

# **SULTAN ALI**

Associate Professor,
Institute of Microbiology, UAF,
Faisalabad Pakistan.
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**Research Interests:** 

Zoonotic diseases, Foodborne Diseases, One Health, Antimicrobial residues in Food (Detection Kit)

 Citations:
 519

 h-index:
 13

 i10-index:
 13

### **Work History**

Associate Professor (Tenured).
 Institute of Microbiology, UAF.

 Assistant Professor (TTS)
 Institute of Microbiology, UAF.

 Assistant Professor (IPFP)
 Institute of Microbiology, UAF.

 Research Associate
 INSERM U0748 Strasbourg, France.

 Research Associate

 Research Associate
 Feb 2007 – Mar 2008

"Prevalence of Pathological Conditions Causing Skin Damage and Consequently Reducing Its Market Value in Domestic Ruminants of Punjab"

#### **Education**

PhD. Aspects of Cellular and Molecu	lar Biology (Virology).
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Department of Pathology (UVAS), Lahore

University of Strasbourg, France. Sep 2009 - Jun 2013 "Induction of proteasome-mediated degradation of CTIP2 by HIV-1 Vpr in microglial cells".

❖ Master 2 (M2), Cellular and Molecular Physiopathology 13.67/20

University of Strasbourg, France. Sep 2008 - Jul 2009

"Identification and characterization of CTIP2 partners in microglial cells".

❖ M.Sc. (Hons.), Veterinary Microbiology
 University of Agriculture Faisalabad, Pakistan.
 CGPA: 3.65 (79%)
 Sep 2006 - Aug 2009

"Post-Vaccinal antibody profile against different vaccines of ND in backyard poultry under controlled experimental conditions".

❖ Doctor of Veterinary Medicine (DVM)
 University of Agriculture Faisalabad, Pakistan.
 CGPA: 3.74 (78%)
 Sep 2002 − Jun 2006

#### **Academic Distinctions**

- Serving as Associate Editor in Pakistan Veterinary Journal (Q1; IF: 3.8 (2024), Oct-2022 to date)
- 5-years HEC Overseas MPhil leading to PhD Scholarship to study in France.
- Merit scholarships in DVM (2003-2006).

## **Training/Workshops**

- International Training program on "Enhancing Molecular Biology Techniques and Cybersecurity" held on 21-27-Febuary-2023 jointly organized by National Laboratories, USA and PHBC, University of Science and Technology, in Irbid Jordan.
- International Training program on "Enhancing Molecular Biology, Epidemiology & Sequencing" held on Oct-2021 to Nov 2023 (Virtual series of workshops) jointly organized by National Laboratories, USA and PHBC, University of Science and Technology, Irbid Jordan.
- ❖ International Training program on "Molecular Diagnostic Advanced Technologies" held on 15-26-September-2019 jointly organized by National Laboratories, USA and PHBC, University of Science and Technology, in Irbid Jordan.
- ❖ International Training program on "Advanced Community Based Prevention, Detection and Response to All-Hazards" held on 31-July to 03-August-2018 organized by Center for Agriculture and Food Security and Preparedness, University of Tennessee, Knoxville, USA at Bangkok, Thailand.
- ❖ A Joint Pakistan-U.S. Workshop on "Strengthening and Sustaining a Network of Public and Animal Health Clinical Laboratories in Pakistan" held on 27-29, September-2016 organized by The National Academies of Sciences, Engineering & Medicine at PAS, Islamabad.
- International Training program on "Community Based Prevention, Detection and Response to All-Hazards" held on 15-18-August-2016 organized by Center for Agriculture and Food Security and Preparedness, University of Tennessee, Knoxville, USA at Kuala Lumpur, Malaysia.
- ❖ Workshop on "Grant Writing Workshop, Competitive Grants Program" held on 06-07-April-2016 organized by US-Pakistan Centers for Advanced Studies in Agriculture and Food Security at UAF.
- ❖ Workshop on "Applications of Bioinformatics in Genomics" held on 16-17-09-2015 organized by US-Pakistan Centers for Advanced Studies in Agriculture and Food Security at UAF.
- ❖ Workshop on "Grant Writing Workshop, Competitive Grants Program" held on 01-06-2015 organized by US-Pakistan Centers for Advanced Studies in Agriculture and Food Security at UAF.

# **Research Projects**

- ❖ Aptly-2023, entitled "Control of waterborne colibacillosis through combinations of organic acids in broilers" funded by Aptly Pharmaceuticals, Faisalabad, Pakistan (Rs. 1.69 million) as PI (2023).
- **EFS-2020**, entitled "Detection of novel coronavirus (nCoV-19) by real-time RT-PCR" funded by Endowment Fund Secretariat, UAF, Pakistan (Rs. 1.984 million) as Co-PI (2020).
- NRPU-2018, entitled "Zearalenone and its binder impact on productive and reproductive performance of dairy buffalo and cattle under different managemental conditions" funded by HEC, Pakistan (Rs. 3.38 million) as Co-PI (2018-2021).
- NRPU-2016, entitled "Diagnostic and prognostic potential of soluble cytokine IL-33 as non-invasive biomarker of viral hepatitis" funded by HEC, Pakistan (Rs. 1.13 million) as Co-PI (2016-2018).
- SRGP-2015, entitled "Seroprevalence of FeLV and FIV infections among cats in Faisalabad, Pakistan" funded by HEC, Pakistan (Rs. 0.5 million) as PI (2015-2016).

#### **Administrative Services**

Liaison Officer, Chief Hall Warden, UAF.
 Associate Director Students' Affaires, UAF.
 Senior Academic Advisor (Undergraduate), IOM, UAF.
 Deputy Director Students' Affaires, UAF.
 Secretary, Board of Studies, IOM, UAF.
 Tutor, UAF.
 (June-2023 – March-2024)
 (Feb-2017 – Oct-2019)
 (April 2016 – To date)
 (Aug 2015 – Feb-2017)
 (April 2020 – Jan 2024)
 (May 2022 – To date)

## **Peer Reviewed Scientific Publications (Total Impact Factor: 79.9)**

- **43)** Yaseen K, **Sultan Ali\***, Rahman SU, and Sajid MS, 2025. Comparative molecular virulence typing and antibiotic resistance of *Campylobacter* species at the human–animal–environment interface. <u>Foodborne Pathogens and Disease</u>, 22(2): 109-117. **(IF: 1.9)**
- **42)** Saeed, M., Zafar, S., Sajjad, Z., Aslam, R., **Sultan Ali**, Mahmood, M.S., Aayan, M., Sophy, M., Umer, S., Rahman, S.U. and Anwar, M.N., 2024. The efficacy of egg albumin nanoparticles adjuvanted *Clostridium perfringens* type D toxoid vaccine in rabbits. <u>Brazilian Journal of Microbiology</u>, pp.1-10. **(IF: 2.1)**
- **41)** Khan, M.K., Mahmood, M.S., **Sultan Ali,** Khatoon, A., Umar, S., Sabir Mughal, M.A., Azeem, A., Chatha, A.K., Abbas, Z. and Rafique, A., 2024. Prevalence and Characterization of *Buxtonella sulcata* in Bovines in Pakistan Using Morphological and PCR-Based Approaches. <u>Pakistan Veterinary Journal</u>, 44(4): 1298-1302. **(IF: 3.8)**
- **40)** Abdullah RM, **Sultan Ali**, Aslam B and Arshad MI, 2024. Molecular characterization and drug resistance pattern of *Pseudomonas aeruginosa* isolated from poultry meat and meat products. <u>Pakistan Veterinary Journal</u>, 44(3): 812-818. **(IF: 3.8)**
- **39)** Zafar S, Sarfraz MS, **Sultan Ali**, Saeed L, Mahmood MS, Khan AU and Anwar MN, 2024. Recapitulation of Peste des Petits Ruminants (PPR) prevalence in small ruminant populations of Pakistan from 2004 to 2023: A systematic review and meta-analysis. <u>Veterinary Sciences</u>, 11(6): 280. (**IF: 2.0**)
- **38)** Ali HM, Hussain S, Ahmad MZ, Siddique AB, **Sultan Ali**, Mohiuddin M, Ehsan M, Nadeem M, Qayyum A, Hussain R, and Khan I, 2024. Molecular identification of different toxinogenic strains of *Clostridium perfringens* and histopathological observations of camels died of per-acute entero-toxaemia. <u>Heliyon</u>. (**IF: 4.0**)
- **37)** Zaman A, Rafique A, Ashraf A, Mahmood MS, Nahid N, Jabeen F, Sultana S, Sultana T, **Sultan Ali**, Zihad SMNK, and Uddin SJ, 2023. Diversity, abundance, and distribution of *Avifauna* in district Jhang, Pakistan. <u>Journal of Zoological Systematics and Evolutionary Research</u>, 2023; p. 1-14. **(IF: 1.9)**
- **36)** Masoud F, Mahmood MS, Abbas RZ, Cheema HMN, Rafique R, **Sultan Ali**, Aslam R, Khan MK, 2023. Engineered Newcastle disease virus expressing the haemagglutinin protein of H9N2 confers protection against challenge infections in chickens. <u>Process Biochemistry</u>, 130; p. 281-290. **(IF: 4.885)**
- **35)** Fatima A, Zaheer T, Pal K, Abbas RZ, Akhtar T, **Sultan Ali,** Mahmood MS, 2023. Zinc oxide nanoparticles significant role in poultry and novel toxicological mechanisms. <u>Biological Trace Element Research</u>, p. 1-23. **(IF: 3.9)**
- **34) Sultan Ali,** and Alsayeqh AF, 2022. Review of major meat-borne zoonotic bacterial pathogens. <u>Frontiers in Public Health</u>, 10:1045599; p. 4798. **(IF: 5.2)**
- **33)** Aslam S, **Sultan Ali**, Gul ST and Arshad MI, 2022. Pattern of rifampicin resistance and gene xpert based molecular typing of tuberculosis patients in tertiary care hospitals, <u>Pakistan Journal of Pharmaceutical Sciences</u>, Vol.35, No.6(Special), pp.1719-1724. (IF: 0.684)
- **32)** Masih A, Rafique A, Siddique AB, Nazwa Z, **Sultan Ali**, Aslam R, Mahmood MS, Abbas RZ, and Mehmood T, 2022. *Babesia bovis* in large ruminants in Pakistan molecular detection and haemato-biochemical alterations. <u>Acta Scientiae Veterinariae</u>, 50:1890. **(IF: 0.30)**
- **31)** Ishaq K, Ahmad A, Rafique A, Aslam R, **Sultan Ali**, Shahid MA, Sarwar N, Aslam MA, Aslam B, and Arshad MI, 2022. Occurrence and Antimicrobial Susceptibility of *Proteus mirabilis* from Chicken Carcass. <u>Pakistan Veterinary Journal</u>, 42(4), 576-579. (IF: 1.803)
- **30)** Rafique A, Mahmood MS, Abbas RZ, **Sultan Ali**, Mian AH, and Rizwan A, 2022. Anthelmintic activity of *Moringa oleifera* and *Azadirachta indica* against gastrointestinal nematodes of wild sheep. <u>Journal of the Hellenic Veterinary Medical Society</u>, 73(2), 3989-3996. **(IF: 0.186)**

- **29)** Liu X, Nawaz Z, Guo C, **Sultan Ali**, Naeem MA, Jamil T, Ahmad W, Siddiq MU, Ahmed S, Idrees MA, and Ahmad A, 2022. Rabies virus exploits cytoskeleton network to cause early disease progression and cellular dysfunction. <u>Frontiers in Veterinary Science</u>, 9:889873. **(IF: 3.12)**
- **28)** Khan SU, Aslam R, Ashraf M, **Sultan Ali,** Saqib M, Khattak MA, Khattak US, Amanullah H, Wuryastuty H, Wasito R, and Haryanto A, 2022. Prevalence of antibiotic resistance pattern in *Shigella* isolates procured from pediatric patients at Faisalabad-Pakistan. <u>Pakistan Journal of Pharmaceutical Sciences</u>, 35(1), Vol. 35 (1): p41-48. (IF: 0.684)
- **27)** Bashir MJ, Rahman SU, Ashraf M, Aslam R, **Sultan Ali**, and Jabbar A, 2021. Transferring of *Lactobacillus* antibiotic resistant genes to *Salmonella*. Abasyn Journal of Life Sciences, 4(1): 145-151.
- **26)** Hussain K, Abbas RZ, Abbas A, Rehman MA, Raza MA, Rehman T, Hussain R, Mahmood MS, Imran M, Zaman MA, Sindhu ZD, and **Sultan Ali**, 2021. Anticoccidial and biochemical effects of *Artemisia brevifolia* extract in broiler chickens. <u>Brazilian Journal of Poultry Science</u>, 23: eRBCA-2020-1377. **(IF: 0.826)**
- **25)** Ahmad A, Sarwar N, Aslam R, **Sultan Ali**, Aslam B, Arshad MA, Hameed H, and Arshad MI, 2021. Pattern of clinical drug resistance and occurrence of Gram negative bacterial neonatal sepsis at a tertiary care hospital. <u>Pakistan Journal of Pharmaceutical Sciences</u>, 34 (5) (Suppl): 1873-1878. **(IF: 0.684)**
- **24)** Mahmood MS, Ashraf A, **Sultan Ali**, Siddique AB, Asad F, Abbas RZ, Siddique F, Aslam A, Aslam R, and Rafique A, 2021. Portrayal of *Punica granatum* L. peel extract through high performance liquid chromatography and antimicrobial activity evaluation. <u>Brazilian Journal of Biology</u>, 83: e244435. **(IF: 1.316)**
- 23) Ahmad A, Ishtiaq SM, Khan JA, Aslam R, Sultan Ali, and Arshad MI, 2021. COVID-19 and comorbidities of hepatic diseases in a global perspective. World Journal of Gastroenterology, 27(13): 1296-1310. (IF: 5.374)
- **22)** Jabeen K, Haider MBH, Haider Z, Hassan A, **Sultan Ali**, and Niazi AK, 2021. Coronavirus (COVID-19) pandemic: outbreak, current scenario, and impact on human physiology in Pakistan. <u>Global Journal of Clinical Virology</u>, 6(1): 21-29.
- **21)** Anam S, Rahman SU, **Sultan Ali**, Saeed M, and Goyal SM, 2021. Comparative growth kinetic study of Newcastle disease virus, infectious bursal disease virus and avian influenza virus in chicken embryo fibroblast and DF-1 cell lines. Polish Journal of Veterinary Sciences, 24(2): 287–292. (IF: 0.90)
- **20)** Rashid MH, Qureshi ZI, **Sultan Ali**, Khan HH, Masood A, Nawaz H, Hayder S, Hassan MM, and Waqas MS, 2021. Prevalence of mycotic endometritis in buffaloes and mares maintained under different managemental conditions in district Faisalabad. <u>Pakistan Veterinary Journal</u>, 41(3): 414-418. (IF: 1.803)
- **19)** Yaseen K, Sajid MS, Arshad MI, Aslam R, **Sultan Ali\***, Saqib M, Akram W, Abbas H, Malik A, Khalid U, and Raza FA, 2020. Metagenomics of mosquito-borne flaviviruses in various geoclimatic districts of Punjab, Pakistan. <u>Pakistan Veterinary Journal</u>, 40(4): 407-412. **(IF: 1.803)**
- **18)** Khan HH, Qureshi ZI, Waqas MS, Rashid MH, Saeed MS, **Sutlan Ali\***, and Hassan M, 2020. Prevalence and drug susceptibility of mycotic endometritis in Sahiwal cattle in district Faisalabad, Pakistan. <u>Pakistan Veterinary Journal</u>, 40(4): 461-466. (IF: 1.803)
- **17)** Anjum FR, Anam S, Rahman SU, **Sultan Ali**, Aslam MA, Rizvi F, Asif M, Abdullah RM, Abaidullah M, Shakir MZ, and Goraya MU, 2020. Anti-chicken type I IFN countermeasures by major avian RNA viruses. <u>Virus research</u>, 286, 198061. (IF: 3.303)
- **16)** Nawaz Z, Aslam B, Zahoor MA, Siddique AB, Rafique A, Aslam R, Qamar MU, **Sultan Ali**, and Mubeen MU, 2020. Frequency of extended spectrum beta lactamase producing *Escherichia coli* in fresh and frozen meat. <u>Pakistan Veterinary Journal</u>, 41(1):102-106. (**IF: 1.175**)
- **15)** Pinheiro REE, Chaves TP, Melo ES, **Sultan Ali**, Ali SW, Umer M, Gama GSP, Lira DN, Souza JSN, Soares MJDS, and de Souza Santos A, 2020. Modulatory-antibiotic activity of the essential oil from *Eucalyptus citriodora* against MDR bacterial strains. <u>Cellular and Molecular Biology</u>, 66(4): 60-64. **(IF: 1.77)**

- **14)** Nawaz Z, Rasool MH, Siddique AB, Zahoor MA, Naz A, **Sultan Ali**, and Mukhtar MU, 2020. Frequency and molecular detection of *Giardia intestinalis* in children attending pediatrics of Punjab, Pakistan. <u>Jundishapur Journal of Microbiology</u>, **13(1)**: e97080. **(IF: 0.957)**
- **13)** Zaib H, Kanwar R, Zafar N, and **Sultan Ali**, 2019. Prevalence and multidrug resistance profiles of several bacterial pathogens isolated from hospital inanimate surfaces in Faisalabad, *Pakistan*. Novel Research in Microbiology Journal, 3(6): 526-534.
- **12)** Forouzanfar F, **Sultan Ali**, Wallet C, De Rovere M, Ducloy C, El Mekdad H, El Maassarani M, Aït-Ammar A, Van Assche J, Boutant E, and Daouad F, 2019. HIV-1 Vpr mediates the depletion of the cellular repressor CTIP2 to counteract viral gene silencing. <u>Scientific Reports</u>, 9(1): 1-10. **(IF: 4.16)**
- **11)** Ashraf M, Anam S, Anjum FR, **Sultan Ali**, and Aslam R, 2019. Detection of antibiotic resistance genes in *Lactobacillus* and its role in transferring these genes to *Salmonella*. <u>Pure and Applied Biology</u>, 8(3): 2007-2014.
- **10)** Nawaz Z, Siddique AB, Zahoor MA, Aslam B, Zahoor MK, Ali S, and **Sultan Ali**, 2019. Detection of foot and mouth disease virus shedding in milk of apparently healthy buffaloes and cattle of Punjab, Pakistan. <u>Buffalo Bulletin</u>, 38(2), 255-261. (**IF: 0.152**)
- **09)** Zafar H, Rahman SU, **Sultan Ali**, and Javed MT, 2019. Evaluation of a strain isolated from honeybee gut as a potential live oral vaccine against lethal infection of Typhimurium. <u>Polish Journal of Microbiology</u>, 68(1): 173-183. (IF: 1.98)
- **08) Sultan Ali**, Nawaz Z, Akhtar A, Aslam R, Zahoor MA, and Ashraf M, 2018. Epidemiological investigation of human brucellosis in Pakistan. <u>Jundishapur Journal of Microbiology</u>, 11(7): e61764. **(IF: 0.957)**
- **07) Sultan Ali**, Arshad MI, Akhtar F, Saqib M, Aslam R, Abbas G, Ashraf M, and Rahman SU, 2017. Seroprevalence and risk factor association of feline immunodeficiency virus in cats. <u>Pakistan Veterinary Journal</u>, 37(3): 368-371. **(IF: 1.217)**
- **06)** Gohar S, Abbas G, Sajid S, Sarfraz M, **Sultan Ali\***, Ashraf M, Aslam R, and Yaseen K, 2017. Prevalence and antimicrobial resistance of *Listeria monocytogenes* isolated from raw milk and dairy products. <u>Matrix Science Medica</u>, 1(1): 10-14.
- **05)** Akram FS, Ashraf M, **Sultan Ali,** and Kazmi SI, 2017. Isolation of Gram-positive bacteria from different sources and evaluation of their probiotic properties. <u>Journal of Medical Microbiology and Infectious Diseases</u>, 5(1): 12-16.
- **04)** Ashraf M, **Sultan Ali\***, Iram A, Aslam R, Abbas G, Rahman SU, Yaseen K, and Khalid U, 2017. Isolation and screening of biodegrading fungi from kitchen waste and optimization of physico-chemical conditions for enhanced biodegradation. <u>Journal of Agriculture and Basic Sciences</u>, 02 (01): 1-7.
- **03)** Ahsan A, Ashraf M, **Sultan Ali\***, Aslam R, Rahman SU, and Zubair M, 2016. Isolation and screening of polyethylene degrading fungi from solid waste material. <u>Journal of Agriculture and Basic Sciences</u>, 1(1): 1-6.
- **02) Sultan Ali**, Muhammad A, Tahir MF, Khan IA, Zeeshan N, Muhammad A, Muhammad N, and Khan NU, 2016. Post vaccinal antibody profile against different vaccines of Newcastle disease in backyard poultry. <u>International Journal of Veterinary Science</u>, 5(3), 127-130.
- **01)** Le Douce V, Janossy A, Hallay H, **Sultan Ali**, Riclet R, Rohr O, and Schwartz C, 2012. Achieving a cure for HIV infection: do we have reasons to be optimistic? <u>Journal of Antimicrobial Chemotherapy</u>, 67(5): 1063-1074. (IF: 5.338)

DVM, B.Sc. (Hons.) Microbiology, HND, FST, MPhil, PhD		
Undergraduate Courses	Postgraduate Courses	
General Microbiology; Veterinary Microbiology	Applied Immunology and Vaccinology	
Bacteriology; Veterinary Bacteriology	Advanced Bacteriology	
Immunology; Veterinary Immunology, Medical Microbiology,	Advanced Virology	
Introduction to Microbiology and Immunology	Public Health Microbiology	
Virology; Veterinary Virology, Clinical Microbiology	Applied and Environmental Microbiology	
Introduction to Microbial Genetics	Disaster Preparedness and Management	
Immunodiagnostics, Cell Culture Techniques	Special Problem, Seminar	

## **Student Supervised (Mentoring)**

*	PhD Microbiology (Completed)	(04 student)
*	PhD Microbiology (In Progress)	(03 students)
*	MPhil Microbiology (Completed)	(71 students)
*	MPhil (Epidemiology and Public Health) (Completed)	(01 student)

## **Manuals / Book Chapter**

"A Concise Laboratory Manual of Systematic Bacteriology", 2025.

Authors: Prof. Dr. MS Mahmood, **Dr. Sultan Ali**, Dr. G Abbas, and Dr. FR Anjum Published by Society of Applied Research Aspects (SARA), Pakistan.

"Training Manual of Immunology", 2020.

Authors: SU Rahman, M Habibi, MS Mahmood, **Sultan Ali,** SU Sajid, and M Ullah Published by Institute of Microbiology, UAF.

**❖** A Concise Laboratory Manual of Microbiology and Immunology", 2024.

Authors: Prof. Dr. MS Mahmood, Dr. Sultan Ali\*, Dr. N Fatima, Dr. M Chouhdary

Editors: Dr. M.I. Arshad, Dr. Rizwan Aslam

Published by Society of Applied Research Aspects (SARA), Pakistan.

"Antimicrobial residues and food of animal origin", 2023.

Noor Fatima, MS Mahmood, MN Anwar, R Aslam, MI Arshad, Z Nawaz, MUZ Khan, M Ali, M Chouhdary, and **Sultan Ali\***.

In: Abbas RZ, Saeed NM, Younus M, Aguilar-Marcelino L, and Khan A (eds),

One Health Triad, Unique Scientific Publishers, Faisalabad, Pakistan, Vol. 2, pp: 1-7.

"Rift Valley Fever", 2023.

Muqadas, Sultan Ali, A Qureshi, N Imdad, Z Fatima, A Khalid, B Ahmad, and IA Sindhu.

In: Aguilar-Marcelino L, Younus M, Khan A, Saeed NM, and Abbas RZ (eds),

One Health Triad, Unique Scientific Publishers, Faisalabad, Pakistan, Vol. 3, pp: 151-156.

\* "Bacterial Biofilms and their Regulatory Approaches", 2023.

Liaqat MA, MS Mahmood, MN Akram, MI Arshad, R Aslam, MK Khan, MUZ Khan, N Fatima, & **S Ali\***. In: Abbas RZ, Saeed NM, Younus M, Aguilar-Marcelino L, and Khan A (eds),

One Health Triad, Unique Scientific Publishers, Faisalabad, Pakistan, Vol. 2, pp. 8-17.

"Clostridium difficile Infection (CDI) in Human-Animal Interface: A One Health Perspective", 2023.

Saad Zafar, MUZ Khan, MS Mahmood, RZ Abbas, MN Akram, MN Anwar, MI Arshad, R Aslam, M Chouhdary, N Fatima, and **Sultan Ali\***.

In: Abbas RZ, Saeed NM, Younus M, Aguilar-Marcelino L and Khan A (eds),

One Health Triad, Unique Scientific Publishers, Faisalabad, Pakistan, Vol. 2, pp: 201-208.

"Meat Borne Bacterial Pathogens", 2021.

Sultan Ali\*, R Aslam, MI Arshad, MS Mahmood, and Z Nawaz.

Veterinary Pathobiology and Public Health, Unique Scientific Publishers.