



## Dr. VIRENDRA KUMAR SIKKA

Senior Scientist, Biotechnology and Molecular Biology

Patent Filed

Poly hydroxy butyrate (PHB) production by ecofriendly rhizobia from agri-byproducts towards cost effective biodegradable plastics

Out Side Agency Projects as Principal Investigator,

NATP – (2001 -2005)

DRDO – (2007 – 08)

UGC - (As Co PI – 1993 – 1997)

Post Doctoral Fellowships

DAAD fellow (1987 - 89)

The Rockefeller Foundation Post Doctoral Fellow (1998 – 2000)

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### ***Field of Specialization***

Microbial Biotechnology and Molecular Biology

Plant Biotechnology and Molecular Biology

Genomics

### ***Academic record***

Ph.D. Genetics, 3.69/4.00, IARI New Delhi, Sr. Fellowships (1978-83)

M.Sc. Plant Breeding, 3.70/4.00, HAU Hisar, Merit Scholarships (1976-78)

B.Sc. (Hons.) Agri., 3.68/4.00, HAU Hisar, Merit Scholarships (1971-76)

Ph.D Genetics Thesis - 'Behavior of Plasmids in ***Rhizobium***

***leguminosarum***' Advisor-Prof. Sushil Kumar, IARI, New Delhi

M.Sc Plant Breeding Thesis- 'Heterosis and combining ability studies in

***Cicer arietinum***' Advisor -Prof. N. D. Arora, HAU, Hisar

#### Merit and Academic Awards :

- i) Awarded Rockefeller Foundation's Post Doctoral Fellowship in Rice Biotechnology
- ii) Awarded Post Doctoral Fellowship by German Academic Exchange Service (DAAD), Germany
- iii) Awarded IARI Senior Fellowship during Ph.D. Genetics
- iv) Awarded Merit Scholarship during B.Sc. (Hons.) Agriculture and M.Sc.(Agri.) Plant Breeding by Haryana Agricultural University, Hisar
- v) Awarded Dr Ram Dhan Singh Gold Medal for First Rank during M.Sc.(Agri.) Plant Breeding by Haryana Agricultural University, Hisar
- vi) Merit awards during B.Sc. (Hons.) Agriculture and M.Sc.(Agri.) Plant Breeding for top rank in several courses and cumulative year as a whole.

#### **Employment record**

Professor, Biotechnology & Molecular Biology, CCS HAU, Hisar (1999 - to date)

Scientist, Biotechnology & Molecular Biology, CCS HAU, Hisar (1997-99)

Geneticist, CCS HAU, Hisar (1989-97)

Assistant Geneticist , CCS HAU, Hisar (1985-89)

Assistant Scientist, Plant Breeding, CCS HAU, Hisar (1983-85)

#### **Research Projects completed:**

- I. Maximizing and large scale production of PHB (Polyhydroxybutyric acid) from agribyproducts.
- II.** Identification Of Genes For Starch Synthesis With High Temperature Tolerance In Wheat
- III. ***Genetic manipulation of enzymes of ammonia assimilation for improvement in efficiency of symbiotic nitrogen fixation in rhizobia***

#### **Peer recognition:**

- i) Life member, Society of Plant Biochemistry & Biotechnology, India.**
- ii) Life Member, Association of Microbiologists of India.**
- iii) Executive member, Association of Microbiologists of India, Hisar branch (2008)**
- iv) Paper Setter for Post Graduate Examinations of several leading Universities**
- v) Examiner of Post Graduate Examinations of several leading Universities**
- vi) Member Scientific and Technical Committees of several International and National Meetings and Symposia.**

- vii) Involved in the organisation of scientific sessions, editing and publishing of proceedings etc. Performed Reporteur duties in scientific sessions

### **Teaching**

- ✓ Actively involved in teaching of under- and post-graduate courses in Genetics (1983 - 1997), Biotechnology and Molecular Biology (1990 – to date) and Plant Breeding including Introductory Plant Biotechnology, Principles of Biotechnology, Genetic Engineering, Advances in Molecular Biology.
- ✓ Actively involved in developing course curricula for Molecular Biology and Biotechnology (BSMA) at ICAR level.
- ✓ Guided/guiding 14 M.Sc. students and 2 Ph.D. students and supervised the research of projects fellows.

### **Publications:**

#### Manuals

1. Chaudhary K, K. S Boora, V. K. Sikka N. R. Yadav and R. K Patel 2006. Strategies for gene cloning and expression for value addition in crop plants”. CCS HAU, Hisar. Pp. 191.
2. Chaudhary K, K. S Boora, V. K. Sikka N. R. Yadav and R. K Patel 2006. Practical Manual “Strategies for gene cloning and expression for value addition in crop plants” CCS HAU, Hisar. Pp. 100
3. Dhillon, S., V. K. Sikka, K. S. Boora and P. Kharb 2009. Practical manual on Molecular Techniques in Biotechnology. CCS HAU, Hisar. Pp. 110.

### **Selected Research Papers**

Ahlawat S, Chhabra A K, Behl R K, and Sikka V K., 2009 ADP-glucose pyrophosphorylase activity in normal senescing and stay green genotypes of wheat under normal and late sown conditions. *Icfa J Genet. Evol.* 2 : 7-12.

Kumar U., Sikka V. K. 2009 Maximization of poly- $\beta$ -hydroxybutyrate production by rhizobacteria using agri-byproducts. Submitted

Sikka V. K. 2008 In Vitro Site-specific Mutagenesis for Manipulating Genetic Information. In Proceedings of Winter school on ‘Recent advances in Genetics : Achievements and future trends for crop improvement’ , Genetics, HAU Hisar.

- Sikka V K, Choi S B, Kavakli I H, Gupta S, Ito H and Okita T W 2001. Subcellular compartmentalization and allosteric regulation of the rice endosperm ADP glucose Pyrophosphorylase. Plant Science. 161: 461 – 468.
- Sikka V K and Okita T W 2001. ***Oryza sativa*** ADP glucose pyrophosphorylase large subunit mRNA, complete cds (coding sequence). United State's National Science Foundation – National Center for Biotechnological Information. Gene Bank Accession No. AY 028314.
- Sikka V K and Okita T W 2001. ***Oryza sativa*** ADP glucose pyrophosphorylase small subunit mRNA, complete cds (coding sequence). United State's National Science Foundation – National Center for Biotechnological Information. Gene Bank Accession No. AY 028315.
- Aggarwal M., Sikka V K. and Vashishat R K 2000. Symbiotic properties of ***Rhizobium trifolii*** mutants altered for cell wall degradative ability. Trop. Ag. 77 : 109 – 111.
- Hussain Z , Sikka V K and Vashishat R K 1995. Symbiotic infection of clovers by ***Rhizobium trifolii*** depends on degradative enzymes cellulase and pectinase. Annal. Biol 11 : 285 - 9.
- Sikka V K 1995. Genetic Engineering a tool in the service of Mankind. In : 'Recent Advances in Agronomy' Organized by the Academy of Agricultural Research and Education Management. July 11-29 AREM Proceedings, H A U, Hisar\_: 313 – 316.
- Sikka P and Sikka V K 1991. Animal Bioreactors. Indian Dairyman 43 (9) : 414 – 416.
- Ram B, Sikka V K, Yunus M and Naidu MR 1987. Polygenic variation in Wheat following hybridization and mutagenesis. Annal. Biol. 3 : 107 – 110.
- Sikka V K and Kumar S 1984. Underexpression of ***amp*** from R plasmids in fast growing ***Rhizobium*** spp. Appl. Environ. Microbiol. 48 : 1248 – 1250.
- Sikka V K and Kumar S 1984. R – plasmids that express self transfer and chromosome mobilization function in ***Rhizobium leguminosarum***. Indian J Expt. Biol. 22 : 410 – 414.

Singh A, Ram J, Sikka V K and Kumar S 1984. Derivation of marked strains of ***Rhizobium leguminosarum*** Rld1 by nitrosoguanidine and transposon mutagenesis. Indian J. Expt. Biol. 22 : 239 – 247.

Verma P K, Sharma G D, Tomar D P S and Sikka V K 1983. Prospects of Liquarice (***Mulhathi***) cultivation in Haryana. Har. Farm. 12 : 19 –24.