

Pankaj Mogha, Ph.D.

Research Scholar

Aim towards developing organ-on-chip disease models by employing single-cell omic approach for clinical research, therapeutic application, tissue engineering, and regenerative medicine.

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H-index=7 (2024)

EDUCATION

PhD

IIT Bombay Dec 2014 - July 2021
Mumbai, India

GDM

Central Queensland University 2012
Brisbane, Australia

M.S. Biotechnology

Queensland University of Technology 2012
Brisbane, Australia

POSTDOC

Dey lab

UC-Santa Barbara April 2023 – Till date
Keywords: Singel cell Sequencing

- Investigating the role of RNA structure and RNA modifications during development.

Varghese lab

Duke University April 2022 – April 2023
Keywords: In-vitro disease models

- Development of in vitro models for lung extravasation and mechanical nociception.

M-Lab

IIT Bombay July 2021 - Dec 2021
Keywords: ECM protein, stem cell expansion

- Exploring the effects of ECM protein coating on stem cell proliferation.

THESIS

PhD

IIT Bombay Dec 2014 - July 2021 Mumbai, India
Keywords: Stem cells, Matrix, Material, Mechanobiology
Effect of cellular microenvironment on primary stem cells maintenance, expansion, and proliferation
(Prof. KC Khilar Ph.D. award)

Masters

Queensland University of Technology Jan - May 2012
Brisbane, Australia
Epitope identification of CMRF44 antibody

Bachelors

UPTU 2009 Lucknow, India
Cloning of PLD gene from *Chlamydia Trachomatis*

PUBLICATIONS

Patent submittted

- Fabrication of low-cost high-throughput spheroid generation device, **Indian Patent Application No: 202421044714** dated June 10, 2024.

Published or in progress

\$-equal first author, #-corresponding author

2025

- Perikamana, S. K. M., Kumar, V., **Mogha, P.**, Duncan, L., Tata, A., Jabba, S. V., Jordt, S. E., Tata, P., Varghese, S. Modeling functional responses to pollutant exposure using modular hydrogel supported vascularized alveolosphere-on-a-chip, Biomaterials Science, manuscript **submitted 2025**.
- MOGHA, P.**, MUKHARJEE S., GANGWAR T., ROY D., KULKARNI S., SHARMA V., MAJUMDER A. Shape, Shrink, Spheroid: A DIY High-throughput Spheroid Generation Device, Lab-on-chip, manuscript **submitted 2025**.

2024

- NATESH, N. R., **MOGHA, P.**, CHEN, A., ANTONIA, S. J., & VARGHESE, S. (2024). Differential roles of normal and lung cancer-associated fibroblasts in microvascular network formation. APL Bioengineering, 8(1), 16120.

2023

- KUMAR V, KINGSLEY D, PERIKAMANA SM, **MOGHA P**, GOODWIN CR, VARGHESE S, (2023) Self-assembled innervated vasculature-on-a-chip to study nociception. Biofabrication, 15, (3).

- **MOGHA P[#]**, IYER S, & MAJUMDER A, 2022, Extracellular Matrix protein gelatin provides higher expansion, reduces size heterogeneity, and maintains cell stiffness in a long-term culture of mesenchymal stem cells. *Tissue and Cell*, 80:101969.

📅 2020

- MISHRA M, DADHICH R, **MOGHA P**, & KAPOOR S. (2020). Mycobacterium Lipids Modulate Host Cell Membrane Mechanics, Lipid Diffusivity, and Cytoskeleton in a Virulence-Selective Manner. *ACS Infectious Diseases*. 6, 2386-2399.

📅 2019

- KUREEL SK, **MOGHA P^{\$}**, KHADPEKAR A, KUMAR V, JOSHI R, DAS S, BELLARE J, & MAJUMDER A. (2019). Soft substrate maintains proliferative and adipogenic differentiation potential of human mesenchymal stem cells on long-term expansion by delaying senescence. *Biology Open*. 8
- **MOGHA P**, et al. (2019). Hydrogel scaffold with substrate elasticity mimicking physiological-niche promotes proliferation of functional keratinocytes. *RSC Advances*. 9, 10174-10183.

📅 2018

- VENUGOPAL, B., **MOGHA, P^{\$}**, DHAWAN, J., & MAJUMDER, A. (2018). Cell density overrides the effect of substrate stiffness on human mesenchymal stem cells' morphology and proliferation. *BIOMATERIALS SCIENCE*. 6, 1109-1119.
- SAXENA, N., **MOGHA, P.**, DASH, S., MAJUMDER, A., JADHAV, S., & SEN, S. (2018). Matrix elasticity regulates mesenchymal stem cell chemotaxis. *Journal of Cell Science*. 131, jcs211391.
- KAPOOR, A., et al. (2018). Soft drug-resistant ovarian cancer cells migrate via two distinct mechanisms utilizing myosin II-based contractility. *Biochimica Et Biophysica Acta*. 1865, 392-405.

REVIEWER FOR JOURNALS

APL Bioengineering

PRESENTATIONS AND CONFERENCES

📅 2019

- Inter-cellular force interaction overrides cellular response to substrate stiffness in human mesenchymal stem cells.
📍 EMBL, Germany
- Cell density overrides the effect of substrate stiffness on human mesenchymal stem cells' morphology and proliferation.
📍 RSS, IITB, India

📅 2018

- Optimized substrate to maintain primary human keratinocytes in long term culture for regenerative use.
📍 CCMB, India
- Inter-cellular force interaction overrides cellular response to substrate stiffness in human mesenchymal stem cells.
📍 DBT-welcome Symposia, India

📅 2016 📍 NCBS, India

- Inter-cellular force interaction overrides cellular response to substrate stiffness in human mesenchymal stem cells.

AWARDS

Prof KC Khilar Best Thesis Award
IITB, 2023

Travel Award
EMBO, 2019

Travel Award
CCMB, 2018

Best poster award
IIT Kanpur

Consolation prize
IIT Roorkee

REFERENCES

Dr. Abhijit Majumder
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Dr. Shobhna Kapoor
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Dr. Jayesh Bellare
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