

Dr Sadeeq ur Rahman

PhD (Microbiology: The Netherlands)

Marie-Curie Postdoc fellow (Ireland-School of Microbiology, UCC, Cork)

Date of Birth: March 1980

Birth place: Dir, Khyber Pakhtunkhwa, Pakistan

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PhD Thesis (VU University Amsterdam, The Netherlands)

The role of the TpsB transporters of co-expressed Two-partner Secretion systems of *Neisseria meningitidis*

M. Phil thesis: (UVAS, Lahore, Pakistan)

In vitro culture characteristics of baby hamster kidney-21 (BHK-21) cell line.

M. Sc (Bio medical sciences, VU University Amsterdam, The Netherlands)

Internship: Heterologous expression of Neisserial antigens and Two-Partner Secretion system in laboratory strain *Escherichia coli* (Tof10F)

Working Experience and Education

Dec.2017 to date	Principal, College of Veterinary Sciences and AH, AWKUM
Sep 2015 to date	Assistant Professor of Microbiology (veterinary), College of Veterinary Sciences and AH, Abdul Wali Khan University, Mardan, KPK, Pakistan.
Sep 2015-March 2017	Marie-Curie Post doc Fellow at University College Cork-Ireland.
Sep 2014 -Sep 2015	Assistant Professor of Microbiology [(HEC-Interim)(The University of Agriculture, Peshawar, Pakistan)
Sep 2010- May 2014	Docent (Teaching Assistant Microbiology), I was teaching practical courses to undergraduates at VU University Amsterdam, The Netherlands.
Sep 2009-Sep 2013	PhD student at VU University, Amsterdam, Department Molecular Microbiology, The Netherlands.
Sep 2008- Sep 2009	Master ((deficiency) Biomedical sciences) and internship at VU University, Amsterdam, The Netherlands.
Dec 2006- Sep 2008	Lecturer of Microbiology, The University of Agriculture, Peshawar,
March 2005-Dec 2006	Incharge Poultry diagnostic Lab, SB poultry, Murre Road Rwp
Jan 2004- Sep 2006	M. Phil (Microbiology, University of Veterinary and Animal Sciences, Lahore, Pakistan)
Dec 1999- Dec 2003	DVM (Doctor of Veterinary Medicine), University of Veterinary and Animal Sciences, Lahore, Pakistan

Publications in peer reviewed journals

Under review

1. Muhammad Irshad, Sadeeq ur Rahman, Amir Hameed, Muhammad Younas, Mohammad Khursheed Alam and Alamgir Khan. Microbial composition, antimicrobial susceptibility and clinical features of periodontal abscesses; A clinical study. **BMC oral health**
2. Mohammad Din; Ghulam Sarwar; Khan Babar; Abdul Aleem; Dawood Shah; Shahab Uddin; Saleem Khan; Shahjahan Ahmed; Hummaira Sadaf; Ijaz Ali; Mohammad Ali; Sadeeq ur Rahman. Prevalence of blaNDM-1 in Clinical Isolates from Tertiary Care Hospitals of Quetta Pakistan. Journal of Infection and Public Health
3. Tariq Ali, Jian Gao, Sadeeq-ur-Rahman, Limei Zhang, Muhammad Shahid, Shiyao Zhang, Dandan Han and Bo Han. 2018. Co-occurrence of plasmid-mediated colistin resistance (*mcr-1*) and extended-spectrum β -lactamase (ESBL) encoding genes in *Escherichia coli* from bovine mastitis. Accepted in Journal of Dairy Sciences

4. Sadeeq ur Rahman, Muhammad Ismail, Nazir Ahmad Khan, Sidra Noor and Sultan Ayaz. Antimicrobial resistance; Clinical significance and challenges: A Perspective of Pakistani Medical Care. In Emerging and neglected tropical diseases of poverty
5. Sadeeq ur Rahman and Nazir Ahmad Khan. The under reported issue of antibiotic-resistance threats in Pakistan: a focus on the use of antibiotics in food-producing animals and livestock and consequence. In International Journal of Pharmaceutical sciences
6. Ijaz Ali, Amina Gul, Atika NS, Haji Akbar, Shahid Niaz Khan, Sadeequr Rahman, Anwar ullah, Shahroz Khan, Muhammad Idrees, Sanaullah Khan. Sofosbuvir based IFN-free therapy among treatment naive and treatment experienced HCV 3a infected patients of the Khyber Pakhtunkhwa province of Pakistan. BMC

Accepted manuscripts

1. Sadeeq ur Rahman, Tariq Ali, Ijaz Ali, Nazir Ahmad Khan, Bo Han and Jian Gao. 2018. The growing genetic and functional diversity of extended spectrum beta-lactamases. Biomed research International
2. Nasir Abbas, Muhammad Suleman, Nazir Ahmad Khan, Ijaz Ali, Mubashir Rauf and Sadeeq ur Rahman. 2018. Prevalence of *Mycoplasma gallisepticum* in poultry- and wild life- birds suspected of chronic respiratory disease in Northern Pakistan. Pakistan Journal of Zoology.
3. Nasir Abbas, M. Suleman, Naveed Muhammad, Sadeeq ur Rahman, Manzoor Ahmad, Anwar Khalid and Faheem Jan. 2018. Seropositivity, involvement in suspected cases of chronic respiratory disease and comparative efficacy of various sero-diagnostic testes of *Mycoplasma gallisepticum*. Accepted in Journal of applied environmental and biological sciences 8(3)xxx
4. Azmatullah Khan, Muhammad Shafee, Naimatullah Khan, Attaur Rahman, Rafiullah, Ijaz Ali, Imad Khan and Sadeeq ur Rahman. 2017. Incidence of brucellosis in aborted animals and occupationally exposed veterinary professionals of Bannu, Khyber Pakhtunkhwa, Pakistan. Accepted in *Thai J Vet Med.* 2017.

Published

2018

1. Irfan Khattak, Muhammad Mushtaq, Sultan Ayaz; Sajid Ali; Anwar Sheed, Javed Muhammad, Muhammad Luqman Sohail, Irshad Ahmad, Haq Amanullah and **Sadeeq ur Rahman**. 2018. Incidence and drug resistance of zoonotic *Mycobacterium bovis* infection in Peshawar-Pakistan. Pp. 1-15. Boston, MA: Springer US. [Adv Exp Med Biol.](#) 2018 Feb 17. doi: 10.1007/5584_2018_170. [Epub ahead of print]

2017

2. Wei Chen, Yongxia Liu, Jinhua Yin, Youtian Deng, Tariq Ali, Ju Zhang, Jia Cheng, **Sadeeq ur Rahman**, Jian Gao, and Bo Han. 2017. Cloning, Expression, and Immunogenicity of Fimbrial-F17A Subunit Vaccine against *Escherichia coli* Isolated from Bovine Mastitis. BioMed Research International. Volume 2017 (2017), Article ID 3248483. <https://doi.org/10.1155/2017/3248483> [IF=2.47].
3. Ahmad I, Nawaz N, Darwesh NM, **Ur Rahman S**, Mustafa MZ, Khan SB, Patching SG. 2017. [Overcoming challenges for amplified expression of recombinant proteins using *Escherichia coli*](#). Protein Expr Purif. 2017 Nov 24. pii: S1046-5928(17)30651-4. doi: 10.1016/j.pep.2017.11.005. [IF=1.8]
4. Tariq Ali, **Sadeeq ur Rahman**, Limei Zhang, Muhammad Shahid, Dandan Han, Jian Gao, Shiyao Zhang, Pamela L. Ruegg, Umer Saddique and Bo Han. 2017. Characteristics and genetic diversity of multi-drug resistant extended-spectrum beta-lactamase (ESBL)-producing *Escherichia coli* isolated from bovine mastitis. Oncotarget. 2017 Oct 4;8(52):90144-90163. doi: 10.18632/oncotarget.21496. [IF= 5.12].
5. **Ur Rahman S**, Stanton M, Casey PG, Spagnuolo A, Benshi G, Hill C, Francis KP, Tangney M and Gahan CGM (2017) Development of a Click Beetle Luciferase Reporter System for Enhanced Bioluminescence Imaging of *Listeria monocytogenes*: Analysis in Cell Culture and Murine Infection Models. *Front. Microbiol.* 8:1797. doi: 10.3389/fmicb.2017.01797. (IF=4.17)
6. M. K. Shah, U. Saddique, S. Ahmad, S. Qureshi, **S. U. Rahman**, Z. U. Hassan, M. A. Khan, T. Ali, F. Anwar, H. Khan and H. Khan. 2017. Molecular identification and comparative antimycoplasmal activity of three indigenous medicinal plants against *mycoplasma putrefaciens* isolated from sheep. *The J. Anim. Plant Sci.* 27(5):2017 (IF=0.422)
7. Abdul Qadir Khan, Syed Kashif Haleem, Muhammad Shafiq, Nazir Ahmad Khan and **Sadeeq ur Rahman**. 2017. Seropositivity of brucellosis in human and livestock in Tribal-Kurram Agency of Pakistan indicates cross circulation. *Thai J Vet Med.* 2017. 47(3): (IF=0.32)

8. Muhammad Kamal Shah, Umer Saddique, Shakoor Ahmad, Yousaf Hayat, **Sadeeq ur Rahman**, Mohammad Farooque Hassan and Tariq Ali. 2017. Isolation rate and antimicrobial susceptibility profiles of *Mycoplasma mycoides* subspecies capri field isolates from sheep and goats in Pakistan. [Small Ruminant Research](#) 153 (2017) 118–122 (Impact factor 1.01)
9. Adnan M, Khan H, Kashif J, Ahmad S, Gohar A, Ali A, Khan MA, Shah SSA, Hassan MF, IrshadM, Khan NA and **Rahman SU**, 2017. Clonal expansion of sulfonamide resistant *Escherichia coli* isolates recovered from diarrheic calves. [Pak Vet J](#), 37(2): 230-232 (Impact factor .89)
10. Attaur Rahman, Saeed Ahmad Soomro, Hameed u Rehman, Sultan Ayaz, **Sadeeq ur Rahman**, Wali Mohammad Achakzai, Shagufta Saddozai, Tahir Usman, Muhammad Tariq, Muhammad Arshad Iqbal and Kausar Saeed. 2017. Effects of exogenous bovine somatotropin (rbST) on blood biochemistry of Kundhi buffalo calves. [JEZS](#) 2017; 5(1): 322-327

2016

11. Irfan Khattak, Muhammad H. Mushtaq, Sultan Ayaz, Mansur U.D. Ahmad, **Sadeeq U. Rahman** "Occurrence of zoonotic tuberculosis in occupationally exposed high-risk groups in Peshawar, Pakistan." [International Journal of Mycobacteriology](#) (2016). <http://dx.doi.org/10.1016/j.ijmyco.2016.10.039> (Impact factor 0.05)
12. Ali T, **ur Rahman S**, Zhang L, Shahid M, Zhang S, Liu G, Gao J and Han B (2016) ESBL-Producing *Escherichia coli* from Cows Suffering Mastitis in China Contain Clinical Class 1 Integrins with CTX-M Linked to ISCR1. [Front. Microbiol.](#) 7:1931. doi: 10.3389/fmicb.2016.01931 (Impact factor 4.75)
13. Farman Ali, Hamayun Khan, Shakoor Ahmed, Muhammad Athar Khan, Muhammad Hasan Raza, Muhammad Abuakar, Nazir Ahmed Khan, Zia Ullah Mahmood, Naushad Khan and **Sadeeq ur Rahman**. 2016. Nomad-Animals Are Associated With Exposure To Emerging Diseases Pathogens. [Life Science Journal](#) 2016;13(9) doi:10.7537/marslsj130916.09.
14. Piet JR, van Ulsen P, **Ur Rahman S**, Bovenkerk S, Bentley SD, van de Beek D, van der Ende A (2016). [Meningococcal Two-Partner Secretion Systems and Their Association with Outcome in Patients with Meningitis.](#) [Infect Immun.](#) 19;84(9):2534-40. doi: 10.1128/IAI.00160-16.(IF 5.7, 5 yrs) **2006-2014**
15. **Ur Rahman S.**, Arenas J, Oztürk H, Dekker N, van Ulsen P. 2014. [The Polypeptide Transport-associated \(POTRA\) Domains of TpsB Transporters Determine the System Specificity of Two-Partner Secretion Systems.](#) [J Biol Chem.](#) ;289(28):19799-809. doi: 10.1074/jbc.M113.544627 (IF 5.02, 5 yrs)
16. van Ulsen P, **ur Rahman S**, Jong WS, Daleke-Schermerhorn MH, Luirink J.2014. Type V secretion: from biogenesis to biotechnology. [Biochim Biophys Acta.](#) S0167-4889(13)00397-2. doi: 10.1016/j.bbamcr.2013.11.006.(IF: 4.66)
17. **Ur Rahman S.**, and Peter van Ulsen. System specificity of the *TpsB* translocator of coexpressed two-partner secretion system of *Neisseria meningitidis*. [J Bacteriol.](#);195(4):788-97. doi: 10.1128/JB.01355-12. Epub 2012 Dec 7. (IF: 3.9)
18. Ali Ahmad, **Sadeeq ur Rahman**, Zaheer Ahmed Qureshi, Masood Rabbani, Khushi Muhammad and Muhammad Bilal. 2011. Passive Immunization of *Pasteurella Multocida* Infected Rabbits. [Pakistan j.zool.](#), 43(4) 623-28.(IF:0.45)
19. Shehzad Ahmed, **Sadeeq ur Rahman**, Muhammad Quaid Zaman, Zaheer Ahmed, Zafar Iqbal, Muhammad Bilal and Ali Ahmed. 2011. Toxicological effects of feeding first cut sorghum vegetation and stalks to rabbits. [Pakistan. J. Zool.](#), 43(4) 629-35. (IF:0.45).
20. Mushtaq, A., MS Qureshi, S Khan, G Habib, ZA Swati, S.U. Rahman. 2012. Body condition (BCS) regulates milk yield (MY) and composition (MC) in dairy animals. [J. Anim Plant Sci](#), 22(Sup 3): 2012. (IF 0.5)
21. Naseem S., **ur Rahman S.**, Shafee M, Sheikh AA, and Khan A., 2011. Immunomodulatory and growth-promoting effect of a Probiotic supplemented in the feed of broiler chicks vaccinated against Infectious Bursal disease. [Brazilian J. Poultry Science.](#) 14 (2) 219-226. (IF 0.6)
22. Sahidullah, M. Rabbani and **Sadeeq ur Rahman**. 2008. Development of standard protocols for preparation and evaluation of liver homogenate vaccines against Hydropericardium Syndrome Virus in poultry. [Pakistan Vet. J.](#), 2008, 28(4): 163-166.(IF 0.89)
23. M. Kamal shah, A. Khan, F. Rizvi, M. Siddique and **Sadeeq ur Rahman**. 2007. Effect of Cypermethrin on Clinico-Haematological parameters in rabbits. [Pakistan Vet. J.](#), 27(4): 171-175. (IF 0.89)
24. **Sadeeq ur Rahman**, M. Rabbani, K. Muhammad and Sahidullah. 2007. Studies on in vitro culture characteristics of adherent baby hamster kidney-21 (BHK-21) cell line [Int. J. Agri. & Biol.](#), 09 (6): 821–826. (IF 0.0)
25. **Sadeeq ur Rahman**, A. Ahmad and S. Bhatti. 2006. Comparative Growth Promoting Efficacy of fetal calf serum for BHK-21 Cell line. [J. Ani. Plant Sci.](#), 1(2): 20-23. (0.5)

Conference papers (peer reviewed only)

1. Muhammad ALI, SulmanBasit, Muhammad tariq Masood, Yasar MehmoodYousafzai, Asif Naseer, **Sadeeq urRahman**, MusharrafJelani, ImranKhan, YousafKhan, AbidJameel, JawadAhmed and Abid SohailTaj. "Prognostic Stratification of Acute Myeloid Leukemia and Myelodysplastic Syndrome Patients on the Basis of Genetic Variations." *Blood* 128.22 (2016): 5239-5239. **{Impact factor= 12.3}**
2. **Ur Rahman S**, Stanton M, Casey PG, Spagnuolo A, Tangney M and Gahan CGM (2017) bioluminescent imaging and of *Listeria monocytogenes* by using codon optimized click betel luciferase. **{Impact factor= 12.3}**

Books

1. Sadeeq ur Rahman (2014) The role of the TpsB transporters of Two-Partner Secretion systems in *Neisseria meningitidis*. ISBN: 978-94-6182-458-5., Offpage, publishers, Republic of Poland.

a. Book chapters

1. Irfan Khattak, Muhammad Mushtaq, Sultan Ayaz; Sajid Ali; Anwar Sheed, Javed Muhammad, Muhammad Luqman Sohail, Irshad Ahmad, Haq Amanullah and Sadeeq ur Rahman. 2018. Incidence and drug resistance of zoonotic *Mycobacterium bovis* infection in Peshawar-Pakistan. Pp. 1-15. Boston, MA: Springer US. [Adv Exp Med Biol](#). 2018 Feb 17. doi: 10.1007/5584_2018_170. [Epub ahead of print]

Grants and awards

Project Title	Sponsored by	Position	Project/Grant No	Date of acceptance	worth
Dissemination of antibiotic resistance bacteria through bovine mastitic milk: focusing on the Extended-Spectrum β -lactamase (ESBL) producing and carbapenem resistant <i>Escherichia coli</i>	Natural National Science Foundation of China	PI	3155011000	19-08-2015	3.90 Million yuan
Characterization, isolation and purification of Taq Polymerase from locally isolate of <i>Thermus Aquaticus</i>	HEC- Pakistan	PI	21-1088/SRGP/R&D/HE C/2016	29-08-2016	0.50 mill Pak Rs
Development of rapid and cost-effective assays for the diagnosis of prevalent <i>Echinococcus</i> species in Pakistan	USAID-CIMMYT	Co-PI	14/09/2017	14-09-2017	3.2 mill Pak Rs

Awards

1. FEMS (Federation of European Microbiological Societies) –Invited Speaker/ Young Scientist Grant to present my research work in the meeting “XVIIIth International Pathogenic *Neisseria* Conference IPNC 2012 from 2012 September 09 to 2012 September 14 in Wurzburg, Germany.
2. The Netherlands Royal society of Microbiology (KNVM & NVMM) scientific spring meeting 2012 invited speaker grant.
3. Grant award to attend FEBS-EMBO (FEBS: federation of European biological societies EMBO: European microbiological organisation lecture summer course and workshop on Biomembrane Dynamics: from Molecules to Cells at Corsica, Cargese France June 20 to June 30, 2011.
4. Grant award from HEC and NUFFIC for PhD fellowship (2009-2014)
5. Merit stipend award from Higher education commission of Pakistan under “support to scientific talent” during 2005-2006. This grant enabled me to sponsor a part of my studies during M. Phil at university of veterinary and animal science, Lahore.

Research profile

Three major areas, vaccine development for bacterial diseases, bacterial resistance to antibiotics and development of broad-range bacterial bioluminescent vector for bactofection and therapeutic gene delivery in gene therapy, of microbiology/bacteriology remained of my research interest. Thus far, I have analysed the Two-Partner Secretion (TPS) Systems *Neisseria meningitidis* (NM), a Gram negative diplococcus, and identified its mechanism of targeting, system specificity and outer membrane secretion. The knowledge is useful to understand

the mechanistic principle behind an important toxin secretion of Gram negative bacterium and understanding mechanism of outer membrane proteins insertion by members of super family Omp85-A. Mastitis is an economically devastating disease of dairy animals, and failure of treatment of mastitis is mainly attributed to antimicrobial resistance (AMR) of bacterial pathogens causing mastitis. So far, we have comprehensively analysed AMR of mastitic pathogens focusing mainly on extended spectrum beta lactamase, colistin resistance and carbapenemase resistances offered by Gram negatives. Furthermore, recently I have engineered various bacterial vectors for targeted delivery of genes of therapeutic interest in cancerous and stem cells. For this purpose I have developed broad host range bacterial vectors that can be used to integrate bioluminescent markers including gene of interest for targeted delivery.

DETAILS OF TRAININGS /Workshops

S#	Title/purpose	Organized by	date	Info
1.	Train of the Trainers Workshop a	Pakistan Biological Safety organisation and NIH-Fogarty at COMSTECH Islamabad	-6-10 Nov. 2017	Pakistan biological safety association
2.	Funding Your Research Time: 10:00 – 12:00	Date: Fri 28/10/2016	Kane G20- UCC	www.ucc.ie/en/devhub/in-house/professional/ Postdoc development Hub, UCChttp://www.ucc.ie/en/devhub/in-house/professional/
3.	Consolidating your research career	UCC post doc development hub	22 nd July, 2016	
4.	Innovation and entrepreneurship	UCC post doc development hub	8 th of July, 2016	
5.	Introductory and training workshop on flow cytometry	Western gate way building, UCC Ireland	31 st of May, 2016	
6.	Teaching and learning skills	UCC post doc development hub	27 th May 2016	
7.	Researcher's towards industry	UCC post doc development hub	20 th May 2016	
8.	Excel Level 2	UCC-IT	3 rd December 2015	
9.	Excel Level 1	UCC-IT	19 th November 2015	
10.	Antimicrobial resistance - theory and methods	Coursera	July-August 2016	One month online course certificate-awarded
11.	International workshop on biosafety and biosecurity	University of Veterinary and Animal Sciences,	Lahore 18-21 december	
12.	Bacterial typing (serotyping, biotyping and genotyping) and Multilocus sequencing	Netherlands's bacterial meningitis reference lab VumC Amsterdam, The Netherlands,	1 st july to 14 th July 2014,	a.vanderende@mc.uva.nl).
13.	Detection, genotypic characterization (genes detection, plasmid replicon	VU medical centrum. Amsterdam, The	1st June-30-2014	[vandenbrouckegr auls@vumc.nl]

	typing etc) of extended spectrum β -lactamase (ESBL) <i>Escherichia coli</i>	Netherland		
14.	FEBS-EMBO lecture summer course on Biomembrane Dynamics: from Molecules to Cells at Corsica	Corsica, Cargese France	June 20 to June 30, 2011	
15.	A Joint University-Industry Workshop on the Role of Nanomaterials in Drug Delivery and Cancer Treatment	School of science and Engineering LUMS, Lahore- Pakistan.	28-29/07/2008.	
16.	International workshop on molecular techniques biological research	PMA ARID Rawalpindi, Pakistan.	6-10 May 2008	
17.	Workshop on PC-1 development	The Agriculture university, Peshawar	16-17 July, 2007	

Invited speakers/special guest speaker

1. Mechanisms of ESBL drug resistance in *E. coli*- July 11 2017. At postgraduate seminar series of college of veterinary Sciences, China Agriculture University, Beijing, China
2. Invited talk on the drug resistance pattern and incidence in Khyber Pakhtunkhwa-10th Jan. 2018 during IBCAST, at National Centre for Physics, Quide-i-Azam University, Islamabad

Speaker in conferences/workshops

1. Speaker as a resource person in "foal care management "workshop on 6th Feb 2018 at AWKUM Mardan
2. Speaker at Chemistry in relation to physics and material sciences, 10-11 Feb 2014 at Veldhoven De koningshof conference center, The Netherlands.
3. Speaker at the *XVIIIth International Pathogenic Neisseria Conference IPNC 2012* from 2012 September 09 to 2012 September 14 in Wurzburg, Germany.
4. Poster presentation in Young Microbiologists Symposium, 20-22nd June 2012 at BIOMERIT Research Centre Biosciences Institute, Room 3.04 University College Cork, Ireland.
5. Speaker at the Netherlands Royal society of Microbiology (KNVM & NVMM) scientific spring meeting 2012.
6. Presenter at annual meeting of Amsterdam institute for molecules medicines and systems (AIMS) April 2012.
7. Speaker at annual national "Protein Secretion Platform, 28-29 march 2011. VU University Amsterdam, The Netherlands.
8. Speaker at annual national "Protein Secretion Platform, 8-9 April 2010". Biological Centre, Haren, Groningen, The Netherlands.
9. Speaker at annual national "Protein Secretion Platform, 4-5 February 2009. Utrecht University, Utrecht, The Netherlands.

Conferences attended

1. Alimentary Pharmabiotic annual symposium, University college cork, Ireland, 6th Septmeber 2016.
2. Exploring the microbe-immune system interface, Focused Meeting, Irish division of Society of Microbiology, Rochestown Park Hotel, Cork – 1-2 september 2016
3. Focused Meeting 2016 – Irish Division: Host-Pathogen Interactions, University college Dublin 30 June-1July-2016
4. Bacterial surface, 6-7 march 2014, at Science Park, University of Amsterdam, The Netherlands.
5. Protein secretion platform annual conference 7-8th March, 2013 at University of Groningen Zernike, building Donald Smits Centre for Information Technology, Zernikeborg, Gronengen, The Netherlands.
6. Annual meeting of Amsterdam institute of molecules medicines, 2012. VU university, Amsterdam, The Netherlands
7. Protein Secretion Platform conference, 4-5 Feb 2012. Faculty of Science, Utrecht University, The Netherlands
8. Protein Secretion Platform conference, 29-30 March 2011. VU university, The Netherlands
9. Molecular Microbiology/Institute Pasteur Minisymposium on Bacterial Membranes Institute Pasteur, February 12, 2010.
10. Protein Secretion Platform conference, 4-5 Feb 2009. Faculty of Science, Utrecht University, The Netherlands

Student currently enrolled

PhD students

2. Mohammad Din – studies on extensive drug resistance *Pseudomonas aeruginosa*.
3. Ghulam Sarwar-bacteriological and molecular studies focusing common pathogens causing urinary tract infection

Students supervised (graduated)

2016: Daniel Delany BSc environmental microbiology- development bioluminescent vector for Gram negative bacteria imaging.

Cathal

2015: Muhammad Mushtaq Zoonotic potential of poultry organs and eggs as source of human infection, 2015. [M. Phil Pathology, department of Animal Health, The University of Agriculture Peshwar-Pakistan).

2013: Tim R. Antonises Coupling a single molecular of Haemaglobin protease to DNA for using in optical twizer to determine its mechanism of folding and maturation of at the surface of *E. coli*. (2013) *MSc biophysical sciences, Faculty of Earth and Life Sciences* VU University, Amsterdam.

2012: Anoushka Molhoek *In vitro* binding between TpsB and its partner TpsA of the two-partner secretion system of *Neisseria meningitidis*. (2012). Bachelor Gezondheid en Leven *Faculty of Earth and Life Sciences*, VU University, Amsterdam.

2011: Hülya Öztürk. Mechanism of system specificity of the Two partner secretion systems of *Neisseria meningitidis* (2011). *Bsc-Biomedical sciences, Faculty of Earth and Life Sciences*, VU University, Amsterdam

Co-supervisor

2016-17:

1. Nzeer Muhammad, M. Phil (Pathology), Investigation into the origin, persistence and spread of drug resistant *Escherichia coli* in broiler chicken of Peshawar region.
2. Tasbihullah, Table eggs from chicken as potential source of drug resistant *escherichia coli*

Registration with professional bodies

Life time member of Pakistan biological safety organisation, Islamabad, Pakistan.

Member of *Royal Dutch Society of Microbiology (KNVM)*

Member of Microbiology society of United Kingdom

Member of Pakistan Veterinary Medical council and Pakistan Veterinary medical association

Skills and expertise:

- Vector designing for gene integration, biomarker development, bioluminescence
- Bacterial cloning, gene expression, protein purification and analysis.
- Mass spectrometry.
- Characterization of bacterial resistance to antibiotics: Phenotypic and genotypic characterization of extended spectrum β -lactamase *Escherichia coli*, carbapenemase producing bacteria, genotyping, plasmid integron typing etc.
- Synthesis of genetically modified organisms, knocking out genes, overexpressing genes etc.
- Structural and functional analysis of over expressed proteins using various techniques such as SDS PAGE, western blot, NMR etc
- Bacterial specie identification using various, from classical such as biochemical tests (API), ELISA to the most advanced vitek2-MS techniques for identification and 16C-RNA detection.
- Conventional, multiplex and nested-PCRs for bacterial characterization, gene cloning, gene detection etc.
- Bacterial serotyping, isotyping, and genotypic analysis. Multilocus sequence typing