Hello, I'm **Vivek!**

I am Located at:

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I Was Trained in:

2008: Ph.D. in Bioinformatics, Jawaharlal Nehru University (JNU), New Delhi, India
2003: Advanced Post-graduate Diploma in Bioinformatics, JNU, New Delhi, India
2002: M. Sc. in Toxicology, Hamdard University, New Delhi, India
1999: B. Sc. (Honours) in Zoology, Delhi University, New Delhi, India

My Work Experience (details later):

2018- : Assistant Professor, Dept. of Systems & Computational Biology, University of Hyderabad.
2017-18: Ramalingaswami Fellow, International Crops Res. Inst. for Semi-Arid Tropics (ICRISAT), Hyd.
2016-16: Visiting Researcher at SCIS, Jawaharlal Nehru University (JNU), New Delhi &
Guest Faculty, G.G.S. Indraprastha University (IPU), Delhi
2010-15: Post-doctoral Fellow, C4 rice center, International Rice Research Institute (IRRI), Philippines.
2008-09: Visiting scientist, International Crops Res. Inst. for Semi-Arid Tropics (ICRISAT), Hyderabad.

My Research Works Published: [Some statistical metrics=> citations:157 | h-index:7]

[Research articles/reviews]

21. Dhania NK, Chauhan VK, Abhilash D, **Thakur V**, Chaitanya RK, Dutta-Gupta S, Dutta-Gupta A. Gut-specific arylphorin mediates midgut regenerative response against Cry-induced damage in *Achaea janata*. *Compr Biochem Physiol Part B: Biochemistry and Molecular Biology*, 255:110600 (2021) https://doi.org/10.1016/j.cbpb.2021.110600
ISSN: 1096-4959 | IF: 2.5 | Citation: 1
20. Chatterjee J, Coe RA, Acebron K, **Thakur V**, …., Quick WP. Identification of a low CO2 responsive mutant from chemical mutagenesis of Setaria viridis shows that reduced carbonic anhydrase severely limits C4 photosynthesis. *Journal of Experimental Botany*, Volume 72, Issue 8, 2 April 2021, Pages 3122–3136 (2021), https://doi.org/10.1093/jxb/erab039
ISSN: 1460-2431 | IF: 7 | Citation: 6
19. Bohra, A., Gandham, P., Rathore, A., **Thakur V**., *et al.* Identification of microRNAs and their gene targets in cytoplasmic male sterile and fertile maintainer lines of pigeonpea. *Planta* **253,** 59 (2021). https://doi.org/10.1007/s00425-021-03568-6
ISSN: 1432-2048 | IF: 4.1 | Citation: 3
18. Danila F, **Thakur V**, et al. "Bundle sheath suberisation is required for C4 photosynthesis in a Setaria viridis mutant" *Communications Biology* 4, 254 (2021) https://doi.org/10.1038/s42003-021-01772-4
ISSN: 2399-3642 | IF: 6.3 | Citation: 6
17. Chatterjee, J., **Thakur, V.**, Nepomuceno, R. *et al.* Natural Diversity in Stomatal Features of Cultivated and Wild *Oryza* Species. *Rice* **13,** 58 (2020). https://doi.org/10.1186/s12284-020-00417-0
ISSN: 1939-8433 | IF: 4.8 | Citation: 5
16. Subramaniam G*, **Thakur V***, Saxena RK*, *et al.* Complete genome sequence of sixteen plant growth

promoting *Streptomyces* strains. *Sci Rep* **10,** 10294 (2020). https://doi.org/10.1038/s41598-020-67153-9

ISSN: 2045-2322 | IF: 4.4 | Citation: 16

15. Karki S, Lin H.S., Danila FR, Abu-Jamous B, Giuliani R, Emms DM, Coe RA, Covshoff S, Woodfield H, Bagunu E, **Thakur V**, Wanchana S, Slamet-Loedin I, Cousins AB, Hibberd JM, Kelly S, Quick WP. A role for neutral variation in the evolution of C4 photosynthesis. ***BioRxiv*** (2020) https://doi.org/10.1101/2020.05.19.104299 IF: NA | Citation: 0
14. Naiyer S, Kaur D, Ahamad J, Singh SS, Singh YP, **Thakur V**, Bhattacharya A and Bhattacharya S (2019) Transcriptomic analysis reveals novel downstream regulatory motifs and highly transcribed virulence factor genes of Entamoeba histolytica. *BMC Genomics 20:206.* *https://doi.org/10.1186/s12864-019-5570-z*

ISSN: 1471-2164 | IF: 4 | Citation: 11

13. Kelly S, Covshoff S, **Thakur V**, Wanchana S, Quick WP, Zhu X, Ludwig M, Bruskievich R, Sage R, Wong G, Hibberd JM (2017) Wide sampling of natural diversity identifies conserved molecular signatures of the highly complex trait C4 photosynthesis. ***BioRxiv; https://doi.org/10.1101/163097***

IF: - | Citation: 1

12. Rizal G, Karki S, **Thakur V**, Wanchana S , Alonso-Cantabrana H, Dionora J, Sheehy JE, Furbank R, Von Caemmerer S, Quick WP (2017) A Sorghum (Sorghum bicolor) Mutant with Altered Carbon Isotope Ratio. *PLoS One 12(6): e0179567. https://doi.org/10.1371/journal.pone.0179567*

IF: 2.8 | Citation: 2

11. Chatterjee J, Dionora J, Mabilangan AE, Wanchana S, **Thakur V**, Bandopadhyaya A, Brar DS, Quick WP (2016) The Evolutionary Context of Naturally Diverse Rice Leaf Anatomy. *PLoS One 11(10): e0164532.*

IF: 2.8 | Citation: 15

10. Wang F, Karki S; Wanchana S, **Thakur V**, Henry A, Lin H-C, Huang J, Peng S, Quick P, Coe R (2016) Overexpression of *OsSAP16* regulates photosynthesis and the expression of a broad range of stress responses genes in rice (Oryza sativa L.) *PLoS One 11(6): e157244.*

IF: 2.8 | Citation: 4

9. Campen JV, Yaapar M, Narawatthana S, Lehmeier C, Wanchana S, **Thakur V**, Kelly S, Rolfe S, Quick W, and Fleming A (2016) Combined Chlorophyll Fluorescence and Transcriptomic Analysis Identifies the P3/P4 Transition as a Key stage in Rice Leaf Photosynthetic Development. *Plant Physiology 170(3): 1655*.

IF: 6.3 | Citation: 12

8. Rizal G*, **Thakur V***, Dionora J*, Karki S, Wanchana S, Acebron K, Larazo N, Garcia R, Mabilangan A, Montecillo F, Danila F, Mogul R, Pablico P, Leung H, Langdale JA, Sheehy J, Kelly S, Quick, WP (2015) Two forward genetic screens for vein density mutants in sorghum converge on a cytochrome P450 gene in the brassinosteroid pathway. *The Plant Journal* 84(2):257. (Cover article) (*: equal author)

IF: 6 | Citation: 23

7. Rizal G, Karki S, **Thakur V**, Chatterjee J, Coe RA, Wanchana S, Quick WP (2012) Towards a C4 rice. *Asian Journal of Cell Biology* 7: 13-31. (Invited review)

IF: NA | Citations: 9

6. Azam S*, **Thakur V***, Ruperao P, Shah T, Balaji J, Amindala B, Farmer AD, Studholme DJ, May GD, Edwards D, Jones JDG, Varshney RK (2012) Coverage-based consensus calling (CbCC) of short sequence reads and comparison of CbCC results to identify SNPs in chickpea (Cicer arietinum; Fabaceae), a crop species without a reference genome. *American Journal of Botany* 99(2):186-92. (*: equal author)

IF: 2.6 | Citations: 34

5. **Thakur V^**, Wanchana S, Xu M, Bruskiewich R, Quick WP, Mosig A, Zhu XG (2011) Characterization of statistical features for plant microRNA prediction. *BMC Genomics* 12(1):108. (^: corresponding author)

IF: 4 | Citations: 50

4. Saxena RK, Cui X, **Thakur V**, Walter B, Close TJ, Varshney RK (2011) Single feature polymorphisms (SFPs) for drought tolerance in pigeonpea (Cajanus spp.). *Functional and Integrative Genomics* 11(4): 651–657.

IF: 2.5 | Citations: 18

3. **Thakur V**, Varshney R (2010) Challenges and strategies for next generation sequencing (NGS) data analysis. *J*

Comput Sci Syst Biol 3: 040-042. (Workshop report)

IF: NA | Citations: 12

2. Kelkar A*, **Thakur V***, Deobagkar D, and Ramaswamy R (2009) Characterisation of inactivation domains and evolutionary strata in human X-chromosome through Markov segmentation. *PLoS ONE* 4(11): e7885.

IF: 3.2 | Citations: 4

1. **Thakur V**, Azad RK, and Ramaswamy R (2007) Markov Models of genome segmentation. *Physical Review E* 75, 011915. *(*Also featured in 'Virtual J Biol Phys Res' 13 (3), 2007*).*

IF: 2.3 | Citations: 19

[Book Chapter]

3. **Thakur V**, Wanchana S (2019) Gene Discovery by Forward Genetic Approach in the Era of High-Throughput Sequencing. In ***OMICS-Based Approaches in Plant Biotechnology***, John Wiley & Sons.

2. Biswal AK, Singh AK, **Thakur V**, Mangrauthia SK, and Ponnuswamy R (2017) Breeding Strategies to Convert C3 into C4 Plants. In ***Advanced Molecular Plant Breeding***, ed by DN Bhardwaj, Apple Acad. Press, USA.

1. Azad RK, Lawrence J, **Thakur V**, and Ramaswamy R (2007) Segmentation of Genomic DNA Sequences. In ***Advanced Computational Methods in Biocomputing and Bioimaging***, *ed.* by Tuan D. Pham, Nova Science Publishers, New York.

Grants approved/submitted:

S. No.	Title of project	Funding agency	Duration	Sanctioned amount	Role	Status
1	Discovery of missing components of gene regulatory network underlying C4 pathway/anatomy translational research	DBT-Ramalingaswami scheme	5 yrs (5/1/2017-4/6/2022)	88 lakhs	PI	Ongoing
2	Evaluation of change in micronutrients content in rice grains with variation in rice yield, and prediction of genes/alleles involved in the underlying process	DST-CRG	3 years	99.5 lakhs	PI	Submitted
3	Characterization of human gut microbiota for micronutrient production and exploring metabolic potential for its enhancement	UoH-IoE	3 years (30/8/2021-29/8/2024)	39.5 lakhs	PI	Ongoing
4	"DBT-Centre for Microbial Informatics (CMI)"-BIC at University of Hyderabad	DBT	5 years (29/8/2021-28/8/2026)	179.4 lakhs	Co-PI	ongoing

5	Allele mining for the epigenetic regulator NGR5 and the yield associated genes (GID1 and GRF4) and their modulation using multiple genomic and molecular approaches to enhance rice yield under low nitrogen conditions	ICAR-NASF	3 years (Aug 2022- July 2025)	147.8	Co-PI	Sanctioned

Research Problems I Have Worked On:

1. Gene discovery for traits relevant for C_4 biology
    a. Discover causal gene in low vein density mutant in sorghum through genome sequencing
    b. Discover causal gene in delta C13 isotope mutant in sorghum through genome sequencing
    c. Differential gene expression between C3 and C4 leaf transcriptome
    d. Discover sites of transgene integration through whole genome sequencing
2. Discovery of novel plant microRNAs
    a. Characterize plant specific parameters for miRDeep
    b. Apply new pipeline to predict novel miRNAs differentially expressed in samples of C4 rice project
3. Discovery of molecular markers (SNPs) using next generation sequencing
    a. Use next generation sequencing of multiple chickpea genotypes to discover SNP markers
4. Uncovering genome organization based on nucleotide composition-based methods
    a. Improvement of methods for identification of homogeneous segments
    b. Biological relevance of homogeneous segments in bacterial genomes
    c. Examination of evolutionary strata of human Y-chromosome for compositional homogeneity

Experience Gained :

1. Next generation sequencing data analysis (Variant discovery, differential expression testing, molecular marker discovery)
2. Application development (NGS data visualization portal, database and webserver)
3. Pipeline development (discovery of causal variants in bulk segregant analysis, plant miRNA discovery using miRDeep, genome segmentation, RNAseq assembly, annotation & translation)
4. Candidate gene discovery
5. Small RNA discovery and target prediction
6. Information theoretic analysis of genomes
7. Comparative genomics and molecular evolutionary analysis

My Soft Skills

1. Programming language: PERL and C
2. Databases: MySQL
3. Statistical computing platform: R, Octave, R-studio
4. Bioinformatics applications: Genome Browser, Galaxy, etc.
5. Operating system: Linux/Unix based OS

When Scientific Community Rewarded Me:

2016: Re-entry Ramalingaswami fellowship by Dept. of Biotechnology (DBT), India.

2003: Junior and Senior Research fellowship (JRF/SRF) by University Grants Commission (UGC-CSIR), India.
2002: National Merit Scholarship for Bioinformatics by Department of Biotechnology (DBT), India.

When I Got Involved in Training Others:

Teaching:	Genomics theory/lab; Evolution; Programming lab, Metagenomics (UoH, since 2018) 6 credit course "Biostatistics/Computer applications" to M. Sc. students of IPU (2016).
Teaching assistant:	3 credit course "Systems Biology" for P.G. Diploma Bioinformatics students (2003).
Research supervision:	Co-supervised thesis work of two postgraduate and one undergraduate Bioinfomatics students of Indian universities/institutes.

My Contributions to Scientific Community:

Course development:	Bioinformatics course for an under-graduate program run by Indira Gandhi National Open University (IGNOU), New Delhi.
Workshop organized:	Co-organized an Internat. workshop on NGS data analysis at ICRISAT, India (2009).
Manuscript review:	Manuscripts from Oxford University Press and Elsevier journals.

Scientific Gatherings I have Been to:

2018: 59th Annual International conference of the Association of Microbiologists of India (AMI) held at the University of Hyderabad on Dec 9-12, 2018. [*ORAL*]
2018: International conference on Bioinformatics (INCoB2018), organized by Jawaharlal Nehru University, New Delhi, held on Sep 26-28, 2018. [*ORAL*]
2013: International Symposium on Rice genetics (RG7), organized by the International Rice Research Institute (IRRI), held at Manila, Philippines. [*PARTICIPANT*]
2012: 10th International Symposium on Rice Functional Genomics (ISRFG 10th), held at Chiang Mai, Thailand.
2010: Symposium on C4 Plant Biology, organized by the Institute of Computational Biology, Shanghai. [*POSTER*]
2009: International workshop on NGS data analysis, organized by the International Crops Research Institute for the Semi Arid Tropics (ICRISAT), Hyderabad. [*ORAL*]
2008: International workshop on Candidate gene discovery, organized by GCP-CGIAR at Bangkok. *[ORAL]*
2008: 13th Human Genome Meeting (HGM), organized at Hyderabad. *[POSTER]*
2006: 5th International Conference on Bioinformatics and Biotechnology (InCOB), organized by JNU/IIT at New Delhi. *[POSTER]*
2004: 22nd International Conference on Statistical Physics (STATPHYS), organized by IISc. Bangalore *[POSTER]*

When I was invited to talk on topics of my/their interest:

2017: Symposium "Accelerating Biology 2017" organized by CDAC, Pune.
2016: CUJ, Ranchi; ICGEB, Delhi; JUIT, Solan; AMU, Aligarh; JNU, Jaipur
2007: Bioinformatics workshop at H.P. University, Shimla
2005: Bioinformatics workshop at BITSAR, Jaipur
2004: Bioinformatics workshop at JNU, New Delhi; CSKHP Agricultural University, Palampur, H.P.

My Critics/Mentors/Colleague who can be contacted for feedback:

1. Dr. Steve Kelly
Systems Biology Scientist, Department of Plant Sciences, University of Oxford, South Parks Road, Oxford
Phone: +44-1865-2751-23 | Email: steven.kelly@plants.ox.ac.uk

2. Prof. William Paul Quick
Head, C4 Rice center, International Rice Research Institute, DAPO BOX 7777, Metro Manila, Philippines.
Phone- +63 (2) 580-5600, 845-0563 | Email- w.p.quick@irri.org

3. Prof. Ram Ramaswamy
Professor, School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India - 110067
Phone (M) : +91-7893093737 | Email: r.ramaswamy@gmail.com, r.ramaswamy@mail.jnu.ac.in