

Rabaab Zahra, Ph.D.

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Education:

- Ph.D.** Institute of Cell Biology, University of Edinburgh, UK (2007)
Thesis: *CAG.CTG trinucleotide repeat instability in the E. coli chromosome*
- M.Sc.** Department of Biotechnology, University of Karachi, Pakistan (2002)
Thesis: *Isolation and Purification of Deoxyribonuclease from Staphylococcus aureus*

Research and Teaching Experience:

- Aug 2015 – Present Associate Professor, Department of Microbiology, Quaid-i-Azam University, Islamabad, Pakistan
- Jan 2011-Aug 2015 Assistant Professor, Department of Microbiology, Quaid-i-Azam University, Islamabad, Pakistan
- July 2009-Dec 2010 Postdoctoral scholar, Department of Pediatrics, University of California, San Diego, CA, USA
- July 2007-June 2009 Postdoctoral scholar, Department of Laboratory Medicine, University of Washington, Seattle, WA, USA
- Feb-May 2007 Project Manager, 3-A Diagnostics Co., Pakistan
- Sep 2003-Dec 2006 Graduate Research, University of Edinburgh, UK
- Sep 2002-Feb 2003 Medical Technologist, Canal View Diagnostics Center, Pakistan
- March-July 2002 Demonstrator, Microbiology, Inst of Health Management, Pakistan
- June 2001 & July 2000 Demonstrator, Hematology, Inst of Health Management, Pakistan
- Aug 1998-Dec 1999 Medical Technologist, The Medical Labs (pvt) Ltd., Pakistan

Honors and awards:

- 2016-2017 Commonwealth Academic Staff Fellowship, Commonwealth Scholarship Commission, UK
- 2015 Travel grant (5,595 GBP), UK-Researcher Links, British Council, UK
- 2012 Travel grant (PKR 205,045), Higher Education Commission, Pakistan
- 2010 Mentor, EYH conference, University of San Diego, California, USA
- 2009 Presider, Sumer research conference, University of California-San Diego, USA
- 2006 Honor Fell Travel Award (300£), British Society of Cell Biology, UK
- 2005 Finalist in Biotechnology YES competition, UK
- 2003 Commonwealth Scholarship for Ph.D., UK
- 2002 Gold Medal, First class first position, M.Sc. Biotechnology, Pakistan
- 2002 Certificate of Merit, University of Karachi, Pakistan
- 1999 Certificate of Merit, University of Punjab, Pakistan

Research Grants:

2011-2012	“Role of <i>agr</i> system and autophagy in development of methicillin resistance of methicillin resistant <i>Staphylococcus aureus</i> (MRSA)” Higher Education Commission, Pakistan (principal investigator)
2014-2017	“Autophagy mediated cytotoxicity and antibiotic resistance of <i>Staphylococcus aureus</i> , role of <i>accessory gene regulatory (agr)</i> system” Higher Education Commission, Pakistan (principal investigator)
2015-2018	Burden of Antibiotic Resistance in Neonates from Developing Societies (BARNARDS)” As part of the BARNARDS Network. Bill and Melinda Gates Foundation (principal investigator-Pakistan)
2015	Genetics of Gram Negative Bacteria Causing Infection in Neonates. UK-Researcher Links Travel Grant Program, Cardiff University, United Kingdom
2016-2018	BARNARDS – Community Project. As part of the BARNARDS Network. Bill and Melinda Gates Foundation (principal investigator-Pakistan)
2016-2017	Sequence Types of <i>E. coli</i> in Environment. Commonwealth Academic Staff Fellowship, Cardiff University, United Kingdom
2017-2020	Genomic Comparison of community and hospital acquired carbapenemase-producing Enterobacteriaceae (CPE) in Pakistan, and influence of the intestinal microbiota. Pak-France Joint HEC PERIDOT Research Program 2017 (principal investigator – Pakistan side)
2020 – 2023	Establishing a Monitoring Baseline for Antibiotic Resistance in Key Environments – EMBARK, a joint Project under JPI-AMR (PI-Pakistan)
2020 – 2023	Genomic Comparison of community and Hospital Acquired Carbapenemase Producing Enterobacteriaceae and Influence of the Intestinal Microbiota (PI)

Teaching

I teach MSc and MPhil/PhD students. The courses I teach/have taught are following:

BS/MSc courses: General Virology, Clinical Microbiology, Medical Microbiology, Lab courses

MPhil/PhD courses: Antibiotic Resistance, Molecular Mechanisms of Pathogenesis, Recombinant DNA Technology, Advances in Microbiology

Publications:

1. Khan, A.A., Farooq, J., Abid, M., **Zahra, R.** (2020) Assessment of inducible Clindamycin Resistance and Hyper Variable Region (HVR) of *mecA* gene in clinical staphylococci. ***Pakistan Journal of Medical Sciences*** Jan-Feb;36(2):136-140. doi: 10.12669/pjms.36.2.665
2. Stewardson, A., Marimuthu, K., Sengupta, S., Allignol, A., Elbouseary, M., Carvalho, M. J., Hassan, B., Delgado-Ramirez, M. A., Arora, A., Bagga, R., Owusu-Ofori, A., Ovosi, J. O., Aliyu, S., Saad, H., Kanj, S. S., Khanal, B., Bhattarai, B., Saha, S. K., Uddin, J., Barman, P., Sharma, L., Elbanna, T., **Zahra, R.**, Saleemi, M.A., Kaur, A., Iregbu, K., Uwaezuoke, N.S., Hanna, P. A., Feghali, R., Correa, A., Munera, M., Thu, L. T., Thanh Nga, T. T., Phukan, C., Valderrama, S., Alvarez-Moreno, C., Walsh, T.R., Harbarth, S. (2019) Impact of carbapenem resistance on bloodstream infection outcomes in low-income and middle-income countries: a multinational prospective cohort study. ***Lancet Infectious Diseases*** 19(6):601-610. doi: 10.1016/S1473-3099(18)30792-8
3. Samad, A., Khan, A.A., Sajid, M., **Zahra, R.** (2019) Assessment of Biofilm formation by *Pseudomonas aeruginosa* and Hydrodynamic Evaluation of Microtiter Plate Assay. ***Journal of the Pakistan Medical Association*** May;69(5):666-671

4. **Zahra, R.**, Javeed, S., Bibi, M., Babenko, D., Toleman, M. (2018) Analysis of Escherichia coli STs and resistance mechanisms in sewage from Islamabad, Pakistan indicates a difference in *E. coli* carriage types between South Asia and Europe. *Journal of Antimicrobial Chemotherapy* doi: 10.1093/jac/dky109
5. Gilmore-Hall, S., Kuo, J., Ward, J., **Zahra, R.**, Morrison, R., Perkins, G., La Spada, A. (2018) CCP1 promotes mitochondrial fusion and motility to prevent Purkinje cell neuron loss in pcd mice. *Journal of Cell Biology* doi: 10.1083/jcb.201709028
6. Latif, A., Zahur, A.B., Libeau, G., **Zahra, R.**, Ullah, A., Ahmed, A., Afzal, M., Rahman, S.U. (2018) Comparative Analysis of BTS-34 and Vero-76 Cell lines for Isolation of Peste des Petits Ruminants (PPR) Virus. *Pakistan Veterinary Journal* 38(3): 237-242. doi: 10.29261/pakvetj/2018.050
7. Saba, T., Sajid, M., Khan, A. A., **Zahra, R.** (2018) Role of Intracellular Adhesion icaAD and agr genes in Biofilm Formation in Clinical *S. aureus* Isolates and Assessment of Two Phenotypic Methods. *Pakistan Journal of Medical Sciences* 34(3): 633-637. doi: 10.12669/pjms.343.14530
8. Nahid, F., **Zahra, R.**, Sandergrén, L. (2017) A bla_{OXA-181}-harbouring multi-resistant ST147 *Klebsiella pneumoniae* isolate from Pakistan that represent an intermediate stage towards pan-drug resistance. *PLoS One* 12(12), doi: 10.1371/journal.pone.0189438
9. Kumar, N., Nahid, F., **Zahra, R.** (2017) Association of virulence factors, phylogenetic groups and antimicrobial resistance markers in *Escherichia coli* from Badin City, Pakistan. *Journal of Chemotherapy* 29(1): 8-13
10. Maryam, S., Rasheed, S., Latif, A., **Zahra, R.**, Zahur, A. B., Ahsan, A., Afzal, M., Farooq, U. (2017) One-Step Real-Time Loop-Mediated Isothermal Amplification (RT-LAMP): Evaluation and its Applications for the detection of Foot and Mouth Disease Virus and its serotypes. *Turkish Journal of Veterinary and Animal Sciences* 41(3):435-443. doi: 10.3906/vet-1611-10
11. Ahmed, A., Latif, A., **Zahra, R.**, Zahur, A. B., Farooq, U., Ullah, A., Abubakar, M., Jamil, A., Afzal, M. (2017) Current Appraisal of the suitability of foot-and-mouth disease strains in two commonly used Commercial Vaccines for Control of FMD in Pakistan. *Journal of Animal and Plant Sciences* 27(2):446-450
12. Angez, M., Shaukat, S., **Zahra, R.**, Alam, M. M., Sharif, S., Khurshid, A., Arshad, Y., Rana, M. S., Mujtaba, G., Zaidi, S. Z. Z. (2017) Characterization of group B Coxsackieviruses isolates from non-polio acute flaccid paralysis patients in Pakistan: vital assessment before polio eradication. *Epidemiology and Infection* 145(12): 2473-2481
13. Sattar, H., Toleman, F., Nahid, F., **Zahra, R.** (2016) Co-existence of bla_{NDM-1} and bla_{KPC-2} in clinical isolates of *Klebsiella pneumoniae* from Pakistan. *Journal of Chemotherapy* 28(4): 346-9
14. Angez, M., Shaukat, S., **Zahra, R.**, Sharif, S., Alam, M. M., Khurshid, A., Rana, M. S., Zaidi, S. Z. Z. (2015) Identification of new genotype of Echovirus 19 from children with Acute Flaccid Paralysis in Pakistan. *Scientific Reports* doi: 10.1038/srep17456
15. Jamil, A., Zahra, R., Abubakar, M., Arshad, M. J., Ehtisham-ul-Haq, L., Akhter, T., Afzal, M. (2015) Study of Humoral Immune Response in Buffalo Calves Following Various Foot and Mouth Disease Vaccines. *Pakistan Veterinary Journal* 35(3):289-292

16. Qamar, M. U., Nahid, F., Walsh, T. R., Kamran, R., Zahra, R. (2015) Prevalence and clinical burden of NDM-1 positive infections in pediatric and neonatal patients in Pakistan. ***The Pediatric Infectious Disease Journal* 34(4): 452-4**
17. Angez, M., Shaukat, S., **Zahra, R.**, Khurshid, A., Sharif, S., Alam, M. M., Zaidi, S. Z. Z. (2015) Molecular epidemiology of enterovirus B77 isolated from non polio acute flaccid paralytic patients in Pakistan during 2013. ***Infection, Genetics and Evolution* 29: 189-195**
18. Wasee Ullah, R., Zahur Bin A., Latif, A., Dasti, J. I., **Zahra, R.**, Khan, S. (2015) Mild Form of Peste des Petits Ruminants Virus (PPRV) in Pakistan. ***Pakistan Journal of Zoology* 47(1): 276-279**
19. Dubinsky, A. N., Dastidar, S. G., Hsu, C. L., **Zahra, R.**, Djakovic, S. N., Durate, S., Esau, C. C., Spencer, B., Ashe, T. D., Fischer, K. M., MacKenna, D. A., Sopher, B. L., Masliah, E., Gaasterland, T., Chau, B. N., Pereira de Almeida, L., Morrison, B. E., La Spada, A. R. (2014) *Let-7* Coordinately suppresses Components of the Amino Acid Sensing Pathway to Repress mTORC1 and Induce Autophagy. ***Cell Metabolism* 20 (4): 626-638**
20. Shah, T. A., **Zahra, R.** (2014) Screening of Environment water for the presence of *bla*_{NDM-1} containing Microorganisms. ***Journal of the College of Physicians and Surgeons Pakistan* 24 (9): 695-697**
21. Rasheed, F., Campbell, B. J., Alfizah, H., Varro, A., **Zahra, R.**, Yamaoka, Y., Pritchard, D. M. (2014) Analysis of Clinical Isolates of *Helicobacter pylori* in Pakistan Reveals High Degrees of Pathogenicity, High Frequencies of Antibiotic Resistance and Identifies a Novel Mutation which Confers Resistance to Clarithromycin. ***Helicobacter* 19:387-399**
22. Hasan, B., Perveen, K., Olsen, B. and **Zahra, R.** (2014) Emergence of carbapenem-resistant *Acinetobacter baumannii* in hospitals in Pakistan. ***Journal of Medical Microbiology* 63: 50-55**
23. Khan, S., Rasheed, F., **Zahra, R.** (2014) Genetic polymorphism of *agr* Locus and antibiotic resistance of *Staphylococcus aureus* at two hospitals in Pakistan. ***Pakistan Journal of Medical Sciences* 30(1): 172-6**
24. Rasheed, F., Khalid, A., Saadia, A., Habib, S., Khan, S. M., Saeed, F., Ahmed, T., Usman, J., and **Zahra, R.** (2014) Correlation of 13C Urea Breath Test Values with *Helicobacter pylori* Load among Positive Patients. ***Hepato Gastroenterology* 61 (129): 125-8**
25. Nahid, F., Khan, A. A., Rehman S., **Zahra, R.** (2013) Prevalence of metallo-beta-lactamase NDM-1-producing multi-drug resistant bacteria at two Pakistani hospitals and implications for public health. ***J Infect Public Health* 6, 487-493**
26. Blackwood, J., Okely, E., **Zahra, R.**, Eykelenboom, J., and Leach, D.R.F. (2010) DNA tandem repeat instability in the *Escherichia coli* chromosome is stimulated by mismatch repair at an adjacent CAG.CTG trinucleotide repeat. ***PNAS* 107(52): 22582-22586**
27. Chakrabarti, L., **Zahra, R.**, Jackson, S.M., Kazemi-Esfarjani, P., Sopher, B. L., Mason, A. G., Toneff, T., Ryu, S., Shaffer, S. Kansy, J. W., Eng, J., Merrihew, G., Maccoss, M., Murphy, A., Goodlett, D. R., Hook, V., Bennett, C. L., Pallanck, L. J., and La Spada, A. R. (2010) Mitochondrial dysfunction in NnaD mutant flies and *Purkinje cell degeneration* mice reveals a role for Nna proteins in neuronal bioenergetics. ***Neuron* 66: 835-847**
28. **Zahra, R.**, Blackwood, J. K., Sales, J. and Leach D. R. F. (2007) Proofreading and secondary structure processing determine the orientation dependence of CAG.CTG trinucleotide repeat instability in *Escherichia coli*. ***Genetics* 176(1):27-41 (Issue Highlight)**

Book Chapters:

1. **Zahra, R.**, and La Spada, A. R. (2011) Cellular and Molecular basis of Neurodegeneration in the CAG-Polyglutamine repeat diseases. *Basic Neurochemistry*, 8th Edition, Elsevier Inc.

Conference Presentations:

Platform Talks:

- Perveen K, and **Zahra, R.** (2012) Analysis of Carbapenem Resistance Genes in Multidrug-Resistant *Acinetobacter* spp. from a tertiary care hospital. 13th Asia-Pacific Congress of Clinical Microbiology and Infection (APCCMI), October 25-28, 2012, Beijing, China.
- **Zahra, R.**, Chakrabarti, L., Jackson, S. M., Pallanck, L. J., and La Spada, A. R. (2008) Drosophila NnaD mutant flies model *Purkinje cell degeneration* mouse phenotypes and suggest a role for Nna proteins in mitochondrial function and mitochondrial dynamics. The annual meeting of The American Society of Human Genetics, November 11-15, 2008, Philadelphia, Pennsylvania.
- **Zahra, R.**, Blackwood, J. and Leach D. (2006) Orientation dependence of CAG-CTG repeat Instability in *E. coli*. 5th International Conference on Unstable Microsatellites and Human Disease, Granada, Spain.
- **Zahra, R.**, Blackwood, J. and Leach D. (2006) CAG-CTG repeat Instability in *E. coli*: Insight into the link between instability and repeat orientation. Erling Seeberg Symposium on DNA repair, Lofoten, Norway
- **Zahra, R.**, Blackwood, J. and Leach D. (2006) CAG-CTG repeat Instability in *E. coli*. Genome Stability Network meeting, Cambridge, UK.

Poster Presentations:

- Nahid, F. and **Zahra, R.** (2012). A Molecular Study on Clinical Gram Negative Isolates for Identification of Metallo- β -lactamases. 13th Asia-Pacific Congress of Clinical Microbiology and Infection (APCCMI), October 25-28, 2012, Beijing, China.
- **Zahra, R.**, Blackwood, J. and Leach D. (2006) Orientation dependence of CAG-CTG repeat Instability in *E. coli*. Society for General Microbiology meeting, York, UK
- **Zahra, R.**, Blackwood, J. and Leach D. (2006) CAG-CTG repeat Instability in *E. coli*. 12th Tenovus - Scotland Symposium, Glasgow, UK
- **Zahra, R.**, Blackwood, J. and Leach D. (2006) CAG-CTG repeat Instability in *E. coli*. Genetics Society meeting, Warwick, UK

Research Supervision

PhD Supervised = 4

MPhil supervised = 55

Currently under supervision: 5 PhD students and 3 MPhil students

Doctorates Supervised

S.No	Student's Name	Thesis title	Year
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1	Asma Latif	Development of thermostable vaccine for control of Peste des Petits Ruminants (PPR)	2020
2	Fouzia Nahid	Molecular Epidemiology and Genetic Characterization of Multi-drug Resistant <i>Klebsiella pneumoniae</i>	2019
3	Mehar Angez	Genetic Diversity of Non-Polio Enteroviruses Circulating in Pakistan	2018
4	Faisal Rasheed	Molecular Basis of Antibiotic Resistance and Pathogenicity in <i>Helicobacter pylori</i> Clinical Isolates	2015

MPHil Supervised

No.	Student's Name	Thesis title	Year
1	Anam Shanal Atta	Antibiograms and Molecular Characterization of Enterobacteriaceae Isolated from gut microbiota of mothers and neonates	2019
2	Meh Rokhshan	Isolation and Characterization of Methicillin Resistant <i>Staphylococcus aureus</i> (MRSA) circulating in peri urban dairy farms in Islamabad Region	2019
3	Yasin Ahmed	Isolation, Antimicrobial Susceptibility Profiling and Molecular Characterization of Salmonella spp. Isolated from Poultry in Peshawar Region	2019
4	Summayya Kanwal	PCR Based Screening of Periodontal Pathogens in Fasting and Non-fasting Oral Health Care Providers	2019
5	Adil Muhammad	Staphylococcal Cassette Chromosome-mec (SCC-mec) Typing, Antibiograms and virulence factors of <i>Staphylococcus aureus</i> causing neonatal sepsis	2018
6	Mati Ullah	Study of <i>bla</i> _{AmpC} and Aminoglycosides Resistance Genes in <i>Enterobacteriaceae</i> isolated from Fecal Matter of Local Birds in Islamabad	2018
7	Sumair Khan	Association of Quinolones and Fluoroquinolone resistance genes with ESBLs producing <i>Enterobacteriaceae</i> isolated from fecal matter of local birds in Islamabad	2018
8	Madiha Imtiaz	Prevalence of <i>bla</i> _{CTX-M} and <i>qnr</i> genes in Multi-Drug Resistant <i>E. coli</i> isolated from sewage water	2018
9	Muhammad Adeel Husnain	Investigations of Culturable Bacterial Isolates from Antral Gastric Biopsies and Endoscopic Equipment	2018
10	Syed Najeeb Ullah	Assessment of Resistance Profiles of Bacteria causing Neonatal Sepsis and Association with Maternal and Neonatal Risk Factors in Patients from Bhara Kahu region	2018
11	Attiquallah	Molecular Analysis and Efficacy of Current Antiviral Regimens of Hepatitis C Virus	2017
12	Hira Iqbal	Analysis of Antibiotic Resistance and Virulence Factors in Coagulase Negative Staphylococci from a Tertiary Care Hospital, Islamabad	2017

13	Asad Ali	Staphylococcal Cassette Chromosome-mec (SCC-mec) Typing and Antibiotic Resistance Profiles of Methicillin Resistant <i>Staphylococcus aureus</i> from a Tertiary Care Hospital, Islamabad	2017
14	Shermeen Akif	Prevalence, Antibiotic Resistance Profiles and Virulence Factors of <i>Staphylococci</i> isolated from Neonates	2017
15	Muhammad Hilal Jan	Assessment of maternal and neonatal risk factors associated with Neonatal Sepsis: a Case Control Study	2017
16	Hamna Sadaf	Prevalence of hemolysins and Panton-Valentine Leukocidin encoding genes in clinical <i>Staphylococcus</i> isolates collected from a tertiary care hospital, Islamabad	2017
17	Muhammad Faraz	Analysis of Risk Factors, Histopathological Grades and Eradication Therapies against <i>Helicobacter pylori</i> among Symptomatic Patients	2017
18	Tahira Yasmeen	Assessment of Burden of Antimicrobial Resistance in Early and Late Neonatal Septic Cases at Pakistan Institute of Medical Sciences (PIMS), Islamabad	2016
19	Shahid Aziz	Investigation of Eradication Therapies against Hepatitis C Virus, their Side Effects and Possible Routes of Transmission	2016
20	Sidra Riaz	Antibacterial Activity of Zinc and Chromium Nanoparticles against Multi-Drug Resistant Bacteria	2016
21	Madeeha Gohar	Prevalence and Characterization of Livestock Associated-Methicillin-Resistant <i>Staphylococcus aureus</i> (LA-MRSA) Isolated from Retail Meat in District Haripur	2016
22	Tahir Rasheed	Standardization of qRT-PCR for detection and quantification of Peste Des Petitis Ruminant virus (PPRV) from 2013-2015 outbreaks in Pakistan	2016
23	Sidra Maryam	Standardization of Loop Mediated Isothermal Amplification Process (LAMP) for serotyping of Foot and Mouth Disease Virus	2016
24	Saba Javeed	A study of the variation of <i>E. coli</i> sequence types moderated by bacteriophages in environmental sewage samples from city of Islamabad	2016
25	Bibi Malala	A study of association of antibiotic resistance genes with successful sequence types of <i>E. coli</i> in environment	2016
26	Afaq Mahmood	Isolation and Characterization of Bacteriophages against Multi-drug Resistant <i>Acinetobacter baumannii</i> Clinical Isolates	2015
27	Madiha Abid	Assessment of Hypervariable Region (HVR) of mecA Gene of Clinical <i>Staphylococcus aureus</i> Isolates	2015

28	Mansab Ali Saleemi	Impact of Carbapenem Resistance on Outcomes of Carbapenem Resistant <i>Enterobacteriaceae</i> (CRE) Bloodstream Infections	2015
29	Hameed-ur-Rehman	Detection of carbapenem resistance genes in Gram negative bacteria disseminated through wild birds in environment	2015
30	Zeeshan Umar	Analysis of phase variable genes <i>pldA</i> and <i>lex2B</i> in clinical <i>Helicobacter pylori</i> isolates	2015
31	Shahid Ali	Molecular Investigation of Simple Sequence Repeats in phase variable genes of clinical <i>Helicobacter pylori</i> isolates	2015
32	Afshan Ahmed	Comparison of field and vaccinal Foot and Mouth Disease Virus strains using Serum Neutralization assay	2015
33	Jahanzaib Farooq	Prevalence of Vancomycin and Inducible Clindamycin resistance in Staphylococci spp. isolates	2014
34	Neeraj Kumar	Association of Virulence factors with Phylogenetic groups of <i>E.coli</i> isolated from urinary tract infections in a tertiary care hospital, Badin	2014
35	Flora Farrukh	Prevalence of acquired carbapenamases among Gram negative bacteria causing neonatal sepsis	2014
36	Zahra Jabeen	Distribution of Phylogenetic groups of <i>Escherichia coli</i> causing symptomatic and asymptomatic Urinary tract infections	2014
37	Hafsa Khalil	Determination of biogenic amines in <i>Geotrichum candidum</i> and <i>Enterococcus spp.</i>	2014
38	Nafisa Bint Farid	Dissemination of antibiotic resistant bacteria in the environment	2014
39	Haseeb Sattar	Multi-drug resistant phenotypes of Gram negative bacteria in two Tertiary care hospitals	2014
40	Abdus Samad	Biofilm formation in Clinical and Environmental Isolates of <i>Pseudomonas aeruginosa</i>	2013
41	Ribqa Akhtar	A retrospective study of prevalence of Dengue Virus genotypes in different cities of Pakistan	2013
42	Nayab Mehmood	Molecular detection of Influenza B lineages in respiratory samples from different hospitals of Pakistan	2013
43	Aatka Jamil	A study of humoral immune response in buffalo calves following various Foot and Mouth disease vaccines	2013
44	Saqib-ud-Din	Isolation and molecular characterization of tetracycline resistant organisms associated with dental caries	2013
45	Naila Altaf	Staphylococcal Interspersed Repeat Unit (SIRU) typing of <i>Staphylococcus aureus</i> isolates	2013

46	Adam Sher Khan	Evaluation of antimicrobial activity of natural products against <i>bla</i> _{NDM-1} carrying clinical isolates	2013
47	Amir Afzal Khan	Plasmid profile analysis of NDM-1 positive isolates from clinical and environmental settings	2013
48	Sana Rehman	Molecular detection of <i>bla</i> _{NDM-1} gene in bacteria causing urinary tract infections	2012
49	Tayyeba Saba	Biofilm formation and quorum sensing in <i>Staphylococcus aureus</i>	2012
50	Muhammad Usman Qamar	Assessment and molecular identification of NDM-1 positive microorganisms causing infection in children	2012
51	Mehnaz Akram	Genetic analysis of <i>Helicobacter pylori</i> genes in dental plaques of symptomatic patients	2012
52	Khalida Perveen	Analysis of Carbapenem resistance genes in Multidrug-Resistant <i>Acinetobacter</i> from a tertiary care hospital	2012
53	Sadia Khan	Prevalence of <i>agr</i> specific groups of methicillin resistant <i>Staphylococcus aureus</i> (MRSA) in a tertiary care hospital	2012
54	Tawaf Ali Shah	Molecular analysis of water for the presence of metallo- β -lactamase <i>bla</i> _{NDM-1} gene containing microorganisms	2012
55	Fouzia Nahid	A Molecular Study for the identification of metallo- β -lactamase <i>bla</i> _{NDM-1} gene in Gram negative clinical isolates	2012