

Madhusoodhanan Suresh

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Professional Experience

UMass Chan School of Medicine
Gene Therapy Center (GTC)
Research Associate I

02/23 - Present

- Designed CRISPR Cas12j8, CRISPR Cas12A and CRISPR Cas12i2 expressing AAV vector using SnapGene, cloning, expression, and purification to target DMD.
- Laboratory inventory management and procurement using BuyWays.

Bioinformatics and Integrative Biology (BIB)
Research Associate I

6/22 – 1/23

- Cell culture, In-vitro 3D brain organoid culture from induced pluripotent stem cells (iPSCs) and Lancaster organoid differentiation.
- Organoid viral infection using HSV-1, HHV6A and influenza A virus.
- WGS library preparation from extracted DNA.
- MACSQuant Flow Cytometry and Organoid staining for Flow Cytometry.
- Stem cell bead purification and mycoplasma testing.

Southern Illinois University
Graduate Research Assistant

07/19 - 07/22

- Generation of knockdown cell lines using lentiviral shRNA Vector.
- Cell culture, molecular cloning, and migration assay.
- Confocal cell imaging, cell sorting, ELISA, and Immunohistochemistry.
- Animal research - Dissection, biopsy, microsection and genotyping.
- Pharmacokinetic assays and toxicity assays.

Indian Institute of Science
Project Trainee

01/18 - 02/19

- Molecular cloning and expression studies in breast cancer cell lines.
- Mice Xenograft studies.
- CRISPR CAS9, Confocal microscopy and Epifluorescence microscopy.

Regional Cancer Center
Project Intern

07/16 - 08/16

- Worked on the pathophysiology of breast cancer biopsies.

Education

Southern Illinois University
Masters in Pharmacology and Neuroscience - 3.51 on a 4 scale

07/19 - 07/22

- Dissertation Title: The role of CLCA2 in Anoikis Resistance, Migration and Resistance to Chemotherapy in HNSCC.

Yuvaraja's College - University of Mysore
Integrated Master of Science in Molecular Biology - 8.71 on a 10 scale

08/13 - 07/18

- Dissertation Title: Cloning and expression of EIF4GII to study the role in matrix deprived condition.

Jawahar Navodaya Vidyalaya, Central Board of Secondary Education
Pre-University Course - 85%

08/10 - 05/12

Publications

- **oFlowSeq: a quantitative approach to identify protein coding mutations affecting cell type enrichment using mosaic CRISPR-Cas9 edited cerebral organoids.** Dawes P, Murray LF, Olson MN, Barton NJ, Smullen M, Suresh M, Yan G, Zhang Y, Fernandez-Fontaine A, English J, Uddin M, Pak C, Church GM, Chan Y, Lim ET. **Hum Genet.** 2023 Mar 06. PMID: [36877372](#).
- **Modeling of mitochondrial genetic polymorphisms reveals induction of heteroplasmy by pleiotropic disease locus MT:10398A>G.** Molly Smullen; Meagan N Olson; Madhusoodhanan Suresh; Liam F Murray; Guang Yan; Pepper Dawes; Nathaniel J Barton; Jivanna N Mason; Yucheng Zhang; Aria A Fernandez-Fontaine; George M Church; Diego Mastroeni; Qi Wang; Elaine T Lim; Yingleong Chan; Benjamin Readhead. **Scientific Reports**.

Publications under progress

- **The role of CLCA2 in Anoikis Resistance, Migration and Resistance to Chemotherapy in HNSCC.** Madhusoodhanan Suresh 1-2, Randolph Elble 1-2*. **International Journal of Cancer**.

Textbook chapter under progress

- High-throughput, multiplexed technologies to associate genetic variants in brain organoids. Methods in Molecular Biology.

Scientific Outreach

- SIU Graduate Research Symposium, Southern Illinois University, School of Medicine, Carbondale, IL (poster presentation), Role of CLCA2 in resistance to EGFRi and anoikis in HNSCC, 2021.
- Simmons Cancer Institute- Cancer Symposium, Springfield, IL (poster presentation), CLCA2 as a marker for predicting HNSCC response to EGFR inhibitors, 2021.

Key Skills

- Cell culture, 3D organoid culture, AAV vector production, Flow Cytometry, CRISPR Cas12, SnapGene, Cancer research, Molecular biology techniques, Pharmacokinetic assays, shRNA mediated gene knockdown, WGS library preparation, Confocal microscopy, ELISA, Cell sorting, Animal research, Genotyping, Mycoplasma testing, Scientific writing, Statistical analysis and Inventory management.

References

Randolph C. Elble, Ph.D. – Associate Professor,
Southern Illinois University,
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