# Dr. Sajjad **Asaf**

Research Assistant Professor


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## Languages

Pashto: mother tongue
English: fluent

## Bioinformatics

Genome and transcriptome assembly, Canu Assembler, reference and ab initio genome annotation with Maker, Augustus and Braker, Python, R software,dnaSP, RAxML,PAUP, PHYML, MrBayes, Perl, tophat, cuffdiff, cufflinks, DESeq2, edgeR

## Skills

Plant microbes interaction, qRT-PCR, phytohormonal analysis, Microbial genome and metagenomics analysis, plant metabolomics, Bio-control of plant pathogen, Modern bioinformatic analysis of NGS data.

## Statistics

Publications: 103
Citations: 2507
h-index: 31

## education

2014–2017 **PhD** Plant Physiology and genomics — Kyungpook National University, Daegu, South Korea
Research: Plant microbe's interaction, Plant genomics.
Thesis Title: Physiology and genomics of plant growth promoting bacteria and its role in environmental stress tolerance.

2010–2012 **M.Phil** Botany — Kohat University of Science and Technology, Pakistan
Graduated with High Distinction.
Thesis Title: Effect of Acacia and Cymbopogon smoke solutions on carrot seed germination and seedling vigour and its comparison with Auxin

2008–2010 **Master of Science** Botany — Kohat University of Science and Technology, Pakistan
Graduated with High Distinction (Gold Medal)

## employment

2018-Current **Assistant Professor** — University of Nizwa, Oman
Omics and biotechnology lab. Key tasks: Genome sequencing of various medicinally important plant, chloroplast genomes, mitochondrial genomes, sequencing of endophytic microbes by using IonS5 sequencing platform. Genomics and transcriptomics data analysis from different platforms like Illumina and Ion torrents.Taught courses related to genomics, molecular biology and bioinformatics.Guide and supervised undergraduate and master student in various research projects.

2017–2018 **Postdoctoral researcher** — Kyungpook National University, South Korea
Plant physiology Lab. Key tasks:Genome sequencing and analysis of various plant growth promoting endophytic bacteria and fungi. Chloroplast and mitochondrial genome sequencing. Supervised underrate students during their research projects. Taught courses related to plant physiology and plant microbe interaction.

2013–2014 **Research Associate** — Kohat University of Science and Technology Kohat, Pakistan
Plant Biotechnology Lab. Key tasks:Lab management. Taught courses related to allelopathy and introductory genetic at bachelor level.

## publications

Lubna, Khan, M. A., **Asaf, Sajjad**, Jan, R., Waqas, M., Kim, K.-M., Lee, I.-J., "Endophytic fungus Bipolaris sp. CSL-1 induces salt tolerance in Glycine max.L via modulating its endogenous hormones, antioxidative system and gene expression" Journal of Plant Interactions *17.1 (2022) pp. 319–332. Taylor Francis*

Khan, A. L., Numan, M., Bilal, S., **Asaf, Sajjad**, Crafword, K., Imran, M., Al-Harrasi, A., Al-Sabahi, J. N., Rehman, N. U., Ahmed, A., "Mangrove's rhizospheric engineering with bacterial inoculation improve degradation of diesel contamination" Journal of hazardous materials *423.Pt A (2022) p. 127046*

**Asaf, Sajjad**, Ahmad, W., Al-Harrasi, A., Khan, A. L., "Uncovering the first complete plastome genomics, comparative analyses, and phylogenetic dispositions of endemic medicinal plant Ziziphus hajarensis (Rhamnaceae)" BMC Genomics *23.1 (2022) pp. 1–16. BioMed Central*

Lubna, **Asaf, Sajjad**, Jan, R., Khan, A. L., Bilal, S., Asif, S., Al-Harrasi, A., Kim, K.-M., "Unraveling the Genome Sequence of Plant Growth Promoting Aspergillus niger (CSR3) Provides Insight into the Synthesis of Secondary Metabolites and Its Comparative Genomics" Journal of Fungi *8.2 (2022)*

Jan, R., Kim, N., Lee, S., Khan, M., **Asaf, Sajjad**, Park, J., Asif, S., Lee, I., Kim, K., "Enhanced Flavonoid Accumulation Reduces Combined Salt and Heat Stress Through Regulation of Transcriptional and Hormonal Mechanisms" Frontiers in plant science *12 (2021). Frontiers Media SA*

Khan, A. L., **Asaf, Sajjad**, Numan, M., AbdulKareem, N. M., Imran, M., Riethoven, J.-J., Kim, H.-Y., Al-Harrasi, A., Schachtman, D. P., Al-Rawahi, A., "Transcriptomics of tapping and healing process in frankincense tree during resin production" Genomics *(2021). Elsevier*

Jan, R., Khan, M. A., **Asaf, Sajjad**, Lubna, Lee, I.-J., Kim, K.-M., "Over-Expression of Chorismate Mutase Enhances the Accumulation of Salicylic Acid, Lignin, and Antioxidants in Response to the White-Backed Planthopper in Rice Plants" Antioxidants *10.11 (2021)*

**Asaf, Sajjad**, Khan, A. L., Al-Harrasi, A., Al-Rawahi, A., "Comparative Analysis of Date Palm (Phoenix dactylifera L.) Mitochondrial Genomics" *(2021) pp. 211–222. Springer*

Lubna, **Asaf, Sajjad**, Khan, A. L., Jan, R., Khan, A., Khan, A., Kim, K.-M., Lee, I.-J., "The dynamic history of gymnosperm plastomes: Insights from structural characterization, comparative analysis, phylogenomics, and time divergence" The plant genome *() e20130*

Khan, M. A., Hamayun, M., **Asaf, Sajjad**, Khan, M., Yun, B.-W., Kang, S.-M., Lee, I.-J., "Rhizospheric Bacillus spp. Rescues Plant Growth Under Salinity Stress via Regulating Gene Expression, Endogenous Hormones, and Antioxidant System of Oryza sativa L" Frontiers in Plant Science *12 (2021) p. 1145. Frontiers*

Jan, R., **Asaf, Sajjad**, Numan, M., Lubna, Kim, K.-M., "Plant Secondary Metabolite Biosynthesis and Transcriptional Regulation in Response to Biotic and Abiotic Stress Conditions" Agronomy *11.5 (2021)*

Khan, A. L., **Asaf, Sajjad**, Al-Rawahi, A., Al-Harrasi, A., "Decoding first complete chloroplast genome of toothbrush tree (Salvadora persica L.): insight into genome evolution, sequence divergence and phylogenetic relationship within Brassicales" BMC genomics *22.1 (2021) pp. 1–16. BioMed Central*

Khan, M. A., Sahile, A. A., Jan, R., **Asaf, Sajjad**, Hamayun, M., Imran, M., Adhikari, A., Kang, S.-M., Kim, K.-M., Lee, I.-J., "Halotolerant bacteria mitigate the effects of salinity stress on soybean growth by regulating secondary metabolites and molecular responses" BMC plant biology *21.1 (2021) pp. 1–15. BioMed Central*

Numan, M., Khan, A. L., **Asaf, Sajjad**, Salehin, M., Beyene, G., Tadele, Z., Ligaba-Osena, A., "From Traditional Breeding to Genome Editing for Boosting Productivity of the Ancient Grain Tef [Eragrostis tef (Zucc.) Trotter]" Plants *10.4 (2021)*

**Asaf, Sajjad**, Khan, A. L., Numan, M., Al-Harrasi, A., "Mangrove tree (Avicennia marina): insight into chloroplast genome evolutionary divergence and its comparison with related species from family Acanthaceae" Scientific reports *11.1 (2021) pp. 1–15. Nature Publishing Group*

Al-Mahruqi, S., Al-Wahaibi, A., Khan, A. L., Al-Jardani, A., **Asaf, Sajjad**, Alkindi, H., Al-Kharusi, S., Al-Rawahi, A. N., Al-Rawahi, A., Al-Salmani, M., Al-Shukri, I., Al-Busaidi, A., Al-Abri, S. S., Al-Harrasi, A., "Molecular epidemiology of COVID-19 in Oman: A molecular and surveillance study for the early transmission of COVID-19 in the country" International Journal of Infectious Diseases *104 (2021) pp. 139–149*

Jan, R., **Asaf, Sajjad**, Paudel, S., Lee, S., Kim, K.-M., "Discovery and Validation of a Novel Step Catalyzed by OsF3H in the Flavonoid Biosynthesis Pathway" Biology *10.1 (2021) p. 32. Multidisciplinary Digital Publishing Institute*

Jan, R., Khan, M. A., **Asaf, Sajjad**, Lee, I.-J., Bae, J.-S., Kim, K.-M., "Overexpression of OsCM alleviates BLB stress via phytohormonal accumulation and transcriptional modulation of defense-related genes in Oryza sativa" Scientific reports *10.1 (2020) pp. 1–15. Nature Publishing Group*

Jan, R., Khan, M. A., **Asaf, Sajjad**, Lee, I.-J., Kim, K.-M., "Modulation of sugar and nitrogen in callus induction media alter PAL pathway, SA and biomass accumulation in rice callus" Plant Cell, Tissue and Organ Culture (PCTOC) *(2020) pp. 1–14. Springer Netherlands*

Jan, R., Khan, M. A., **Asaf, Sajjad**, Lee, I.-J., Kim, K.-M., "Overexpression of OsF 3 H modulates WBPH stress by alteration of phenylpropanoid pathway at a transcriptomic and metabolomic level in Oryza sativa" Scientific Reports *10.1 (2020) pp. 1–16. Nature Publishing Group*

Lubna, **Asaf, Sajjad**, Jan, R., Khan, A. L., Lee, I.-J., "Complete Chloroplast Genome Characterization of Oxalis Corniculata and Its Comparison with Related Species from Family Oxalidaceae" Plants *9.8 (2020) p. 928. Multidisciplinary Digital Publishing Institute*

Khan, A. L., **Asaf, Sajjad**, Khan, A., Khan, A., Imran, M., Al-Harrasi, A., Lee, I.-J., Al-Rawahi, A., "transcriptomic analysis of Dubas bug (Ommatissus lybicus Bergevin) infestation to Date palm" Scientific reports *10.1 (2020) pp. 1–15. Nature Publishing Group*

Khan, M. A., **Asaf, Sajjad**, Khan, A. L., Jan, R., Kang, S.-M., Kim, K.-M., Lee, I.-J., "Thermotolerance effect of plant growth-promoting Bacillus cereus SA1 on soybean during heat stress" BMC microbiology *20.1 (2020) pp. 1–14. BioMed Central*

**Asaf, Sajjad**, Khan, A. L., Khan, A., Al-Harrasi, A., "Unraveling the Chloroplast Genomes of Two Prosopis Species to Identify Its Genomic Information, Comparative Analyses and Phylogenetic Relationship" International Journal of Molecular Sciences *21.9 (2020)*

Khan, A., Khan, A. L., Imran, M., **Asaf, Sajjad**, Kim, Y.-H., Bilal, S., Numan, M., Al-Harrasi, A., Al-Rawahi, A., Lee, I.-J., "Silicon-induced thermotolerance in Solanum lycopersicum L. via activation of antioxidant system, heat shock proteins, and endogenous phytohormones" BMC Plant Biology *20.1 (2020) pp. 1–18. BioMed Central*

Khan, M. A., **Asaf, Sajjad**, Khan, A. L., Jan, R., Kang, S.-M., Kim, K.-M., Lee, I.-J., "Extending thermotolerance to tomato seedlings by inoculation with SA1 isolate of Bacillus cereus and comparison with exogenous humic acid application" PloS one *15.4 (2020) e0232228. Public Library of Science San Francisco, CA USA*

Khan, M. A., **Asaf, Sajjad**, Khan, A. L., Adhikari, A., Jan, R., Ali, S., Imran, M., Kim, K.-M., Lee, I.-J., "Plant growth-promoting endophytic bacteria augment growth and salinity tolerance in rice plants" Plant Biology *(2020)*

Khan, A., Numan, M., Khan, A. L., Lee, I.-J., Imran, M., **Asaf, Sajjad**, Al-Harrasi, A., "Melatonin: Awakening the Defense Mechanisms during Plant Oxidative Stress" Plants *9.4 (2020) p. 407. Multidisciplinary Digital Publishing Institute*

Kang, S.-M., **Asaf, Sajjad**, Khan, A. L., Khan, A., Mun, B.-G., Khan, M. A., Gul, H., Lee, I.-J., "Complete Genome Sequence of Pseudomonas psychrotolerans CS51, a Plant Growth-Promoting Bacterium, Under Heavy Metal Stress Conditions" Microorganisms *8.3 (2020) p. 382. Multidisciplinary Digital Publishing Institute*

**Asaf, Sajjad**, Khan, A. L., Khan, A., Khan, G., Lee, I.-J., Al-Harrasi, A., "Expanded inverted repeat region with large scale inversion in the first complete plastid genome sequence of Plantago ovata" Scientific reports *10.1 (2020) pp. 1–16. Nature Publishing Group*

Khan, A., **Asaf, Sajjad**, Khan, A. L., Shehzad, T., Al-Rawahi, A., Al-Harrasi, A., "Comparative chloroplast genomics of endangered Euphorbia species: Insights into hotspot divergence, repetitive sequence variation, and phylogeny" Plants *9.2 (2020) p. 199. Multidisciplinary Digital Publishing Institute*

Khan, A. L., **Asaf, Sajjad**, Abed, R. M., Ning Chai, Y., Al-Rawahi, A. N., Mohanta, T. K., Al-Rawahi, A., Schachtman, D. P., Al-Harrasi, A., "Rhizosphere Microbiome of Arid Land Medicinal Plants and Extra Cellular Enzymes Contribute to Their Abundance" Microorganisms *8.2 (2020) p. 213. Multidisciplinary Digital Publishing Institute*

**Asaf, Sajjad**, Numan, M., Khan, A. L., Al-Harrasi, A., "Sphingomonas: from diversity and genomics to functional role in environmental remediation and plant growth" Critical Reviews in Biotechnology *(2020) pp. 1–15. Taylor & Francis*

**Asaf, Sajjad**, Khan, A., Khan, A. L., Al-Harrasi, A., Al-Rawahi, A., "Complete Chloroplast Genomes of Vachellia nilotica and Senegalia senegal: Comparative Genomics and Phylogenomic Placement in a New Generic System" PloS one *14.11 (2019). Public Library of Science*

Khan, M. A., **Asaf, Sajjad**, Khan, A. L., Adhikari, A., Jan, R., Ali, S., Imran, M., Kim, K.-M., Lee, I.-J., "Halotolerant Rhizobacterial Strains Mitigate the Adverse Effects of NaCl Stress in Soybean Seedlings" BioMed Research International *2019 (2019). Hindawi*

Biology of Genus Boswellia

Al-Harrasi, A., Khan, A. L., **Asaf, Sajjad**, Al-Rawahi, A.,

*2019*

Jan, R., Khan, M. A., **Asaf, Sajjad**, Lee, I.-J., Kim, K. M., "Metal resistant endophytic bacteria reduces cadmium, nickel toxicity, and enhances expression of metal stress related genes with improved growth of Oryza Sativa, via regulating its antioxidant machinery and endogenous hormones" Plants *8.10 (2019) p. 363. Multidisciplinary Digital Publishing Institute*

Khan, M. A., Khan, A. L., Imran, Q. M., **Asaf, Sajjad**, Lee, S.-U., Yun, B.-W., Hamayun, M., Kim, T.-H., Lee, I.-J., "Exogenous application of nitric oxide donors regulates short-term flooding stress in soybean" PeerJ *7 (2019) e7741. PeerJ Inc.*

Khan, A., Khan, A. L., **Asaf, Sajjad**, Al-Harrasi, A., Al-Rawahi, A., "DNA extraction from resin producing Boswellia tree" *()*

Kang, S.-M., Khan, A. L., Waqas, M., **Asaf, Sajjad**, Lee, K.-E., Park, Y.-G., Kim, A.-Y., Khan, M. A., You, Y.-H., Lee, I.-J., "Integrated phytohormone production by the plant growth-promoting rhizobacterium Bacillus tequilensis SSB07 induced thermotolerance in soybean" Journal of Plant Interactions *14.1 (2019) pp. 416–423. Taylor & Francis*

Khan, M. A., **Asaf, Sajjad**, Khan, A. L., Jan, R., Kang, S.-M., Kim, K.-M., Lee, I.-J., "Rhizobacteria AK1 remediates the toxic effects of salinity stress via regulation of endogenous phytohormones and gene expression in soybean" Biochemical Journal *476.16 (2019) pp. 2393–2409. Portland Press Ltd.*

Khan, A., **Asaf, Sajjad**, Khan, A. L., Khan, A., Al-Harrasi, A., Al-Sudairy, O., AbdulKareem, N. M., Al-Saady, N., Al-Rawahi, A., "Complete chloroplast genomes of medicinally important Teucrium species and comparative analyses with related species from Lamiaceae" PeerJ *7 (2019) e7260. PeerJ Inc.*

Kang, S.-M., Shahzad, R., Bilal, S., Khan, A. L., Park, Y.-G., Lee, K.-E., **Asaf, Sajjad**, Khan, M. A., Lee, I.-J., "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 *19.1 (2019) p. 80. BioMed Central*

Khan, M. A., **Asaf, Sajjad**, Khan, A. L., Ullah, I., Ali, S., Kang, S.-M., Lee, I.-J., "Alleviation of salt stress response in soybean plants with the endophytic bacterial isolate Curtobacterium sp. SAK1" Annals of Microbiology *69.8 (2019) pp. 797–808. Springer International Publishing*

Lubna, L., **Asaf, Sajjad**, Khan, A. L., Waqas, M., Kang, S.-M., Hamayun, M., Lee, I.-J., Hussain, A., "Growth-promoting bioactivities of Bipolaris sp. CSL-1 isolated from Cannabis sativa suggest a distinctive role in modifying host plant phenotypic plasticity and functions" Acta Physiologiae Plantarum *41.5 (2019) p. 65. Springer Berlin Heidelberg*

Ali, A., Mohanta, T. K., **Asaf, Sajjad**, Rehman, N., Al-Housni, S., Al-Harrasi, A., Khan, A. L., Al-Rawahi, A., "Biotransformation of benzoin by Sphingomonas sp. LK11 and ameliorative effects on growth of Cucumis sativus" Archives of microbiology *201.5 (2019) pp. 591–601. Springer Berlin Heidelberg*

Shahzad, R., Khan, A. L., Waqas, M., Ullah, I., Bilal, S., Kim, Y.-H., **Asaf, Sajjad**, Kang, S.-M., Lee, I.-J., "Metabolic and proteomic alteration in phytohormone-producing endophytic Bacillus amyloliquefaciens RWL-1 during methanol utilization" Metabolomics *15.2 (2019) p. 16. Springer US*

Imran, Q. M., Lee, S.-U., Mun, B.-G., Hussain, A., **Asaf, Sajjad**, Lee, I.-J., Yun, B.-W., "WRKYs, the Jack-of-various-Trades, Modulate Dehydration Stress in Populus davidiana—A Transcriptomic Approach" International journal of molecular sciences *20.2 (2019) p. 414. Multidisciplinary Digital Publishing Institute*

Arif, K., **Asaf, Sajjad**, Khan, A. L., Al-Harrasi, A., Al-Sudairy, O., AbdulKareem, N. M., Khan, A., Shehzad, T., Alsaady, N., Al-Lawati, A., Al-Rawahi, A., "First complete chloroplast genomics and comparative phylogenetic analysis of Commiphora gileadensis and C. foliacea: Myrrh producing trees" PloS one *14.1 (2019). Public Library of Science*

Khan, A. L., **Asaf, Sajjad**, Lee, I.-J., Al-Harrasi, A., Al-Rawahi, A., "First reported chloroplast genome sequence of Punica granatum (cultivar Helow) from Jabal Al-Akhdar, Oman: phylogenetic comparative assortment with Lagerstroemia" Genetica *146.6 (2018) pp. 461–474. Springer International Publishing*

Bilal, S., Ali, L., Khan, A. L., Shahzad, R., **Asaf, Sajjad**, Imran, M., Kang, S.-M., Kim, S.-K., Lee, I.-J., "Endophytic fungus Paecilomyces formosus LHL10 produces sester-terpenoid YW3548 and cyclic peptide that inhibit urease and $\alpha$-glucosidase enzyme activities" Archives of microbiology *200.10 (2018) pp. 1493–1502. Springer Berlin Heidelberg*

**Asaf, Sajjad**, Khan, A. L., Khan, M. A., Al-Harrasi, A., Lee, I.-J., "Complete genome sequencing and analysis of endophytic Sphingomonas sp. LK11 and its potential in plant growth" 3 Biotech *8.9 (2018) p. 389. Springer International Publishing*

Khan, M. A., Hamayun, M., Iqbal, A., Khan, S. A., Hussain, A., **Asaf, Sajjad**, Khan, A. L., Yun, B.-W., Lee, I.-J., "Gibberellin application ameliorates the adverse impact of short-term flooding on Glycine max L." Biochemical Journal *475.18 (2018) pp. 2893–2905. Portland Press Ltd.*

Khan, A. L., **Asaf, Sajjad**, Lee, I.-J., Al-Harrasi, A., Al-Rawahi, A., "First chloroplast genomics study of Phoenix dactylifera (var. Naghal and Khanezi): A comparative analysis" PloS one *13.7 (2018). Public Library of Science*

**Asaf, Sajjad**, Khan, A. L., Al-Harrasi, A., Kim, T. H., Lee, I.-J., "The first complete mitochondrial genome of wild soybean (Glycine soja)" Mitochondrial DNA Part B *3.2 (2018) pp. 527–528. Taylor & Francis*

Shahzad, R., Khan, A. L., Bilal, S., **Asaf, Sajjad**, Lee, I.-J., "What is there in seeds? Vertically transmitted endophytic resources for sustainable improvement in plant growth" Frontiers in plant science *9 (2018) p. 24. Frontiers*

Khan, M. A., Ullah, I., Waqas, M., Hamayun, M., Khan, A. L., **Asaf, Sajjad**, Kang, S.-M., Kim, K.-M., Jan, R., Lee, I.-J., "Halo-tolerant rhizospheric Arthrobacter woluwensis AK1 mitigates salt stress and induces physio-hormonal changes and expression of GmST1 and GmLAX3 in soybean" Symbiosis *77.1 (2019) pp. 9–21. Springer Netherlands*

**Asaf, Sajjad**, Khan, A. L., Al-Harrasi, A., Al-Rawahi, A., "First complete mitochondrial genome of Phoenix dact ylifera var. Khanezi" Mitochondrial DNA Part B *3.2 (2018) pp. 778–779. Taylor & Francis*

Lubna, L., **Asaf, Sajjad**, Hamayun, M., Khan, A. L., Waqas, M., Khan, M. A., Jan, R., Lee, I.-J., Hussain, A., "Salt tolerance of Glycine max. L induced by endophytic fungus Aspergillus flavus CSH1, via regulating its endogenous hormones and antioxidative system" Plant Physiology and Biochemistry *128 (2018) pp. 13–23. Elsevier Masson*

**Asaf, Sajjad**, Khan, A. L., Khan, M. A., Shahzad, R., Kang, S. M., Al-Harrasi, A., Al-Rawahi, A., Lee, I.-J., "Complete chloroplast genome sequence and comparative analysis of loblolly pine (Pinus taeda L.) with related species" PLoS One *13.3 (2018) e0192966. Public Library of Science San Francisco, CA USA*

Al-Hosni, K., Shahzad, R., Latif Khan, A., Muhammad Imran, Q., Al Harrasi, A., Al Rawahi, A., **Asaf, Sajjad**, Kang, S.-M., Yun, B.-W., Lee, I.-J., "Preussia sp. BSL-10 producing nitric oxide, gibberellins, and indole acetic acid and improving rice plant growth" Journal of plant interactions *13.1 (2018) pp. 112–118. Taylor & Francis*

Bilal, L., **Asaf, Sajjad**, Hamayun, M., Gul, H., Iqbal, A., Ullah, I., Lee, I.-J., Hussain, A., "Plant growth

promoting endophytic fungi Asprgillus fumigatus TS1 and Fusarium proliferatum BRL1 produce gibberellins and regulates plant endogenous hormones" Symbiosis *76.2 (2018) pp. 117–127. Springer Netherlands*

Lubna, **Asaf, Sajjad**, Hamayun, M., Gul, H., Lee, I.-J., Hussain, A., "Aspergillus niger CSR3 regulates plant endogenous hormones and secondary metabolites by producing gibberellins and indoleacetic acid" Journal of plant interactions *13.1 (2018) pp. 100–111. Taylor & Francis*

Imran, Q. M., Hussain, A., Mun, B.-G., Lee, S. U., **Asaf, Sajjad**, Ali, M. A., Lee, I.-J., Yun, B.-W., "Transcriptome wide identification and characterization of NO-responsive WRKY transcription factors in Arabidopsis thaliana L." Environmental and Experimental Botany *148 (2018) pp. 128–143. Elsevier*

Waqas, M., Shahzad, R., Hamayun, M., **Asaf, Sajjad**, Khan, A. L., Kang, S.-M., Yun, S., Kim, K.-M., Lee, I.-J., "Biochar amendment changes jasmonic acid levels in two rice varieties and alters their resistance to herbivory" PloS one *13.1 (2018). Public Library of Science*

Khan, A. L., **Asaf, Sajjad**, Al-Rawahi, A., Lee, I.-J., Al-Harrasi, A., "Rhizospheric microbial communities associated with wild and cultivated frankincense producing Boswellia sacra tree" PloS one *12.10 (2017). Public Library of Science*

**Asaf, Sajjad**, Waqas, M., Khan, A. L., Khan, M. A., Kang, S.-M., Imran, Q. M., Shahzad, R., Bilal, S., Yun, B.-W., Lee, I.-J., "The complete chloroplast genome of wild rice (Oryza minuta) and its comparison to related species" Frontiers in plant science *8 (2017) p. 304. Frontiers*

Kang, S.-M., Waqas, M., Hamayun, M., **Asaf, Sajjad**, Khan, A. L., Kim, A.-Y., Park, Y.-G., Lee, I.-J., "Gibberellins and indole-3-acetic acid producing rhizospheric bacterium Leifsonia xyli SE134 mitigates the adverse effects of copper-mediated stress on tomato" Journal of Plant Interactions *12.1 (2017) pp. 373–380. Taylor & Francis*

**Asaf, Sajjad**, Khan, A. L., Khan, M. A., Imran, Q. M., Yun, B.-W., Lee, I.-J., "Osmoprotective functions conferred to soybean plants via inoculation with Sphingomonas sp. LK11 and exogenous trehalose" Microbiological research *205 (2017) pp. 135–145. Urban & Fischer*

**Asaf, Sajjad**, Khan, A. L., Khan, M. A., Imran, Q. M., Kang, S.-M., Al-Hosni, K., Jeong, E. J., Lee, K. E., Lee, I.-J., "Comparative analysis of complete plastid genomes from wild soybean (Glycine soja) and nine other Glycine species" PloS one *12.8 (2017). Public Library of Science*

**Asaf, Sajjad**, Khan, A. L., Khan, M. A., Waqas, M., Kang, S.-M., Yun, B.-W., Lee, I.-J., "Chloroplast genomes of Arabidopsis halleri ssp. gemmifera and Arabidopsis lyrata ssp. petraea: Structures and comparative analysis" Scientific reports *7.1 (2017) pp. 1–15. Nature Publishing Group*

Bilal, S., Khan, A. L., Shahzad, R., **Asaf, Sajjad**, Kang, S.-M., Lee, I.-J., "Endophytic Paecilomyces formosus LHL10 augments Glycine max L. adaptation to Ni-contamination through affecting endogenous phytohormones and oxidative stress" Frontiers in plant science *8 (2017) p. 870. Frontiers*

Kang, S.-M., Waqas, M., Shahzad, R., You, Y.-H., **Asaf, Sajjad**, Khan, M. A., Lee, K.-E., Joo, G.-J., Kim, S.-J., Lee, I.-J., "Isolation and characterization of a novel silicate-solubilizing bacterial strain Burkholderia eburnea CS4-2 that promotes growth of japonica rice (Oryza sativa L. cv. Dongjin)" Soil Science and Plant Nutrition *63.3 (2017) pp. 233–241. Taylor & Francis*

Waqas, M., Kim, Y.-H., Khan, A. L., Shahzad, R., **Asaf, Sajjad**, Hamayun, M., Kang, S.-M., Khan, M. A., Lee, I.-J., "Additive effects due to biochar and endophyte application enable soybean to enhance nutrient uptake and modulate nutritional parameters" Journal of Zhejiang University-SCIENCE B *18.2 (2017) pp. 109–124. Zhejiang University Press*

Shahzad, R., Khan, A. L., Bilal, S., **Asaf, Sajjad**, Lee, I.-J., "Plant growth-promoting endophytic bacteria versus pathogenic infections: an example of Bacillus amyloliquefaciens RWL-1 and Fusarium oxysporum f. sp. lycopersici in tomato" PeerJ *5 (2017) e3107. PeerJ Inc.*

**Asaf, Sajjad**, Khan, A. L., Hamayun, M., Khan, M. A., Bilal, S., Kang, S.-M., Lee, I.-J., "Complete mi-

tochondrial genome sequence of Aspergillus oryzae RIB 127 and its comparative analysis with related species" Mitochondrial DNA Part B *2.2 (2017) pp. 632–633. Taylor & Francis*

Khan, A. R., Park, G.-S., **Asaf, Sajjad**, Hong, S.-J., Jung, B. K., Shin, J.-H., "Complete genome analysis of Serratia marcescens RSC-14: A plant growth-promoting bacterium that alleviates cadmium stress in host plants" PloS one *12.2 (2017). Public Library of Science*

Khan, A. L., Al-Harrasi, A., **Asaf, Sajjad**, Park, C. E., Park, G.-S., Khan, A. R., Lee, I.-J., Al-Rawahi, A., Shin, J.-H., "The first chloroplast genome sequence of Boswellia sacra, a resin-producing plant in Oman" PloS one *12.1 (2017). Public Library of Science*

**Asaf, Sajjad**, Khan, M. A., Khan, A. L., Waqas, M., Shahzad, R., Kim, A.-Y., Kang, S.-M., Lee, I.-J., "Bacterial endophytes from arid land plants regulate endogenous hormone content and promote growth in crop plants: an example of Sphingomonas sp. and Serratia marcescens" Journal of Plant Interactions *12.1 (2017) pp. 31–38. Taylor & Francis*

Khan, A. L., Waqas, M., **Asaf, Sajjad**, Kamran, M., Shahzad, R., Bilal, S., Khan, M. A., Kang, S.-M., Kim, Y.-H., Yun, B.-W., "Plant growth-promoting endophyte Sphingomonas sp. LK11 alleviates salinity stress in Solanum pimpinellifolium" Environmental and Experimental Botany *133 (2017) pp. 58–69. Elsevier*

Khan, A. L., Al-Harrasi, A., Al-Rawahi, A., Al-Farsi, Z., Al-Mamari, A., Waqas, M., **Asaf, Sajjad**, Elyassi, A., Mabood, F., Shin, J.-H., "Endophytic fungi from Frankincense tree improves host growth and produces extracellular enzymes and indole acetic acid" PloS one *11.6 (2016). Public Library of Science*

Khan, A. L., Gilani, S. A., Waqas, M., Al-Hosni, K., Al-Khiziri, S., Kim, Y.-H., Ali, L., Kang, S.-M., **Asaf, Sajjad**, Shahzad, R., "Endophytes from medicinal plants and their potential for producing indole acetic acid, improving seed germination and mitigating oxidative stress" Journal of Zhejiang University-Science B *18.2 (2017) pp. 125–137. Zhejiang University Press*

Kang, S.-M., **Asaf, Sajjad**, Kim, S.-J., Yun, B.-W., Lee, I.-J., "Complete genome sequence of plant growth-promoting bacterium Leifsonia xyli SE134, a possible gibberellin and auxin producer" Journal of biotechnology *239 (2016) pp. 34–38. Elsevier*

Waqas, M., Shahzad, R., Khan, A. L., **Asaf, Sajjad**, Kim, Y.-H., Kang, S.-M., Bilal, S., Hamayun, M., Lee, I.-J., "Salvaging effect of triacontanol on plant growth, thermotolerance, macro-nutrient content, amino acid concentration and modulation of defense hormonal levels under heat stress" Plant Physiology and Biochemistry *99 (2016) pp. 118–125. Elsevier Masson*

**Asaf, Sajjad**, Khan, A. L., Khan, A. R., Waqas, M., Kang, S.-M., Khan, M. A., Lee, S.-M., Lee, I.-J., "Complete chloroplast genome of Nicotiana otophora and its comparison with related species" Frontiers in plant science *7 (2016) p. 843. Frontiers*

Back, C. G., Lee, S. Y., **Asaf, Sajjad**, Rang, I. K., Jung, H. Y., Ohga, S., "Identification and characterization of a new species, Cladobotryum hypsigum, that causes cobweb disease in beech mushroom (Hypsizygus marmoreus) in Korea" Journal of the Faculty of Agriculture, Kyushu University *60.1 (2015) pp. 7–12. Faculty of Agriculture, Kyushu University*

Khan, A. L., **Asaf, Sajjad**, Khan, A. R., Al-Harrasi, A., Al-Rawahi, A., Lee, I.-J., "First draft genome sequencing of indole acetic acid producing and plant growth promoting fungus Preussia sp. BSL10" Journal of biotechnology *225 (2016) pp. 44–45. Elsevier*

**Asaf, Sajjad**, Khan, A. L., Khan, A. R., Waqas, M., Kang, S.-M., Khan, M. A., Shahzad, R., Seo, C.-W., Shin, J.-H., Lee, I.-J., "Mitochondrial genome analysis of wild rice (Oryza minuta) and its comparison with other related species" PloS one *11.4 (2016). Public Library of Science*

## Current projects

- Genome sequencing and analysis of different plants, bacteria and fungi.

- Mitochondrial genome sequencing of important plants, fungi and their comparative analysis with related species.
- Chloroplast genome sequencing and comparative analysis of gymnosperms. Infer phylogenetic position of gymnosperms on the basis of complete chloroplast genomes.
- Metagenomic analysis of rhizospheric bacteria associated with medicinally important plants growing in harsh conditions.
- Role of plant growth promoting bacteria during abiotic stresses ( salinity/drought/ flood/ heavy metal).
- Whole plant genome sequencing and transcriptomics analysis of date palm (Phoenix dactylifera) and pomegranate (Punica granatum) plants.
- The first draft genome and evolutionary history of frankincense producing Boswellia sacra plant.
- Transcriptomic analysis of Date palm during Dubas bug (Ommatissus lybicus Bergevin) infection.
- Molecular responses involved in wound-induced tapping of Boswellia sacra tree for Frankincense.
- Sugar synthesis related genes expression pattern during fruit developmental stages of various Phoenix dactylifera L. cultivars.
- Metabolomic and genetic diversity in frankincense tree populations.

## awards & honors

2019 **Faculty Mentored Undergraduate Research Award Program** University of Nizwa,Oman
Grant to cover the First Chloroplast genomics and barcoding of commiphora foliacea and commophora gileadensis form Dhofar region

2018 **Faculty Mentored Undergraduate Research Award Program** University of Nizwa, Oman
Grant to cover the chloroplast DNA extraction and sequencing of important Omani date palm varieties

2017 **Awarded Brain Korea (BK-21 Plus) fellowship** Kyungpook National University, South Korea
Two year fellowship to pursue research at Kyungpook National University

2014 **Awarded KNU Honour Scholarship for PhD studies** Kyungpook National University, South Korea
Three years scholarship for PhD studies

2012 **Awarded Gold Medal** Kohat University, Pakistan
Awarded a Gold medal and graduated with distinction

## Grants

2021 **Research grant 60,000 USD, as Co- Investigator** The Research Council (TRC) in the Sultanate of Oman
Eco-friendly allelochemistry and plant physiological functions to reduce seeds dispersal and growth inhibition

2020 **Research grant 10,000 USD, as Principal Investigator** The Research Council (TRC) in the Sultanate of Oman
Genomics and molecular evolution of Important Omani Coral reefs species

2018 **Research grant 500,000 USD, as Co-Investigator** The Research Council (TRC) in the Sultanate of Oman
Mechanisms involved in Resin Production from endemic Boswellia sacra Tree in response to wounding and fungal elicitation: Physiological and genomic perspectives

2018 **Faculty Mentored Undergraduate Research Award Program** University of Nizwa, Oman
Grant to cover the chloroplast DNA extraction and sequencing of important Omani date palm varieties

# teaching

2021 **Plant physiology** University of Nizwa
Introduction to plant molecular physiology

2020 **General microbiology and microbiology lab** University of Nizwa
supervise and co-supervise undergraduate students, computational analysis for microbiology

2019 **Introduction to genomics and molecular biology** University of Nizwa
Introduction to microbial genomics and basic analysis

2019 **Introduction to bioinformatics** University of Nizwa
Introduction to bioinformatic, NCBI Blast, download fasta files and sequence alignment.

2018 **Plant microber interaction** University of Nizwa
Introduction to plant microbe interaction and use of plant growth promoting bacteria to alleviate salinity stress.

2018 **Plant physiology and genomics** University of Nizwa
Introduction to phytohormones and secondary metabolites.

2017 **Genome sequencing and analysis of endophytic bacteria** Kyungpook National University
Genome sequencing and analysis of various plant growth promoting endophytic bacteria.

# presentations

2018 **Chloroplast and mitochondrial genome sequencing of Boswellia sacra and its comparative analysis** Oman
Sultan Qaboos Univesity, Oman

2017 **Plant growth promoting rhizospheric bacteria isolated from sand dunes of Pohang coastal area** South Korea
Youth Development Programme for Revolutionary 4-H Agricultural Bio-indutry Scholarship Symposium.

2015 **Specific PCR-based assay for detection of three Xanthomonas species infecting bulbs and flowers.** japan
100th Anniversary Meeting of The Phytopathological Society of Japan

2016 **The complete genome sequence of the plant growth promoting bacterium Sphingomonas taxi LK11** South Korea
International symposium and annual meeting of the KSABC

2014 **Development and application of rapid and sensitive detection of Marssonina ko coronaria causing apple blotch disease by using loop-mediated isothermal amplification assay** South Korea
The Korean society of Plant Pathology

# editorial responsibilities

2019
Review editor in Scientific reports

2018
Review editor in Frontier in Plant Sciences

2017
Review editor in PLOSone

2017
Review editor in Journal of Crop Science and Biotechnology