Stanford

Marwa Zafarullah

Postdoctoral Scholar, Neurology and Neurological Sciences

Bio

BIO

Dr. Marwa Zafarullah is a dedicated neuroscientist with extensive interdisciplinary experience spanning over 8 years in clinical and pre-clinical research. She holds a Ph.D. in Integrative Genetics and Genomics (IGG) from the University of California Davis, focusing on neuroscience, human genetics, and functional genomics. Before joining Stanford, Dr. Zafarullah harnessed the power of molecular biology with advanced technologies to delve into biomarkers related to the prediction, development, progression, and severity of Fragile X Syndrome and associated disorders.

Dr. Zafarullah's career journey reflects her commitment to advancing scientific knowledge, improving patient care, and positively impacting society through her research and contributions. She thrives in multi-disciplinary teams, aiming to enhance the quality of life for all individuals affected by various neurological conditions. Beyond her professional endeavors, she enjoys communicating complex scientific concepts to diverse audiences. Her continuous pursuit of excellence and her drive to bridge clinical practice and scientific innovation make her a true trailblazer in the field.

INSTITUTE AFFILIATIONS

- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Stanford Postdoc Champion Community Impact Award, Stanford office of postdoctoral affairs (OPA) (2025)
- Guest and keynote speaker, Six International higher academic Institutes in Pakistan. (2024)
- Scientist Guest Speaker, Pakistan national radio and television with millions of viewership across 47 countries (2024)
- Individual Development Fund, ($400), UC Davis Graduate Student Association. (2021)
- Emmy Werner and Stanley Jacobsen Fellowship, ($50,000), The University of California Davis, USA. (2020-2021)
- Leaders for the Future Fellowship, UC Davis Graduate School of Management. (2020-2021)
- Best Presenter Award ($500), National Fragile X Foundation, USA (2020)
- Aggie Hero, Chancellor Gary May, UC Davis. (2019)
- International Travel Award ($600), International premutation Conference Committee Netherlands (2019)
- Keller Pathway Fellowship, UC Davis Graduate School of Management. (2018-2019)
- Rosen/Weingarden Summer Fellowship, ($2500), National Fragile X Foundation, USA (2017)
- Outstanding Service Award, Integrative Genetics and Genomics, UC Davis (2016)
- Agriculture Innovation program-HRD-USAID, MS Scholarship, ($100,000), United States Agency for International Development (2015-2017)
- Pakistan Scottish Scholarship, ($3000), Scottish Higher Education, Scotland. (2013)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- BioSci Career Ambassador, Stanford University (2025 - present)
- Communications Director, Stanford University Postdoctoral Association (SURPAS), Stanford University (2023 - present)
- Vice President, Association of Women in Science (AWIS) (2025 - present)
- Executive adviser for Ph.D. Pathways 2025, Stanford Career Education, Stanford University (2024 - 2025)
- Executive Board Member, Postdoctoral Scholar Association (PSA), The University of California Davis (UC Davis) (2021 - 2022)
- Inaugural Board Member, Global Education For All, The University of California Davis (UC Davis) (2019 - 2020)
- Student Admission officer, IGG Student Executive Committee, The University of California Davis (UC Davis) (2019 - 2020)
- Executive Board Member, Student Health Advisory Board, The University of California Davis (UC Davis) (2019 - 2020)
- Board Member, Status of Women Administrative Advisory Committee, The University of California Davis (UC Davis) (2016 - 2017)
- Executive Board Member, Graduate Student Association (GSA), The University of California Davis (UC Davis) (2017 - 2020)
- Executive Board Member, Chancellor's Graduate and Professional Student Advisory Board (CGPSA), The University of California Davis (UC Davis) (2015 - 2018)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, University of California Davis (2021)
- Master of Science, University of California Davis (2017)
- Ph.D., The University of California Davis , Integrative Genetics and Genomics (2021)
- M.S., The University of California Davis , Integrative Genetics and Genomics (2017)

STANFORD ADVISORS

- JW Day, Postdoctoral Faculty Sponsor

LINKS

- Day Lab Site: https://med.stanford.edu/day-lab.html
- Linkedin Profile: https://www.linkedin.com/in/marwazafarullah

Research & Scholarship

LAB AFFILIATIONS

- JW Day, Day Lab (8/21/2023)

Publications

PUBLICATIONS

- **Integrated multi-omics profiling reveals novel molecular biomarkers and pathways associated with Fragile X-associated tremor/ataxia syndrome** *FRONTIERS IN MOLECULAR NEUROSCIENCE*
  Zafarullah, M., Ponzini, M., Kim, K., Hagerman, P. J., Hagerman, R. J., Tassone, F.
  2026; 19

- **Heart Transplantation and Ventricular Assist Device in Duchenne Muscular Dystrophy: A New Era.** *Pediatric transplantation*
  Rosenthal, D. N., Amodeo, A., Butterfield, R. J., Butts, R., Chrzanowski, S., Cripe, L., Day, J., Davies, R., Duong, T., Evers, P., Gambetta, K., Harris, R., Hayes, et al
  2026; 30 (1): e70253

- **Cerebrospinal fluid proteomic profiling reveals potential biomarkers and altered pathways in myotonic dystrophy type 1** *FRONTIERS IN NEUROSCIENCE*
  Zafarullah, M., Kamali, T., Hagerman, K. A., Ghiglieri, L., Duong, T., Wang, E., Sampson, J. B., Day, J. W.

2025; 19: 1709678

- **CSF Proteomic Profiling Reveals Altered Pathways in Myotonic Dystrophy Type 1**
  Zafarullah, M., Kamali, T., Hagerman, K., Ghiglieri, L., Sampson, J., Day, J.
  LIPPINCOTT WILLIAMS & WILKINS.2025

- **In Utero Alcohol and Unsuitable Home Environmental Exposure Combined with FMR1 Full Mutation Allele Cause Severe Fragile X Syndrome Phenotypes** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*
  Winarni, T., Aishworiya, R., Culpepper, H., Zafarullah, M., Mendoza, G., Wilaisakditipakorn, T., Likhitweerawong, N., Law, J., Hagerman, R., Tassone, F.
  2025; 26 (7)

- **FMR1 Protein Expression Correlates with Intelligence Quotient in Both Peripheral Blood Mononuclear Cells and Fibroblasts from Individuals with an FMR1 Mutation.** *The Journal of molecular diagnostics : JMD*
  Jiraanont, P., Zafarullah, M., Sulaiman, N., Espinal, G. M., Randol, J. L., Durbin-Johnson, B., Schneider, A., Hagerman, R. J., Hagerman, P. J., Tassone, F.
  2024

- **Untargeted metabolomic, and proteomic analysis identifies metabolic biomarkers and pathway alterations in individuals with 22q11.2 deletion syndrome.** *Metabolomics : Official journal of the Metabolomic Society*
  Zafarullah, M., Angkustsiri, K., Quach, A., Yeo, S., Durbin-Johnson, B. P., Bowling, H., Tassone, F.
  2024; 20 (2): 31

- **Blood Proteome Profiling Reveals Biomarkers and Pathway Alterations in Fragile X PM at Risk for Developing FXTAS** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*
  Zafarullah, M., Li, J., Salemi, M. R., Phinney, B. S., Durbin-Johnson, B. P., Hagerman, R., Hessl, D., Rivera, S. M., Tassone, F.
  2023; 24 (17)

- **Insight and Recommendations for Fragile X-Premutation-Associated Conditions from the Fifth International Conference on FMR1 Premutation** *CELLS*
  Tassone, F., Protic, D., Allen, E., Archibald, A. D., Baud, A., Brown, T. W., Budimirovic, D. B., Cohen, J., Dufour, B., Eiges, R., Elvassore, N., Gabis, L. V., Grudzien, et al
  2023; 12 (18)

- **Intercorrelation of Molecular Biomarkers and Clinical Phenotype Measures in Fragile X Syndrome** *CELLS*
  Aishworiya, R., Chi, M., Zafarullah, M., Mendoza, G., Ponzini, M., Kim, K., Biag, H., Thurman, A., Abbeduto, L., Hessl, D., Randol, J., Bolduc, F. V., Jacquemont, et al
  2023; 12 (14)

- **Structure and Alternative Splicing of the Antisense FMR1 (ASFMR1) Gene.** *Molecular neurobiology*
  Zafarullah, M., Li, J., Tseng, E., Tassone, F.
  2023; 60 (4): 2051-2061

- **Maternal Microbiota Modulate a Fragile X-like Syndrome in Offspring Mice.** *Genes*
  Varian, B. J., Weber, K. T., Kim, L. J., Chavarria, T. E., Carrasco, S. E., Muthupalani, S., Poutahidis, T., Zafarullah, M., Al Olaby, R. R., Barboza, M., Solakyildirim, K., Lebrilla, C., Tassone, et al
  2022; 13 (8)

- **Differential Methylation Profile in Fragile X Syndrome-Prone Offspring Mice after in Utero Exposure to Lactobacillus Reuteri.** *Genes*
  AlOlaby, R. R., Zafarullah, M., Barboza, M., Peng, G., Varian, B. J., Erdman, S. E., Lebrilla, C., Tassone, F.
  2022; 13 (8)

- **Both cis and trans-acting genetic factors drive somatic instability in female carriers of the FMR1 premutation.** *Scientific reports*
  Hwang, Y. H., Hayward, B. E., Zafarullah, M., Kumar, J., Durbin Johnson, B., Holmans, P., Usdin, K., Tassone, F.
  2022; 12 (1): 10419

- **De Novo Large Deletion Leading to Fragile X Syndrome.** *Frontiers in genetics*
  Jiraanont, P., Manor, E., Tabatadze, N., Zafarullah, M., Mendoza, G., Melikishvili, G., Tassone, F.
  2022; 13: 884424

- **Metabolomic Biomarkers Are Associated With Area of the Pons in Fragile X Premutation Carriers at Risk for Developing FXTAS.** *Frontiers in psychiatry*

Zafarullah, M., Durbin-Johnson, B., Fourie, E. S., Hessl, D. R., Rivera, S. M., Tassone, F.
2021; 12: 691717

- **Metabolic profiling reveals dysregulated lipid metabolism and potential biomarkers associated with the development and progression of Fragile X-Associated Tremor/Ataxia Syndrome (FXTAS).** *FASEB journal : official publication of the Federation of American Societies for Experimental Biology*
  Zafarullah, M., Palczewski, G., Rivera, S. M., Hessl, D. R., Tassone, F.
  2020; 34 (12): 16676-16692

- **Urine-Derived Epithelial Cell Lines: A New Tool to Model Fragile X Syndrome (FXS).** *Cells*
  Zafarullah, M., Jasoliya, M., Tassone, F.
  2020; 9 (10)

- **FMR1 locus isoforms: potential biomarker candidates in fragile X-associated tremor/ataxia syndrome (FXTAS).** *Scientific reports*
  Zafarullah, M., Tang, H. T., Durbin-Johnson, B., Fourie, E., Hessl, D., Rivera, S. M., Tassone, F.
  2020; 10 (1): 11099

- **Molecular Biomarkers in Fragile X Syndrome.** *Brain sciences*
  Zafarullah, M., Tassone, F.
  2019; 9 (5)

- **Fragile X-Associated Tremor/Ataxia Syndrome (FXTAS).** *Methods in molecular biology (Clifton, N.J.)*
  Zafarullah, M., Tassone, F.
  2019; 1942: 173-189