

## **Curriculum Vitae**

Prof. Nirala Ramchiary  
School of Life Sciences  
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### **EDUCATION**

- Ph.D., Department of Genetics, Delhi University South Campus, New Delhi
- M.Sc, Department of Genetics and Plant Breeding, University of Agricultural Sciences, Dharwad, Karnataka
- B.Sc. Assam Agricultural University, Jorhat, Assam, India

### **RESEARCH INTEREST**

- Comparative genomics, computational and systems biology of Ghost chili and other *Capsicum* species.

### **PROFESSIONAL CAREER**

- Professor, School of Life Sciences, Jawaharlal Nehru University (June 2022- till date)
- Associate Professor, Department of Biotechnology, Delhi Technological University (December 2018 –Nov 30, 2020)
- Assistant Professor, School of Life Sciences, Jawaharlal Nehru University (October 2012-June 2023)
- Visiting Scientist, Molecular Genetics and Genomics Lab, Department of Horticulture, Chungnam National University, Daejeon, South Korea (January 2012 – April 2012)
- Assistant Professor, Gauhati University (September, 2011-September, 2012)
- Postdoc, Molecular Genetics and Genomics Lab, Department of Horticulture, Chungnam National University, Daejeon, South Korea (February 2008 – September 2011)
- Postdoc, Centre for Genetic Manipulation of Crop Plants, Department of Genetics, Delhi University South Campus, New Delhi (April 2007- January 2008)

### **FELLOWSHIPS**

- Erasmus Mundas European Union BRAVE Fellowship to Visit Athens Agricultural University, Greece (2015-2016)
- Ramalingaswami Re-Entry-Fellowship, Department of Biotechnology, Govt. of India (2012-2017)
- Ramanujan Fellowship, Department of Science and Technology, Government of India (selected in January, 2012, not availed)
- National Research Foundation Fellowship for Foreign Postdoctoral Researcher, Government of Korea (March 2010 to Feb, 2011)
- Awarded Junior Research and Senior Research Fellowship by Council of Scientific & Industrial Research, India
- Awarded Junior Research Fellowship for Masters by Indian Council of Agricultural Research, India

## PUBLICATIONS IN PEER REVIEWED JOURNALS

1. Islam K, Rawoof A, Kumar A, Momo J, Ahmed I, Dubey M, **Ramchiary N** (2023) Genetic Regulation, Environmental Cues, and Extraction Methods for Higher Yield of Secondary Metabolites in *Capsicum*. *Journal of Agricultural and Food Chemistry*, *71*: 9213–9242
2. Ahmad I, Rawoof A, Islam K, Momo J, Anju T, Kumar A, **Ramchiary N** (2023) Diversity and expression analysis of ZIP transporters and associated metabolites under zinc and iron stress in *Capsicum*. *Plant Physiology and Biochemistry*, *196*:415-430
3. Yadav BG, Aakanksha, Kumar R, Yadava SK, Kumar A, **Ramchiary N** (2023) Understanding the Proteomes of Plant Development and Stress Responses in Brassica Crops. *Journal of Proteome Research*, *22*:660-680
4. Momo M, Rawoof A, Kumar A, Islam K, Ahmad I, **Ramchiary N** (2022) Proteomics of reproductive development, fruit ripening and stress responses in tomato. *Journal of Agricultural and Food Chemistry* (accepted)
5. Rawoof A, Ahmad I, Islam K, Momo J, Kumar A, Jaiswal V, **Ramchiary N** (2022) Integrated omics analysis identified genes and their splice variants involved in fruit development and metabolites production in *Capsicum* species *Functional & Integrative Genomics*, *22*:1189–1209
6. Jaiswal V, Rawoof A, Gahlaut V, Ahmad I, Chhapekar SS, Dubey M, **Ramchiary N** (2022) Integrated analysis of DNA methylation, transcriptome, and global metabolites in interspecific heterotic *Capsicum* F1 hybrid. *Iscience*, *25*:105318
7. Momo M, Kumar A, Islam K, Ahmad I, Rawoof A, **Ramchiary N** (2022) A comprehensive update on *Capsicum* proteomics: Advances and future prospects. *Journal of Proteomics*, *261*:104578
8. Ahmad I, Rawoof A, Islam K, Momo J, **Ramchiary N** (2021) Identification and expression analysis of phosphate transporter genes and metabolites in response to phosphate stress in *Capsicum annum*. *Environmental and Experimental Botany*. *190*: 104597
9. Ahmad I, Rawoof A, Dubey M, **Ramchiary N** (2021) ICP-MS based analysis of mineral elements composition during fruit development in *Capsicum* germplasm (2021) *Journal of Food Composition and Analysis*: *101*, 103977
10. Islam K, Rawoof A, Ahmad I, Dubey M, Momo J, **Ramchiary N** (2021) *Capsicum chinense* MYB Transcription Factor Genes: Identification, Expression Analysis, and Their Conservation and Diversification With Other Solanaceae Genomes. *Front. Plant Sci.* *12*:721265.
11. Kumar A, Sreedharan S, Singh P, Achigan-Dako EG, **Ramchiary N** (2021) Improvement of a Traditional Orphan Food Crop, *Portulaca oleracea* L. (Purslane) Using Genomics for Sustainable Food Security and Climate-Resilient Agriculture. *Front. Sustain. Food Syst.* *5*:711820
12. Kumar A, Sreedharan S, kashyap AK, Singh P, **Ramchiary N** (2021) A review on bioactive phytochemicals and ethnopharmacological potential of purslane (*Portulaca oleracea* L.), *heliyon*, *1*: e08669
13. Ahmad I, Rawoof A, Dubey M, **Ramchiary N** (2021) ICP-MS based analysis of mineral elements composition during fruit development in *Capsicum* germplasm. *Journal of Food Composition and Analysis*, *101*: 103977
14. Paul P, Chhapekar SS, Rameneni JJ, Oh SH, Dhandapani V, Subburaj S, Shin SY, **Ramchiary N**, Shin C, Choi SR, et al (2021) MiR1885 Regulates Disease Tolerance Genes in *Brassica rapa* during Early Infection with *Plasmodiophora brassicae*. *Int. J. Mol. Sci.*, *22*, 9433. <https://doi.org/10.3390/ijms22179433>
15. Kumar A, Anju T, Kumar S, Chhapekar SS, Sreedharan S, Singh S, Choi SR, Ramchiary N, Lim YP (2021) Integrating Omics and Gene Editing Tools for Rapid Improvement of Traditional Food

Plants for Diversified and Sustainable Food Security. Int. J. Mol. Sci. 2021, 22, 8093. <https://doi.org/10.3390/ijms22158093>

16. Kumar A, Kumar S, Komal, **Ramchiary N**, Singh P (2021). Role of Traditional Ethnobotanical Knowledge and Indigenous Communities in Achieving Sustainable Development Goals. Sustainability 13:3062. <https://doi.org/10.3390/su13063062>
17. Nivedita, Rawoof A, Ramchiary N, Abdin MZ (2021) A high-throughput RNA-Seq approach to elucidate the transcriptional response of *Piriformospora indica* to high salt stress. Scientific Reports.11:4129
18. Chhapekar SS, Kumar N, Srpras M, Brahma Vijaya, Rawoof A, jaiswal V, Kumar A, Sarmah BK, Ramchiary N(2021) **Profiling of miRNAs in Bhut Jolokia (*Capsicum chinense*) and Kon Jolokia (*C. frutescens*) of Northeast India. Scientia Horticulturae.** <https://doi.org/10.1016/j.scienta.2021.109952>
19. Chhapekar SS, Brahma V, Rawoof A, Kumar N,Gaur R,Jaiswal V, Kumar A, Yadava SK, Kumar R, Sharma V,Babu SS, Ramchiary N(2020) Transcriptome profiling, simple sequence repeat markers development and genetic diversity analysis of potential industrial crops **Capsicum chinense** and **C. frutescens** of Northeast India: **Industrial Crops and Products**, 154, 112687
20. Rawoof A, Chhapeka SS, Jaiswal V, Brahma V, Kumar N, Ramchiary N(2020) Single-base cytosine methylation analysis in fruits of three *Capsicum species*. **Genomics** **112**:3342-3353
21. M S, Ahmad I, Rawoof A, **Ramchiary N**. (2019) Comparative analysis of developmental changes of fruit metabolites, antioxidant activities and mineral elements content in Bhut jolokia and other *Capsicum* species. LWT Food Science and Technology. Volume 105: 363-370
22. Jaiswal V, Gupta S, Gahlaut V, Muthamilarasan M, Bandhyopadhyay T, **Ramchiary N**, Prasad M(2019) Genome-Wide Association Study of Major Agronomic Traits in Foxtail Millet (*Setaria italica* L.) Using ddRAD Sequencing. Scientific Reports **9**: 5020
23. Jaiswal V, Bandhyopadhyay T, Gahlaut V, Gupta S, **Ramchiary N**, Prasad M(2019) Genome-wide association study (GWAS) delineates genomic loci for ten nutritional elements in foxtail millet (*Setaria italica* L.). Journal of Cereal Science 85:48-55
24. Dubey M, Jaiswal J, Abdul Rawoof A, Kumar A, Nitin M, Chhapekar SS, Kumar N, Ahmad I, Islam K, Brahma V, **Ramchiary N** (2019) Identification of genes involved in fruit development/ripening in *Capsicum* and development of functional markers. Genomics [doi.org/10.1016/j.ygeno.2019.01.002](https://doi.org/10.1016/j.ygeno.2019.01.002)
25. M S, Chhapekar SS, Ahmad I, Abraham SK, **Ramchiary N** (2018) Analysis of bioactive components in Ghost chili (*Capsicum chinense*) for antioxidant, genotoxic, and apoptotic effects in mice. DRUG AND CHEMICAL TOXICOLOGY , <https://doi.org/10.1080/01480545.2018.1483945>
26. Choi SR , Yu X, Dhandapani V, Li X , Wang Z, Lee SY, Oh SH, Pang W, **Ramchiary N** et al (2017) Integrated analysis of leaf morphological and color traits in different populations of Chinese cabbage (*Brassica rapa* ssp. *pekinensis*). Theor Appl Genet DOI 10.1007/s00122-017-2914-4
27. M S, Gaur R, Sharma V, Chhapekar SS , Das J, Kumar A , **Ramchiary N** (2016) Comparative Analysis of Fruit Metabolites and Pungency Candidate Genes Expression between Bhut Jolokia and Other *Capsicum* Species. PLoS ONE 11(12): e0167791. doi:10.1371/journal.pone.0167791
28. Singh D, Rawat S, Waseem M, Gupta S, Lynn A, Nitin M, **Ramchiary N** et al (2016) Molecular modelling and simulation studies of recombinant laccase from *Yersinia enterocolitica* suggests significant role in the biotransformation of non-steroidal anti-inflammatory drugs. Biochemical and biophysical research communications 469:306-312

29. Pang W, Kim YY, Li X, Choi SR, Wang Y, Sung C, Im S, **Ramchiary N** et al (2015) Anatomic Characteristics Associated with Head Splitting in Cabbage (*Brassica oleracea* var. *capitata* L.). PloS one 10 (11), e0142202
30. **Ramchiary N**, Pang W, Nguyen VD, Li X, Choi SR, Kumar A, Kwon M, Song HY, Begum S, Kehie M, Yoon MK, Na J, Kim H, Lim YP (2015) Quantitative trait loci mapping of partial resistance to Diamondback moth in cabbage (*Brassica oleracea* L). Theor Appl Genet DOI 10.1007/s00122-015-2501-5
31. Pang W, Li X, Choi SR, Nguyen VD, Dhandapani V, Kim YY, **Ramchiary N**.....(2015) Mapping QTLs of resistance to head splitting in cabbage (*Brassica oleracea* L. var. *Capitata*, Molecular Breeding 35::126
32. Kehie M, Kumaria S, Tandon PK, **Ramchiary N** (2015) Biotechnological advances on in vitro capsaicinoids biosynthesis in capsicum: a review. Phytochemistry Review 14:189–201
33. Kumar A, Sharma KK, Kumar P, **Ramchiary N**(2015) Laccase isozymes from *Ganoderma lucidum* MDU-7: Isolation, characterization, catalytic properties and differential role during oxidative stress (2015) Journal of Molecular Catalysis B: Enzymatic, 113:68-75
34. **Ramchiary N**, Kehie M, Brahma V, Kumaria S, Tandon P(2013) Application of Genetics and Genomics towards capsicum translational research . Plant Biotechnology Reports DOI 10.1007/s11816-013-0306-z
35. Yu X, Choi SR, **Ramchiary N**, Miao X, Lee SH, Sun HJ, Kim S, Ahn CH, Lim YP (2013) Comparative mapping of *Raphanus sativus* genome using *Brassica* markers and quantitative trait loci analysis for the Fusarium wilt resistance trait. Theoretical and Applied Genetics 126 :2553-62
36. Wu J, Liu B, Cheng F, **Ramchiary N**, Choi SR, Lim YP, Wang X (2012) Sequencing of chloroplast genome using whole cellular DNA and Solexa sequencing technology (Frontiers in Plant Science, doi: 10.3389/fpls.2012.00243)
37. Li X\*, **Ramchiary N**\*, Dhandapani V, Choi SR, Hur Y, Nou IS, Yoon MK, Lim YP(2012) Quantitative trait loci mapping in *Brassica rapa* revealed the structural and functional conservation of genetic loci governing morphological and yield component traits in the A,B and C sub-genomes of *Brassica* species. DNA Research, doi:10.1093/dnares/dss029, **\*co-first author**
38. Dhandapani V, Choi SR, Paul P, Kim YK, **Ramchiary N**, Hur Y, Lim YP (2012) Development of EST database and transcriptome analysis in the leaves of *Brassica rapa* using a newly developed pipeline. Gene & Genomics 34:671-679
39. Ge Y, Wang T, Wang Na, Wang Zhe, Liang C, **Ramchiary R**, Choi SR, Lim YP, Piao ZY(2012) Genetic mapping and localization of quantitative trait loci for chlorophyll content in Chinese cabbage (*Brassica rapa* ssp. *pekinensis*) Scientia Horticulturae 147, 42-48
40. The Multinational *Brassica rapa* Genome Sequencing Project Consortium (2011) The genome of the mesopolyploid crop species *Brassica rapa*. Nature Genetics 43:1035-9
41. Ge Y\*, **Ramchiary N**\*, Wang T, Liang C, Wang N, Wang Z, Choi SR, Lim YP<sup>β</sup> and Piao ZY<sup>β</sup> (2011) Mapping quantitative trait loci for leaf and heading-related traits in chinese cabbage (*Brassica rapa* L. ssp. *pekinensis*). Horticulture, Environment and Biotechnology. 52:491-501, **\*co-first author**
42. **Ramchiary N**, Nguyen VD, Li X, Hong CP, Dhandapani V, Choi SR, Yu G, Piao ZY and Lim YP (2011) Genic microsatellite markers in *Brassica rapa*: development, characterization, mapping, and their utility in other cultivated and wild *Brassica* relatives. DNA Research 18:305-20
43. Jiang C\*, **Ramchiary N**\*, Ma Y, Jin M, Feng J, Li R, Wang H, Long Y, Choi SR, Zhang C, Cowling WA, Park BS, Lim YP and Meng J (2011) Structural and functional comparative mapping between the *Brassica* A genomes in allotetraploid *Brassica napus* and diploid *Brassica rapa*. Theoretical and Applied Genetics 123:927-41, **\*co-first author**

44. Dhandapani V, **Ramchiary N<sup>β</sup>**, Paul P, Kim J, Choi SH, Lee J, Hur Y and Lim YP<sup>β</sup> (2011) Identification of potential microRNAs and their targets in *Brassica rapa* L. *Molecules and Cells* 32:21-37, <sup>β</sup>**co-corresponding author**
45. Ge Y\*, **Ramchiary N\***, Wang T, Liang C, Wang N, Wang Z, Choi SR, Lim YP and Piao ZY(2011) Development and linkage mapping of unigene-derived microsatellite markers in *Brassica rapa* L. *Breeding Science*. 61 :160-167, **\*co-first author**
46. Li X\*, **Ramchiary N\***, Choi SR\*, Nguyen VD, Hossain MJ, Yang HK and Lim YP (2010) Development of high density integrated reference genetic linkage map for multinational *Brassica rapa* genome sequencing project. *Genome* 53:939-47, **\*co-first author**
47. Mun JH, Kwon SJ, Seol YJ, Kim JA, Jin M, Kim JS, Lim MH, Lee SI, Hong JK, Park TH, Lee SC, Kim BJ, Seo MS, Baek S, Lee MJ, Shin JY, Hahn JH, Hwang YJ, Lim KB, Park JY, Lee J, Yang TJ, Yu HJ, Choi IY, Choi BS, Choi SR, **Ramchiary N**, et al (2010) Sequence and structure of *Brassica rapa* chromosome A3. *Genome Biology* 11(9):R94
48. Van Dan N, **Ramchiary N**, Choi SR., Uhm TS., Yang TJ., Ahn IO, Lim YP( 2010). Development and characterization of new microsatellite markers in *Panax ginseng* C.A. Meyer from BAC end sequences. *Conservation Genetics* 11: 1223–1225.
49. Piao Z, **Ramchiary N**, Lim YP (2009) Genetics of clubroot resistance in Brassica species *Plant Growth Regulation* (2009) 28:252–264
50. Bisht NC, Gupta V, **Ramchiary N**, Sodhi YS, Mukhopadhyay A, Arumugam N, Pental D and Pradhan AK (2009) Fine mapping of loci involved with glucosinolate biosynthesis in oilseed mustard (*Brassica juncea*) using genomic information from allied species. *Theoretical and Applied Genetics* 118:413–421
51. **Ramchiary N**, Bisht NC, Gupta V, Mukhopadhyay A, N, Sodhi YS, Pental D and Pradhan AK (2007). QTL analysis reveals context-dependent loci for seed glucosinolate traits in oilseed *Brassica juncea*: Importance of recurrent selection backcross (RSB) scheme for the identification of ‘true’ QTL. *Theoretical and Applied Genetics* 116:77-85
52. **Ramchiary N**, Padmaja L, Sharma S, Sodhi YS, Gupta V, Pental D and Pradhan AK (2007). Mapping of yield influencing QTL in *Brassica juncea*: Implications for breeding of a major oilseed crop of dry land areas. *Theoretical and Applied Genetics* 115:807-817

#### **BOOKS EDITED**

1. Ramchiary N and Kole C (2019) *The Capsicum Genome*, Springer International Publishing, Cham.

#### **BOOK CHAPTERS**

1. Islam K, **Ramchiary N**, Kumar A (2023) Databases Relevant to Phytochemicals and Genes That Govern Biosynthesis of the Phytochemicals. In: Swamy MK and Kumar A (eds.), *Phytochemical Genomics: Plant Metabolomics and Medicinal Plant Genomics*, pp 361-377, Springer Nature Singapore.
2. Vijay A, Kumar A, Radhakrishnan AM, Kumar S, Singh K, **Ramchiary N**, Swamy MK( 2023) Emergence of Phytochemical Genomics: Integration of Multi-Omics Approaches for Understanding Genomic Basis of Phytochemicals. In: Swamy MK and Kumar A (eds.), *Phytochemical Genomics: Plant Metabolomics and Medicinal Plant Genomics*, pp 219-261, Springer Nature Singapore.
3. Islam K, Momo J, Rawoof A, Vijay A, Anusree VK, Kumar A, **Ramchiary N** (2023) Integrated Use of Molecular and Omics Approaches for Breeding High Yield and Stress Resistance Chili Peppers. In: Singh S, Sharma D, Sharma SK and Singh R (eds.), *Smart Plant Breeding for Vegetable Crops in Post-genomics Era*, 279-335, Springer Nature Singapore.

4. Vijay A, Kumar A, Islam I, Momo J, **Ramchiary N** (2022) Functional genomics to understand the tolerance mechanism against biotic and abiotic stresses in *Capsicum* species. In: Ali MA and Lee J (eds.), Transcriptome Profiling :Progress and Prospects, pp:305-332, Academic Press.
5. Jaiswal V, Gahlaut V, Chhapekar SS, **Ramchiary N** (2022) Genomic Selection in Solanaceae: Status, Opportunities and Future Prospects. In: Elias AA and Goel S(eds.). Genomic Selection in Plants: A Guide for Breeders, CRC Press.
6. Momo J, Islam K, Kumar K, **Ramchiary N** (2022) Molecular Approaches for Breeding Abiotic Stress Tolerance Traits in Capsicum Species. In: Kole C (ed.). Genomic Designing for Abiotic Stress Resistant Vegetable Crops pp 77–114, Springer, Singapore.
7. Islam K, Kumar K, Yadava SK, Momo J, **Ramchiary N** (2022) Genomic Designing for Breeding Biotic Stress Resistant Pepper Crop: In: Kole C (ed.). Genomic Designing for Biotic Stress Resistant Vegetable Crops pp 65–145, Springer, Singapore.
8. Yadava SK, **Ramchiary N** (2022) Molecular Linkage Mapping in *Brassica juncea* : Founding the Basis for Marker-Assisted Selection. In: Kole C and Mohapatra T (eds.). The *Brassica juncea* Genome: 197-219, Springer Nature Singapore.
9. Yadava SK, **Ramchiary N** (2022) Advanced Molecular Breeding for Yield. In: Kole C and Mohapatra T (eds.). The *Brassica juncea* Genome : 399-412, Springer Nature Singapore.
10. Jaiswal V, Gahlaut V, Kumar N, **Ramchiary N** (2021) Genetics, Genomics and Breeding of Chili Pepper *Capsicum frutescens* L. and Other Capsicum Species. In: Al-Khayri JM, Jain SM and Johnson DV(eds.). Advances in Plant Breeding Strategies: Vegetable Crops, pp 59–86, Springer Cham.
11. Kumar A, Anju T, Archa V, Warriar VP, Kumar S, Goud GK, Kashyap AK, Singh S, Singh P, Kumar R, Sharma S, Radhakrishnan AM, **Ramchiary N** (2021) Mangrove Forests: Distribution, Species Diversity, Roles, Threats and Conservation Strategies. In: Sharma S and Singh P (eds) Mangrove Forests: Distribution, Species Diversity, Roles, Threats and Conservation Strategies. <https://doi.org/10.1002/9781119692621.ch12>, John Wiley & Sons, Ltd.
12. Kumar A, Kumar S, Thuruthiyil DT, **Ramchiary N**, Swamy MK, Ilyas K (2019) Linking Omics approaches to medicinal Plant and Human health. In: Akthar MS and Swamy MK (eds.) Natural Bio-active Compounds, pp 31-57, Springer Singapore, Singapore
13. Ahmad I, Nitin M, Rawoof A, Dubey M, **Ramchiary N** (2019) Noncoding RNAs in Capsicum Genome. In: Ramchiary N and Kole C (eds.) The *Capsicum* Genome. pp. 173–186. Springer International Publishing, Cham .
14. Rawoof A, Ahmad I, **Ramchiary N** (2019) Epigenome Landscape in Capsicum Genome. In: Ramchiary N and Kole C (eds.) The *Capsicum* Genome. pp. 187–199. Springer International Publishing, Cham . [https://doi.org/10.1007/978-3-319-97217-6\\_11](https://doi.org/10.1007/978-3-319-97217-6_11).
15. Jaiswal V, Gahlaut V, Dubey M, **Ramchiary N** (2019) Genes/Quantitative Trait Loci and Associated Molecular Mechanisms Identified in Capsicum Genome for Tolerance to Abiotic and Biotic Stresses. In: Ramchiary N and Kole C (eds.) The *Capsicum* Genome. pp. 121–138. Springer International Publishing, Cham (2019). [https://doi.org/10.1007/978-3-319-97217-6\\_7](https://doi.org/10.1007/978-3-319-97217-6_7).
16. Kumar N, Islam K, **Ramchiary N** (2019) Sequencing of Capsicum Organellar Genomes. In: **Ramchiary N** and Kole C. (eds.) The *Capsicum* Genome. pp. 153–172. Springer International Publishing, Cham (2019). [https://doi.org/10.1007/978-3-319-97217-6\\_9](https://doi.org/10.1007/978-3-319-97217-6_9).
17. Panjabi P, Yadava SK, Kumar N, Bangkim R, **Ramchiary N** (2019) Breeding *Brassica juncea* and *B. rapa* for Sustainable Oilseed Production in the Changing Climate: Progress and Prospects. In: Kole C. (ed.) Genomic Designing of Climate-Smart Oilseed Crops. pp. 275–369. Springer International Publishing, Cham. [https://doi.org/10.1007/978-3-319-93536-2\\_6](https://doi.org/10.1007/978-3-319-93536-2_6).
18. Chhapekar SS, Jaiswal V, Ahmad I, Gaur R, **Ramchiary N** (2018) Progress and Prospects in Capsicum Breeding for Biotic and Abiotic Stresses. In: Vats S. (ed.) Biotic and Abiotic Stress

Tolerance in Plants. pp. 279–322. Springer Singapore, Singapore . [https://doi.org/10.1007/978-981-10-9029-5\\_11](https://doi.org/10.1007/978-981-10-9029-5_11).

19. Bhat TM, Choudhary S, **Ramchiary N.**: Proteomic Responses to Cold Stress. In: Wani, S.H. and Herath, V. (eds.) Cold Tolerance in Plants: Physiological, Molecular and Genetic Perspectives. pp. 111–125. Springer International Publishing, Cham (2018).
20. Chhapekar, SS, Gaur, R, Kumar, A, **Ramchiary N** (2015) Reaping the Benefits of Nextgeneration Sequencing Technologies for Crop Improvement — Solanaceae. In.: Kulski J (ed.) Next Generation Sequencing: Advances, Applications and Challenges. InTech Open, Croatia.
21. Li X, **Ramchiary N**, Dhandapani V, Choi SR, Lim YP (2013) . Omics Applications in Brassica Species. In: Barh D (ed.) OMICS Applications in Crop Science. CRC Press, USA.
22. **Ramchiary N**, Park SY, Lim YP (2011) Classical Breeding and Genetic Analysis of Vegetable Brassicas. In: Sadowski J and Kole C (eds.) Genetics, Genomics and Breeding of Vegetable Brassicas. CRC Press, US
23. **Ramchiary N**, Lim YP (2011) Genetics of *Brassica rapa* L.(2011) In: Schmidt R and Bancroft I (eds.) Genetics and Genomics of the Brassicaceae. pp. 215–260. Springer New York, New York, [https://doi.org/10.1007/978-1-4419-7118-0\\_8](https://doi.org/10.1007/978-1-4419-7118-0_8).

#### **CURRENT RESEARCH PROJECTS**

1. Sequencing of Ghost chili (Bhut jolokia) and *C. frutescens* to develop high throughput molecular markers for genomics assisted trait breeding (CRG/2021/006707), funded by Science and Engineering Research Board, Govt. of India (2022-2025)
2. Identification and functional characterization of transcription factors regulating capsaicinoids biosynthesis in the extremely pungent Bhut jolokia (*Capsicum chinense*), funded by Science and Engineering Research Board, Govt. of India (2023-2026)

#### **COMPLETED PROJECTS**

1. Study the metabolome, transcriptome and proteome of Khera Dapini (*Premna herbacea*), an important medicinal and wild vegetable crop widely used in Northeast India, funded by Science and Engineering Research Board, Govt. of India (2019-2022) , PI
2. Molecular dissection of defense against Sigatoka infection in Banana; exploitation of Musa germplasm of Northeast for Development of Sigatoka resistant hybrid, Funded by DBT, Govt of India (2018-2021), PI
3. Study of Virome, RNAome and leaf curl disease manifestation in Bhut jolokia(*C chinense*) and *C frutescens* of North East India Completed Project Funded by DBT, Govt of India (2018-2021), PI
4. Dissecting Genetic Diversity of Capsaicinoids Complex (pungency) and Yield Component Traits in the Genome of “Bhut Jolokia”, the Hottest Native Chili Pepper of North East India, Funded by DBT, Govt. of India (2012-2017), PI
5. Genomic approach to develop high density single nucleotide polymorphism markers in Bhut jolokia (*Capsicum chinense*) for mapping and identification of genes for economically important traits , Funded by DST, Govt. of India (2014-2017)
6. Comparative profiling of small RNA in different Capsicum Species funded by Department of Biotechnology Govt. of India and Assam Agricultural University (2014-20117), as Co PI
7. Comparative epigenome profiling to identify epigenetic regulation of fruit development in different Capsicum species, funded by University Grants Commission and Jawaharlal Nehru University (2014-2016), PI

## TEACHING

### Jawaharlal Nehru University (2012-Till date )

- M.Sc Students: i) Genetics, and ii) Biodiversity and Evolution, iii) Computational Biology and Bioinformatics
- Ph.D Students: i) Fundamentals of Life Sciences, iii) Computational Biology, iv ) Crop Genomics

### Delhi Technological University (2018- 2020)

- B Tech: i) Genetics, ii) Genomics and Proteomics, iii) Population Genetics
- M.Sc and M. Tech: i) Cell and Developmental Biology, ii) Omics in Medicine

### Gauhati University (2011-2012)

- B.Tech/B.Sc Students: i). Biological Sciences, ii) Genetics and Molecular Biology

## RESEARCH GUIDANCE

- Ph.D Students: 10 Ph.D students degree awarded (4 co supervised), 4 Ph.D ongoing
- M.Sc. students: 6 students completed, 2 ongoing
- Postdocs/Research Scientists: Mentored two NPDF, DST Inspire Faculty, One DST Woman Scientist A and two DBT RA.

## ACADEMIC AND ADMINISTRATIVE RESPONSIBILITIES

- Member, Academic Council, Jawaharlal Nehru University (May 2018 to December 2018)
- Faculty In charge, Botanical Garden and Glasshouse, School of Life Sciences(2017-2018, 2021-till date )
- Faculty in charge, School purchase and store (2016-2018)
- Faculty in charge, Summers School, School of life Sciences, Jawaharlal Nehru University (2015 and 2017)
- Member, M.Phil/Ph.D seminar committee School of life Sciences, Jawaharlal Nehru University (2015 to 2018)
- Observer, M.Phi/Ph.D interview, Jawaharlal Nehru University(2018 and2019)
- Member, syllabus development and updating committee, Department of Biotechnology, Delhi Technological University (2019)
- Member, Board of Studies, Department of Biotechnology, Delhi technological University (2019 onwards)
- Deputy coordinator, M.Sc, M.Tech and Ph.D admission (2019-2020) Department of Biotechnology, Delhi technological University.

## SEMINARS/SYMPOSIUM/WORKSHOP ORGANIZED

- Organizing secretary, National Seminar on “Impact of Climate Change on Indian Agriculture and Plant Productivity”, School of life Sciences, Jawaharlal Nehru University, 23-24 March, 2018.
- Organizing Secretary, symposium on “Advances in human and molecular genetics, school of life sciences, and Jawaharlal Nehru University, 31<sup>st</sup> January, 2017
- Co convener, National workshop on “Research Methodology & Biostatistics : Application in Biomedical Science/ Biological Science, sponsored by Department of Biotechnology, Govt. of India , Department of Biological Science, Gauhati University, 4-6 October, 2012
- Organizing secretary, International Symposium on Plants to Medicine: Advances in Genome Biology, Department of Biological Sciences, Gauhati University Institute of Science and Technology, 30<sup>th</sup> April, 2012.



### **Selected Invited Lectures on National and International Seminars/Symposia/Workshops**

1. Delivered an invited lecture on the topic “Analysis of Differential Expression of Genes in Plants” in the national Workshop on “Advance Techniques in Plant Stress Biology (November 7-13) on November 11 at Gauhati University, Assam, India.
2. Delivered an invited lecture on the topic “Comparative, Functional and Evolutionary Genomics of Capsicum species’ in the Second Hands on Training in “next generation Sequencing Data analysis (20<sup>th</sup> to 22<sup>nd</sup> September, 2022)” on 22<sup>nd</sup> September , 2022, organized by the Department of Molecular Biology and Bioinformatics, Tamil Nadu Agricultural University, Coimbatore.
3. Delivered an invited lecture on “Searching the Ghost in Northeast Chilli” in the International Conference on “Advances and Innovations in Biotechnology and Allied Sciences (AIBAS-22)” from 24-25 March, 2022, Chandigarh University, Chandigarh, India.
4. Application of DNA barcoding in host plant identification and ecological conservation of Seribicigenous insects of Northeast India, National Workshop on Wildlife Ecology and Seribioresources (BIOCONVERSE 2018), Manas National Park, Assam, from 30 January to 01 February 2018.
5. Evolution of pungency diversity in Capsicum germplasm of Northeast India, ADNAT Silver Jubilee International Symposium on Biodiversity and Biobanking (BIODIVERSE 2018) , Indian Institute of Technology, Guwahati, from 27-29 January 2018.
6. Towards understanding the molecular basis of Fiery Hot pepper Bhut Jolokia, Genomics Analysis and Technology Conference, 8- 9 January, 2017, Guwahati, Assam.
7. Application of molecular markers towards translational research of vegetable crops, National short training course sponsored by ICAR and organized by Department of Vegetable Sciences, Punjab Agricultural University, Ludhiana, 1<sup>st</sup> December 2015.
8. Development of Translational Genomics Tools for Crop Improvement, National Seminar organized by the Department of Botany, Arya Vidyapeeth College, Guwahati, Assam, India, 7<sup>th</sup> November, 2015.
9. Genetic dissection of complex traits, National training workshop organized by the Division of Plant Biotechnology ICAR at Indian Institute of Pulses Research Kanpur 208 024, Uttar Pradesh, India, 17<sup>th</sup> September 2015.
10. Application of Genomics in Crop Breeding, National Training workshop organized by the ICAR-National Research Center on Plant Biotechnology (NRCPB), PUSA, New Delhi 110012, 19<sup>th</sup> May, 2015.
11. Application of Next Generation Sequencing in Plant Translational research, National workshop on next generation sequencing Techniques of DNA, Institute of Advanced Study in Science and Technology, Guwahati 20-21 October, 2014
12. Translational Research for Improving Nutritional Quality in Oilseed and Vegetable Brassicas, National symposium organized by Pantnagar Biotechnology Program & Society for Plant Biochemistry and Biotechnology, G. B. Pant University of Agriculture & Technology, Pantnagar, India during 4-6 March,2016
13. Genetics and genomics of vegetable Brassicas, Second Brassica National Workshop, Punjab Agricultural University, Ludhiana,15-16 February, 2014
14. Comparative Genomics of Brassicaceae, DBT sponsored National Seminar on “Prospects of Molecular Biological and Biotechnological Applications for Human Welfare” on 11 & 12th May, 2012 organized by Department of Biotechnology, Pandu College., Guwahati.
15. Dissecting Glucosinolates Biosynthesis Pathway Genes for Engineering Better Nutritional Quality in Brassicas, International Symposium on International Symposium on BIOENGINEERING 2012, 10 December, 2012

16. Prospects of Integrating Genomics and Metabolomics for Improvement of Host Plants in Sericulture, International Consultative Meeting on International Consultative Meeting on SERIBIOTECHNOLOGY 2012,5-7 December 2012, Institute of Bioresources and Sustainable Development (IBSD) Takyelpat, Takyelpat, Imphal
17. Identification of potential miRNA and Their targets in *Brassica rapa*, 17th Crucifer genetics workshop, Brassica 2010,5-8 Sept,2010 National Research Council of Canada, Plant Biotechnology Institute , Saskatoon, Canada.
18. Genome Analysis: Finding the molecular Basis of Life, Capacity building on Biology Teaching, BN college of Agriculture, Assam Agriculture University, December 2011
19. Impact of Genome mapping in Crop Genetics, As Resource Person, 27-29 October, 2011, Biotech Hub, Arya Vidyapeeth College, Guwahati, Assam.