Dr. Syed Babar Jamal Bacha

Associate Professor

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Profile

Dr. Babar is an Associate Professor of Bioinformatics with 8 years of experience, specialized in microbial genomics and computer-aided drug design. His research focuses on leveraging computational tools to uncover microbial mechanisms and advance drug discovery. He is passionate about integrating cutting-edge bioinformatics methods to address global health challenges. He strives to foster innovation in his students and contribute meaningfully to the evolving landscape of biomedical research. His dedication lies in bridging the gap between theoretical genomics and practical drug applications.

Research Interest

Microbial Genomics, Computer Aided Drug Design, Immunoinformatics

Selected Publications

Naseeb J, Kanwal M, Aldalali S, Sarwar A, Jamal SB et al. Metabolic and enzymatic characterization of linoleic acid biotransformation by Lactiplantibacillus plantarum NGML2 to conjugated linoleic acid and different metabolites. World J Microbiol Biotechnol. 2025, 41, 193. https://doi.org/10.1007/s11274-025-04420-9.

Qureshi H, Basheer A, Faheem M, Arshad MW, Rai SK and Jamal SB*. Designing a multiepitope vaccine against Shigella dysenteriae using immuno-informatics approach. Front. Genet. 2024, 15:1361610. https://doi:10.3389/fgene.2024.1361610.

Abid A, Alzahrani B, Naz S, Basheer A, Bakhtiar SM, Al-Asmari F, Jamal SB*, Faheem M*. Reverse Vaccinology Approach to Identify Novel and Immunogenic Targets against Streptococcus gordonii. Biology, 2024, 13, 510. https://doi.org/10.3390/biology13070510.

Jamal SB, Ismail S, Yousaf R, Qazi AS, Iftkhar S, Abbasi SW. Exploring Novel 1-Hydroxynaphthalene-2-Carboxanilides Based Inhibitors Against C-Jun N-Terminal Kinases Through Molecular Dynamic Simulation and WaterSwap Analysis. Appl Biochem Biotechnol. 2023, https://doi:10.1007/s12010-023-04638-z.

Saleem T†, Jamal SB†, Alzahrani B, Basheer A, Abbasi SW, Ali M, Rehman AU and Faheem M. In-silico drug design for the novel Karachi-NF001 strain of brain-eating amoeba: Naegleria fowleri. Front. Mol. Biosci. 2023, 10: 1098217. https://doi:10.3389/fmolb.2023.1098217.

Grants/Awards/Achievements

Grants

- Principal Investigator: "Utilizing the combined approaches of culturomics and pan-genomics to identify Next-Generation probiotics and pharmacomicrobiomics" NUMS-TIF 2025-27 (4.0 Million PKRs).
- Principal Investigator: "Development of Recombinant Subunit Tetravalent Vaccine against Dengue virus" HEC-NRPU 2022-25 (9.6 Million PKRs).
- Principal investigator: Start-up Research Grant Program (SRGP) "Application of pan genomics and reverse vaccinology towards the development of improved diagnostics and management of Clostridium botulinum (0.5 Million PKRs) by Higher Education Commission (HEC), Pakistan 2019-2020.
- Principal Investigator: "High-throughput screening of inhibitors for SARS-COV2 using multi-dimensional drug design: A supercomputing approach" IRF-NUMS 2021-2022 (0.8 Million PKRs).
- Co-Principal Investigator: "Fabrication and characterization of Silver Sulphadiazine loaded Bio-polymeric cellulose scaffold for wound dressing application" Pakistan Science Foundation (PSF), 2023-2026 (4.04 Million PKRs).
- Co-Principal Investigator: "Laboratory scale production of anti-cancerous thermostable recombinant L- asparaginase" IRF-NUMS 2022-2023 (1.0 Million PKRs).
- Co-Principal Investigator: "Development and in-vivo evaluation of Antibiotic Nanoparticles Polymeric Tri-composite wound dressing" Technology Innovation Fund (TIF), NUMS 2023-2025 (2.5 Million PKRs).
- Co-Principal Investigator: "Whole Genome Sequencing of core Bacterial Strains from a Healthy Human Gut for the Genome Guided Synthetic Microbiome Transplant" IRF-NUMS 2024-2026 (1.0 Million PKRs).

Awards

- Syed Babar Jamal. Genome Based Drug Target Identification in Human Pathogen Streptococcus gallolyticus. ICGEB & The Future of Science "3rd Bioinformatics Research Symposium", Harare, Zimbabwe, October 16th, 2021. (Scholarship Award)
- Syed Babar Jamal. Ethics and in-silico approaches in Biotechnology, One-day National Seminar, Department of Molecular Biology, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad, March 3rd, 2021.
- Syed Babar Jamal. Integrative in-silico approach for therapeutic target identification in the human pathogen Corynebacterium diphtheriae, One-day National Seminar, Department of Biochemistry, Bahauddin Zakariya University, Multan, November 27th, 2019.

- Sandeep Tiwari, Syed Babar Jamal and co. A comparative in silico evolutionary analysis of Non-structural Proteins in pre-endemic genotypes and endemic Brazilian genotypes of Zika virus. 24th International Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology (VEME) and Croucher Summer Course: Computational Genomics of Viral Evolution and Epidemiology, The University of Hong Kong, Hong Kong, 4th August to 9th August, 2019. (Poster Presentation)
- Syed Babar Jamal. Proteome scale comparative modeling for conserved drug and vaccine targets identification in Salmonella serovers. X-Meeting 2017 - 13th International Conference of the Brazilian Association of Bioinformatics and Computational Biology (AB3C), held in São Pedro - Brazil between 4th and 6th October of 2017. (Scholarship Award)
- Sandeep Tiwari, Syed Babar Jamal and co. Whole-genome sequence of Corynebacterium auriscanis strain CIP106629 isolated from a dog with bilateral otitis from the United Kingdom. 2nd Symposium of Microbiology at Institute of Biological Science, Federal University of Minas Gerais, Belo Horizonte - Brazil between 5th and 6th of October 2015.
- Award to attend 2nd international workshop on “Advanced Topics in Proteomics” held at research center of FIOCRUZ Rio de Janeiro – Brazil, between 28th of August and 4th of September 2015.
- Award to attend workshop entitled “Workshop of Gene Ontology”, by Dr. Prudence Mutowo (EMBL) at Institute of Biological Science, Federal University of Minas Gerais, Belo Horizonte - Brazil between 27th and 28th September of 2014.
- Lightening review on National Television (Samaa TV) on emergence of Naegleria fowleri in Pakistan.

Achievements

- **CNPq-TWAS Fellow:** Federal University of Minas Gerais, Brazil, March 2014 - March 2018
- Member Asian Federation of Biotechnology (AFOB), Pakistan Chapter – Current
- Member Global Young Academy (GYA) - Current