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Education

1998	**Ph.D. Cell Biology**	Central Drug Research Institute, Lucknow India. *(Cell Biology/Reproductive Endocrinology)*
1990	**M.S. Zoology**	University of Allahabad, Allahabad, India.
1988	**B.S. Botany, Chemistry, Zoology**	University of Allahabad, Allahabad, India.

Research Focus

Meena Jaggi, PhD. Dr. Jaggi is Professor in the College of Medicine at UTRGV. The primary focus of my research is to identify and evaluate the functional significance of cell-cell adhesion molecules known as cadherins and catenins in cancer progression and to understand the regulation of cadherin/catenin complex activity by Protein Kinase D signaling. In-depth knowledge of molecular mechanisms involved in signal transduction of human cancers is critical for the development of biomarker for early detection of cancer and rationalized structure-based drug designing. We have identified a novel interaction between E-cadherin/ß-catenin complex and Protein Kinase D1 (PKD1), an important modulator of several kinase signal-transduction pathways in benign and malignant human diseases. Downstream signaling of the E-cadherin/ ß-catenin and PKD1 interaction alters malignant phenotype of cancer cells. The cadherins are members of a large family of transmembrane glycoproteins that mediate calcium dependent homotypic adhesion and require association with the actin cytoskleton through cytoplasmic proteins called catenins. The cadherin family of proteins is implicated in cell sorting during normal development. Aberrant expressions of cadherins and catenins have been implicated in the carcinogenesis and invasiveness of tumor cells. Malignant transformation is often characterized by major changes in the organization of the cytoskeleton, decreased cell-cell adhesion, and aberrant adhesion-mediated signaling. Disruption of normal cell-cell adhesion in transformed cells contributes to enhanced tumor cell migration and proliferation, which leads to invasion and metastasis. This disruption can be achieved by down-regulating the expression of cadherin or catenin family members or by activation of signaling pathways that prevent the assembly of junctions. We are attempting to understand how the activity the cadherin/catenin complex is regulated.

PKD1 is a serine/threonine-specific kinase that performs a variety of functions in cells and is target-dependent. PKD1 has been shown to play a major role in a multitude of cellular functions including apoptosis, immune response, DNA synthesis, cell proliferation and invasion, Golgi trafficking and intracellular signal transduction. I have identified a novel interaction between E-cadherin and PKD1 that results in E-cadherin phosphorylation. Downstream signaling of the interaction alters cellular aggregation and motility of cancer cells. I have also shown down-regulation of PKD1 and aberrant expression of E-cadherin, N-cadherin and ß-catenin in human prostate cancer progression in three publications. ß-catenin, a distinct member of the cadherin-catenin protein complex that plays a dual role in cell adhesion as well as in Wnt (Wingless type) signaling pathway associated with cell proliferation. In addition, we will also study the ß-catenin subcellular modulation by the PKD1 and regulation of membrane trafficking of ß-catenin by PKD1. She has discovered that protein kinase D1 interacts with β-catenin to regulate cell adhesion and proliferation and that alterations in this signaling pathway are associated with prostate cancer (PrCa). This important work has led to several publications in the top-rated journals including Cancer Research. Dr. Jaggi's published studies have suggested suppressed expression of PKD1 in PrCa and has implications in PrCa progression and metastasis. Therefore, it has a potential to serve as a novel molecular biomarker for early PrCa diagnosis and for the stratification of indolent versus aggressive cancer types.

Recent Publications

1. Chauhan N, Maher DM, Yallapu MM, B Hafeez B, Singh MM, Chauhan SC, **Jaggi M*.** A triphenylethylene nonsteroidal SERM attenuates cervical cancer growth. Sci Rep. 2019 Jul 29;9(1):10917. doi: 10.1038/s41598-019-46680-0. PubMed PMID: 31358785; PubMed Central PMCID: PMC6662837.

2. 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). pii: E364. doi: 10.3390/cancers11030364. PubMed PMID: 30875788; PubMed Central PMCID: PMC6469021.

3. Kashyap VK, Wang Q, Setua S, Nagesh PKB, Chauhan N, Kumari S, Chowdhury P, Miller DD, Yallapu MM, Li W, **Jaggi M,** Hafeez BB, Chauhan SC. Therapeutic efficacy of a novel βIII/βIV-tubulin inhibitor (VERU-111) in pancreatic cancer. J Exp Clin Cancer Res. 2019 Jan 23;38(1):29. doi: 10.1186/s13046-018-1009-7. PubMed PMID: 30674344; PubMed Central PMCID: PMC6343279.

4. 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). pii: E289. doi: 10.3390/cancers10090289. PubMed PMID: 30149628; PubMed Central PMCID: PMC6162422.

5. 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). 2019 Jan;21(1):87-95. doi: 10.1016/j.hpb.2018.07.009. Epub 2018 Aug 14. PubMed PMID: 30115565; PubMed Central PMCID: PMC6349495.

6. 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. doi: 10.1038/s41389-018-0031-0. PubMed PMID: 29467405; PubMed Central PMCID: PMC5833644.

7. Ganju A, Chauhan SC, Hafeez BB, Doxtater K, Tripathi MK, Zafar N, Yallapu MM, Kumar R, **Jaggi M*.** Protein kinase D1 regulates subcellular localisation and metastatic function of metastasis-associated protein 1. Br J Cancer. 2018 Feb 20;118(4):587-599. doi: 10.1038/bjc.2017.431. Epub 2018 Feb 20. PubMed PMID: 29465084; PubMed Central PMCID: PMC5830591.

8. 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. doi: 10.1016/j.hpb.2017.12.003. Epub 2018 Jan 17. PubMed PMID: 29352660; PubMed Central PMCID: PMC5995635.

9. Sahay P, Ganju A, Almabadi HM, Ghimire HM, Yallapu MM, Skalli O, **Jaggi M,** Chauhan SC, Pradhan P. Quantification of photonic localization properties of targeted nuclear mass density variations: Application in cancer-stage detection. J Biophotonics. 2018 May;11(5):e201700257. doi: 10.1002/jbio.201700257. Epub 2018 Jan 17. PubMed PMID: 29222925.

10. Setua S, Khan S, Doxtater K, Yallapu MM, **Jaggi M,** Chauhan SC. miR-145: Revival of a Dragon in Pancreatic Cancer. J Nat Sci. 2017 Mar;3(3). pii: e332. PubMed PMID: 28616589; PubMed Central PMCID: PMC5467535.