



Namrata Dhaka

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Area of Expertise

- Molecular marker development, analysis of quantitative traits through linkage mapping and quantitative trait loci (QTL) mapping
- Small RNA analysis through high throughput sequencing
- Plant transcriptomic analysis

Research Interests

My principal research interest lies in understanding the underlying causal variation of agronomic traits in plants. I have previously used genetic analysis to identify the QTL segregating for various agronomic traits in different mapping populations of oilseed crop *Brassica juncea*. My current work principally involves use of high throughput transcriptomic and small RNA sequencing analysis to identify candidate genes and microRNAs regulating economically important seed traits in dicots as well as monocots. In future, I aim to integrate the use of transcriptomic, small RNA, and QTL approaches to decipher the genetic regulation of crucial seed traits in *Brassica juncea* as well as *Sorghum bicolor* to enable precision breeding.

Projects as Principal Investigator

SERB Core Research Grant Project (~Rs.40 lakh; Sanctioned)

Identification of key microRNA-target modules and genes involved in the determination of grain weight and micronutrient content in *Sorghum bicolor* using small RNA and transcriptome profiling.

DST INSPIRE (Rs.35 lakh; 2018-2023; Ongoing)

Identification of microRNAs involved in the regulation of thousand seed weight and oil content in *Brassica juncea*.

SERB-NPDF (2017 – 2018, Completed)

Small RNA profiling to elucidate key miRNAs and post-transcriptional regulatory networks during male reproductive organ development in *Sorghum bicolor*

Academic Qualifications

2010-2016:	Ph.D. Genetics Department of Genetics, University of Delhi, South Campus Title: Genetic dissection of some agronomically important characters, with special emphasis on seed size in <i>Brassica juncea</i> . Supervisor: Prof. Akshay Kumar Pradhan
2008-2010:	M.Sc. Genetics (Gold Medalist with 73.2%) Department of Genetics, University of Delhi, South Campus
2005-2008:	B.Sc. Honors Botany (Third rank in University with 85.3%) Gargi College, University of Delhi
2003:	Intermediate Meerut Public School, Meerut (CBSE) (First division with 81.2%)
2001:	High School St. Francis School, Meerut (ICSE) (First rank with 89.2%)

Publications

Research Publications

- **Dhaka, N.#**, Krishnan, K.#, Kandpal, M., Vashisht, I., Sharma, M. K., Singh, M.P., & Sharma, R. (2020) Transcriptional trajectories of anther development provide candidates for engineering male fertility in sorghum. *Scientific Reports* (#Equal authors)

- **Dhaka, N.**, Sharma, S., Vashisht, I., Kandpal, M., Sharma, M. K., & Sharma, R. (2019). Small RNA profiling from meiotic and post-meiotic anthers reveals prospective miRNA-target modules for engineering male fertility in sorghum. *Genomics*. doi.org/10.1016/j.ygeno.2019.09.009
- **Dhaka, N.**, Sharma, R. (2017). MicroRNAs as targets for engineering biofuel feedstock Sorghum. *Indian Journal of Plant Physiology*. doi.org/10.1007/s40502-017-0332-x
- **Dhaka, N.**, Bhardwaj, V., Sharma, M.K., and Sharma, R. (2017). Evolving Tale of TCPs: New Paradigms and Old Lacunae. *Frontiers in Plant Science* 8(479). doi: 10.3389/fpls.2017.00479.
- **Dhaka, N.**, Mukhopadhyay, A., Paritosh, K., Gupta, V., Pental, D., & Pradhan, A. K. (2017). Identification of genic SSRs and construction of a SSR-based linkage map in *Brassica juncea*. *Euphytica*, 213(1), 15. doi:10.1007/s10681-016-1814-z
- Francis, A., **Dhaka, N.**, Bakshi, M., Jung, K. H., Sharma, M. K., & Sharma, R. (2016). Comparative phylogenomic analysis provides insights into TCP gene functions in Sorghum. *Scientific Reports*, 6, 38488. doi:10.1038/srep38488
- **Dhaka, N.**, Rout, K., Yadava, S. K., Sodhi, Y. S., Gupta, V., Pental, D., & Pradhan, A. K. (2016). Genetic dissection of seed weight by QTL analysis and detection of allelic variation in Indian and east European gene pool lines of *Brassica juncea*. *Theoretical and Applied Genetics*. doi:10.1007/s00122-016-2811-2

Book Chapters/Online content

Five book chapters published under the 'National Mission on Education - Information Communication Technology' (NME-ICT), an Ministry of Human Resource Development (MHRD) project, Institute of Lifelong Learning, University of Delhi (www.vle.du.ac.in) (ISSN-2349-154x)

- **Dhaka, N.** (2015), Molecular markers
- **Dhaka, N.** (2015), Tissue Culture Applications – Part I
- **Dhaka, N.** (2015), Tissue Culture Applications – Part II
- **Dhaka, N.** (2015), Tissue Culture Applications – Part III
- **Dhaka, N.** (2015), Tissue Culture Media and Sterilization Techniques

Academic employment

- Assistant Professor, Department of Biotechnology, Central University of Haryana, Mahendergarh, Haryana (January 2020 - Present)
- DST INSPIRE Faculty, School of Computational and Integrative Sciences, Jawaharlal Nehru University (April 2018 – January 2020)
- DST-SERB National Postdoctoral Fellow, School of Computational and Integrative Sciences, Jawaharlal Nehru University (April 2017 – April 2018)
- Senior Research Fellow, School of Computational and Integrative Sciences, Jawaharlal Nehru University (July 2016 – March 2017)
- University Teaching Assistant, Department of Genetics, University of Delhi, South Campus (July 2010 – June 2014)

Scholarships and awards

- DST-INSPIRE Faculty Fellowship (2018)
- National Postdoctoral Fellowship, Science and Engineering Research Board, Department of Science and Technology, Government of India (2018)
- Junior and Senior Research Fellowship, Council of Scientific and Industrial Research (CSIR), Government of India (July 2010 – June 2015)
- University Teaching Assistantship, Department of Genetics, University of Delhi, South Campus (July 2010 – June 2014)
- M.Sc. Gold Medalist, Department of Genetics, University of Delhi, South Campus (2010)
- All India 34th rank holder in National Eligibility Test (NET) conducted in Life Sciences by CSIR, Government of India (2010)
- All India 21st rank holder in Graduate Aptitude Test (GATE) conducted in Life Sciences by MHRD, Government of India (2010)

- South Campus Endowment Scholarship for meritorious students (2009)
- Third Rank holder, B.Sc. (Honors) Botany, University of Delhi, India (2008)

Presentations and Posters

- National Science Day Symposium, Jawaharlal Nehru University, February 2017 (Poster)
- 4th National Science Day Symposium, University of Delhi South Campus, February 2015 (Oral Presentation)
- Genomics and Proteomics Research Conference, Select Biosciences India Private Limited, New Delhi, June 2014 (Poster)
- NGBT Conference, Institute for Genomics and Integrative Biology, New Delhi, November 2013 (Best Poster Award)
- ABAP conference, University of Delhi, South Campus, October 2013 (Poster)

Extra-curricular activities

- Poster presentation in Open Day, JNU (2017)
- Poster presentation in Open Day, JNU (2016)
- First Prize in Scientific article writing competition, Gargi College (2008).
- Second Prize in Paper Presentation Contest on RNA interference, Sri Venkateswara College (2008)
- Second Prize in Paper Presentation Contest for B. M. Johri Rolling shield, Department of Botany, University of Delhi (2007)
- Second Prize in Paper Presentation Contest, Miranda House (2006)
- Second Prize in Botanical Quiz, Kirori Mal College. (2008)
- Special Appreciation prize in inter college science debate competition TERI University (2007)