

# C.V. OF PROF. DR. MUHAMMAD FAISAL

NAME: MUHAMMAD FAISAL  
FATHER'S NAME: MUHAMMAD RAMZAN  
DESIGNATION: PROFESSOR  
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## ACADEMIC QUALIFICATION

STEP	UNIVERSITY/BOARD	YEAR	SUBJECTS
Post-Doc	University of Canberra (Australia)	2008	Environmental Microbiology
Ph.D	University of the Punjab, Lahore, Pakistan	2005	Environmental Microbiology / Botany
M.Sc	University of the Punjab	1997	Botany

## FIELD / SPECIALIZATION

Environmental Microbiology / Biotechnology/ Plant Sciences

## TEACHING EXPERIENCE

DESIGNATION	FROM	TO	WORK PLACE
Professor	28-05-2016	To-date	Department of Microbiology & Molecular Genetics, Punjab University
Assistant Professor (TTS)	16-6-2008	27-05-2016	Department of Microbiology & Molecular Genetics, Punjab University
Assistant Professor (BPS)	23-01-2008	15-06-2008	Department of Microbiology & Molecular Genetics, Punjab University
Lecturer (Full Time)	03-01- 2006	22-01- 2008	Department of Microbiology & Molecular Genetics, Punjab University
Lecturer (Full time)	17-01- 2003	02-01- 2006	Department of Botany, Punjab University
Lecturer (visiting)	Sept 2002	02-01-2006	Department of Microbiology & Molecular Genetics, Punjab University

## THEORY / PRACTICAL COURSES TAUGHT

Principles of Genetics, Microbial Genetics, Quantitative Genetics, Population Genetics, Microbiology, Environmental Bacteriology, Biodegradation & Bioremediation, Environmental Microbiology, Problems in Plant Anatomy, Plant Anatomy, Advanced Plant Anatomy, Microbial

Wastewater treatment, Research Paper Writing skills, Problem based learning in Basic Genetics, Problem based learning in Molecular Genetics, General Genetics, Population Genetics, Atomic absorption spectrophotometry

## RESEARCH INTEREST

1. **M.Sc:** Effect of growth regulators i.e. Indole-3-Acetic Acid & GA<sub>3</sub> on the external and internal morphology of root and hypocotyls of *Phaseolus vulgaris*. L. (Punjab University, Lahore)
2. **Ph.D:** Screening of Chromium Resistant Bacteria for detoxification potential and plant growth stimulation under chromium stresses. (Punjab University, Lahore)
3. **Post Doctorate:** Mechanisms of heavy metal detoxification by bacteria and plants using atomic absorption, ICP-MS. (University of Canberra, Australia)
4. **1996 – to date:** Research work related to Wastewaters treatment, Environmental Microbiology/ Biotechnology, Plant-Microbe-Interaction., Microbial Ecology and phylo-genetics of Extremophiles, Bio-fortification,

## RESEARCH PROJECTS AWARDED

### Completed

Sr. No	Title	Funding agency	Year	Duration	Amount Rs (million)
1	Toxic Cr (VI) Reduction in industrial wastes by Bacterial strains. (PI)	University of the Punjab	2004	01 year	0.17
2	Removal of chromium from tannery effluents by bacteria. (PI)	University of the Punjab	2006	01 year	0.10
3	Reduction of Cr (VI) by Bacterial cytosol. (PI)	DPCC, University of the Punjab,	2007	01 year	0.09
4	Plant-Assisted Bioremediation of Arsenic in the Industrial Effluent. (PI)	University of the Punjab	2008	01 year	0.10
5	Microbiological industrial wastewater treatment and plant growth promotion under heavy metal stress. (PI)	HEC, Pakistan	2008	01 year	0.531
6	Elimination of Carcinogenic Cr (VI) By Microorganisms in Association with Hydrophytes. (PI)	HEC, Pakistan	2007-10	03 year	1.995
7	Modern strategies to combat chromium pollution in industrial effluent. (PI)	HEC, Pakistan	2010	01 year	0.245
8	Study of Diversity of selected bacterial communities present in Hot springs of Himalayan range.	University of the Punjab	2010	01 year	0.125

	(PI)				
9	Study of Desiccation Tolerant Bacteria From Cholistan Desert Pakistan. (PI)	University of the Punjab	2011	01 year	0.150
10	Bioremediation of Chromium and Arsenic from industrial wastewater. (Co-Director).	HEC-USAID	2008-11	03 years	31.28
11	Bacterial transformation of toxic Selenite (IV) to elemental Selenium (0) in wastewater/contaminated soil (PI)	HEC, Pakistan	2010-12	02 years	4.32
12	Functional and Molecular Diversity of <i>Pinus roxburghii</i> Rhizospheric Bacterial Communities (PI)	University of the Punjab	2012	01 year	0.15
13	Isolation and Characterization of Biosurfactant Producing Bacteria from Oil Contaminated Sites (PI)	University of the Punjab	2013	1 year	0.15
14	Detoxification of heavy metal contaminated water by <i>Lemna minor</i> (Duckweed) in association with bacteria (PI)	University of the Punjab	2014	1 year	0.15
15	Isolation and Characterization of selenium nano-particles from selenium resistant bacteria (PI)	University of the Punjab	2015	I year	0.15
16	Microbial degradation of petrol by <i>Bacillus</i> and <i>Enterobacter</i> species	University of the Punjab	2016	I year	0.15
17	Oil degradation potential of bacterial strains from indigenous environment	University of the Punjab	2018	I year	0.15
18	Comparative assessment of biologically and chemically synthesized selenium nanoparticles on wheat growth	University of the Punjab	2019	I year	0.25
19	Industrial application of Bio-surfactant producing bacteria isolated from water and soil	University of the Punjab	2019	I year	0.25

## InProgress

Sr.No	Title	Funding agency	Year	Duration	Amount Rs (million)
01	Bioremediation and removal of Arsenic as Arsenic sulfide by indigenous bacteria	HEC, Pakistan	2019-21	02 Years	4.7

## HEC RECOGNIZE Ph.D RESEARCH SUPERVISOR

Higher Education Commission recommended Ph. D research supervisor in the field of Biological Sciences.

## RESEARCH THESIS SUPERVISED

Status	B.S/M.Sc	M.S/M.Phil	Ph.D	Total
<b>Completed</b>	<b>42</b>	<b>33</b>	<b>05</b>	<b>80</b>
<b>In-progress</b>	<b>00</b>	<b>00</b>	<b>05</b>	<b>05</b>

## B.S/M.Sc Completed

Sr. No.	Name of student	Title	Year
1	Rizwan Ahmad	Effect of domestic wastewater on the chromium reduction ability of <i>Ochrobactrum intermedium</i> , <i>Brevibacterium</i> sp and <i>Bacillus cereus</i> .	2007
2	Imran Afzal	Effect of physiological inhibitors on the chromium reduction ability of <i>Ochrobactrum intermedium</i> , <i>Brevibacterium</i> sp and <i>Bacillus cereus</i> .	2007
3	Madiha Ikram	Biotransformation of selenite (VI) to elemental selenium (Se <sup>0</sup> ) by bacterial strains isolated from agricultural fields	2008
4	Sidra Tayyab Akhtar	Accumulation and reduction of Arsenic by bacteria isolated from industrial effluents	2008
5	Aslam Khan Ghalib	Microbial diversity in the various hot springs of Hunza valley Gilgit, Pakistan	2009
6	Sadia Bano	Ability of thermophilic bacteria to reduce Selenite (IV) and Chromate Cr(VI) into less toxic form	2009
7	Samman Ikram	Estimation of Cr(VI) reduction potential of bacteria isolated from tannery effluent	2009
8	Rida Tariq	Se Biofortification: A modern strategy to combat Se concentration in soil	2010
9	Shaiq Sultan	Isolation and characterization of coal residing Bacteria	2010
10	Anam	<i>Helianthus annuus</i> growth promotion by Se resistant bacterial strains	2010

11	Sobia Aslam	Biodiversity of bacterial flora residing in the rhizosphere of <i>Arachis hypogea</i> from upper Punjab	2010
12	Mehvish Ajaz	Diversity of bacterial population of surface, subsurface and deep soil of Salt Range	2010
13	Komal Amer	Variation in Population Occupancy of Bacterial strains at different Pollution Level	2011
14	Mahvish Akhtar	Effect of UV treatment on the toxin production and metal resistance abilities of <i>Bacillus</i> spp	2011
15	Saima Javed	Biotransformation of Selenite to Elemental Red Selenium by indigenous bacteria	2011
16	Fahima Abdirehman	Isolation and characterization of antibiotic resistance bacteria from polluted soil of Kasur tanneries	2011
17	Sahra Isse Mohammad	Evaluation of Soil Physical and Chemical Properties on the Bacterial Multiple Metal and Antibiotic Resistances	2011
18	Farwa Zubair	Screening of Biosurfactant producing bacteria and their possible role in oil biodegradation	2012
19	Warda Anwar	Isolation and characterization of Biosurfactant bacteria from Oil drilling sites	2012
20	Ayesha Siddiqa	Transformation of selenite to elemental selenium by <i>Bacillus</i> spp	2013
21	Fatima Rehman	Reduction of Cr(VI) by bacterial isolated from metal contaminated soil	2013
22	Kokab Farooq	Characterization of Biosurfactant bacteria and their oil degrading potential	2014
23	Zumar Javed	Isolation and Characterization of Salt Tolerant bacteria from Khewara Salt Mine	2014
24	Hira Hanif	Isolation and characterization of antibiotic resistance bacteria from polluted environment	2014
25	Zona Mukhtar	Comparative assessment of hexavalent chromium reduction by Bacterial strains	2014
26	Sadjang	Characterization of Phosphate solubilizing bacteria from agricultural field	2014
27	Zainab Mir	Degradation of petrol by <i>Bacillus</i> and <i>Enterobacter</i> species	2015
28	Zainab Idrees	Microbial efficacy of phosphate solubilization and their application as biofertilizers	2015
29	Iffrah Atif Malik	Isolation and characterization of auxin producing bacteria and their effect on plant growth	2016
30	Rabisa Zia	Effect of mutagenesis on oil biodegradation ability of bacteria	2016
31	Iqra Alauddin	Phosphate solubilization potential of bacteria and their combined effect on plant growth	2016
32	Rotaba	Isolation, characterization and oil degrading ability of biosurfactant bacteria	2017
33	Amna Tahir	Reduction of selenite (IV) to elemental selenium Se(0)	2017

		by bacteria isolated from polluted environment	
34	Ammara Ghous	Isolation and characterization of selenium resistant/reducing bacterial strains	2018
35	Rubab Naeem	Bacterial detoxification of carcinogenic chromate into less toxic trivalent chromium	2018
36	Saher Naseer	Isolation and characterization of biosurfactant bacterial strains	2018
37	Tayyaba Bhatti	Isolation and characterization of biosurfactant producing bacteria and their role in oil biodegradation	2019
38	Sana Riasat	Characterization of metal detoxification potential of bacterial isolates from polluted sites	2019
39	Bisma Azam	Isolation of hydrocarbonoclastic bacteria from hydrocarbon contaminated sites of Riyadh and Balochistan	2019
40	Gul E Hina	Characterization and mobil oil degradation potential of biosurfactant producing bacteria	2020
41	Fizza Irfan	Petrol degradation study of bacterial isolates under different environmental conditions	2020
42	Isma Afzal	Isolation and characterization of auxin producing bacteria from plant rhizosphere and their role in seed germination	2020

**M.S / M.Phil  
Completed**

Sr. No.	Name of student	Title	Year
1	Shaiza Iftikhar	Enzymatic reduction of carcinogenic chromate by bacterial strains isolated from chromium contaminated environment	2005
2	Sadia Ejaz	Role of Bacterial Strains in Conjunction with Hydrophytes for the removal of carcinogenic chromium	2008
3	Asma Hina	Comparative study of selenium accumulation in bacteria and yeast under different environmental conditions	2008
4	Yousra Saeed Malik	Detoxification of chromium contaminated water by <i>Lemna minor</i> (Duckweed) in association with thermophilic bacteria	2009
5	Fariha Zakaria Rizvi	Role of Heavy metal resistant bacteria for bioremediation of polluted environment	2009
6	Faiz Ahmed Raza	Study of desiccation tolerant bacteria from Cholistan desert, Pakistan	2010
7	Muhammad Yasin	Assessing the phytotoxicity of metal contaminated soil on <i>Helianthus annuus</i> and <i>Zea mays</i> growth	2010
8	Neelam Zia	Detoxification of Selenite to elemental selenium by exopolysacchride producing desert isolates	2010
9	Tayyaba Younas	Comparison of Rhizospheric Bacterial Communities of <i>Pinus roxburghii</i>	2011

10	Huma Nawaz	Screening of Biosurfactant producing Bacteria and their role in Oil Biodegradation	2011
11	Iqra Munir	Phylogenetic analysis of halotolerant L-Glutaminase producing bacteria from Kalar Kahar and their impact on plant growth promotion	2012
12	Munazafa Batool	Diversity of L-Asparaginase producing bacteria from Kallar Kahar Lake and their effect on <i>Vigna radiata</i> growth	2012
13	Samina Yasin	Comparative assessment of chromate reduction in whole cell and cell free extract of <i>Cellulosimicrobium</i> and <i>Exiguobacterium</i>	2013
14	Siddra Maqbool	Reduction of selenite to less bioavailable elemental selenium by bacteria	2014
15	Fatima Rehman	Investigating impact of Lactic Acid Bacteria on Growth of <i>Triticum aestivum</i> L.	2015
16	Kokab Farooq	Effect of biologically and chemically synthesized selenium nanoparticles on growth of <i>Triticum aestivum</i>	2016
17	Aisha Siddiq	Investigation of Selenium biofortification in Lentil by <i>Bacillus</i> species	2016
18	Sidra Masood	Comparative assessment of chromate (VI) and selenite (IV) reduction by <i>Bacillus</i> spp	2017
19	Asma Zafar	Comparative assessment of bacterial isolates (biofertilizers) and chemicals fertilizers on the growth of <i>Triticum aestivum</i> under metal stress	2018
20	Naziah Maqbool	Selenite reduction potential of bacterial strains isolated from polluted soil	2018
21	Rubab Afzal	Reduction of sodium selenite to elemental selenium through microbial consortium (Co-supervisor: CEES, PU)	2018
22	Sameen Arzoo	Comparative assessment of metal resistant / reducing bacteria residing in industrial wastewater (Co-supervisor: CEES, PU)	2018
23	Ali Rehman	Optimization of biosurfactant producing bacterial strains for mobil oil biodegradation	2019
24	Amna Tahir	Synthesis, Characterization and Antimicrobial Activity of Silver Nanoparticles Synthesized from Plant Extracts	2019
25	Haseeba Yousaf	Characterization of Plant Growth Promoting Ability of Phosphate Solubilizing Bacteria	2019
26	Ifra Sohail	Isolation And Characterization of Selenium Degrading Bacteria and Evaluation of Their Biofortification Potential (Co-Supervisor)	2019
27	Amna Bashir	Bacterial selenium nanoparticle: Isolation, characterization and their applications	2020
28	Ifra Rehman	Characterization and application of biosurfactant producing bacteria in food industry	2020
29	Ayesha Sidiqa	Screening, characterization and enzymatic study of starch degrading thermophilic <i>Bacillus</i> spp	2020
30	Ifrah Sakhawat	Isolation and characterization of oil degrading bacteria and their metal resistance profile (Co-supervisor)	2020
31	Ayesha Nawaz	Determination of physical parameters of indigenous isolates and	2020

		their chromium reduction potential (Co-supervisor)	
32	Ummul Hazeefa	Determining the petroleum biodegradation potential of biosurfactant producing bacteria	2021
33	Tayaba Afzal Bhatti	Isolation and characterization of arsenic resistant bacteria and their arsenic removal potential	2021

### Ph.D Completed

Sr. No.	Name of student	Title	Year
1	Saba Riaz	Extended spectrum Beta-lactamases phenotypic and genotypic study	2012
2	Muhammad Yasin	Bacterial Enhanced Se-biofortification: Raising Selenium Contents of Crops in Se-deficient Soils	2015
3	Fariha Zakaria Rizvi	Indigenous chromium resistant bacteria: Some molecular investigation of their chromate detoxification mechanism	2016
4	Huma Nawaz	Functional and genomic diversity of agriculturally important <i>Bacillus</i> from rhizosphere of wheat and maize	2019
5	Iqra Munir	Phosphate Solubilizing Bacteria: Their isolation, characterization and impact on plant growth.	2019

### PH.D THESIS (SUBMITTED)

- **Zain-Ul-Abdeen.** Bacterial Selenium Biofortification: A strategy to improve Selenium content of crops
- **Saima Javed.** Isolation and characterization of biosurfactant producing bacteria and their potential role in oil biodegradation.

### PH.D THESIS IN PROGRESS

- **Ayesha Siddiqa. 2016.** Agronomic biofortification of Selenium in crops using *Bacillus* strains (research work in progress/Thesis writeup)
- **ZiaUllah. 2016.** A multi-gene phylogenetic study of Mushrooms of Upper Swat valley, Khyber Pakhtunkhwa Pakistan. (research work in progress/Thesis writeup)
- **Tahir Mursaleen 2018.** Characterization of selenium reducing bacteria and their potential role in plant growth and bioremediation. (research work in progress)
- **Afifa Israr. 2020.** Antimicrobial and Antioxidant Activity of Nanoparticles from Medicinal Plants and Associated Bacterial Flora.

### M.PHIL/M.SC/B.S THESIS IN PROGRESS

#### RESEARCH CO-SUPERVISED

1. Toheed Ahmad (MSc) 2012: (University of Lahore, Lahore).
2. Riffat Yousof: (B.S) 2012: (Uni of Veterinary and Animal Sciences, Lahore).
3. Rubab Afzal (B.S) 2012-16: (CEES, University of the Punjab)
4. Sameen Arzoo (B.S) 2012-16: (CEES, University of the Punjab)
5. Masooma Ali (B.S) 2017-18: (CEES, University of the Punjab)
6. Tabassum Shoukat (MSc) 2017-18: (CEES, University of the Punjab)
7. Monazza Nasir (MSc) 2017-18: (CEES, University of the Punjab)



8. Maeen Ijaz (MSc) 2017-18: (CEES, University of the Punjab)
9. Rubab Afzal (M.S) 2016-18: (CEES, University of the Punjab)
10. Sameen Arzoo (M.S) 2016-18: (CEES, University of the Punjab)
11. M Haseeb Arif (M.S) 2018-20: (MMG, University of the Punjab)
12. Rafia Mazhar (M.S) 2018-20: (MMG, University of the Punjab)

### ACT AS EDITOR FOR SCIENTIFIC JOURNAL/S

Working as member editorial board of the journal/s

- *BioMed Research International*

### ACT AS REVIEWER FOR SCIENTIFIC JOURNALS

Worked as reviewer for the following National / International Scientific Journals

- *Applied Microbiology and Biotechnology*-----Springer
- *Journal of Microbiology & Biotechnology*-----Korean Soc Microbiol. Biotechnol.
- *Hydrobiologia*-----Elsevier
- *Current Microbiology*-----Springer
- *Journal of Contaminant Hydrology*-----Elsevier
- *International Research Journal of Biotechnology*-----Interjournals Org
- *International Research Journal of Microbiology*-----Hindawi Publishing Co.
- *Journal of Chemistry Materials Sciences*-----Global Research Journals
- *Int. Res. J. Plant Sci*----- Interjournals Org
- *Pakistan Journal of Botany*-----Pak Botanical Soc
- *Journal of the Chemical Society of Pakistan*-----Chem Soc Pakistan
- *International Research Journal of Plant Sciences*---- Interjournals Org
- *Journal of Medicine and Medical Sciences*----- Interjournals Org
- *Journal of Public Health and Epidemiology*----- Academic Journals
- *Journal of Environmental Chemical Engineering*----Elsevier
- *Polish Journal of Environmental Studies*-----Poland
- *Bioremediation Journal*-----Taylor & Francis
- *Plos One*-----PLOS, USA
- *Environmental Geochemistry & Health*-----Springer
- *Plant Physiology and Biochemistry*-----Elsevier
- *Plant Physiology & Biochemistry*-----Elsevier
- *Journal of Infection and Public Health*-----Elsevier
- *Environmental Pollution*

### PUBLICATIONS

#### A) Research Papers

Sr. No	Year	Authors	Title of Paper	Journal Name	Country	IF/ CITES
1	1999	Faisal, M and Hasnain, S.	Gram-negative rod shaped bacteria exhibiting high level Resistance to Chromium	Proc. Pak. Cong. Zoo, 19: 121-132	Pakistan	IF=0 Cite (03)
2	2001	Faisal, M and	Reduction of Toxic Hexavalent	Pakistan Journal	Pakistan	0.800

		Hasnain, S.	Chromium by Bacterial strains isolated from the effluents of tanneries.	of Botany, 33 (SI) 659-672		(04)
3	2002	Faisal, M and Hasnain, S.	Bacterial mediated aerobic reduction of toxic Cr (VI) in industrial effluents.	Pakistan Journal of Microbiology, 2: 27-32.	Pakistan	-- --
4	2003	Faisal, M and Hasnain, S.	Synergistic Removal of Cr (VI) by <i>Eichornia crassipes</i> in conjunction with Bacterial Strains.	Pakistan Journal Biological Sciences, 6 (3): 264-268	Pakistan	-- (21)
5	2003	Faisal, M and Hasnain, S.	Accumulation and Reduction of Cr (VI) in industrial effluent by <i>Bacillus</i> Sp- strain CrM-1.	Pakistan Journal of Botany, 35(5): 797-804	Pakistan	0.800 --
6	2004	Faisal, M and Hasnain, S.	Bacterial Role in the Reduction of Toxic Cr (VI) in to Cr (III).	Chinese Journal of Biotechnology, 20 (5): 774-778	China	--
7	2004	Faisal, M and Hasnain, S.	Microbial Conversion of Cr(VI) in to Cr(III) in Industrial Effluent.	African Journal of Biotechnology, 3 (11): 610-617.	Africa	0.00 (124)
8	2004	Faisal, M and Hasnain, S.	Comparative Study of Cr(VI) Reduction in Industrial Effluent by <i>Ochrobactrum intermedium</i> vs. <i>Brevibacterium</i> sp.	Biotechnology Letters, 26 (21): 1623-1628	U.K	1.977 (65)
9	2004	Faisal, M and Hasnain, S.	Isolation and Characterization of Chromium Resistant Bacteria from Polluted Environment.	An International Journal of Earth and Life Sciences, 2 (4): 38-45	Pakistan	-- --
10	2005	Faisal, M and Hasnain, S.	Chromate Resistant <i>Bacillus cereus</i> improves Sunflower Growth by Reducing the Toxicity of Cr (VI).	Journal of Plant Biology, 48(2): 187-194	Korea	1.529 (28)
11	2005	Faisal, M and Hasnain, S.	Bacterial Cr (VI) reduction concurrently improves <i>Helianthus annuus</i> growth.	Biotechnology Letters, 27(13): 943-947	U.K	1.977 (64)
12	2005	Faisal, M; Hameed, A and Hasnain, S.	Chromium resistant bacteria and cyanobacteria: Impact on Cr(VI) reduction potential and plant growth.	Journal of Industrial Microbiology & Biotechnology, 32(12): 615-621	USA	2.824 (42)
13	2005	Faisal, M and Hasnain, S.	Beneficial role of hydrophytes in removing Cr(VI) from wastewater in association with chromate-reducing bacterial strains <i>Ochrobactrum intermedium</i> and <i>Brevibacterium</i> .	International Journal of Phytoremediation , 7(4): 271-277	USA	2.528 (09)

14	2005	Faisal, M and Hasnain, S.	Colonization of <i>Vigna radiate</i> roots by chromium resistant bacterial strains <i>Ochrobactrum intermedium</i> , <i>Bacillus cereus</i> and <i>Brevibacterium</i> sp.	Chinese Journal of Applied and Environmental Biology, 11(5): 528-530	China	-- (01)
15	2005	Faisal, M and Hasnain, S.	Growth improvements of Sunflower seedlings by Cr(VI)-resistant bacteria.	Iranian Journal of Biotechnology, 3(4): 114-120	Iran	0.973 (07)
16	2005	Faisal, M and Hasnain, S.	Reduction of mobile Cr(VI) under different environmental conditions.	Science International, 27(3): 271-277	Pakistan	-- --
17	2006	Faisal, M and Hasnain, S.	Growth stimulatory effects of <i>Bacillus cereus</i> and <i>Ochrobactrum intermedium</i> on <i>Vigna radiata</i> plants	Letters in Applied Microbiology, 43: 461-466	U.K	2.117 (53)
18	2006	Faisal, M and Hasnain, S.	Colonization of <i>Triticum aestivum</i> and <i>Helianthus annuus</i> roots by chromium resistant bacterial strains <i>Ochrobactrum intermedium</i> , <i>Bacillus cereus</i> and <i>Brevibacterium</i> sp.	Journal of Plant Sciences, 1(1): 36-41	USA	-- (01)
19	2006	Faisal, M and Hasnain, S.	Detoxification of Cr (VI) by <i>Bacillus cereus</i> S-6.	Research Journal of Microbiology, 1 (1): 45-50.	USA	-- (18)
20	2006	Faisal, M and Hasnain, S.	Plant growth promotion by <i>Brevibacterium</i> under chromium stress.	Research Journal of Botany, 1(1): 24-29.	USA	-- (09)
21	2006	Faisal, M and Hasnain, S.	Hazardous impact of chromium on environment and its appropriate remediation	Journal of Toxicology and Pharmacology, 1(3): 248-258	USA	-- (12)
22	2007	Iftikhar, S., Faisal, M and Hasnain, S.	Cytosolic reduction of Toxic Cr(VI) by indigenous Microorganism.	Research Journal of Environmental Sciences, 1(2): 77-81	USA	-- (12)
23	2007	Iqbal, U., Mehmood, S., Faisal, M and Hasnain, S.	Chromosomal analysis of girls with short stature and puberty failure.	Trends in Medical Research, 2(4): 204-207	USA	-- (02)
24	2007	Anwar, S., Sabri, A.N., Rehman, H., Faisal, M and Hasnain, S.	Impact of Temperatures and pH on Soluble Protein Content and Protein Profile of PY79 (Wild Type) and Sporulation Defective Mutant Strains of <i>Bacillus</i> .	Research Journal of Microbiology, 2(11): 866-870	USA	-- (01)
25	2007	Zaidi, S., Yasmin, A.,	Inoculation effect of bacteria isolated from <i>Trianthema</i>	World Journal of Agricultural	Pakistan	-- (01)

		Faisal, M and Hasnain, S.	<i>partulacastrum</i> , <i>Rumex dentatus</i> , and <i>Coronopus Didymus</i> plants on <i>Vigna radiata</i> seedlings.	Sciences, 3 (6): 796-800		
26	2008	Muhammad, K., Yasmin, A., Rehman,H, Faisal, M and Hasnain, S.	Growth responses of <i>Vigna radiata</i> to arid land bacteria exhibiting antimicrobial activity.	Research Journal of Environmental Sciences, 2(2): 139-144	USA	-- --
27	2010	Afrasyab, S, Faisal, M and Hasnain, S.	Comparative study of Wild and transformed salt tolerant bacterial strains on <i>Triticum aestivum</i> growth under salt stress.	Brazilian Journal of Microbiology, 41 (4): 946-955.	Brazil	2.428 (22)
28	2010	Ikram, M and Faisal, M.	Comparative assessment of selenite (SeIV) detoxification to elemental selenium (Se0) by <i>Bacillus</i> sp.	Biotechnology Letters 32: 1255-1259	U.K	1.977 (31)
39	2010	Riaz, S, Faisal, M and Hasnain, S	<i>Cicer arietinum</i> growth promotion by <i>Ochrobactrum intermedium</i> and <i>Bacillus cereus</i> in the presence of CrCl <sub>3</sub> and K <sub>2</sub> CrO <sub>4</sub> .	Annals of Microbiology, 60: 729-733.	Italy	1.528 (10)
30	2011	Rehman, Y., Rizwan, M., Faisal, M and Hasnain, S.	Seasonal Effects of Domestic Wastewaters on the Cr (VI) Reduction Potential of <i>Bacillus cereus</i> S-6 and <i>Ochrobactrum intermedium</i> CrT-1.	Biology and Environment, 111 (1): 33-40.	Ireland	0.654 (05)
31	2011	Riaz, S., Faisal, M., Hasnain, S.	Antibiotic susceptibility pattern and multiple antibiotic resistances (MAR) calculation of extended spectrum β-lactamase (ESBL) producing <i>Escherichia coli</i> and <i>Klebsiella</i> species in Pakistan	Afr. J Biotechnol, 10(33):6325-6331	Africa	0.573 (34)
32	2011	Riaz, S., Faisal, M., Hasnain, S and Khan, N.A.	Antibacterial and Cytotoxic Activities of <i>Acacia nilotica</i> Lam (Mimosaceae) Methanol Extracts Against Extended Spectrum Beta-Lactamase Producing <i>Escherichia coli</i> and <i>Klebsiella</i> Species	Tropical Journal of Pharmaceutical Research, 10(6):785-791	Nigeria	0.504 (11)
33	2012	Riaz, S., Faisal, M., Hasnain, S.	Prevalence and comparison of Beta-lactamase producing <i>E. coli</i> and <i>Klebsiella</i> spp from clinical and environmental sources in Lahore, Pakistan.	Afr J Microbiol Res, 6(2): 465-470.	Africa	0.539 (23)
34	2012	Sheik, CK., Mitchell, T.W., Rizvi, F.Z.,	Exposure of soil microbial communities to Chromium and Arsenic alters their diversity and	Plos One 7(6): 1-13. e40059.	USA	2.740 (125)

		Faisal, M., Hasnain, S., McInerney, M.J, and Krumholz, L.R.	structure.	doi:10.1371/journal.pone.0040059		
35	2012	Kiran, M., Afrasayab, S., Abbas, Z., Faisal, M. and Hasnain, S.	Plant growth promoting capability of <i>Azotobacter</i> as mono and mix culture on <i>Vigna radiata</i>	Afr J Microbiol Res, 6: 1291-1296.	Africa	0.539 (03)
36	2012	Yasin, M and Faisal, M.	Comparative analysis of tannery-effluent contaminated soil and mixed culture bacterial inoculation on <i>Helianthus annuus</i> L. growth	Journal of Chemical Society of Pakistan 34(6): 1573-1577	Pak	0.300
37	2012	Sultan, S., Mubashar, K and Faisal, M.	Uptake of toxic Cr (VI) by biomass of exo-polysaccharides producing bacterial strains	Afr J Microbiol Res, 6: 3329-3336.	Africa	0.539 (14)
38	2013	Yasin, M and Faisal, M.	Assessing the phytotoxicity of tanneries waste contaminated soil on <i>Zea mays</i> (Lin) growth.	Polish Journal of Environmental Studies 22(6):1871-1876.	Poland	1.383 (04)
39	2013	Ejaz, S., F.Z.Rizvi, S, Anwar. Faisal, M.	Biotransformation potential of hexavalent chromium by <i>Bacillus pumilus</i> -S4, <i>Pseudomonas doudoroffii</i> -S5 and <i>Exiguobacterium</i> -S8 in association with hydrophytes	International Journal of Environmental Science and Technology, 10: 709-718.	Iran	2.540 (05)
40	2013	Yasir, R., Rizvi, F.Z., Faisal, M and Hasnain, S	Arsenic and Chromium Reduction in Co-Cultures of Bacteria Isolated from Industrial Sites in Pakistan	Microbiology, 82(4): 428-433.	Russia	0.945 (11)
41	2013	Yasin, M., Faisal, M and Sultan, S.	Growth responses of <i>Triticum aestivum</i> after inoculating with <i>Pseudomonas</i> and <i>Stenotrophomonas</i>	Afr J Microbiol Res, 7: 1952-1956.	Africa	0.0 (02)
42	2013	Reza, F.A and Faisal, M	Growth promotion of maize by desiccation tolerant <i>Micrococcus luteus</i> -chp37 isolated from Cholistan desert, Pakistan	Australian Journal of Crop Sciences, 7(11):1693-1698.	Australia	0.00 (16)
43	2013	Faisal, M	Inoculation of Plant Growth Promoting Bacteria <i>Ochrobactrum intermedium</i> , <i>Brevibacterium</i> sp. and <i>Bacillus cereus</i> Induce Plant Growth Parameters	Journal of Applied Biotechnology, 1:45-53	USA	0.00 (07)
44	2013	Anam, Qureshi, A.H and Faisal,	Beneficial impact of selenium resistant bacteria on selenium	Punjab University Journal of	Pak	0.00

		M	contaminated soil and plant growth	Zoology, 28(2): 55-60		
45	2014	Ghalib, AK, Yasin, M., Faisal, M	Characterization and Metal Detoxification Potential of Moderately Thermophilic <i>Bacillus cereus</i> from Geothermal Springs of Himalaya	Brazilian Archive of Biology and Technology, 57: 554-560.	Brazil	0.579 (04)
46	2014	Yasin, M., Faisal, M	Comparative effect of Selenium and Selenium tolerant microbes on <i>Brachiaria reptans</i> L. growth	Pakistan Journal of Botany, 46(6): 2293-2296.	Pak	0.800 --
47	2014	Faisal, M	Detoxification of carcinogenic Cr (VI) by combined action of <i>Bacillus pumilus</i> -S4 and <i>Pseudomonas doudoroffii</i> -S5 in associated with hydrophytes	Journal of Pure & Applied Microbiology, 8(6): 4289-95.	India	0.073 --
48	2014	Siddiqa, A., Sultan, S and Faisal, M	Selenite detoxification by <i>Bacillus</i> spp isolated from indigenous polluted sites	Journal of Environment & Earth Sciences, 4: 196-201.	China	
49	2015	Yasin, M., El-Mehdawi, AF., Jahn, CE., Anwer, A., Turner, MFS., Faisal, M and Pilon-Smith, EAH	Seleniferous soils as a source for production of selenium-enriched foods and potential of bacteria to enhance plant selenium uptake	Plant and Soil, 386(1): 385-394.	Netherland	3.299 (31)
50	2015	Naseem, S. Yasin, M., Ahmed, A and Faisal, M	Chromium accumulation and toxicity in Corn ( <i>Zea mays</i> L.) seedling	Polish Journal of Environmental Studies 24(2): 899-904.	Poland	1.383 (02)
51	2015	Yasin, M., El-Mehdawi, A., Anwar, A., Elizabeth Pilon-Smiths and Faisal, M	Microbial-enhanced selenium and iron biofortification of wheat ( <i>Triticum aestivum</i> L.)- applications in phytoremediation and biofortification	International Journal of Phytoremediation , 17(4):339-341.	USA	2.528 (40)
52	2015	Yasin, M., El-Mehdawi, AF., Pilon-Smith, EAH and Faisal, M	Selenium-fortified wheat: Potential of microbes for biofortification of selenium and other essential nutrients	International Journal of Phytoremediation , 17(8): 777-786.	USA	2.528 (13)
53	2015	Rehman, F and Faisal, M	Estimation of toxic hexavalent chromium reduction potential of <i>Bacillus pumilis</i> , <i>Cellulosimicrobium cellulans</i> and	Chinese Journal of Oceanology and Limnology, 33: 585-589.	China	1.068 (06)

			<i>Exiguobacterium</i>			
54	2015	Younis, T and Faisal, M.	Functional and genomic diversity of <i>Pinus roxburghii</i> rhizospheric bacteria and their potential role in plant growth promotion.	Research Journal of Biotechnology, 10(3): 54-61.	India	0.242 --
55	2015	Reza, F.A., Amin, A and Faisal, M	Characterization of desiccation tolerant rhizobacteria from Cholistan desert, Pakistan: Their impact on growth of <i>Zea mays</i> L	Polish Journal of Environmental Studies, 24(4): 223-231.	Poland	1.383 ---
56	2015	Ahmad, T., Faisal, M., Iqbal, S., Khalil, M and Qazi, M.H	Factors affecting detoxification of hexavalent chromium into trivalent in industrial effluents by indigenous bacteria	Journal of Environment and Earth Science, 5(15): 111-118.	China	--
57	2015	Javed, S., Sarwar, A., Tassawar, C. and Faisal, M	Conversion of selenite to elemental selenium by indigenous bacteria isolated from polluted areas	Chemical Speciation & Bioavailability, 27(4): 162-168.	U.K	2.077 (04)
58	2016	Akhtar, M., Siddiq, A and Faisal, M	Impact of UV treatment on Exotoxin production by <i>Bacillus</i> species	Research Journal of Biotechnology, 11(9): 8-15.	India	0.242 --
59	2016	Rizvi, F.Z., Kanwal, W., Faisal, M	Chromate reducing profile of bacterial strains isolated from industrial effluents of Punjab, Pakistan	Polish Journal of Environmental Studies, 25(5):1-8	Poland	1.383 (04)
60	2016	Sultan, S and Faisal, M	Isolation and Characterization of Iron and Sulfur Oxidizing Bacteria from Coal Mines	Journal of Environment and Earth Sciences, 6(3): 153-157	China	--
61	2016	Nasim, S., Yasin, M., Faisal, M and Ahmed, A	Comparative Study of Plant Growth Promoting Bacteria in Minimizing Toxic Effects of Chromium on Growth and Metabolic Activities in Wheat ( <i>Triticum aestivum</i> )	Journal of Chemical Society of Pakistan, 38(3): 509-516	Pak	0.300 (01)
62	2017	Nawaz, H and Faisal, M	Diversity of <i>Bacillus</i> sp. isolated from rhizosphere of Corn and Wheat for their use as potential plant growth promoting bacteria	Research Journal of Biotechnology, 12(3): 53-59.	India	0.242
63	2018	Khan, WA., Yasin, NA., Ahmad, SR., Ali, A., Ahmad, A., Faisal, M	Role of <i>Burkholderia cepacia</i> CS8 in Cd-stress alleviation and phytoremediation by <i>Catharanthus roseus</i>	International Journal of Phytoremediation, 20(6):581-592	USA	2.528 (03)
64	2018	Mehmood U and Faisal, M	Bacterial flora of <i>Arachis hypogea</i> plants from Punjab Pakistan	Int J Sci Basic Appl Res, 40(2):	-	-

				78-86.		
65	2019	Bano, A., Munir, I and Faisal, M	Impact of Phosphate Solubilizing Bacteria on Wheat ( <i>Triticum aestivum</i> ) In The Presence of Pesticides	Brazilian Journal of Biology, 79 (1): 29-37.	Brazil	1.266
66	2019	Ullah, Z., Jabeen, S., Faisal, M., Ahmad, H and Khalid, AN	<i>Leucoagaricus brunneus</i> sp. nov. from Khyber Pakhtunkhwa, Pakistan	Mycotaxon, 134: 601-611.	USA	0.538
67	2020	Shahid, S., Aslam, M.A., Ali, S., Zameer, M., Faisal, M	Self-Healing of cracks in Concrete using <i>Bacillus</i> strains encapsulated in Sodium alginate beads	ChemistrySelect, 5: 312-323	Europe	1.811
68	2020	Ullah,Z; Khurshed, R; Khan, MB; Ahmad, I; Jabeen, S; Faisal, M; Ahmad, H; Fiaz, M; Khalid, AN.	<i>Melanoleuca kashmirensis</i> sp. nov. in subg. Urticocystis from Pakistan	Phytotaxa, 434 (1): 89-100	New Zealand	1.007
69	2020	Rehman A, Anam, Saleem H, Tariq H, Javed S, Faisal M.	Selenium resistant bacteria enhance <i>Zea mays</i> growth parameters under selenium stress	Abasyn Journal of Life Sciences 2020; 3(2): 164-174.	Pak	
70	2021	Ayesha, S., Munir, R and Faisal, M	Antitumor effect of sodium selenite on acute lymphocytic leukemia	Journal of Cancer Research and Therapeutics, 17(1): 266-268	India	1.326
71	2021	Zaheer, A., Munir, I and Faisal, M	Diversity of Phosphate Solubilizing Bacteria and their plant growth promoting attributes for the maintenance of sustainable agriculture system	Polish Journal of Environmental Studies (Accepted)	Poland	1.383
72	2021	Ziaullah, Jabeen, S., Zainab., Bashir, H., Faisal, M., Ahmad, H and Khalid, A.N	<i>Pholiota malakandensis</i> sp. Nov., in subg. Flammuloides from Pakistan	Nova Hedwigia, 113(1-2): 229-241		1.0

**Total Cites: 1000+**

**IF= 59.317**

## B) Research Paper/s in Proceedings



1. Neelam Zia and Muhammad Faisal. 2014. Detoxification of Selenite to Elemental Selenium by Exo-polysaccharides producing desert isolates. pp. 690-697. *EurAsia Waste Management Symposium, 28-30 April 2014, YTU 2010 Congress Center, İstanbul/Türkiye.*

**C) Book/s**

1. Huma Nawaz and Muhammad Faisal. 2012. Biosurfactant producing Bacteria: Screening and role in oil biodegradation. ISBN 978-3-659-16195-7. LAP Lambert Academic Publishing

**D) Book Chapters in International Books (Springer, Elsevier, Taylor & Francis)**

<u>S. No</u>	<u>Year</u>	<u>Title of Chapter</u>	<u>Publisher</u>
1	2007	Afrasyab, S; Faisal, M and Hasnain, S. 2007. Induction of Salinity Tolerance in Plants through Indigenous Bacteria. Applications of Biotechnology Published by Avishankar Publisher India	Avishankar
2	2014	Muhammad Yasin, Muhammad Faisal and E.A.H. Pilon-Smits. 2013. Microbial-enhanced selenium biofortification of Wheat ( <i>Triticum aestivum</i> L.). In: Selenium in the environment and human health (Gary S. Banuelos, Zhi-Qing Lin, Xuebin Yin), CRC Press, Taylor & Francis Group, USA. ISBN 978-1-138-00017-9.	Taylor & Francis
3	2016	Yasin M, El-Mehdawi AF, Faisal M. & Pilon-Smits EAH. 2015. Microbe-assisted selenium phytoremediation and phyto-management of natural seleniferous areas. Eds: Gary S. Banuelos et al. Selenium in the environment and human health. CRC Press 2015. pp 199-200, ISBN-978-1-138-02731-2. DOI:10.1201/b19204-101	Taylor & Francis
4	2016	Muhammad Yasin, Iqra Munir and Muhammad Faisal. 2016. Can <i>Bacillus</i> spp enhance K <sup>+</sup> uptake in crops species pp163-170. In: Potassium Solubilizing Microorganisms for Sustainable Agriculture, V.S. Meena <i>et al.</i> (eds). Springer 2016. DOI 10.1007/978-81-322-2776-2_12	Springer
5	2016	Iqra Munir and Muhammad Faisal. 2016. Plant Growth Promoting Bacteria: A good source for phytoremediation of metal contaminated soil. In: Phytoremediation. Management of Environmental Contaminants, Volume 4. By AA Ansari, SS Gill, R Gill, GR Lanza, L Newman. Springer ISBN 978-319-41810-0	Springer
6	2017	Zain ul Abadin, Muhammad Yasin and Muhammad Faisal. 2017. Bacterial mediated Selenium Biofortification of <i>Triticum aestivum</i> : A strategy for improvement in Selenium phytoremediation and Biofortification. pp 299-315. In: Agriculturally Important Microbes for Sustainable Agriculture, Vol-I Plant Soil Microbe Nexus. ISBN 978-981-10-5588-1. Springer Nature Singapore Pve Ltd, 2017.	Springer
7	2018	Hera Naheed Khan and Muhammad Faisal. 2018. Phytoremediation of industrial wastewater by hydrophytes. In: Phytoremediation: Management of Environmental Contaminants Vol-6 by Ansari et al. pp. 179-200. Springer. DOI: 10.1007/978-3-319-99651-6	Springer
8	2018	Ayesha Siddiqa and Muhammad Faisal. 2018. Phytoremediation of chromium polluted soil using plants in conjunction with	Springer

- microbes. *In: Phytoremediation: Management of Environmental Contaminants Vol-6* by Ansari et al. Springer. DOI: 10.1007/978-3-319-99651-6
- 9      2020      Ayesha Siddiqa and Muhammad Faisal, 2020. Heavy Metals: Source, toxicity mechanisms, health effects, nanotoxicology and their bioremediation. pp. 117-142. *In: Contaminants in Agriculture: Sources, Impacts and Management* Naeem et al. Eds Springer. <https://doi.org/10.1007/978-3-030-41552-5>. ISBN 978-3-030-41551-8      **Springer**
- 10      2020      Hera Naheed Khan and Muhammad Faisal, 2020. Planning and engineering strategies of agricultural wastes and their remediation strategies. pp. 219-232. *In: Contaminants in Agriculture: Sources, Impacts and Management* Naeem *et al.* Eds Springer. <https://doi.org/10.1007/978-3-030-41552-5>. ISBN 978-3-030-41551-8      **Springer**
- 11      2021      Ayesha Siddiqa and Muhammad Faisal. 2021. Microbial degradation of organic pollutants using indigenous bacterial strains. Pp. 625-637. *In: Handbook of Bioremediation; Physiological, Molecular and Biotechnological Interventions*, Mirza, H., M.N.V Prasad 1<sup>st</sup> Eds, Elsevier. ISBN 9780128193839      **Elsevier**
- 12      2021      Uqba Mahmood and Muhammad Faisal. 2021. Materialization of CO<sub>2</sub> from distilleries in Algae based biofuel and biomass. *In: Sustainable Ethanol and Climate Change*. Muhammad Arshad Eds. Springer. <https://doi.org/10.1007/978-3-030-59280-6>. ISBN 978-3-030-59279-0      **Springer**

## BACTERIAL CULTURE COLLECTION

### **Chromium and Arsenic Resistant Strains**

*Acinetobacter* sp. AsK07 Accession No. GQ503319; *Bacillus megaterium* strain AsK08 Accession No. GQ503320; *Pontibacter korensis* strain AsK09 Accession No. GQ503321; *Bacillus* sp. AsK15 Accession No. GQ503322; *Bacillus subtilis* strain AsK18 Accession No. GQ503323; *Bacillus licheniformis* strain AsK03 Accession No. GQ503324; *Exiguobacterium* sp. AsK04 Accession No. GQ503325; *Bacillus pumilus* strain CrK08 Accession No. GQ503326; *Staphylococcus pasteurii* strain CrK14 Accession No. GQ503327; *Cellulosimicrobium cellulans* strain CrK16 Accession No. GQ503328; *Bacillus cereus* strain CrK20 Accession No. GQ503329; *Exiguobacterium* sp. CrK19 Accession No. GQ503330; *Bacillus licheniformis* strain CrK21 Accession No. GQ503331

### **Biosurfactant producing / Oil degrading Strains**

*Enterobacter* sp. S1-8 Accession No. JN565979; *Acinetobacter* sp. S5-1 Accession No. JN544140; *Pseudomonas stutzeri* S7-13 Accession No. JN565980  
*Staphylococcus* sp- Z1, *Enterobacter aerogenes*- Z3, *Enterobacter asburiae*- Z4, *Bacillus cereus*- Z5, *Bacillus anthracis*- Z6; *Pseudomonas aeruginosa*-S1, *Pseudomonas aeruginosa*-SC, *Enterobacter cloacae*-SF, *Pseudomonas aeruginosa*-M13

### **Plant Growth Promoting Strains**

*Pseudomonas aeruginosa* PRM1 Accession No. JN544141; *Bacillus cereus* strain PRM2 Accession No. JN544142; *Exiguobacterium acetylicum* strain PRM3 Accession No. JN544143; *Comamonas* sp.-PRM4

Accession No. JN544144; *Exiguobacterium acetylicum*- PRM5 Accession No. JN544145; *Pseudomonas mendocina* -PRM6 Accession No. JN544146; *Bacillus licheniformis*- PRM7 Accession No. JN544147; *Acinetobacter* sp.- PRM8 Accession No. JN544148; *Lysinibacillus* sp.- PRM9 Accession No. JN544149; *Enterobacter* sp.- PRL1 Accession No. JN544150; *Bacillus subtilis* -PRL2 Accession No. JN544151; *Bacillus simplex* - PRL3 Accession No. JN544152; *Bacillus* sp.- PRL4 Accession No. JN544153; *Exiguobacterium* sp.- PRL5 Accession No. JN544154; *Bacillus* sp.- PRL6 Accession No. JN544155; *Pseudomonas* sp.- PRL7 Accession No. JN544156; *Pantoea* sp.- PRL8 Accession No. JN544157; *Pseudomonas aeruginosa* - PRL9 Accession No. JN544158; *Chryseobacterium gleum*- PRR1 Accession No. JN544159; *Bacillus pumilus* - PRR2 Accession No. JN544160; *Acinetobacter lwoffii*- PRR3 Accession No. JN544161; *Bacillus pumilus*- PRR4 Accession No. JN544162; *Acinetobacter* sp. - PRR5 Accession No. JN544163; *Brevibacillus laterosporus*- PRR6 Accession No. JN544164; *Pseudomonas aeruginosa* - PRR7 Accession No. JN544165

*Bacillus subtilis*- CSH27, *Bacillus cereus*- Cu47, *Bacillus axarquiensis*- CF18, *Bacillus* sp.- CSH23, *Bacillus safensis*- CN17, *Bacillus cereus*- CMS17, *Bacillus endophyticus*- CU33, *Bacillus subtilis*- CN2, *Bacillus pumilis*- CSH7, *Bacillus cereus*- CMS7, *Bacillus pumilis*- CSH4, *Bacillus subtilis*- WRY23, *Bacillus* sp- WM3, *Bacillus cereus*- WSK9, *Bacillus anthracis*- WUS2, *Bacillus thuringiensis*- WG5, *Bacillus anthracis*- WFS6, *Bacillus amyloliquefaciens*- WSH8, *Bacillus* sp.- WG1, *Bacillus anthracis*- WRY1, *Bacillus subtilis*- WRY11, *Bacillus cereus*- WFS20, *Bacillus subtilis*- WL22, *Bacillus anthracis*- WSH13, *Bacillus subtilis*- WSK11, *Bacillus pseudomycooides*- WSK6

#### **Selenium Resistant Plant Growth Promoting Strains**

*Bacillus foraminis*-YAK-1 Accession No. JX203248; *Bacillus thuringiensis* serovar finitimus-YAK2 Accession No. JX203249; *Bacillus licheniformis*-YAK4 Accession No. JX203250; *Proteus penneri*-YAK6 Accession No. JX203251; *Bacillus endophyticus*-YAK7 Accession No. JX203252; *Bacillus licheniformis*-YAP1 Accession No. JX203253; *Bacillus cereus*-YAP6 Accession No. JX203254; *Bacillus licheniformis*-YAP7 Accession No. JX203255; *Bacillus endophyticus*-YAM1 Accession No. JX203256; *Bacillus pichinotyi*-YAM2 Accession No. JX203257; *Bacillus jeotgali*-YAM3 Accession No. JX203258; *Bacillus licheniformis*-YAM4 Accession No. JX203259

#### **Salt Tolerant Plant Growth Promoting Strains (Soil)**

*Exiguobacterium profundum*-B9 Accession No. JX112643; *Bacillus pumilus*-B10 Accession No. JX112644; *Pseudomonas* sp.-B12 Accession No. JX112645; *Pseudomonas stutzeri*-B15 Accession No. JX112646; *Bacillus licheniformis*-B16 Accession No. JX112647; *Bacillus subtilis*-B18 Accession No. JX112651; *Bacillus flexus*-B32 Accession No. JX112648; *Bacillus* sp.-B33 Accession No. JX112649; *Pseudomonas fluorescens*-IM12 Accession No. JX112652; *Bravibacterium fugoritolerans*-IM20 Accession No. JX112650

#### **Salt Tolerant Plant Growth Promoting Strains (Water)**

*Pseudomonas mandocina*-SM05 Accession No. JX102498; *Pseudomonas pseudoalcaligenes*-M10 Accession No. JX105525; *Microbacterium* sp.-M18 Accession No. JX105526; *Pseudomonas stutzeri*-M19 Accession No. JX105527; *Sphingobacterium* sp.-M30 Accession No. JX102496; *Pseudomonas* sp.-M39 Accession No. JX105528; *Bacillus pumilis*-M45 Accession No. JX102495; *Bacillus subtilis*-M50 Accession No. JX102497; *Bacillus licheniformis*-B37 Accession No. JX105529

#### **Lactic acid bacteria**

*Lactobacillus fermentum*- F1, *Lactobacillus brevis*- F3

#### **Phosphate solubilizing bacteria (Soil)**

*Pseudomonas putida*- Rad-2, *Acinetobacter baumannii*- JA-10, *Pseudomonas oryzihabitans*- Sud-F, *Pseudomonas fulva*- Ros-1, *Pseudomonas aeruginosa*- R-15, *Acinetobacter* sp- L-6, *Pseudomonas frederiksbergensis*- L-22, *Acinetobacter* sp- S6-2, *Pseudomonas* sp- Ros-2, *Pseudomonas koreensis*- L-20, *Ochrobactrum haematophilum*- M-6, *Pseudomonas putida*- SL8, *Enterobacter aerogenes*- W-96, *Pseudomonas* sp- UPG

## **Biosurfactant producing bacteria**

*Staphylococcus hominis*-F1 Accession No. MT107124; *Staphylococcus* sp.F9 Accession No. MT107125; *Staphylococcus hominis*-F19 Accession No. MT107126; *Paenibacillus* sp.S6 Accession No. MT107127; *Paenibacillus lactis*-SJ1 Accession No. MT107128; *Bacillus safensis*- SJ4 Accession No. MT107129; *Bacillus paranthracis*- SJ10 Accession No. MT103046; *Vagococcus fluvialis*- SJ12 Accession No. MT103047; *Bacillus flexus*- SJ15 Accession No. MT103048; *Bacillus altitudinis*- SJ17 Accession No. MT103049; *Bacillus* sp. SJ19 Accession No. MT103050; *Bacillus flexus*- SJ20 Accession No. MT103051; *Bacillus oceanisediminus*- SJ32 Accession No. MT103052; *Sporosarcina saromensis*- SJ36 Accession No. MT103053; *Bacillus cereus*- SJ37 Accession No. MT103054; *Staphylococcus haemolyticus*- SJ39 Accession No. MT103055; *Bacillus pumilus*- SJ40 Accession No. MT103056; *Bacillus flexus*-SJ41 Accession No. MT103057; *Pseudomonas aeruginosa*-SU2 Accession No. MT093463; *Sporosarcina saromensis*-U8 Accession No. MT103058

## **AWARDS/ HONORS**

1. Awarded Government Merit Scholarship, Rawalpindi Division (on basis of result of Intermediate Exam. 1992).
2. Awarded Flemish Inter University Scholarship to participate in the summer course Sustainable water management and Technology in Urbanized areas, 2006, in the University of Antwerp, Belgium/Europe.
3. Awarded Presidential Young Innovator Award (PYI) (year 2007) by the Higher Education commission, Islamabad, Pakistan.
4. Awarded Endeavor Post-Doctorate Research Fellowship by the Australian Government Department of Education, Science and Training (DEST) for the year 2008.
5. Awarded performance based incentive and honorarium in the years 2012, 2013, 2014, 2015, 2016 by the University of the Punjab, Lahore.

## **COURSES/TRAINING**

- Certificate course in Spreadsheet Management (Computer), 1998, Department of Mathematics, University of The Punjab, Lahore
- Sustainable Water Management and Technology, Belgium
- Chemical Safety and Security Officer Training, Bangkok
- “Indigenous on-campus Faculty Training Program” for faculty, PU, Lahore

## **MEMBERSHIPS**

1. Member, Botanical Society of Pakistan (1998-2002, 2011).
2. Member, Biological Society of Pakistan (2002).
3. Member, Zoological Society of Pakistan (1998-2001).
4. Member, Pakistan Society for Biochemistry and Molecular Biology (2003).
5. Member, Environment Protection Society
6. Member, Pakistan Society for Microbiology (2000)
7. Member, Society for General Microbiology, U.K (2009-todate). Membership No: C025749
8. Member, American Society for Microbiology (2018-todate)
9. Member, Asia-Pacific Chemical, Biological & Environmental Engineering Society

## **PROFESSIONAL ACTIVITIES**

1. Worked as Hostel Assistant Superintendent (2004-2006).
2. Member, Admission Committee Botany Department, PU, (2004-2006).
3. Member, Admission Committee MMG Department, PU, (2006-todate).

4. Incharge M.S/M.Phil/Ph.D program MMG Department, PU, (2008-todate)
5. Member, Department Doctoral Program Committee, MMG Department, PU, (2008-todate)
6. Member Board of Faculty of Life Sciences, Punjab University (2010-2013) (2018- todate)
7. Member, Board of Studies of Genetics, Hazara University Mansehra, K.P (2011-2014, 2014-2017)
8. Member, Board of Studies of Center for Human Genetics, Hazara University Mansehra, K.P (2015-2018)
9. Member, Board of Study in Microbiology & Molecular Genetics, The Women University Multan
10. Member, Purchase Committee, Department of MMG, P.U (2009- todate).
11. Member, Board of Studies in Microbiology & Molecular Genetics, MMG (2011-2014) (2018-todate)
12. Member, Board of Studies Microbiology and Molecular Genetics, Okara University (2021-todate)
13. Member, Board of Studies Biological Sciences, UMT University Lahore (2019-todate)
14. Secretary/Member, Doctoral Program Coordination Committee, University of the Punjab, Lahore. (2017-2019)
15. Member Senate, University of the Punjab, Lahore (2018-todate)
16. Member, Academic Council, University of the Punjab, Lahore (2018-todate)

#### **CONFERENCE / SEMINAR / WORKSHOPS ATTENDED/PARTICIPATED /INVITED**

1. Participated in the 18<sup>th</sup> congress of Zoology, held at Department of Zoology, University of Punjab, Lahore on 20-22 April, 1998.
2. Participated in the 6<sup>th</sup> National Conference of Plant Scientists, held at Department of Botany, University of Peshawar, Peshawar, on 20-22 October, 1998.
3. Participated in the 19<sup>th</sup> Congress of Zoology, held at National Agricultural Research Council, Islamabad on 19-21 April, 1999.
4. Participated in the 2<sup>nd</sup> National Symposium on Practical Applications of Plant tissue Culture and Genetic Engineering, NARC, Islamabad, 1-3 June, 1999.
5. Participated in the Third International Biennial Conference of Pakistan Society for Microbiology, held on March 28-30 2000 at PC hotel, Lahore.
6. Participated in the 2<sup>nd</sup> International Science Conference, 26-28 October 2000, at University of the Punjab, Lahore.
7. Participated in the 7<sup>th</sup> National Conference of Plant Scientists 12-14 Nov, 2000, Botany Department, Punjab University, Lahore.
8. Participated in the 1<sup>st</sup> National Conference of Biology 28-30 March, Botany Department, Government College University, Lahore, 2002.
9. Participated in the 8<sup>th</sup> National Conferences of Plant Scientists 24-28 February, Botany Department, Karachi University, Karachi, 2003.
10. Participated in the 7<sup>th</sup> International Conference “Trends in Biochemistry and Molecular Biology” Organized by Pakistan Society for Biochemistry and Molecular Biology 2-5 April, 2003, held in the Institute of Biochemistry and Biotechnology, University of the Punjab, Lahore.
11. Attended International Conference on Environmental Challenges held 11-13 March 2004, at Department of Environmental Sciences, University of Peshawar.
12. Participated in three days workshop on “Identification, Maintenance and Preservation of Microorganisms” held 10-12 May 2004 organized by Microbiology Laboratory, Quaid-e-Azam University Islamabad.
13. Participated in the Workshop on “College Teacher Training in Genetically Techniques” held July 2004 organized by Microbial & Molecular Genetics Laboratory, University of the Punjab, Lahore.
14. Participated in the International Symposium on “Salinity and Drought Tolerance” conducted by the National Commission on Biotechnology at Pakistan Academy of Sciences at Islamabad on March 27-31, 2005.

15. Participated in the “World Environment Day” conducted by the Pakistan Engineering Congress at Averi Hotel Lahore, Pakistan on June 5, 2005.
16. Participated in the 4<sup>th</sup> International Symposium on “Genomics, Bioinformatics, Biotechnology and Economic Development” conducted by the Centre for Molecular Genetics , University of Karachi, Karachi on December 4-8, 2005.
17. “International Conference on Environmental Horizons” conducted by International centre for Chemical Sciences (ICCS), University of Karachi, Karachi, December 19-21, 2005.
18. Attended meeting of Senior Staff Members of Faculty of Life Sciences, University of the Punjab with Life Sciences Core Group at HEC regional office Lahore on 15 December, 2005.
19. Participated in “26<sup>th</sup> Zoological Congress of Pakistan (International)” Organized by Member, Zoological Society of Pakistan, 3-6 April, 2006, held in the Institute of Department of Zoology, University of the Punjab, Lahore.
20. Participate in the summer course Sustainable Water Management and Technology in Urbanized areas, August, 2006, in the University of Antwerp, Belgium/Europe funded by the Flemish Inter University Council.
21. Invited as oral speaker in the Brownfield Asia 2006 Conference on International Conference on Remediation and Management of Contaminated Land, The Institution of Engineers, Kuala Lumpur, Malaysia 5-7 September 2006.
22. Paper accepted in the 22<sup>nd</sup> Annual International Conference on Soil, Sediments and Water held at University of Massachusetts, Amherst, USA, from October 16-19, 2006.
23. Participated in the two days National Conference on Life Sciences conducted by the Bahaudin Zakria University Multan on November 13-14, 2006.
24. Attended the one day workshop on self-assessment manual to be held in the Quality Enhancement Cell, University of the Punjab, Lahore on 18-12-2006.
25. Attended a workshop on “Innovations in Assessment” organized by the Quality Enhancement cell, University of the Punjab, Lahore on 15 January, 2007.
26. Attended a seminar on “Education, Training and Qualifications in the Financial Services Sector” organized jointly by the City of London and Institute of Chartered Accountants of Pakistan on 11 February 2007 at Institute of Chartered Accountants of Pakistan, Lahore.
27. Attended a workshop on “Development Partnerships in Higher Education Links Programme” organized by the British Council Lahore on 12 February 2007 at Pearl Continental Hotel Lahore.
28. Participated in a training workshop on “Quality Assurance in Higher Education” organized by the Pakistan Institute of Quality Control on March 09, 2007 at Hotel Ambassador Lahore, Pakistan.
29. Attended a workshop entitled “National Training Seminar on Biosafety and Biosecurity Initiative” organized by the US Department of State Biosecurity Engagement Programme, Pakistan Agricultural Research Council and Planning Commission of Pakistan on 18-19 June, 2007 at Marriott Hotel Islamabad, Pakistan.
30. Attended a seminar entitled “The Role of Nano-Biotechnology in Diagnosis and Treatment of Diseases” organized by the Pakistan Association for the Advancement of Science at NIBGE Faisalabad on 10 September, 2007.
31. Worked as Secretary organizing committee of the symposium entitled “Genomics, Proteomics, Metabolomics: Recent Trends in Biotechnology” organized by the Department of Microbiology & Molecular Genetics, University of The Punjab, Quaid-E-Azam Campus, Lahore-54590, on 22-23 October, 2007.
32. Participated in the one day forum on the implementation of “Biosafety and Biosecurity initiatives” in research organizations and universities of Pakistan, organized by Dr. Anwar Nasim, Advisor COMSTECH, in HEC, Islamabad, Pakistan on 26 October, 2007.
33. Participated in the two days Workshop on Research Ethics in Biosciences on 26-27 November, 2007, organized by National Health Research Complex (PMRC) at Sheikh Zayyed Post Graduate Medical Institute, Lahore, Pakistan.

34. Participated in the two days National Conference of Life Scientist conducted by the Bahaudin Zakria University, Multan, on January 30-31, 2008.
35. Participated in the five day “National Bioforum” organized by CEMB, University of the Punjab, Lahore on 24-28 March, 2008.
36. Attended and Member, organizing committee of the one day seminar “Microbial Resistant Paints” organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 17<sup>th</sup> April, 2008.
37. Attended one day seminar “Clues to weathering and climate change from rare earth elements” on 23 September 2008 at Institute of Applied Ecology, University of Canberra, Australia.
38. Risk Analysis: Current application in conservation and future possibilities” attended a seminar held on 30 September, 2008, organized by Dept of Environmental Sciences, University of Canberra, and Center of Excellence for Risk Analysis, University of Melbourne, Australia.
39. Attended two day AusAID-APFRN Conference entitled “*South Asia: Environment and Human Security*” organized by Government of Australia on 2<sup>nd</sup> & 3<sup>rd</sup> October, 2008 at The Visions Theatre, National Museum of Australia, Canberra, Australia.
40. Attended a seminar entitled “Too far beyond BACI? Bioassessment in a multiple stresses context using the reference condition approach” on 7<sup>th</sup> October 2008, organized by Institute of Applied Ecology, University of Canberra, Australia.
41. Attended one day seminar/workshop entitled “Scientific and Medical Research on Meditation” conducted by University of New South Wales” on 30 October, 2008 in Belconnen, ACT, Australia.
42. Attended two days conference “Mining, Gender and sustainable Livelihoods” jointly organized by ANU and the World Bank on 6-7 November, 2008 at Australian National University, Canberra, Australia.
43. Attended two days conference “Health, culture and religion in South Asia *Interdisciplinary and cross-national social science perspectives*” A workshop supported by the Australian Research Council, held in ANU, Canberra, Australia, 12-13 November, 2008.
44. Attended national seminar on “National Biodiesel Programme: Identification of Barriers on 10<sup>th</sup> July 2009 at Marriott Hotel, Islamabad, organized by Alternative Energy Development Board (AEDB).
45. Participated in the two day conference on “Development and commercialization of Biotechnology Products” organized by NIBGE and National Commission on Biotechnology, at NIBGE on 19-20 June, 2009.
46. Member organizing committee of the symposium on Modern Biotechnology: A Resource for Sustainable Development, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 04<sup>th</sup> July, 2009.
47. Attended one day training workshop on “International Health Links Funding Scheme” organized by the British Council Lahore on 29<sup>th</sup> October 2009 at Crown Plaza Hotel, Lahore.
48. Attended three day training workshop on “Writing Project Proposals for Competitive System (CGS)” organized by Punjab Agriculture Research Board, Lahore on 9<sup>th</sup> to 11<sup>th</sup> November 2009 in Lahore.
49. Participated in III International Conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld2009) in Lisbon, Portugal on 2-4 December, 2009 in the University of Lisbon, Portugal.
50. Attended Lectures series on Hepatitis A, B, C, E by Dr. Mudassar Subtain Sheikh, organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore on February-March, 2010.
51. Attended one day seminar on “Lahore Biotechnology Cluster” organized by Forman Christian College University, Lahore on March 15, 2010.
52. Participated in the “Chemical Safety and Security Officer Training” organized by Sandia National Laboratories, U.S Department of Energy in Bangkok, Thailand on 29<sup>th</sup> March to 2<sup>nd</sup> April, 2010.

53. Attended a seminar on “Farm Dynamics Pakistan: Working with Soil Moisture Sense” organized by Microbiology & Molecular Genetics, University of the Punjab, Lahore on April 29, 2010.
54. Member organizing committee of the symposium on “Current Agro-biotechnology and Transgenic Plants” organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 21 June, 2010.
55. Attended a three-day International symposium on “Basic Techniques in Research, Dissertation and Paper Writing” on 27<sup>th</sup> -29<sup>th</sup> of July, 2010 organized by Institute of Research Promotion (IRP) and Hazara University at Hazara University, Mansehra, KP, Pakistan.
56. Participated in a three-day Conference on “6<sup>th</sup> International conference on Plant Tissue Culture and Biotechnology” on 3-5 December, 2010 in University of Dhaka, Dhaka, Bangladesh.
57. Participated in a three-day Conference “2<sup>nd</sup> International Conference of Plant Scientists and 11<sup>th</sup> National Meeting of Plant Scientists” held on 22-24<sup>th</sup> February, 2011 at G.C University Lahore, Pakistan.
58. Attended a two days’ workshop on “National workshop on Environment and Health” on 8<sup>th</sup>-9<sup>th</sup> of March, 2011 organized and held at Department of Toxicology and Pharmacology, University of Veterinary and animal Sciences, Lahore, Pakistan.
59. Participated in the “Exhibition: Universities Building Economics” organized by HEC, Islamabad on 25-26<sup>th</sup> of May, 2011 in Serena Hotel Islamabad.
60. Attended first “National Conference on Setting Standards for 21<sup>st</sup> Century Pakistan” on 26<sup>th</sup> May, 2011 in Serena Hotel Islamabad organized by HEC and sponsored by British Council and SASSI.
61. Participated in Two Days workshop “Case Based Teaching” organized by Higher Education Commission, Pakistan at HEC Regional Center Lahore, on 13-14 July, 2011.
62. Attended seminar on “dengue fever” organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore on September 21, 2011.
63. Attended a Lecture on “Granulomatous Diseases of Nose” organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore on September 26, 2011.
64. Attended one day seminar on World Quality Day at Undergraduate Block, University of the Punjab, Lahore, on 21 December, 2011.
65. Attended and participated in one day workshop entitled “Invention to Innovation Summit-2012” in the University of the Punjab, Lahore, organized by IRP, ORIC and PSF, on 18 June, 2012.
66. Attended One day seminar on Recent Trends in Diagnosis of Tuberculosis, on 04 September, 2012, Organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
67. Attended One day seminar on Dengue Virus on 2 September, 2012, Organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
68. Attended Workshop on “Biosafety” with collaboration with Sure Bio-Diagnostics in Department of Microbiology and Molecular Genetics on March 4, 2013.
69. Attended and participated in two days conference on “Bio-Phsicochemical Basis for Technopreneurship” organized by Department of Microbiology and Molecular Genetics and IBA, University of the Punjab, Lahore on 2-3 April, 2013.
70. Attended two days summit “Invention to Innovation” in the University of the Punjab, Organized by ORIC, PSF and IRP on 9-10 April, 2013.
71. Attended one day workshop on “FTIR” in COMSATS, Lahore, on 5<sup>th</sup> of September, 2013.
72. Attended and participated in National Consultative Conference, Islamabad on 22 November, 2013 at Jinnah Convention Center Islamabad.
73. Attended one day workshop on “Biosafety and Risk Assessment” held in the Undergraduate block University of the Punjab, Lahore on 19<sup>th</sup> April, 2014.
74. Participated in the three day symposium “Eurasia Waste Management Symposium 2014” in Yildiz Teknik University, Istanbul, Turkey on 28-30 April, 2014.
75. Attended two day conference on “Innovative Biological and Public Health Research (IBPHR 2014)” in Government College University, Lahore on 6-8 May, 2014.



76. Participated in 1<sup>st</sup> International seminar on “Soil Health Reclamation Approaches” organized by the College of Earth and Environmental Sciences, University of the Punjab, Lahore on 11 June, 2014.
77. Participated in Fourth International Conference on Biotechnology and Environment Management on 15<sup>th</sup> to 16<sup>th</sup> of September 2014 in Paris France.
78. Attended three days International Conference of Plant Sciences” organized by the Department of Botany, GC University, Lahore, 22<sup>nd</sup>-24<sup>th</sup>September, 2014.
79. Participated in one day symposium “Emerging Issues of Multidrug Resistance: A Threat to the Globe” organized by the Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, on 2<sup>nd</sup> October, 2014.
80. Attended and participated in one week “Indigenous on-campus Training Program” for faculty organized by University of the Punjab in collaboration with Higher Education Commission Pakistan on 1-5 December, 2014.
81. Attended two days pre-conference workshop “Parasitology and its immunological Aspects” on 13-14 February, 2015 in the Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore, Pakistan.
82. Member organizing committee of the 10<sup>th</sup> Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25<sup>th</sup> to 28<sup>th</sup> March, 2015.
83. Participated and presented paper in the 10<sup>th</sup> Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25<sup>th</sup> to 28<sup>th</sup> March, 2015
84. Co-Chair a Technical Session “Environmental Microbiology” in the 10<sup>th</sup> Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25<sup>th</sup> to 28<sup>th</sup> March, 2015
85. Attended one day Post Conference seminar on “Beyond the Fringe: when Science moves from innovative to nonsense” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, March 30, 2015.
86. Attended one day Post Conference seminar on “Out of Africa: Human genome diversity and Migration over the last 70,000 years” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, March 31, 2015.
87. Attended one day Post Conference seminar on “Writing and Publishing a Scientific Manuscript: Radical Changes are now happening” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, April 01, 2015.
88. Attended one day Post Conference seminar on “Mega Viruses” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, April 02, 2015.
89. Attended a one day seminar on “Quality Assurance in Education” organized by Quality Enhancement Cell University of the Punjab, Lahore on 3<sup>rd</sup> April, 2015
90. Attended one day symposium “Diversity in Microbiology: A Crosstalk” organized by ASM and Department of Microbiology and Molecular Genetics, University of the Punjab, on 17 December, 2015.
91. Attended one day seminar on “World Quality Day” organized by University of the Punjab in collaboration with Virtual University Lahore on 5<sup>th</sup> April, 2016 at Al-Razi Hall University of the Punjab, Lahore.
92. Attended three day conference on medical sciences in BSMU, Mirpur, AJK on 6-8 May, 2016.

93. Delivered lecture on “Meeting Journal Requirements” in the workshop Craft of Scientific Writing: A two days intensive workshop on scientific writing and publishing on 6-7<sup>th</sup> December, 2016 in the Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
94. Participated in three days conference “Recent Trends in Microbiology” at Department of Microbiology AUST, Abbottabad on 19-21 December, 2016.
95. Attended a preconference workshop on “Bacteriophage Isolation and Propagation” in the three days conference “Recent Trends in Microbiology” held in AUST, Abbottabad on 19-21 December, 2016.
96. Attended a preconference workshop on “Recent trends in Bioinformatics” in the three days conference “Recent Trends in Microbiology” held in AUST, Abbottabad on 19-21 December, 2016.
97. Attended a preconference workshop on “Scientific Writing: Standards for publications in peer reviewed journals” in the three days conference “Recent Trends in Microbiology” held in AUST, Abbottabad on 19-21 December, 2016.
98. Attended a preconference workshop on “Teaching strategies and challenges in graduate and post graduate studies in microbiology and allied sciences” in the three days conference “Recent Trends in Microbiology” held in AUST, Abbottabad on 19-21 December, 2016.
99. Attended a preconference workshop on “How to raise bioethics, biosafety and biosecurity standards in microbiology laboratories across Pakistan” in the three days conference “Recent Trends in Microbiology” held in AUST, Abbottabad on 19-21 December, 2016.
100. Attended and participated in 6<sup>th</sup> two days summit entitled “Invention to Innovation Summit-2017” as a judge in the University of the Punjab, Lahore, organized by IRP, ORIC, UMT and PSF, on 8-9 March, 2017.
101. Attended one day seminar on National IP Strategy on “intellectual property rights” organized by Commerce Division Govt. of Pakistan in collaboration with USAID in the PC Hotel Lahore on 20<sup>th</sup> March, 2017.
102. Member organizing committee in the one day symposium “Awareness on HIV/AIDS” held in the Undergraduate block University of the Punjab, Lahore on 30 March, 2017.
103. Organizer, MMG2018, held on 7-9 February, 2018 in the Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
104. Participated in 7<sup>th</sup> Innovation Summit 2018 in the undergraduate block, university of the Punjab, Lahore on March 7 and 8, 2018.
105. Attended a lecture on “Discovery and Utilization of Pharmaceutical Microorganisms and Drugs from Special Environments” by Prof. Dr. Chenghang Sun from Peking Union Medical College, China and was organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore, October 23, 2018.
106. Organized Scientific competition on Current Environment issues on world environment day in the Department of Microbiology and Molecular Genetics, University of the Punjab Lahore, on June, 2018.
107. Participated in Training workshop organized by the office of the research innovation and Commercialization (ORIC) University of the Punjab Lahore on March 14 2019.
108. Participated in the one day workshop on How to make University budget in the department of Economics university of the Punjab, Lahore on 20 March 2019.
109. Participated in training workshop on national program for universities awardees in the undergraduate block, university of the Punjab, Lahore on 14-03-2019.
110. Participated in the interactive session on QS ranking in the University of the Punjab on 28-08-2019.

**FOREIGN TRAINING / WORKSHOPS / CONFERENCES / SEMINARS**

Sr. No	Activity/Title	Year	Venue / Country
<b>1</b>	Sustainable Water Management and Technology	2006	<b>Belgium / Netherland</b>
<b>2</b>	Clues to weathering and climate change from rare earth elements	2008	<b>Australia</b>
<b>3</b>	Risk Analysis: Current application in conservation and future possibilities	2008	<b>Australia</b>
<b>4</b>	South Asia: Environment and Human Security	2008	<b>Australia</b>
<b>5</b>	Bio-assessment in a multiple stresses context using the reference condition approach	2008	<b>Australia</b>
<b>6</b>	Mining, Gender and sustainable Livelihoods	2008	<b>Australia</b>
<b>7</b>	Health, culture and religion in South Asia	2008	<b>Australia</b>
<b>8</b>	Environmental, Industrial and Applied Microbiology	2009	<b>Portugal</b>
<b>9</b>	Chemical Safety and Security Officer Training	2010	<b>Thailand</b>
<b>10</b>	Plant Tissue Culture and Biotechnology	2010	<b>Bangladesh</b>
<b>11</b>	Eurasia Waste Management Symposium 2014	2014	<b>Turkey</b>
<b>12</b>	Fourth International Conference on Biotechnology and Environment Management	2014	<b>France</b>