

List of 10 best papers highlighting the important discoveries and/or contributions – Madhura Kulkarni

1. Apurv Kulkarni, Devaki A Kelkar, L S Shashidhara, C B Koppiker, **Madhura Kulkarni***. Meta-analysis of prevalence and clinical features at presentation of TNBC in Indian Cohort. **JCO Glob Oncol** 2020 Jul;6:1052-1062 Impact factor **4.3** *Corresponding author

TNBC is one of the aggressive subsets of breast cancer and is presented with variable but high prevalence in India. We documented the variability and for the first time the reasons for the variability in TNBC prevalence across 34 studies in India. The meta-analysis concluded that despite the variability and diagnostic advancements, TNBC presents with a high prevalence of up to 27% and at a significantly younger age.

The meta-analysis has been cited for 53 times, and the article has been downloaded 7,260 times since its publication in 2020, within just 4 years. It states that this meta-analysis documented the knowledge gap present in the field and is well-appreciated in the scientific community.

2. Pooja Vaid, Aditi Khatpe, Rutvi Shah, Ruhi Reddy, Devaki Kelkar, Anirudha Puntambekar, Chaitanyanand Koppiker, LS Shashidhara, **Madhura Kulkarni*** "Evaluation of Tumor Infiltrating Lymphocytes (TILs) as a prognostic and predictive marker in Indian breast cancer" **Diagnostic Pathology**. 2022, 17 (1), 1-15. Impact factor **2.9** *Corresponding author

To identify novel biomarkers to tackle the aggressive subset of breast cancer, as presented in Kulkarni et al. 2020, we profiled TNBC with cellular markers such as TILs and molecular markers to identify distinct molecular characteristics within an Indian cohort. The study facilitates the development of a clinically implementable prognostic and therapeutic marker for better clinical management. This is one of the first studies to be undertaken to uncover novel and clinically significant markers within Indian TNBCs that are associated with aggressive clinical parameters, and this understanding will have a significant impact on defining prognosis in Indian TNBC patients.

*The study reported a correlation of treatment response with tumor infiltrating lymphocytes (TILs), specifically in Triple Negative Breast Cancers from an Indian cohort of 250 breast cancer (IDC) cases, **Vaid et al 2022**. This is a first of the kind study for breast cancer patients in India and provides a proof-of-principal for larger cohort analyses. Especially when in India TNBC presents with aggressive disease with high incidence rate; cost-effect markers like TILs scores will aid identifying TNBC patients that may benefit from the chemotherapy from the ones who may not.*

The article has been cited 5 times, and the article has been downloaded 3639 times. The article ranks 3rd in the journal for viewing and access.

3. **Madhura Kulkarni**, Tuan Zea Tan, Nurfarhanah Sulaiman, John Lamar, Prashali Bansal, Jianzhou Cui, Yiting Qiao, Yoshiaki Ito. RUNX1 and RUNX3 protect against YAP-mediated EMT, stem-ness and shorter survival outcomes in breast cancer. **Oncotarget**. 2018;9:14175-14192. Impact factor **5.2**

A complex interplay between an oncogene and tumor suppressor genes is dissected here in tumor progression, which is quite difficult to study due to experimental limitations. The work has been well appreciated by the YAP-Hippo research community and has built tools and avenue for further research.

This article has been cited 63 times and has 4217 views online.

4. Busheri L, Dixit S, Nare S, Alhat R, Thomas G, Jagtap M, Navgire R, Shinde P, Banale R, Unde R, Reddy R, Shaikh S, Konnur A, Namewar N, Bapat A, Patil A, Johari R, Kushwaha R, Kumari W, Varghese B, Deshpande P, Deshmukh C, Kelkar DA, Shashidhara LS, Koppiker CB, **Kulkarni M***. Breast cancer biobank from a single institutional cohort in an urban setting in India: Tumor characteristics and survival outcomes. **Cancer Treat Res Commun**. 2021 Jun 1;28:100409. Doi: 10.1016/j.ctarc.2021.100409. Impact factor **1.5** *Corresponding author

With the high prevalence of TNBC in India, there is an urgent need to perform molecular and cellular profiling studies to understand the TNBC heterogeneity within Indian patients to combat this most aggressive form of breast cancer in India that presents at younger age in high proportion. To aid the study of profiling TNBCs in an Indian cohort, we set-up FFPE tumor biobank at PCCM with a cohort of 1000 patient samples for breast tumors along with over 700 parameters to cover clinical features and treatment details, with follow-up information for 82%, and average follow-up of 3 years. A detailed audit of the biobank is published in a peer reviewed journal, Cancer Treatment and Research Communication, Busheri et al. 2021. This biobank also includes a vast amount of image data at high resolution from whole slide scans of H&E and IHC slides for over 300 patients and

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building on.

This is one of the first comprehensive breast tumor tissue biobank in India that's non-for profit and built with philanthropic funds. Today, the biobank serves many researchers across India and outside, implementing the goal with which it was set up.

5. Sneha Joshi*, Rupa Mishra*, **Madhura Kulkarni***, Devaki A. Kelkar*, Keerthi Harikrishnan*, Pooja Vaid, Gomathi V, Jisha John, Anand Deshpande, Sunil Badve, Chintamani, Ravi Mehrotra, L.S. Shashidhara, Ashutosh Kothari, and Chaitanyanand Koppiker. J Proceedings of the 3rd Indian Cancer Genome Atlas Conference 2022: Biobanking to Omics: Collecting the Global Experience. CO Global Oncol 00:e2200176. *Equal contribution Impact factor **4.3**

The proceedings of the 'Indian Cancer Genome Atlas Meeting' are where we bring out the nitty gritty of biobanking for tumor tissue samples in India, the guidelines, the necessities, and the regulations under one umbrella. The concise review of the talks and panel discussions will serve the Indian community very well for a long time.

6. Gomathi V, Devaki A. Kelkar, Susmita Mandal, Mohit Kumar Jolly, **Madhura Kulkarni***. Analysis of Yes-associated protein-1 (YAP1) target gene-signature to predict a progressive subset of breast cancer. **Journal of Clinical Medicine** on 29th March 2022. Impact factor **4.2** *Corresponding author

This is an international peer-reviewed article published from a master's student's dissertation work during the covid lockdown. I am very proud of the student. The work identifies a gene-signature to predict aggressive subsets of TNBC and HER2 positive breast cancer subtypes for better treatment management.

7. Alexander G. Milbradt, **Madhura Kulkarni***, Tingfang Yi*, Koh Takeuchi, Zhen-Yu J. Sun, Rafael Luna, Philipp Selenko, Anders M. Näär and Gerhard Wagner. Structure of the VP16 Transactivator Target in ARC/Mediator. **Nat Struct Mol Biol.** 2011 Apr;18 (4):410-5. Impact Factor **12.7** *Equal Contribution.

*This work characterized the biochemical interactions between the mediator complex and transcription factor VP16 that regulates Herpes Simplex viral infection. The biochemical characterization was done to the single amino acid level, which demonstrates the critical residues that can be targeted to block VP16 mediated transcription and block virus infection. This article has been **cited 94 times**. Download history not available.*

8. **Madhura Kulkarni** and Harold Smith. E1 Ubiquitin-Activating Enzyme UBA-1 plays multiple roles throughout *C. elegans* development. **PLoS Genetics.** 2008 July 18;4(7):e1000131. Impact factor **9.2**

*This is a very first time an E1 enzyme was cloned from any model organism with successful characterization of the dependent phenotypes and the report was selected for a cover story of PLoS Genetics. E1 enzyme an essential and critical role in ubiquitination cycle across all multicellular organisms and any mutations in the gene are lethal for any organism. Cloning the gene with the microinjection into *C.elegans* embryos was very tricky as the gene dosage window was very short, and the dosage had to be tailored for successful cloning, and I managed to find the window, where lethality was rescued. The study is only one of the two successful cloning stories of E1 enzyme which give window into the fundamental biological processes E1 functions in.*

*This article has been **cited 78 times** and has **8,259 views** online.*

9. **Madhura Kulkarni**, Shakes DC, Guevel K, Smith Harold E. SPE-44 implements sperm cell fate. **PLoS Genetics.** 2012 Apr;8(4):e1002678. Impact Factor **9.2**

*Spe-44, after cloning turned out to be the only transcription factor and the most upstream regulator of sperm development in *C. elegans*. The spe-44 gene expression determines the germline cell fate to sperm development. This article has been **cited 42 times** and has **6,117 views** online.*

10. **Madhura Kulkarni**¹, Antonio Del-Castillo¹, and Harold Smith. Regulation of sperm gene expression by the GATA factor ELT-1. **Dev. Biol.** 2009 July 8;doi:10.1016/j.ydbio.2009.06.044. (**¹Shared Lead author**) Impact Factor **4.1**

*This work involved investigating sperm-development specific function of the gene ELT1 amongst its myriad other function. This article has been **cited 25 times**.*