CH. CHARAN SINGH UNIVERSITY, MEERUT
FACULTY PROFILE

Name	**SACHIN KUMAR**		
Qualification	M.Sc. (Ag.), Ph.D.		
Designation	Assistant Professor		
Department	Genetics and Plant Breeding		
Present address	House No.: C-10, Ch. Charan Singh University Campus, Meerut – 250 004, UP, India		
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Brief Introduction

I (DOB: April 03, 1982) obtained my Ph.D degree in Genetics and Plant Breeding from Chaudhary Charan Singh University, Meerut in 2012. I worked for my Ph.D on "Physical mapping of DNA-based molecular markers and genome analysis in bread wheat" under the joint supervision of Professor H.S. Balyan and Professor P.K. Gupta. Subsequently, I was awarded with a highly prestigious "Natural Sciences and Engineering Research Council of Canada (NSERC) Visiting Fellowships" under *Canadian Government Laboratories Program* at Swift Current Research and Development Centre (formerly, Semiarid Prairie Agricultural Research Centre), Agriculture and Agri-food Canada (AAFC), Swift Current, Saskatchewan, Canada for three years (2012-15). At AAFC, I worked with Dr. Ron Knox on a research project entitled "Canadian *Triticum* Advancement through Genomics" funded by Genome Canada.

While working as Post-doctoral Fellow, I was appointed as Assistant Professor at Ch. Charan Singh University, Meerut and presently working at Department of Genetics and Plant Breeding, since March 2015. I have published >30 research articles in peer reviewed Journals *e.g.*, BMC Genomics, BMC Research Notes, Theoretical and Applied Genetics, Euphytica, PLoS One, Field Crop Research, Canadian Journal of Plant Pathology, Molecular Breeding, APS Plant Health Progress, Molecular Genetics and Genomics, International Journal of Molecular Sciences, Gene Reports, etc. My research area covers Plant Genomics and Molecular Breeding in cereal crops particularly wheat, which include development of molecular markers, high-throughput SNP genotyping, construction of high-density genetic maps, physical and radiation hybrid maps, comparative mapping, phenomics, QTL interval mapping, genome-wide association studies (GWAS), stress genomics, marker-assisted selection for agronomically important traits.

In 2017, Science and Engineering Research Board (SERB) of Department of Science and Technology (DST), New Delhi, India awarded me an **Early Carrier Research Award (ECRA)**. I am Principal Investigator in an International collaborative research project "**Improved Wheat for Heat Tolerance and Climate Resilience**" funded by USAID (USA) and DBT-BIRAC (India). In addition, I am Co-

Principal Investigator in two research projects on drought tolerance and rust resistance both funded by Department of Biotechnology (DBT), New Delhi, Government of India.

Areas of Research

Genetic improvement of wheat, one of the most demanding food-grain crop. In addition to teaching responsibilities, my research is involved to exploit wheat germplasm and utilize genomics based technologies to map, validate, introgress and express favorable alleles/enzymes controlling complex traits such as yield and to improve resilience for adverse climate.

Research Experience

I have gained expertise in the following areas while working for the past more than 10 years in the areas of wheat breeding and genomics:

- High-throughput SNP genotyping, QTL interval mapping, GWAS
- Synteny analysis among cereal's genomes
- Induced mutagenesis and gene characterization
- Comparative genomics (Identification of genes AGPase/TT1/SIZ1 through bioinformatics)
- Gene expression analysis
- Enzymatic assay for AGPase genes
- Marker-assisted selection
- Breeding for heat/drought tolerance, disease resistance, grain quality

For the last more than five years, he has worked extensively on the development and mapping of molecular markers in tetraploid and hexaploid wheat, leading to array-based high-throughput SNP genotyping, construction of high-density SNP genetic maps and conducting QTL analysis for grain quality, disease resistance, heat tolerance and other agronomic traits in wheat. He also gained expertise for development and use of KASP (Kompetitive Allele Specific PCR) markers, designed from sequences of SNPs flanking important QTL and finding candidate genes.

Career Profile

Designation	University/Institution	Duration	Responsibility
Assistant Professor (Stage II)	Department of Genetics & Plant Breeding, Ch. Charan Singh University, Meerut, UP, India	February 2015 to Continue	Teaching and Research (M.Sc. Ag., M.Phil. and Ph.D.)
Post-doctoral Fellow of Natural Science and Engineering Research Council (NSERC) of Canada	Swift Current Research and Development Centre (formerly, Semiarid Prairie Agricultural Research Centre) of Agriculture and Agri-Food Canada (AAFC),	Two years and three months (November, 2012 to February-2015)	Project handled; prepared and submitted quaternary progress reports of the projects; oral presentation of research progress of the project once in a year; worked in laboratory and

	Swift Current – S9H 3X2, Saskatchewan, Canada		protocol standardization; conducted experimental trials in greenhouse and in field; supervised summer students
Research Associate	Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, UP	Three months (August, 2012 to October 2102)	Prepared six months progress report of the project; laboratory management; conducted field trial; taught M.Sc. students in the department
Senior Research Fellow	Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, UP	Three years and two months (June, 2009 to July, 2012)	Prepared six months progress report of the project; laboratory management; conducted field trial; taught M.Sc. students in the department
Visiting Fellow	Department of Plant Sciences, North Dakota State University, Fargo, ND, USA	Five months (June to October, 2007)	Conducted research work in the laboratory, conducted experiments of wheat in greenhouse and field; prepared and submitted reports
Junior Research Fellow	Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, UP	Three years and five months (Dec., 2005 to May, 2009)	Prepared six months progress report on the project; laboratory management; conducted field trials

Research Projects (03 Ongoing)

Title/ Subject of Research Project	Period	Total Cost of the Project (Rs.)	Name of Funding Agency	Expected outcome/product	PI/ Co-PI
Development of heat tolerant, high yielding and climate resilient wheat cultivars by utilizing genomics, molecular and physiological information and resources (No.: BIRAC/TG/USAID/08/2014)	2017-2022 (Five years)	Rs. 1,38,42,000/- sanction to CCSU from the total cost Rs. 820.79 Lakhs sanctioned to all network centers	USAID – BIRAC	To develop high yielding heat tolerant wheat varieties	Sachin Kumar (PI)/ Prof. HS Balyan (Co-PI) and Prof. PK Gupta (Co-PI)

Marker-Assisted Breeding and Mapping of QTLs for Drought Tolerance in Wheat (No. BT/PR15781/AGIII/103/910/2015)	2018-2021 (Three years)	Rs. 28,48,200/- sanction to CCSU from the total amount Rs. 1,20,89,200/- sanctioned to all network partners	DBT, New Delhi	To improve wheat varieties for drought tolerance	Prof. P.K. Sharma (PI)/ Sachin Kumar (Co-PI)
Pyramiding of Rust Resistance Genes into High Grain Quality Wheat Lines Developed Through Marker-assisted Selection (No. BT/PR21024/AGIII/103/925/2016)	2018-2021 (Three years)	Rs. 50,96,400/- sanction to CCSU from the total amount Rs. 2,12,17,200/- sanctioned to all network partners	DBT, New Delhi	To improve wheat varieties for rust resistance by gene pyramiding	Prof. P.K. Sharma (PI)/ Sachin Kumar (Co-PI)

Research Projects (02 Completed)

Title/ Subject of Research Project	Period	Total Cost of the Project	Name of Funding Agency	Expected outcome/product	PI/ Co-PI
"QTL analysis for seed dormancy and pre-harvest sprouting tolerance in bread wheat (*Triticum aestivum* L.) using a high-density genetic map" under UGC-BSR Research Start-Up-Grant	2016-2018 (Two years)	Rs. 6,00,000/- (Rupees Six Lakhs Only)	University Grant Commission (UGC)	Creation of phenotypic facilities, Development of Physical map, genetic dissection of chromosomal regions controlling pre-harvest sprouting tolerance	Sachin Kumar (PI)
"Identification of Quantitative Trait Loci and Underlying Candidate Genes for Seed Dormancy and Pre-harvest Sprouting Tolerance in Common Wheat" under Early	2017-2020 (Three years)	Rs. 52,47,872/- (Rupees Fifty Two Lakhs Forty Seven Thousand Eight Hundred and	DST – Science and Engineering Research Board (SERB)	Identified QTL/ genes for PHS tolerance and seed dormancy, gene prediction, development and validation of trait-	Sachin Kumar (PI)/ Prof. H. S. Balyan (Co-PI)

Carrier Research Award (ECRA)		Seventy Two Only)		linked markers for breeding	

Research Publications

(a) Research articles

1. Kumar J, Mir RR, Shafi S, Sen Gupta D, Djalovic I, Miladinovic J, Kumar R, **Kumar S**, Kumar R. (2022) Genomics associated interventions for heat stress tolerance in cool season adapted grain legumes. Int J Mol Sci. 23(1):399.
2. Kumar S, Singh VP, Saini DK, Sharma H, Saripalli G, **Kumar S**, Balyan HS, Gupta PK (2021) Meta-QTLs, ortho-MQTLs, and candidate genes for thermotolerance in wheat (*Triticum aestivum* L.). Mol Breeding 41: 69.
3. Gautam T, Kumar K, Agarwal P, Tyagi S, Jaiswal V, Gahlaut V, **Kumar S**, Prasad P, Chhuneja P, Balyan HS, Gupta PK (2021) Development of white-grained PHS-tolerant wheats with high grain protein and leaf rust resistance. Mol Breeding 41: 42.
4. Singh K, Batra R, Sharma S, Saripalli G, Gautam T, Singh R, Pal S, Malik P, Kumar M, Jan I, Singh S, Kumar D, Pundir S, Chaturvedi D, Verma A, Rani A, Kumar A, Sharma H, Chaudhary J, Kumar K, Kumar So, Singh VK, Singh VP, **Kumar S**, Kumar R, Gaurav SS, Sharma S, Charma PK, Balyan HS, Gupta PK (2021) WheatQTLdb: A QTL database for wheat. Mol Genet Genomics 296: 1051–1056.
5. **Kumar S**, Fetch TG, Knox RE, Singh AK, Clarke JM, DePauw RM, Cuthbert RD, Campbell HL, Singh D, Bhavani S, Pozniak CJ, Meyer B, Clarke FR (2021) Mapping of Ug99 stem rust resistance in Canadian durum wheat. Can. J. Plant Pathol. 43 (4): 599–611
6. Kumar J, **Kumar S**, Kianian SF (2020) The wheat dwarf India virus-betasatellite complex has a wider host range that previously reported. Plant Health Progress 21:119-122
7. **Kumar S**, Knox RE, Singh AK, DePauw RM, Campbell HL, Isidro-Sanchez J, et al. (2018) High-density genetic mapping of a major QTL for resistance to multiple races of loose smut in a tetraploid wheat cross. PLoS ONE 13(2): e0192261 (Impact factor: 3.54)
8. Singh A, Knox RE, DePauw RM, Singh AK, Cuthbert RD, **Kumar S**, Campbell HL (2016) Genetic mapping of common bunt resistance and plant height QTL in wheat. Theor Appl Genet 129 (2):243-256
9. **Kumar S**, Knox RE, Clarke FR, Pozniak CG, DePauw RM, Cuthbert R, Fox S (2015) Maximizing the identification of QTL for pre-harvest sprouting resistance using seed dormancy measures in white-grained common wheat population. Euphytica 205:287–309
10. Agarwal P, Jaiswal V, **Kumar S**, Balyan HS, Gupta PK (2015) Chromosome mapping of four novel mutants of common wheat (*Triticum aestivum* L.). Acta Physiol Plant 37:66
11. Agarwal P, **Kumar S**, Mir RR, Balyan HS, Gupta PK (2014) Some ENU induced mutations: a resource for functional genomics in bread wheat. Plant Mut Rep 3 (1): 9-17

12. **Kumar S**, Goyal A, Mohan A, Balyan HS, Gupta PK (2013) An integrated physical map of simple sequence repeats in bread wheat. Aus J Crop Sci 7: 760-766
13. Balyan HS, Gupta PK, **Kumar S**, Dhariwal R, Jaiswal V, Tyagi S, Agarwal P, Gahlaut V, Kumari S (2013) Genetic improvement of grain protein content and other health-related constituents of wheat grain. Plant Breeding 132 (5): 446-457
14. **Kumar S**, Balyan HS, Gupta PK (2012) Comparative DNA sequence analysis involving wheat, brachypodium and rice genomes using mapped wheat ESTs. Triticeae Genomics Genetics 3: 25-37
15. Kumar A, Bassi FM, Paux E, Al-Azzam O, de Jimenez MM, Denton AM, Gu Y, Huttner E, Kilian A, **Kumar S**, Goyal A, Iqbal MJ, Tiwari V, Dogramaci M, Balyan HS, Dhaliwal HS, Gupta PK, Randhawa GS, Feuillet C, Pawlowski WP, Kianian SF (2012) DNA repair and crossing over favor similar chromosome regions as discovered in radiation hybrid of Triticum. BMC Genomics 13: 339-362
16. Kumar J, Jaiswal V, Kumar A, Mir RR, **Kumar S**, Dhaliwal R, Balyan HS, Gupta PK (2011). Introgression of a major gene for high grain protein content in some bread wheat cultivars. Field Crops Res 123: 226-233
17. Gupta PK, Balyan, HS, Mir RR, Kumar J, Kumar A, **Kumar S**, Jaiswal V, Tyagi S, Kumari S (2011) QTL analysis, association mapping and marker-assisted selection for some quality traits in bread wheat – An overview of the work done at CCS University, Meerut. J Wheat Res 3 (2): 1-11
18. Kulwal PL, Mir RR, **Kumar S**, Gupta PK (2010). QTL analysis and molecular breeding for seed dormancy and pre-harvest sprouting tolerance in bread wheat. J Plant Biol 37 (1): 59–74
19. **Kumar S**, Mohan A, Balyan HS, Gupta PK (2009). Orthology between genomes of Brachypodium, wheat and rice. BMC Res Notes 2: 93
20. **Kumar S,** Vaishali, Rai PK, Purushottam (2006). Biochemical characterization and antibiotic sensitivity tests of isolated microbial flora from bovine faeces. Prog Agric 6: 12-16

(b) <u>Book chapters</u>

1. **Kumar S.**, Kumar M., Mir R.R., Kumar R. (2021) Advances in Molecular Markers and Their Use in Genetic Improvement of Wheat. In: Wani S.H., Mohan A., Singh G.P. (eds) Physiological, Molecular, and Genetic Perspectives of Wheat Improvement. Springer, Cham. https://doi.org/10.1007/978-3-030-59577-7_8
2. Kumar R., **Kumar S.**, Sharma S., Kumar R. (2021) Genetics and Breeding of Fe and Zn Improvement in Wheat. In: Wani S.H., Mohan A., Singh G.P. (eds) Physiological, Molecular, and Genetic Perspectives of Wheat Improvement. Springer, Cham. https://doi.org/10.1007/978-3-030-59577-7_5
3. Mir R.R., **Kumar S.**, Shafi S. (2021) Genetic Dissection for Yield and Yield-Related Traits in Bread Wheat (*Triticum aestivum* L.). In: Wani S.H., Mohan A., Singh G.P.

(eds) Physiological, Molecular, and Genetic Perspectives of Wheat Improvement. Springer, Cham. https://doi.org/10.1007/978-3-030-59577-7_10

(c) Annual wheat Newsletter

1. Gupta PK, Balyan HS, Sharma PK, Gaurav SS, Sharma S, Kumar R, **Kumar S**, Sharma S, Singh K, Batra R, Saripalli G, Gautam T, Rakhi, Pal S, Jan I, Rani A, Kumar A, Kumar K, Kumar M, Singh S, Kumar S, Pratap V, Sharma H, Chaturvedi D, Malik P, Singh VK, Kumar D, Pundir S, Verma A, Nagar J, Bhadana D (2021) Genetic, molecular breeding, and epigenetic studies for a variety of traits in wheat. Ann Wheat Newsletter 67: 16-24
2. Gupta PK, H.S. Balyan, P.K. Sharma, S.S. Gaurav, Shailendra Sharma, Rahul Kumar, **Sachin Kumar**, Shiveta Sharma, Kalpana Singh, Ritu Batra, Gautam Saripalli, Tinku Gautam, Rakhi, Sunita Pal, Irfat Jan, Anuj Kumar, Kuldeep Kumar, Manoj Kumar, Sahadev Singh, Sourabh Kumar, Vivudh Pratap, Hemant Sharma, Deepti Chaturvedi, Parveen Malik, Vikas Kumar Singh, and Anjali Verma; and Deepak Kumar and Saksham (2020) Genetic and epigenetic studies for a variety of traits in wheat in genomics era. Ann Wheat Newsletter 66: 27-36
3. Gupta PK, H.S. Balyan, P.K. Sharma, Shailendra Sharma, **Sachin Kumar**, Kalpana Singh, Ritu Batra, Supriya Kumar, Jitendra Kumar, Gautam Saripalli, Tinku Gautam, Rakhi, Sunita Pal, Anuj Kumar, Irfat Jan, Kuldeep Kumar, Manoj Kumar, Divya Malik, Sourabh Kumar, Vivudh P Singh, Hemant Sharma, Deepti Chaturvedi, and Parveen Malik (2019) QTL mapping for pre-harvest sprouting tolerance. Ann Wheat Newsletter 65: 20-27
4. Gupta PK, Balyan HS, Kumar J, Mir RR, **Kumar S**, Kumar R, Jaiswal V, Tyagi S, Agarwal P, Gahlaut V, Kumari S (2013) Molecular breeding, induced mutagenesis, and transcriptome analysis in wheat. Ann Wheat Newsletter 59: 20-26
5. Gupta PK, Balyan HS, Kumar J, Mohan A, Kumar A, Mir RR, **Kumar S**, Kumar R, Jaiswal V, Tyagi S, Agarwal P, Gahlaut V, Das M and Banerjee S (2010). Deployment of molecular markers for the improvement of some important quality traits in bread wheat. Ann Wheat Newsletter 56: 60-65
6. Gupta PK, Balyan HS, Kumar J, Mohan A, Kumar A, Mir RR, **Kumar S**, Kumar R, Kumari P, Bhalla V, Jaiswal V, Banerjee S and Das M (2009). Development and use of molecular markers for wheat genomics and breeding. Ann Wheat Newsletter 55: 66-71
7. Gupta PK, Balyan HS, Kumar J, Mohan A, Goyal A, Kumar A, Mir RR, **Kumar S**, Kumar R, Banerjee S and Das M (2008). Development and use of molecular markers for wheat genomics and breeding. Ann Wheat Newsletter 54: 59-63

(d) Conference Proceedings

1. Balyan HS, Gupta PK, Goyal A, Mohan A and **Kumar S** (2008) Integrated physical map of bread wheat containing 2,120 simple sequence repeat loci. In: 3rd Asian Chromosome Colloquium (ACC): Advance in Chromosome Science, Osaka, Japan Vol. 3, pp. 87-91, December 1-4, 2008.

2. Michalak M, Kumar A, Riera-Lizarazu O, Gu Y, Paux E, Choulet F, Feuillet C, **Kumar S**, Goyal A, Tiwari V, Dogramaci M, Hegstad J, Peckrul A, Kalavacharla V, Hossain K, Balyan HS, Dhaliwal HS, Gupta PK, Randhawa GS, Maan SS and Kianian SF (2008) High-resolution radiation hybrid mapping in wheat: an essential tool for the construction of wheat physical maps. In: 11th International Wheat Genetics Symposium (IWGS), Brisbane, Australia, pp. 24-67, August 24-29, 2008.
3. Gupta PK, Balyan HS, Goyal A, Mohan A and **Kumar S** (2008) An integrated physical map of 2,072 SSRs loci (gSSR and EST-SSR) in bread wheat. In: 11th International Wheat Genetics Symposium (IWGS), Brisbane, Australia, pp. 333-335, August 24-29, 2008.

Abstracts (accepted Poster/Oral presentation in National/International conference)

1. Malik D, **Kumar S**, Batra R (2020) Identification and sequence diversity of KNOX4 gene in different plant species with emphasis on wheat. In: The 1st International e-Conference (iCiAsT 2020) on "Innovative Approaches in Agriculture, Applied Sciences and Technologies" under the theme of "Importance of Biodiversity and Bioresources in the Post COVID Era", December 14-15, 2020 (Oral).
2. Bokore FE, Knox RE, Cuthbert RD, Fetch T, Berraies S, Campbell HL, N'diaye A, Pozniak CJ, Sharpe AG, Hiebert CW, McCartney C, **Kumar S**, Ruan Y, Meyer B (2020) A stem rust resistance QTL located on chromosome 5D in two contemporary Canadian spring wheat varieties. *PE0940*: International Plant & Animal Genome (PAG) XXVIII, San Diego, CA, USA, January 11-15, 2020.
3. Kumar M, Prakash R, Saripalli G, **Kumar S**, Balyan HS (2019) Association mapping for pre-harvest sprouting tolerance in wheat (*Triticum aestivum* L.). Poster presentation: International conference on Genomics and Breeding for Crop Improvement (December 4-6, 2019), Depart of Genetics and Plant Breeding Ch. Charan Singh University, Meerut (UP).
4. Malik D, Batra R, **Kumar S** (2019) Computational identification of KNOX4 gene in wheat and its comparative analysis among monocot and dicot species. *In:* 14th Agricultural Science Congress (February 20-23, 2019), NASC Complex, New Delhi.
5. Berraies S, Campbell HL, Knox RE, Cuthbert RD, Ruan Y, Bhadauria V, Meyer B, **Kumar S,** Depauw RM (2018) Genetic analysis of ergot resistance in a Canada Western Red Spring Wheat population. *P05*: CPS-QSPP Joint Meeting, June 17 – 20, 2018, Quebec, Canada.
6. **Kumar S**, Knox RE, Isidro J, Ruan Y, Cuthbert RD, Clarke F, Pozniak CJ, N'Diaye A, Meyer B, Singh AK, Clarke JM, DePauw RM (2017) Identification of genomic regions determining the grain quality and agronomic characters in durum wheat. *P0850*: International Plant & Animal Genome (PAG) XXV, San Diego, CA, USA, January 14-18, 2017.
7. **Kumar S**, Knox RE, Singh AK, Fetch Jr TG, Singh D, Bhavani S, Cuthbert RD, Ruan Y, Pozniak CJ, Campbell HL, Meyer B (2016) Identification of QTL for resistance to Ug99 races of stem rust in durum wheat. *P0890*: Plant & Animal Genome XXIV Conference, San Diego, CA, USA, January 9-13, 2016.

8. **Kumar S**, Knox RE, Clarke FR, Cuthbert RD, Pozniak CJ, DePauw RM and He Y (2015) High-density SNP mapping and quantitative trait locus analysis of glaucousness and leaf colour in common wheat. *P062*: Plant & Animal Genome XXIII Conference, San Diego, CA, USA, January 10-15, 2015.

9. Cuthbert RD, **Kumar S**, Knox RE, Clarke FR, Pozniak CJ, Hucl P, DePauw RM and He Y (2015) High-density SNP mapping and quantitative trait locus analysis of agronomic traits in common wheat. *P058*: Plant & Animal Genome XXIII Conference, San Diego, CA, USA, January 10-15, 2015.

10. **Kumar S**, Knox RE, Clarke FR, Clarke JM, Pozniak CJ, Isidro J, Singh AK, Cuthbert RD, DePauw RM, Campbell HL and Somers DJ (2014) QTL mapping for resistance to loose smut in a durum wheat doubled haploid population. In: Canadian Society of Agronomy (CSA) Annual Meeting and Joint Conference with Canadian Society of Horticultural Sciences, University of Lethbridge, Lethbridge Alberta, Canada, July 10-12, 2014.

11. **Kumar S**, Knox RE, Clarke FR, Pozniak CJ, DePauw RM, Cuthbert RD and Fox S (2014) Fine mapping of pre-harvest sprouting resistance associated QTL in white-grained wheat. In: 2nd Canadian Wheat Symposium, Saskatoon, SK, Canada, June 08-11, 2014.

12. Knox RE, **Kumar S**, Fetch T, Singh AK, Clarke, JM, DePauw RM, Cuthbert RD, Campbell HL, Singh D, Bhavani S, Pozniak CJ and Clarke FR (2014) Identification of quantitative trait loci for stem rust resistance in durum wheat. In: Canadian Wheat Alliance, Saskatoon, SK, Canada, April 07-08, 2014.

13. DePauw RM, Cuthbert RD, Knox RE, **Kumar S**, Singh A, Singh AK, Campbell H, Bhavani S, Singh D, Fetch T and Clarke FR (2014) Evidence for recombination of *Sr2* and *Fhb1* genes. In: Borlaug summit on wheat for food security, CIMMYT, Ciudad Obregon, Mexico. March 25-28, 2014.

14. Supriya Kumari, **Kumar S**, Dhariwal R, Gill BS, Sehgal SK, Feuillet C, Sourdille P, Balyan HS and Gupta PK (2014) *In silico* identification of a putative gene *TaGS5-3A*, an ortholog of rice *OsGS5* associated with grain size in wheat. *In*: National Conference on: Science of Omics for Agricultural Productivity: Future Perspectives, Department of Molecular Biology and Genetic Engineering, G. B. Pant University of Agricultural & Technology, Pantnagar, Uttrakhand. March 04-06, 2014.

15. Knox RE, Singh A, **Kumar S**, DePauw RM, Clarke FR, Cuthbert RD, Singh AK, Pozniak CJ and Campbell HL (2014) Epistasis and preliminary fine mapping of quantitative trait loci for common bunt resistance. *P259*: Plant & Animal Genome XXII Conference, San Diego, CA, USA, January 11-15, 2014.

16. Gupta PK, Balyan HS, **Kumar S**, Kumar R, Jaiswal V, Tyagi S, Agarwal P, Gahlaut V and Kumari S (2012) Marker-assisted selection for crop improvement of some major crops in India. Plant & Animal Genomes XX Conference, San Diego, CA, USA, January 14-18, 2012.

17. Balyan HS, **Kumar S**, Kumar R, Jaiswal V, Tyagi S, Agarwal P, Gahlaut V and Gupta PK (2011) Molecular markers for genetic dissection and improvement of some grain

quality traits in bread wheat. IUSSTF, NASC Complex, New Delhi, India, October 29-31.

18. Tyagi S, Mir RR, **Kumar S**, Balyan HS and Gupta PK (2011) Marker-assisted pyramiding of four grain quality traits and leaf rust resistance in Indian bread wheat cv. PBW343. Proceedings of 21st International Triticeae Mapping Initiative (ITMI), Mexico, September 5-9, 2011
19. **Kumar S**, Balyan HS and Gupta PK (2011) Comparative DNA sequence analysis involving wheat *Brachypodium* and rice genomes using mapped wheat ESTs. In: Plant Genome Evolution: A Current Opinion Conference held in Amsterdam, The Netherlands, September 4-6, 2011.
20. Gupta PK, Balyan HS, Kumar J, Kumar A, Mir RR, **Kumar S**, Jaiswal V and Tyagi S (2010). QTL analysis, association mapping and marker-assisted selection for some quality traits in bread wheat. Proceedings of 3rd International Conference on Plant Molecular Breeding (ICPMB), September 5-9, 2010, Beijing, China.
21. Gupta PK, Balyan HS, Kumar J, Mir RR, **Kumar S**, Jaiswal V and Tyagi S (2010). Marker-assisted selection (MAS) for wheat breeding in India. Proceedings of 20th International Triticeae Mapping Initiative (ITMI) and 2nd Wheat Genomics in China (WGC), September 1-5, 2010, Beijing, China.

Conference/symposium/workshop Organized

1. Worked as Coordinator for organizing an international e-conference (webinar) on **"Genetics and Plant Breeding Research in Post COVID-19 Era"** held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, June 13-14, 2020.
2. Worked as conference coordinator for organizing an international conference on **"Genomics and Breeding for Crop Improvement"** held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, December 04-06, 2019.
3. Organized International workshop on **GBS Data Handling and an Acquaintance with SAS** at Dr. Rajendra Prasad Central Agricultural University (DRPCAU), Pusa, Samastipur, Bihar during February 02-12, 2019.
4. Worked as joint organizing secretary for international conference on **"100 Year of Cytogenetics: Its Impact on Crop Improvement"** held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, November 03-04, 2018.
5. Worked as joint organizing secretary for international conference on **"Genomics and Translational Research in Crop Improvement"** held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, December 14-16, 2016.
6. Worked as joint organizing secretary for national symposium on **"Genomics and Molecular Breeding"** held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, March 28-29, 2016.
7. Worked as a member of the organizing committee in two days training workshop on **"R package for genetical data analysis"** was organized during January 09-10, 2016 held

in the Department of Genetics and Plant Breeding, Ch. Charan Singh, University, Meerut.

8. Indo-US conference (sponsored by Indo-US Science and Technology Forum, Department of Science and Technology, New Delhi) on **Development and Use of Molecular Markers for Crop Improvement,** organized by Ch. Charan Singh University, Meerut, held at the National Acedamy of Agricultural Sciences (NAAS) Complex, New Delhi during October 28-31, 2011
9. Indo-Chinese Bilateral workshop on **Plant Genomics and Quantitative Genetics**, held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, February 14-16, 2009
10. Seminar-cum-workshop on **Bioresource Conservation & Utilization**, organized by Life Science Faculty, Ch. Charan Singh University, Meerut during March 27-29, 2009.
11. International symposium on **Molecular Basis of Plant Breeding**, held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, February 26-28, 2007.
12. National Seminar on **Molecular Cytogenetics & Crop Breeding**, held in the Department of Genetics and Plant Breeding, Ch. Charan Singh University, Meerut, November 5-6, 2005.

Training/Workshop/Symposium/Conference attended

1. Participated an online International Workshop on "Advance Statistical Data Analysis Using SPSS" organized by Science Tech Institute, Lucknow (UP) for one week during September 21-27, 2021.
2. Participated in a two days training workshop on **"R Package for Genetical Data Analysis"** during January 09-10, 2016 held in the Department of Genetics and Plant Breeding, Ch. Charan Singh, University, Meerut.
3. Attended a National Seminar on "Challenges in Plant Sciences: Now and Then" during December 08 – 10, 2015 at Department of Botany, CCS University, Meerut.
4. Attended an Interactive Seminar on "Role of CST UP Promotion of Science & Technology and Facilitation of IPR Protection" on March 18, 2015 at CCS University, Meerut.
5. Participated in **18th Summer Institute of Statistical Genomics (SISG)** for two modules **(i)** regression and analysis of variance and **(ii)** population genetics and association mapping during July 08 – 26, 2013 at Department of Biostatistics, University of Washington – South Campus Center, Seattle, USA.
6. Participated in training-cum-workshop on **"Virus Induced Gene Silencing (VIGS) in Bread Wheat"** December 1-15, 2010 held in the Department of Genetics and Plant Breeding, Ch. Charan Singh, University, Meerut.
7. Participated in a workshop on **"Database, Data Mining and Retrieval of Information"** held in the Department of Genetics and Plant Breeding, Ch. Charan Singh, University, Meerut on March 24-25, 2008

8. Participated in workshop on **"Detecting Mutation in Plant Reverse–Genetics Collection"** March 5–10, 2007, (sponsored by National Science Foundation USA, Division of Biological Infrastructure Plant Genome Research Program, North Dakota State University, USA) held in the Department of Genetics and Plant Breeding, Ch. Charan Singh, University, Meerut.

Science Outreach/Extension activities

1. Acted as Resource Person in a DST-NCSTC Sponsored Program for motivation to science students and teachers at the Arpan Public School, Thana Bhawan, Shamli (UP) on March 06, 2021.

Research (thesis/project) Supervised

- M.Sc. Ag. (Genetics & Plant Breeding): 12 (completed)
- M.Phil. (Genetics & Plant Breeding): 10 (completed)
- Ph.D. (Genetics & Plant Breeding): 04 registered

Orientation Course/ Refresher Course/ Faculty Development Program

Sl. No.	Theme	Venue	Duration/ Time	National/ International
1.	Statistical Course	18th Summer Institute of Statistical Genomics (SISG) for two modules (i) regression and analysis of variance and (ii) population genetics and association mapping during July 08 – 26, 2013 at Department of Biostatistics, University of Washington, South Campus Center, Seattle, USA	Three weeks (July 08 to 26, 2013)	International
2.	8th Orientation Programme	UGC – Human Resource Development Centre, Jawaharlal Nehru University (JNU), New Delhi	Four Weeks/ October 03 to 28, 2016	National
3.	Refresher Course in Life Sciences	Centre for Professional Development in Higher Education (CPDHE), UGC-HRDC, Academic Research Centre Building, University of Delhi, New Delhi	Three weeks/ July 17 to August 06, 2018	National
4.	Faculty Development Program on	Teaching Learning Centre (TLC), Indian Institute of Technology (BHU), Varanasi.	One week/ July 15-19, 2019	National

	"Communication for Educators"	(Organized under Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT)		
5.	Winter School on "Data Analysis in Agriculture using Statistical Software Packages"	Division of Statistical Genetics, ICAR-Indian Agricultural Statistics Research Institute (IASRI), New Delhi-110 012	Three weeks/ January 16 to February 05, 2020	National

Fellowship/Honor/Award

Year	Details
2021	7th Venus International Science and Technology Awards – VISTA 2021, Venus International Foundation, Chennai, India (27-September-2021) awarded 'YOUNG RESEARCHER IN GENETICS AND PLANT BREEDING' under the Agricultural Sciences Discipline
2017	Science and Engineering Research Board (SERB) of Department of Science and Technology (DST), New Delhi awarded International travel grant (Application No. - ITS/4610/2016-17) and provided financial assistance of worth Rs. 1,61,640.00 for participating in International Plant & Animal Genome (PAG) XXV conference held from January 14-18, 2017 in San Diego, California, USA
2017	Science and Engineering Research Board (SERB) of Department of Science and Technology (DST), New Delhi recommended Early Carrier Research Award (ECRA) and granted Rs. 52 Lakhs research grant for three years.
2016	University Grant Commission (UGC), New Delhi awarded UGC-BSR Research Start-Up-Grant and provided Rs. 6.00 Lakhs for two years
2012	Natural Science and Engineering Research Council (NSERC), Government of Canada awarded me Visiting Scientist Fellowship under the Canadian Government Laboratories Program to work on research projects in Semiarid Prairie Agricultural Research Centre (SPARC) of Agriculture and Agri-Food Canada (AAFC) laboratory for the duration of three years (Amount received as fellowship = CAD $50,000.00 per annum)
2011	Science and Engineering Research Council, Department of Science and Technology (DST), New Delhi awarded International travel grant (Letter No. SR/ITS/2404/2011-2012, dated 28/7/2011) and provided financial assistance of worth Rs. 83,000.00 for participating in Plant Genome Evolution conference held from September 04-06, 2011 in Amsterdam, The Netherlands.
2007	Under the National Science Foundation (NSF), Government of USA research grants for developing countries, I was selected as Visiting Fellow in the Department of

	Plant Sciences, North Dakota State University (NDSU), Fargo, ND, USA for the duration of five months (Amount received as fellowship = US $1,500.00 per month)

University Administrative Positions Held

- Assistant Proctor in Proctorial Board: May 11, 2018 to continue
- Member, UG Cell (NEP 2020): August 08, 2021 to continue
- Member, Executive Council: October 25, 2021 to continue (for one year)

Membership of Scientific Organization

(A) National

- Indian Science Congress Association (ISCA), Life-time, membership number L17056
- Indian Society of Agricultural Science and Technology for Rural Empowerment (ISATRE), Life-time, membership number 217002

(B) International

- International Society for Computational Biology (ISCB), yearly
- Canadian Society of Plant Biologists (CSPB), yearly
- International Association for Plant Biotechnology (IAPB), yearly

Date: January, 2022
Place: Meerut, UP, India (**Sachin Kumar)**