



**Dr. Soni K.B., PhD**  
Professor (Biotechnology)  
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### **Profile summary:**

M.Sc. (Biotechnology) degree from Cochin University of Science and Technology  
Ph.D. from Amala Cancer Research Centre, Thrissur. Research on Pharmacological studies on food additives in animal models using carcinogens and hepatotoxins.

Postdoctoral research at the Indian Institute of Science, Bengaluru on the identification of *FtsZ* gene involved in the cell division of *Mycobacterium tuberculosis*.

Junior Scientist, Rubber Research Institute of India, Kottayam: 1995-1997

Kerala Agricultural University from 1997 onwards.

Specialization: Biotechnology

### **Areas of research**

Genomics, Metagenomics, Transgenics

### **Research Highlights**

Developed transgenic banana lines with resistance to Banana bract mosaic virus using RNAi technology

Developed multiplex RNAi constructs targeting coat protein, replicase and movement protein genes of banana bract mosaic virus in banana

Computationally predicted microRNAs in banana and validated

Identified microRNAs associated with biotic and abiotic stress responses in banana

### **Research projects**

Molecular and physiological analysis of banana clones (KSCSTE)

SRE II project on the Effect on microgravity and high energy radiation in outer space on growth, development and quality of crop plants (VSSC)

Advanced Centre for Integrated Biotechnology-Bioenergy production from industrial waste, Department of Agricultural Research and Education (ICAR-DARE).

Evaluation of promising cytotoxic plant extractives for antiproliferative potential and standardization of agrotechnology for these selected crops for yield and metabolic accumulation

Network project on genome editing and genomic interventions for crop improvement in major crops of Kerala

### **Student guidance**

PhD: 3 completed, 2 Ongoing

M.Sc.: 22 completed

## Membership in Professional Bodies (Life membership)

Society of Biological Chemists (India)

Indian Society for Spices

Association for the Promotion of DNA fingerprinting and other DNA technologies

## Awards

Dr. K.S. Krishnan award from Dept of Atomic Energy, BARC, Bombay, 1990

## Publications

### Journal Articles (Scopus indexed)

1. Dongare, M.D., Alex, S., **Soni, K.B.**, Sindura, K.P., Nair, D.S., Stephen, R. and Jose, E. (2023). Cross-species transferability of IRAP retrotransposon markers and polymorphism in black pepper (*Piper nigrum* L.). *Genetic Resources and Crop Evolution* 70, 2593–2605. **(IF-1.876)**
2. Nasreena, C., Alex, S., **Soni, K.B.**, Dinkar, D.M., Kiran, A.G. and Manju, R. V. (2023). Selection of stable housekeeping genes for gene expression studies in different varieties of black pepper (*Piper nigrum* L.). *Plant Science Today* 10, 26–36. **(IF- 0.832)**
3. Lakshmi, G., Beena, R., **Soni, K.B.**, Viji, M.M. and Jha, U.C. (2023). Exogenously applied plant growth regulator protects rice from heat-induced damage by modulating plant defense mechanism. *Journal of Crop Science and Biotechnology* 26(1), 63-75. **(IF: 0.364)**
4. Thara, S.S., **Soni, K.B.** and Sindura, K.P. (2023). Expression profiling of laccase and  $\beta$ -glucan synthase genes in *Pleurotus ostreatus* during different developmental stages. *Molecular Biology Reports* 50(9), 7205-7213. **(IF-2.316)**
5. Nair, A., Sible, G., Cyriac, A., Thara, S.S., Johnson, J.M., Radhika, N. and **Soni, K.B.** (2022). Characterization of novel strains of *Trichoderma* spp. and their utilization in management of damping off disease in tomato. *Journal of Biological Control* 36(1), 31-46. **(NAAS-4.99)**
6. Thomas, A., Beena, R., Lakshmi, G., **Soni, K.B.**, Alex, S. and Viji, M.M. (2022). Changes in sucrose metabolic enzymes to water stress in contrasting rice genotypes. *Plant Stress* 5, 100088. **(IF-5)**
7. Benny, A., Alex, S., **Soni, K.B.**, Anith, K.N., Kiran, A.G. and Viji, M.M. (2022). Improved transformation of *Agrobacterium* assisted by silver nanoparticles. *BioTechnologia* 103, 311-317. **(IF-0.17)**
8. Bijula, V. L., Alex, S., **Soni, K. B.**, Anith, K.N., Joy, M., Deepa, S., Beena, R. and Benny, A. (2022). Algicidal effects of green synthesized nanoparticles using *Tinospora cordifolia* on *Chlamydomonas reinhardtii*. *Journal of Pure and Applied Microbiology* 16, 2. **(IF-0.8)**
9. Ganesh, K.V., Mathew, D., Augustine, R., **Soni, K.B.**, Alex, S., Shylaja, M.R. and Cherian, A., 2022. Development of transgenic okra (*Abelmoschus esculentus* L. Moench) lines having RNA mediated resistance to Yellow vein mosaic virus (Geminiviridae). *Journal of Virological Methods*, 301, p.114457. **(IF-2.623)**
10. Amrutha, V., Shanija, S., Beena, R., Nithya, N., Jaslam, M.P.K., **Soni, K.B.** and Viji, M.M. (2022). Population structure analysis and marker trait association in selected set

- of Indian tomato (*Solanum lycopersicum* L.) varieties under high temperature condition. Genetic Resources and Crop Evolution 69(1), 183-207. **(IF- 1.524)**
11. Drishya Prakashan, RJ Nija, G Anju Krishnan, KB Soni, Swapna Alex, Smita Sudheer, S Shanas. 2022. Effect of stingless bee (Hymenoptera: Apidae: Apinae: Meliponini) propolis on the proliferation of human stem cells. ENTOMON 47(4): 353-364 (IF: 0.22)
  12. Lekshmi, R. S., Harshitha, C. K., Soni, K. B. and Alex, S. (2021). Transgenic banana plants carrying ihpRNA cassette targeting viral replicase gene show resistance against Banana bract mosaic virus. Journal of Horticultural Science and Biotechnology 96, 324–329. **(IF-2.893)**
  13. Rajkumari, N., Alex, S., **Soni, K.B.**, Anith, K.N., Viji, M.M. and Kiran, A.G. (2021). Silver nanoparticles for biolistic transformation in *Nicotiana tabacum* L. 3 Biotech 11, 1–7. **(IF-2.893)**
  14. Mathew, K.S.A., Subramanian, A., **Soni, K.B.**, Alex, S., Sreekumar, J. and Kiran, A.G. (2021). Computationally predicted virus responsive miRNAs in banana (*Musa AAB*). Research Journal of Biotechnology 16 (7), 150-179. **(IF-0.346)**
  15. Benny, A.M., Gopakumar, S.T., Janardhanan, R.K., Nair, A.V., Raj, N.B., Vakkachan, A.P., Raveendran, R.K., **Soni, K.B.** and Karayi, S.N. (2021). Analysis of nonribosomal peptide synthetase genes in haemolymph microbes of marine crabs. Archives of Microbiology 203, 1251-1258. **(IF-2.552)**
  16. Neethu, B.R., Reshma, K.J., Sumithra, T.G., Akhitha, M.B., Amala, P.V., Kumar, R.R., **Soni, K.B.** and Sanil, N.K. (2021). Profiles of hemolymph antioxidant system in apparently healthy marine bivalve, *Perna viridis* (Linnaeus, 1758) residing in a normoxic coastal ecosystem. Estuarine, Coastal and Shelf Science 262, 107599. **(IF-2.8)**
  17. Vishnu, G.M., Alex, S., **Soni, K.B.**, Kiran, A.G., Krishnan, G.A. and Shanas, S. (2020). Molecular phylogeny of south Indian *Aphthona* species (Coleoptera: Chrysomelidae: Galerucinae: Alticini) with evidence for colour polymorphism. Entomon 45(1), 1-6. **(NAAS- 4.69)**
  18. Nagamani, G., Alex, S., **Soni, K.B.**, Anith, K.N., Viji, M.M. and Kiran, A.G. (2019). A novel approach for increasing transformation efficiency in *E. coli* DH5 $\alpha$  cells using silver nanoparticles. 3 Biotech 9, 113. **(IF-2.893)**
  19. Hembade, V.L., Alex, S., **Soni, K.B.**, Sreekantan, L., Nair, D.S. and Reghunath, B.R. (2019). Presence of integrase core domain in mutant type black pepper (*Piper nigrum* L.) “Thekken” with altered inflorescence architecture. Indian Journal of Experimental Biology 57, 770-773. **(IF- 0.818)**
  20. Nair, D.S., Reghunath, B.R., **Soni, K.B.** and Alex, S. (2019). Cryopreservation of Encapsulated Axillary Buds of *Clitoria ternatea* (L.). CryoLetters 40(1), 28-35. **(IF-1.066)**
  21. Deepa, E., Nair, D.S., Alex, S., **Soni, K.B.** and Viji, M.M. (2018). Effect of plant stimulants on shoot proliferation from nodal segments of *Aegle marmelos* L. (Corr.). medicinal plants. International Journal of Phytomedicines and Related Industries 10(1), 58-64. **(IF-0.136)**

22. Prakash, A.V., Nair, D.S., Alex, S., **Soni, K.B.**, Viji M.M. and Reghunath, B.R. (2018). Calcium alginate encapsulated synthetic seed production in *Plumbago rosea* L. for germplasm exchange and distribution. *Physiology and Molecular Biology of Plants* 24(5), 963–971. (IF- 3.023)
23. Lal, R., **Soni, K.B.**, Alex, S., Sreekantan, L. and Reghunath, B.R. (2018). Identification and characterization of a protease encoding metagenome clone from dairy effluent. *Journal of Scientific and Industrial Research* 77(10), 583-586. (IF- 0.555)
24. Alex, S., Saira, A., Nair, D. S., Soni , K.B., Sreekantan, L., Rajmohan, K. and Reghunath, B. R. (2017). Bioethanol production from watermelon rind by fermentation using *Saccharaum cerevisiae* and *Zymomonas mobilis*. *Indian Journal of Biotechnology* 16, 663-666. (IF- 0.324)
25. Lekshmi, R.S., **Soni, K.B.**, Alex, S., Rajmohan, K. and Anith, K.N. (2014). Callus induction and *Agrobacterium tumefaciens* mediated transfer of hydroxy methyl glutaryl CoA reductase (HMGR) gene in *Centella asiatica* L. *Journal of Tropical Agriculture* 52 (1), 67-73. (NAAS- 4.85)
26. Resmi, D.S., Celine, V.A., **Soni, K.B.** and Rajamony, L. (2008). Molecular characterization of drumstick landraces using random amplified polymorphic DNA markers. *Indian Journal of Horticulture* 65(4), 503-505. (IF- 0.163)
27. R.V.Manju, K.B.Soni, K.S. Heera, P.V.Bijila, Roy Stephen, Vignesha, B.T.Krishnaprasad and M.M.Viji. 2007. Role of stomatal characteristics and mesophyll capacity on yield variation in Nendran clones. *International J. Tropical Agriculture* 25(3): 401-405. (IF: 0.164)
28. **Soni, K.B.**, Lahiri, M., Chackradeo, P., Bhide, S.V. and Kuttan, R. (1997). Protective effect of food additives on aflatoxin-induced mutagenicity and hepatocarcinogenicity. *Cancer letters*, 115(2), 129-133. (IF-8.679)
29. **Soni, K.B.**, Rajan, A. and Kuttan, R. (1993). Inhibition of aflatoxin-induced liver damage in ducklings by food additives. *Mycotoxin Research* 9, 22-26.(IF: 3.9)
30. Soudamini, K.K., Unnikrishnan, M.C., **Soni, K.B.** and Kuttan, R. (1992). Inhibition of lipid peroxidation and cholesterol levels in mice by curcumin. *Indian journal of physiology and pharmacology* 36, 239-239.(IF: 0.118)
31. **Soni, K.B.**, Rajan, A. and Kuttan, R. (1992). Reversal of aflatoxin induced liver damage by turmeric and curcumin. *Cancer Letters* 66(2), 115-121. (IF-8.679)
32. **Soni, K.B.** and Kutian, R. (1992). Effect of oral curcumin administration on serum peroxides and cholesterol levels in human volunteers. *Indian Journal of Physiology and Pharmacology* 36(4), 273-275. (IF: 0118)

#### Articles not indexed in Scopus

1. Aruna, S., Rafeekher, M., Johnson, J.M., Sarada, S., Beena, R., **Soni, K.B.** and Anil, A.S. (2023). *Piriformospora indica* Improves Drought Tolerance in Tomato Plants through Enhanced Nutrient Uptake and Antioxidant Enzymes. *International Journal of Plant & Soil Science* 35(18), 865-875. (NAAS – 5.07)
2. Unni, B., Sindura, K.P., Alex, S. and **Soni, K.B.** (2023). Biological Databases on Medicinal Plants: A Review. *Informatics Studies* 10, 47–60.

3. Vijayan, N., Alex, S., **Soni, K.B.**, Sindura, K.P., Sarada, S. and Dongare, M.D. (2023). Induction of Embryogenesis in Anthers of *Capsicum annuum* var. Arka Meghana. Mysore Journal of Agriculture Science. 57 (1), 186-196.
4. Karapareddy, S., Alex, S., **Soni, K.B.** and G, K. (2022). Expression profiling of auxin responsive genes during inflorescence development in black pepper (*Piper nigrum* L.) using Real time PCR (RT-QPCR). Multilogics in Sciences 12, 54-59.
5. Arya, K., Sindura, K.P., Alex, S. and **Soni, K.B.** (2022). Bioinformatics tools for marine-derived chemotherapeutic drug discovery and designing. Informatics Studies 9(3), 7-24.
6. Wagh, Y.S., Viji, M.M., **Soni, K.B.**, Jadhav, P.R., Ekatpure, S.C., Manju, R.V., Stephen, R. and Beena, R. (2020). Isolation of RNA from Grains of Medicinal Rice “Njavara” using Improved TRIzol Method. International Journal of Current Microbiology and Applied Science 9(9), 2858-2866.
7. Malavika, M. R., Viji, M. M., **Soni, K. B.**, Alex, S. and Beena, R. (2020). Standardized protocol for in vitro seed germination of *Withania somnifera*. Indian Journal of Applied Research 11, 1-2.
8. Shaji, S., Vijayakumar, A., **Soni, K. B.**, Alex, S. and MM, Viji. (2020). Genetic diversity analysis using SSR markers for high temperature tolerance in tomato (*Solanum lycopersicum* L.). Vegetable Science 47, 176-182.
9. Ekatpure, S.C., Soni, K.B., Jadhav, P.R., Lekshmi, R.S. and Alex, S., 2019. Rapid and Efficient High Quality Viral RNA Isolation from Banana Bract Mosaic Virus Infected Banana Cv. Grand Naine. *International Journal of Agriculture Sciences*, ISSN, pp.0975-3710.
10. Jadhav, P. R., Soni, K. B., Charles S. and Alex, S. (2018). An in silico phylogenetic analysis and homology modelling of coat protein of banana bract mosaic virus. Journal of Pharmacognosy and Phytochemistry 7 (5), 1957-1962.
11. R. S. Lekshmi, K.B. Soni and A. Swapna. 2018. In Vitro Propagation of Musa sp. cv. Nendran Using Immature Male Inflorescence and Synthetic 198 Seed Production. Trends in Biosciences 2(2): 198-204
12. Nair. D.S., Reghunath, B.R. **Soni, K.B.** and Alex, S. (2016). *In vitro* regeneration and conservation of Indigo (*Indigofera tinctoria* L.) by slow growth induction. International Journal of Agriculture Environment and Biotechnology 1(4), 873-884. (NAAS 4.54)
13. Reji Rani, O.P., Shifa, B.S., **Soni, K.B.** and Sudharma, K. (2015). Isolation and screening of indigenous entomopathogenic fungi against sucking pests of vegetables. International Journal of Applied and Pure Science and Agriculture 1(5), 9-17.
14. Vimarsha, H.S., Sowjanya, M.S., Rajmohan, K., **Soni, K.B.** and Alex, S. (2014). Attfl-1 gene homolog in spike branching black pepper type (*Piper nigrum* L.) and local variety Karimunda. Journal of Medicinal Plants Studies 2, 1-4.
15. Subba A., **Alex S.**, Soni K. B., Nair D. S. and Reghunath B.R. (2014). Isolation of genomic DNA from mature leaves and spikes of black pepper (*Piper nigrum* L.). Journal of Plant Science and Research 30 (1), 21-25. (NAAS- 4.1)
16. Vimarsha, H.S., Sowjanya, M.S., Rajmohan, K., **Soni, K.B.** and Alex, S. (2014). Diversity studies for characterization of spike branching black pepper (*Piper nigrum*

- L.) type collected from Idukki district of Kerala. *Journal of Medicinal Plants Studies* 2(2), 69-75.
17. Ponsubrya, R.K., Alex, S., Rajmohan, K. and **Soni, K.B.** (2014). Polymerase chain reaction based detection of banana bunchy top virus using coat protein based primers. *International Journal of Agriculture Environment and Biotechnology* 7(4), 765-767. **(NAAS 4.54)**
  18. Simi, S., Rajmohan, K. and **Soni, K.B.** (2013). Molecular characterization of traditional mango (*Mangifera indica* L.) varieties of Kerala. *The Asian Journal of Horticulture* 8(1), 324.
  19. Vijeth, S., Sreelathakumary, I., Sarada, S., Rafeekher, M., Umamaheswaran, K. and **Soni, K.B.** (2012). Heterosis studies for fruit yield and related traits in hot pepper (*Capsicum annuum* L.) under leaf curl virus disease severity conditions. *International Journal of Current Microbiology and Applied Sciences* 8(2), 644-655.
  20. Alex, S., Rani, P.M.R., **Soni, K.B.**, Nair, D.S. and Reghunath, B.R. (2012). Biosynthesis of silver nanoparticles with antibacterial activity using leaf extract of *Michelia champaca*. *Journal of Plant Science and Research* 28(1), 121-126. **(NAAS-4.1)**
  21. Rajmohan, K., **Soni, K.B.**, Alex, S., Nazeem, P.A. and Suku, S.S. (2010). Use of copper sulphate for controlling systemic contamination in black pepper (*Piper nigrum* L.) cultures. *Journal of Food, Agriculture and Environment* 8, 569-571.
  22. Bhasi, S., Alex, S., Rajmohan, K. and **Soni, K.B.** (2010). Morphological and genetic variability among black pepper *Piper nigrum* L. variety Panniyur-1 clones. *International Journal of Tropical Agriculture* 28, 465-470. **(NAAS- 3.94)**
  23. Kamala, S., **Soni, K.B.** and Alex, S. (2010). Recent advances in flow cytometry. *Millennium Zoology* 11(1), 54-57.
  24. Krishnan, V.N., **Soni, K.B.** and Rajmohan, K. (2008). Agrobacterium tumefaciens mediated genetic transformation in Centella asiatica L. urban. *Current Biotica* 2(1), 1-8.
  25. Jiji, T., K. B. Soni, P. Prajeesh, Kavitha Babu and K. Rajmohan (2006). Molecular characterisation of promising fungal strains of *Beauveria bassiana* and *Paecilomyces lilacinus* using RAPD markers. *Insect Environment* 12 (1): 33-34.
  26. **Soni KB**, Thresiamma KK and Kuttan R. 1997. Inhibition of collagen synthesis and fibrosis by antioxidant curcumin. *J Pharmaceutical Res& Devpt.* 2: 52

### Popular Articles

1. Rajmohan, K., Alex, S., and **Soni, K.B.** (2023). Biotechnology for the advancement of floriculture. *Karshikolsavam* 69-72.
2. Pimpale, P.A., Alex, S. and **Soni, K.B.** (2023). Biomimetics- The technology powered by Nature. *Biotica Research Today* 5(6), 436-438.
3. Alex, S., Benny, A., Rajkumari, N., **Soni, K.B.** and Anith, K.N. (2022). Silver nanoparticles for improved genetic transformation efficiency. *Biotica Research Today* 4(12), 818-820.
4. Alex, S. and **Soni, K.B.** (2010). Intellectual property rights (IPR) & intellectual property protection (IPP) in biotechnology. *Readers Shelf* 7(1), 11-13.

5. Alex, S. and **Soni, K.B.** (2011). Banana bunchy top disease- a menace during banana cultivation. *Agrobios.*, 9(3): 41-42.
6. Alex, S. Vinitha, G. and **Soni, K.B.** (2011). *In vitro* flowering- an aid for orchid improvement. *Readers Shelf* 7(4), 5-6.
7. Alex, S. and **Soni, K.B.** (2011). Black pepper- the king of spices. *Agrobios* 9(8), 27-28.
8. Abhinand, C.S., **Soni, K.B.** and Alex, S. (2011). Computational approach for gene prediction. *Agrobios* 9(12), 14-15.
9. Soni K.B. and Mini, C. 1998. Value added spices products. *Kalpadhenu* 25(4), 21-24.
10. Suma Divalar and Soni, K.B. 1999. Lemion- sarvarogasamhari. *Kerala Karshakan.* 44(13), 23-25.
11. Soni, K.B. 2001. Molecular diagnostics. *Millenium Zoology.* 2(1), 56-58.
12. Lekshmi, R and Soni, K.B. 2007. *Millenium Zoology.* 8(1).

### **Books**

K.Rajmohan, K.B.Soni, K.Suseela Gomathi and R.Prakash. 2005. *Essentials of Plant Tissue Culture.* Kerala Agricultural University

### **Chapters in Books**

Deepa S. Nair, Alex, S., and **Soni, K.B.** (2015) *Tissue culture production and cultivation practices.* NARP (SR), KAU & NABARD publishers.

Benny, A., Alex, S., and Soni, K. B. (2020) *Nanoparticles for genetic transformation.* In: *Advances in agriculture: Recent perspectives* Jaya publishing group

### **Other Responsibilities**

Coordinator of project coordination group-Biotechnology, Biochemistry and Plant Physiology

Member of Purchase committee

Member of Institutional Biosafety Committee