

# **Manisha Tripathi, Ph.D.**

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## **Education and Training**

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### **Post-Doctoral Training**

**Institution and Location:** Cedars-Sinai Medical Center, Los Angeles, CA, USA  
**Field of Study:** The role of tumor microenvironment in prostate cancer progression.  
**Years:** 2011 - 2016

**Degree:** Ph.D.  
**Institution and Location:** Vanderbilt University School of Medicine, Nashville, TN, USA  
**Field of Study:** Cancer Biology  
**Dissertation Title:** Proteolytic processing of Laminin-332 by Hepsin and Matriptase and its role in prostate cancer progression.  
**Years:** 2004 - 2011

**Degree:** M.Sc.  
**Institution and Location:** Barkatullah University, Bhopal, India  
**Field of Study:** Biotechnology  
**Years:** 1999 - 2001

**Degree:** B.Sc.  
**Institution and Location:** Awadhesh Pratap Singh University, Rewa, India  
**Field of Study:** Chemistry, Zoology, Botany  
**Years:** 1996 - 1999

## **Positions and Employment**

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2018 - present: **Assistant Professor (Tenure Track)**, Dept. of Cell Biology and Biochemistry, Texas Tech University Health Sciences Center, Lubbock, TX, USA.

2016-2018: **Project Scientist**, Cedars-Sinai Medical Center, Los Angeles, CA, USA.

2011-2016: **Postdoctoral Scientist**, Cedars-Sinai Medical Center, Los Angeles, CA, USA.

2004-2011: **Graduate Student**, Vanderbilt University School of Medicine, Nashville, TN, USA.

2002-2003: **Project Assistant**, National Institute of Immunology, New Delhi, India.

2000-2001: **Project Trainee**, National Institute of Immunology, New Delhi, India.

## Publications

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- Cheng R, Billet S, Liu C, Haldar S, Choudhury D, **Tripathi M**, Hav M, Merchant A, Hu T, Huang H, Zhou H, Bhowmick NA. Periodontal inflammation recruits distant metastatic breast cancer cells by increasing myeloid-derived suppressor cells. *Oncogene*. 2019 Nov.
- Patel GK, Chugh N, and **Tripathi M**\*. Neuroendocrine differentiation of Prostate Cancer - An intriguing example of tumor evolution at play. *Cancers*, Sep 2019 (\*corresponding author). [Cover Story](#).
- Reichel D, **Tripathi M**, Butte P, Saouaf R, Perez JM. Tumor-Activatable Clinical Nanoprobe for Cancer Imaging. *Nanotheranostics*. 2019 May 4;3(2):196-211
- Reichel D, **Tripathi M**, Perez JM. Biological Effects of Nanoparticles on Macrophage Polarization in the Tumor Microenvironment. *Nanotheranostics*. 2019 Jan 1;3(1):66-88.
- Cavassani K, Rebecca M, David H, Chen J, Alexander M, **Tripathi M**, Martins G, Timothy C, You S, Hogaboam C, Bhowmick N, Posadas E. Circulating monocytes from prostate cancer patients promote invasion and motility of epithelial cells. *Cancer Med*. 2018 Sep; 7(9): 4639–4649.
- Kato M, Placencio VR, Madhav A, Haldar S, **Tripathi M**, Billet S, Mishra R, Smith B, Rohena-Rivera K, Agarwal P, Duong F, Angara B, Hickok D, Liu Z, Bhowmick N. Heterogeneous cancer associated fibroblast population potentiates neuroendocrine differentiation and castrate resistance in a CD105-dependent manner. *Oncogene*. 2019 Jan ;38(5):716-730.
- Mishra R, Haldar S, Placencio V, Madhav A, Rohena-Rivera K, Agarwal P, Duong F, Angara B, **Tripathi M**, Liu Z, Gottlieb RA, Wagner S, Posadas EM, Bhowmick NA. Stromal epigenetic alterations drive metabolic and neuroendocrine prostate cancer reprogramming. *J Clin Invest*. 2018 Oct 1;128(10):4472-4484.
- **Tripathi M**\*, Nandana S.\*, Billet S., Cavassani K., Chung L.W.K., Posadas E.M., Bhowmick N.A. Modulation of cabozantinib efficacy by the prostate tumor microenvironment. *Manuscript Accepted in Oncotarget, Oncotarget*. 2017 Sep 23;8(50):87891-87902. (\*contributed equally).
- Nandana S.\*, **Tripathi M**\*, Duan P., Chu C.Y., Mishra R., Liu C., Jin R., Yamashita H., Zayzafoon M., Bhowmick N.A., Zhou H.E., Matusik R.J. and Chung L.W.K. Bone metastasis of prostate cancer can be therapeutically targeted at the TBX2-WNT signaling axis. *Cancer Research*, 77(6):1331-1344; Mar 15, 2017 (\*contributed equally).
- Haldar S., Dru C., Mishra R., **Tripathi M**., Angara B., Duong F., Fernandez A., Arditi M., Bhowmick N.A. Histone deacetylase inhibitors mediate DNA damage repair in ameliorating hemorrhagic cystitis. *Scientific Reports*, 6: 39257; DOI: 10.1038/srep39257, 2016.
- Qi J., **Tripathi M**., Mishra R., Sahgal N., Fazil L., Ettinger S., Placzek W.J., Claps G., Chung L.W.K., Bowtell D., Gleave M., Bhowmick N.A., and Ronai Z.A. The E3 Ubiquitin Ligase Siah2 Contributes to Castration-Resistant Prostate Cancer by Regulation of Androgen Receptor Transcriptional Activity. *Cancer Cell*, Volume 23, Issue 3: March 18, 2013.
- **Tripathi M**., Billet S., and Bhowmick N.A. Understanding the role of stromal fibroblasts in cancer progression. *Cell Adhesion & Migration*. 1; 6(3): 231-5, May 2012.

- **Tripathi M.**, Potdar A., Yamashita H., Weidow B., Cummings P.T., Kirchhofer D., and Quaranta V. Laminin-332 cleavage by Matriptase alters motility parameters of prostate cancer cells. *The Prostate*, 1; 71 (2): 184-96 Feb, 2011.
- Yamashita H., **Tripathi M.**, Jourquin J., Kam Y., Liu S., Weidow B., and Quaranta V. Lysophosphatidic acid upregulates laminin-332 expression during A431 cell colony dispersal. *Journal of Oncology*, Article ID 107075, Aug, 2010.
- Yamashita H., **Tripathi M.**, Harris M., Ronca F., Liu S, and Quaranta V. A recombinant fragment of laminin-332 directs integrin  $\alpha3\beta1$ -dependent cell binding, spreading, and migration. *Biomaterials*, 31 (19): 5110-21, Mar 26, 2010.
- Yamashita H., Shang M., **Tripathi M.**, Jourquin J., Liu S., Weidow B., and Quaranta V. Epitope Mapping of Function-blocking Monoclonal Antibody CM6 Suggests a "Weak" Integrin Binding Site on the Laminin-332 LG2 Domain. *Journal of Cellular Physiology* 223 (3): 541-548, Mar 18, 2010.
- **Tripathi M.**, Nandana S., Yamashita H., Kirchhofer D., and Quaranta V. Laminin-332 is a substrate for hepsin, a protease associated with prostate cancer progression. *Journal of Biological Chemistry*, 283 (45): 30576-84. Nov, 2008.
- Dey P.\* , **Tripathi M.\***, and Batra J.K. Involvement of loops L2 and L4 of ribonucleolytic toxin restrictocin in its functional activity. *Protein and Peptide Letters*, 14: 125-129, 2007 (\*contributed equally).

### **Book Chapters**

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Jourquin J., **Tripathi M.**, Guess C. and Quaranta V. "Laminins and cancer progression" in "Cell- Extracellular Matrix Interactions and Cancer." Zent R and Pozzi A (editors), Springer-Verlag New York (Publisher) 2009.

### **Abstracts**

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- Nandana S., Gururajan M., **Tripathi M.**, Chu C., Zhau H, Shiao S, Chung L. A novel syngeneic mouse model of prostate cancer bone metastasis: Mechanisms of chemotaxis and bone colonization: AACR Annual Meeting 2019; March 29- April 3, 2019; Atlanta, GA.
- **Tripathi M.**, Nandana S., Huang JM., Kato M., Mishra R., Chung L., Xin L., Bhowmick N. Signaling crosstalk within prostate tumor microenvironment mediates castrate resistant disease progression. AACR Annual Meeting 2019; March 29- April 3, 2019; Atlanta, GA.
- Cavassani K, Rebecca M, David H, Chen J, Alexander M, **Tripathi M**, Martins G, Timothy C, You S, Hogaboam C, Bhowmick N, Posadas E. Monocyte-produced Chitinase-3-like 1 is a driver of metastatic behavior in prostate cancer patients. *Proceedings: AACR Annual Meeting 2018; April 14-18, 2018; Chicago, IL. Cancer Research* 78 (13 Supplement), 5208-5208.
- EM Posadas, JF Chen, **M Tripathi**, YT Lu, A Montes, A Go, A Ureno, Cavassani K, Sievert M, Rogatko A, Limvorasak S, Oppenheim A, Moldawer N, Chung LWK, Bhowmick N, Tseng H, Figlin R. Circulating tumor cell subsets and macrophage polarization to predict efficacy of cabozantinib in advanced prostate cancer with visceral metastases. *American Society of Clinical Oncology Annual Meeting: May 20 2017, Journal of Clinical Oncology* 35 (15\_suppl), 5031-503.

- **Tripathi M.**, Nandana S., Billet S., Posadas E.M., Chung L.W.K., and Bhowmick N.A. Microenvironment mediates the efficacy of cabozantinib in prostate cancer. AACR 107th Annual Meeting 2016; April 16-20, 2016; New Orleans, LA. *Cancer Research* 76 (14 Supplement), LB-274-LB-274.
- **Tripathi M.**, Nandana S., Huang J., Kato M., Chung L.W.K., Xin L. and Bhowmick N.A. Reciprocal prostate cancer signaling with its microenvironment mediates castrate resistant disease progression. *Cancer Research* 76 (15 Supplement), PR06-PR06 Published 1 August 2016 Abstracts: AACR Special Conference: The Function of Tumor Microenvironment in Cancer Progression; January 7-10, 2016; San Diego, CA.
- Nandana S., **Tripathi M.**, Duan P., Chu C., Zhou H.E., Matusik R.J. and Chung L.W.K. Blocking endogenous TBX2 abrogates prostate cancer bone metastasis through WNT signaling. AACR 107th Annual Meeting 2016; April 16-20, 2016; New Orleans, LA. *Cancer Research* 76 (14 Supplement), 4131-4131.
- **Tripathi M.**, Nandana S., Billet S., Posadas E.M., Chung L.W.K., and Bhowmick N.A. Microenvironment mediates the efficacy of cabozantinib in prostate cancer. Annual Research Day, Cedars-Sinai Medical Center, Feb 2016, Los Angeles, CA.
- Nandana S., **Tripathi M.**, Duan P., Chu C., Mishra R., Liu C., Jin R., Yamashita H., Zayzafoon M., Bhowmick N.A., Zhou H.E., Matusik R.J. and Chung L.W.K. TBX2-WNT signaling axis – a new therapeutic target for prostate cancer bone metastasis. The Stem Cell Niche and Cancer Microenvironment Symposium, Cedars-Sinai Medical Center, Nov 2015, Los Angeles, CA.
- **Tripathi M.**, Nandana S., Billet S., Chung L.W.K., Posadas E.M. and Bhowmick N.A. Microenvironment mediates the efficacy of cabozantinib in prostate cancer. The Stem Cell Niche and Cancer Microenvironment Symposium, Cedars-Sinai Medical Center, Nov 2015, Los Angeles, CA.
- Qi J, **Tripathi M.**, Sahgal N., Fazil L., Ettinger S., Placzek W.J., Claps G., Chung L.W.K., Bowtell D., Gleave M, Bhowmick N, and Ronai Z. The E3 ubiquitin ligase Siah2 regulates the androgen receptor activity and contributes to castration-resistant prostate cancer. AACR 104th Annual Meeting 2013; Apr 6-10, 2013; Washington, DC. *Cancer Research* 73 (8 Supplement), 5456-5456.
- Nandana S., **Tripathi M.**, Chu C., Bhowmick N.A., Matusik R.J. and Chung L.W.K. Blocking endogenous TBX2 expression in PC3 prostate cancer cells abrogates bone metastasis in a xenograft mouse model. AACR Special Conference on Tumor Invasion and Metastasis, Jan 2013, San Diego, CA. *Cancer Research* 73 (3 Supplement), C23-C23.
- **Tripathi M.**, Jackson R. and Bhowmick N.A. Role of stromal factors in the maintenance of progenitor cells in prostate cancer. Fourth Annual Cancer Institute Research Poster Presentation, Cedars-Sinai Medical Center, June 2012, Los Angeles, CA.
- Mishra R., Biondi S., **Tripathi M.** and Neil Bhowmick N.A. Role of epigenetics modification in stromal induction of prostate cancer progression. Society for Basic Urologic Research (SBUR), November 2012, Miami, FL.
- **Tripathi M.**, Nandana S., Yamashita H., Potdar A., Ganesan R., Weidow B., Cummings P., Kirchhofer D., and Quaranta V. Proteolytic processing of laminin-332 by hepsin and matriptase and its role in prostate cancer progression. Department of Defense Prostate Cancer IMPACT Meeting, March 2011, Orlando, FL.
- **Tripathi M.**, Jackson R. and Bhowmick N.A. Role of stromal factors in the maintenance of progenitor cells in prostate cancer. Society for Basic Urologic Research (SBUR), November 2011, Las Vegas, NV.
- **Tripathi M.**, Potdar A., Yamashita H., Weidow B., Cummings P.T., Daniel Kirchhofer, and Quaranta V. Laminin-332 cleavage by matriptase alters motility parameters of prostate cancer cells. Symposium on Basement

Membranes in Tissue Development and Regeneration, Center for Matrix Biology, Vanderbilt University, July 2010, Nashville, TN.

- **Tripathi M.**, Potdar A., Yamashita H., Weidow B., Cummings P.T., Kirchhofer D., and Quaranta V. Laminin-332 cleavage by Matriptase alters motility parameters of prostate cancer cells. Gordon Research Conference on Plasminogen Activation and Extracellular Proteolysis, Feb 2010, Ventura, CA.
- **Tripathi M.**, Nandana S., Yamashita H., Kirchhofer D. and Quaranta V. Cleavage of Laminin-332 by hepsin and its implications in the progression of prostate cancer. Vanderbilt-Ingram Cancer Center Retreat, Student Life center Vanderbilt University, May 2009, Nashville, TN.
- **Tripathi M.**, Nandana S., Yamashita H., Ganesan R., Kirchhofer D. and Quaranta V. Proteolytic processing of laminin-332 by type II transmembrane serine protease hepsin, and its implications in prostate cancer. SBUR Fall Annual Meeting, Nov 2008, Phoenix, Arizona.
- Yamashita H., Harris M., **Tripathi M.**, Ronca F. and Quaranta V. The  $\alpha 3$  LG4 module harbors a second binding site for Integrin  $\alpha 3\beta 1$  on Laminin-5. The 7th Annual Host-tumor Interactions Program & Department of Cancer Biology Joint Retreat, Nov 2007, Lake Barkley State Resort Park, Cadiz, Kentucky.
- Harris M., Yamashita H., **Tripathi M.**, Quaranta V. Determining the mechanism of integrin-laminin binding. Matrix Biology, Volume 25, Supplement 1, November 2006, Page S83, American Society of Matrix Biology Biennial Meeting, 2006.
- Harris M., Yamashita H., **Tripathi M.** and Quaranta V. Determining the mechanism of integrin-laminin binding. The 5th Annual Host-tumor Interactions Program & Department of Cancer Biology Joint Retreat, Lake Barkley State Resort Park, Nov 2005, Cadiz, Kentucky.

#### **FUNDED PEER-REVIEWED RESEARCH GRANTS**

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PC160386

**Tripathi (PI)**

09/30/17-09/30/20

**Idea Development Award (New Investigator), DoD-PCRP**

Title: Reciprocal crosstalk between Notch Signaling and Hippo Pathway in the Tumor Microenvironment mediates Castrate Resistant Prostate Cancer.

Goal: To tease apart the Notch-Hippo crosstalk in Castrate Resistant Prostate Cancer and to elucidate the effect of this crosstalk on the immune response mounted by the tumor microenvironment.

\$481,250

W81XWH-12-1-0103

**Tripathi (PI)**

09/30/12-09/30/14

**Postdoctoral Fellowship Award, DoD-PCRP**

Title: TGF beta-mediated regulation of HGF/c-met signaling in the progression of castrate-resistant prostate cancer bone metastasis.

Goal: To study the mechanisms by which HGF/c-met signaling plays a role in castrate-resistant prostate cancer bone metastasis.

\$124,200

W81XWH-09-1-0594

**Tripathi (PI)**

08/15/09-01/31/11

**Predocctoral Fellowship Award, DoD-PCRP**

Title: Proteolytic processing of Laminin-332 by Hepsin and Matriptase and its role in prostate cancer progression.

*Goal: To study the role of proteolytic processing of Laminin-332 by Hepsin and Matriptase in prostate cancer progression.*

*\$92,499*

### **Awards and Honors**

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*2019: Cover Photo, Cancers*

*2018: Recognition for exceptional effort towards teamwork from the Department of Neuroscience, Cedars-Sinai Medical Center, Los Angeles, CA, USA.*

*2017: Award of Recognition for Outstanding Performance, Cedars-Sinai Medical Center, Los Angeles, CA, USA.*

*2015: Poster Presentation Award, Cedars-Sinai Medical Center, Los Angeles, CA, USA.*

*2009: Poster Presentation Award, Vanderbilt-Ingram Cancer Center, Nashville, TN, USA.*

*2008: Travel Award, Society for Basic Urologic Research, USA.*

*2004: Fellowship, Interdisciplinary Graduate Program in Biomedical Sciences, Vanderbilt University, Nashville, TN, USA.*

*2000: Dissertation Research Scholarship, Barkatullah University, Bhopal, M.P., India.*

*1999: Gold Medal, Awadhesh Pratap Singh University, Rewa, M.P., India*

### **Invited Talks and Presentations**

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*2019: Invited Talk TTUHSC Garrison Institute on Aging, Lubbock, USA.*

*2018,2019: Research Talk, Student and Faculty Fall Retreat, Graduate School of Biomedical Sciences, Texas Tech University Health Sciences Center, Lubbock, USA.*

*2018: Invited Speaker, The Biomedical and Translational Science Seminar Series at the Samuel Oschin Comprehensive Cancer Institute, Cedars-Sinai Medical Center, Los Angeles, USA.*

*2018: Invited Speaker, University of North Carolina at Charlotte, Department of Biological Sciences, Charlotte, USA.*

*2018: Invited Speaker, Texas Tech University Health Sciences Center, Department of Cell Biology and Biochemistry, Lubbock, USA.*

*2018: Invited Speaker, University of Nebraska Medical Center, Department of Genetics, Cell Biology and Anatomy, Omaha, USA.*

*2017: Invited Speaker, Texas Tech University Health Sciences Center, El Paso, USA.*

*2017: Invited Speaker, University of Nebraska Medical Center, College of Dentistry, Lincoln, USA.*

*2017: Invited Speaker, Northshore University Health System Research Institute, Evanston, IL, USA.*

*2016: Invited Speaker, AACR Special Conference - The function of Tumor Microenvironment in Cancer Progression, San Diego, USA.*

2015: *Invited Speaker, Program Project (P01) Meeting, Cedars-Sinai Medical Center, Los Angeles, USA.*

2012: *Invited Speaker, National Cancer Institute – Tumor Microenvironment Network (TMEN) Junior Investigators Meeting, New York, USA.*

2010: *Invited Speaker, University of California, Los Angeles, USA.*

2009: *Invited Speaker, Science Hour, Dept. of Cancer Biology, Vanderbilt University, Nashville, USA.*

2008: *Invited Speaker, Center for Matrix Biology Seminar Series, Vanderbilt University, Nashville, USA.*

### **Professional Service**

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- 2019: *Editorial Board member for the Journal of Pathology and Therapeutics*
- 2019: *Poster Judge for the Annual Student Research Day, Graduate School of Biomedical Sciences, TTUHSC, Lubbock TX. April, 2019.*
- 2019: *Initiated and organized the Cancer Research Focus Group meeting (Monthly group meeting of cancer research faculty at TTUHSC for fostering new collaborations among laboratories and for discussion of grant applications.)*
- 2019: *Applicant Interviewer for M.S. Biotechnology Program*
- 2019: *Applicant Interviewer for Ph.D. Program*
- 2019: *Application Reviewer for Summer Accelerated Biomedical Research (SABR) Program*
- 2019: *Member of Department Outstanding Student selection committee*
- 2019: *Member of Department Faculty Recruitment Committee for Kayla Weitlauf Professor*
- 2015: *Poster Session Judge, 3<sup>rd</sup> Annual Cedars Sinai Graduate Student Symposium, October 2015.*

### **Ad Hoc Reviewer:**

- *Oncogenesis (Nature)*
- *Cancers (MDPI)*
- *Molecular Cancer Therapeutics (MCT)*
- *British Journal of Cancer (BJC)*
- *PLOS ONE*
- *OncoTargets and Therapy*
- *Clinical Pharmacology: Advances and Applications*
- *Therapeutics and Clinical Risk Management*

### **Faculty Development Activities**

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2019 : *Participated in the Faculty Development Course entitled Academic Socialization*

2019: *Faculty development course – Lessons, Life and Leadership Seminar Series for Women Faculty in Academic Medicine.*

### **Teaching and Training Experience:**

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2019: *Lecture in the Biology of Cancer Course (GBTC 5340)*

2019: *Lecture and hands on training for Laboratory Methods Course for Biotechnology Students*

2019: *Lecture and Laboratory activity for high school students, Science Camp*

### **Trainees:**

*Postdoctoral Fellow:*

2019- present: *Girijesh Patel, Ph.D.*

*Masters Student:*

*2019, Fall: Tasmin Rahman Omy (Part time)*

*Undergraduate Trainee:*

*2019, Summer: Darron Tharp (Summer Accelerated Biomedical Research (SABR) Student- Won 2<sup>nd</sup> place in the SABR project presentation, Aug 2019)*

*2019, Summer: Natasha Chugh (Published an article with us, that was accepted as the cover page story)*

*2019-present: Vy Do*

***Memberships:***

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- *American Association for Cancer Research (AACR) USA*
- *Society for Basic Urologic Research (SBUR) USA*