics

PUBLICATIONS:

Total Research article:	+100
Citations	8600
h-index	51

GoogleScholar: <https://scholar.google.com/citations?user=G9j7lgEAAAAJ&hl=en&oi=ao>

Patent:

Potential of endophyte *Bacillus amyloliquefaciens* RWL-1 strain in crop growth promotion and metabolomics. Kang SM, Shehzad R, Lee IJ, **Khan AL**. 2020 (Feb). Patent# 10-2085900, Patent Office, Korean Patent Intellectual Property Office, South Korea

Book/Chapters:

1. Ahmed Al-Harrasi, **Abdul Latif Khan**, Sajjad Asaf, Ahmed Al-Rawahi. Biology and Genomics of *Boswellia*. 2019. Springer Nature 10.1007/978-3-030-16725-7, XIX, 173, 978-3-030-16725-7
2. **Khan, A.L.**, Shahzad, R., Al-Harrasi, A. and Lee, I.J., 2017. Endophytic Microbes: A Resource for Producing Extracellular Enzymes. In *Endophytes: Crop Productivity and Protection* (pp. 95-110). Springer, Cham.
3. Kang SM, Waqas M, **Khan AL**, Lee IJ. 2013. Plant Growth Promoting Rhizobacteria: Potential candidates for gibberellins production and crop growth promotion. In: Use of Microbes for the Alleviation of Soil Stresses, Miransari M (Edt). Springer. ISBN 978-1-4614-9465-2 <http://www.springer.com/life+sciences/microbiology/book/978-1-4614-9465-2#>

In review:

1. **Abdul Latif Khan**, Ahmed Al-Harrasi, Jin Peng Wang, Sajjad Asaf, Tariq Shehzad, Jean-Jack Riethoven, Daniel Schachtman, Ahmed Al-Rawahi, In-Jung Lee, Jeffery Benedtzen et al. 2021. Genome sequencing and evolutionary history of Frankincense producing *Boswellia sacra*. **PNAS** in Review
2. Abdul Latif Khan (Corresponding author), Muhammad Numan, Noor AbdulKareem, Sajjad Asaf, Tapan Kumar Mohanta, Ahmed Al-Harrasi, Muhammad Imran, Jean-Jack Riethoven, Daniel Schachtman, Ahmed Al-Rawahi, In-Jung Lee. 2021. Molecular responses of wound induced tapping to produce Frankincense in *Boswellia sacra* tree. New Phytologists in review
3. **Abdul Latif Khan** (Corresponding author), Ahmed Al-Harrasi, Muhammad Numan, Sajjad Asaf, Tapan Kumar Mohanta, Muhammad Imran, Kerri Crawford, Ahmed Al-Rawahi, In-

Jung Lee. 2021. Mangrove rhizosphere engineering with extremophilic bacteria regulating degradation of diesels contamination. J Hazardous Materials

4. **Abdul Latif Khan**, Sajjad Asaf, Ahmed Al-Harrasi, Ahmed Al-Rawahi. 2021. Decoding first complete chloroplast genome of Toothbrush tree (*Salvadora persica* L.): Insight into genome evolution, sequence divergence and phylogenetic relationship within Brassicales. BMC Genomics

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1. Sajjad Asaf, **Abdul Latif Khan** (Corresponding author), Ahmed Al-Harrasi, Ahmed Al-Rawahi. 2021. Mangrove tree (*Avicennia marina*): insight into chloroplast genome evolutionary divergence and its comparison with related species from family Acanthaceae. Scientific reports, 10.1038/s41598-021-83060-z
2. Ahmed Al-Harrasi, **Abdul Latif Khan**, Najeeb Rehman, Rene Scuk, Ann Osbourn. 2020. Biosynthetic diversity in triterpene cyclization in genus Boswellia. Phytochemistry 184 (2021) 112660

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3. **Abdul Latif Khan** (Corresponding author), Adil Khan, Sajjad Asaf, Ahmed Al-Rawahi, Ahmed Al-Harrasi. 2020. Transcriptomics of Dubas bug (*Ommatissus lybicus* Bergevin) attack on Date Palm. Scientific reports 10, Article number: 11505 (2020)
4. Asaf, Sajjad, **Abdul Latif Khan** (Corresponding author), Arif Khan, Gulzar Khan, In-Jung Lee, and Ahmed Al-Harrasi. "Expanded inverted repeat region with large scale inversion in the first complete plastid genome sequence of *Plantago ovata*." *Scientific Reports* 10, no. 1 (2020): 1-16.
5. Sajjad Asaf, Muhammad Numan, **Abdul Latif Khan** (Corresponding author), Ahmed Al-Rawahi, Ahmed Al-Harrasi. 2020. Sphingomonas: from diversity and genomics to functional role in environmental remediation and plant growth. Critical Reviews in Biotechnology <https://doi.org/10.1080/07388551.2019.1709793>
6. Kang, Sang-Mo, Sajjad Asaf, **Abdul Latif Khan**, Adil Khan, Bong-Gyu Mun, Muhammad Aaqil Khan, Humaira Gul, and In-Jung Lee. "Complete Genome Sequence of *Pseudomonas psychrotolerans* CS51, a Plant Growth-Promoting Bacterium, Under Heavy Metal Stress Conditions." *Microorganisms* 8, no. 3 (2020): 382.
7. Sajjad Asaf, **Abdul Latif Khan** (Corresponding author), Arif Khan, Ahmed Al-Harrasi, Ahmed Al-Rawahi. 2020. Complete genome sequencing of *Prosopis juliflora* and *Prosopis cineraria* to identify genomic information, comparative analyses and phylogenetic relationship. International Journal of Molecular Sciences, May 6;21(9). pii: E3280. doi: 10.3390/ijms2109328
8. Arif Khan, Sajjad Asaf, **Abdul Latif Khan** (Corresponding author), Ahmed Al-Harrasi, Tariq Shehzad, Ahmed Al-Rawahi. 2020. Comparative Chloroplast Genomics of Endangered *Euphorbia* species: Insights into Hotspot divergence, Repetitive sequence variation and Phylogeny. *Plants* 2020, 9, 199; doi:10.3390/plants9020199
9. **Abdul Latif Khan**, Sajjad Asaf, Raeid MM Abed, Yen Ning Chai, Ahmed N. Al-Rawahi, Tapan Kumar Mohanta, Ahmed Al-Rawahi, Daniel P. Schachtman, and Ahmed Al-Harrasi.

"Rhizosphere Microbiome of Arid Land Medicinal Plants and Extra Cellular Enzymes Contribute to Their Abundance." *Microorganisms* 8, no. 2 (2020): 213.

10. Adil Khan, Saqib Bilal, Muhammad Imran, **Abdul Latif Khan** (Corresponding author), Ahmed Al-Harrasi, In-Jung Lee. 2020. Silicon confers heat stress tolerance to *Solanum lycopersicum* L. via activation of antioxidant system, heat-shock protein, and endogenous phytohormones. *BMC Plant Biology* 20:248
11. Adil Khan, Saqib Bilal, Muhammad Imran, **Abdul Latif Khan** (Corresponding author), Ahmed Al-Harrasi, In-Jung Lee. Melatonin: Awakening the Defense Mechanisms during Plant Oxidative Stress. *Plants* 2020, 9, 407; doi:10.3390/plants9040407

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12. Adil Khan, Saqib Bilal, Muhammad Imran, **Abdul Latif Khan** (Corresponding author), Ahmed Al-Harrasi, Ahmed Al-Rawahi, In-Jung Lee. 2019. Silicon-mediated alleviation of

combined salinity and cadmium stress in date palm (*Phoenix dactylifera* L.) by regulating physio-hormonal alteration. *Ecotoxicology and Environmental Safety*; Volume 188, 30 January, 109885

13. Adil Khan, **Abdul Latif Khan** (Corresponding author), Sowbiya Muneer, Yoon-Ha Kim, Ahmed Al-Rawahi, Ahmed Al-Harrasi. 2019. Silicon and salinity: cross-talk in crop mediated stress tolerance mechanisms. *Frontiers in Plant Sciences* 10:1429. doi: 10.3389/fpls.2019.01429
14. Adil Khan, Muhammed Kamran, **Abdul Latif Khan** (Corresponding author), Sajjad Asaf, Ahmed Al-Rawahi, Ahmed Al-Harrasi. 2019. Silicon and salicylic acid confers high pH stress tolerance in tomato seedlings. *Scientific reports* 9, no. 1;1-16.
15. Bilal, Saqib, Raheem Shahzad, **Abdul Latif Khan**, Ahmed Al-Harrasi, Chang Kil Kim, and In-Jung Lee. "Phytohormones enabled endophytic *Penicillium funiculosum* LHL06 protects *Glycine max* L. from synergistic toxicity of heavy metals by hormonal and stress-responsive proteins modulation." *Journal of Hazardous Materials* (2019): 120824.
16. Khan A, Asaf S, **Abdul Latif Khan** (Corresponding author), Khan A, Al-Harrasi A, Al-Sudairy O, AbdulKareem NM, Al-Saady N, Al-Rawahi A. 2019. Complete chloroplast genomes of medicinally important *Teucrium* species and comparative analyses with related species from Lamiaceae. *PeerJ*:e7260 <https://doi.org/10.7717/peerj.7260>
17. Khan A, Asaf S, **Abdul Latif Khan** (Corresponding author), Al-Harrasi A, Al-Sudairy O, AbdulKareem NM, et al. (2019) First complete chloroplast genomics and comparative phylogenetic analysis of *Commiphora gileadensis* and *C. foliacea*: Myrrh producing trees. *PLoS ONE* 14(1): e0208511. <https://doi.org/10.1371/journal.pone.0208511>
18. Tapan Kumar Mohanta, **Abdul Latif Khan**, Abeer Hashem, Elsayed Fathi AbdAllah, Dhananjay Yadav, Ahmed Al-Harrasi. Genomic and evolutionary aspects of chloroplast tRNA in monocot plants. *BMC Plant Biology* (2019) 19:39 <https://doi.org/10.1186/s12870-018-1625-6>
19. Raheem Shahzad, **Abdul Latif Khan**, Muhammad Waqas, Ihsan Ullah, Saqib Bilal, Yoon-Ha Kim, Sajjad Asaf, Sang-Mo Kang, In-Jung Lee. Metabolic and proteomic alteration in phytohormone-producing endophytic *Bacillus amyloliquefaciens* RWL-1 during methanol utilization. *Metabolomics* 2019, 15:16 <https://doi.org/10.1007/s11306-018-1467-0>
20. Sang-Mo Kang, Raheem Shahzad, Saqib Bilal, **Abdul Latif Khan**, Yeon-Gyeong Park, Ko-Eun Lee, Sajjad Asaf, Muhammad Aaqil Khan, In-Jung Lee. 2019. Indole-3-acetic-acid and ACC deaminase producing *Leclercia adecarboxylata* MO1 improves *Solanum lycopersicum* L. growth and salinity stress tolerance by endogenous secondary metabolites regulation. *BMC Microbiology* 19:80 <https://doi.org/10.1186/s12866-019-1450-6>
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23. Shahzad, Raheem, Saqib Bilal, Muhammad Imran, **Abdul Latif Khan**, Areej Ahmed Alosaimi, Hussah Abdullah Al-Shwyeh, Hanan Almahasheer, Suriya Rehman, and In-Jung Lee. "Amelioration of heavy metal stress by endophytic *Bacillus amyloliquefaciens* RWL-1 in rice by regulating metabolic changes: potential for bacterial bioremediation." *Biochemical Journal* 476, no. 21 (2019): 3385-3400.
24. Khan, Muhammad Aaqil, Sajjad Asaf, **Abdul Latif Khan**, Arjun Adhikari, Rahmatullah Jan, Sajid Ali, Muhammad Imran, Kyung-Min Kim, and In-Jung Lee. "Halotolerant Rhizobacterial Strains Mitigate the Adverse Effects of NaCl Stress in Soybean Seedlings." *BioMed Research International* 2019 (2019).
25. Khan, Muhammad Aaqil, **Abdul Latif Khan**, Qari Muhammad Imran, Sajjad Asaf, Sang-Uk Lee, Byung-Wook Yun, Muhammad Hamayun, Tae-Han Kim, and In-Jung Lee. "Exogenous application of nitric oxide donors regulates short-term flooding stress in soybean." *PeerJ* 7 (2019): e7741.
26. Khan, Muhammad Aaqil, Sajjad Asaf, **Abdul Latif Khan**, Rahmatullah Jan, Sang-Mo Kang, Kyung-Min Kim, and In-Jung Lee. "Rhizobacteria AK1 remediates the toxic effects of salinity stress via regulation of endogenous phytohormones and gene expression in soybean." *Biochemical Journal* 476, no. 16 (2019): 2393-2409.
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28. Khan, **Abdul Latif**, Sajjad Asaf, In-Jung Lee, Ahmed Al-Harrasi, and Ahmed Al-Rawahi. First reported chloroplast genome sequence of *Punica granatum* (cultivar Helow) from Jabal Al-Akhdar, Oman: phylogenetic comparative assortment with *Lagerstroemia*. *Genetica* (2018): 1-14.
29. Asaf, Sajjad, **Abdul Latif Khan** (Corresponding author), Muhammad Aaqil Khan, Ahmed Al-Harrasi, and In-Jung Lee. Complete genome sequencing and analysis of endophytic *Sphingomonas* sp. LK11 and its potential in plant growth. *3 Biotech* 8, no. 9 (2018): 389.
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34. **Abdul Latif Khan**, Shezad R, Imran M, Yun BW, Al-Harrasi A, Kim YH, Lee IJ. 2016. Regulations of endogenous phytohormones and essential metabolites in preserved and incised endemic *Boswellia sacra* tree. *Acta Physiologiae Plantarum* (2018) 40:113
35. Bilal, S., Shahzad, R., **Khan, A.L.**, Kang, S.M., Imran, Q.M., Al-Harrasi, A., Yun, B.W. and Lee, I.J., 2018. Endophytic microbial consortia of phytohormones-producing fungus *Paecilomyces formosus* LHL10 and bacteria *Sphingomonas* sp. LK11 to *Glycine max* L. regulates physio-hormonal changes to attenuate aluminum and zinc stresses. *Frontiers in plant science*, 9.
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37. Raheem Shahzad, **Abdul Latif Khan**, Saqib Bilal, Sajjad Asaf, In-Jung Lee 2018. What is there in seeds? Vertically transmitted endophytic resources for sustainable improvement in plant growth. *Frontiers in Plant Science*. 8. doi: 10.3389/fpls.2018.00024
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39. Khan, Muhammad Aaqil, Muhammad Hamayun, Amjad Iqbal, Sumera Afzal Khan, Anwar Hussain, Sajjad Asaf, **Abdul Latif Khan**, Byung-Wook Yun, and In-Jung Lee. Gibberellin application ameliorates the adverse impact of short-term flooding on *Glycine max* L. *Biochemical Journal* 475, no. 18 (2018): 2893-2905.
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77. Hamayun, M., Hussain, A., Khan, S.A., Irshad, M., **Khan, A.L.**, Waqas, M., Shahzad, R., Iqbal, A., Ullah, N., Rehman, G. and Kim, H.Y., 2015. Kinetin modulates physio-hormonal attributes and isoflavone contents of Soybean grown under salinity stress. *Frontiers in plant science*, 6, p.377
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79. Waqas, M., **Khan, A.L.**, Hamayun, M., Shahzad, R., Kim, Y.H., Choi, K.S. and Lee, I.J., 2015. Endophytic infection alleviates biotic stress in sunflower through regulation of defence hormones, antioxidants and functional amino acids. *European Journal of Plant Pathology*, 141(4), pp.803-824. DOI 10.1007/s10658-014-0581-8
80. Khan AR, Ullah I, **Khan AL**, Gun-Seok Park, Muhammad Waqas, Sung-Jun Hong, Byung-Kwon Jung, Yun Young Kwak, In-Jung Lee, Jae-Ho Shin. 2015. Improvement in phytoremediation potential of *Solanum nigrum* under cadmium contamination through endophytic-assisted *Serratia* spp. RSC-14 inoculation. *Environmental Science and Pollution Research* DOI 10.1007/s11356-015-4647-8
81. Kang SM, **Khan AL**, Waqas M, You YH, Joo GJ, Park JM, Lee SM, Lee IJ. 2015. Gibberellins producing *Serratia nematodiphila* PEJ1011 ameliorates cold-shock stress in *Capsicum annum* L. *European Journal of Soil Biology*. 68, pp.85-93
82. Khan, A.R., Ullah, I., **Khan, A.L.**, Park, G.S., Waqas, M., Hong, S.J., Jung, B.K., Kwak, Y., Lee, I.J. and Shin, J.H., 2015. Improvement in phytoremediation potential of *Solanum nigrum* under cadmium contamination through endophytic-assisted *Serratia* sp. RSC-14 inoculation. *Environmental Science and Pollution Research*, 22(18), pp.14032-14042.

Year 2014

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84. **Khan AL**, Waqas M, Kang SM, Al-Harrasi A, Hussain J, Al-Rawahi A, Al-Khizri S, Ali L, Ullah I, Jung HY, IJ Lee. 2014. Bacterial endophyte *Sphingomonas* sp. LK11 produces gibberellins and IAA and promotes tomato plant growth. *Journal of Microbiology* 52(8), 689-695.

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Year 2013

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93. **Khan, A.L.**, Waqas, M., Hamayun, M., Al-Harrasi, A., Al-Rawahi, A. and Lee, I.J., 2013. Co-synergism of endophyte *Penicillium resedanum* LK6 with salicylic acid helped *Capsicum annuum* in biomass recovery and osmotic stress mitigation. *BMC microbiology*, 13(1), p.51. doi:10.1186/1471-2180-13-51
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of Microbiology and Biotechnology, 29(11), pp.2133-2144. DOI: 10.1007/s11274-013-1378-1

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97. Waqas M, **Khan AL (equal contributor)**, Ali L, Kang SM, Kim YH, Lee IJ. 2013. Seed Germination-Influencing Bioactive Secondary Metabolites Secreted by the Endophyte *Cladosporium cladosporioides* LWL5. *Molecules* 18(12), 15519-15530

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99. Kang SM, **Khan AL (equal contributor to first author)**, Hussain J, Ali L, Waqas M, Kamran M, Lee IJ. 2012. Rhizonin A from *Burkholderia* sp. KCTC11096 and Its Growth Promoting Role in Lettuce Seed Germination. *Molecules* 17: 7980-7988
100. **Khan AL**, Hamayun M, Kang SM, Kim YH, Jung HY, Lee JH, Lee IJ. 2012. Endophytic fungal association via gibberellins and indole acetic acid can improve plant growth potential in abiotic stress: an example of *Paecilomyces formosus* LHL10. *BMC Microbiology* 12:3. **Highly accessed** <http://www.biomedcentral.com/1471-2180/12/3>
101. **Khan, A.L.**, Hamayun, M., Hussain, J., Kang, S.M. and Lee, I.J., 2012. The newly isolated endophytic fungus *Paraconiothyrium* sp. LK1 produces ascotoxin. *Molecules*, 17(1), pp.1103-1112.
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103. Waqas, M., **Khan, A.L.**, Kamran, M., Hamayun, M., Kang, S.M., Kim, Y.H. and Lee, I.J., 2012. Endophytic fungi produce gibberellins and indoleacetic acid and promotes host-plant growth during stress. *Molecules*, 17(9), pp.10754-10773.
104. Kang SM, **Khan AL (equal contributor to first author)**, Hamayun M, Hussain J, Joo GJ, Lee IJ. 2012. Gibberellins-Producing *Promicromonospora* sp. SE188 Improves *Solanum lycopersicum* Plant Growth and Influences Endogenous Plant Hormones. *The Journal of Microbiology*. DOI 10.1007/s12275-012-2273-4

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105. **Khan AL**, Hamayun M, Khan SA, Kang SM, Shinwari ZK, Kamran M, Rehman S, Kim JG, Lee IJ. 2011. Pure culture of *Metarhizium anisopliae* LHL07 reprograms soybean

- to higher growth and mitigates salt stress. *World J. Microb Biotech*; 28(4):1483-94. DOI 10.1007/s11274-011-0950-9
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 109. **Khan, AL**, Hamayun M, Kim YH, Kang SM, Lee JH and Lee IJ. 2011. Gibberellins producing endophytic *Aspergillus fumigatus* sp. LH02 influenced endogenous phytohormonal levels, plant growth and isoflavone biosynthesis in soybean under salt stress. *Process Biochemistry*. 46 : 440–447
 110. Kim YH, **Khan AL**, (equal contributor to first author) Hamayun M, Kang SM, Beom YJ, Lee IJ. 2011. Influence of short-term silicon application on endogenous phytohormonal levels of *Oryza sativa* L. under wounding stress. *Biological Trace Element Research*. 144(1-3):1175-85.DOI 10.1007/s12011-011-9047-4

Year 2010

111. **Khan AL**, Hussain J, Hamayun M, Kang SM, Watanabe KN, and Lee IJ. 2010. Allelochemical, Eudesmane-Type Sesquiterpenoids from *Inula falconeri*. *Molecules* 2010, 15(3), 1554-1561
112. **Khan AL**, Hussain J, Hamayun M, Gilani SA, Ahmad S, Rehman G, Kim YH, Kang SM, and Lee, I.J. 2010. Secondary metabolites from *Inula britannica* L. and their biological activities. *Molecules* 15(3), 1562-1577
113. Hamayun M, Khan SA, **Khan AL**, Shin JH, Lee IJ. 2010. Exogenous Gibberellic Acid Reprograms Soybean to Higher Growth, and Salt Stress Tolerance. *Journal of Agriculture and Food Chemistry*. 58: 7226–7232 DOI:10.1021/jf101221t
114. Hamayun M, Khan SA, **Khan AL**, Rehman G, Kim YH, Iqbal I, Hussain J, Sohn EY, and Lee IJ. 2010. Gibberellin production and plant growth promotion from pure cultures of *Cladosporium* sp. MH-6 isolated from Cucumber (*Cucumis sativus*. L.) *Mycologia* 102: 989-995 doi:10.3852/09-261
115. Kang SM, Hamayun M, Joo GJ, **Khan AL**, Kim YH, Kim SK, Jeong HJ, Lee IJ. 2010. Effect of *Burkholderia* sp. KCTC 11096BP on some physiochemical attributes of cucumber, *Eur.J. Soil Biol.* 46: 264-269. doi:10.1016/j.ejsobi.2010.03.002)

116. Hamayun M, Khan SA, Iqbal I, Na C, **Khan AL**, Hwang YH, Lee BH, Lee IJ. 2009. *Chryso sporium pseudomer darium* Produces Gibberellins and Promotes Plant Growth. The Journal of Microbiology 47 (4), 425-430
117. Hamayun M, Khan SA, Khan MA, **Khan AL**, Kang SM, Kim SK, Joo GJ, Lee IJ. 2009. Gibberellin production by pure cultures of a new strain of *Aspergillus fumigatus*. World J. Microbiology Biotechnology 25:1785–1792 DOI 10.1007/s11274-009-0078-3
118. Hamayun M, Khan SA, **Khan AL**, Rehman G, Sohn EY, Shah AA, Kim SK, Joo GJ, and Lee IJ. 2009. *Phoma herbarum* as a New Gibberellin-Producing and Plant Growth Promoting Fungus. J. Microbiol. Biotechnol. 19(10), 1244–1249 doi: 10.4014/jmb.0901.030

TEACHINGS (BSc/MS):

Semester	Course	Cr Hrs	Students	My Evaluation
Fall 2019	BIOL455 Final Year Project	4	4	95%
Spring 2019	BIOL455 Final Year Project	4	3	98%
Fall 2018	BIOL455 Final Year Project	4	5	95%
Spring 2017	BIOL455 Final Year Project	4	5	95%
Fall 2017	BIOL437 Biology Teacher Seminar	3	26	83%
Spring 2017	BIOL437 Biology Teacher Seminar	3	9	91%
Fall 2016	BIOL211L Plant Physiology	2	25	83%
Spring 2016	BIOL455 Final Year Project	4	4	97%
Fall 2015	BIOL455 Final Year Project	4	4	95%
Spring 2015	BIOL211 Plant Molecular Physiology	4	52	86%
Spring 2014	BIOL211L Plant Physiology	2	24	83%
Fall 2013	BIOL455 Final Year Project	4	6	95%
Fall 2012	Chemical Biology	4	12	95%

MENTORING/SUPERVISION:

PhD Co-Supervision:

- i. Dr. IhsanUllah, Molecular microbiology, 2013, Kyungpook National University, S. Korea
- ii. Dr. Muhammad Waqas, Crop physiology, 2014, Kyungpook National University S. Korea
- iii. Dr. Sajjad Asaf, Physiology & genomics, 2018, Kyungpook National University S. Korea
- iv. Dr. Sajid Ali, Molecular microbiology, 2018, University of Peshawar, Pakistan
- v. Dr. Fazal Akber, Plant Sciences, 2020, Quaid e Azam University Pakistan

MS Co-Supervision:

- i. Mohammed Kamran, MS Crop physiology, 2013, Kyungpook National University S. Korea
- ii. Amjid Ali, Plant Sciences, 2017, Quaid e Azam University Pakistan
- iii. Khadija Al Hosni, Crop physiology, 2018, Kyungpook National University S. Korea
- iv. Arif Khan, Plant Sciences, 2019, Quaid e Azam University Pakistan

- v. Adil Khan, Plant Sciences, 2019, Quaid e Azam University Pakistan
- vi. Muhammad Numan, Plant Sciences, 2018, Quaid e Azam University Pakistan

Undergraduate:

- 2012-2013 Khadeeja Salim Said Al Hosni, Salima Salim Hamed Saif AL-khziri, Narjis Nasser ali AL-Maawali, Marwa Al-Haqwani, Dalal Hilal Ali Al Busaidi, Sharifa Khalifa Al-Mahrooqi, Abir, Yaqoob Saud Al-Azri, Maryam Amer Nasser Al-Kharousi, Asma said abdulrhman Alarimi, Noof AL-Moqbbali, Aseela Rashid Al-Shabibi, Kholoud Ahmed Al-Balushi, Raya Salim Al-Mashrafi
- 2014-2015 Thuraya Nasser Al-Abri, Aza Saif Humaid Al-Mamari, Zainab Khamis Rashid AL-Farsi, Hafsa Mohammed Al-Toubi, Zainab Al-Hinai
- 2015-2016 Raya Al-Shidani, Iman Masoud Said Al- Kindi, Rahma Khamis Hamed Al Badi, Amal Al-Saidi, Zainab Al-Sabari, Wafa Al-Harrasi, Rasha Al-Ramadi
- 2016-2017 Roqaiya Mossa Al-Harrasi, Jawahar Juma Al-Busaidi, Zamzam Said Al-Sadi, Sara Al-Wahaibi, Asmahan Al-Mahrooqi, Maryam Al – Harrasi
- 2018-2019 Anwaar Abdullah Salim Aljahwari, Alanood Amer Slaim Al ghunimi, Nawars Abdullah Ahmed Alhinai, Shrooq Salim Hamdoon Alsulti, Amna Mohammed Abdullah Al-Buriaki
- 2019-2020 Zuwaina Ahmed Al-Harrasi

Visiting scientists:

- Feb-May 2019 Dr. Muhammed Kamran, University of Adelaide, Australia

Invited Talks/Presentations:

1. Indigenous wheat landraces and exploration for QTLs in heat induced drought resistance through Next generation sequencing approaches. Annual Scientific Management Committee meeting, Oman’s Animal & Plant Genetic Resources, Research Council May 2020
2. Ecophysiolomics of frankincense from *Boswellia sacra*. American Society for plant biologist, San Jose Aug 2019
3. Genomics and metabolomics of Frankincense tree. Center for Genomics and Bioinformatics, Texas A&M University, USA, Aug 2019
4. Molecular physiology, genomics and conservation of Frankincense tree. Special Session in World Congress on Medicinal and Aromatic Plants, Cyprus, Nov 2019
5. Wounding stress in *Boswellia sacra*. Science Café, University of Nizwa, 2018
6. Physiology and Genomics of *Boswellia sacra*. First International Conference on Frankincense and Medicinal Plants at Sultan Qaboos University, Oct 30 to Nov 1st, 2018
7. Chloroplast genomics of Medicinal Plants in Oman. Annual Molecular Biology (CE-NGS) user meeting, by ThermoFisher. Nov 15, 2018

8. Endophytic microbes from Arid Land plants as resources for improved agriculture. The GenoBusiness, Oman's Animal and Plant Genetic Resource Center/The Research Council Oman July, 2018
9. Endophytic microbes from Arid land to crop utilization, School of Applied Biosciences, Kyungpook National University S. Korea 2013

INTRAMURAL SERVICES:

- Administration:** Planning, designing, implementation and purchase related to instruments and chemicals for Biotechnology Lab, Microbiology Lab, NGS Lab, Bioinformatics Lab, Seed bank, Microbial culture collection, Greenhouse, and Herbarium lab, at University of Nizwa
- Supervision:** Currently supervising 12 students, researchers and staff from different nationalities
- Training:** Short-term voluntary training for students (4 per year) from Higher College of Technology, Sultan Qaboos University, Applied Science College, and K-12 lectures on Plants, environment, secondary metabolites and microbes

Steering committees:

- Nov 2017 - Member University Executive Board for Research, University of Nizwa
- Aug 2017 - Member National Scientific Committee on Plant Genetic Resources of Oman at Oman's Animal and Plant Genetic Resource Center/The Research Council Oman
- Jan 2018 - Research Grant Evaluation Committee, University of Nizwa
- 2018 - Member recruitment committee University of Nizwa
- April 2017 - Member for research publications board University of Nizwa

EXTRAMURAL SERVICES:

Review Editor: More than 105 research articles reviewed till now; Horticulture Research, New Phytologists, Frontiers in Plant Sciences, Frontiers in Microbiology, Frontiers in Chemistry, Journal of Hazardous Materials, Journal of Agricultural & Food Chemistry, Journal Plant Growth Regulation, Ecotoxicology and Environmental Safety, PlosOne, Plant Physiology & Biochemistry, Biotechnology Advances, Frontiers in Genetics, Scientific Reports

Scholarly assistance: **1)**-Sequencing and analysis of Covid-19 viral genomes (150 samples) for public health laboratory, ministry of health (Oman), sequencing infectious samples via AmpliSeq research panels to understand outbreak analysis, **2)**-Guiding and assisting Oman Plant & Animal Genetic Resource center for strategies and experimental work for molecular analysis of available plant gene pools **3)**- GenBank management and Microbial Culture Collection from Arid land ecosystem in Oman with more than 2300 microbial strains (fungi/bacteria) with Oman Plant and Animal Genetic Resource Center, Sultan Qaboos University, University of Nizwa

Editorial Positions:

- 2016-2019 Frontiers in Plant Sciences (Associate Editor; 8-12 manuscripts/year)
2016-2019 Frontiers in Microbiology – Plant Microbe Interaction (Associate Editor/8-12 manuscripts/year)
2017-2018 Frontiers in Chemistry (Guest Associate Editor/4 manuscripts/year)

Memberships: Member American Association for Plant Biologist (ASBP); Member Plantae – Community network of ASBP; Member Pakistan Botanical Society; Member World Wide Fund for Nature (WWF-Pakistan), Society of Experimental Biology (SEB-UK)

Thesis evaluation: Maryam Ameen Al-Khobouri (MS, Sultan Qaboos University), Dr. Khanoranga (Fatimah Jinnah Women University)

Grant Evaluations: 4 grant proposals submitted to The Research Council Oman, 2 proposal to Internal Research Fund University of Nizwa

Symposia/Conference organization:

- i. 04 days training workshop on Bioinformatics and Genomics, University of Nizwa, University of Nebraska, University of Georgia, North China University of Sci & Tech (Feb 17-21, 2019);
- ii. Three days, First International Conference on Frankincense and Medicinal Plants at Sultan Qaboos University, Oct 30 to Nov 1st, 2018
- iii. One day symposia on Semester system and evaluation criteria for undergraduate students, Higher Education Commission Pakistan May 2007
- iv. Three days conference on medicinal plant and its conservation, WWF-Pakistan, People and Plants UK, April 2004

SKILLS Developed:

- **Plant environment physiology:** plant growth in controlled environments, abiotic/biotic stress applications and monitoring, targeted and non-target metabolome analysis (LC/qTOF-MS, metaboAnalyst, XCMS tools), phytohormonal analysis (gibberellins, abscisic acid, salicylic acid, jasmonic acid through LC/MS; GC/MS-SIM), gene expression analysis (qPCR, RT-PCR), cloning and transformation (gene selection, gateway cloning system, agrobacterium-mediated transformation), population biochemical and genetic analysis
- **Plant genomics (whole genomics, transcriptomics):** Planning, implementation and analysis of genomic projects, AmpliSeq and De novo Sequencing, HMW DNA/RNA extraction, quantification and gel electrophoresis, Bioanalyzer, QC, library preparation, emulsion PCR and template preparation, sequencing (Illumina and PacBio – external sources; nanopore and ion torrents technologies – in Lab facilities), Bioinformatics (assembly, filtering and trimming, annotation, phylogenetic analysis, BLAST2GO, CLCbio

Genome Work bench, MEGAX, Geneious software, DNASTAR SeqMan, GraphPad, GALAXY server, dnaSP, MAAFT, Biolinux, R software, DAMBE, Mira genome assembler, Canu and Muscara, Docker, and microbial community analysis workflow through USEARCH, QIIME2 and R. Metabolite mapping, Command line utilization at University of Nebraska and Houston computing facility for larger assembly and analysis)

- **Plant-microbial interaction:** microbe isolation, molecular identification, secondary metabolite extraction, and characterization, bioremediation, competent microbe transformation and product analysis, fermentation, light and transmission electron microscopy, greenhouse and field experiments for PGPB/F microbes, microbial symbiosis and signaling, pathogen antagonism, microbiome (endophytic, epiphytic, metagenome bioinformatic analysis – QIIME2, R, USEARCH)
- **Write-up:** Grant writing and submissions, reports and manuscript writing, student supervision, open to adopt new methods and approaches, performing experiments by my own or together with students, instrument handling and maintenance, teaching (more than 90% evaluation), organizing conferences/workshops, establishing collaborations

AWARDS:

- Best FURAP project Award from The Research Council, Oman 2016
- Best FURAP project Award from The Research Council, Oman 2015
- Best FURAP project Award from The Research Council, Oman 2014
- Selected as **BK21 (BrainKorea Project, Korean Government)** student for two years
- Awarded two times (March 2010 and March 2011) as **productive researcher** in School of Applied Biosciences, Kyungpook National University, South Korea
- Awarded with **KNU honorary scholarship** for PhD studies by the Kyungpook National University, Daegu Korea
- Awarded with **JASSO research fellowship** by University of Tsukuba, Ibaraki, Japan
- Awarded **Gold Medal** in M.Sc by University of Peshawar, NWFP Pakistan (Feb 2003) for securing distinctive position in the batch