

Sheema Shabir Khan, PhD

Department of Immunology and Microbiology
University of Texas Rio Grande Valley
5300 North L Street
McAllen, TX 78504
Email: sheema.khan@utrgv.edu

Academic qualifications

Degree	Institution	MM/YY	Field of study
BS	University of Kashmir, India	04/2003	General Science
MS	Bundelkhand University, Jhansi, Uttar Pradesh, India	08/2006	Medical Microbiology and Immunology
PhD	Indian Institute of Integrative Medicine (IIIM) C.S.I.R., Jammu and Kashmir, India	10/2010	Biotechnology, Immunology and Cancer Biology

Professional Experience

2007-2010	Junior Research Fellow (CSIR) , Indian Institute of Integrative Medicine (IIIM), Jammu and Kashmir, India
2010-2011	Postdoctoral Senior Research Fellow (CSIR) , Indian Institute of Integrative Medicine (IIIM), Jammu and Kashmir, India
2012-2013	Postdoctoral Fellow , Cancer Biology Research Center, Sanford Research/USD, Sioux Falls, SD
2013-8/15	Postdoctoral Research Fellow , Department of Pharmaceutical Sciences, University of Tennessee Health Science Center (UTHSC), Memphis, TN, USA
8/15-11/16	Associate Scientist , Department of Pharmaceutical Sciences, University of Tennessee Health Science Center (UTHSC), Memphis, TN, USA.
11/16-5/19	Assistant Professor , Department of Pharmaceutical Sciences, University of Tennessee Health Science Center (UTHSC), Memphis, TN, USA.
6/19 – Pres	Assistant Professor , Department of Immunology and Microbiology, University of Texas Rio Grande Valley (UTRGV), Edinburg, TX, USA.

Teaching experience

- Training supervisor of PhD graduate research projects at UTHSC, 2013 – 2019.
- Supervised residents / observers / trainees at Sanford Research and UTHSC, 2012 – 2019.
- Demonstrator in General Microbiology, General Immunology and Cancer Biology, 2007 – 2010.
- Supervised six master's research projects at Indian Institute of Integrative Medicine, 2007 – 2010.

Honors/Awards/Scholarships

- UTHSC Outstanding Postdoctoral Fellow Achievement Award, 2014 – 2015.
- Best Poster Presentation Award at postdoctoral research meeting, UTHSC, 2014

- UTHSC Winter Travel Award, postdoctoral research meeting, 2014.
- UTHSC Postdoctoral Research Trainee Achievement Award - Travel Scholarship, 2013.
- Best Poster Presentation Award, UTHSC postdoctoral research meeting, 2013.
- Awarded pilot grant support for research from National Institutes of Health NIH/NCI 2012 – 2013.
- Awarded Senior Research Fellowship from Council of Scientific and Industrial Research (CSIR), Ministry of Human Resource Development, Government of India, 2010.
- Best Poster Award, Knowledge Exchange Program in Life Science Education and Research, Bundelkhand University, Uttar Pradesh, India, 2006.

Reviewer Activities

- Reviewer for Neoplasma
- Reviewer for Anti-cancer agents
- Reviewer for MDPI Pharmaceuticals
- Reviewer for Oncotargets and Therapy
- Reviewer for Cell Biology and Toxicology
- Reviewer for Cancer Growth and Metastasis
- Reviewer for Clinical and Experimental Gastroenterology
- Reviewer for Heliyon
- Reviewer for *Plos One*
- Reviewer for Journal for ovarian Cancer
- Reviewer for Journal of Colloid and Interface Science

Professional Memberships

- Member American Association for Cancer Research (AACR) since 2012
- UTHSC Postdoctoral Association Member since 2013
- Member Pancreas Club since 2015
- Member of BD Bioscience Flow cytometry Association since 2010
- Member of postdoctoral association and acting judge for the evaluation of posters/talks on UT Graduate Research day, 2015.

International Collaborations

- Department of Biosciences, Jamia Milia University, New Delhi, India.
- Department of Biotechnology, University of Kashmir, Srinagar, India.
- Department of Oncology, Sher-e-Kashmir Institute of Medical Sciences, Srinagar, India.
- Centre of Drug Design and Research, National Institutes of Biomedical Innovation, Health and Nutrition (NIBIOHN), Osaka, Japan.

Research Interests

- Mucin biology and tumor microenvironment
- Cancer Immunosurveillance
- Microbiome signatures in cancer for Diagnosis and Prognosis
- Health Disparity
- Cancer cell signaling and drug discovery
- Cell death mechanisms and autophagy
- Stem cell biology in cancer

Peer-reviewed Publications:

1. **Sheema Khan**, Saini Setua, Sonam Kumari, Nirnoy Dan, Andrew Massey, Bilal Hafeez, Murali M. Yallapu, Zachary Edwar Stiles, Anas Alabkaa, Junming Yue, Aditya Ganju, Stephen Behrman, Meena

- Jaggi, Subhash C. Chauhan. Superparamagnetic iron oxide nanoparticles of curcumin enhance gemcitabine therapeutic response in pancreatic cancer. *Biomaterials*, 2019 Jul;208:83-97.
2. Massey AE, Sikander M, Chauhan N, Kumari S, Setua S, Shetty AB, Mandil H, Kashyap VK, **Khan S**, Jaggi M, Yallapu MM, Hafeez BB, Chauhan SC. Next-generation paclitaxel-nanoparticle formulation for pancreatic cancer treatment. *Nanomedicine*. 2019 Jun 4;20:102027.
 3. Sikander M, Malik S, Chauhan N, Khan P, Kumari S, Kashyap VK, **Khan S**, Ganju A, Halaweish FT, Yallapu MM, Jaggi M, Chauhan SC. Cucurbitacin D Reprograms Glucose Metabolic Network in Prostate cancer. *Cancers* (Basel). 2019 Mar 14;11(3).
 4. **Khan S**, Zafar N, Khan SS, Setua S, Behrman SW, Stiles ZE, Yallapu MM, Sahay P, Ghimire H, Ise T, Nagata S, Wang L, Wan JY, Pradhan P, Jaggi M, Chauhan SC. Clinical significance of MUC13 in pancreatic ductal adenocarcinoma. *HPB (Oxford)*. 2018 Jun;20(6):563-572.
 5. Pallabita Chowdhury, Prashanth K.B. Nagesh, Elham Hatami, Santosh Wagh, Nirnoy Dan, Manish K. Tripathi, **Sheema Khan**, Bilal B Hafeez, Bernd Meibohm, Subhash C. Chauhan, Meena Jaggi, Murali M. Yallapu. Tannic acid-inspired paclitaxel nanoparticles for enhanced anticancer effects in breast cancer cells. In press, *Cancers* Aug 2018, <https://doi.org/10.1016/j.jcis.2018.09.072>
 6. Nagesh PKB, Chowdhury P, Hatami E, Boya VKN, Kashyap VK, **Khan S**, Hafeez BB, Chauhan SC, Jaggi M, Yallapu MM. miRNA-205 Nanoformulation Sensitizes Prostate Cancer Cells to Chemotherapy. *Cancers* (Basel). 2018 Aug 25;10(9).
 7. Stiles ZE, **Khan S**, Patton KT, Jaggi M, Behrman SW, Chauhan SC. Transmembrane mucin MUC13 distinguishes intraductal papillary mucinous neoplasms from non-mucinous cysts and is associated with high-risk lesions. *HPB (Oxford)*. 2018 Aug 13. doi: 10.1016/j.hpb.2018.07.009.
 8. Chowdhury P, Nagesh PKB, **Khan S**, Hafeez BB, Chauhan SC, Jaggi M, Yallapu MM. Development of polyvinylpyrrolidone/paclitaxel self-assemblies for breast cancer. *Acta Pharm Sin B*. 2018 Jul;8(4):602-614. doi: 10.1016/j.apsb.2017.10.004.
 9. Dan N, Setua S, Kashyap VK, **Khan S**, Jaggi M, Yallapu MM, Chauhan SC. Antibody-Drug Conjugates for Cancer Therapy: Chemistry to Clinical Implications. *Pharmaceuticals* (Basel). 2018 Apr 9;11(2).
 10. Nagesh PKB, Hatami E, Chowdhury P, Kashyap VK, **Khan S**, Hafeez BB, Chauhan SC, Jaggi M, Yallapu MM. Tannic Acid Induces Endoplasmic Reticulum Stress-Mediated Apoptosis in Prostate Cancer. *Cancers* (Basel). 2018 Mar 7;10(3).
 11. Kumari S, **Khan S**, Gupta SC, Kashyap VK, Yallapu MM, Chauhan SC, Jaggi M. MUC13 contributes to rewiring of glucose metabolism in pancreatic cancer. *Oncogenesis*. 2018 Feb 22;7(2):19.
 12. Saini Setua, **Sheema Khan**, Kyle Doxtater, Murali M. Yallapu, Meena Jaggi, Subhash C. Chauhan. miR-145: Revival of a Dragon in Pancreatic Cancer. *Journal of Nature and Science*, 3(3):e332, 2017
 13. Chowdhury Pallabita, Roberts Allison Michelle, Hafeez Bin, Chauhan Subhash, **Khan Sheema**, Jaggi Meena, Murali M. Yallapu. Magnetic nanoformulations for prostate cancer, *Drug Discovery Today*. 2017.
 14. Vijaya Boya, Renn Lovett, Saini Setua, Vaibhav Gandhi, Prashanth K Nagesh, **Sheema Khan**, Meena Jaggi, Subhash C Chauhan, Murali. M. Yallapu. Probing Mucin Interaction Behavior of Magnetic Nanoparticles. *Journal of Colloid and Interface Science*, 2017 Feb 15;488:258-268.
 15. Aditya Ganju, **Sheema Khan**, Murali M. Yallapu, Stephen W. Behrman, Nadeem Zafar, Meena Jaggi, Subhash C. Chauhan. miRNA nanotherapeutics for cancer. *Drug Discovery Today*, 2017 Feb;22(2):424-432.
 16. Saini Setua, **Sheema Khan**, Murali M. Yallapu, Stephen W. Behrman, Mohammed Sikander, Shabia Shabir Khan, Meena Jaggi, Subhash C. Chauhan. Restitution of Tumor Suppressor microRNA-145 using Magnetic Nanoformulation for Pancreatic Cancer Therapy. *J Gastrointest Surg*. 2016 Aug 9.
 17. **Sheema Khan**, Mara C. Ebeling, Mohammad Sikander, Murali M. Yallapu, Tomoko Ise, Satoshi Nagata, Stephen W. Behrman, Subhash C. Chauhan, Meena Jaggi. MUC13 Interaction with Receptor Tyrosine Kinase HER2 Drives Pancreatic Ductal Adenocarcinoma Progression. *Oncogene*, June 20, 2016; Doi:10.1038/onc.2016.218.
 18. Prashanth K.B. Nagesh, Nia R. Johnson, Vijaya K.N. Boya, Pallabita Chowdhury, Shadi F. Othman, Vahid Khalilzad-Sharghi, Bilal B. Hafeez, Aditya Ganju, **Sheema Khan**, Stephen W. Behrman, Nadeem Zafar,

Subhash C. Chauhan, Meena Jaggi, Murali M. Yallapu. PSMA targeting docetaxel-loaded superparamagnetic iron oxide nanoparticles for prostate cancer. *Colloids and Surfaces B: Biointerfaces* - 2016; 144, 8-20.

19. **Khan S**, Ebeling MC, Chauhan N, Thompson PA, Gara RK, Ganju A, Yallapu MM, Behrman SW, Zhao H, Zafar N, Singh MM, Jaggi M, Chauhan SC. Ormeloxifene Suppresses Desmoplasia and Enhances Sensitivity of Gemcitabine in Pancreatic Cancer. *Cancer Research*. 2015 Jun 1;75(11):2292-304.
20. **Khan S**, Jaggi M, Chauhan SC. Revisiting stroma in pancreatic cancer. *Oncoscience*. 2015 Aug 1;2(10):819-20. PubMed PMID: 26682261.
21. **Khan S**, Chauhan N, Yallapu MM, Ebeling MC, Balakrishna S, Ellis RT, Thompson PA, Balabathula P, Behrman SW, Zafar N, Singh MM, Halaweish FT, Jaggi M, Chauhan SC. Nanoparticle formulation of ormeloxifene for pancreatic cancer. *Biomaterials*. 2015. June; 53: 731-743. doi:10.1016/j.biomaterials.2015.02.082.
22. Zaman MS, **Khan S**, Maher DM, Yallapu MM, Sikander M, Kumari S, Zafar N, Jaggi M, Chauhan SC. Curcumin Nanoformulation for Cervical Cancer Treatment. *Nature Scientific Reports*, 2016 Feb 3;6:20051. PMID: 26837852
23. Yallapu MM, Chauhan N, Othman SF, Khalilzad-Sharghi V, Ebeling MC, **Khan S**, Jaggi M, Chauhan SC. Implications of protein corona on physico-chemical and biological properties of magnetic nanoparticles. *Biomaterials*. 2015 Apr;46:1-12. doi: 10.1016/j.biomaterials.2014.12.045. PubMed PMID: 25678111.
24. Maher DM*, **Khan S*** (***Equal contributors**), Nordquist J, Ebeling MC, Bauer NA, Kopel L, Singh MM, Halaweish F, Bell MC, Jaggi M, Chauhan SC. Ormeloxifene efficiently inhibits ovarian cancer growth. *Cancer Letters*. 2014 Oct 9. pii: S0304-3835(14)00597-7. PubMed PMID: 25306892.
25. **Khan S**, Ebeling MC, Zaman MS, Sikander M, Yallapu MM, Chauhan N, Yacoubian AM, Behrman SW, Zafar N, Kumar D, Thompson PA, Jaggi M, Chauhan SC. MicroRNA-145 targets MUC13 and suppresses growth and invasion of pancreatic cancer. *Oncotarget*. 2014 Sep 15;5(17):7599-609. PubMed PMID: 25277192; PubMed Central PMCID: PMC4202147.
26. Sundram V, Ganju A, Hughes JE, **Khan S**, Chauhan SC, Jaggi M. Protein kinase D1 attenuates tumorigenesis in colon cancer by modulating β -catenin/T cell factor activity. *Oncotarget*. 2014 Aug 30;5(16):6867-84. PubMed PMID: 25149539; PubMed Central PMCID: PMC4196169.
27. Yallapu MM, Katti KS, Katti DR, Mishra SR, **Khan S**, Jaggi M, Chauhan SC. The Roles of Cellular Nanomechanics in Cancer. *Med Res Rev*. 2014 Aug 18. doi:10.1002/med.21329. [Epub ahead of print] PubMed PMID: 25137233.
28. Yallapu MM, **Khan S**, Maher DM, Ebeling MC, Sundram V, Chauhan N, Ganju A, Balakrishna S, Gupta BK, Zafar N, Jaggi M, Chauhan SC. Anti-cancer activity of curcumin loaded nanoparticles in prostate cancer. *Biomaterials*. 2014 Oct;35(30):8635-48. doi: 10.1016/j.biomaterials.2014.06.040. Epub 2014 Jul 12. PubMed PMID: 25028336.
29. Ganju A, Yallapu MM, **Khan S**, Behrman SW, Chauhan SC, Jaggi M. Nanoways to overcome docetaxel resistance in prostate cancer. *Drug Resist Updat*. 2014 Apr;17(1-2):13-23. doi: 10.1016/j.drug.2014.04.001. Epub 2014 Apr 5. PubMed PMID: 24853766; PubMed Central PMCID: PMC4100480.
30. **Khan S**, Ansarullah, Kumar D, Jaggi M, Chauhan SC. Targeting microRNAs in pancreatic cancer: microplayers in the big game. *Cancer Research*. 2013 Nov 15;73(22):6541-7. doi: 10.1158/0008-5472.CAN-13-1288. Epub 2013 Nov 7. Review. PubMed PMID: 24204026; PubMed Central PMCID: PMC3834190.
31. Yallapu MM, Ebeling MC, **Khan S**, Sundram V, Chauhan N, Gupta BK, Puumala SE, Jaggi M, Chauhan SC. Novel curcumin-loaded magnetic nanoparticles for pancreatic cancer treatment. *Mol Cancer Ther*. 2013 Aug;12(8):1471-80. doi: 10.1158/1535-7163.MCT-12-1227. Epub 2013 May 23. PubMed PMID: 23704793; PubMed Central PMCID: PMC3965353.
32. Zaman MS, Maher DM, **Khan S**, Jaggi M, Chauhan SC. Current status and implications of microRNAs in ovarian cancer diagnosis and therapy. *J Ovarian Res*. 2012 Dec 13;5(1):44. doi: 10.1186/1757-2215-5-44. PubMed PMID: 23237306; PubMed Central PMCID: PMC3539914.

33. Rah B, Amin H, Yousuf K, **Khan S**, Jamwal G, Mukherjee D, Goswami A. A novel MMP-2 inhibitor 3-azidowithaferin A (3-azidoWA) abrogates cancer cell invasion and angiogenesis by modulating extracellular Par-4. *PLoS One*. **2012**;7(9):e44039. doi: 10.1371/journal.pone.0044039. Epub 2012 Sep 4. PubMed PMID: 22962598; PubMed Central PMCID: PMC3433490.
34. **Khan S**, Kaur R, Shah BA, Malik F, Kumar A, Bhushan S, Jain SK, Taneja SC, Singh J. A novel cyano derivative of 11-keto- β -boswellic acid causes apoptotic death by disrupting PI3K/AKT/Hsp-90 cascade, mitochondrial integrity, and other cell survival signaling events in HL-60 cells. *Mol Carcinog*. **2012** Sep;51(9):679-95. doi: 10.1002/mc.20821. Epub 2011 Jul 12. PubMed PMID: 21751262.
35. **Khan S**, Chib R, Shah BA, Wani ZA, Dhar N, Mondhe DM, Lattoo S, Jain SK, Taneja SC, Singh J. A cyano analogue of boswellic acid induces crosstalk between p53/PUMA/Bax and telomerase that stages the human papillomavirus type 18 positive HeLa cells to apoptotic death. *Eur J Pharmacol*. **2011** Jun 25;660(2-3):241-8. doi: 10.1016/j.ejphar.2011.03.013. Epub 2011 Apr 2. PubMed PMID: 21440536.
36. Kaur R, **Khan S**, Chib R, Kaur T, Sharma PR, Singh J, Shah BA, Taneja SC. A comparative study of proapoptotic potential of cyano analogues of boswellic acid and 11-keto-boswellic acid. *Eur J Med Chem*. **2011** Apr;46(4):1356-66. doi: 10.1016/j.ejmech.2011.01.061. Epub 2011 Feb 3. PubMed PMID: 21334793.
37. **Khan S**, Malik F, Suri KA, Singh J. Molecular insight into the immune up-regulatory properties of the leaf extract of Ashwagandha and identification of Th1 immunostimulatory chemical entity. *Vaccine*. **2009** Oct 9;27(43):6080-7. doi:10.1016/j.vaccine.2009.07.011. Epub 2009 Jul 21. PubMed PMID: 19628058.
38. Malik F, Kumar A, Bhushan S, **Khan S**, Bhatia A, Suri KA, Qazi GN, Singh J. Reactive oxygen species generation and mitochondrial dysfunction in the apoptotic cell death of human myeloid leukemia HL-60 cells by a dietary compound withaferin A with concomitant protection by N-acetyl cysteine. *Apoptosis*. **2007** Nov;12(11):2115-33. PubMed PMID: 17874299.

Current Research support

Ongoing Research Support

E073620036

UTHSC New grant support (PI: Khan)

10/01/17- 09/30/2019

Novel c-type lectin involved in pancreatic carcinogenesis: To investigate role of novel c-type lectin in cancer

1R01CA204552-01

NIH/NCI (PI: Chauhan, Key personnel: Khan) 07/11/16 - 05/31/21

Identification of Molecular Signatures for Colon Cancer Health Disparity: To investigate role of MUC13 mucin in colorectal cancer health disparity and evaluate its diagnostic/prognostic potential.

1R01CA206069-01A1

NIH/NCI (PI: Chauhan, Key personnel: Khan) 06/24/16 - 05/31/21

Development of a Targeted Nanotechnology platform for Pancreatic Cancer

To develop a curcumin loaded magnetic nanoparticle formulation for altered tumor microenvironment and chemo-sensitization of pancreatic cancer.

Kosten Foundation: Identification of novel biomarkers in Pancreatic Cancer (PI: Chauhan; Co-Investigator: Khan) (2017-2020)

This grant will provide funding for combination therapy with EGFR and Hedgehog Inhibitors for treating pancreatic carcinoma

Completed Research Support

P20GM103548

NIH/NCI (Sheema Khan – Principle Investigator)

06/01/2012 - 06/01/2013

A PLGA nanoparticle based miRNA formulation to reprogram miRNA networks in prostate cancer. The aim is to target the prostate cancer cells on a genetic level by restoring the tumor suppressor, miR-205.

Role: Principal investigator

1U01CA162106-01A1 **NIH/NCI (PI: Chauhan, Key personnel: Khan)** **06/24/12 - 06/20/17**
Etiology of cervical cancer health disparity in American Indian women
To study the effects of smoking on HPV infection and cervical cancer progression in American Indian women.

1R01CA142736-01A1 **NIH/NCI (PI: Chauhan; Khan: Postdoc)** **06/01/10 - 04/30/16**
(No Cost Extension)
Aspects of MUC13 Mucin in Cancer
To study the different domains of MUC13 execute specific functions in cancer cells and their suppression will diminish pancreatic cancer cell growth and tumorigenesis.

UT 14-0558 **(PI: Chauhan; Co-Investigator: Khan)** **03/01/14-02/28/15**
Kosten Foundation, Memphis
Pancreatic Cancer Treatment
Pancreatic Cancer Treatment using microRNA nanoparticle technology
Overlap: None.
Role: Key personnel

RESIDENCE STATUS: UNITED STATES PERMANENT RESIDENT