Conversations in the tumor microenvironmentasion: experimental models of fibroblast driven cancer cell inv

Mehta; P.P.

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Curriculum Vitae

PRANAV MEHTA

Delft, Netherlands | pranav.mehta114@gmail.com | +31 6 489 25688 | linkedin.com/in/pmehta12

PhD-trained life scientist with 5 years of experience independently designing, executing, and documenting research studies to rigorous quality standards. Skilled in protocol development, deviation identification, troubleshooting, and communicating scientific results to diverse stakeholders. Hands-on expertise in cell biology and molecular biology techniques. Experienced in SOP authorship, compliance, and cross-functional coordination.

EDUCATION

PhD, Chemical & Cell Biology / Product & Process Engineering 2021 – 2026

Leiden University Medical Center x Delft University of Technology

Research conducted in the laboratories of Prof. dr. Peter ten Dijke & dr. Pouyan E Boukany, investigating the interplay between cancer associated fibroblasts and cancer cells.

Thesis: Conversations in the Tumor Microenvironment: experimental models of fibroblast-driven cancer cell invasion

MSc, Chemical & Biomolecular Engineering 2018 – 2020

Johns Hopkins University, Baltimore, Maryland, USA

Research conducted in the laboratory of Prof. Konstantinos Konstantopoulos, investigating cancer cell invasion under micro and nanoscale confinement with a focus on cellular adaptations to high viscosity microenvironments.

Thesis: Viscosity Induced Cellular Adaptations for Increased Cell Motility

Bachelor of Engineering, Chemical Engineering 2014 - 2018

D.J. Sanghvi College of Engineering, University of Mumbai, Mumbai, India

Thesis: Design and fabrication of a spiral microfluidic device for size-based separation of bacterial cells from complex biological fluids including blood.

Cambridge International AS & A Levels 2012 - 2014

Vibgyor High, Mumbai, India

EXPERIENCE

Lead Researcher | LUMC x TU Delft 2021 - 2026

- Translated research objectives into clear, robust study protocols; designed and executed studies from conception through completion, ensuring documentation met rigorous quality standards throughout.
- Reviewed and interpreted experimental results across concurrent studies; identified deviations, coordinated troubleshooting with the laboratory team, and ensured corrective actions were properly documented and implemented.
- Executed hands-on laboratory work across mammalian cell culture, ELISA, FACS, Western blot, qPCR, lentiviral transduction, and 3D tumour models; provided scientific guidance and practical support to junior researchers during study execution.
- Managed data analysis and quality control across concurrent projects; prepared well-structured study reports and communicated results, progress, and deviations clearly to internal teams and external stakeholders.
- Served as single point of contact between LUMC and TU Delft, coordinating internally across biology, engineering, and clinical functions; communicated study content, progress, and outcomes to stakeholders with different scientific backgrounds.
- Established ML2-certified cell biology laboratory at TU Delft; co-authored biosafety SOPs and authored standard operating procedures for all core wet lab techniques; ensured compliance with regulatory and ethical standards across dual-institution research; familiar with GMP quality system principles.
- Led scientific writing across 4 peer-reviewed PhD publications; prepared technical reports and contributed to cross-functional documentation; presented findings at international conferences to scientific and clinical audiences.
- Resolved a critical methodological challenge by independently synthesising primary literature with current findings; coordinated the troubleshooting process and implemented a novel workflow adopted lab-wide.
- Maintained current awareness of scientific literature using PubMed; synthesised findings to inform study design, identify methodological improvements, and support QA and audit processes from a scientific and methodological perspective.
- Coordinated workload across multiple concurrent projects; mentored and advised graduate students and junior researchers on study design, experimental execution, and data interpretation; prioritised tasks effectively under time and performance pressure.

Graduate Researcher | Johns Hopkins University 2018 - 2020

- Designed experimental frameworks underpinning successful in vivo cancer dissemination studies; performed data QC and quantitative interpretation for cross-lab datasets.
- Developed automated MATLAB/FIJI pipeline for focal adhesion segmentation and quantification, mapping distribution, size, and turnover dynamics from formation through dissolution.
- Collaborated across engineering, biology, and imaging groups; contributed to a Nature (2022) publication.

Teaching Assistant, Thermodynamics | Johns Hopkins University 2019

- Led problem-solving sessions for engineering cohorts; simplified complex quantitative concepts for diverse student audiences.

Director & Senior Educator | eKids, Mumbai 2016 - present

- Designed and delivered science curriculum across Physics, Chemistry, Biology, and Mathematics for GCSE, AS/A2, and IBDP students through to undergraduate level; developed interactive strategies including analogy-based teaching, quizzes, and trivia to improve engagement across diverse learning profiles.
- Maintained continuous teaching output through MSc, PhD, and remote periods including full online delivery during COVID; contributed to institutional leadership as Director overseeing programme quality and educational effectiveness.

SELECTED PUBLICATIONS

- Mehta P. et al. **Inter-Spheroid Proximity and Matrix Remodelling Determine CAF-Mediated Cancer Cell Invasion.** Acta Biomaterialia (2025)
- Boot R.C., Mehta P. et al. **Cell Spheroid Viscoelasticity is Deformation-Dependent.** Scientific Reports (2024)
- Mehta P.P. et al. **Microfluidics Meets 3D Cancer Cell Migration.** Trends in Cancer (2022)
- Sinha A.*, Mehta P.* et al. (*equal contribution) **Visualizing Dynamic Changes During TGF-β-Induced EMT.** Methods in Molecular Biology, Springer (2022)
- Bera K., Mehta P. et al. **Extracellular Fluid Viscosity Enhances Cell Migration and Cancer Dissemination.** Nature (2022)

CERTIFICATIONS

Fundamentals of Finance, The Wharton School, University of Pennsylvania (Coursera) Jan 2026

Introduction to Corporate Finance, The Wharton School, University of Pennsylvania (Coursera) Jan 2026

TECHNICAL SKILLS & COMPETENCIES

Study Design & Management: Study protocol development, deviation identification and handling, troubleshooting coordination, study report preparation, QA audit support, SOP authorship; familiar with GMP quality system principles

Molecular Biology & Cell Systems: Mammalian cell culture (MCF7, MDA-MB-231, HEK293, primary CAFs), ELISA, FACS, Western blot, qPCR, SDS-PAGE, lentiviral transduction, stable cell line generation, 3D spheroid and ECM co-culture, confocal microscopy

Data Analysis & Reporting: MATLAB (custom pipelines), FIJI/ImageJ, Python, MS Excel; quantitative data analysis, structured report writing (4 peer-reviewed publications), technical documentation, scientific literature search (PubMed)

Client Communication & Coordination: Scientific communication to clients and stakeholders, study progress reporting, cross-departmental coordination (QA, lab, management), workload prioritisation across concurrent studies, researcher mentoring and guidance

Compliance & Quality: ML2 biosafety certification, SOP authorship and implementation, assay validation, data QC, deviation documentation; familiar with GMP quality system principles; MS Office, MATLAB, Python

Languages: English (fluent), Dutch (actively learning)

List of Publications

- **Mehta P**, Bordoloi AD, Ravensbergen C, David MKH, Mesker W, et al. Inter-spheroid proximity and matrix remodeling determine cancer-associated fibroblast-mediated cancer cell invasion. Acta Biomaterialia. 2025.

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- Sinha A, **Mehta P**, Fan C, Zhang J, Marvin DL, van Dinther M, et al. Visualizing dynamic changes during TGF-β-induced epithelial to mesenchymal transition. TGF-Beta Signaling: Methods and Protocols. 2022:47–65.

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- Si BR, Choudhury D, Bera K, Li Y, **Mehta P**, et al. Extracellular fluid viscosity regulates cancer cell invasion via KCC4-dependent signalling. Science Advances. *Under review*.