

# Irshad Ul Haq, Ph.D.

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## EDUCATION

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- 2012-2016      University of Groningen  
**Ph.D. in Microbiology**  
Mentor: Dr. Jan Dirk van Elsas  
*Interactions of Burkholderia terrae with soil fungi*
- 2008-2012      National University of Sciences and Technology (NUST)  
**M.Phil. in Virology and Immunology**  
Mentor: Dr. Ishtiaq Qadri  
*Isolation and partial characterization of bacteriophages from environmental samples*
- 2004-2007      University of Peshawar  
**B.S. in Biotechnology**

## EMPLOYMENT RECORD

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- 2022-present      University of Minnesota  
**Postdoctoral Associate**  
Mentor: Dr. Jonathan S. Schilling  
*The biology and ecology of wood rot fungi and their associated bacteria, with an emphasis on carbon (C) cycling in decaying wood and soils*
- 2020-2022      University of Minnesota  
**Postdoctoral Associate**  
Mentor: Dr. Kathryn R. Fixen  
*Understanding a decomposer food chain for improved bioconversion of lignocellulosic biomass*
- 2017-2020      University of Haripur  
**Assistant Professor**  
Department of Microbiology

## AWARDS AND FELLOWSHIPS

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- 2023      University of Minnesota Genomic Center (UMGC) Pilot Sequencing grant
- 2017-2019      Higher Education Commission (HEC) of Pakistan Startup Research Grant (SRGP) Rs500,000
- 2012-2016      Marie Skłodowska-Curie Ph.D. Fellowship (Netherlands)
- 2008-2010      Ministry of Science and Technology Fellowship (Pakistan)

## PUBLICATIONS

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### Refereed Journal Articles:

**Haq IU**, Kennedy P, Schreiner KM, Agnich JC, Schilling JS. **2024**. Gene expression by a model fungus in Ascomycota provides insight into the decay of fungal necromass. *Environmental Microbiology*. DOI:10.1111/1462-2920.70006

**Haq IU**, Christensen A, Fixen KR. **2023**. Evolution of *Rhodopseudomonas palustris* to degrade halogenated aromatic compounds involves changes in pathway regulation and enzyme specificity. *Applied and Environmental Microbiology*. DOI:10.1128/aem.02104-23

**Haq IU**, Hillmann B, Moran M, Willard S, Knights D, Fixen KR, Schilling JS. **2022**. Bacterial communities associated with wood rot fungi that use distinct decomposition mechanisms. *ISME Communications*. DOI:10.1038/s43705-022-00108-5

**Haq IU**, Fixen KR. **2021**. Complete genome sequence of *Rhodopseudomonas palustris* RCB100, an anoxygenic phototroph that degrades 3-chlorobenzoate. *Microbiology Resource Announcements*. DOI:10.1128/MRA.00043-21

Nisa S, Khan N, Shah W, Sabir M, Khan W, Bibi Y, Jahangir M, **Haq IU**, Alam S, Qayyum A. **2020**. Identification and bioactivities of two endophytic fungi *Fusarium fujikuroi* and *Aspergillus tubingensis* from foliar parts of *Debregeasia salicifolia*. *Arabian Journal for Science and Engineering*. DOI:10.1007/s13369-020-04454-1

Muhammad A, Khan SN, Jamal T, **Haq IU**, Jabbar A, Ihsan AN. **2020**. Bacterial spectrum and antimicrobial profile of pediatric blood stream infection at a tertiary care hospital in Pakistan. *Chinese Medical Sciences Journal*. DOI:10.24920/003675

**Haq IU**, Zwahlen RD, Yang P, van Elsas JD. **2018**. The response of *Paraburkholderia terrae* strains to two soil fungi and the potential role of oxalate. *Frontiers in Microbiology*. DOI:10.3389/fmicb.2018.00989

Javed F, Manzoor KN, Ali M, **Haq IU**, Khan AA, Zaib A, Manzoor S. **2017**. Zika virus: What we need to know? *Journal of Basic Microbiology*. DOI:10.1002/jobm.201700398

Pratama AA, **Haq IU**, Nazir R, De Mares MC, van Elsas JD. **2017**. Draft genome sequences of three fungal-interactive *Paraburkholderia terrae* strains, BS007, BS110 and BS437. *Standards in Genomic Sciences*. DOI:10.1186/s40793-017-0293-8

**Haq IU**, Dini-Andreote F, van Elsas JD. **2017**. Transcriptional responses of the bacterium *Burkholderia terrae* BS001 to the fungal host *Lyophyllum* sp. strain Karsten under soil-mimicking conditions. *Microbial Ecology*. DOI:10.1007/s00248-016-0885-7

**Haq IU**, Calixto RO, Yang P, dos Santos GMP, Barreto-Bergter E, van Elsas, JD. **2016**. Chemotaxis and adherence to fungal surfaces are key components of the behavioral response of *Burkholderia terrae* BS001 with two selected soil fungi. *FEMS Microbiology Ecology*. DOI:10.1093/femsec/fiw164

**Haq IU**, Graupner K, Nazir R, van Elsas JD. **2014**. The genome of the fungal-interactive soil bacterium *Burkholderia terrae* BS001—a plethora of outstanding interactive capabilities unveiled. *Genome Biology and Evolution*. DOI:10.1093/gbe/evu126

Chaudhry WN, **Haq IU**, Andleeb S, Qadri I. **2014**. Characterization of a virulent bacteriophage LK1 for *Citrobacter freundii* isolated from sewage water. *Journal of Basic Microbiology*. DOI:10.1002/jobm.201200710

**Haq IU**, Chaudhry WN, Andleeb S, Qadri I. **2012**. Isolation and partial characterization of a virulent bacteriophage IHQ1 specific for *Aeromonas punctata* from stream water. *Microbial Ecology*. DOI:10.1007/s00248-011-9944-2

**Haq IU**, Chaudhry WN, Akhtar MN, Andleeb S, Qadri I. **2012**. Bacteriophages and their implications on future biotechnology: a review. *Virology Journal*. DOI:10.1186/1743-422x-9-9

#### **Book Chapters:**

**Haq IU**, van Elsas JD. **2015**. Metagenomics and metatranscriptomics for the exploration of natural products from soil fungi, in “*Biosynthesis and Molecular Genetics of Fungal Secondary Metabolites*”. DOI:10.1007/978-1-4939-2531-5\_5

**Haq IU**, Zhang M, Yang P, van Elsas JD. **2014**. The interaction of bacteria with fungi in soil: emerging concepts. *Advances in Applied Microbiology*. DOI:10.1016/b978-0-12-800259-9.00005-6

#### **PRESENTATIONS**

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| 2025 | Poster presentation. <b>93<sup>rd</sup> Annual Meeting of the Mycological Society of America (MSA)</b> , Madison, Wisconsin. Decay modes and substrate types influence bacterial communities in decaying wood  |
| 2024 | Poster presentation. <b>32<sup>nd</sup> Fungal Genetics Conference</b> Asilomar, Pacific Grove, CA. Transcriptional response of key genes revealed <i>Trichoderma reesei</i> RUT-C30 ability to degrade <i>Hyaloscypha bicolor</i> melanized necromass |
| 2022 | Invited speaker (virtual meeting). <b>Department of Biosciences, University of Oslo, Norway</b> . Understanding how rot types influence bacterial communities in decomposed wood   |
| 2017 | Invited speaker. <b>Department of Microbiology</b> , University of Haripur. Pakistan   |
| 2016 | Invited speaker. <b>Department of Microbiology, Quaid e Azam University</b> . Pakistan. The interactions of <i>Burkholderia terrae</i> with fungi in soil  |

- 2015 Oral presentation. **Ecology of Soil Microorganisms conference.** Prague, Czech Republic. Transcriptome analyses of *Burkholderia terrae* BS001 reveal responses to the fungus *Lyophyllum* sp. strain Karsten on soil extract medium
- 2015 Poster presentation. **8<sup>th</sup> congress of International Symbiosis Society** Lisbon, Portugal. Transcriptional profiling of *Burkholderia terrae* BS001 populations upon confrontation with soil fungus *Lyophyllum* sp. strain Karsten
- 2015 Poster presentation. **Groningen Institute for Evolutionary Life Sciences Symposium.** University of Groningen, Netherlands. Bacterial-fungal interactions in soil
- 2014 Oral presentation. **Trainbiodiverse summer school. What a Brave New Soil.** Florence, Italy. The genome of the fungal-interactive soil bacterium *Burkholderia terrae* BS001
- 2014 Oral presentation. **Department of Environmental Microbiology,** Helmholtz Center for Environmental Research, Leipzig, Germany
- 2013 Poster presentation. **CNRS-Jaques Monod conference.** Roscoff, France. Comparative genome analysis of *Burkholderia terrae* and other species
- 2013 Oral presentation. **Trainbiodiverse Marie Skłodowska-Curie meeting.** Zugspitze, Munich, Germany
- 2012 Oral presentation. **DK-MOLIN.** Medical University Graz, Austria. Isolation and partial characterization of bacteriophages from stream water
- 2011 Paper presentation. **MCBO.** Innsbruck Medical University, Austria
- 2011 Attended **1<sup>st</sup> Annual HCV management symposium.** Atta Ur Rahman School of Applied Biosciences (ASAB) NUST, Islamabad, Pakistan
- 2010 Attended national training course. **Food Safety Management System ISO22000:2005,** Lahore, Pakistan

## **TEACHING EXPERIENCE AND MENTORING**

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- 2023 **Adjunct instructor.** PMB 3212/PMB5212: Fungi - A Kingdom of Their Own. Co-taught with Jonathan Schilling. Fall 2023. University of Minnesota, Saint Paul
- 2017-2020 **Assistant Professor.** Department of Microbiology, University of Haripur. Pakistan  
 Courses taught:  
 Environmental Microbiology (MIC 606)  
 Advances in Soil Microbiology (MIC 524)  
 Soil Microbiology (MIC 601)

General Immunology	(MIC 403)
Epidemiology	(MIC 502)
Research Methodology and Report Writing	(MIC 507)
Freshwater Microbiology	

2010      **Teaching Assistant.** Bacteriophages and their Biology. Atta Ur Rahman School of Applied Biosciences (ASAB), National University of Sciences and Technology (NUST), Islamabad, Pakistan

2012-present      Formally mentored 5 undergraduates, and 5 master students

### **SERVICE AND OTHER RELEVANT ACTIVITIES**

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2019-present      **Ad-hoc reviewer:** *Microbial Ecology*

2024-present      Member of the **Mycological Society of America (MSA)**

2017-2020      Member of the **Board of Studies Committee**, Department of Microbiology, University of Haripur

2017-2020      **Thesis Committee Member**, Department of Microbiology, University of Haripur

2017-2020      **Community Outreach Programs Leader** (social work), University of Haripur

2013-2016      Member of the **Royal Dutch Society of Microbiology**, Netherlands

2005-2007      Member of the **Biotech Science Circle**, University of Peshawar