

Curriculum Vitae of Prof. Dr. G. S. Randhawa

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Name: GURSHARN SINGH RANDHAWA

Present Position: Professor, Department of Biotechnology, Indian Institute of Technology Roorkee

Date of Birth: February 6, 1953

Nationality: Indian

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Areas of Interest: Plant Molecular Biology, Recombinant DNA Technology, Genetic Engineering, Molecular Genetics of *Rhizobium*-legume Symbiosis

Education:

1980	Ph.D. (Genetics). Punjab Agricultural University, Ludhiana, India; OGPA 3.50/4.00.
1976	M.Sc. (Genetics). Punjab Agricultural University, Ludhiana, India; First Division; OGPA 3.50/4.00.
1974	B.Sc. (Biology). Guru Nanak University, Amritsar, India; First Division; 70.0% marks; 6 th position in University.
1969	Matriculation. Punjab University, Chandigarh, India; First Division; 68.6% marks.

Employment:

1996 to present	Professor , Department of Biotechnology, Indian Institute of Technology (formerly University of Roorkee), Roorkee, India .
2005 (June-July)	Visiting Scientist , Department of Plant Sciences, North Dakota State University, Fargo, North Dakota, U.S.A.
2001(Oct.-Dec.)	Visiting Scientist , Pioneer Hi-Bred International Inc., Johnston, U.S.A.
1986-1996	Reader , Department of Biosciences & Biotechnology, University of Roorkee, Roorkee, India .
1984-1986	Lecturer , Department of Biosciences & Biotechnology, University of Roorkee, Roorkee, India .
1982-1984	Research Associate , Jawaharlal Nehru University, New Delhi, India .
1980-1982	I.T.C. Fellow , Hungarian Academy of Sciences, Hungary .

Research Projects Completed/In Progress:

2016-till date	Forecasting Agricultural Output Using Space Agro Meteorology and Land Based Observation (FASAL), Sponsored by India Meteorological Department, Ministry of Earth Sciences, Government of India
2016-till date	Gramin Krishi Mausam Sewa (Integrated Agro Meteorological Advisory Services), Sponsored by India Meteorological Department, Ministry of Earth Sciences, Government of India.
2005-2010	Biofortification of wheat for micronutrients through conventional and molecular breeding approaches. D.B.T., India funding for Rs. 84, 34, 000.
2005-2007	Development of Diploid Wheat Deletion Lines for Reverse Genetics. NSF, USA funding for \$ 95,400. Developing Country Collaboration in Plant Genome Research (India &US).
2005-2007	Isolation and characterization of bacteria from industrial effluents. D.S.T., India funding for Rs.10,50, 000.
1996-1998	Structural and enzymatic protein changes in higher plant cell walls under saline stress. U.P.C.S.T. funding for Rs. 1,69,000.
1990-1993	Isolation of tonoplasts ATPase mRNA from mungbean. U.G.C. funding for Rs. 4,00,000.
1990-1993	Nitrogen fixing genes in <i>Rhizobium meliloti</i> . D.S.T. funding for Rs. 9,00,000.
1985-1992	Centre for Bioconversion. M.H.R.D. funding for Rs. 63, 34, 000.

Teaching Experience:

1. Total period of teaching: **32 years and 2 months** (July 1984 to date).
2. Courses taught to Postgraduate students: Cellular and Molecular Biology, Microbial Genetics, Genetic Engineering, Advanced Techniques in Biochemistry and Molecular Biology, Fermentation Processes, Applied Microbiology, Genetics, Recombinant DNA Technology, Cell and Tissue Culture Technology, Gene Regulation, General Biology, Biosciences Laboratory Course & Biotechnology Laboratory Course.
3. Courses taught to Undergraduate students: Principles of Biotechnology; Fundamentals of Biotechnology; Genetics; Genetic Engineering; Genetics & Molecular Biology; Plant Biotechnology.

Research Experience : 42 Years

Ph.D. Theses Supervised : Completed : 30; In Progress : 7

1. Bioconversion of lignocellulosic waste materials. **Dr. Ashwani Kumar Lakhani** (1990).
2. Effect of water quality parameters on biota. **Dr. Dinesh Kumar Garg** (1991).
3. Characterization of genes involved in the biosynthesis of amino acids in *Rhizobium meliloti*. **Dr. Manju Rani Agarwal** (1995).
4. Some immunological and chemotherapeutic studies on *in vitro* exoerythrocytic stages of rodent malaria. **Dr. Aditya Bhushan Pant** (1996).
5. Isolation and characterization of stress tolerant strains of *Rhizobium*. **Dr. Umesh Kumar** (1997).
6. Studies on estuarine oil spill management. **Dr. Suneel Chhatre** (1999).
7. Genetic and biochemical studies on biosynthesis of amino acids, nucleotide bases and vitamins in *Rhizobium*. **Dr. K. E. Vineetha** (1999).
8. Genetic and biochemical studies on biosynthesis of some amino acids in *Rhizobium*. **Dr. C. Krishna Prasad** (1999).
9. Genetic and biochemical studies on stress tolerance in *Rhizobium*. **Dr. Ihsan Arfan Hussein Ali** (2000).
10. Studies on the role of pyrimidine biosynthetic pathway of *Rhizobium meliloti* in symbiosis. **Dr. Neeraj Vij** (2000).
11. Studies on isoleucine, valine and leucine auxotrophs of *Sinorhizobium meliloti*. **Dr. Raad Hassani Sultan** (2001).
12. Studies on auxotrophic mutants of sulfur-containing amino acids of *Sinorhizobium meliloti*. **Dr. Basil Abdul-Zahrah Abbas** (2001).
13. Role of arginine biosynthetic pathway of *Sinorhizobium meliloti* in symbiosis. **Dr. Anvita Kumar** (2003).
14. Studies on the symbiotic role of arginine biosynthetic pathway of two genera of rhizobia. **Dr. Nand Kumar Singh** (2007).
15. Molecular mapping and cloning of polyembryony (*OsPE*) insertional mutant in basmati rice. **Dr. Anju Bhalla** (2008).

16. Mapping and molecular characterization of dwarf (*OsGAI/Sd*) insertional mutant in basmati. **Dr. Mankesh Kumar** (2008).
17. Introgression and molecular mapping of high grain Fe and Zn content from *Aegilops* into wheat. **Dr. Vijay Kumar Tiwari** (2009).
18. Molecular analysis of wheat-*Ae. kotschy* derivatives with high grain iron and zinc content. **Dr. Nidhi Rawat** (2009).
19. Isolation and characterization of antifungal compounds from *Diospyros kaki*. **Dr. Sunity** (2010).
20. Studies on arsenic resistance properties in *Rhizobium*-legume symbiosis. **Dr. Durga Prasad Panigrahi** (2010).
21. In vitro model of cerebral stroke : Therapeutic potential and metabolism of trans-resveratrol, a natural antioxidant from grapes. **Dr. Megha Agrawal** (2010).
22. Isolation and molecular characterization of alien addition lines in wheat for micronutrient. **Dr. Nancy Girdharwal** (2012).
23. Molecular genetic and biochemical studies on galactomannan production in guar (*Cyamopsis tetragonoloba*). **Dr. Pranita Bhatele** (2012).
24. Morphological, biochemical and molecular characterization of guar (*Cyamopsis tetragonoloba*) accessions. **Dr. Nagesh K. A.** (2012).
25. Heterologous expression, purification and biophysical characterization of reversibly glycosylated protein from guar. **Ms. Shilpi Kumari** (2015).
26. Genetic transformation of cluster bean (*Cyamopsis tetragonoloba*). **Ms. Swati Verma** (2015).
27. Physiological, biochemical and molecular studies on salt stress in cluster bean. **Ms. Shalini Pareek** (2015).
28. Guar leaf transcriptome analysis and evaluation of guar gum drug delivery system. **Mr. Umesh Kumar Tanwar** (2016).
29. Purification and biophysical characterization of phosphomannose isomerase from guar. **Ms. Pallavi Gahlot** (2016).
30. Study of root architecture modification in wheat: Bioinformatic and molecular approaches. **Ms. Deepa Dewan** (2016).
31. Studies on nutrient use efficiency in wheat using bioinformatics and molecular techniques. **Ms. Navneet Kaur** (In progress).
32. Purification and biophysical characterization of a small protein of guar. **Ms. Nishu Mittal** (In progress).
33. Identification and characterization of small proteins of clusterbean [*Cyamopsis tetragonoloba* (L.) Taub.] **Ms. Poonam Subhash Jaiswal** (In progress).
34. Studies on the gene encoding A/B barrel domain containing small protein of guar. **Dharmendra Singh** (In progress).
35. Engineering resistance to *Alternaria alternaria* in clusterbean through gene silencing. **Omika Thakur** (In progress).
36. Guar molecular biology. **Manjeshree Shail** (In progress).
37. Guar molecular biology. **Shipra** (In progress).

M. Sc. Research Projects Supervised: 67 (Completed)

Summer Projects Supervised: 20

B. Tech. Projects Supervised: 9 (Completed)

Awards/Honours:

1988	Award of Honour from Young Writers Association, Punjab Agricultural University, Ludhiana.
1982-1984	Research Associate, Indian Council of Agricultural Research.
1980-1982	I.T.C. Fellowship, Hungarian Academy of Sciences, Hungary.
1979-1980	Junior Research Fellowship, Department of Atomic Energy, Govt. of India.
1976-1978	Punjab Agricultural University Merit Fellowship (Ph.D.).
1974-1976	Punjab Agricultural University Merit Fellowship (M.Sc.).

International Training Courses/ Workshops Attended as a Trainee:

1. **ASM Virtual Workshop on “Art of Science Communication”;** Conducted by The American Society of Microbiology at IIT Roorkee, India, February 8, 2014.
2. **E.M.B.O. (European Molecular Biology Organization) Intensive Training Course on Molecular Genetics: Bacterial Genetics,** Pavia University Pavia, Italy, Sept. 16-30, 1981.
3. **International Training Course on Fungal Protoplast Fusion and its Applications,** J. Attila University, Szeged, Hungary, July 6-16, 1981 (sponsored by U.N.D.P., U.N.E.P., I.C.R.P.).
4. **International Training Course on selected topics of Modern Biology, Biological Research Centre, Hungarian Academy of Sciences, Szeged, Hungary.** Oct. 1, 1980-Nov. 30, 1981 (sponsored by U.N.D.P., I.C.R.O. and Hungarian Academy of Sciences).
5. **Afro-Asian Writers Workshop,** New Delhi, India, Feb. 4-20, 1980 (sponsored by India International Centre and Ministry of Education, Govt. of India).
6. **International Training Course on Biofuels, Bioproductivity and Photosynthesis,** Madurai Kamaraj University, Madurai, India, Dec. 6-16, 1978 (sponsored by U.N.E.P.).

Administrative Assignments at Indian Institute of Technology Roorkee/University of Roorkee:

1. **Member-Secretary, Institute Biosafety Committee, Indian Institute of Technology Roorkee (Jan 1, 2008-2015).**
2. Member, Departmental Professorial Committee, Department of Biotechnology, Indian Institute of Technology Roorkee (Jan. 2, 2007-till date).
3. **Head (Chairman), Department of Biotechnology, Indian Institute of Technology, Roorkee (Jan. 1, 2004 – Jan. 1, 2007).**
4. Member, Academic Committee for the M. Tech. (Conservation of Rivers and Lakes) programme of Alternate Hydro Energy Centre, Indian Institute of Technology Roorkee (2004-2007).
5. **Member, Senate, Indian Institute of Technology Roorkee (2002-to date).**
6. **Member, Board of Post Graduate Studies and Research, Indian Institute of Technology Roorkee (2002-03; 2008).**
7. **Member, Board of Academic Research, Indian Institute of Technology Roorkee (2009-2010).**
8. Chairman, Departmental Research Committee, Department of Biotechnology, Indian Institute of Technology Roorkee (2002-03; 2008-2012, 2014-2015).
9. Chairman, Postgraduate Academic Programme Committee, Department of Biosciences & Biotechnology, University of Roorkee, Roorkee: 1988 to 2002.
10. **Member, Academic Council, University of Roorkee: 1988-89, 1992-98.**
11. **Member, Senate, University of Roorkee: 1989-96.**

Organizing Assignments for Symposia/Seminars/Training Courses/Workshops :

1. Member, National Advisory Committee of the **International Conference on Microbial Biotechnology for Sustainable Development**, Punjab University, Chandigarh, India, November 3-6, 2011.
2. Member, International Advisory Committee of the **International Symposium on Recent Advances in Cross-Disciplinary Microbiology: Avenues and Challenges**, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, December 14-17, 2010.
3. Member, National Advisory Committee, **National Conference on Leads for Futuristic Biotechnological Inputs : Indian Context**, IAMR, Ghaziabad, March 26-27, 2010.
4. Member, National Advisory Committee, National Conference on Seabuckthorn : Emerging Trends in Production to Consumption, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur, India, February 16-18, 2010.
5. Member, Programme Committee, National Conference on DNA-2009 : DNA The Decisive Evidence, Andhra Pradesh Police Academy, Hyderabad, India, August 17-19, 2009.
6. Member, Advisory Committee, National Symposium on Emerging Trends in Biomedical Sciences, S. B. S. Post Graduate Institute of Biomedical Sciences & Research, Dehra Dun, India, February 27-28, 2009.

7. Member, National Advisory Board, Symposium on Biotechnology : Vision 2020, SVBP University of Agriculture & Technology, Meerut, India, December 8-9, 2008.
8. Member, National Advisory Committee, National Conference on Advances in Fermentation Technology, MGNIRSA, Hyderabad, India, November 9-10, 2008.
9. **Member, National Advisory Committee, International Conference on Molecular Biology and Biotechnology, Banasthali University, Rajasthan, India, October 19-21, 2008.**
10. **Convener, Summer School on Advanced Techniques in Biotechnology, Indian Institute of Technology Roorkee, India, August 4-10, 2008.**
11. Member, Organizing Committee of the The Lecture Series on Biotechnology "BIOLOGIC 08" held at O.N.G.C., Dehradun, India on April 15, 2008.
12. Member, Advisory Committee, National Conference on Microbial Biodiversity : Avenues and Applications, S. B. S. Post Graduate Institute of Biomedical Sciences & Research, Dehra Dun, India, March 17-18, 2007.
13. **Chairman, Organizing Committee, National Biotechnology Conference – 2006 : Current Trends & Future Perspectives, Indian Institute of Technology Roorkee, India, September 2-3, 2006.**
14. Member, Advisory Committee, National Symposium on New Horizons in Fermentation and Food Biotechnology-2006, Patiala, India, March 21-22, 2006.
15. **Chairman, Organizing Committee, Symposium on Therapeutic and Diagnostic Products for Reproductive Health : Recent Trends and Future Prospects, I. I. T. Roorkee, India, 14-16 February, 2006.**
16. **Chairman, Organizing Committee, Seminar-cum-Exhibition on the Transfer of Horticulture Production Technology to Needy Farmers and Entrepreneurs, Roorkee, India, January 19-20, 2006.**
17. **Chairman, Organizing Committee, QIP Workshop on Curriculum Development of B.Tech. (Biotechnology) programme, Indian Institute of Technology Roorkee, April 24, 2004.**
18. Member, Organizing Committee, National Seminar on Bioinformatics, Indian Institute of Technology Roorkee, March 21, 2004.
19. Coordinator of the Programme to Commemorate the Golden Jubilee Year of the Discovery of DNA Double Helix, Department of Biotechnology, I.I.T.Roorkee, November 22, 2003.
20. Member, Organizing Committee, National Symposium on Biophysics: 21-23 February 2003 & International Workshop on Education and Capacity Building in Biophysics: Needs of the Asian African Region, 24-25 February 2003, Department of Biotechnology, I.I.T. Roorkee.
21. Secretary Resource, National Workshop on Role of Information Technology and Continuing Education in Human Resource Development, Roorkee, India, Oct. 24-25, 1998.
22. Organizing Secretary, National Seminar on Biofertilizers: Prospects and Constraints, University of Roorkee, Roorkee, India, April 15, 1997.
23. Treasurer, International Satellite Symposium on Complex Carbohydrates, University of Roorkee, Roorkee, India, Sept. 15-16, 1994.

24. Course Coordinator, Training course on Techniques in Biotechnology, Continuing Education Department, University of Roorkee, Roorkee, India, Aug 18-Sept. 7, 1988.
25. Course Coordinator, Training course on Techniques in Genetic Engineering, Continuing Education Department, University of Roorkee, Roorkee, India, May 3-21, 1988.

Reviewing and Editorial Assignments:

1. **Member, Editorial Board, Indian Journal of Experimental Biology (A journal published by the Council of Scientific & Industrial Research, Govt. of India, Indexed in PubMed) (2008-2010).**
2. **Editor, Indian Journal of Microbiology (A journal published by Springer Verlag, Germany) (2006-2008).**
3. **Guest Editor, Special Issue (October, 2003) on Bacterium-plant Symbiosis, Indian Journal of Experimental Biology (A journal published by the Council of Scientific & Industrial Research, Govt. of India, Indexed in PubMed).**
4. **Referee, Clinical Transplantation (John Wiley & Sons, Inc.), The Journal of Urology (American Urological Association, Inc.), Cancer Biology & Therapy (Landes Bioscience, Austin, U.S.A.), Oncology Research Incorporating Anti-Cancer Drug Design (Cognizant Communication Corporation, NY, U.S.A.), DNA and Cell Biology (Mary Ann Liebert, Inc., NY, U.S.A.), SABRAO Journal of Breeding & Genetics (Manila, Philippines), Critical Reviews in Biotechnology (Taylor & Francis), Cancer Letters (Elsevier), Journal of Basic Microbiology (Wiley-VCH), Indian Journal of Microbiology (Springer, Germany), Indian Journal of Experimental Biology, Indian Journal of Biotechnology, Current Science (India) , Journal of Plant Biochemistry and Biotechnology, Journal of Human Genetics (NPG & MTS), Molecular Biology Reports (Springer, Netherlands), PLoS one (Public Library of Science), Journal of Circuits, Systems and Computers (World Scientific) & International Journal of Plant Physiology and Biochemistry (Academic Journals).**
5. **Member, Editorial Committee, University Grants Commission, Govt. of India (1999).**

Assignments for the Selection of Faculty Members, Scientists and Technical Staff :

1. **Member, Selection Committees for Appointing Faculty Members/ Scientists in Invertis University, Bareilly (2014, 2016), Thapar University, Patiala (2012), Rajiv Gandhi University of Knowledge Technologies, Hyderabad (2012), Panjab University, Chandigarh (2011), National Environmental Engineering Research**

Institute, Nagpur (2011), Indira Gandhi National Open University, New Delhi (2011), C. C. S. Haryana Agricultural University, Hisar (2011), Guru Gobind Singh Indraprastha University, Delhi (2010), V. B. S. Purvanchal University, Jaunpur (2010), Delhi Technological University, Delhi (2010), Harcourt Butler Technological Institute, Kanpur (2010), D. D. U. University, Gorakhpur (2009), Guru Nanak Dev University, Amritsar (2009, 2010), Institute of Engineering & Technology, Lucknow (2009, 2011), Shobit University, Modipuram (2009), Maharishi Dayanand University, Rohtak (2007), Barkatullah University, Bhopal (2006), G.B.Pant University of Agriculture and Technology, Pantnagar (2006), K. L. D. A. V. College, Roorkee (2005, 2006, 2009, 2010), Rani Durgavati University, Jabalpur (2005, 2007), National Institute of Technology, Jalandhar (2005), Rajeev Gandhi Technological University, Bhopal (2005, 2006, 2007), Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow (2003, 2004), Ambala College of Engineering & Applied Research, Ambala (2003, 2010), Punjabi University, Patiala (2001, 2003), S.B.S. Post Graduate Institute of Biomedical Sciences & Research, Dehradun (2001, 2003, 2007, 2008, 2009, 2010), Indian Council of Forestry Research & Education, Dehra Dun (1998)

2. **Member, Selection Committees for Appointing Faculty Members in the Indira Gandhi National Open University as Visitor's Nominee (H. E. President of India's Nominee) (2008, 2009).**
3. **Member, Selection Committee for Appointing the Head, Department of Molecular Biology & Genetic Engineering, G. B. Pant University of Agriculture & Technology, Pantnagar (2009).**
4. Chairman, Assessment Committee for Grant of Merit Promotion/ Advance Increments to Technical Personnel of Group- II (Laboratory Technicians) in Cat. III, National Dairy Research Institute, Karnal (2002-03).
5. Chairman, Assessment Committee for Category I Technicians in the Field of Stockman/ Field/ Farm, National Bureau of Animal Genetic Resources, Karnal (2002-03).
6. Member, Department Promotion Committee (Scientists), National Bureau of Animal Genetic Resources, Karnal (2002-03 & 2007-08).

Ph. D. Examinations :

Evaluated/ conducted viva voce examination of Ph.D. theses of National Dairy Research Institute, Karnal, Indian Agricultural Research Institute, New Delhi, Punjab Agricultural University, Ludhiana, Punjab University, Chandigarh, Punjabi University, Patiala, Goa University, Goa, S.G. Post Graduate Institute of Medical Sciences, Lucknow, Aligarh Muslim University, Aligarh, M.D. University, Rohtak, Guru Nanak Dev University, Amritsar, Kurukshetra University, Kurukshetra, G.B.Pant University of Agriculture and Technology, Pantnagar, CCS Haryana Agricultural University, Hisar, CSJM Kanpur University, Kanpur, Devi Ahilya University, Indore, University of Delhi, Delhi, Guru Jambheshwar University, Hisar, CCS University, Meerut, D.D.U.Gorakhpur

University, Gorakhpur , Thapar University, Patiala, Forest Research Institute, Dehradun, Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni, Solan, Tezpur University, Tezpur, H. N. B. University, Srinagar (Garhwal), University of Pune, Pune, Jawaharlal Nehru Technical University, Hyderabad, Banasthali University, Banasthali, Shobit University, Meerut, Annamalai University, Annamalai Nagar & Chaudhary Devi Lal University, Sirsa.

Membership of Administrative / Scientific Committees of Other Institutions or Organizations :

1. **Member, Expert Team, National Board of Accreditation, New Delhi, India** to evaluate the UG/PG programmes of National Institute of Technology, Rourkela, Orissa (February 21-23, 2014), Sri Venkateswara College of Engineering , Tamil Nadu (March 21-23, 2014), PSG College of Technology, Coimbatore, Tamil Nadu (October 17-19, 2014), SSN College of Engineering, Kalavakkam, Tamil Nadu (January 9-11, 2015), National Institute of Technology, Warangal, Andhra Pradesh (February 6-8, 2015), College of Engineering, Pune, Maharashtra (April 3-5, 2015), SRE College, Coimbatore, Tamil Nadu (December 18-20, 2015), SIST, Hyderabad, Telangana (March 4-6, 2016), Manipal Institute of Technology, Manipal, Karnataka (April 15-17, 2016), PSG College of Technology, Coimbatore, Tamil Nadu (July 8-10, 2016), Birla Institute of Technology, Mesra, Ranchi, Jharkhand (August 26-28, 2016), National Institute of Technology, Durgapur, West Bengal (September 23-25, 2016).
2. Member, Academic Council, Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni, Solan (2013-2014).
3. Member, Advisory Committee, School of Biotechnology, University of Jammu, India (2013).
4. Member, Board of Studies (Biotechnology/Biomedical Engineering), Punjab Technical University, Jalandhar (2011-13).
5. Member, Scrutiny Committee, All India Council of Technical Education (AICTE), Govt. of India, for technical institutions of South Central India (2011).
6. Member, Expert Committee for Designing the Syllabi of M. Sc. (Life Sciences) Programme, Indira Gandhi National Open University, New Delhi, India (2010).
7. Member, Post Graduate Board, Deenbandu Chhotu Ram University of Science & Technology (A Govt. of Haryana University), Murthal (2009).
8. Member, Expert Group for Brainstorming Meeting to prepare Action Plan Delineating the Activities of the School of Vocational Education & Training, Indira Gandhi National Open University, New Delhi (the largest Open University in the world) (2009).
9. Member, Expert Committee of G. B. Pant University of Agriculture & Technology, Pantnagar to study the infrastructure, equipments and other facilities available at the Institute of Biotechnology, Patwadanger and to suggest R & D activities to be taken up by the institute (2008).

10. **DBT (Department of Biotechnology, Govt. of India) representative in the Institute Biosafety Committee, G. B. Pant University of Agriculture & Technology, Pantnagar, India (2008-2015).**
11. Member, Screening Committee, Young Scientist and Best Poster Awards, Uttarakhand State Science & Technology Congress-2008.
12. Expert (Biology), Council of Boards of School Education in India (2008).
13. Member, Research Degree Committee, U. P. Technical University, Lucknow (2008-09).
14. Member, ICAR (Indian Council of Agricultural Research) Course Curricula Committee for M. Sc. & Ph. D. programmes (2008).
15. Member, Board of Studies in Engineering & Technology, Maharishi Dayanand University, Rohtak (2007-08).
16. **Member, National Jury, Agilent Engineering and Technology Awards – 2007 & 2008 (Awards given by Agilent Technologies, U. S. A.).**
17. Member (subject expert), Research Advisory Committee, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar (2007-09).
18. **Academic Advisor of the Environmental Working Group, established by the Ministry of Railways, Govt. of India as a committee overlooking environmental aspects of the Feasibility Study for the Development of Dedicated Freight Corridor Project (November, 2006 to October, 2007). Worked with experts of Japan International Cooperation Agency (JICA) of Japan which carried out the Feasibility Study of the first phase of the DFC project. Total cost of the Dedicated Freight Corridor Project : Rs. 60, 000 Crore.**
19. Member, Board of Studies in Biotechnology, HNB Garhwal University, Srinagar Garhwal, Uttaranchal (2005-07).
20. Member, Task Force for HRD in Biotechnology in Uttaranchal (2006-07).
21. **Member, Court, Banaras Hindu University, Varanasi (2006-08). This nomination was by H. E. President of India.**
22. Member, Purchase Committee (For Biotechnology Equipments)(2004) & Research Degree Committee in Biotechnology (2005-07), Rajiv Gandhi Proudhyogiki Vishwavidyalaya, (Technological University of Madhya Pradesh) Bhopal.
23. Member, Expert Committee of All India Council of Technical Education (AICTE) to assess the technical institutions in the South Western Region, Bangalore (2004).
24. External Expert, Board of Studies, Department of Biotechnology, Punjabi University, Patiala (2004-05).
25. Member, Expert Committee of All India Council of Technical Education (AICTE) to assess the M.Tech.(Biotechnology) programme of Rajiv Gandhi Proudhyogiki Vishawavidyalya, Bhopal (2004).
26. Member, Expert Committees of Department of Science & Technology and Department of Biotechnology, Govt. of India, to review the project proposals submitted for funding.
27. External Expert, Board of Postgraduate Studies in Microbiology, Kurukshetra University, 2002-2004.

28. Member, Board of Studies, S.B.S.M. Post Graduate Institute of Biomedical Sciences and Research, Dehradun, 2002.
29. Member, Board of Studies, B. Tech. Biotechnology Engineering, Kurukshetra University, Kurukshetra (2001-2002).
30. Member, Expert Committee, H.N.B. Garhwal University, Srinagar (Garhwal) for inspection of S.B.S.M.P.G.I.B.S.R., Dehradun (2001).
31. Member, Assessment Committee, J.R.F., Gurukul Kangri Vishwavidyalaya, Haridwar (2001).
32. Member, Executive Committee (1997-1999) and Additional Secretary (1999-2000), Indian Society for Continuing Engineering Education.

Educational Films Produced for the Countrywide Classroom Programme of University Grants Commission (UGC):

1. Milk Microbiology- Part I (22 min), Subject Experts: **Dr. G.S. Randhawa** & Dr. S.K. Sisodia.
2. Milk Microbiology- Part II (18 min), Subject Experts: **Dr. G.S. Randhawa** & Dr. S.K. Sisodia
3. Water Treatment at the point of use (30 min), Subject Experts: Dr. S.K. Sisodia & **Dr. G.S. Randhawa**.
4. Nitrogen Fixation (13 min), Subject Experts: Prof. H.K. Das, Coordinator: **Dr. G.S. Randhawa**.

Membership of Scientific/ Technical Societies:

1. Life member, Society of Biosciences, India.
2. Life member, Indian Society of Continuing Engineering Education.
3. Life member, Association of Microbiologists of India.
4. Life member, Biomedical and Biotechnical Society of India.
5. Member, The American Society of Microbiology, USA (2014).

Chairing of Sessions in National & International Conferences & Workshops :

1. 7th Conference of International Seabuckthorn Association, New Delhi, India. November 24-26, 2015.
2. National Symposium on Advances in Biotechnological Research in Agri-Horticultural Crops for Sustaining Productivity, Quality Improvement and Food Security, S. V. P. University of Agriculture and Technology, Meerut, India, September 14-16, 2011.
3. National Conference on Multidisciplinary Approach in Frontier Areas of Environmental Science and Engineering, G. J. University of Science & Technology, Hisar, India, March 4-5, 2011.

4. **International Symposium on Recent Advances in Cross-disciplinary Microbiology: Avenues and Challenges, Ranchi, India, December 14-17, 2010.**
5. **International Symposium on Role of Genomics in Clinical Practice, S.G. Postgraduate Institute of Medical Sciences, Lucknow, India, March 6-8, 2010.**
6. National Conference on Seabuckthorn : Emerging Trends in Production to Consumption, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur, India, February 16-18, 2010.
7. National Conference on DNA-2009 : DNA-The Decisive Evidence, Andhra Pradesh Police Academy, Hyderabad, India, August 17-19, 2009.
8. National Symposium on Biotech-2009-Present and Future Perspectives, Punjabi University, Patiala, India, March 19-20, 2009.
9. National Symposium on Emerging Trends in Biomedical Sciences, S. B. S. Post Graduate Institute of Biomedical Sciences and Research, Balawala, Dehradun, India, February 27-28, 2009.
10. National Symposium on Biotechnology: Vision 2020, Sardar Vallabh Bhai Patel University of Agriculture & Technology, Meerut, India, December 8-9, 2008.
11. **International Symposium on Microbial Biotechnology : Diversity, Genomics and Metagenomics, University of Delhi, Delhi, India, November 18-20, 2008.**
12. Industry Academia Coordination Workshop, G. B. Pant University of Agriculture & Technology, Pantnagar, India, November 15, 2008.
13. **International Conference on Molecular Biology & Biotechnology, Banasthali University, Banasthali, India, October 19-21, 2008.**

Keynote Addresses /Lectures / Presentations in Conferences /Seminars / Workshops / Training Courses / Other Special Programmes:

1. Invited lecture in the DBT sponsored Short Term Training Course Virus-Induced Gene Silencing (VIGS-2016), Hindustan College of Science & Technology, Mathura, India, January 20-February 2, 2016.
2. Invited lecture on “Increasing productivity of guar and guar gum” in the **2nd Guar International 2014**, Jaipur Marriott Hotel, Jaipur, India, October 10-11, 2014.
3. Invited lectures in the **Special Summer School for the University and College Teachers**, UGC-Academic Staff College, Guru Nanak Dev University, Amritsar, India, June 10-30, 2014.
4. Invited lecture in the Science Conclave-2014, YMCA University of Science and Technology, Faridabad, India, April 17, 2014.
5. Invited lecture in the **National Conference on New Horizons in Healthcare, Environment, Food and Biochemicals**, IIT BHU, Varanasi, India, March 26, 2014.
6. Invited lecture in the National Science Day, 2014 Programme, Chaudhary Devi Lal University, Sirsa, India, February 28, 2014.
7. Invited lecture in the National Science Day, 2014 Programme, Sant Longowal Institute of Engineering and Technology, Sangrur, India, February 28, 2014.
8. Invited lecture in the Science Conclave-2014, Guru Jambheshwar University of Science and Technology, Hisar, India, February 18-19, 2014.

9. Invited lecture on **“Therapeutic and pharmaceutical applications of guar gum”** in the **International Conference on Pharmaceutical Sciences**, SGRRITS, Dehradun, India, February 14-15, 2014.
10. Keynote address on **“Milestones in Gene and Genome Research”** in the **National Biotechnology Conference:2012**, I. T. S. Paramedical College, Ghaziabad, India, April 28, 2012.
11. Keynote address on **“How to be successful in academic life”** in the **National Seminar-Cum-Workshop on How to promote basic/applied sciences to strengthen technical education**, S. R. S. Government Polytechnic College (Girls), Ludhiana, India, February 23-24, 2012.
12. Invited lecture on **“How to be successful in science”** in the **Science Conclave-2012**, R. K. S. D. (PG) College, Kaithal, India, February 2-3, 2012.
13. Invited lecture on **“Biotechnological advances in guar for enhancing quantity and quality of guar gum”** in the **National Symposium on Advances in Biotechnological Research in Agri-Horticultural Crops for Sustaining Productivity, Quality Improvement and Food Security**, S. V. P. University of Agriculture and Technology, Meerut, India, September 14-16, 2011.
14. Invited lecture on **“Alleviation of arsenic toxicity in soil by using genetically-engineered rhizobia”** in the **National Conference on Multidisciplinary Approach in Frontier Areas of Environmental Science and Engineering**, G. J. University of Science & Technology, Hisar, India, March 4-5, 2011.
15. Plenary lecture on **“Genetic studies on auxotrophic and stress tolerant strains of rhizobial”** in the **International Symposium on Recent Advances in Cross-disciplinary Microbiology: Avenues and Challenges**, Ranchi, India, December 14-17, 2010.
16. Invited lecture on **“Genetic manipulation of plant cell wall polysaccharides for industrial applications”**, Delhi Technological University, Delhi, India, October 29-30, 2010.
17. Invited lecture on **“Studies on arsenic resistance in rhizobial strains and alleviation of arsenic toxicity in alfalfa”**, National Institute of Technology, Durgapur, India, October 4-5, 2010.
18. Invited lecture in the **Zonal Seminar on Physiological and Molecular Interventions for yield and quality improvement in crop plants**, SVPUA&T, Meerut, India, September 17-18, 2010.
19. Invited lecture on **“Genetic Engineering : A Tool to Change Life on Earth”**, Lecture Series on Biotechnology, Beehive Group of Colleges, Dehradun, April 3, 2010.
20. Invited lecture in the **National Conference on Leads for Futuristic Biotechnological Inputs : Indian Context**, IAMR, Ghaziabad, March 26-27, 2010.
21. Invited lecture in the **U. G. C. National Seminar on Biotechnology : Expanding Horizons**, S. D. College, Barnala, Punjab, India, February 20, 2010.
22. Invited lecture on **Industrial Biotechnology** in the **Workshop on Recent Trends and Future in Biotechnology**, Vardhaman Mahaveer Open University, Kota, March 8-10, 2010.
23. Keynote address in the **National Symposium on Biotechnology : Innovations and Challenges**, G. G. D. S. D. College, Chandigarh, India, February 6, 2010.

24. Invited lecture in the **National Symposium on Emerging Trends and Opportunities in Basic and Applied Sciences**, Poddar International College, Jaipur, India, January 30, 2010.
25. **Keynote address in the National Symposium on Emerging Trends in Biotechnology**, M. D. University, Rohtak, November 24, 2009.
26. Invited lecture in the National Seminar on Bioengineered Foods : Strategies & Perspective, SLIET, Longowal, Punjab, India, November 20-21, 2009.
27. **Keynote address in the National Workshop on Current Advancements in Biotechnology & Bioinformatics**, IASE (D) University, Sardarshahr, India, November 11-15, 2009.
28. Invited lecture in the **Workshop on How to be Successful**, Yadavindra College of Engineering, Punjabi University Guru Kashi Campus, Talwandi Sabo, India, October 19, 2009.
29. Invited lecture in the **National Conference on DNA-2009 : DNA-The Decisive Evidence**, Andhra Pradesh Police Academy, Hyderabad, India, August 17-19, 2009.
30. Plenary lecture in the **National Symposium on Biotech-2009-Present and Future Perspectives**, Punjabi University, Patiala, India, March 19-20, 2009.
31. Invited lecture in the **National Conference on Modern Developments in Engineering & Sciences**, College of Engineering & Applied Research, Ambala, India, February 27-28, 2009.
32. **Keynote address in the 3rd Annual Biotech Fest 2009**, I. T. S. Paramedical College, Muradnagar, Ghaziabad, India, February 27-28, 2009.
33. Invited lecture in the **International Symposium on Emerging Trends in Biotechnology & Management**, Biyani Institute of Science & Management, Jaipur, India, December 19, 2008.
34. Invited lecture in the **QIP Workshop on Recent Trends and Emerging Technologies in Medicine**, I. I. T. Roorkee, India, November 16, 2008.
35. Invited lecture in the **Industry Academia Coordination Workshop**, G. B. Pant University of Agriculture & Technology, Pantnagar, India, November 15, 2008.
36. Invited lecture in the **International Conference on Molecular Biology & Biotechnology**, Banasthali University, Banasthali, India, October 19-21, 2008.
37. Invited lecture in the **Asia Regional Workshop on 'Role of Youth in Mitigating the Impact of Climate Change for Sustainable Livelihood'**, Forest Research Institute, Dehradun, India, October 13-18, 2008.
38. Invited lecture in the **National Seminar on Trends in Modern Biosciences**, Hans Raj Mahila Maha Vidyalaya, Jalandhar, India, September 29-30, 2008.
39. **Presidential address in the National Seminar on Genetic Panorama**, D. A. V. College, Jalandhar, India, September 27, 2008.
40. Invited lecture in the Summer School on **Biotechnology**, Indian Veterinary Research Institute, Mukteshwar, India, September 6, 2008.
41. Invited lecture in the **Summer School on Recent Trends in Biology and Biotechnology**, Forest Research Institute, Dehradun, India, August 18-29, 2008.
42. **Keynote address in the National Science Day Celebrations Programme**, S.B.S. Postgraduate Institute of Biomedical Sciences and Research, Balawala, Dehradun, India, February 28, 2008.

43. **Keynote address in the 10-day Workshops on “Molecular and Applied Microbiology” and “Microbial Fermentation and Inoculant Preparations” Gurukul Kangri University, Harwar, India, Feb.10-19, 2008.**
44. **Keynote Address on “Milestones in Gene Research” delivered in the “National Conference-Cum-Seminar on Emerging Trends in Biotechnology”, IMS Engineering College, Ghaziabad, India, January 18-19, 2008.**
45. **Invited Lecture on “Gehun Paudh Ka Jaiv Sanrakshan” in the Workshop “Hindi mein Vigyan Lekhan avam Manak Vegyanic / Takniki Shabdavali Karayshala” organized by the Commission for Scientific & Technical Terminology, Ministry of Human Resource Development, Govt. of India at Bhabha Atomic Research Centre, Mumbai, India, March 21-22, 2007.**
46. **Invited Lecture on “Role of Rhizobial Biosynthetic Pathways of Amino Acids and Nucleotide bases in *Rhizobium*-legume Symbiosis” in the National Conference on “Microbial Diversity: Avenues and Applications”, S. B. S. P. G. I. B. S. R., Balawala, Dehra Dun, India, March 17-18, 2007.**
47. **Invited Lecture on “Genetic Manipulation of Plant Polysaccharides” in the III Annual Conference on “Shaping the Nature with Artificial Hands – An Amalgamation of Information Technology and Biosciences”, Kanpur, India, January 27-28, 2007.**
48. **Invited Lecture on “Fundamental Technologies in Molecular Genetics and Biotechnology” in the “Workshop on Biotechniques”, Mahatma Gandhi Institute of Applied Sciences, Jaipur, India, January 8-11, 2007.**
49. **Invited Lecture on “Cloning of genes for quality traits” in the training programme on “Biotechnology in Relation to Crop Improvement”, Punjab Agricultural University, Ludhiana, India, December 1-21, 2006.**
50. **Invited Lecture on “Molecular genetics of *Rhizobium*-legume symbiosis” in the 47th Annual Conference of Association of Microbiologists of India, Barkatullah University, Bhopal, India, December 6-8, 2006.**
51. **Invited Lecture on “Manipulation of polysaccharide synthesis in plants : Transgenic approach”, ICAR Sponsored Winter School 2006 on “Strategies for gene cloning and expression for value addition in crop plants”, CCS Haryana Agricultural University, Hisar, India, November 15 - December 5, 2006.**
52. **Plenary Lecture in the National Symposium on Biotechnology in Genomic Era : Industrial Applications, IILM Academy of Higher Learning, Greater Noida, India, April 28, 2006.**
53. **Plenary Lecture in the National Symposium on Entrepreneurship in Biotechnology, S.U.S. College of Engineering & Technology, Tangori, India, February 27, 2006.**
54. **National Science Day Lecture at Punjab University, Chandigarh, India, February 27, 2006.**
55. **Invited Lecture in the Uttaranchal Herbal Expo-2005 at Dehra Dun, December 26, 2005.**
56. **Plant cell wall polysaccharides biosynthesis – Industrial applications; National Conference on Modern Trends in Chemical Science & Technology, D.A.V.College, Jalandhar; Oct. 15-17, 2005.**
57. **Molecular genetics of *Rhizobium*-legume symbiosis; Department of Biotechnology, Punjabi University, Patiala, India; January 25, 2003.**

58. **Isolation and characterization of tryptophan auxotrophs of *Sinorhizobium meliloti***; 5th European Nitrogen Fixation Conference, Norwich, U.K.; Sept. 6-10, 2002.
59. Genetic Engineering; Refresher Course on Industrial Biotechnology, Organized by Department of Biotechnology, Punjabi University, Patiala, India; Oct.11-31, 2000.
60. Nodulation and nitrogen fixation under stress conditions; Refresher Course on Microbes in Integrated Nutrients Management at C.C.S. Haryana Agricultural University, Hisar, India; Sept. 15 to Oct. 12, 2000.
61. Development of stress tolerant transgenic rhizobial strains; Brain Storming Session on Development of transgenic microbial inoculants, Organized by the Department of Biotechnology, Govt. of India at Habitat Centre, New Delhi, India; May 24-25, 2000.
62. *Rhizobium* plasmids; Summer Institute on Unconventional Approaches in Plant Breeding, Punjab Agricultural University, Ludhiana, India, July 1985.

Publications:

a) Research Papers in Journals:

1. Heterologous expression, characterization and *in silico* approach for structural analysis of phosphomannose isomerase (PMI) from *Cyamopsis tetragonoloba*. P. Gahlot, S. Kumari, S. Singh, P. Kumar, S. M. Sondhi, K. S. Dhugga & **G. S. Randhawa**. **Journal of Proteins and Proteomics** 5 (3): 148 (December, 2014).
2. Effect of grain hardness on bioavailability of iron in wheat as determined using the coupled *in vitro* digestion/Caco-2 model. R. Salunke, N. Rawat, K. Neelam, V. K. Tiwari, **G. S. Randhawa**, H. S. Dhaliwal & P. Roy. **LWT-Food Science and Technology** 59: 433-438 (November, 2014).
3. Identification and characterization of EST-SSR markers in cluster bean (*Cyamopsis* spp.). N. A. Kuravadi, P. B. Tiwari, U. K. Tanwar, S. K. Tripathi, K. S. Dhugga, K. S. Gill & **G. S. Randhawa**. **Crop Science** 54: 1097-1102 (May-June, 2014). doi:10.2135/cropsci2013.08.0522
4. A novel combination of plant growth regulators for *in vitro* regeneration of complete plantlets of guar [*Cyamopsis tetragonoloba* (L.) Taub.]. S. Verma, K. S. Gill, V. Pruthi, K. S. Dhugga & **G. S. Randhawa**. **Indian J. Exp. Biol.** 51 : 1120-1124 (December, 2013).
5. Genetic diversity study of cluster bean (*Cyamopsis tetragonoloba* (L.) Taub) landraces using RAPD and ISSR markers. N. A. Kuravadi, P. B. Tiwari, M. Choudhary, S. K. Tripathi, K. S. Dhugga, K. S. Gill & **G. S. Randhawa**. **International Journal of Advanced Biotechnology and Research** 4 : 460-471 (October, 2013).
6. Development and molecular characterization of wheat-*Aegilops longissima* derivatives with high grain micronutrients. K. Neelam, N. Rawat, V. K. Tiwari, N. Ghandhi, P. C. Arun, S. Kumar, S. K. Tripathi, **G.**

S. Randhawa, R. Prasad & H. S. Dhaliwal. Australian Journal of Crop Science 7 : 508-514 (March, 2013).

7. Role of rootless concerning crown and seminal roots (RTCS) gene in wheat : Bioinformatics and molecular approach. D. Dewan, N. Kaur, K. S. Gill & **G. S. Randhawa. Crop Improvement** (Special Issue containing short communications from the International Conference on Sustainable Agriculture for Food and Livelihood Security, November 27-29, 2012) : 111 (2012).
8. Studies on the role of NRT2 gene in nutrient use efficiency in wheat through virus-induced gene silencing. N. Kaur, D. Dewan, K. S. Gill & **G. S. Randhawa. Crop Improvement** (Special Issue containing short communications from the International Conference on Sustainable Agriculture for Food and Livelihood Security, November 27-29, 2012) : 249 (2012).
9. *catA* gene in a potential *Corynebacterium* strain is responsible for its efficiency in phenol bioremoval. S. Dalal, D. P. Panigrahi, **G. S. Randhawa** & R. C. Dubey. **Polycyclic Aromatic Compounds** 32 (4) : 423-438 (September, 2012).
10. Molecular characterization of high-strength polycyclic aromatic hydrocarbon (PAH)-degrading and phenol-tolerant bacteria obtained from thermal power plant wastewater. S. Dalal, D. P. Panigrahi, **G. S. Randhawa** & R. C. Dubey. **Chemistry and Ecology** 28 : 187-192 (April, 2012).
11. DNA repair and crossing over favor similar chromosome region as discovered in radiation hybrid of *Triticum*. A. Kumar, F. M. Bassi, E. Paux, O. Al-Azzam, M. M. de Jimenez, A. M. Denton, Y. Q. Gu, E. Huttner, A. Kilian, S. Kumar, A. Goyal, M. J. Iqbal, V. Tiwari, M. Dogramaci, H. S. Balyan, H. S. Dhaliwal, P. K. Gupta, **G. S. Randhawa**, C. Feuillet, W. P. Pawlowski & S. F. Kianian. **BMC Genomics** 13 : 339 (24 July, 2012) doi : 10.1186/1471-2164-13-339
12. Evaluation and identification of wheat-*Aegilops* addition lines controlling high grain iron and zinc concentration and mugineic acid production. K. Neelam, N. Rawat, V. K. Tiwari, R. Prasad, S. K. Tripathi, **G. S. Randhawa** & H. S. Dhaliwal. **Cereal Research Communications** 40 : 53-61 (2012).
13. Determination of bioavailable-zinc from biofortified wheat using a coupled *in-vitro* digestion/Caco-2 reporter-gene based assay. R. Salunke, N. Rawat, V. K. Tiwari, K. Neelam, **G. S. Randhawa**, H. S. Dhaliwal & P. Roy. **Journal of Food Composition and Analysis** 25:149-159 (March, 2012).
14. Development and molecular characterization of wheat-*Aegilops kotschy* addition and substitution lines with high grain protein, iron and zinc. N. Rawat, K. Neelam, V. K. Tiwari, **G. S. Randhawa**, B. Friebe, B. S. Gill & H. S. Dhaliwal. **Genome** 54 : 943-953 (November, 2011).
15. Ischemic insult induced apoptotic changes in PC12 cells : Protection by *trans resveratrol*. M. Agrawal, V. Kumar, M. P. Kashyap, V. K. Khanna,

G. S. Randhawa & A. B. Pant. European Journal of Pharmacology 666 : 5-11 (September, 2011).

16. Bioavailability of iron from wheat *Aegilops* derivatives selected for high grain iron and protein contents. R. Salunke, K. Neelam, N. Rawat, V. K. Tiwari, **G. S. Randhawa**, H. S. Dhaliwal & P. Roy. **Journal of Agricultural and Food Chemistry** 59 : 7465-7473 (June, 2011) & DOI: **10.1021/jf202913e**.
17. Introgression of group 4 and 7 chromosomes of *Ae. peregrina* in wheat enhances grain iron and zinc density. K. Neelam, N. Rawat, V. K. Tiwari, S. Kumar, P. Chhuneja, K. Singh, **G. S. Randhawa** & H. S. Dhaliwal. **Molecular Breeding** 28 : 623-634(December, 2011).
18. Random chromosome elimination in synthetic wheat-*Aegilops* amphiploids leads to development of a stable partial amphiploid with high grain micro and macronutrient content and powdery mildew resistance. V. K. Tiwari, N. Rawat, K. Neelam, S. Kumar, **G. S. Randhawa** & H. S. Dhaliwal. **Genome** 53 : 1053-1065 (2010).
19. A novel method to alleviate arsenic toxicity in alfalfa plants using a deletion mutant strain of *Sinorhizobium meliloti*. D. P. Panigrahi & **G. S. Randhawa**. **Plant Soil** 336 : 459-467 (2010).
20. Identification of *Aegilops* species with higher production of phytosiderophore and iron and zinc uptake under micronutrient sufficient and deficient conditions. K. Neelam, V. K. Tiwari, N. Rawat, S. K. Tripathi, **G. S. Randhawa** & H. S. Dhaliwal. **Plant Genetic Resources : Characterization and Utilization** 8 : 132-141(August, 2010).
21. Substitution of 2S and 7U chromosomes *Aegilops kotschy* in wheat enhances grain iron and zinc concentration. V. Tiwari, N. Rawat, K. Neelam, S. Kumar, **G. S. Randhawa** and H. Dhaliwal. **Theoretical and Applied Genetics** 121 : 259-269 (July, 2010).
22. A candidate gene *OSAPC6* of anaphase-promoting complex of rice identified through T-DNA insertion. M. Kumar, P. Osmanbasha, A. Bhalla, D. Rajpurohit, T. Jhang, V. Garg, T. R. Sharma, **G. S. Randhawa**, S. Kianian & H. S. Dhaliwal. **Functional and Integrative Genomics** 10 : 349-358 (August, 2010).
23. The polyembryo gene (*OsPE*) in rice. A. Puri, P. O. Basha, M. Kumar, D. Rajpurohit, **G. S. Randhawa**, S. F. Kianian, A. Rishi & H. S. Dhaliwal. **Functional and Integrative Genomics** 10 : 359-366 (August, 2010).
24. Genetic control of seed dormancy in basmati rice. M. Kumar, D. Rajpurohit, P. O. Basha, A. Bhalla, **G. S. Randhawa** & H. S. Dhaliwal. **Madras Agric. J.** 96 : 305-308 (December, 2009).
25. Linkage mapping of polyembryonic, oligoculm and gibberellic acid insensitive dwarf insertional mutants of *Oryza sativa* var. Basmati 370. A. Bhalla, P. O. Basha, M. Kumar, K. Singh, D. Rajpurohit, **G. S. Randhawa** & H. S. Dhaliwal. **SABRAO Journal of Breeding & Genetics** 41 : 13-23 (2009).
26. Development and characterization of *Triticum aestivum*-*Aegilops kotschy* amphiploids with high grain iron and zinc content. N. Rawat, V. K. Tiwari, K. Neelam, **G. S. Randhawa**, P. Chhuneja, K. Singh, & H. S.

Dhaliwal. **Plant Genetic Resources : Characterization and Utilization** 7 : 271-280 (2009).

27. Molecular mapping of high grain iron and zinc related QTLs in a diploid RIL wheat population. V. K. Tiwari, N. Rawat, P. Chhuneja, K. Neelam, R. Agarwal, K. Singh, **G. S. Randhawa** & H. S. Dhaliwal. **Journal of Heredity** 100 : 771(2009).
28. Evaluation and utilization of *Aegilops* and wild *Triticum* species for enhancing iron and zinc content in wheat. N. Rawat, V. K. Tiwari, N. Singh, **G. S. Randhawa**, K. Singh, P. Chhuneja & H. S. Dhaliwal. **Genet. Resour. Crop Evol.** 56 : 53-64 (2009).
29. Development of *Triticum turgidum* subsp *durum*-*Aegilops longissima* amphiploids with high iron and zinc content through unreduced gamete formation in F-1 hybrids. V. K. Tiwari, N. Rawat, K. Neelam, **G. S. Randhawa**, K. Singh, P. Chhuneja & H. S. Dhaliwal. **Genome** 51 : 757-766 (2008).
30. Guar Seed β -Mannan Synthase Is a Member of the Cellulose Synthase Super Gene Family. K. S. Dhugga, R.Barreiro, B. Whitten, K.Stecca, J. Hazebroek, **G. S. Randhawa**, M. Dolan, A. J.Kinney, D.Tomes, S. Nichols, P.Anderson. **Science** 303: 363-366 (2004).
31. Isolation and symbiotic characterization of transposons Tn5-induced arginine auxotrophs of *Sinorhizobium meliloti*. A. Kumar, N. Vij and G. S. Randhawa. **Indian J. Exp. Biol.** 41 : 1198-1204 (2003). PMID: 15242285 [PubMed - indexed for MEDLINE].
32. Symbiotic characterization of cysteine and methionine auxotrophs of *Sinorhizobium meliloti*. B.A. Abbas, K.E. Vineetha, C.K. Prasad, N. Vij, R. Hassani & **G.S. Randhawa**. **Indian J. Exp. Biol.** 40: 1121-1130 (2002). PMID: 12693691 [PubMed - indexed for MEDLINE].
33. Symbiotic characterization of isoleucine+valine and leucine auxotrophs of *Sinorhizobium meliloti*. R. Hassani, C.K. Prasad, Vineetha K.E., N. Vij, P. Singh, S. Yadav, R. Sud & **G.S. Randhawa**. **Indian J. Exp. Biol.** 40: 1110-1120 (2002). PMID: 12693690 [PubMed - indexed for MEDLINE].
34. Ultrastructural studies on nodules induced by pyrimidine auxotrophs of *Sinorhizobium meliloti*. Vineetha K.E., N. Vij, C.K. Prasad, R. Hassani & **G.S. Randhawa**. **Indian J. Exp. Biol.** 39: 371-377 (2001). PMID: 11491584 [PubMed - indexed for MEDLINE].
35. Isolation and symbiotic characterization of aromatic amino acid auxotrophs of *Sinorhizobium meliloti*. C.K. Prasad, Vineetha K.E., R. Hassani, R. Gupta & **G.S. Randhawa**. **Indian J. Exp. Biol.** 38: 1041-1049 (2000). PMID: 11324158 [PubMed - indexed for MEDLINE].
36. Toxicity of pesticides 2,4-D and cypermethrin on *Rhizobium meliloti*. N. Vij, **G.S. Randhawa** and A.K. Chopra. **Chem. Env. Res.** 7: 123-138 (1998).
37. Prevalence and transfer of R-plasmids in *Escherichia coli* isolates from healthy adults. A.B. Pant, R.K. Bedi & **G.S. Randhawa**. **Indian Vet. Med. Jour.** 22: 179-183 (1998).
38. Plasmid elimination from clinical isolates of *Escherichia coli* by ciprofloxacin and other inhibitors of DNA gyrase. A.B. Pant, **G.S.**

Randhawa, G.D. Sharma & M.K. Kapil. *Biotechnology Techniques* 8: 209-213 (1994).

<http://www.springerlink.com/content/q4515lh712265212/>

39. Introduction of a segment of *Rhizobium meliloti* megaplasmid into *E. coli* slows down its growth in minimal medium. R. Choubey, **G.S. Randhawa**, A. Dixit & C.B. Sharma. **Indian J. Exp. Biol.** 30: 257-259 (1992). PMID: 1459590 [PubMed - indexed for MEDLINE]
40. Construction and characterization of R-prime plasmids carrying symbiotic genes of *Rhizobium meliloti*. Z. Banfalvi, **G.S. Randhawa**, E. Kondorosi, A. Kiss & A. Kondorosi. **Mol. Gen. Genet.** 189: 129-135 (1983).
41. Introduction of symbiotic genes of *Rhizobium meliloti* into other rhizobial and *Agrobacterium*. Z. Banfalvi, E. Kondorosi, G. S. Randhawa et al. **Acta Microbiologica Hungarica** 31 : 234 (1984).
42. Localization of symbiotic mutations in *Rhizobium meliloti*. T. Forrai, E. Vincze, Z. Banfalvi, G.B. Kiss, **G.S. Randhawa** & A. Kondorosi. **J. Bacteriol.** 153: 635-643 (1983).

b) Other Publications in Journals:

1. Understanding life : by making and breaking the cell. **G. S. Randhawa**, D. P. Panigrahi & K. A. Nagesh. **Indian J. Microbiol.** 50 : 247-248 (2010).
2. Plant cell wall matrix polysaccharide biosynthesis (Review Article). A. P. S. Sandhu, **G. S. Randhawa** & K. S. Dhugga. **Molecular Plant** 2 : 840-850 (2009).
3. Review of the book entitled “Microbial Biotechnology”, Editor : Ratul Saikia. **Indian J. Exp. Biol.** 46 : 258 (2008).
4. News Scan : Underground strategies of an invader; MicroRNAs rescued from neglect & Recent report of a novel reporter. **G.S.Randhawa** & Shubha G. **Indian J. Exp. Biol.** 41: 1352-1353 (2003).
5. News Scan: Yeast made somewhat human to produce human proteins. **G.S.Randhawa** & Shubha G. **Indian J. Exp. Biol.** 41: 1352-1353 (2003). PMID: 15332514 [PubMed - indexed for MEDLINE].
6. Recent advances in *Rhizobium*-legume symbiosis. **G.S.Randhawa**, Shubha G., N.K. Singh, A. Kumar & A. Bhalla. **Indian J. Exp. Biol.** 41: 1184-1197 (2003). PMID: 15242284 [PubMed - indexed for MEDLINE].
7. Milestones in the genetical research on rhizobia. **G.S.Randhawa** & A. Kumar. **Indian J. Exp. Biol.** 41: 1095-1100 (2003). PMID: 15242275 [PubMed - indexed for MEDLINE].
8. Preface to the Special Issue on “Bacterium-plant Symbiosis”. **G.S.Randhawa** & G.B. Kiss. **Indian J. Exp. Biol.** 41: 1091-1092 (2003).
9. 5th European Nitrogen Fixation Conference- A Report. **G.S. Randhawa**. **Indian J. Exp. Biol.** 40: 1321 (2002). PMID: 13677639 [PubMed - indexed for MEDLINE].
10. Role of biosynthetic pathways of amino acids, nucleotide bases and vitamins in symbiosis (Review Article). **G.S. Randhawa** & Raad Hassani. **Indian J. Exp. Biol.** 40: 755-764 (2002). PMID: 12597544 [PubMed - indexed for MEDLINE].

11. Antiquity of life. **G.S. Randhawa**. **Everyday Science**. 22: 23-25 (1977).

c) Articles in Books:

1. Recombinant DNA technology: A tool to change life. **G. S. Randhawa**, D. P. Panigrahi & S. Verma. In: S. M. Paul Khurana & M. Singh (eds.). *Biotechnology: Progress & Prospects*; Studium Press LLC, Houston, USA; pp. 139-157 (2015).
2. Guar : An industrial crop from marginal farms. N. A. Kuravadi, S. Verma, S. Pareek, P. Gahlot, S. Kumari, U. K. Tanwar, P. Bhatele, M. Choudhary, K. S. Gill, V. Pruthi, S. K. Tripathi, K. S. Dhugga & **G. S. Randhawa**. In : G. S. Bhullar & N. K. Bhullar (eds.). *Agricultural Sustainability : Progress and Prospects in Crop Research*; Elsevier, Amsterdam; pp. 47-60 (2013).
3. How to be successful in academic life. **G. S. Randhawa** & S. Verma. In : M. S. Randhawa, S. Singh, R. K. Sharma & G. H. Hugar (eds.). *Proceedings of the National Seminar-Cum-Workshop on How to Promote Applied/ Basic Sciences to Strengthen Technical Education*, February 23-24, 2012, Ludhiana, India, pp. 139-141 (2012).
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