

## Dr. Nilay Mitash



**Designation:** Assistant Professor

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**Qualification:** M.Sc., PhD

**ORCID ID:** <https://orcid.org/0000-0001-8899-0915>

**Scopus:** 55960603200;

**Web of Science ID:** Y-1814-2019

**Complete List of Publication:**

1. PubMed: <https://www.ncbi.nlm.nih.gov/myncbi/1PKXT6fMCBSAq/bibliography/public/>
2. Google Scholar: <https://scholar.google.com/citations?user=vCDRVU4AAAAJ&hl=en>
3. Research gate: [https://www.researchgate.net/profile/Nilay\\_Mitash2](https://www.researchgate.net/profile/Nilay_Mitash2)
4. LinkedIn: <https://www.linkedin.com/in/nilay-mitash-phd-1a24a54a/>

**Area of Specialization:** Cancer Biology, microRNA mediated gene regulation, Pulmonary Fibrosis, Precision cut lung slices tissue model

**Research Interest:** My core competencies lie in utilizing tissue model systems, particularly tissue-based precision-cut lung slices, which closely mimic the complexity of chronic diseases like pulmonary fibrosis. These models enable us to assess the efficacy and safety of drug candidates and biomarkers for chronic diseases. My mission is to contribute to the advancement of biomedical research and ultimately improve human health. I am also passionate about teaching and mentoring junior researchers and graduate students.

My strongest technical skills include fluorescence microscopy, western blotting, flow cytometry, RNA sequencing analysis, pathway analysis, qPCR, electrophysiology of ion channels in bronchial epithelial cells, statistical analysis, and data visualization.

Previously, I served as a Research Instructor at the University of Pittsburgh School of Medicine until May 2024, where I was part of a consortium and innovation ecosystem aimed at accelerating the development of effective therapies for pulmonary fibrosis (PF), a chronic, progressive lung disease with no current cure. I bring over seven years of postdoctoral research experience and hold a Ph.D. in MicroRNA in Urinary Bladder Carcinoma from S.G.P.G.I.M.S., Lucknow, India.

In my current role as an Assistant Professor at Dr. D. Y. Patil Biotechnology and Bioinformatics Institute in Tathwade, Pune, India, I teach human anatomy & physiology, and forensic biotechnology to B.Tech. Medical Biotechnology students.

**EDUCATIONAL QUALIFICATIONS:**

1. Ph.D. (Urinary Bladder Carcinoma) 2011-16, Department of Urology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow (UP) India. Thesis title: "Identification of micro RNAs of different pathways of metastasis in bladder cancer".
2. M.Sc. (Biotechnology) 2006-08, Sam Higginbottom University of Agriculture, Technology and Sciences (SHUATS) formerly Allahabad Agricultural Institute, Allahabad (UP), India. CGPA- 9.56 (~89%).
3. B.Sc. (Zoology Honors) 2001-04 (Awarded in 2005), M. S. College, Motihari, Baba Saheb Bhimrao Ambedkar Bihar University, Muzaffarpur (Bihar), India. Percentage of marks - 64
4. I.Sc. (Physics, Chemistry, Biology, Math) 2000, MSSG College, Areraj, East Champaran (Bihar). Board: Bihar Intermediate Education Council. Percentage of marks - 67
5. Matric (Hindi, Sanskrit, Math, Physics, Chemistry, Biology, History, Civics, Geography, Advance Math) 1998, Sri Someshwar High School, Areraj, East Champaran (Bihar). Board: Bihar School Examination Board. Percentage of marks - 61

**ACADEMIC AND RESEARCH EXPERIENCE:**

1. Assistant Professor (14-08-2024 to till date): Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Tathawade, Pune, India. (Primary role: Teaching and Research).
2. Research Instructor Faculty (01-10-2022 to 31-05-2024): Pulmonary, Allergy and Critical Care, and Sleep Medicine, University of Pittsburgh, PA, USA. (Primary role: Research and Teaching).
3. Postdoctoral Research Associate (01-07-2020 to 30-09-2022): Pulmonary, Allergy and Critical Care Medicine, University of Pittsburgh, PA, USA. (Primary role: Research)
4. Postdoctoral Research Associate (04-06-2018 to 30-06-2020): UPMC Children's Hospital of Pittsburgh, University of Pittsburgh, PA, USA. (Primary role: Research)
5. National Postdoctoral Fellow (31-03-2017 to 31-08-2017): Centre for Biomedical Research, SGPGIMS Campus, Lucknow, India. (Primary role: Research)
6. Assistant Professor (Guest Faculty) (16-08-2016 to 30-03-2017): Department of Applied Animal Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow, UP, India. (Primary role: Teaching)
7. PhD Student/ Senior Research Fellow (09-09-2011 to 18-07-2016): PI: Dr. Anil Mandhani, Department of Urology, SGPGIMS, Lucknow, U.P. (Primary role: Research)
8. Junior Research Fellow (07-07-2010 to 25-08-2011): PI: Dr. A. K. Roy, in P. G. Biotechnology Department, T. M. Bhagalpur University, Bhagalpur, Bihar. (Primary role: Research)
9. Junior Research Fellow (11-02-2010 to 30-05-2010): PI: Dr. B.N. Singh, Division of Microbiology, CDRI, Lucknow, U.P. (Primary role: Research)
10. Lecturer (29-08-2009 to 23-11-2009): P.G. Department of Biotechnology, T.M. Bhagalpur University, Bhagalpur, Bihar. (Primary role: Teaching)

**AWARDS AND ACHIEVEMENTS:**

1. Qualified CSIR- UGC NET (LS) Dec 2008, Dec 2010, and June 2011.
2. Selected as Lecturer in P.G. Department of Biotechnology, T.M. Bhagalpur University, Bhagalpur, Bihar. (29-08-2009)
3. Qualified CSIR-UGC NET (JRF+LS) June 2009.
4. Council of scientific and industrial research- Junior Research Fellowship (JRF) award (11/02/2010), New Delhi, India, 2010
5. Council of scientific and industrial research- Senior Research Fellowship (SRF) award (01/03/2012), New Delhi, India, 2012
6. National Postdoctoral Fellowship Award, SERB-DST, New Delhi, India, 2016
7. American Thoracic Society Abstract Scholarship-2022, by ATS Assembly on Respiratory Cell

and Molecular Biology for the abstract entitled, "Inhibition of YAP/TAZ Signaling by the FDA Approved Drug Verteporfin Attenuates Fibrosis in Mouse and Human Tissue". May 15th, 2022. American Thoracic Society Conference 13-18 May 2022, Moscone Centre, San Francisco, California, USA.

**REVIEWER:**

BMC Cancer, PLOS ONE, IJMS, Nutrients, Bioscience Reports, Genes  
(<https://publons.com/researcher/3110907/nilay-mitash>)

**JUDGE:**

1. Judge for the "Health Disparities Poster Competition" held on March 25th, 2021 (Virtual via ZOOM) from Office of Diversity, Equity and Inclusion, University of Pittsburgh, Pittsburgh, USA.

**SCIENTIFIC COMMITTEE MEMBER:**

1. American Thoracic Society (ATS), March 2021- March 2022.

**PUBLICATIONS:**

1. Bahudhanapati H, Tan J, Apel RM, Seeliger B, Schupp J, Li X, Sullivan DI, Sembrat J, Rojas M, Tabib T, Valenzi E, Lafyatis R, **Mitash N**, Pineda RH, Jawale C, Peroumal D, Biswas P, Tedrow J, Adams T, Kaminski N, Wuyts WA, McDyer JF, Gibson KF, Alder JK, Königshoff M, Zhang Y, Nourai M, Prasse A, Kass DJ. Increased Expression of CXCL6 in Secretory Cells Drives Fibroblast Collagen Synthesis and is Associated With Increased Mortality in Idiopathic Pulmonary Fibrosis. *Eur Respir J.* 2023 Nov 2:2300088. doi: 10.1183/13993003.00088-2023. Epub ahead of print. PMID: 37918852. (I.F.=24.3).
2. Ewelina D. Hejenkowska\*, **Nilay Mitash\***, Joshua E. Donovan, Anvita Chandra, Carol Bertrand, Chiara De Santi, Catherine M. Greene, Fangping Mu, Agnieszka Swiatecka-Urban. TGF- $\beta$ 1 inhibition of ACE2 mediated by miRNA uncovers novel mechanism of SARS-CoV-2 pathogenesis. Accepted in *Journal of Innate Immunity* (I.F.=5.3) on August 11, 2023. *J Innate Immun* (2023) 15 (1): 629–646 \***Authors contributed equally**. (DOI: 10.1159/000533606). ISSN: 1662-811X
3. Tamara Cruz, Paula A. Agudelo Garcia, Julián A. Chamucero-Millares, Anna Bondonese, **Nilay Mitash**, John Sembrat, Tracy Tabib, Wenping Zhang, Nourai Seyed, Victor Peters, Sean Stacey, Dario Vignali, Ana L. Mora, Robert Lafyatis, Mauricio Rojas; End-Stage Idiopathic Pulmonary Fibrosis Lung Microenvironment Promotes Impaired NK Activity. *J Immunol* 2023; *J Immunol* (2023) 211 (7): 1073–1081 <https://doi.org/10.4049/jimmunol.2300182> (I.F.=4.4). ISSN: 0022-1767
4. Ghigo A, De Santi C, Hart M, **Mitash N**, Swiatecka-Urban A. Cell signaling and regulation of CFTR expression in cystic fibrosis cells in the era of high efficiency modulator therapy. *J Cyst Fibros.* 2023 Jan 6: S1569-1993(22)01435-7. doi: 10.1016/j.jcf.2022.12.015. Epub ahead of print. PMID: 36621372. (I.F.=5.53). ISSN: 1569-1993
5. Koudelka A, Cechova V, Rojas M, **Mitash N**, Bondonese A, St Croix C, Ross MA, Freeman BA. Fatty acid nitroalkene reversal of established lung fibrosis. *Redox Biol.* 2022 Apr; 50:102226. doi: 10.1016/j.redox.2021.102226. Epub 2021 Dec 29. PMID: 35150970; PMCID: PMC8844680. <https://pubmed.ncbi.nlm.nih.gov/35150970/> (I.F.=10.79). ISSN: 2213-2317
6. Acharya AP, Tang Y, Bertero T, Tai YY, Harvey LD, Woodcock CC, Sun W, Pineda R, **Mitash N**, Königshoff M, Little SR, Chan SY. Simultaneous Pharmacologic Inhibition of Yes-Associated Protein 1 and Glutaminase 1 via Inhaled Poly(Lactic-co-Glycolic) Acid-Encapsulated Microparticles Improves Pulmonary Hypertension. *J Am Heart Assoc.* 2021 Jun 15;10(12):e019091. doi: 10.1161/JAHA.120.019091. Epub 2021 May 29. PMID: 34056915; PMCID: PMC8477870. <https://pubmed.ncbi.nlm.nih.gov/34056915/> (I.F.=5.4)

ISSN: 2047-9980

7. Cruz DF, **Mitash N**, Mu F, Farinha CM, Swiatecka-Urban A. Differential Gene Expression Analysis Reveals Global LMTK2 Regulatory Network and Its Role in TGF- $\beta$ 1 Signaling. *Front Oncol.* 2021 Mar 18;11:596861. doi: 10.3389/fonc.2021.596861. PMID: 33816229; PMCID: PMC8013980. <https://pubmed.ncbi.nlm.nih.gov/33816229/> (I.F.=6.24) ISSN: 2234-943X
8. Snyder ME, Sembrat J, Noda K, Myerburg MM, Craig A, **Mitash N**, Harano T, Furukawa M, Pilewski J, McDyer J, Rojas M, Sanchez P. Human Lung-Resident Macrophages Colocalize with and Provide Costimulation to PD1hi Tissue-Resident Memory T Cells. *Am J Respir Crit Care Med.* 2021 May 15;203(10):1230-1244. doi: 10.1164/rccm.202006-2403OC. PMID: 33306940; PMCID: PMC8456469. <https://pubmed.ncbi.nlm.nih.gov/33306940/> (I.F.=24.7) ISSN: 1073-449X and 1535-4970
9. **Mitash N**, Donovan JE, Swiatecka-Urban A. The Ago2-miRNA-co-IP Assay to Study TGF- $\beta$ 1 Mediated Recruitment of miRNA to the RISC in CFBE Cells. *J Vis Exp.* 2020 Jul 31;(161):e61571. doi: 10.3791/61571. PMID: 32894261; PMCID: PMC8637178. <https://pubmed.ncbi.nlm.nih.gov/32894261/> \*Corresponding Authors (I.F.=1.4) ISSN: 1940-087X
10. **Mitash N**, E Donovan J, Swiatecka-Urban A. The Role of MicroRNA in the Airway Surface Liquid Homeostasis. *Int J Mol Sci.* 2020 May 28;21(11):3848. doi: 10.3390/ijms21113848. PMID: 32481719; PMCID: PMC7312818. <https://pubmed.ncbi.nlm.nih.gov/32481719/> \*Corresponding Authors (I.F.=5.6) ISSN: 1422-0067
11. De Santi C, Fernández Fernández E, Gaul R, Vencken S, Glasgow A, Oglesby IK, Hurley K, Hawkins F, **Mitash N**, Mu F, Raof R, Henshall DC, Cutrona MB, Simpson JC, Harvey BJ, Linnane B, McNally P, Cryan SA, MacLoughlin R, Swiatecka-Urban A, Greene CM. Precise Targeting of miRNA Sites Restores CFTR Activity in CF Bronchial Epithelial Cells. *Mol Ther.* 2020 Apr 8;28(4):1190-1199. doi: 10.1016/j.ymthe.2020.02.001. Epub 2020 Feb 6. PMID: 32059764; PMCID: PMC7132615. <https://www.ncbi.nlm.nih.gov/pubmed/32059764> (I.F.=12.4) ISSN: 1525-0016
12. Cruz DF, **Mitash N**, Farinha CM, Swiatecka-Urban A. TGF- $\beta$ 1 Augments the Apical Membrane Abundance of Lemur Tyrosine Kinase 2 to Inhibit CFTR-Mediated Chloride Transport in Human Bronchial Epithelia. *Front Cell Dev Biol.* 2020 Feb 7;8:58. doi: 10.3389/fcell.2020.00058. PMID: 32117984; PMCID: PMC7018669. <https://www.ncbi.nlm.nih.gov/pubmed/32117984> (I.F.=6.3) ISSN: 2296-634X
13. Gupta A, Bansal N, **Mitash N**, Kumar D, Kumar M, Sankhwar SN, Mandhani A, Singh UP. NMR-derived targeted serum metabolic biomarkers appraisal of bladder cancer: A pre- and post-operative evaluation. *J Pharm Biomed Anal.* 2020 May 10;183:113134. doi: 10.1016/j.jpba.2020.113134. Epub 2020 Feb 1. PMID: 32070930. <https://www.ncbi.nlm.nih.gov/pubmed/32070930> (I.F.=3.4) ISSN: 0731-7085
14. **Mitash N\***, Mu F, Donovan JE, Myerburg MM, Ranganathan S, Greene CM, Swiatecka-Urban A\*. Transforming Growth Factor- $\beta$ 1 Selectively Recruits microRNAs to the RNA-Induced Silencing Complex and Degrades CFTR mRNA under Permissive Conditions in Human Bronchial Epithelial Cells. *Int J Mol Sci.* 2019 Oct 5;20(19):4933. doi: 10.3390/ijms20194933. PMID: 31590401; PMCID: PMC6801718. <https://www.ncbi.nlm.nih.gov/pubmed/31590401> \*Corresponding Authors (I.F.=5.6) ISSN: 1422-0067
15. **Mitash N**, Agnihotri S, Tiwari S, Agrawal V, Mandhani A. MicroRNA-21 could be a molecular marker to predict the recurrence of nonmuscle invasive bladder cancer. *Indian J Urol.* 2017 Oct-Dec;33(4):283-290. doi: 10.4103/iju.IJU\_4\_17. PubMed PMID: 29021651; PubMed Central PMCID: PMC5635668. <https://www.ncbi.nlm.nih.gov/pubmed/29021651>

(I.F. =1.1). ISSN 0970-1591

16. **Mitash N**, Tiwari S, Agnihotri S, Mandhani A. Bladder cancer: Micro RNAs as biomolecules for prognostication and surveillance. *Indian J Urol.* 2017 Apr-Jun;33(2):127-133. doi: 10.4103/0970-1591.203412. Review. PubMed PMID: 28469300; PubMed Central PMCID: PMC5396400. <https://www.ncbi.nlm.nih.gov/pubmed/28469300> (I.F.=1.1). ISSN 0970-1591
17. **Mitash N**, Agnihotri S, Mittal B, Tiwari S, Mandhani A. Molecular cystoscopy: Micro-RNAs could be a marker for identifying genotypic changes for transitional cell carcinoma of the urinary bladder. *Indian J Urol.* 2016 Apr-Jun;32(2):149-53. doi: 10.4103/0970-1591.174775. PubMed PMID: 27127359; PubMed Central PMCID: PMC4831505. <https://www.ncbi.nlm.nih.gov/pubmed/27127359> (I.F.=1.1) ISSN 0970-1591
18. Sureka SK, Maheshwari R, Agnihotri S, **Mitash N**, Ahmad S, Mandhani A. Predictors for progression of metastatic prostate cancer to castration-resistant prostate cancer in Indians. *Indian J Med Res.* 2016 May;143 (Supplement): S68-S73. doi: 10.4103/0971-5916.191783. PubMed PMID: 27748280; PubMed Central PMCID: PMC5080931. <https://www.ncbi.nlm.nih.gov/pubmed/27748280> (I.F.=4.2) ISSN: 0971-5916
19. Bansal N, Gupta A, **Mitash N**, Shakya PS, Mandhani A, Mahdi AA, Sankhwar SN, Mandal SK. Low- and high-grade bladder cancer determination via human serum-based metabolomics approach. *J Proteome Res.* 2013 Dec 6;12(12):5839-50. doi: 10.1021/pr400859w. Epub 2013 Nov 18. PubMed PMID: 24219689. <https://www.ncbi.nlm.nih.gov/pubmed/24219689> (I.F.=4.4) ISSN: 1535-3907 and 1535-3893.

#### **BOOK CHAPTERS:**

1. **Mitash, N.**, Chaurasia, S. (2024). Autophagy, Reactive Oxygen Species, and Tumorigenesis. In: Mishra, N., Kaundal, R.K. (eds) *Role of Autophagy and Reactive Oxygen Species in Cancer Treatment. Cancer Drug Discovery and Development.* Humana, Cham. Published 01 September 2024, Print ISBN: 978-3-031-66420-5. Online ISBN; 978-3-031-66421-2. [https://doi.org/10.1007/978-3-031-66421-2\\_7](https://doi.org/10.1007/978-3-031-66421-2_7)

#### **CONFERENCE PROCEEDINGS:**

1. Oral presentation of “Clinical predictors for castrate resistant prostate cancer in locally advanced and metastatic prostate cancer” in 46th Annual conference of Urological Society of India, 17th-20th January 2013 at Balewadi Sports Complex, Pune.
2. Oral presentation of “Micro RNA: A potential marker to give an insight into bladder cancer biology and to characterize risk stratification for recurrence and progression” in 4th International conference on stem cells and cancer (ICSCC-2013): Proliferation, differentiation and apoptosis, 19th - 22nd October 2013 Haffkine Institute, Mumbai.
3. Oral Presentation at 1st Indian Cancer Congress, 21st -24th November 2013, Delhi, India.
4. Participated as a delegate in Advance course in adult and pediatric urological laparoscopy and retroperitoneoscopy at Department of Urology and Renal Transplantation SGPGIMS, Lucknow, UP.
5. Actively participated in Hands-on Training in ‘Molecular Biology Techniques’ organized by SGPGI URO MEET on December 26th – 28th, 2014 at Department of Urology & Renal Transplant, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow.
6. Participated in Urological Association of Uttar Pradesh Conference-UAUCON 2015, 3-5th April 2015 at Department of Urology & Renal Transplant, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow.
7. Participated as a delegate in the 3rd National Conference of the Forum for Ethics Review Committees in India, held at SGPGIMS on 11th and 12th December 2015. (4 credit hours)

8. Attended 8th Annual Children's hospital Rangos research Symposium, June 21st, 2018, Rangos Research conference center, UPMC Children's Hospital of Pittsburgh, Pittsburgh, USA.
9. Poster Presented in 32nd Annual North American Cystic Fibrosis Conference, Oct 18-20, 2018, Denver, CO, USA.
10. CFRC External Advisory Committee Meeting, CFF RDP Review, Apr 15, 2019, 503 Bridgeside Point II Building, 450 technology Drive, Pittsburgh, USA.
11. Pitt AMSA Annual Research Recruitment Fair, March 29, 2019, O'Hara Student Center, University of Pittsburgh, Pittsburgh, USA.
12. Poster Presentation for the abstract entitled, "Inhibition of YAP/TAZ Signaling by the FDA Approved Drug Verteporfin Attenuates Fibrosis in Mouse and Human Tissue". American Thoracic Society Conference 13-18 May 2022, Moscone Centre, San Francisco, California, USA.
13. Poster Presentation for the Abstract entitled, "YAP/TAZ signaling inhibition by verteporfin attenuates fibrosis in in vivo as well as ex vivo models of pulmonary fibrosis". Pittsburgh International Lung Conference, September 8-9, 2022, University Club, Pittsburgh, USA.

**CERTIFICATIONS: (Teaching Certification)**

1. Pitt-CIRTL Associate Certification in STEM Teaching, University of Pittsburgh, 2019  
Participated in a community-based course that introduced evidence-based STEM teaching practices (2201\_ENGR\_3001\_SEC1160\_PREP FOR THE STEM CLASSROOM - An Introduction to Evidence-Based STEM Teaching).
2. Advancing Learning Through Evidence-Based STEM Teaching, University of Pittsburgh, 2020  
A course designed for postdocs preparing for academic careers in STEM disciplines, focused on applying research principles to disciplinary teaching.

**EPIGEUM (Research Skill Courses):**

1. Hands on training in Shantha Biotech, Hyderabad under supervision of Dr. Samir Kumar Roy, Senior Scientist. Learnt techniques on SDS-PAGE and ELISA. (16-12-2006 to 16-01-2007)
2. Hands on training in Central Drug Research Institute (CDRI), Lucknow. Learnt techniques involved in bacterial culture maintenance, Protein expression optimization, Immunoscreening of cDNA library and maintenance of *Brugia malayi* in insectarium. (29-05-2007 to 09-07-2007)
3. Dissertation from division of structural and molecular biology, CDRI, Lucknow under supervision of Dr. Shakil Ahmed. Topic: Attempt to characterize anti-silencing activity associated with multi-copy expression of Asf1/Cia1 in *Schizosaccharomyces pombe*. (14-01-2008 to 07-07-2008)
4. Foundation course held from 06-08-2012 to 22-08-2012, SGPGIMS, Lucknow (UP) India.
5. Basic Biostatistics held from 03-09-2012 to 21-09-2012, SGPGIMS, Lucknow (UP) India.
6. Cancer Genetics held from 17-12-2012 to 22-12-2012, SGPGIMS, Lucknow (UP) India.
7. Good Laboratory Practice held from 18-03-2013 to 23-03-2013, SGPGIMS, Lucknow (UP) India.
8. Basic Immunology in the month of September 2013, SGPGIMS, Lucknow (UP) India.
9. Bioinformatics in the month of May 2014, SGPGIMS, Lucknow (UP) India.
10. INTRODUCTION TO GRANT WRITING FOR POSTDOCTORAL TRANIEE (2194\_CLRES\_2076\_SEC1200) : BST S100A, University of Pittsburgh, Pittsburgh, PA, USA (Every Monday 6 PM to 8 PM, From Feb 25, 2019, to Apr 15, 2019)
11. Introduction to Basic Biomedical Research (Sponsored by the Research Conduct and Compliance Office- <http://rcco.pitt.edu> or [orp.pitt.edu](http://orp.pitt.edu)): Benedum Hall 157, 3700 O'Hara Street, University of Pittsburgh, Pittsburgh, PA, USA (Aug 14, 2019)
12. PREP FOR THE STEM CLASSROOM (2201\_ENGR\_3001\_SEC1160)- An Introduction to Evidence-Based STEM Teaching: A teaching course for how learning works. Benedum Hall 320,

3700 O'Hara Street, University of Pittsburgh, Pittsburgh, PA, USA (Every Tuesday 4-4.50 PM, From Aug 27, 2019, to Dec 10, 2019)

13. ENGR 3000 Preparation for a STEM Academic Career- Topics included How to supervise graduate research, balancing service obligations, funding avenues, publishing, and intellectual property, teaching expectations, and balancing work-life issues. Benedum Hall 312, 3700 O'Hara Street, University of Pittsburgh, Pittsburgh, PA, USA (Every Thursday 12-12.50 PM, From Jan 09, 2020, to Apr 16, 2020)
14. BIOSC 3002 (CRN 24979) Advancing Learning Through Evidence-Based STEM Teaching: A course designed for postdocs preparing for academic careers in the STEM disciplines and interested in learning how to apply research principles to their disciplinary teaching. Benedum Hall 318, 3700 O'Hara Street, University of Pittsburgh, Pittsburgh, PA, USA (Every Thursday 4.30-5.25 PM, From Jan 09, 2020, to Apr 24, 2020)

#### **CONFERENCES (Abstracts/Oral/Poster):**

1. **Mitash N**, Agnihotri S, Tiwari S, Mandhani A. 'Molecular cystoscopy': Micro-RNAs could be a marker for identifying early genotypic changes of transitional cell carcinoma in normal mucosa of the urinary bladder: 261. *Bju International*. 2014 Mar 1; 113:125-6. <https://doi.org/10.1111/bju.12619>
2. **Mitash N**, Mu F, Swiatecka-Urban A (2018) Smad3 Loss Promotes TGF- $\beta$ 1 Repression of F508del-CFTR in Human Bronchial Epithelial Cells by a Mechanism Independent of miRNA-145(09/2018). "Poster Session Abstracts". *Pediatrics pulmonology* (8755-6863), 53 (s2), p. S148. DOI: 10.1002/ppul.24152
3. **Mitash N**, Mu F, Swiatecka-Urban A (2019) Transforming Growth Factor- $\beta$ 1 modulates the micro(mi)RNA landscape in human bronchial epithelial cells: implications for F508del-CFTR rescue. The 2019 CFF Research Conference, Stowe, VT
4. **Mitash N**, Mu F, Myerburg MM, Greene CM, and Swiatecka-Urban A (2019) TGF- $\beta$ 1 Repression of CFTR Correlates with micro-RNA Recruitment to RISC in HBE Cells (9/2019). "Poster Session Abstracts". *Pediatrics pulmonology* (8755-6863), 54 (s2), p. 190. DOI: 10.1002/ppul.22493
5. **Mitash N**, Myerburg MM, Swiatecka-Urban A (2019) TGF- $\beta$ 1 Differentially Regulates Recruitment of micro-RNAs to the RNA Induced Silencing Complex (9/2019). "Poster Session Abstracts". *Pediatrics pulmonology* (8755-6863), 54 (s2), p. 244. DOI: 10.1002/ppul.22493
6. Chavez M, A. Ayyoubi S, Barnaby Roxanna L., Pellegrini M, **Mitash N**, Swiatecka-Urban A, Vollmer L, Shun T, Schurdak M, Vogt A, Stanton Bruce A., Madden Dean R. (2019) Disabled-2 blockade stabilizes and improves functional rescue of F508del-CFTR (9/2019). "Poster Session Abstracts". *Pediatrics pulmonology* (8755-6863), 54 (s2), p. 334. DOI: 10.1002/ppul.22493
7. Cruz D F, **Mitash N**, Farinha C M, Swiatecka-Urban A (2020) Novel mechanisms of TGF-beta signaling in the airway and relevance to Cystic Fibrosis (3/2020). 17<sup>th</sup> ECFS Basic Science Conference. 25-28 March 2020, Albufeira, Portugal.
8. T Cruz, J Sembrat, A Bondonese, **N Mitash**, D Vignali, AL Mora, RA Lafyatis, M Rojas (2021) Impaired Natural Killer (NK) Activity in the Idiopathic Pulmonary Fibrosis (IPF) Lungs (05/2021). American Thoracic Society. TP107 PULMONARY FIBROSIS: MOLECULAR AND CELLULAR MECHANISMS / Thematic Poster Session. *Am J Respir Crit Care Med* 2021;203: A4243. [https://www.atsjournals.org/doi/pdf/10.1164/ajrccm.conference.2021.203.1\\_MeetingAbstracts.A4243](https://www.atsjournals.org/doi/pdf/10.1164/ajrccm.conference.2021.203.1_MeetingAbstracts.A4243)
9. **N Mitash**, HN Alsafadi, RH Pineda, K Kohler, M Ishizuka, J Sembrat, M Lehmann, R Chambers, DE Wagner, M Koenigshoff Inhibition of YAP/TAZ Signaling by the FDA Approved Drug Verteporfin Attenuates Fibrosis in Mouse and Human Tissue (05/2022) D29. MECHANISMS IN LUNG INJURY, REPAIR, AND FIBROSIS, A5226-A5226, <https://www.atsjournals.org/doi/pdf/10.1164/ajrccm->

conference.2022.205.1\_MeetingAbstracts.A5226, American Thoracic Society Conference 13-18 May 2022, Moscone Centre, San Francisco, California, USA.

10. RH Pineda, N **Mitash**, K Kohler, MC Melo Narvaez, J Sembrat, M Fangping, M Lehmann, N Kaminski, M Koenigshoff Differential RNAseq Analysis of an Ex-Vivo Human Fibrotic Tissue Slice Model Reveals Dysregulated Genes of Cellular Senescence and YAP/TAZ Signaling in Fibrosis (05/2022) D29. MECHANISMS IN LUNG INJURY, REPAIR, AND FIBROSIS, A5229-A5229, [https://www.atsjournals.org/doi/pdf/10.1164/ajrccm-conference.2022.205.1\\_MeetingAbstracts.A5229](https://www.atsjournals.org/doi/pdf/10.1164/ajrccm-conference.2022.205.1_MeetingAbstracts.A5229), American Thoracic Society Conference 13-18 May 2022, Moscone Centre, San Francisco, California, USA.
11. E Hejenkowska, N **Mitash**, J Donovan, F Mu, D Beer Stolz, C Bertrand, A Swiatecka-Urban Differential small ribonucleic acid expression analysis reveals transforming growth factor beta role in SARS-CoV-2 infection of the cystic fibrosis airway (2022/10) 433, Journal of Cystic Fibrosis 21(S248). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9527870/>
12. Hejenkowska E, **Mitash** N, Donovan J, Bertrand C A, Swiatecka-Urban A. Transforming Growth Factor-beta Regulates Angiotensin Converting Enzyme 2 by MicroRNA Mediated Mechanism, Journal of the American Society of Nephrology; 33:330-331, 2022.

#### **WORKSHOPS:**

1. 'Refresher GCP workshop' at Sanjay Gandhi Postgraduate Institute of Medical Sciences conducted by QUINTILES on 29-09-2012
2. Abcam seminar in India held at CDRI, Lucknow on 02-12-2013 covering 'Optimization techniques for Immunohistochemistry (IHC)' and 'Optimization techniques for Western Blotting (WB)'.
3. Actively participated in the scientific deliberations in three-day seminar on occasion of "National Science Day" organized by the Department of Applied Animal Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh in association with Zoological Society of India, Bodhgaya. (February 28 – March 2, 2017)
4. Five-day hands-on Workshop: Python for Scientific Computing and TensorFlow for AI hosted on June 7-11th, 2021. Presented by Dr Stephen Lynch of Manchester Metropolitan University in the U.K. The workshop covered: programing Python using IDLE, Spyder, and Jupyter and Google Colab notebooks; modeling both continuous and discrete dynamical systems; modeling in engineering, computing, biology, chemistry, physics and mathematics; how the brain works relating to artificial intelligence; programing deep neural networks in Google Colab with TensorFlow. (<https://crc.pitt.edu/python-and-tensor-flow-workshop>)

#### **FUNDING RECEIVED:**

1. Junior Research Fellowship (JRF) grant, Council of scientific and industrial research, New Delhi, India- (11/02/2010-28/02/2012)
2. Senior Research Fellowship (SRF) grant, Council of scientific and industrial research, New Delhi, India - (01/03/2012-29/02/2015)
3. National Postdoctoral Fellowship grant, SERB-DST, New Delhi, India
4. American Thoracic Society Abstract Scholarship-2022, by ATS Assembly on Respiratory Cell and Molecular Biology

#### **PROJECT WORKED ON:**

1. Three Lakes Foundation grant (Three Lakes Consortium for Pulmonary Fibrosis) (PI: Dr. Melanie Koenigshoff)  
Specific aim of the project: To develop a consortium and innovation ecosystem that will accelerate the introduction of effective therapies, and expedite drug discovery and validation for pulmonary fibrosis (PF).



2. Correcting Pathogenic TGF Beta Activity in the Airway  
1R01HL144539-01 (NIH/NHLBI) (Swiatecka-Urban, PI)  
Specific aim of the project: To develop strategies for targeted reduction of TGF- $\beta$ 1 activity to reverse the negative effects on CFTR and airway surface liquid homeostasis in cystic fibrosis lung.
3. Novel Strategies to Improve ASL Regulation in CF  
CFF-SWIATE18G0 (CFF) (Swiatecka-Urban, PI)  
Specific aim of the project: The major goal of the project is to identify microRNAs repressing CFTR to develop strategies to allow corrector mediated rescue of mutant CFTR and repair the airway surface liquid (ASL) volume homeostasis.
4. Can micro-RNA (mi RNA) for pathways of metastasis i.e., endothelial mesenchymal transition EMT, angiogenesis and apoptosis help in prognosticating the non-muscle invasive bladder cancer?  
Intramural Grant (2012-15), Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India.
5. "Functional analysis of pathway specific microRNAs in urinary bladder carcinoma"  
Intramural Grant (2014-16), Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India.

**RESEARCH TRAINING PROVIDED:**

1. A'ri Artis: Undergraduate student enrolled in PURDIP program of University of Pittsburgh in Summer 2021
2. Kaliyah Crockham: Undergraduate student enrolled in PURDIP program of University of Pittsburgh in Summer 2023
3. Kristin Wannemo: Graduate Student for lab rotation in Division of Pulmonary Allergy Critical Care and Sleep Medicine, University of Pittsburgh in Summer 2023

**HANDS ON TRAINING AND DEMONSTRATION PROVIDED:**

1. Fundamentals of Bench Research Course 2022: Education and training of clinical fellows in Department of Medicine entering their research year. Organized workshop and provided training on "Western Blot Analysis" on Monday, July 25, 2022.
2. Fundamentals of Bench Research Course 2023: Education and training of clinical fellows in Department of Medicine entering their research year. Organized workshop and provided training on "Western Blot Analysis" on Monday, July 17, 2023.

**BIOINFORMATICS AND BIOTECHNOLOGY SKILLS:**

1. **Immunological:** Immunohistochemistry (IHC), ELISA, Flow Cytometry, Immunofluorescence.
2. **Single Cell Isolation:** Single cell isolation from human and mice lung slices. AT2 cell isolation from Lung of Bleomycin mice model.
3. **Molecular Biology:** DNA/RNA/miRNA isolation from tissue/blood/cells, DNA isolation from Microbes, cDNA synthesis of miRNA and mRNA, PCR, Reverse Transcriptase-qPCR, agarose gel electrophoresis, plasmid isolation from Microbes, Gene cloning, RIP (RISC Immunoprecipitation) Assay, Small RNA sequencing.
4. **RNA Sequencing analysis:** RNA sequencing analysis of CLC genomics workbench and Partek Flow
5. **Proteomics:** SDS-PAGE, Western blotting, Co-immunoprecipitation.
6. **Mammalian Cell Culture:** Maintenance and culture of mammalian immortal cell lines (parental CFBE41o-, wtCFBE41o- and F508delCFBE41o-) and primary human bronchial epithelial cells on collagen coated plates. Culture of human lung fibroblasts. Isolation and culture of basal cells from human trachea ex-plant.
7. **Organoid Culture on Matrigel:** Culture of organoids from human tracheal basal cells and lung

fibroblast on Matrigel coated 48 well plate.

8. **Animal Handling:** Maintaining Mice colonies, genotyping, Intraperitoneal Injection, Subcutaneous Injection, harvesting Lung, Liver, Kidney, and Heart. Cryopulverization of Lung. Perfusion of mice and rat lung. Inflating mouse lung with formaline for histology.
9. **Precision Cut Lung Slices (PCLS) / Human and Mouse Lung tissue Model:** Inflation of human lung and mouse lung with low melting point Agarose dissolved in DMEM. Coring of human lung tissue. Slicing and punching of human and mouse lung tissue using vibroslicer and compresstome.
10. **Sectioning:** PCLS of mice, rat, and human lung ex-plants, PCTS of heart and kidney of mice and rat on vibroslicer and compresstome. Microtomy and Cryostat.
11. **Beta Gal Staining:** Beta galactosidase staining of mice lung for evaluating fibrosis.
12. **Trichrome Staining:** Trichrome staining of mice lung for evaluating fibrosis.
13. **Hydroxyproline Assay:** Hydroxyproline assay from cryopulverized mice lung tissues.
14. **Microscopy:** Brightfield, Fluorescence and Confocal microscopy.
15. **Electrophysiology:** Chloride ion channel (such as CFTR, ENaC etc.) studies with Ussing experiments
16. **Computer Softwares:** MS office, SPSS 16, GraphPad Prism 6, NIH Image J, End Note, Bioinformatics tools such as CLC Genomics, Ingenuity pathway Analysis, Partek Flow, Target Scan, miRbase, miRTar base, mirnet. Expertise in preparing abstract figure for manuscript with the help of powerpoint, 3D paints, smart art (<https://smart.servier.com/>) and Biorender