

**Surname:** Shabbir  
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**Date of birth:** September 27, 1982



**Contact details:**

Tenured Professor  
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**Qualifications:**

DVM (Bronze Medalist), 2001-06, University of Veterinary and Animal Sciences, Lahore, Pakistan.  
M. Phil (Microbiology), 2006-08, University of Veterinary and Animal Sciences, Lahore, Pakistan.  
PhD (Microbiology), 2009-13, University of Veterinary and Animal Sciences, Lahore, Pakistan.  
Post-Doctorate (Microbiology), 2021-22, The Pennsylvania State University, USA

**Employment Record:**

**Tenured Professor** (Microbiology) (July 02, 2023 to date)  
**Tenured Associate Professor** (Microbiology) (July 02, 2019 to July 01, 2023)  
**Assistant Professor** (Microbiology) (April 17, 2013 to June 01, 2019)  
**Lecturer** of Veterinary Disease Diagnostics (September 05, 2006 to April 16, 2013)

**Current Responsibilities/Duties:**

Primary responsibilities include teaching various undergraduate and postgraduate courses along with disease diagnostics, infectious disease surveillance in humans and animals, and research related to public health pathogens together with the coordination of research grants as principal investigator/co-principal Investigator/team member.

**Research projects (Ongoing):**

1. **Higher Education Commission of Pakistan (2021-24).** Mapping an in-depth genetic diversity of Infectious Bronchitis Virus (IBV) in Pakistan and development of serotype-matched recombinant IBV Vaccine. Value **\$37,969**. Role: **PI**

**Research projects (Completed):**

1. **Higher Education Commission of Pakistan (2015-18).** Sero-epidemiology and molecular characterization of bluetongue virus in Pakistan. Value **\$48,507**. Role: **Co-PI**
2. **Civilian Research and Development Foundation, USA (2016 – 2018).** Deciphering the role of bats as natural reservoirs for zoonotic and emerging pathogens of public health. (Project ID: **GTR3-15-61876-0**). Value **\$44,650**, Role: **PI**
3. **Civilian Research and Development Foundation, USA (2016 – 2018).** Serological evidences for emerging diseases at the level of human and animal interface. Project ID: **GTR2-15-61869-0**). Value **\$44,997**, Role: **Co-PI**
4. **Pakistan Science Foundation (2015 – 2017).** The development and evaluation of thermostable vaccine against peste des petits ruminants (Project ID: **P-UVAS/Bio 544**). Value **\$17,562**. Role: **Co-PI**
5. **Higher Education Commission, Pakistan (2015 -2016).** Sequencing and understanding toward genetic variations in Peste des petits ruminants virus isolates from Punjab province. Value **\$ 4461**. Role: **PI**
6. **Higher Education Commission of Pakistan (2015-16).** Role of host entry factors in pathogenesis of Foot and Mouth Disease. Value **\$5555**. Role: **Co-PI**
7. **Naval Medical Research Unit-3 at Egypt (2014-17).** Viral and Hemorrhagic Fever disease Surveillance, diagnostic testing and laboratory capacity building in Pakistan (Project ID: **N68171-14-P-0240**). Value **\$120,000**, Role: **Co-PI**

8. **Defense Threat Reduction Agency, USA (2010-15).** Spatial ecology and epidemiology of soil-borne human and animal bacterial pathogens and its public health significance in Pakistan (Project ID: 4368-UVAS-DTRA-0080). Value **\$519,854**, Role: **Program Manager/Co-PI**
9. **Defense Threat Reduction Agency, USA. (2010-15).** A metagenomic approach to the unbiased identification of pathogens endemic to Pakistan (Project ID: 4367-UVAS-DTRA-0081). Value **\$590,000**, Role: **Program Manager/Co-PI**
10. **Punjab Agriculture Research Board, Pakistan (2011-14).** Development of vaccine for the control of Buffalo and Cattle calf diarrhea. Value **\$165,554**. Role: **Team Member**
11. **World Health Organization (2013-14).** A pilot study for implementation of a comprehensive Rabies control program in Lahore (Project ID: EMPAK1206232). Value **\$12,000**. Role: **Co-PI**
12. **Higher Education Commission of Pakistan (2012-13).** Genetic analysis of multidrug-resistant and virulence factors of *Salmonella spp.* in poultry. Value **\$5555**. Role: **Co-PI**
13. **American Association for the Advancement of Sciences (2011 -12).** Transboundary ecosystem health in the Pamirs, Pakistan (Project ID: S-LMAQM-09-GR-055). Value **\$74,980**, Role: **Co-PI**

**Honours/Awards/Fellowships:**

1. **Bronze Medalist (DVM); Chief Proctor and Merit Scholarship** during DVM (2001 – 2005)
2. **Biosecurity Engagement Program Fellowship** at The Pennsylvania State University, USA (July – September, 2009)
3. Higher Education Commission (HEC) Pakistan (**PhD Indigenous Scholarship, 2010-2013**)
4. **HEC- IRSIP Fellowship** (September 2012 to February 2013) at The Pennsylvania State University USA
5. **HEC Approved Supervisor** (2013 to date) and **ORCID Researcher** (F-8792-2013)
6. **BBSRC, UK Fellowship** for development of pseudotypes of peste des petits ruminants virus (October 13 – December 12, 2014)
7. British Commission, UK sponsored **ResearcherLink travel grant Fellowship** at The Pirbright Institute, UK from November 15, 2015 to February 06, 2016
8. **Global Outreach Membership (43052540)** – American Society of Microbiology, USA
9. **Lifetime membership in Pakistan Biosafety Association (No. 1181)** – Pakistan Biological Safety Association (PBSA) Islamabad

**Academic Record Summary:**

a. PUBLICATIONS (Impact factor: 267.6)		b. STUDENTS					
			Supervised		Under supervision		TOTAL
			M. Phil	PhD	M. Phil	PhD	
• Reviews:	11	Supervisor	15	03	03	04	26
• Research articles:	105	Major member	05	03	02	03	13
• Book chapter	01	Minor member	06	02	02	01	11
<b>TOTAL</b>	<b>116</b>	<b>TOTAL</b>	<b>26</b>	<b>08</b>	<b>07</b>	<b>08</b>	<b>50</b>

**Publications (Reviews)**

1. Ul-Rahman A, Ishaq HM, Raza MA, **Shabbir MZ**. Zoonotic potential of Newcastle disease virus: old and novel perspectives related to public health. Review in Medical Virology. (2022). 32(1):e2246
2. Khurana SK, Sehrawat A, Tiwari R, Prasad M, Gulati B, **Shabbir MZ** et al. Bovine brucellosis – a comprehensive review. Veterinary Quarterly. (2021). 41(1): 61-88
3. Rahman A, Dhama K, Ali Q, Raza MA, Chaudhry U, **Shabbir MZ**. Foot and mouth disease in a wide range of wild hosts: a potential constraint in disease control efforts worldwide particularly in disease-endemic settings. Acta Tropica. (2020). 210: 105567
4. Rahman A, Dhama K, Ali Q, Hussain I, Oneeb M, Chaudhary U, Wensman JJ, **Shabbir MZ**. Peste des petits ruminants in large ruminants, camels and unusual hosts. Veterinary Quarterly. (2020). 40(1): 35-42

5. Shabbir MA, Shabbir MZ, Wu Q, Mahmood S, Sajid A, Maan MK, Ahmed S, Naveed U, Hao H, Yuan Z. CRISPR-cas system: biological function in microbes and its use to treat antimicrobial resistant pathogens. *Annals of Clinical Microbiology and Antimicrobials*. (2019). 18:21
6. Dhama K, Kumar N, Saminathan M, Tiwari R, Karthik K, Kumar MA, Palanivelu M, **Shabbir MZ**, Malik YS, Singh RK. Duck virus enteritis (duck plague) - a comprehensive update. *Veterinary Quarterly* (2017). 37(1): 57-80
7. Shabbir MAB, Hao H, **Shabbir MZ**, Hussain HI, Iqbal Z, Ahmed S, Sattar A, Iqbal M, Li J, Yuan Z. Survival and evolution of CRISPR-CAS system in prokaryotes and its applications. *Frontiers in Immunology* (2016). 7: 375.
8. Shabbir MAB, Hao H, **Shabbir MZ**, Wu Q, Sattar A, Yuan Z. Bacteria vs. Bacteriophages: parallel evolution of immune arsenals. *Frontiers in Microbiology* (2016). 7: 1292.
9. Malik YS, Kumar N, Sharma K, Dhama K, **Shabbir MZ**, Ganesh B, Kobayashi N, Banyai K. Epidemiology, phylogeny, and evolution of emerging enteric Picobirnaviruses of animal origin and their relationship to human strains. *Biomed Research International* (2014). 780752
10. Dhama K, Saminathan M, Karthik K, Tiwari R, Shabbir MZ, Kumar N, Malik YS, Singh RK. Avian Rotavirus Enteritis – An Updated Review. *Veterinary Quarterly* (2015). 35(3):142-58.
11. Dhama K, Karthik K, Tiwari R, **Shabbir MZ**, Barbuddhe S, Malik SV, Singh RK. Listeriosis in animals, its public health significance (food borne zoonosis) and advances in diagnosis and control: A comprehensive review. *Veterinary Quarterly* (2015). 35(4): 211-35.

#### Publications (Research Articles/Short communications):

1. **Shabbir MZ**, Yu H, Lighty ME, Dunn PA, Wallner-Pendleton EA, Lu H. Diagnostic investigation of Avian Reovirus field variants circulating in Broiler chickens in Pennsylvania of United States between 2017-2022. *Avian Pathology*. 2024. 17:1-33.
2. Ahmad F, Javed K, Tahir A.... **Shabbir MZ**. Identifying key soil characteristics for *Francisella tularensis* classification with optimized Machine learning models. *Scientific Reports* 2024. 14: 1743
3. Rahman Su, Akbar H, **Shabbir MZ**, Ullah U, Rashid MI (2023) Newly optimized ELISA kit and LAT reveal significantly higher seroprevalence in sheep raised in agro-ecological zone as against range-ecological zone, with a significant association of meteorological parameters. *PLoS ONE* 18(12): e0290374.
4. Sardar N, Aziz MW, Mukhtar N, Yaqub T, Anjum AA, Javed M, Ashraf MA, Tanvir R, Wolfe AJ, Schabacker DS, ..... **Shabbir MZ**. One Health assessment of *Bacillus anthracis* incidence and detection in Anthrax-endemic areas of Pakistan. *Microorganisms* 2023. 11: 2462.
5. Habib M, Ul-Rahman A, Shahid MA, Sarwar N, Bilal M, Imran MS, Munir M, Abbas S, **Shabbir MZ**. Comparative Immunocompetence and Interspecies Transmission of Avian Orthoavulavirus-1 in Feral Birds Originating from Rural and Urban Settings. *Comparative Immunology, Microbiology and Infectious Diseases*. 2023:102036.
6. Ul-Rahman A, Rabbani M, **Shabbir MZ**. A comparative evaluation of transcriptome changes in lung and spleen tissues of chickens infected with velogenic and mesogenic Avian Orthoavulavirus 1. *Microbial Pathogenesis*. 2023.174:105956.
7. Ahmad F, Khan MUG, Tahir A, Tipu MY, Rabbani M, **Shabbir MZ**. Two phase feature-ranking for new soil dataset for *Coxiella burnetii* persistence and classification using machine learning models. *Scientific Reports*. 2023. 13: 29.
8. Aslam M, Naeem F, Seher R, **Shabbir MZ**, Shehzad W, Imran M. Effect of storage temperature and duration on direct PCR amplification of various feather types and DBS matrices. *Gene*. 2023. 854:147116.
9. **Shabbir MZ**, Kariyawasam S, Pierre TA, Dunn PA, Wallner-Pendleton EA, Lu H. Identification, 16S rRNA-based characterization, and antimicrobial profile of Gallibacterium isolates from broiler and layer chickens. *Journal of Veterinary Diagnostic Investigation*. 2023. 35(1): 13 – 21.
10. Aziz MH, **Shabbir MZ**, Ali MM, Asif Z, Ijaz MU. Immunoinformatics approach for epitope mapping of immunogenic regions (N, F and H Gene) of Small Ruminant Morbillivirus and its comparative analysis with standard vaccinal strains for effective vaccine development. *Vaccines*. 2022. 10: 2179
11. Ul-Rahman A, Niaz N, Raza MA, Mehmood A, Rajpoot SU, Abubakar M, **Shabbir MZ**. First emergence of lumpy skin disease in cattle in Pakistan. *Transboundary and Emerging Diseases*. 2022. 1–3.

12. Yasein G, Ashraf K, Naveed U, Rashid MI, **Shabbir MZ**. First genetic evidence of *Trypanosoma theileri* in indigenous cattle in Southern Punjab province of Pakistan. *Pakistan Veterinary Journal*. 2022. 42(3): 322-327.
13. Rahman S, Akbar H, **Shabbir MZ**, Ullah U, Rashid MI. Serological investigation of Bovine Toxoplasmosis using commercial and indigenous ELISA kits while validating Cattle Toxo IgG ELISA kit. *Animals*. 2022. 12: 2067
14. Yasein G, Zahid O, Minter E, Ashraf K, Rashid I, **Shabbir MZ**, Betson M, Sargison ND, Chaudhry U. A novel metabarcoded deep amplicon sequencing tool for disease surveillance and determining the species composition of *Trypanosoma* in cattle and other farm animals. *Acta Tropica*. 2022. 230:106416.
15. Nawaz M, Ashraf MA, Ali MA, **Shabbir MZ**, Shabbir MAB, et al. T. Renessans helps in early clearance of SARS-CoV-2: *In-Vivo* activity of the Iodine complex in *Rhesus macaque*. *Life*. (2022). 12: 1424.
16. Yaqub T, Nawaz M, **Shabbir MZ**, ..... et al. A longitudinal survey for genome-based identification of SARS-COV-2 in sewage water in selected lockdown areas of Lahore city, Pakistan: a potential approach for future smart lockdown strategy. *Biomedical and Environmental Science*. (2021). 34(9): 729-733.
17. **Shabbir MZ**, Nissly RH, Ahad A, et al. Genomic characterization of velogenic avian orthoavulavirus 1 isolates from poultry workers: Implications to emergence and its zoonotic potential towards public health. *Asian Pacific Journal of Tropical Medicine*. (2021). 14(2): 64-72.
18. Sarfraz-ur-Rahman, Akbar H, **Shabbir MZ**, Ullah U, Rashid MI. Development of human Toxo IgG ELISA kit, and false-positivity of Latex Agglutination test for the diagnosis of Toxoplasmosis. *Pathogens*. (2021). 10: 1111.
19. Mustafa, G.R., Li, C., Zhao, S. .... **Shabbir MZ**, et al. Metagenomic analysis revealed a wide distribution of antibiotic resistance genes and biosynthesis of antibiotics in the gut of giant pandas. *BMC Microbiology*. (2021). 21: 15
20. Chaudhry U, Ali Q, Zheng L, Rashid I, **Shabbir MZ** et al. Contrasting population genetics of co-endemic cattle- and buffalo- derived *Theileria annulate*. *Ticks and Tick-borne Diseases*. (2021). 12: 101595
21. **UI-Rahman A**, Shabbir MA, Mehmood A, **Shabbir MZ**. Genotypic and sub-genotypic diversity of Avian Paramyxoviruses 2, 4, and 6. *Pakistan Veterinary Journal*. (2021). 41(1): 156-159.
22. UI-Rahman A, Shabbir MA, Aziz MW, Yaqub S, Mehmood A, Raza MA, **Shabbir MZ**. A comparative phylogenomic analysis of SARS-CoV-2 strains reported from non-human mammalian species and environmental samples. *Molecular Biology Reports*. (2020). 47(11): 9207-17.
23. Doyle SR, Tracey A, ..... **Shabbir MZ**, et al. Genomic and transcriptomic variation defines the chromosome-scale assembly of *Haemonchus contortus*, a model gastrointestinal worm. *Communication Biology*. (2020). 3: 656
24. Jens H. Kuhn.... **Shabbir MZ**, et al. 2020 taxonomic update for phylum *Negarnaviricota* (*Riboviria: Orthornavirae*), including the large orders *Bunyavirales* and *Mononegavirales*. *Archives of Virology*. 2020. 165: 3023 – 3072.
25. Shahid MF, **Shabbir MZ**, et al. Sero-epidemiological survey of Crimean-Congo Hemorrhagic Fever among the human population of the Punjab province in Pakistan. *Virologica Sinica*. 2020. 35(4):486-489
26. Shahid MF, **Shabbir MZ**, et al. Seroprevalence of Crimean-Congo haemorrhagic fever among three selected risk human groups in disease-endemic region of Pakistan. *Zoonoses and Public Health*. (2020) 67: 755–759
27. Ahmad F, Farooq A, Khan MUG, **Shabbir MZ**, Rabbani M, Hussain I. Identification of most relevant features for classification of *Francisella tularensis* using machine learning. *Current Bioinformatics*. 2020; 15: 1-16
28. Holder A, Garty R, Elder C, Mesnard P, Laquerbe C, Bartens MC, Salavati M, **Shabbir MZ** et al. Analysis of genetic variation in the Bovine *SLC11A1* gene, its influence on the expression of NRAMP1 and potential association with resistance to Bovine Tuberculosis. *Frontiers in Microbiology*. (2020). 11:1420.
29. **Shabbir MZ**, Sohail T, Rahman A et al. Sentinel surveillance of selected veterinary and public health pathogens in camel population originating from Southern Punjab province, Pakistan. *Acta Tropica*. (2020); 205: 105435
30. **Shabbir MZ**, Rahman A, Munir M. A comprehensive global perspective on phylogenomics and evolutionary dynamics of *Small ruminant morbillivirus*. *Scientific Reports*. (2020). 10:17

31. Rahman A, Shabbir MAB, Ahmed M, **Shabbir MZ**. A comparative evaluation of serum biochemistry profile and antigenic relatedness among velogenic and mesogenic Avian avulavirus 1 infection in chickens and pigeons. *Tropical Animal Health and Production*. (2020). 52(4):1977-1984
32. Rahman A, Rohaim MA, Naggard RFE, Mustafa G, Chaudhry U, **Shabbir MZ**. Comparative clinico-pathological assessment of velogenic (sub-genotype VIII) and mesogenic (sub-genotype VIIm) *Avian avulavirus 1* in chickens and pigeons. *Avian Pathology*. 2019; 48(6): 610–621.
33. Habib M, Yaqub T, Rahman A, Sohail T, Shahbaz M, Shehzad W, Munir M, **Shabbir MZ**. Evaluation of transmission potential and pathobiological characteristics of mallard originated *Avian orthoavulavirus 1* (sub-genotype VII.2) in commercial broilers. (2019). *Microbial Pathogenesis*. 137: 103785.
34. Rahman AU, Munir M, **Shabbir MZ**. A comparative phylogenomic analysis of peste des petits ruminants virus isolated from wild and unusual hosts. *Molecular Biology Reports*. (2019).46(5): 5587-5593
35. Yaqub S, Yaqub T, **Shabbir MZ** et al. Circulation of multiple subtypes (A, G and CRFs 02\_AG) of human immunodeficiency virus type-1 (HIV-1) in select districts of Punjab province, Pakistan. *Archives of Virology*. (2019). 164: 3081-3087
36. Chaudhry U, Q Ali, Rashid I, **Shabbir MZ** et al. Development of a deep amplicon sequencing method to determine the species composition of piroplasm haemoprotozoa. *Ticks and Tick-Borne Diseases*. (2019). 10: 101276
37. Rahman A, **Shabbir MZ** A comparative phylogenomic analysis of avian avulavirus 1 isolated from non-avian hosts: conquering new frontiers of zoonotic potential among species. *Archives of Virology*. (2019). 164:1771–1780
38. Rahman A, Munir M, **Shabbir MZ**. A comparative genomic and evolutionary analysis of circulating strains of Avian avulavirus 1 in Pakistan. *Molecular Genetics and Genomics*. (2019). 294:1289–1309.
39. Rahman A, Yaqub T, Imran M, Habib M, Sohail T, N Mukhtar, Shahid MF, Munir M, **Shabbir MZ**. Sequence analysis and biological characterization of virulent avian avulavirus 1 isolated from asymptomatic migratory fowl. *Acta Virologica*. (2019). 63: 223-228.
40. Muhammad J, Rabbani M, **Shabbir MZ** et al. Cross-sectional study and risk factors analysis of *Francisella tularensis* in soil samples in Punjab province of Pakistan. (2019). *Frontiers in Cellular and Infection Microbiology*. 9:89.
41. Anwar H, Suchodolski JS, Ullah MI, Hussain G, **Shabbir MZ**, Mustafa I, Sohail MU. Shiitake culinary-medicinal mushroom, *Lentinus edodes* (Agaricomycetes), supplementation alters gut microbiome and corrects dyslipidemia in Rats. *International Journal of Medicinal Mushrooms*. (2019). 21(1): 79-88.
42. Rohaim MA, El-Naggat RF, Helal AM, Bayoumi MM, El-Saeid MA, Ahmed KA, **Shabbir MZ**, Munir M. Genetic diversity and phylodynamics of *Avian Coronaviruses* in Egyptian wild birds. *Viruses*. (2019). 11(1); 57.
43. Sohail T, Yaqub T, Abbas T, Rabbani M, Nazir J, Maqbool SM, Yaqub S, Habib M, Rahman A, Mukhtar N, Shahbaz M, Zahoor MY, **Shabbir MZ**. Seroprevalence of Bluetongue virus in small and large ruminants in Punjab province, Pakistan. *Acta Tropica*. (2019). 189: 22-29
44. Ali Q, Rashid I, **Shabbir MZ**, Rahman A, Shahzad K, Ashraf K, Sargison ND, Chaudhry UN. Emergence and the spread of the F200Y benzimidazole resistance mutation in *Haemonchus contortus* and *Haemonchus placei* from buffalo and cattle. (2019) 265: 48-54.
45. Rohaim MA, El Naggat RF, Hamoud MM.... **Shabbir MZ**, et al. Emergence and genetic analysis of variant pathogenic 4/91 (serotype 793/B) infectious bronchitis virus in Egypt during 2019. *Virus Genes*. 2019;55(5):720-725.
46. Rahman A, Yaqub T, Imran M, Habib M, Sohail T, Shahid MF, Munir M, **Shabbir MZ**. Phylogenomics and infectious potential of *Avian Avulaviruses* species type 1 Isolated from healthy Green-Winged Teal (*Anas carolinensis*) from a wetland sanctuary of Indus River. *Avian Diseases*. (2018). 62(4): 404-415
47. Shabbir MAB, Wu Q, **Shabbir MZ**, Sajid A, Ahmed S, Sattar A, Tang Y, Li J, Maan MK, Hao H, Yuan Z. The CRISPR-cas system promotes antimicrobial resistance in *Campylobacter jejuni*. *Future Microbiology*. (2018) 13 (16): 1757 – 1774.
48. Linz B, Mukhtar N, **Shabbir MZ**, Rivera I, Ivanov YV, Tahir Z, Yaqub T and Harvill ET. Virulent epidemic pneumonia in Sheep caused by the human pathogen *Acinetobacter baumannii*. *Frontiers in Microbiology*. (2018). 9:2616.

49. **Shabbir MZ**, Rahman A, Zahid MN, Munir M. Genetic characterization of small ruminant morbillivirus from recently emerging wave of outbreaks in Pakistan. *Transboundary and Emerging Diseases*. (2018). 65: 2032 – 2038.
50. Ali Q, Rashid I, **Shabbir MZ**, Shahzad K, Ashraf K, Sargison ND, Chaudhry UN. Population genetics of benzimidazole-resistant *Haemonchus contortus* and *Haemonchus placei* from buffalo and cattle: implications for the emergence and spread of resistance mutations. *Parasitology Research* (2018). 117:3575–3583
51. Rahman A, Munir M, **Shabbir MZ**. Comparative evolutionary and phylogenomic analysis of Avian avulaviruses 1-20. *Molecular Phylogenetics and Evolution* (2018) 127: 931-951
52. Rahman A, Wensman JJ, Abubakar M, **Shabbir MZ**, Rossiter P. Peste des petits ruminants in wild ungulates. *Tropical Animal Health and Production* (2018). 50: 1815-1819
53. Ali Q, Rashid I, **Shabbir MZ**, Akbar H, Shahzad K, Ashraf K, Sargison N, Chaudhry U. First genetic evidence for the presence of the rumen fluke *Paramphistomum epiclitum* in Pakistan. *Parasitology International*. (2018) 67: 533-537.
54. Habib M, Yaqub T, Nazir J, Shehzad W, Rahman A, Sohail T, Mukhtar N, Mehboob A, Munir M, **Shabbir MZ**. Genomic and biological characterization of Newcastle disease viruses isolated from migratory Mallards (*Anas platyrhynchos*). *Archives of Virology*. (2018) 163: 2179–2188
55. Malik AI, Ijaz M, Yaqub T, Avais M, **Shabbir MZ**, Aslam H, Aqib AI, Farooqi SH, Sohail T, Ghaffar A, Ali A. Sero-epidemiology of bluetongue virus (BTV) infection in sheep and goats of Khyber Pakhtunkhwa province of Pakistan. *Acta Tropica*. (2018) 182: 207-211.
56. Sohail T, Yaqub T, Shafee M, Abbas T, Nazir J, Najeebullah, Rabbani M, Chaudhary MH, Mukhtar N, Habib M, Rahman A, Malik AI, Ghafoor A, Zahoor MY, **Shabbir MZ**. Seroprevalence of Bluetongue Virus in small ruminants in Balochistan province, Pakistan. *Transboundary Emerging Diseases*. (2018). 65: 1272-1281
57. Ghorri MT, Khan MS, Khan JA, Rabbani M, **Shabbir MZ**, Chaudhry HR, Ali MA, Muhammad J, Elschner MC, Jayarao BM. Seroprevalence and risk factors of glanders in working equines - findings of a cross-sectional study in Punjab province of Pakistan. *Acta Tropica*. (2017) 176: 134-139.
58. Yaqub T, **Shabbir MZ**, Mukhtar N, Tahir Z, Abbas T, Amir E, Defang G. Detection of selected arboviral infections in patients with history of persistent fever in Pakistan. *Acta Tropica*. (2017) 176: 34-38.
59. **Shabbir MZ**, Sohail MU, Chaudhary UN, Yaqub W, Rashid I, Saleem MH, Munir M. Genetic characterization of canine parvovirus from dogs in Pakistan. *Acta Virologica*. (2017) 61(2): 175 – 182.
60. Chaudhary UN, Paridon B, Lejeune M, **Shabbir MZ**, Rashid MI, Ashraf K, Ashraf S, Gilleard JS, Sargison N. Morphological and molecular identification of *Explanatum explanatum* in domestic water buffalo in Pakistan. *Veterinary Parasitology*. (2017) 8: 54 – 59.
61. **Shabbir MZ**, Akhtar S, Tang Y, Yaqub T, Ahmad A, Mustafa G, Alam MA, Santhakumar D, Nair V. Infectivity of wild bird origin Avian Paramyxovirus serotype 1 and vaccine effectiveness in chickens. *Journal of General Virology*. (2016) 97 (12): 3161-3173.
62. Akhtar S, Muneer MA, Muhammad K, Tipu MY, Rabbani M, Rahman A, **Shabbir MZ**. Genetic characterization and phylogeny of pigeon paramyxovirus isolate (PPMV-1) from Pakistan. *SpringerPlus*. (2016) 5:1295
63. **Shabbir MZ** et al. Evidence of *Coxiella burnetii* in Punjab province, Pakistan. *Acta Tropica*. (2016) 163: 61-69.
64. Chaudhry UN, Redman EM, Ashraf K, **Shabbir MZ**, Rashid MI, Ashraf S, Gilleard JS. Microsatellite marker analysis of *Haemonchus contortus* populations from Pakistan suggests that frequent benzimidazole drug treatment does not result in a reduction of overall genetic diversity. *Parasites and Vectors* (2016) 9:349
65. Asad MHH, Iqbal M, Akram MR, Khawaja NR, Muneer S, **Shabbir MZ**, Khan MS, Murtaza G, Hussain I. 5-nucleotidases of *Naja naja karachiensis* snake venom: their determination, toxicities and remedial approach by natural inhibitors (medicinal plants). *Acta Poloniae Pharmaceutica* (2016) 73(3): 667 – 673.
66. Sohail MU, **Shabbir MZ**, Steiner JM, Ahmad S, Kamran Z, Anwar H, Hussain G, Shaukat A, Irfan-ullah M, Suchodolski JS. Molecular analysis of the gut microbiome of diabetic rats supplemented with

- prebiotic, probiotic, and synbiotic foods. International Journal of Diabetes in Developing Countries (2016). 37: 419 - 25
67. **Shabbir MZ**, Ali M, Abbas M, Chaudhary UN, Rehman Z, Munir M. Molecular characterization of infectious bursal disease viruses from Pakistan. Archives of Virology (2016) 161(7): 2001-2006
  68. Sohail MU, Shahzad AH, Iqbal S, **Shabbir MZ**, Iqbal Z, Younus M, Nak D, Nak Y, Arshaad T. Ascorbic acid inclusion in semen extender improves the post-thawed semen quality of Sahiwal cattle (*Bos Indicus*). Pakistan Journal of Zoology (2015) 47(6): 1571 – 1577.
  69. **Shabbir MZ** et al. Prevalence and distribution of soil-borne zoonotic pathogens in Lahore district of Pakistan. Frontiers in Microbiology (2015). 6:917
  70. **Shabbir MZ** et al. Microbial communities present in the lower respiratory tract of clinically healthy birds in Pakistan. Poultry Science (2015). 94(4): 612 – 620.
  71. Chaudhry U, van Paridon B, **Shabbir MZ**, Shafee M, Ashraf K, Yaqub T, Gilleard J. Molecular evidence that *Fasciola gigantica*, is the predominant *Fasciola* species infecting ruminants in Pakistan. Journal of Helminthology (2015).
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  73. Khan M, Nazir J, Anjum AA, Ahmad M, Nawaz M, **Shabbir MZ**. Toxinotyping and antimicrobial susceptibility of enterotoxigenic *Clostridium perfringens* isolates from mutton, beef and chicken meat. Journal of Food Sciences and Technology (2015). 52(8): 5323- 5328
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97. **Shabbir MZ**, Rabbani M, Ahmad A and Yaqub T. Detection of rabies virus from equines showing nervous signs. *Pakistan Journal of Zoology* (2010). 43 (3): 608-611
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100. Rasheed SU, Khan MS, Rehman ZU, Avais M, Khan JA and **Shabbir MZ**. A study on prevalence and treatment of anhidrosis in Horses. *Journal of Animal and Plant Sciences* (2010). 20(2): 70-72.
101. **Shabbir MZ**, Rabbani M, Yaqub T, Ahmad A, Rehman ZU and Umair S. Comparative clinical epidemiology of *Toxocariasis* in dogs and cats. *Pakistan Journal of Zoology* (2010). 2(2):129-133
102. Rehman ZU, Khan MS, Avais M, Aleem M, **Shabbir MZ** and Khan JA. Prevalence of theileriosis in sheep in Okara district, Pakistan. *Pakistan Journal of Zoology* (2010). 42 (5): 639-643
103. **Shabbir MZ**, Rabbani M, Yaqub T, Ahmad A, Akhtar F, Muhammad K, Hussain M and Ahmed M. Trends in isolation and antimicrobial susceptibility of mastitis causing pathogens of Nili Ravi buffalo. *Pakistan Journal of Zoology Supplementary Series* (2009). 9: 273-279.
104. **Shabbir MZ**, Rabbani M, Muhammad K, Ahmad A, Anwar I and Yaqub T. Detection of canine distemper virus from lymphopenic dogs by RT-PCR amplification of nucleoprotein gene. *Pakistan Journal of Zoology* (2009). 41 (5): 424 – 428.
105. **Shabbir MZ**, Ghafoor A, Ahmad A, Anjum AA and Yaqub T. Immunomodulatory effect of polyimmune (*Astragalus membranaceus* extract) on humoral response of layer birds vaccinated against Newcastle disease virus. *International journal of Agriculture and Biology* (2008). 10: 585-587



### Oral Presentations

1. “**Genetic and pathobiological characteristics of the Newcastle disease virus from migratory birds**” at online international conference organized by the Russian Poultry Federation dated June 2-3, 2021
2. “**Evaluating the effectiveness of vaccines in commercial poultry against Newcastle disease viruses of genotype VI and VII**” via Online interactive session dated February 25, 2021 organized by the International Veterinary Vaccinology Network UK
3. “**Genetic and pathobiologic characterization of peacock-originated Newcastle disease virus**” at Microbiology, Infectious Diseases and Health Safety conference at University of Swabi dated April 4-5, 2019
4. “**Prevalence status and serotype distribution of Bluetongue in buffalo herds originating from Punjab province Pakistan**” at International Buffalo Congress 2019 at Pearl Continental Hotel, Lahore dated February 18-19, 2019
5. “**Complete genome sequencing and pathobiological characterization of a virulent strain of Newcastle disease virus isolated from migratory Anseriforms (*Anas platyrhynchos*)**” at 2018 PSA Annual Meeting at San Antonio Texas, USA dated July 23-26, 2018
6. “**Evidence of *Coxiella burnetii* in Punjab province, Pakistan**” at International Conference on Agriculture and Biological Sciences at Shanghai, China dated July 23-26, 2016
7. “**Genetic and pathobiologic characterization of pigeon-originated Newcastle disease virus**” at 105<sup>th</sup> 2016 Poultry Science Association Annual Meeting at New Orleans, Louisiana, USA dated July 11 – 14, 2016
8. “**Investigation of a respiratory disease outbreak in calves; isolation of *Pasteurella multocida* and metagenomics of clinical samples**” at 8<sup>th</sup> Asian Buffalo Congress from April 21 – 25, 2015
9. “**Microbial communities present in the lower respiratory tract of clinically healthy birds in Pakistan**” at the Annual meeting of Poultry Science Association from July 14 – 17, 2014 at Corpus Christi, Texas, USA
10. “**Spatial Ecology and Epidemiology of Soil borne Human and Animal Bacterial Pathogens and its Public Health Significance in Pakistan**”. DTRA annual review meeting at Washington, USA from November 05 – 07, 2012.
11. “**A Metagenomic Approach to the Unbiased Identification of Pathogens Endemic to Pakistan**”. DTRA annual review meeting at Washington, USA from November 05 – 07, 2012
12. “**Trends in isolation and antimicrobial susceptibility of mastitis causing pathogens of Nili Ravi Buffalo**”. 6<sup>th</sup> Asian Buffalo Congress (ABC) held at pearl continental Hotel, Lahore on October 27-30, 2009

### Abstract/Posters:

1. Shabbir MZ, Rahman A, Yaqub T (2018). Complete genome sequencing and pathobiological characterization of a virulent strain of Newcastle disease virus isolated from migratory Anseriforms (*Anas platyrhynchos*). Poultry Science 97 (E-Suppl. 1), page 128
2. **Shabbir MZ**, Rabbani M, Muhammad J, Ali MA, Jayarao BM (2017). Potential relationship between soil characteristics and the occurrence of soil-borne pathogens of public health significance; preliminary findings of a cross-sectional study. NZMS conference at Auckland University of Technology, Auckland, New Zealand dated November 20-23, 2017
3. **Shabbir MZ**, Akhtar S, Tang Y, Yaqub T, Ahmed A, Mustafa G, Alam MA, Munir M (2016). Genetic and pathobiologic characterization of pigeon-originated Newcastle disease virus. Poultry Science 95(E-Suppl. 1), New Orleans, Louisiana, USA: Page 101.
4. **Shabbir MZ**, Akram S, Hassan Z, Hanif K, Rabbani M, Muhammad J, Chaudhary MH, Abbas T, Ghori MT, Rashid H, Jamil T, Islam Z, Rasool H, Bano A, Ahmad A, Ali MA, Yaqub T, McVey W, Jayarao BM (2016). Evidence of *Coxiella burnetii* in Punjab province, Pakistan
5. Muhammad J, Rabbani M, **Shabbir MZ**, Muhammad K, Wasim M, Husnain MZ, Cahuahdary HR, Ghouri MT, Haisum M, Ali MA, Jamil T, Kirimanjeswara GS, Jayarao BM (2015). Spatial distribution of Francisella tularensis in selected districts of Punjab province Pakistan. 8<sup>th</sup> International conference on Tularemia, Opatija Croatia. Page 130.
6. **Shabbir MZ**, Jayarao BM, McVey WR, Patel K, Francesconi S, Rabbani M (2015). Spatial ecology

and epidemiology of soil-borne human and animal bacterial pathogens and their public health significance in Pakistan. International Conference on Emerging Infectious Diseases, Georgia, USA. Page 204.

7. **Shabbir MZ**, Ivanov Y, Park J, Rabbani M, Yaqub T, Mukhtar N, Ahmad A, Harvill ET (2015). Culture-independent analysis of gastrointestinal tract microbiome of clinically healthy and diseased calves. 8<sup>th</sup> Asian Buffalo Congress, Istanbul Turkey. Page 76.
8. **Shabbir MZ**, Ivanov Y, Rabbani M, Yaqub T, Harvill ET (2015). Investigation of a respiratory outbreak in calves; isolation of *Pasteurella multocida* and metagenomics of clinical samples. 8<sup>th</sup> Asian Buffalo Congress, Istanbul Turkey. Page 31.
9. **Shabbir MZ**, Park J, Malys T, Ivanov Y, Rabbani M, Yaqub T, Harvill ET (2014). Microbial communities present in the lower respiratory tract of clinically healthy birds in Pakistan. Poultry Science 93(E-Suppl. 1), Corpus Christi, USA: Page 58.
10. **Shabbir MZ**, Yaqub T, Abbas M, Berg M, Munir M (2013). Genetic diversity of Newcastle disease virus in Pakistan: A countrywide perspective. Page 191 at EPIZONE Belgium.
11. **Shabbir MZ**, Park J, Shabbir MAB, Ivanov Y, Yaqub T, Rabbani M, Muhammad K, Rana MY and Harvill ET (2013). Culture-Independent analysis of respiratory microbiota of birds in the free-range system. Page 192 EPIZONE, Belgium.
12. Munir M, **Shabbir MZ**, Yaqub T, Berg M. Peste des petits ruminants virus in Pakistan (2013). Page 194 EPIZONE, Belgium.
13. Khan A, Rabbani M, Muhammad K, Maqbool A and **Shabbir MZ** (2009). Seroprevalence of Brucellosis in Buffalo and Human in Swat Valley, NWFP. Page 48. 6<sup>th</sup> Asian Buffalo Congress (ABC).
14. Muhammad S, Rabbani M, Ahmed MD, Muhammad K, and **Shabbir MZ** (2009). Seroprevalence of Brucellosis in cattle and buffalo from slaughter houses of district Quetta, Balochistan. Page 81. 6<sup>th</sup> Asian Buffalo Congress (ABC).
15. Sumara S, **Shabbir MZ**, Ahmad A, Bajwa AG, and Yaqub T (2009). Determination of lactoperoxidase enzyme in bovine milk. Page 236. 6<sup>th</sup> Asian Buffalo Congress (ABC).
16. **Shabbir MZ**, Rabbani M, Yaqub T, Ahmad A, Akhtar F, Muhammad K, Hussain M and Ahmed M (2009). Trends in isolation and antimicrobial susceptibility of mastitis causing pathogens of Nili Ravi Buffalo. Page 283. 6<sup>th</sup> Asian Buffalo Congress (ABC).

#### **Trainings/Workshops/Conferences/Courses (attended):**

1. One-day training on “**Operation of Lab. equipment**” organized by Institute of Microbiology in collaboration with the Worldwide Scientific at Munir Iqbal Hall, UVAS dated August 16, 2023.
2. One-day training on “**How to Respond to an Emergency**” Emergency Response Committee (UVAS) in collaboration with Civil Defence, Lahore at Veterinary Academy, UVAS dated February 22, 2023.
3. Two-day workshop on “**Securing high consequence pathogens by enhancing personnel reliability at research institutions in Pakistan**” organized by Pakistan Biological Safety Association at PC Hotel Karachi dated November 9-10, 2022
4. One-day “**BRM refresher training**” organized by Association for Biorisk Management in collaboration with Health Security Partners and University of Veterinary and Animal Sciences Lahore dated May 10, 2022.
5. A 32-contact hour international workshop on “**Advanced agriculture biorisk training**” organized by the University of Tennessee and the Centre for Agriculture and Food Security and Preparedness at Jakarta Indonesia dated September 02-05, 2018
6. International workshop on “**Arboviruses update: Field epidemiology, laboratory diagnostics and vector analysis**” jointly conducted by Agha Khan University, Pakistan and University of Florida, USA at Department of Pathology and Laboratory Medicine, Agha Khan University, Karachi dated May 08-10, 2018
7. Training course on “**Transport of infectious substances**” based on applicable international shipping regulation organized by the World Health Organization at Islamabad, Pakistan from October 18-19, 2017.
8. Training on “**Quality evaluation of Foot and Mouth disease vaccine**” at SAP institute, Ankara Turkey from October 02-06, 2017
9. Completed “**40 hours of BioPrism laboratory safety training initiative program under “Train the Trainer” workshop**” organized by PBSA Pakistan and NIH, USA from August 1-5, 2016 at Best Western Hotel Islamabad.

10. Course (08 credit Hour) on “**Surveillance and control of Rabies**” at Institute Pasteur, Phnom Penh Cambodia from August 25 – November 07, 2015 organized by WHO, University of Lausanne and Institute Pasteur France.
11. Research cum training on “**Development of pseudotypes for peste des petits ruminants virus**” from October 13 to December 12, 2014 at Animal and Plant Health Agency UK under BBSRC funded research project.
12. Training on “**Molecular and serological tools for Dengue and CCHF diagnosis**” at US Naval Medical Research Unit No. 3, Cairo Egypt from June 16 – 20, 2013.
13. Participated in programmatic and technical review entitled “**Cooperative counter-weapons of mass destruction research with global partners**” organized by Defense Threat Reduction Agency from November 05 -07, 2012 at Washington DC, USA
14. Training on “**Application of Bioinformatics in the field of microbial genetics**” at Swedish University of Agricultural Sciences, Uppsala, Sweden from April 05 – 18, 2012 under a collaborative and DTRA, USA funded research project.
15. Training on “**Metagenomics and DNA sequence analysis using MEGAN and MOTHUR**” at Agricultural Sciences Building, PennState University, USA from September 07 – 09, 2011 under a collaborative and DTRA, USA funded research project.
16. One-week training on “**Geospatial mapping and its role in impact study of soil and food borne human and animal bacterial pathogens**” at Animal Diagnostic Laboratory, PennState University, USA from September 01 - 07, 2011 under a collaborative and DTRA, USA funded research project.
17. Two weeks training on “**Real Time PCR, PCR-DGGE and other molecular techniques for characterization of bacterial pathogens**” at Animal Diagnostic Laboratory, PennState University, USA from August 15 – 31, 2011 under a collaborative and DTRA, USA funded research project.
18. Three months training on “**Animal disease research and Molecular diagnosis**” at Animal Diagnostic Laboratory, Wiley Lab., PennState University, USA from July 1, 2009 to September 30, 2009 funded by Biosecurity Engagement Programme (BEP), United States Department of State, USA.
19. Participated in “**81<sup>st</sup> Northeastern Conference on Avian Diseases**” on September 17-18, 2009 held at Holiday Inn, Harrisburg, Pennsylvania, USA.
20. Forty Days training workshop on “**Staff Development Course**” by National Academy of Higher Education (NAHE, HEC), held at U.V.A.S, Lahore on December 15, 2006 to January 25, 2007
21. Eight days International training workshop on “**Characterization and Management of Newly Emerging Viral Diseases in the Developing World**” by NIBGE, Faisalabad on November 14 – 22, 2006
22. One-week workshop on “**Practical Veterinary Epidemiology**” by Institute of Continuing Education and Extension, UVAS, Lahore on November 4 – 11, 2006
23. One-week Workshop on “**Production and Evaluation of Bird Flu Vaccine**” by Institute of Continuing Education and Extension, UVAS, Lahore on June 19 – 25, 2006
24. Two-week Workshop on “**Preparation and Evaluation of FMD Vaccine**” by Institute of Continuing Education and Extension, UVAS, Lahore on May 16 - 30, 2006.

#### **Trainings Organized/Resource Person:**

1. One-day training workshop on “**Bovine Leukemia Virus: An emerging issue of dairy industry of Pakistan**” at the Institute of Microbiology, UVAS dated March 09, 2023
2. Three-day training on “**Advanced concepts of biorisk management**” organized by Department of Microbiology at Veterinary Academy, UVAS dated March 10-12, 2021
3. National training on “**Laboratory biosafety, equipment maintenance and waste disposal**” for Laboratory Assistants of L&DD, Punjab at the Institute of Microbiology, UVAS, Lahore dated October 13-15, 2020
4. National training on “**Working in BSL-3 laboratory for emerging pathogens**” organized and conducted at Department of Microbiology, University of Veterinary and Animal Sciences dated April 08-10, 2020
5. National training on “**Diagnosis of COVID-19 using RT-PCR**” organized and conducted at Department of Microbiology, University of Veterinary and Animal Sciences dated April 13-14, 2020
6. National training workshop on “**Writing a competitive grant proposal**” organized by Department of Microbiology at Veterinary Academy, UVAS dated January 21-23, 2020

7. Participated as a resource person in a national training workshop on **“Molecular detection of food-borne pathogens”** organized by Quality Operations Laboratory, UVAS dated November 28-29, 2019
8. Participated as a resource person in a national training workshop on **“Production of Foot and Mouth Disease virus vaccine using cell suspension culture system”** organized by Centre for Biologics Production at Quality Operations Laboratory, UVAS dated June 10-14, 2019
9. Participated as a resource person in a workshop on **“Awareness level biosafety workshop”** organized by Faculty of Veterinary Science, University of Veterinary and Animal Sciences dated August 08-10, 2018
10. Organized and participated as a resource person in one-week international workshop on **“Evaluation of Foot and Mouth Disease Virus vaccine”** jointly organized by SAP Institute, Turkey and Centre for Biologics Production at University of Veterinary and Animal Sciences dated April 23-28, 2018
11. Participated as a resource person in an international training course on **“Poultry viral diagnostics”** jointly organized by Department of Microbiology at University of Veterinary and Animal Sciences and The Royal Veterinary College, University of London dated March 05-12, 2018
12. Organized and participated as a resource person in two-day international workshop on **“Hands-on practical training on tools used for next generations sequencing based microbiome and sequencing data analysis”** to faculty/researchers/Postgraduate students across Pakistan at University of Veterinary and Animal Sciences, Lahore from December 14-15, 2016.
13. Participated as a resource person in three-day international workshop on **“Devising strategies to control emerging viral hemorrhagic fevers in Pakistan”** to medical and veterinary officers, research officers and scientists at University of Veterinary and Animal Sciences, Lahore from November 14-16, 2016.
14. A national workshop organized for faculty/students/researchers on **“Controlling Biorisk in Lab”** at Institute of Public Health, Lahore from May 11-13, 2015.
15. Participated as a resource person in national workshop on **“Molecular Diagnostics”** to Research officer/Scientists/Postgraduate students at UDL, IBBT and QOL, UVAS from June 23 – 25, 2015 under DTRA funded research project.
16. A series of training workshops organized and provided as resource person to veterinarians on **“Methods used in dog sterilization”** at Quality Operations Laboratory, UVAS from August 21-September 13, 2014 under WHO sponsored research project
17. Training provided as resource person to faculty/students/researchers on **“Basic molecular biology techniques”** at Quality Operations Laboratory, UVAS, Lahore from June 2-3, 2014.
18. Training organized and provided to ADIO's & VO's of DADRS, Livestock and Dairy Development Department, Punjab on **“Disease surveillance, diagnostics and reporting”** at Quality Operations Laboratory, UVAS, Lahore from June 2-3, 2014.
19. Training organized and provided to Research officer/Scientists/Postgraduate students **“Real Time PCR; applications in surveillance and disease diagnostics”** at University Diagnostic Laboratory and Quality Operations Laboratory of UVAS from August 15 -16, 2013 under DTRA, USA sponsored research project.
20. National awareness conference on **“Tuberculosis a Zoonosis”** organized at Quality Operations Laboratory, UVAS on April 16, 2013
21. Training organized and provided to Research officer/Scientists from different teaching and research institutes of Pakistan on **“Application of Bio-informatics in understanding the nature of microbes”** at University Diagnostic Laboratory and Quality Operations Laboratory of UVAS from August 01 -02, 2012 under DTRA, USA sponsored research project.
22. Training organized and provided to Research officer/Scientists from different teaching and research institutes of Pakistan on **“GIS/GPS applications in epidemiology of human and animal disease and in biological science research”** at University Diagnostic Laboratory, UVAS

and GC University Lahore from November 28 to December 02, 2011 under DTRA, USA sponsored research project.

23. Training provided to Research officer/Scientists from different teaching and research institutes of Pakistan on “**Diagnostic approaches towards Avian Mycoplasmosis**” organized at University Diagnostic Laboratory, UVAS, Lahore from January 06-07, 2011.
24. Training provided to ADIO’s & VO’s of DADRS, Livestock and Diary Development Department, Punjab on “**Advanced Laboratory Techniques for Veterinary Disease Diagnostics**” organized at University Diagnostic Laboratory, UVAS, Lahore from May 17-21, 2010.
25. Training provided to ADIO’s & VO’s of DADRS, Livestock and Diary Development Department, Punjab on “**Basic Disease Diagnostics in Livestock and Poultry**” organized at University Diagnostic Laboratory, UVAS, Lahore from April 05-10, 2010.
26. Training provided to SRO’s & VO’s of Poultry Research Institute (PRI), Livestock and Diary Development Department, Punjab on “**Advanced Diagnostics and Control of Poultry Diseases**” organized at University Diagnostic Laboratory, UVAS, Lahore from May 17-21, 2010.
27. Training provided to Lab staff of the Livestock and Diary Development Department, Punjab on “**Advanced Laboratory Techniques for Veterinary Disease Diagnostics**” organized at University Diagnostic Laboratory, UVAS, Lahore from May 04-16, 2010.