Nima Sarfaraz, Ph.D.

Molecular and Cell Biology and Genetics | Wet Lab and Bioinformatics | Project Leadership

Email & Tel. available upon request – www.nima.bio/contact

Molecular biologist combining wet lab experimental expertise with advanced computational analysis and enterprise-level project management from big data consulting. Specialized in cancer biology, virology, and multi-omics approaches with proven ability to translate complex research into actionable therapeutic targets. Track record of high-impact deliverables, cross-functional leadership, and mentoring in academic and commercial environments.

SKILLS

Wet lab:

Molecular Biology: Vector design and implementation (adenoviral and lentiviral packaging, plasmids, siRNAs, transposons), molecular cloning, RT-qPCR, PCR, blotting (Western, Northern, Southern), RACE, extractions (protein, DNA, RNA)

Cellular Techniques: BSL-2 mammalian cell culture (immortalized cell lines, primary hepatocytes), transfections, transductions, viral infections, stable cell line engineering and generation, banking, aseptic technique, bacterial transformations and culture

Analytical Assays: Gene perturbation experiments, metabolic flux analysis, plate-based assays (ELISA, OPP-incorporation protein synthesis, luciferase), colony formation, drug and compound treatments

Computational and Bioinformatics:

Programming: R, Python, UNIX/Linux, Bash scripting, SQL, NoSQL, high-performance computing environments, Slurm, Git

Analyses & pipelines: NGS / Next-generation sequencing (Illumina, Oxford nanopore), transcriptomics, proteomics, Nextflow, nf-core, quality control, alignment, quantification, batch effect integration, differential expression, pathway enrichment, hierarchical clustering, data visualization, biomarker and target identification

Databases: TCGA, GTEx, GEO, ICGC, BioMart, genome browsers (UCSC, NCBI, Ensembl)

Software: GraphPad Prism, ImageJ, IGV, ELNs, Adobe (Photoshop, Illustrator), MS Office Suite, local/commercial LLMs

Project Management: Agile and Scrum methodologies, sprint planning, stakeholder management, cross-functional team collaboration, requirements gathering, documentation

RESEARCH EXPERIENCE

DREXEL UNIVERSITY COLLEGE OF MEDICINE, BOUCHARD LAB   **Philadelphia, PA**

Doctoral Researcher   **2020-2025**

Project 1: Hepatic Tumor Suppressor Target Identification and Characterization

- **Identified and functionally validated a tissue-specific long non-coding RNA (lncRNA) as a therapeutic target and biomarker in liver cancer**, narrowing candidates through in vitro validation and database mining that correlated with significant clinical patient survival outcomes
- Elucidated novel mechanism of action through adenovirus design, transductions, RNA-seq experiments, TREX-MS, pathway enrichment analyses, and protein synthesis assays in both cancer cell lines and primary human hepatocytes
- Engineered tetracycline-inducible stable cell lines using lentiviral and PiggyBac transposon systems, enabling temporal gene expression control for mechanistic studies and establishing renewable cell line resources for the lab

Project 2: Transcriptomic Benchmarking for Optimal Cancer Model Selection

- **Developed computational framework analyzing 541 bulk RNA-seq samples to systematically compare liver cancer cell lines against primary tumor subtypes**, enabling evidence-based experimental model selection and addressing a critical gap in cancer research reproducibility
- Pioneered analysis pipeline integrating GEO database mining, quality control, batch correction, differential expression analysis, and hierarchical clustering in high-performance computing environments to establish comprehensive molecular maps of heterogeneous liver cancer subtypes
- Identified critical mischaracterizations in widely-used cell lines, helping researchers improve reliability and avoid incorrect contexts and errors

Lab Development:
- Mentored 15 rotation and visiting students in laboratory techniques and experimental design, with 5 progressing to co-authorship on manuscripts
- Established 2 key cross-lab research collaborations, wrote joint R01 and R21 grants
- Initiated and developed a lab-wide digital centralized repository for common protocols and metadata, standardizing procedures for better reproducibility between colleagues and improved onboarding efficiency for new lab members

OTHER PROFESSIONAL EXPERIENCE

ACCENTURE **Washington, D.C.**

Technology Consultant (Hybrid Scrum Master / Product Owner) **2017-2019**
Led a 12-person Agile-based development team delivering custom big data software and dashboard integration projects, serving as a requested primary interface to stakeholders from a 'diamond client' ($100+ million revenue per year) account during the software development lifecycle
- Leveraged system architecture expertise to develop user requirements, technical specifications, and business logic for new features while ensuring seamless integration with existing databases, APIs, and data flows
- Authored monitoring scripts that were adopted into the company's 24/7 production dashboard metrics, improving visibility into system performance and early issue detection
- Oversaw production releases and documentation, provided on-call emergency support

Technology Consulting Senior Analyst **2015-2017**
- Mentored 4 junior analysts on backend testing methodologies; developed standardized workflow adopted as official protocol for developer-to-tester handoffs that reduced error rates leading up to production deployments
- Served as subject matter expert for critical system components, consulted by stakeholders and leadership; generated and maintained interface control documentation for core system components
- Performed root cause analysis using SQL/CQL and data analytics

Technology Consulting Analyst **2014-2015**
- Conducted backend testing for feature implementations across database storage, JSON messaging, and system logic
- Obtained public trust clearance

EDUCATION

DREXEL UNIVERSITY **Philadelphia, PA**

Ph.D., Molecular and Cell Biology and Genetics
- Awards: Drexel University Graduate College Outstanding Mentor Award; 1st Place: Best Trainee Poster Presentation (Sydney Kimmel Cancer Center Trainee Retreat)
- Elective coursework in Biochemical Data
- GPA: 4.00

M.S., Molecular and Cell Biology and Genetics
- Elective coursework in Cancer Biology, Drug Discovery and Development
- GPA: 4.00

UNIVERSITY OF MARYLAND COLLEGE PARK **College Park, MD**

B.S., Bioengineering
- Dean's Scholarship Award

FIRST-AUTHOR PUBLICATIONS

- Sarfaraz, N., Kaur, R., Harper, S., Oni, L., Somarowthu, S., & Bouchard, M. J. (2025). **The Liver-Enriched Long Non-Coding RNA FAM99A Suppresses Tumorigenesis through Negative Regulation of Protein Synthesis. *Under Review* Journal of Molecular Biology**. https://doi.org/10.1101/2025.04.29.651319
- Sarfaraz, N., Winkler, T., Patel, R., Rosen, G., Somarowthu, S., & Bouchard, M. J. (2025). **Transcriptomic Benchmarking of Liver Cancer Cell Line Models Reveals Optimal Matches for Tumor Subtypes. *Under Review* Scientific Reports.**
- Sarfaraz, N., Somarowthu, S., & Bouchard, M. J. (2022). **The interplay of long noncoding RNAs and hepatitis B virus. Journal of Medical Virology**, 95(2), e28058. https://doi.org/10.1002/jmv.28058