

CURRICULUM VITAE

Dr Satwat Hashmi

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PROFESSIONAL QUALIFICATIONS

- Fellow of the Higher Education Academy (**FHEA**), United Kingdom, April 2020.
- Faculty of Medicine and Health Sciences, UAE University, UAE, **Doctor of Philosophy**, January 2010 - May 2014
- Tongji Medical College of Huazhong University of Science and Technology, P.R. China, **MS (Cardiology)**, September 2003 - July 2007
- Ayub Medical College, University of Peshawar, Pakistan, **MBBS**, March 1994 - Dec 1999
- Islamabad College for Girls F-6/2, Islamabad, **Higher Secondary School Certificate**, 1991-1993
- Army Burn Hall College, Abbottabad, **Secondary School Certificate**, 1991

SCHOLARLY INTERESTS

- Cardiovascular Physiology and Pathology
- Medical Education

POSITIONS HELD

- The Noor Mohamed Shamji Endowed Associate Professor, Department of Biological and Biomedical Sciences, Aga Khan University, from January 2023 to the date.
- Vice Chair Education, Department of Biological and Biomedical Sciences, Aga Khan University, from October 2020 to date
- Associate Professor in the Department of Biological and Biomedical Sciences, Aga Khan University from July 2020 to date
- Coordinator MPhil program in Biological and Biomedical Sciences, AKU, July 2020 to date
- Assistant Professor in the Department of Biological and Biomedical Sciences, Aga Khan University from October 2014 to June 2020
- Lecturer at the Department of Internal Medicine, Wuhan University Medical School September 2007 - December 2009

LEADERSHIP AND SERVICE

- Inaugural Member AKU Haile T. Debas Teachers 'Academy 2020 to date
- Member AKU Haile T. Debas Teachers 'Academy; Advancement and Capacity Innovation Committee (MACIC)
- Member, AKU Committee on Simulation Integration 2021 to date
- Member, Faculty Mentorship Forum, AKU, 2019 – present
- Member, Institutional Biosafety Committee (IBC), AKU, 2018 - present
- Chair, BBS Departmental Conference Funding Committee, AKU, 2019 – present
- Member, BBS Academic Council, 2021-present
- Co-Chair, Year I Undergraduate Medical Curriculum Committee AKU, 2019 - present
- Chair, Respiration and Circulation Module Committee, 2018 – 2022.

- Co-Chair, Respiration & Circulation module committee, 2017
- Coordinator: Respiration and Circulation module Committee 2015 – 2016
- Module representative for Physiology: Respiration & Circulation Module committee, 2015-the present
- Member, BBS Departmental Research Committee (DRC), AKU, 2018 - present
- Member committee for ASPIRE to Excellence award for Curriculum Development from the Association for Medical Education Europe (AMEE)-2022
- Emcee AKU Medical College Convocation-February 27, 2022
- Member, Steering committee for BBS departmental strategic planning exercise, AKU, 2019-2020.
- Admissions Interviewer for MBBS, MPhil in BBS program and MHPE program, 2019-2023
- Member, AKU taskforce for strengthening UGME curriculum, 2019.
- Member, TEL (Technology Enabled Learning) Champions Group, AKU, 2018 – present.
- Examiner AKU PhD synopsis and thesis defense 2019 & 2022
- Assessor and Critical Friend for FHEA (Fellow Higher Education Academy UK)
- AKU Challenge Scholarship Program - participated in teaching 'Research component with community integration', 2018.
- Member, Committee for the Tables of Specification for FCPS – Part II examination in Basic Sciences Revision meeting, CPSP, 2018
- Facilitator for the 105th Advance Basic Medical Science Course for FCPS-I candidates at CPSP, Karachi, October 2019
- Member, Scientific Committee, AKU Scholarship of Teaching and Learning Unconference 2021. 'Reimagining Learning Centered Teaching in a Covid-19 World', virtually held on November 29-30, 2021.
- Member, Organizing Committee, 22nd National Health Sciences Research Symposium (NHSRS) on 'Antimicrobial resistance: an opportunity to transform global health', AKU, 2019
- Member, Scientific committee for the 16th Biennial Conference of South Asian Association of Physiologists Conference and Pakistan Physiological Society held in Lahore on December 13-15, 2018
- Member Scientific Committee Member, 5th Biennial Scholarship of Teaching and Learning (SoTL) Conference 2023, "Shaping Tomorrow Together: Transformative Teaching for Engaged Learning" on October 17-18, 2023.
- Member, BBS Departmental Conference Funding Committee, 2017 - 2019
- Member, Organizing committee and lead for the workshop committee, 20th National Health Sciences Research Symposium (NHSRS) on 'Heart and Lungs: from prevention to regeneration', AKU, 2017
- Member, Cardiac Function Research Group of the Aga Khan University
- Grant Reviewer for Higher Education Commission Pakistan, AKU University Research Council and Seed grant AKU, 2016-2018, 2021
- Member, Pakistan Biosafety Association (PBSA)
- Member, Pakistan Physiological Society (PPS)
- Member OIC-COMSTECH (Organization of Islamic Cooperation's (OIC)-Committee on Scientific and Technological Cooperation (COMSTECH) Expert Panel, 2025.

DISTINCTIONS

- Aga Khan University, Excellence in Teaching Award, 2024
- Aga Khan University, Collaborative Award for Teaching: Multidisciplinary, Multisystem, Integrated Formative Assessment using Key Feature Questions, 2024
- Aga Khan University, Collaborative Award for Teaching 'Team-based Learning', 2023
- Aga Khan University, Outstanding Teacher Award, 2018

- Cultural Exchange Merit Scholarship for MS degree studies, Ministry of Education, Pakistan 2003 - 2007
- Ayub Medical College, Distinction in Community Medicine (Year 4)
- PhD with Honors, GPA 4.0, 2014

RESEARCH GRANTS

- AKU Medical College Intramural Funding, MBBS Class of '88 Awards Student and Trainee Initiated Research (STIR) Grant (2025-2027)
Title: Sex Differences in RAAS Pathway Activation: Investigating ROCK 1 & 2 Expression in murine Post-Myocardial Infarction. **Dr Satwat Hashmi (PI)**, Hareem Siddiqui (Graduate Student) and Abdullah Bin Faisal (MBBS Student Class of 2026)
- AKU MBBS Class of 1988 Training Workshop Grant 2025
Title: Academic leadership Development Workshops for Graduate Students: Focus on empowering her. **Dr Satwat Hashmi (PI)**, Zahra Hassan, Seema Lassi and Lubna Kamani
- AKU University Research Council Grant
Title: Mechanisms of the origin and development of Atheroma induced by inhaled chemical toxins. **Dr Satwat Hashmi (PI)**, Dr Ambrin Fatima, Dr. Mati-Ur-Rehman, Dr. HR Ahmad and Dr. Camer Vellani (2022-2025)
- UAEU Strategic Research Grant
Title: Myocardial ischemia reperfusion injury: Role of Galectin-3 in Autophagy. Prof. Suhail Al-Salam (PI), **Dr Satwat Hashmi (Co-PI)** and Prof Abderrahim Nemmar (Co-PI) (2022-2024)
- AKU University Research Council Grant
Title: 'Role of Nrf2 and Wnt pathway in regulating oxidative stress after myocardial ischemia reperfusion injury'. **Dr Satwat Hashmi (PI)**, Dr Sahar Zuberi (Graduate Student) (2020-2021)
- Student and Trainee Initiated Research (STIR) program Grant
Title: Estimating the Effect of Pharmacological Galectin-3 inhibition on the Infarct Size in Mouse Model of Ischemia/Reperfusion Injury. **Dr Satwat Hashmi (PI)**, Dr Sarah Ashraf (MBBS Student Class of 2021)
- Pakistan Science Foundation Grant
Title: 'Development of Mouse Model of Heart Fibrosis after Myocardial Infarction to Study the Molecular Contributions of Wnt-signaling Proteins and Galectin-3'. **Dr Satwat Hashmi (PI)** Dr Fazal Arain and Dr Tashfeen Ahmad (Co-PI) (2019-2022)
- Pakistan Academy of Sciences Grant
Title: 'Understanding the Progression of Heart Failure in Ischemic Heart Disease Patients using Metabolomics tool'. Dr Syed Ghulam Musharaf (PI) from the Dr. Panjwani Center for Molecular Medicine and Drug Research, International Center for Chemical and Biological Sciences (ICCBS), University of Karachi, **Dr Satwat Hashmi (Co-PI)** (2019-2020)
- AKU Scholarship of Teaching and Learning (SoTL) Grant
Title: 'Simulation based education in clinical skills sessions in pre-clinical medical education. **Dr Satwat Hashmi (PI)** (2019-2020)
- Center-Based Interdisciplinary Grant, Zayed Bin Sultan Center for Health Sciences United Arab Emirates University
Title: Inflammatory, necrotic, necroptotic and apoptotic signals in early acute myocardial infarction: Protective role of galectin 3. Prof. Suhail Al-Salam (PI), **Dr Satwat Hashmi (Co-PI)** and Prof Abderrahim Nemmar (Co-PI) (2019-2021)
- Aga Khan University Seed Money Grant
Title: 'Cardiac biomarkers of diastolic dysfunction leading to heart failure'. **Dr Satwat Hashmi (PI)** (2016-2019)

- Center-Based Interdisciplinary Grant, Zayed Center for Health Sciences, United Arab Emirates University
Title: 'Role of Galectin-3 in myocardial ischemia/reperfusion injury'. Dr Suhail Al-Salam (PI), **Dr Satwat Hashmi (Co-PI)**, Prof Abderrahim Nemmar (Co-PI) (2015-2018)
- National Research Foundation Grant UAE
Dr Suhail Al-Salam (PI), **Dr Satwat Hashmi (Co-PI)**. HIF-1a survival signal in Ischemic Myocardium: A protective role of Galectin-1 and Galectin-3. (2011-2014).

RESEARCH PUBLICATIONS

1. Artificial intelligence and student-teacher relationships: Reflections on a conversation across the contexts of Kyrgyzstan, Tajikistan, Pakistan, Tanzania, and Australia. Naseem, A, Guzikova, M, **Hashmi, S**, Matthews, KE, & Wachira, N. International Journal for Students As Partners, 9 (1), 305–313. (2025)
2. Early Cardiac Ischemia–Reperfusion Injury: Interactions of Autophagy with Galectin-3 and Oxidative Stress. Al-Salam S, **Hashmi S**, Jagadeesh G, Sudhadevi, M, Awwad, A, Nemmar, A. Biomedicines. 2024 Oct 28;12(11):2474.
3. GWAS breakthroughs: mapping the journey from one locus to 393 significant CAD associations. Aherrahrou R, Reinberger T, **Hashmi S**, Erdmann J. Cardiovasc Res. 2024 Nov 5;120(13):1508-1530
4. Upregulation of Nrf2 in myocardial infarction and ischemia-reperfusion injury of the heart. Zuberi S, Rafi H, Hussain A, **Hashmi S**. PLoS One. 2024 Mar 15;19(3): e0299503.
5. MRAS in coronary artery disease-Uncharted territory. Shah PW, Reinberger T, **Hashmi S**, Aherrahrou Z, Erdmann J. IUBMB Life. 2024 Jun;76(6):300-312
6. Integrating basic sciences into clerkship rotation utilizing Kern's six-step model of instructional design: lessons learned. **Hashmi S**, Riaz Q, Qaiser H, Bukhari S. BMC Med Educ. 2024 Jan 17;24(1):68.
7. Beyond the Basics: Unraveling the Complexity of Coronary Artery Calcification. **Hashmi S**, Shah P.W, Aherrahrou Z, Aikawa, E, Aherrahrou R. Cells 2023;12(24):2822.
8. In memoriam: Prof. Dr. rer. nat. Jeanette Erdmann. Shah PW, **Hashmi S**, Reinberger T, Odenthal N, Eichelmann L, Kosenko D, Ahmad I, Al-Hasani J, Demal TJ, Aherrahrou Z, Aherrahrou R. IUBMB Life. 2023 Dec 14. doi: 10.1002/iub.2799. Online ahead of print.
9. Dysregulation of metalloproteins in ischemic heart disease patients with systolic dysfunction. Khan N, Ullah J, **Hashmi S**, Ali A, Siddiqui AJ, Sami SA, Bokhari SS, Sharif H, Uddin J, El-Seedi HR, Musharraf SG. Int J Biol Macromol. 2023 Jan 28; 232:123435.
10. Galectin-3 Mitigates Cardiomyocytes Injury through Modulation of Left Ventricular Cathepsins B, D, L and S at 24-Hour Post Myocardial Infarction. Al-Salam S, **Hashmi S**, Jagadeesh G. Cell Physiol Biochem. 2022 Apr 13;56(2):150-165.
11. Pericardial fluid proteomic label-free quantification of differentially expressed proteins in ischemic heart disease patients with systolic dysfunction by nano-LC-ESI-MS/MS analysis. Ullah J, **Hashmi S**, Ali A, Khan F, Sami SA, Basir N. RSC Advances. 2021;11(1):320-7.
12. Simulation based technologies in clinical skills sessions improve confidence and satisfaction among medical students of pre-clinical years. Mirza MB, Sulaiman A, **Hashmi S**, Zaki S, Rehman R, Akbar R. J Pak Med Assoc. 2021 Apr;71(4):1296-1302.
13. Iomic profiling of pericardial fluid in ischemic heart disease. Khan N, **Hashmi S**, Siddiqui AJ, Farooq S, Sami SA, Basir N, et al. RSC Advances. 2020; 10(60):36439-51.
14. Understanding of metals dysregulation in patients with systolic and diastolic dysfunction in ischemic heart disease. Khan N, **Hashmi S**, Siddiqui AJ, Farooq S, Sami SA, Basir N, Bokhari SS, Sharif H, Junejo S, El-Seedi HR, Musharraf SG. Sci Rep. 2020 Aug 18; 10(1):13948.
15. Galectin-3: A Cardiomyocyte Antiapoptotic Mediator at 24-Hour Post Myocardial Infarction. Al-Salam S, **Hashmi S**, Jagadeesh GS, Tariq S. Cell Physiol Biochem. 2020 Apr 4; 54(2):287-302.

16. Teaching "Shock Pathophysiology" by Flipped Classroom: Views and Perspectives. Rehman R, **Hashmi S**, Akbar R, Fatima SS. J Med Educ Curric Dev. 2020 Mar 2; 7:2382120520910853
17. Changes in ventricular depolarisation vectors during exercise caused by regional myocardial ischaemia. Vellani CW, **Hashmi S**, Yusuf M, Mahmud S, Awan S, Kazmi K. Sci Rep. 2019 Nov 8; 9(1):16365.
18. Untargeted metabolomic analysis of coronary artery disease patients with diastolic dysfunction show disturbed oxidative pathway. Fatima T, **Hashmi S**, Iqbal A, Siddiqui AJ, Sami SA, Basir N, Bokhari SS, Sharif H, Musharraf SG. Metabolomics. 2019 Jun 24; 15 (7):98. (IF 3.511)
19. Myocardial Ischemia Reperfusion Injury: Apoptotic, Inflammatory and Oxidative Stress Role of Galectin-3. Al-Salam S, **Hashmi S** (contributed equally). Cell Physiol Biochem. 2018 Oct 24; 50(3):1123-1139.
20. Ventricular depolarisation vectors in exercise induced myocardial ischaemia. Vellani CW, Yusuf M, Mahmud S, **Hashmi S**. Sci Rep. 2017 Nov 7; 7(1):14649.
21. Molecular switch model for cardiomyocyte proliferation. Hashmi S, Ahmad HR. Cell Regen (Lond). 2019 Jan 7; 8(1):12-20. Review.
22. Teaching 'Shock Pathophysiology' by Flipped Classroom. Fatima SS, **Hashmi S**, Rehman R, Husein R. Pak J Med Sci. 2019; 35(6):1631-1635.
23. Is biological repair of Heart on the Horizon? Ahmad HR, **Hashmi S**. Pak J Med Sci. 2017; 33(4):1042-1046.
24. A New Model for PhD Elective Course. Ahmad HR, **Hashmi S**, Mahmood MH. Pak J Med Sci. 2017 May-Jun; 33(3):782.
25. Diastolic Dysfunction in Coronary Artery Disease. **Hashmi S**, Ahmad HR, Sharif H, Bokhari SS. J Coll Physicians Surg Pak. 2017 Mar; 27(3):192.
26. 'Refractory epilepsy': what lies beneath? Bokhari SS, **Hashmi S**. BMJ Case Rep. 2016 Mar 23; 2016.
27. Acute myocardial infarction and myocardial ischemia-reperfusion injury: a comparison. **Hashmi S**, Al-Salam S. Int J Clin Exp Pathol. 2015 Aug 1; 8(8):8786-96.
28. Galectin-1: a biomarker of surgical stress in murine model of cardiac surgery. **Hashmi S**, Al-Salam S. Int J Clin Exp Pathol. 2015 Jun 1; 8(6):7157-64.
29. Galectin-3 is expressed in the myocardium very early post-myocardial infarction. **Hashmi S**, Al-Salam S. Cardiovasc Pathol. 2015 Jul-Aug; 24(4):213-23.
30. Galectin-1 in Early Myocardial Infarction. Al-Salam S, **Hashmi S**. PLoS One. 2014 Jan 31; 9(1):e86994.
31. Loss of dystrophin staining in cardiomyocytes: a novel method for detection early myocardial infarction. **Hashmi S**, Al-Salam S. Int J Clin Exp Pathol. 2013; 6(2):249-57.
32. Hypoxia-inducible factor-1 alpha in the heart: a double agent? **Hashmi S**, Al-Salam S. Cardiol Rev. 2012 Nov-Dec; 20(6):268-73. Review.
33. Relationships of adiponectin and matrix metalloproteinase-9 to tissue inhibitor of metalloproteinase-1 ratio with coronary plaque morphology in patients with acute coronary syndrome. Cheng M, **Hashmi S**, Mao X, Zeng QT. Can J Cardiol. 2008 May; 24(5):385-90.
34. Association of plasma leptin levels and complexity of the culprit lesion in patients with unstable angina. Dubey L, Zeng H, **Hashmi S**, Hongjie W, Tao H. Int J Cardiol. 2008 May 23; 126(2):183-9.
35. Role of interleukin-17 and interleukin-17-induced cytokines interleukin-6 and interleukin-8 in unstable coronary artery disease. **Hashmi S**, Zeng QT. Coron Artery Dis. 2006 Dec; 17(8):699-706.
36. New Features and Experiences in the Nursing Education System and Nursing Clinical Practice in China. Molikova, R., Xue, J., Osmani, J., **Satwat, H.**, Rehorova, J., Bezdicikova, M., et al.

Sociocultural connection in nursing and obstetric and human care, Vol.2: 483-488, 1st Edition, Palacký University Publishing, Olomouce 2006 ISBN 80-244-1424-4.

BOOK CHAPTERS AUTHORED

37. Creating an academic safety net for newly inducted undergraduate medical students using formative assessments and feedback. Fatima, S. S., Idress, R., **Hashmi, S.**, Sabzwari, S., Khan, S., Jabeen, K., & Ghias, K. (2025). S. Elkington & A. Irons (Eds.), Formative assessment and feedback in post-digital learning environments: Disciplinary case studies in higher education. Chapter 16;127–134. Routledge. ISBN: 978-1-032-41894-0
38. Could a Doctoral Thesis be a Research Lighthouse? HR Ahmad and **Satwat Hashmi**. Scientific Writing: A guide to the art of medical writing and scientific publishing'. First edition June 2018, Professional Medical Publications. Section IV, Chapter 18:169-181. ISBN: 978-969-8219-22-2
39. Introduction to Research Ethics and Integrity. **Satwat Hashmi** and Ehtisham Altaf. Research till Publication in Healthcare. Chapter 2: Page 11-21. ISBN: 978-969-23467-0-2

TRAININGS

- Pakistan Institute of Medical Sciences, Islamabad, Pakistan, House-job training, Medicine and Allied, May 2000 - Oct 2000
- Pakistan Institute of Medical Sciences, Islamabad, Pakistan, House-job training, Surgery and Allied, Nov 2000 - May 2001
- Department of Cardiology, Union Hospital, Huazhong University of Science and Technology, Wuhan, China. MS Cardiology clinical training, 2004 - 2007
- Laboratory of Experimental Cardiology, University Medical Centre, Utrecht, Netherlands, Training on murine myocardial infarction and ischemia reperfusion injury models, Sept 2010
- Civilian Research and Development Foundation (CRDF) Global, USA, Training workshop by Dr Judith Sture on “Biosafety and Biosecurity for Tissue Collection Integrity”, Amsterdam, Netherlands, January 23 - 26, 2017.
- Pakistan Biosafety Association (PBSA) and Fogarty International Centre (FIC) USA, training workshop on “Institutional Biosafety Committee (IBC)” workshop, Islamabad, February 15 - 16, 2018
- Pakistan Biosafety Association (PBSA) and Fogarty International Center (FIC) USA, Master trainer workshop with Sean Kaufman, Islamabad, Pakistan, April 24 - 28, 2018
- CRDF Global, USA, Training workshop on “Increasing Biosecurity for Tissue Culture Collections in Pakistan” held in Amsterdam, Netherlands, August 13 - 17, 2018
- Aga Khan University, Teaching and Learning Enhancement Workshop (TLEW), Instructional skills workshop, November 14 - 16, 2018
- Aga Khan University workshop on “Flipped classroom, Podcast and Vodcast for Technology Enabled Learning Program Champions group”, February 11, 2019
- Aga Khan University workshop on “Principles of Assessment”, Continuous Faculty Development Program in Health Professions Education (CFDP-HPE), February 20, 2019
- Aga Khan University workshop on “Leadership I: Strategic Planning”, Continuous Faculty Development Program in Health Professions Education (CFDP-HPE), October 23, 2019
- Aga Khan University workshop on “EPA: Rethinking Competency-based Curricula” by Department for Educational Development (DED), November 20, 2019.
- International Association of Medical Science Educators (IAMSE) symposium on “Integration in Medical and Health Science Education”, Kuala Lumpur, Malaysia, February 28, 2020
- Ottawa 2020, “Assessment of health professionals and evaluation of programmes: Best practice and future development”, training workshop by Ara Tekian & John Norcini on “Five

workshops that are essential for training your faculty in assessment” Kuala Lumpur, Malaysia, February 29, 2020

- Ottawa 2020, “Assessment of health professionals and evaluation of programmes: Best practice and future development”, training workshop by John Norcini on “Systems of Assessment” Kuala Lumpur, Malaysia, February 29, 2020
- Deans’ leadership course 2021 (AKUMC)
- Pakistan Biological Safety Association workshop on Institutional Biosafety Committee, in collaboration with The Fogarty International Center (FIC), Tim Trevan from CHROME Biorisk Management LLC and Dr. Philippe Stroot from Xibios Biosafety Consulting, Karachi, 19-20 October 2022.
- Institute of Cardiogenetics (ICG), Lubeck, Germany. Research Scientist training in Cardiogenetics as part of Faculty development Award (FDA) AKU. May 5-August 1, 2023
- Workshop on Academic Administration hosted by the Office of Faculty Development and Academic Affairs AKU on August 17, 2023.
- ‘Workshop on Financial Literacy’ curated by the Office of the Associate Dean for Faculty, facilitated by the Vice President Finance & CFO, AKU. October 3, 2023.
- ‘Aspiring leaders’ cohort’ of the HEC Women leadership developed by Michigan State University, Visiting International Professional Program, HEC, and US Embassy Pakistan. February-December 2023.
- Pakistan Higher Education Women’s Leadership Summit organized by HEC, Michigan State University and US Embassy from October 7 – 11, 2023 Islamabad, Pakistan.

PRESENTATIONS

a. Abstracts and Oral Presentations:

1. ‘Genetic and Environmental Interactions in Susceptibility to Atherosclerotic Coronary Artery Disease’, Oral presentation at the 4th Annual Biological Sciences Conference, November 27, 2024.
2. "A patterned human primitive heart organoid model generated by pluripotent stem cell self-organization" BBS departmental presentation, July 3, 2024.
3. ‘Translational Science and Research’, invited talk on the Coffee talk series by the Department of Medicine at AKU on May 23, 2024.
4. ‘Basic Science Research’, invited talk at the International Student Research Conference 2023, organized by the Student Research Forum (SRF) AKU, on March 24-26, 2023.
5. ‘A Curriculum Development Model for Integrating Basic Sciences into the Clerkship rotation in undergraduate medical education program’ oral presentation at the 5th Biennial Scholarship of Teaching and Learning (SoTL) Conference 2023 on October 16-18, 2023, in Nairobi, Kenya & Karachi, Pakistan.
6. ‘Developing a Theoretical Framework to Research AI-Assisted Technologies in Teaching and Learning’ paper presentation 5th Biennial Scholarship of Teaching and Learning (SoTL) Conference 2023 on October 16-18, 2023, in Nairobi, Kenya & Karachi, Pakistan.
7. ‘Wnt pathway and cardioprotection’, oral presentation in the 3rd PROBE 2022 Conference, Physiology: Pandemic, Practices & Perspectives organized by the Department of Physiology, University of Karachi on 21-23 February 2022
8. ‘BBS Cardiovascular Research’, talk in the Pulse 2021 conference AKU: Bridge to basics held in Aga Khan University on January 21-24, 2021.
9. ‘Cardiac Regeneration’, Invited talk at the 11th International Biennial Conference 'Cardiothoracic Surgery 2020 and Beyond' held at Aga Khan University on December 7, 2019.
10. ‘Correlation of reversible changes in depolarisation vectors with coronary angiography’. Oral presentation in Pulse 2020 cardiometabolic health conference held at AKU on January 10-12, 2020

11. 'Cardiac Regeneration', Invited talk at the 11th International Biennial Conference 'Cardiothoracic Surgery 2020 and Beyond' held at Aga Khan University on December 7, 2019
12. 'Simulation based technologies in clinical skills sessions improves confidence and satisfaction among medical students of pre-clinical years'. Oral presentation by student at the AKU 3rd Biennial Scholarship of Teaching and Learning (SoTL) Conference held at AKU on the November 27 – 28, 2019
13. 'Clinical application of a basic science concept: The making of an instrument'. Oral presentation at the 16th Biennial Conference of South Asian Association of Physiologists Conference and Pakistan Physiological Society, Lahore, December 13 - 15, 2018
14. 'Could adult cardiomyocytes be coaxed to repair the heart?' Invited talk at the BMSI for the 52nd Annual Medical Symposium in Jinnah Post Graduate Medical Centre, Karachi, January 16 - 19, 2017
15. 'Is biological repair of the heart on the horizon?' Oral presentation with Dr HR Ahmad at the 5th Biennial Conference of the South Asian Association of Physiologists (SAAPCON-2016) Kathmandu University, Dhulikhel, Nepal, November 10 - 13, 2016
16. 'Diastolic function to dysfunction: Modeling and measurement in coronary artery disease' Conference presentation at the 5th Biennial Conference of the South Asian Association of Physiologists (SAAPCON-2016) Kathmandu University, Dhulikhel, Nepal, November 10 -13, 2016
17. 'Galectin-3 and Wnt signaling in myocardial infarct healing: is there a connection?' Oral presentation at the International conference on Translational Medicine by Ziauddin University and European Society of Translational Medicine, Karachi, February 1 - 3, 2016
18. 'Diastolic Dysfunction of the heart: the hidden enemy'. Invited talk at the Pak-China Medgong conference organized by Pakistan Medical Association, January 8 - 10, 2016
19. 'Cardioprotection', Oral presentation with Dr HR Ahmad at the 14th Biennial conference of Pakistan Physiological Society at the University of Jamshoro and ISRA University Hyderabad, March 28 - 29, 2015
20. 'Galectin-3: an emerging biomarker for heart failure'. Oral presentation at the 4th International Conference on Life Sciences Research organized by Life Sciences Society of Pakistan (LSSP) in partnership with Isra University, Islamabad Campus, Pakistan and Nobel Science and Research Center, Turkey, September 4 - 6, 2015

b. Poster Presentations:

1. 'WNT inhibition and Apoptosis in Mice Myocardial Infraction and Ischemia Reperfusion Injury' Poster presentation by Rena Zaman, MPhil Student at the Health Sciences Research Assembly, Aga Khan University on March 31st, 2023.
2. 'Cardioprotective Role of Pyrvinium Pamoate In Post Myocardial Infraction and Ischemia Reperfusion Injury In Murine Mice Models' Poster presentation by Rena Zaman, MPhil Student (1st position) in BBS symposium on 29 Nov 2022
3. 'Time course of heart rate response to exercise: Trained vs untrained students'. *Ahsen Soomro, Sheza Hassan, Saeeda Shaharyar, Dr. HR Ahmad and Satwat Hashmi*. UGME Year 2 Research module, 2018
4. 'Biosafety and biosecurity in context of developing countries: challenges and opportunities' Poster presented at the 7th Annual ABSANZ Biosafety and Bio-containment Conference in Queensland, Australia, October 30 - November 3, 2017
5. 'Hearing threshold of medical students: Correlation between earphone usage and hearing loss'. *Aeman Naseer, Maeen Abbas Syed, Satwat Hashmi and HR Ahmad*. UGME Year 2 Research module, 2017
6. 'Cardiovascular response to orthostatic stress as a marker for heat stroke vulnerability'. *Zain Wahla, Hashim Bokhari, Satwat Hashmi and HR Ahmad*. UGME Year 2 Research module, 2017

7. 'Effect of acetyl salicylic acid on ischemic reperfusion injury demonstrated on a Langendorff heart preparation'. *Talha Khawaja*, Satwat Hashmi and HR Ahmad. UGME Year 2 Research module, 2016
8. 'Effect of acetylsalicylic acid on the relationship of cardiac demand and supply'. *Nabeel Noor*, Satwat Hashmi and HR Ahmad. UGME Year 2 Research module, 2016
9. 'Effect of low dose acetylsalicylic acid on heart rate, coronary flow and force of contraction'. *Laaibah Ejaz*, Satwat Hashmi and HR Ahmad. UGME Year 2 Research module, 2016
10. 'Effect of acetylsalicylic acid on reactive hyperemia'. *Mahanoor Raza*, Satwat Hashmi and HR Ahmed. UGME Year 2 Research module, 2016
11. 'Hypoxia-induced galectin-3 in the heart'. Poster Presentation at Dow University of Health Sciences Research Day, February 27, 2016
12. 'Sympathetic stimulation after ischemia worsens the reperfusion related injury to the heart'. *Mayera Tufail*, Satwat Hashmi and HR Ahmad. UGME Year 2 Research module, 2015
13. 'Effect of Global Ischemia on Cardiac mechanics in isolated rat heart'. *Burhan Khan*, Satwat Hashmi and HR Ahmad. UGME Year 2 Research module, 2015
14. 'Galectin-3 in early myocardial infarction'. Poster presentation at the 6th International conference on drug delivery and therapeutics, Dubai, February 10 - 12, 2014

WORKSHOPS CONDUCTED

- Conducted a pre-conference workshop "Scientific Writing: Adding the Author's Voice to the Manuscript", at the IMECON 2024 on Wednesday 21st February 2024 at aga khan University Karachi.
- Conducted a pre-conference workshop "Leveraging AI for Student-Faculty Partnerships for Enhanced Learning" at the 21st Asia Pacific Medical Education Conference (APMEC) 2024 under the theme "AI in Health Professions Education" on January 17-20, 2024, at Colombo Sri Lanka.
- Facilitated and Co-Directed 2-days workshop 'Ethics of Research in LMICs – Pakistani context' as part of the Fogarty-AKUPI-NCD Research Certification Course NIHD43 held in March 9-10, 2023, and February 29 and March 1, 2024 at AKU.
- Directed and facilitated a two-day specialized training workshop on 'Animal-based research in biomedical sciences-models and techniques' on November 24 and 25, 2022 and on 13-14 November 2023 at AKU.
- Organized an in-house workshop for BBS members on 'Optimization of protein extraction and western blotting' from June 27-July 1, 2022.
- Directed and facilitated workshop 'Good Laboratory Practices' for the Department of Biological & Biomedical Sciences on March 4, 2022
- Facilitated a session on Pain relief / Analgesia in laboratory animals in a workshop 'Principles of Laboratory Animal Science', 28-29 May 2021 and May 26-27, 2022.
- Co-directed a faculty learning session on 'Multidisciplinary integrated concepts in Neurophysiology' with Dr HR Ahmad for the Department of Biological and Biomedical Sciences, December 2019 (8 AACME credits)
- Facilitated a workshop on 'Power Lab Systems in Research: Use of isolated heart perfusion assembly', Hamdard University Karachi, June 26-28, 2018
- Facilitated a preconference workshop on 'Techniques in Physiology-Life in vitro: Langendorff heart perfusion system' at the 1st Probe Conference: Biology down the road, at the Department of Physiology, University of Karachi, January 15, 2018
- Organized and facilitated a post-conference workshop on 'Basic Techniques in Cardiovascular Research' at the 20th National Health Sciences Research Symposium (NHSRS) on "Heart and Lungs: from prevention to regeneration", Aga Khan University, November 3 - 5, 2017

- Facilitated a workshop on ‘Innovative research techniques in basic medical sciences’ as part of pre-conference workshop for the 1st International Conference at Shalamar Medical and Dental College, Lahore, Pakistan, February 2 - 5, 2017
- Facilitated a workshop on ‘Manage Stress: Be Yourself’ at Aga Khan University, August, 2016
- Facilitated a workshop ‘Concept of wellness among family members’ as part of the community awareness service at SOS Village Karachi, December 2015
- Facilitated a workshop ‘How to write a doctoral thesis’ with Dr HR Ahmad as part of a series titled “Why Me - A Bridge for Lifelong Learning” organized by the Department of Continuing Professional Education, Aga Khan University, Karachi, December 2015

TEACHING EXPERIENCE

- Undergraduate (MBBS) and graduate (MPhil & PhD) program faculty, 2014 -present, Aga Khan University
- Undergraduate (MBBS) program faculty, 2007 - 2009, Wuhan University Medical School

TEACHING ACTIVITY

Undergraduate (MBBS) Teaching:

- Lectures, PBLs and practical lab teaching for the discipline of Physiology - Respiration & Circulation, Blood, Neuroscience, GIT and Introductory modules
- Consistent engagement of students in the UGME Year 2 Research module for the past 4 years - Designed small projects for students to be completed during the module and presented in the form of poster.

Post-Graduate Teaching:

FHS-PhD Program:

- Cardiovascular and Respiratory Physiology course
- Cell and Molecular Biology course
- Scientific Writing core course

MPhil in Biological and Biomedical Sciences Program:

- Research Methodology core course
- Cardiovascular and Respiratory Sciences course
- Laboratory Animal Sciences course
- Cellular, Molecular and Genetic Sciences course

MScN Program School Nursing and Midwifery:

- Pathophysiology for Advanced Practice course, ‘Disorder of cardiovascular system’

DEVELOPMENT OF COURSES

FHS-PhD program

- Course director for PhD 4-credit hour core course ‘Scientific Writing’ (2024-date)
- Developed, coordinated, and facilitated a 4-credit hour elective course ‘Cardiovascular and Respiratory Physiology’(2015-date)

AKU MPhil program

- Developed, coordinated, and facilitated the elective course 'Cardiovascular and Respiration Sciences' - for multidisciplinary integrated concepts of heart, circulation and respiration components of human physiology. (2020 to date)

- Course coordinator and facilitator for ‘Cellular, Molecular and Genetic Sciences: Knowledge and Application’ core course. (2024-date)
- Course co-coordinator and facilitator for ‘Research Methodology’ core course (2020-2024)

STUDENT EVALUATIONS

- Post-Graduate Teaching: FHS-PhD Program, - rated as “Excellent” in all assessment criteria.
- Undergraduate Teaching: MBBS– sessions rated “Very good” to “Outstanding” by majority of students.

GRADUATE STUDENTS SUPERVISED

- Ms. Tamkeen Fatima; 2015-2019 (PhD Co-supervisor); ‘*Search for metabolomic biomarkers of ischemic heart disease using mass spectrometry*’ research funded by University of Karachi (completed)
- Ms. Shafaq Javaid; 2020-2025 (PhD Co-supervisor); ‘*Assessing the Biological Role of Rap1 subtype A GTPase in the Heart*’ research funded by University of Karachi (completed)
- Ms. Sahar Zuberi; 2020-2021(Supervisor); ‘*Role of Nrf2 and Wnt pathway in regulating oxidative stress after myocardial ischemia reperfusion injury*’. MPhil program Aga Khan University (completed)
- Ms. Rena Zaman; 2021-2022 (Supervisor); ‘*WNT inhibition and apoptosis in mice myocardial infarction and ischemia reperfusion injury models*’. MPhil program Aga Khan University (completed)
- Ms. Kiran Rashid; 2022-2023 (Supervisor); ‘*Age and sex specific responses of myocardial infarction*’. MPhil program Aga Khan University (completed)
- Ms Hareem Siddiqui; 2023-2024 (Supervisor); ‘*Age and sex related expression of rho associated protein rock 1 & 2 in myocardial infarction*’. MPhil program Aga Khan University (completed)
- Dr Brishna Khan; 2024-2025 (Supervisor); *Identification of the Role of Vascular Smooth Muscle Cells in Atherosclerosis* MPhil program Aga Khan University (ongoing)

UNDERGRADUATE STUDENTS RESEARCH SUPERVISION:

UGME Year 2 Research Module Students: Supervised 19 AKU Medical Students in the ‘Introduction to Research Module’ till 2024

REFERENCES

On request