AMRITA SULE, PhD

Research Scientist | Broad Institute of MIT and Harvard

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PROFESSIONAL SUMMARY

Biomedical scientist with extensive expertise in single-cell genomics and spatial transcriptomics, currently leading large-scale laboratory data generation efforts for the developmental GTEx (dGTEx) consortia. Proven track record of managing large-scale collaborative projects, securing competitive research funding ($250K AACR-AstraZeneca grant), and translating bench discoveries into clinical applications. Demonstrated success in coordinating complex multi-institutional initiatives, mentoring cross-functional teams, and communicating sophisticated technical findings to diverse audiences in developmental biology and precision oncology.

PROFESSIONAL EXPERIENCE

Research Scientist | Broad Institute of MIT and Harvard

November 2021 – Present | Cambridge, MA

- Lead single-cell genomics initiatives for the developmental GTEx (dGTEx) project, profiling cellular heterogeneity and developmental trajectories across pediatric development from infancy through adolescence in 25+ tissue types
- Establish and optimize spatial transcriptomics and single-cell multiome protocols for human and non-human primate models (macaques and marmosets) to study cross-species conservation and divergence in developmental programs
- Generated comprehensive single-cell multiome datasets across 25 diverse tissue types in 4 ENTEX donors, integrating gene regulation and chromatin accessibility data to advance understanding of tissue-specific regulatory landscapes
- Developed and published standardized nuclei isolation protocols for 10X Single Cell Multiome ATAC+ Gene Expression Sequencing from fresh frozen tissues
- Collaborate with 15+ research groups across multiple institutions to coordinate data generation, quality control, and analysis workflows for consortium-wide projects

Postdoctoral Associate | Yale University School of Medicine

March 2018 – October 2021 | New Haven, CT

- Secured $250,000 AACR-AstraZeneca START grant as principal investigator to investigate therapeutic efficacy of DNA repair inhibitors in oncometabolite-producing cancers
- Discovered and validated a synergistic combination of DNA repair inhibitors (ATR and PARP inhibitors) for targeting IDH1/2 mutant cancers
- Identified novel therapeutic vulnerabilities in Krebs-cycle-deficient renal cell carcinoma, demonstrating efficacy of PARP inhibitor combinations with low-dose alkylating chemotherapy
- Elucidated role of mismatch repair proteins in ATR activation in glioblastoma following temozolomide treatment
- Established syngeneic mouse model in collaboration with UCLA to characterize tumor microenvironment dynamics in oncometabolite-producing cancers
- Managed annual research budget and delivered comprehensive progress reports to funding agency, consistently meeting all project milestones
- Mentored graduate and undergraduate researchers in experimental design, data analysis, and scientific communication

Postdoctoral Fellow & Graduate Research Assistant | Virginia Commonwealth University

August 2011 – January 2018 | Richmond, VA

- Designed and executed preclinical assays to evaluate ATM inhibitors AZD1390 and AZ32, contributing to advancement of compounds into two Phase I clinical trials for glioblastoma patients
- Identified and characterized novel ATM-PP2A-Aα signaling axis in DNA damage response and repair regulation
- Generated tissue-specific PP2A-Aα knockout transgenic mouse model to investigate CNS development and DNA repair mechanisms in neural progenitor cells
- Characterized role of BRCA1 SQ-cluster in DNA repair pathway selection, revealing compensatory mechanisms between homologous recombination and non-homologous end joining
- Developed high-throughput live-cell imaging assays for real-time analysis of protein localization dynamics and protein-protein interactions

EDUCATION

Doctor of Philosophy (PhD), Biochemistry and Molecular Biology Virginia Commonwealth University, Richmond, VA | 2017Dissertation: DNA Damage Response Signaling: Role of ATM Kinase and Protein Phosphatase 2AAdvisor: Kristoffer Valerie, PhD

Master of Science (MSc), Life Sciences University of Mumbai, India | 2010

Bachelor of Science (BSc), Life Sciences University of Mumbai, India | 2008

TECHNICAL EXPERTISE

Genomics & Single-Cell Technologies: 10X Genomics (snRNA-seq, snATAC-seq, snMultiome), Scale Biosciences (Split-seq), Fluent Bio (PIP-seq), Takara Curio (Trekker), image-based spatial transcriptomics, CRISPR screens, ChIP-seq, RNA-seq

Computational Analysis: Single-cell RNA-seq and ATAC-seq analysis, multi-omic data integration using R (Seurat, ArchR, Signac, DESeq2), Python (ScanPy, SnapATAC2), and Unix/Linux; SHARP Training in Systems Biology Methods (Columbia University)

Molecular & Cell Biology: Drug screening assays, qPCR, flow cytometry (FACS), PBMC isolation, primary cell culture, mammalian cell culture, molecular cloning, immunofluorescence, live-cell imaging, Western blotting, transgenic mouse model generation

PUBLICATIONS

2025

1. Coorens THH, Guillaumet-Adkins A, Kovner R, Linn RL, Roberts VHJ, ..., **Sule A**, et al. The human and non-human primate developmental GTEx projects. *Nature*. 2025;637(8046):557-564.

2. Guillaumet-Adkins A, **Sule A**. Nuclei isolation from fresh frozen tissues for 10X Single Cell Multiome ATAC+ Gene Expression Sequencing and other technologies. *protocols.io*. 2025.

2022

3. Sule A, Golding SE, Ahmad SF, Watson J, Ahmed MH, Kellogg GE, Bernas T, Koebley S, Reed JC, Povirk LF, Valerie K. ATM phosphorylates PP2A subunit A resulting in nuclear export and spatiotemporal regulation of the DNA damage response. *Cellular and Molecular Life Sciences*. 2022;79(12):603.

4. Ganesa S, **Sule A**, Sundaram RK, Bindra RS. Mismatch repair proteins play a role in ATR activation upon temozolomide treatment in MGMT-methylated glioblastoma. *Scientific Reports*. 2022;12(1):5827.

5. Ueno D, Vasquez JC, **Sule A**, Liang J, van Doorn J, Sundaram R, Bindra RS. Targeting Krebs-cycle-deficient renal cell carcinoma with Poly ADP-ribose polymerase inhibitors and low-dose alkylating chemotherapy. *Oncotarget*. 2022;13:1054.

2021

6. Sule A, Van Doorn J, Sundaram RK, Ganesa S, Vasquez JC, Bindra RS. Targeting IDH1/2 mutant cancers with combinations of ATR and PARP inhibitors. *NAR Cancer*. 2021;3(2):zcab018. **[Editor's Choice]**

2020

7. Allen J, Wang J, Zolotarskaya OY, **Sule A**, Mohammad S, Arslan S, Godin B, Nan A, Valerie K. PEAMOtecan, a novel chronotherapeutic polymeric drug for brain cancer. *Journal of Controlled Release*. 2020;321:36-48.

8. Hong CS, Vasquez JC, Kundishora AJ, Elsamadicy AA, Beckta JM, **Sule A**, Despotí M, Kahle KT, Bindra RS. Persistent STAG2 mutation despite multimodal therapy in recurrent pediatric glioblastoma. *NPJ Genomic Medicine*. 2020;5(1):23.

2018

9. Durant ST, Zheng L, Wang Y, Chen K, Zhang L, Zhang T, Yang Z, Riches L, Trinidad AG, Fok JHL, Hunt T, Pike KG, Wilson J, Smith A, Colclough N, Reddy VP, Sykes A, Janefeldt A, Johnström P, Varnäs K, Takano A, Ling S, Orme J, Stott J, Roberts C, Barrett I, Jones G, Roudier M, Pierce A, Allen J, Kahn J, **Sule A**, Karlin J, Cronin A, Chapman M, Valerie K, Illingworth R, Pass M. The brain-penetrant clinical ATM inhibitor AZD1390 radiosensitizes and improves survival of preclinical brain tumor models. *Science Advances*. 2018;4(6):eaat1719.

10. Karlin J, Allen J, Ahmad SF, Hughes G, Sheridan V, Odedra R, Farrington P, Cadogan E, Riches L, Sharma S, Smith A, Reddy P, Lau A, O'Connor M, Loh V, Yap T, Plummer R, Forster M, **Sule A**, Durant S, Golding S, McMahon M, Valerie K. Orally bioavailable and blood–brain barrier-penetrating ATM inhibitor (AZ32) radiosensitizes intracranial gliomas in mice. *Molecular Cancer Therapeutics*. 2018;17(8):1637-1647.

2016

11. Beckta JM, Dever SM, Gnawali N, Khalil A, **Sule A**, Golding SE, Rosenberg E, Wheelhouse RT, Yao Z, Povirk LF, Valerie K. Correction: Mutation of the BRCA1 SQ-cluster results in aberrant mitosis, reduced homologous recombination, and a compensatory increase in non-homologous end joining. *Oncotarget*. 2016;7(36):58716.

12. Sule A, Valerie K. Radiosensitizing Glioma by Targeting ATM with Small Molecule Inhibitors. In: *Strategies to Enhance the Therapeutic Ratio of Radiation as a Cancer Treatment*. 2016. [Book Chapter]

2015

13. Beckta JM, Dever SM, Gnawali N, Khalil A, **Sule A**, Golding SE, Rosenberg E, Wheelhouse RT, Yao Z, Povirk LF, Valerie K. Mutation of the BRCA1 SQ-cluster results in aberrant mitosis, reduced homologous recombination, and a compensatory increase in non-homologous end joining. *Oncotarget*. 2015;6(29):27674.

AWARDS & HONORS

Broad Institute Excellence Award in Collaboration/Support of Science: Broad Institute of MIT and Harvard | 2025

AACR-AstraZeneca Stimulating Therapeutic Advances through Research Training (START) Grant$250,000 competitive award for investigating DNA repair inhibitor combinations in oncometabolite-producing cancers. American Association for Cancer Research | 2019-2021

Graduate Research Excellence Award: Virginia Commonwealth University | 2016

PROFESSIONAL ACTIVITIES

Peer Reviewer: Frontiers in Oncology, Journal for Immunotherapy of Cancer (JITC), PLOS ONE, Medicine

Student Mentor: Mentored graduate, undergraduate, and summer students across research positions at Broad Institute, Yale University, and Virginia Commonwealth University

Graduate Student Organization, President: Virginia Commonwealth University | 2014-2015• Organized research symposiums, lunch & learns, and professional development workshops• Managed program budget and allocated funds to graduate student organizations• Represented graduate students on university council

Career Development Committee, Member: Virginia Commonwealth University | 2015-2016• Conducted career-oriented workshops for STEM graduate students• Facilitated panel discussions on internships and alternative STEM career paths• Hosted Girl Scouts Medical Sciences Career Day