ABHIRAMI P S

Graduate Research Associate
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EDUCATION

Case Western Reserve University, Cleveland, Ohio *September 2023 - Present*
Doctoral degree
Department of Biomedical Engineering

Arizona State University, Tempe, Arizona *June 2021 - AAugust 2023*
Doctoral degree - Transfer mid degree to CWRU
Department of Biological Design

Indian Institute of Science, Bangalore, India *September 2015 - June 2020*
Integrated 5 year BS-MS course
Department of Biological Science

TECHNICAL STRENGTHS

Software & Tools R, Matlab, FlowJo, Graphpad, ImageJ, Datastudio, Origin, Excel

RESEARCH EXPERIENCE

1.Guide: Dr. Abhinav Acharya, CWRU, Cleveland September 2023 - Present

· Understanding the major determinants of melanoma metastasis in a spatial context

1.Guide: Dr. Abhinav Acharya, ASU,Tempe August 2021 - August 22023

· Generation of metabolite based nanoparticles as a therapy against melanoma.
· Generation of cell based therapy to target ovarian cancer cells.

2.Guide: Dr.Krishnan H Harshan, CCMB Hyderabad August 2020 - June 2021
Study of how SARS-Cov2 modulates the host translation machinery upon infection.

· Learnt to work with and upscale virus cultures.
· Utilized western blot to measure the change in expression level of proteins of interest.
· Checked efficacy of antibodies and anti-viral fabrics against Sars-Cov2 virus.

3.Guide: Dr.Rachit Agarwal, IISc Bangalore July 2018 - March 2020
A 3D Model of Tuberculosis Granuloma using collagen hydrogels

· Collagen was used to mimic the in-vivo conditions during *Mycobacterium Tuberculosis* infection.
· Employed microfluidics to create uniform and monodisperse collagen microspheres.
· Compared mammalian cell culture (monocyte) behavior in hydrogel and in 2D conditions.
· Learned to detect and amplify bacteriophages.
· Optimized the conditions for extraction of bacteriophages from the soil.

4.Guide: Dr. Ravi Sundaresan, IISc Bangalore May 2017 - July 2017
Study of effect of Sirtuins on heart pathophysiology

· Learned to work with mammalian cultures.
· Successfully extracted and quantified proteins.
· Techniques learned - PCR, Western Blot, Bradford Assay

ACHIEVEMENTS

Scholarship and Grant

- Inspire Scholarship was awarded for a duration of five years during undergraduate studies (2015-2020)
- Jumpstart Grant (750$) awarded by The Graduate and Professional Association, ASU. (Spring 2023)

Preprint

Haripriya Parthasarathy, Divya Gupta, **Abhirami P Suresh**, Dixit Tandel, Vishal Sah, Krishnan Harinivas Harshan.(2021) Suppression of Global Protein Translation in SARS-CoV-2 Infection. BioRxiv doi:10.1101/2021.05.08.443207

Publication

- Inamdar S, **Suresh AP**, Mangal JL, Ng ND, Sundem A, Behbahani HS, Rubino TE Jr, Shi X, Loa ST, Yaron JR, Hitosugi T, Green M, Gu H, Curtis M, Acharya AP. Succinate based polymers drive immunometabolism in dendritic cells to generate cancer immunotherapy. J Control Release. 2023 May 15;358:541-554. doi: 10.1016/j.jconrel.2023.05.014. Epub ahead of print. PMID: 37182805..

Inamdar, S., **Suresh AP**, Mangal, J.L. et al. Rescue of dendritic cells from glycolysis inhibition improves cancer immunotherapy in mice. Nat Commun 14, 5333 (2023). https://doi.org/10.1038/s41467-023-41016-z

Mohan Chandra Sekhar Jaggarapu M, Thumsi A, Nile R, D Ridenour B, Khodaei T, **P Suresh A**, Esrafili A, Jin K, P Acharya A. Orally delivered 2D covalent organic frameworks releasing kynurenine generate anti-inflammatory T cell responses in collagen induced arthritis mouse model. Biomaterials. 2023 Sep;300:122204. doi: 10.1016/j.biomaterials.2023.122204. Epub 2023 Jun 13. PMID: 37329683.

Inamdar S, **Suresh AP**, Mangal JL, Ng ND, Sundem A, Behbahani HS, Rubino TE Jr, Yaron JR, Khodaei T, Green M, Curtis M, Acharya AP. Succinate in the tumor microenvironment affects tumor growth and modulates tumor associated macrophages. Biomaterials. 2023 Oct;301:122292. doi: 10.1016/j.biomaterials.2023.122292. Epub 2023 Aug 26. PMID: 37643489; PMCID: PMC10544711.

Thumsi A, Swaminathan SJ, Mangal JL, **Suresh AP**, Acharya AP. Vaccines prevent reinduction of rheumatoid arthritis symptoms in collagen-induced arthritis mouse model. Drug Deliv Transl Res. 2023 Mar 27. doi: 10.1007/s13346-023-01333-8. Epub ahead of print. PMID: 36971998.

Taravat Khodaei, Sahil Inamdar, **Abhirami P. Suresh**, Abhinav P. Acharya, Drug delivery for metabolism targeted cancer immunotherapy, Advanced Drug Delivery Reviews, Volume 184,2022, 114242, doi:10.1016/2022.114242.

Taravat Khodaei, Elizabeth Schmitzer, **Abhirami P. Suresh**, Abhinav P. Acharya,Immune response differences in degradable and non-degradable alloy implants,Bioactive Materials,Volume 24,2023, 153-170,doi:10.1016/j.bioactmat.2022.12.012.

Sahil Inamdar, Tina Tylek, Abhirami Thumsi, **Abhirami P. Suresh**, Madhan Mohan Chandra Sekhar Jaggarapu, Michelle Halim, Shivani Mantri, Arezoo Esrafili, Nathan D. Ng, Elizabeth Schmitzer, Kelly Lintecum, Camila de Ávila, John D. Fryer, Ying Xu, Kara L. Spiller, Abhinav P. Acharya, Biomaterial mediated simultaneous delivery of spermine and alpha ketoglutarate modulate metabolism and innate immune cell phenotype in sepsis mouse models,Biomaterials,Volume 293,2023,121973,doi:10.1016/j.biom--aterials.2022.121973.

Mangal JL, Inamdar S, **Suresh AP**, Jaggarapu MMCS, Esrafili A, Ng ND, Acharya AP. Short term, low dose alpha-ketoglutarate based polymeric nanoparticles with methotrexate reverse rheumatoid arthritis symptoms in mice and modulate T helper cell responses, Biomaterials, 2022 Nov 22;10(23):6688-6697. doi: 10.1039/d2bm00415a.

RELEVANT COURSES

Biology Courses
Molecular Biology
Introductory Physiology
General Biochemistry
Essentials in Microbiology
Principles of Genetic Engineering
Immunology
Developmental Biology
Molecular Basis of Ageing and Regeneration

Other Courses
Probability and Statistics
Structure of Materials
Analysis and Linear Algebra
Polymer Science And Engineering
Introduction to Mechanics
Basics of organic and inorganic chemistry
Biomaterial Science And Engineering

RELEVANT LAB SKILLS

Mammalian cell/Bacteria/Virus culture
Infection experiments
DNA, RNA and Protein extraction
Bradford, BCA assay
Western blot
PCR and RT-PCR
3D cell culture
TCID50 Assay
Plaque assay
ELISA
Agarose gel electrophoresis
In-vivo experiments (mouse)

CONFERENCE PRESENTATION

Suresh AP, Inamdar S, Acharya AP,Generation for CAR-Macrophages as a therapy against ovarian cancer, Society for Biomaterials, April 2022, Baltimore, MD, USA. Poster presentation.

Suresh AP, Inamdar S, Acharya AP, Generation for CAR-Macrophages as a therapy against ovarian cancer, Biomaterials Day Conference, ASU, October 2022, Tempe, Arizona, U S.A, Rapid Fire talk, **Won best presentation**

Suresh AP, Inamdar S, Acharya AP, Generation for CAR-Macrophages as a therapy against ovarian cancer, 3rd Symposium in Stem Cell Biology and Regenerative Medicine, October 2022, Scottsdale, Arizona, U S.A., Poster Presentation.

Inamdar S,Suresh AP, Mangal JL,Nyugen N, Sundem A, Shi X, Curtis M, Gu H,Acharya AP, Succinate based biomaterials modify immune system and reduce tumor growth in aging immunocompetent mice, Society for Biomaterials 2022, Baltimore, MD, USA Poster Presentation

Inamdar S,Suresh AP, Mangal JL,Nyugen N, Sundem A, Wu C, Curtis M, Lintecum K, Gu H,Acharya AP, Rescue from glycolysis inhibition of dendritic cells restores function and generates robust cancer immunotherapy in mice, Society for Biomaterials 2022, Baltimore, MD, USA Oral presentation