

# Ajit Dash

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<b>Current Position</b>	<i>Since February 2007</i> <b>MASSACHUSETTS INSTITUTE OF TECHNOLOGY,</b> <i>Cambridge, MA</i> <i>Post Doctoral Associate</i>
	Working on projects studying hepatocyte-non-parenchymal interactions in flow based 3-D in-vitro tissue culture systems. Developing models of liver inflammation, toxicity and cancer metastasis.
<b>Education</b>	<i>2001-2007</i> <b>MASSACHUSETTS INSTITUTE OF TECHNOLOGY,</b> <i>Cambridge, MA</i> <ul style="list-style-type: none"><li>▪ Ph.D. in Molecular Toxicology at the Department of Biological Engineering. Cumulative GPA 4.8/5.0.</li><li>▪ Thesis Advisors: Linda G Griffith &amp; Steven R. Tannenbaum</li><li>▪ Thesis Title: "A Microscale Flow Controlled 3D Tissue Culture System For Balanced Survival Of Non-Parenchymal Cells In Hepatocyte Co-Cultures."</li></ul>
	<i>1997-2000</i> <b>SETH G.S. MEDICAL COLLEGE,</b> <i>Mumbai, India</i> <ul style="list-style-type: none"><li>▪ M.D., Doctorate in Medicine (Pharmacology).</li><li>▪ Research involved conducting animal studies and a clinical trail to evaluate the effects of an immunostimulant drug in tuberculosis. Familiarity with Good Clinical Practices and clinical trial protocol design.</li></ul>
	<i>1989-1995</i> <b>S.C.B. MEDICAL COLLEGE,</b> <i>Cuttack, India</i> <ul style="list-style-type: none"><li>▪ M.B.B.S., Bachelor in Medicine and Bachelor in Surgery.</li></ul>
<b>Work Experience</b>	<i>2001-2007</i> <b>MASSACHUSETTS INSTITUTE OF TECHNOLOGY,</b> <i>Cambridge, MA</i> <i>Research Assistant</i> <ul style="list-style-type: none"><li>▪ Worked as part of the multi disciplinary 'Liver Bioreactor' team that developed a new three dimensional tissue culture model for application in the drug industry.</li><li>▪ Specifically designed, conducted and analyzed biological experiments using complex biological tools and technology and generated results that impacted overall design considerations of the model.</li></ul>
	<i>2000 - 2001</i> <b>PFIZER LTD. AND PARKE-DAVIS LTD.,</b> <i>Mumbai, India</i> <i>Medical Advisor</i> <ul style="list-style-type: none"><li>▪ Led medical department of Parke-Davis and streamlined and integrated its policies and operations with Pfizer, as part of the merger integration team.</li><li>▪ Implemented Adverse Drug Reporting program of Pfizer in Parke-Davis.</li><li>▪ Trained sales force in pharmacology and communication strategy of company products. Reviewed and approved promotional and informational literature, used by marketing and sales departments.</li></ul>
	<i>2000</i> <b>NICHOLAS PIRAMAL INDIA LTD.,</b> <i>Mumbai, India</i> <i>Medical Associate</i> <ul style="list-style-type: none"><li>▪ Supervised clinical trial with new anti-malarial drug.</li></ul>

**Tools and Techniques Used In Pharmacology and Toxicology**

**Biochemical/ Assays**

- Albumin ELISAs and metabolic (cytochrome activity) assays.
- RNA & DNA extraction and RT-PCR
- Protein assays, SDS-PAGE Gel Electrophoresis and Western Blots
- Nitrate analysis (Greiss Assay)

**Imaging and Staining:**

- Immunohistochemistry.
- Fluorescence Confocal Microscopy and Scanning Electron Microscopy

**Cell culture (Done in 2-D and 3-D systems) and Immunological Assays:**

- Cell cultures of Primary hepatocytes and DU-145 cancer cell line.
- Flow Cytometry and proliferation/apoptosis assays
- Phagocytic function assay (Alveolar Macrophages).
- Oxygen measurements in cell culture systems.

**Animal Studies:**

- Subacute toxicity study for anti-inflammatory agent
- In-vivo immunostimulant study in rat tuberculosis model.

**ADME Toxicity Assays**

**Research Publications/ Conference presentations:**

- 'Novel three-dimensional organotypic liver bioreactor to directly visualize early events in metastatic progression.' Adv Cancer Res. 2007 ;97 :225-46. (Book chapter)
- 'Control of Flow And Oxygen In A 3-D Perfused Micro-Environment Fosters Balanced Survival Of Hepatocyte-Non-Parenchymal Cell Co-Cultures'. Paper in progress for submission in Hepatology 2007.
- 'Role of Transforming Growth Factor – Beta in flow related effects on three dimensional hepatocyte non parenchymal cell co-cultures.' Paper in progress for submission in FASEB Journal 2008.
- 'A Microscale Flow Controlled 3D Tissue Culture System For Balanced Survival Of Non-Parenchymal Cells In Hepatocyte Co-Cultures.' Liver Growth, Development & Disease, FASEB, Snowmass Village, Colorado, July 2006.
- 'The Liver Bioreactor As A 3-D Organotypic Model Of Cancer Metastasis.' Annual Poster Session of MIT Center for Environmental Health Sciences. May 2006
- 'Developing In Vitro Organotypic Models For Analysis Of Anti-tumor Therapy In Prostate Cancer.' The Twentieth Aspen Cancer Conference: Mechanisms Of Toxicity, Carcinogenesis, Cancer Prevention And Cancer Therapy, July 2005.
- 'Liver Microreactor as a model of Single Cell Metastasis.' DuPont-MIT Alliance Symposium. October 2004.
- 'A Novel Medium Formulation for Culture of Primary Hepatocytes to Improve Drug Metabolism Capacity in Vitro.' MIT Computational and Systems Biology Initiative, 2003 Conference on Computational and Systems Biology. "From Bioinformatics to Biofabrication" January 9 -10, 2003
- 'Antioxidant Therapy for Hepatocyte Culture.' DuPont-MIT Alliance Symposium. September 2002.
- 'Stimulation Of Nitric Oxide (NO) Synthesis By *Tinospora Cordifolia* In Alveolar Macrophages And Its Implication In Patients Of Tuberculosis.' XXXIII Annual Conference Of The Indian Pharmacological Society, Gandhinagar, December 28-30, 2000. Abstract published in Indian Journal of Pharmacology 2001; 33: 51-70
- 'Effect Of Anti-Tubercular Drugs On Nitric Oxide Production By Rat Alveolar Macro-Phages.' The International Congress On Frontiers In Pharmacology And Therapeutics In 21st Century, New Delhi, 1-4 December, 1999. Abstract published in Indian Journal of Pharmacology 2000; 32(1)

**Academic  
Fellowships,  
Honors and  
Awards**

- Member of Institutional Review Board, Fenway Community Health Center, Boston (2003-2006) as part of a multi-disciplinary team, reviewing and approving clinical trials conducted by the organization worldwide.
- Invited technical reviewer for chapter of book currently under publication on 'Micro and Nano Engineering of Cell Management'. Publisher: Artech house.
- MIT-Biogen-Idex Fellowship (2004-2005).
- Annual Aspen Cancer Conference Fellowship (2005).
- Young Investigator Award, International Congress of Pharmacology & Therapeutics, New Delhi, (2000).

**Extra-  
curricular  
Awards &  
Leadership  
positions.**

- Winner of John S. W. Kellett Award, (2005), an MIT institute award given to recognize exceptional and sustained commitment to creating a more welcoming environment at MIT.
- Member of finalist team, 50K Awards at MIT-Sloan 50 K Business Plan competition (2003) and winning team, 1K Award (warm up event to 50 K Business Plan competition).
- Student Board Coordinator, Division of Biological Engineering at M.I.T. (2002-2003).
- President, MIT Coffeehouse, a student social organization (2003-2005) and Steering Committee member, MIT Issues Group, a faculty, staff and student initiative (2004-2005).