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PROFILE SUMMARY

Assistant Professor at Atta-ur-Rahman School of applied Biosciences, NUST with a research focus on neuroscience, spaceflight-induced neurodegeneration, aerospace medicine, molecular biomarkers, and epigenetic mechanisms in brain aging. My work integrates genomics, bioinformatics, and advanced imaging techniques to investigate neurological adaptations in extreme environments. I have authored multiple first-author papers in high-impact journals, secured competitive funding as Principal Investigator, and presented at leading international conferences. My experience spans teaching, research collaboration, and science outreach across Asia, the Middle East, and Europe. I am committed to fostering academic excellence through teaching, mentorship, and translational research in neuroscience and space biology.

EDUCATION

- **Ph.D. in Biomedical Engineering**, Beijing Institute of Technology, Beijing, China (2017-2022)
Thesis: Screening and Identification of micro-RNAs Based Biomarkers for Depression under Stimulated Complex Spaceflight Environment.
- **Master of Biotechnology**, Quaid-e-Azam University Islamabad, Pakistan (2013-2015)
Thesis: Molecular Diagnosis of Ichthyosis in Pakistani Family.
- **Bachelor of Biotechnology**, International Islamic University Islamabad, Pakistan (2008-2012)
Thesis: Screening and Characterization of Surface Associated Marine Microorganisms for Drug Delivery Potential

EXPERIENCE

- **Assistant Professor (Jan 2026 - Present)**
Department of Biomedicine, Atta Ur Rahman School of Applied Biosciences, National University of Sciences & Technology, Islamabad, Pakistan. (Non-tenure-track / contractual appointment)
- **Post Doctoral Fellow (Sept 2023 - December 2025)**
School of Medical Technology, Beijing Institute of Technology, China
- **Visiting Lecturer (June 2016 - August 2017)**
Department of Bioinformatics and Biotechnology, International Islamic University Islamabad, Pakistan
- **Research Associate (June 2016- July 2017)**
Higher Education Commission, Project # 2908 at Genomics Research Lab, International Islamic University Islamabad, Pakistan
- **Biology Lecturer (September 2015 - May 2016)**
Government Degree College Jhanda Chichi Civil lines Rawalpindi Cantt, Pakistan
- **Research Assistant (January 2011- August 2012)**
Department of Bioinformatics and Biotechnology, International Islamic University Islamabad, Pakistan
- **Internee (October 2011- January 2012)**
National Institute of Rehabilitation Medicine, Islamabad, Pakistan

RESEARCH GRANTS

- **SUPARCO-Pakistan Manned Space Mission at Chinese Space Station:** Neuroglow: Real-Time Imaging of Stress-Activated Neurons in Microgravity. (*Principal Investigator, 2026-2027*)
- **Beijing Natural Science Foundation Project Funding,** Grant # IS24041, Project on role of mito-miRNAs in neurological issues due to spaceflight factors. (*Principal Investigator, 2024-2025*)
- **Higher Education Commission Pakistan,** Project # 2908: Project on Skeletal Dysplasia in Pakistani Families, (*Research Associate, 2016-2017*)
- **Higher Education Commission Pakistan,** Project # PM IPFP/HRD/HEC/2010/1815, Project on Microbial Drug Screening (*Research Assistant, 2011-2012*)

PUBLICATIONS

➤ First Author Papers

- 1) **Rasheed M,** Maazouzi M, Mbarek L, Wang Xuezhe, Liang J, Hong M, Chen Z, Deng Y. (2025) Exploring Non-Coding-RNAs Regulation of the Blood–Brain Barrier in Neurodegenerative Diseases: A Systematic Review. The Journal of Neurochemistry, 169: e70031. <https://doi.org/10.1111/jnc.70031>. (IF: 4.2, Q2).
- 2) **Rasheed M,** Tahir RA, Maazouzi M, et al. (2024). Interplay of miRNAs and Molecular Pathways in Spaceflight-Induced Depression: Insights from a Rat Model using Simulated Complex Space Environment. FASEB J. 2024; 38:e23831. doi:10.1096/fj.202400420RR. (IF: 4.4, Q1).
- 3) **Rasheed M,** Wang H, Wang C, Sun J, Chen Z, & Deng Y. (2023). Opposing manner of miR-455-3p against NR2B-PSD-95-nNOS complex in the cortex and hippocampus of depressive rats under simulated complex space environment. Journal of Neurochemistry, 165, 391– 412. doi.org/10.1111/jnc.15766. (IF: 4.2, Q2).
- 4) **Rasheed M,** Wan Z, Li Y. et al (2023). miR-218-5p and miR-320a-5p as Biomarkers for Brain Disorders: Focus on the Major Depressive Disorder and Parkinson's Disease. Molecular Neurobiology. doi.org/10.1007/s12035-023-03391-y. (IF: 4.6, Q1).
- 5) **Rasheed M,** Asghar R, Firdoos S, Ahmad N, Nazir A, Ullah KM, Li N, Zhuang F, Chen Z, Deng Y. A Systematic Review of Circulatory microRNAs in Major Depressive Disorder: Potential Biomarkers for Disease Prognosis. International Journal of Molecular Sciences. 2022; 23(3):1294. doi.org/10.3390/ijms23031294. (IF: 4.9, Q1).
- 6) **Rasheed M,** Chen Z, Deng, Y. The epigenetic mechanisms involved in mitochondrial dysfunction: Implication for Parkinson's disease. Brain Pathology. 2022; e13012. doi.org/10.1111/bpa.13012. (IF: 5.8, Q1).
- 7) **Rasheed M,** Liang J, Wang C, Deng Y, & Chen, Z. Epigenetic Regulation of Neuroinflammation in Parkinson's Disease. International Journal of Molecular Sciences. 2021; 22(9), 4956. <https://doi.org/10.3390/ijms22094956>. (IF: 4.9, Q1).
- 8) **Rasheed M,** Karim N, Shah FA, Naeem M. Novel TGM1 mutation in a Pakistani family affected with severe lamellar ichthyosis. Pediatrics Neonatology. 2018 Dec;59(6):628-629. doi: 10.1016/j.pedneo.2018.01.003. (IF: 2.3, Q2).
- 9) **Rasheed M,** Shahzad S, Zaeem A, Afzal I, Gul A, Khalid S. Updated strategies for the management, pathogenesis and molecular genetics of different forms of ichthyosis syndromes with prominent hair abnormalities. Archives of Dermatological Research. 2017 Dec;309(10):773-785. doi: 10.1007/s00403-017-1780-x. (IF: 2.5, Q3).

➤ Corresponding Author Papers

- 1) Junhan L, Chen Z, **Rasheed M**, Yulin Deng (2025). Microgravity-Driven Brain Aging: Mitochondrial, Cytoskeletal, and Neurovascular Mechanisms of Space-Induced Neurodegeneration. *Space Science and Technology*. (Under review). (IF-6.6, Q1).

➤ Co-author Papers

- 1) Liang J, Wan Z, Qian C, **Rasheed M**, Cao C, Sun J, Wang X, Chen Z, Deng Y. (2025). Strategies to rescue mitochondria in Parkinson's disease: The significance of mitochondrial transfer. *Aging Research Reviews*. 112; 102856. <https://doi.org/10.1016/j.arr.2025.102856>. (IF-12.4, Q1).
- 2) Hao J, Chen Z, Borj J, **Rasheed M**, Chang J, Zhang Y, Li N, Deng Y. (2025). Distinct cognitive outcome shaped by hippocampal adaptation and recovery-a system level study under stimulated microgravity exposure. *Space: Science & Technology*. (IF-6.8, Q1).
- 3) Bibi H, Er T, Zhang C, Gao Y, Wang X, Tian M, Cui J, **Rasheed M**, Ma H, Deng Y, Zhang R. (2025). Revealing Simulated Microgravity-Induced Abnormal Accumulation of Lipid Droplets in Nerve Cells with Long-Term Tracking probe. *Sensors and Actuators B: Chemical*. 2025; 444 (1), 138348. doi.org/10.1016/j.snb.2025.138348. (IF: 7.7, Q1).
- 4) R Asghar, **M Rasheed**, X Lv, Y Deng. (2025). FRET-Based TURN-ON Aptasensor for the Sensitive Detection of CK-MB. *Biosensors*. 2025 15(7), 446. <https://doi.org/10.3390/bios15070446>. (IF: 5.6, Q1).
- 5) Liang J, Wan Z, Qian C, **Rasheed M**, Cao C, Sun J, Wang X, Chen Z, Deng Y. (2024). The pyroptosis mediated biomarker pattern: an emerging diagnostic approach for Parkinson's disease. *Cell. Mol. Biol. Lett.* [doi:10.1186/s11658-023-00516-y](https://doi.org/10.1186/s11658-023-00516-y) (IF: 9.2, Q1).
- 6) Li Y, **Rasheed M**, Liu J, Chen Z, Deng Y. (2024) Deciphering the Molecular Nexus: An In-Depth Review of Mitochondrial Pathways and Their Role in Cell Death Crosstalk. *Cells*. 2024; 13(10):863. doi.org/10.3390/cells13100863. (IF: 5.1, Q2).
- 7) Firdoos S, Dai R, Younas Z, Shah FA, Gul M, **Rasheed M**. Agomelatine-loaded nanostructured lipid carriers alleviate neuropathic pain in rats by Nrf2/HO-1 signalling pathway. *Clin Exp Pharmacol Physiol*. 2024; 51(11):e13922. [doi:10.1111/1440-1681.13922](https://doi.org/10.1111/1440-1681.13922). (IF: 2.4, Q2).
- 8) Ouyang F F, **Rasheed M**, Li B, Deng Y. (2024). Comprehensive Understanding of Immune Cells in The Pathogenesis of Non-alcoholic Fatty Liver Disease. *Progress in Biochemistry and Biophysics*, 51(9), 2082-2100. <https://doi.org/10.16476/j.pibb.2024.0045>.
- 9) Chen Z, Li Y, **Rasheed M**, Wang H, Lei R, Zhao T, Deng Y, Ma H. (2023) Altered expression of inflammation-associated molecules in striatum: an implication for sensitivity to heavy ion radiations. *Front. Cell. Neurosci* .17. [doi: 10.3389/fncel.2023.1252958](https://doi.org/10.3389/fncel.2023.1252958). (IF: 4.2, Q2).
- 10) Zhang P, **Rasheed M**, Liang J, Wang C, Feng L, Chen Z. Emerging Potential of Exosomal Non-coding RNA in Parkinson's Disease: A Review. *Frontiers in Aging Neuroscience*. 2022; Mar 10;14:819836. [doi: 10.3389/fnagi.2022.819836](https://doi.org/10.3389/fnagi.2022.819836). (IF: 4.1, Q2).
- 11) Asghar R, **Rasheed M**, ul Hassan J, Rafique M, Khan M, Deng Y, Advancements in Testing Strategies for COVID-19. *Biosensors*. 2022, 12, 410. <https://doi.org/10.3390/bios12060410>. (IF: 4.9, Q1).
- 12) Kakar MU, Naveed M, Saeed M, Zhao S, **Rasheed M**, Firdoos S, Manzoor R, Deng Y, Dai R. A review on structure, extraction, and biological activities of polysaccharides isolated from *Cyclocarya paliurus* (Batalin) Iljinskaja. *International Journal of Biological Macromolecules*. 2020 Aug 1;156:420-429. [doi: 10.1016/j.ijbiomac.2020.04.022](https://doi.org/10.1016/j.ijbiomac.2020.04.022). (IF: 7.7, Q1).
- 13) Mukhtar R, Shahzad S, Rashid S, Rozi M, **Rasheed M**, Afzal I and Shaiq P A, 2022.L237P Substitution in the UROS Gene Causes X-linked Recessive Congenital Erythropoietic Porphyria in Pakistani Consanguineous Family Through Altered Uroporphyrinogen III Binding. *Pakistan Journal of Zoology*., 54: 1849-1857. DOI: <https://dx.doi.org/10.17582/journal.pjz/20200618170629>.

- 14) Yao M, Lv X, Deng Y, **Rasheed M**. Specific and simultaneous detection of microRNA-21 and let-7a by rolling circle amplification combined with lateral flow strip. *Analytica Chimica Acta*. 2019; May 9;1055:115-125. doi: 10.1016/j.aca.2018.12.040. (IF: 5.7, Q1).
- 15) Uzair B, Tabassum S, **Rasheed M**, Rehman SF. Exploring marine cyanobacteria for lead compounds of pharmaceutical importance. *The Scientific World Journal*. 2012; 2012:179782. doi: 10.1100/2012/179782.
- 16) Chen Z, Zhang P, **Rasheed M**, Wang H, Ma H, Deng Y. Pyroptosis and Persistent Neuroinflammation in Gamma Ray-Induced Brain Injury: Implications for Radiotherapy and Spaceflight Health. *The FASEB Journal* (Under Review).

CONFERENCES/ TRAININGS / WORKSHOPS

➤ Conference Proceedings

- 1) **Rasheed M**, Wang H, Sunniya H, Chen Z *, Deng Y* MicroRNA-16-5p and MicroRNA-455-3p Modulate Mitochondrial Signaling Dysregulation in a Simulated Spaceflight Model of Depression. 77th IAC-IAF/IAA Space Life Sciences Symposium. International Astronautical Federation (IAF). (2026). Antalya, Türkiye. 5-9 October 2026. [Interactive Presentation].
- 2) **Rasheed M**. Autonomous Multimodal Anomaly Detection for Precision Astronaut Health Monitoring Using Open Spaceflight Datasets. 77th IAC-IAF/IAA Space Life Sciences Symposium. International Astronautical Federation (IAF). (2026). Antalya, Türkiye. 5-9 October 2026. [Interactive Presentation].
- 3) **Rasheed M**, Deng Y, Chen Z. MicroRNAs based Biomarkers for Space-Induced Mood Disorders: Insights into Neurological Adaptation and Mental Health in Astronauts. The International Conference on Applications of Space Science and Technology (ICAST 2025), Islamabad, Pakistan. (2025). [Oral Presentation]
- 4) **Rasheed M**, Wang H, Mohamed M, Deng Y, Chen Z. Exploring microRNA-206-3p as a Biomarker in Spaceflight-Induced Depression: A Neurobiological Perspective. 75th IAC-IAF/IAA Space Life Sciences Symposium. International Astronautical Federation (IAF), Milan, Italy. (2024). p. 627-635 <https://doi.org/10.52202/078355-0082>. [Interactive Presentation]
- 5) **Rasheed M**, Mohamed M, Wang H, Deng Y, Li Y, Deng Y, Chen Z. *Interplay of miR-455 and miR-16 in the psychopathology of depression under simulated space complex environment*. China Space Conference, Wuhan, China (2024). [Abstract accepted].
- 6) **Rasheed M**, Mohamed M, Deng Y, Deng Y, Chen Z. *Molecular Guardians of the Mind: Unravelling miRNA Pathways in Space-Induced Mood Disorders*. 2024-Academic Conference on Space Science and Applications of China Manned Space Station, Xian, China. (2024). [Abstract accepted].
- 7) **Rasheed M**, Deng Y, Chen Z. Astrobiology and Space Communications: Bridging the Gap for Interstellar Exploration. APSCO/UOS/AUASS International Symposium 2024 on Development in Space Communications-The Regional Balance and Challenges, Sharjah, UAE (2024). [Oral Presentation].
- 8) **Rasheed M**, Deng Z, Li N, Chen Z, Shahzad S, Zhuang F, Deng Y. *Impact of micro-RNAs based biomarkers on the Psychopathology of Depression under Simulated Space Complex Environment Model*. UNOOSA/IAF 29th workshop on Space Technology for Socio-Economic Benefits: "Access to Space for All: Bridging the Space Divide" in Paris, France (2022). [Poster Presentation].
- 9) **Rasheed M**, Deng Y, Chen Z. *Circulatory microRNAs in Major Depressive Disorder: Potential biomarkers for disease prognosis*. International Webinar on Precision Medicine, Coalesce Research Group, Qatar (2022) [Oral Presentation].

- 10) **Rasheed M**, Deng Z, Li N, Chen Z, Shahzad S, Zhuang F, Deng Y. Exploring MicroRNA Biomarkers for Spaceflight induced Depression in Space mimicking conditions. SUPARCO International conference on space 2022: Role of Space Technology in Socio Economic Development” in Islamabad (2022). [Poster Presentation].
- 11) **Rasheed M**, Deng Y. Impact of Biotechnology on the Extra-terrestrial Life. 1st International Conference on Advancements in Biotechnology and Biocomputing". Department of Biological Sciences. International Islamic University Islamabad (2019). [Awarded 2nd Best Poster].

➤ **Rapporteur**

Served as a **Rapporteur** for **Session 3a: Science, Technology and Innovation from Hypergravity and Microgravity Experimentation** at UNOOSA/IAF 29th workshop on Space Technology for Socio-Economic Benefits: “Access to Space for All: Bridging the Space Divide” in Paris, France (2022).

<https://www.unoosa.org/oosa/en/ourwork/psa/schedule/2022/un-iaf-workshop.html>.

➤ **Keynote Speaker**

- 1) *Delivered talk on “**Beyond Earth: The Future of Space Exploration-A journey beyond rockets and satellites- into the human side of space exploration**” at LINCOLN Corner, NUST, 16, Feb 2026*
- 2) *Delivered talk on “**When the Human Brain Meets the Unknown: Discoveries at the Edge of Space and Life**” at 2025 Experiencing China: Beijing–Zhuhai Intelligence Forum Industry–Academia Integration, Beijing Institute of Technology, China, 26, September 2025.*
- 3) *Delivered talk on “**Neurological Consequences of Deep Space Missions: How Space Conditions Impact Astronaut Mental Health**” at Space Medicine Workshop at Bahrain Space Agency, 24, May, 2025 [Virtual]*
- 4) *Delivered session on “**Astrobiology and the Future of Space Colonization: Exploring the Possibilities of Life Beyond Earth**” at the Space Biology Seminar, Faculty of Navigation Science and Space Technology, Beni-Suef University, Beni Suef, Egypt. (2025) [Virtual].*
- 5) *Delivered session on “**A Voyage to a Virtual DNA Lab in Space: Unlocking the Blueprint of Life Beyond Earth**” at the Fakhreddine Milouchi School of Space, Tunisia (2025) [Virtual].*
- 6) *Delivered expert training and practical guidance on **PCR & RT-PCR techniques during a one-day hands-on workshop on genomic techniques** at Department of Zoology and Botany, Rawalpindi Women University, Rawalpindi, Pakistan (2023).*
- 7) *Conducted an **Astrobiology Training Session** as a resource person during PakASTRA's summer camp at Olives School (2023).*

RESEARCH INTERESTS

- 1) **Neurobiology and Molecular Mechanisms:** Investigating the molecular and cellular dimensions of brain function, with a focus on neuroinflammation, neurodegenerative diseases, and spaceflight-induced neurological disorders.
- 2) **Biomarkers in Brain Disorders:** Exploring biomarkers as diagnostic and prognostic tools for major depressive disorder, Parkinson’s disease, and space-induced mood disorders.
- 3) **Spaceflight Biology:** Understanding the neurological and molecular effects of simulated spaceflight environments on brain health, behavior, and mitochondrial dysfunction.
- 4) **Epigenetics and Neurodegeneration:** Studying epigenetic biomarkers and regulatory pathways involved in neuroinflammatory responses and mitochondrial dysfunction in Parkinson’s disease.
- 5) **Advanced Imaging and Behavioral Analysis:** Utilizing advanced imaging techniques and behavioral assessments to study neuronal structures, synaptic plasticity, and animal behavior under experimental models.
- 6) **Genomics and Bioinformatics:** Applying genomics, transcriptomics, and bioinformatics tools for gene mapping, analysis of neurobiological data, and identification of therapeutic targets.

TEACHING COURSES

- 1) **Gene Therapy (Course code HBS-819) (PG course-ASAB, NUST, Spring-2026)**
- 2) **Space Physiology and Health (Newly Developed PG Course-ASAB, NUST, scheduled Fall-2026)**
- 3) **Introduction to Biotechnology (Course code BT-140) (UG course-BSBI, IIUI, Fall-2016)**
- 4) **Genetic Engineering (Course code BT-323) (UG course-BSBT, IIUI, Summer-2017)**

RESEARCH PROJECTS

- 1) RNA based AIEgens: An illuminator to track neurological changes and associated malignancies in brain due to space-flight effects.
- 2) Screening and Characterization of microRNAs for Depression in rats using a simulated complex environment space model.
- 3) Epigenetics Biomarkers in Parkinson's Disease
- 4) Mapping of Genes underlying Human Heredity Skeletal Dysplasia.
- 5) Molecular Diagnosis of Ichthyosis in Pakistani Family.
- 6) Isolation of Microorganisms from Natural Sources for Production of Biotechnologically Important Compounds
- 7) Screening and Characterization of Surface Associated Marine Microorganisms for Drug Delivery Potential.

TRAVEL GRANTS

- 1) **IAF-International Astronautical Congress-2024** in Milan, Italy (2024).
- 2) **UNOOSA/IAF 31st workshop on Space Technology for Socio-Economic Benefits: "Access to Space for All: Bridging the Space Divide"** in Paris, France (2022).
- 3) **APSCO/UOS/AUASS International Symposium 2024 on Development in Space Communications-The Regional Balance and Challenges** in Sharjah, UAE (2024).
- 4) **UNOOSA/IAF 29th workshop on Space Technology for Socio-Economic Benefits: "Access to Space for All: Bridging the Space Divide"** in Paris, France (2022).
- 5) **SUPARCO International conference on space 2022: Role of Space Technology in Socio Economic Development"** in Islamabad, Pakistan (2022).

AWARDS AND HONORS

- 1) Awarded **Women in Space Award-2025** by **Pakistan Space and Upper Atmosphere Research Commission** and **Institute of Space Technology, Islamabad** at **ICAST-2025**. (https://english.bit.edu.cn/2025-12/12/c_1147441.htm)
- 2) Awarded **International Astronautical Federation-Emerging Space Leaders Award-2024**. (<https://www.iafastro.org/news/the-iaf-is-proud-to-introduce-the-2024-iaf-emerging-space-leaders.html>) .
- 3) Recipient of **Chinese Government-Postdoctoral Fellowship Program** at **Beijing Institute of Technology, China (Sept 2023 - Dec 2025)**.
- 4) Granted **Chinese Government Scholarship for PhD (Sept 2017- Aug 2022)**.
- 5) Acknowledged as a **Distinguish Student-2020-2021** at **Beijing Institute of Technology, China**.
- 6) Awardee of **Excellent Student Scholarship** at **Quaid-e-Azam University Islamabad** for M.Phil. Degree (2013-2015).
- 7) Awardee of **Best Student Award of Telecom Foundation School System** (2000-2004)

REFERENCES

References will be provided upon request