Dr Siddharth Tiwari (ORCID ID: https://orcid.org/0000-0003-3958-8465)
Designation: Scientist F (URL: http://nabi.res.in/profile/scientists?id=MTQ%3D)
Affiliation: National Agri-Food Biotechnology Institute (NABI), An institute under the Department of Biotechnology, Government of India, Mohali, Punjab India. (https://nabi.res.in)

ACADEMIC AND RESEARCH CAREER

- Dr Tiwari has an academic background of Genetics in Master and Plant Biotechnology in the Ph.D.
- He completed Ph.D. from National Botanical Research Institute (NBRI), Lucknow, India on the "Genetic Transformation in Peanut and Studies on the Expression of Promoters and a δ-endotoxin Coding Insecticidal Gene".
- He then joined National Agri-food Biotechnology Institute (NABI), an institute under the Department of Biotechnology, Government of India, at Mohali, Punjab, India in July 2010 and presently working as Scientist F.
- His area of specialization includes Plant Tissue Culture, Molecular Biology and Genetic Engineering.
- His group is presently working on the metabolic engineering of staple crops like banana, wheat and pea for nutritional enrichment by using modern biotechnological approaches like transgenic and CRISPR-Cas based genome editing.

MAJOR SALIENT RESEARCH ACHIEVEMENTS

- His team is the pioneer in banana genome editing research and demonstrated first time the application of CRISPR/Cas9-based genome editing in banana (Kaur et al; 2018, Functional & Integrative Genomics). His group has also demonstrated pro-vitamin A enhancement in banana using CRISPR/Cas9 genome editing of *lycopene epsilon cyclase* (*LCYE*) gene (Kaur et al; 2020, Metabolic Engineering) and showed transgene-free genome editing of *carotenoid cleavage dioxygenase-4* (*CCD-4*) gene in banana protoplasts (Awasthi et al; 2022, Journal of Experimental Botany).
- He has given interviews on his banana genome editing work to various national and international platforms such as Indian Rajya Sabha National Channel and the program 'Life in Science with Pallava Bagla'.
- He has been elected a fellow of the Plant Tissue Culture Association of India (PTCA(I)).
- His doctoral research yielded two major contributions: the development of a peanut-seed-expressed fusion edible vaccine against cholera and rabies, recognized with the BioAsia Innovation Young Scientist Award-2010, and the development of insect-resistant transgenic peanut, conferring complete protection against polyphagous foliage insect *Spodoptera litura*, honored with the Indian Science Congress Association (ISCA) Young Scientist Award-2010.
- He has developed research collaborations with various prestigious international organizations like Queensland University of Technology (QUT), Australia, Heinrich Heine University, Dusseldorf, Germany and the Institute of Plant Genetics, Polish Academy of Sciences, Poznan, Poland.
- Eight students have been awarded Ph.D. under his supervision. He has filed 4 patents and published 3 edited books and several book chapters. He trained more than 80 graduates/post graduates trainees and also delivered more than 100 lectures on different platforms to create awareness about plant biotechnology applications and his research work.
- His research findings have been published in more than 50 peer-reviewed journals of high-impact factors like Journal of Experimental Botany, Metabolic Engineering, Functional & Integrative Genomics, Plant Science, The Plant Journal, Biotechnology Advances, Frontiers in Plant Science, Genomics etc.

RESEARCH PUBLICATION (5 MAJOR PUBLICATIONS, LAST 5 YEARS)

1) Chaturvedi S, et al (2023) Overexpression of banana *GDP-L-galactose phosphorylase* (*GGP*) modulates the biosynthesis of ascorbic acid in *Arabidopsis thaliana*. International Journal of Biological Macromolecules. https://doi.org/10.1016/j.ijbiomac.2023.124124
2) Thakur N, et al (2023) Wheat derived *glucuronokinase* as a potential target for regulating ascorbic acid and phytic acid content with increased root length under drought and ABA stresses in *Arabidopsis thaliana*. Plant Science. https://doi.org/10.1016/j.plantsci.2023.111671
3) Awasthi P, et al (2022) Transgene-free genome editing supports the role of carotenoid cleavage dioxygenase 4 as a negative regulator of β-carotene in banana. Journal of Experimental Botany. 73:3401–3416, https://doi.org/10.1093/jxb/erac042
4) Chaudhary R, et al (2022) Genome-wide identification and expression profiling of WUSCHEL-related homeobox (WOX) genes confer their roles in somatic embryogenesis, growth and abiotic stresses in banana. 3 Biotech 12:321. https://doi.org/10.1007/s13205-022-03387-w
5) Kaur N, et al (2020) CRISPR/Cas9 directed editing of lycopene epsilon-cyclase modulates metabolic flux for β-carotene biosynthesis in banana fruit. Metabolic Engineering. 59: 76-86. https://doi.org/10.1016/j.ymben.2020.01.008