



CURRICULUM VITAE

Name : **Dr Pawan K. Jaiwal**
 Designation : Professor Emeritus UGC-BSR Fellow
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 Fathers name : Shri D P S Jaiwal
 Date of Birth : Jan. 1, 1958

Academic Qualifications

| Degree | Year of passing | Division | University |
|---------------------|-----------------|----------|----------------------------|
| Ph.D. | 1984 | - | K. U. Kurukshetra |
| M. Sc. | 1977-1979 | I | -do- |
| B. Sc. (Honours) | 1974-1977 | I | University of Delhi, Delhi |

Post-doctoral Research Experience

- ◆ Institute of Plant Science, ETH, Zurich, Switzerland from Oct., 1995 -Oct., 1996 (worked in the Lab. of Prof Ingo Potrykus)
- ◆ National Research Centre on Plant Biotechnology, IARI, New Delhi from May 1998-Aug., 1998.
- ◆ University of Ghent, Ghent, Belgium, International Institute of Plant Biotechnology for Developing countries, from Aug. 14-23, 2007.

Professional Experience

| Position held | Period | University/Institute |
|---------------|----------------|--------------------------|
| Professor | 2006-till date | M. D. University, Rohtak |
| Reader | 1998-2006 | -do- |

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|--|-----------|-------------------|
| Senior Lecturer | 1991-1998 | -do- |
| Lecturer | 1986-1991 | -do- |
| Junior/Senior/Res. Assoc. (CSIR, New Delhi) | 1980-1985 | K. U. Kurukshetra |

◆ **Field of Specialization:** Plant Genetic Engineering /Mol Plant Physiol/Metabolic Engineering

◆ **Areas of Research:** Development of transgenic grain legumes, oil seed cereal crops plants for resistance to biotic & abiotic stresses, nutrient utilization efficiency, and nutritional improvement of crop plants, and legume genomics

◆ **Teaching PG courses in Biotechnology:** Plant Biotechnology, Molecular Biology, rDNA technology and Metabolic Engineering for the last three decades

Administrative experience:

1. Member, Executive Committee of M. D. University, Rohtak (2015-17)
2. Dean, Faculty of Life Sciences, M. D. University, Rohtak from Sept, 2014 -2017
3. Director, Centre for Biotechnology, M. D. University, Rohtak from March 1, 2012 to Feb 28, 2015.
4. Director, Centre for Medical Biotechnology, M. D. University, Rohtak from Oct 2015 till date
5. Chairman, Institutional Biosafety Committee, 2014 till date
6. Chairman, Institutional Animal Ethics Committee from 2014 to 2017
7. Chairman, Unfair Means Committee for the year, 2013-2014, 2017
8. Coordinator, UGC-SAP
9. Coordinator, DST-FIST
10. Coordinator, Department of Biotechnology, University Institute of Science & Technology, Rohtak from 2004-2006
11. President, MDU Teachers Association from 2011-2012
12. Member of the Research Directorate, M. D. University, Rohtak from 2011 to 2016
13. Member of Central Purchase Committee of the University 2012-2016
14. Member of University House Allotment Committee, 2012
15. Member of the University Admission Committee, 2014 to 2017
16. Member of the University Grievance Committee, 2012
17. Member of the University Finance Committee, 2012
18. Member of the University Provost Committee, 2014
19. Member of the Working Committee of University Film Club, 2012
20. Member of the Managing Body of the University Campus School, 2012
21. Member of the Governing Body of the Satguru College, Faridabad

Professional assignments

- Member of DRC in the subject of Botany, CCS University, Meerut and

Centre for Biotechnology, MDU

- Member of PG board of studies in Environmental Sciences, BBA University Lucknow, PGBOS in Biotechnology, MDU, Rohtak, DCRUST, Murthal and CDLU, Sirsa
- Member of the Academic Council of YMCA, Faridabad, and MDU, Rohtak,
- Member of selection committees for Life-sciences at M. D. University, Rohtak DCRUST, Murthal and Manav Rachna International Univ., Faridabad

- Resource person for refresher courses organized by JNU, New Delhi, CCS University, Meerut and HAU, Hisar
- Reviewer of the research papers for the journals Plant Biotech. J., Plant Cell Rep., Plant Cell Tiss. Org. Cult., Plant Sci., Transgenic Research, Scientia Horticulture, Acta Physiol. Plantarum, African J. Biotech., Curr Sci., Indian J. Exp. Biol., Indian J. Biotech, Physiol Mol Biol. Plants etc.

Research Guidance

♦ **Guided 20 students for Ph.D.**, 3 for M.Phil. and several (approx. 72) for M.Sc. dissertation, and currently six Ph.D. students are working in the laboratory

Ph.D. degrees supervised

| S.No. | Name of Student | Title of Ph. D. thesis | Year of Award | Co-guide/ Co-supervisor |
|-------|-------------------|--|---------------|------------------------------------|
| 1. | Anju Gulati | Isolation and Characterization of salt tolerant cell lines of <i>Vigna radiata</i> L. Wilczek | 1992 | P K Jaiwal |
| 2. | Sujata Bhanote | Ethanobotanical survey of a North East Indian State | 1998 | P K Jaiwal & S K Gakhar (co-guide) |
| 3. | Ragini Kumari | <i>Agrobacterium tumefaciens</i> mediated gene transfer in mungbean (<i>Vigna radiata</i> L. Wilczek) | 2001 | P K Jaiwal |
| 4. | Lingaraj Sahoo | Production of transgenic plants of mungbean via particle bombardment of meristems | 2001 | -do- |
| 5. | N. Dolendro Singh | Regeneration and genetic transformation of Pigeon pea (<i>Cajanus cajan</i> (L.) Millsp.) | 2001 | P K Jaiwal & Neera-Bhalla Sarin |
| 6. | Sonia | Development of transgenic mungbean seeds resistant to storage pest, bruchid beetles | 2002 | P K Jaiwal |
| 7. | Raman Saini | <i>In vitro</i> plant regeneration and <i>Agrobacterium</i> mediated genetic | 2003 | -do- |

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|-----|------------------------|---|------|--------------------------------------|
| | | transformation of black gram (<i>Vigna mungo</i> L. Halper) | | |
| 8. | Amita Gupta | Proline metabolism and antioxidative defense system in mungbean under salt stress | 2005 | R P Singh & P K Jaiwal |
| 9. | Saroj Dahiya | Development of slow release fertilizers for improved nutrient utilization and high yield in rice and mungbean | 2007 | -do- |
| 10. | Sudesh Chhikara | Development of transgenics in Indian oilseed mustard (<i>Brassica juncea</i> Czern.) resistant to fungal pathogens. | 2007 | P K Jaiwal |
| 11. | Seema Madanpotra | Genetic transformation of mungbean with MYMIV replicase gene in sense and antisense orientation to confer resistance to yellow mosaic disease | 2007 | -do- |
| 12. | Anila Baloda | Metabolic engineering of glycinebetaine biosynthesis in mungbean plants for salt and drought tolerance | 2009 | -do- |
| 13. | Darshna Chaudhary | <i>In vitro</i> plant regeneration and <i>Agrobacterium</i> -mediated genetic transformation of cowpea (<i>Vigna unguiculata</i> L. Walp) | 2009 | -do- |
| 14. | Manju Yadav | <i>In vitro</i> plant regeneration and <i>Agrobacterium</i> mediated genetic transformation of sesame (<i>Sesamum indicum</i> L.) | 2009 | -do- |
| 15. | Lalita Badgujjar | <i>In vitro</i> plant regeneration and genetic transformation of cucumber (<i>Cucumis sativa</i> L.) | 2011 | P K Jaiwal |
| 16. | Rakesh Kumar | Molecular characterization of mRNA segment of watermelon bud necrosis virus genome and studies on transgene expression in water melon | 2011 | P K Jaiwal & Bikas Mandal (co-guide) |
| 17. | Gulshan Chabra | <i>In vitro</i> regeneration and <i>Agrobacterium</i> - mediated genetic transformation of a duck weed (<i>Lemna</i> sp.) | 2012 | P K Jaiwal |
| 18. | Savita Dahiya | RNA interference for generation of transgenic blackgram (<i>Vigna mungo</i> L. Hepper) plants resistant to yellow mosaic disease | 2012 | -do- |
| 19. | Lakshmikanth Redipalli | Studies on the development of transgenic pigeon pea (<i>Cajanus cajan</i> (L.) Millsp.): resistant to pod borer | 2013 | P K Jaiwal & P A Kumar (co-guide) |
| 20. | Sanjay Singh | <i>In vitro</i> regeneration and genetic | 2013 | P K Jaiwal |

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|-----|----------------|---|----------|------------|
| | | transformation of wheat (<i>Triticum aestivum</i> L.) for the production of Coenzyme Q10 | | |
| 21. | Manish Sainger | Development of an efficient <i>Agrobacterium</i> -mediated transformation system in mungbean (<i>Vigna radiata</i> L. Wilczek) using MYMV- <i>vig</i> replicase gene | 2013 | -do- |
| 22. | Nirmala | Use of molecular markers for the identification of salt resistant genes in mungbean (<i>Vigna radiata</i> L. wilczek) | 2013 | -do- |
| 23. | Meenakshi | RNAi mediated yellow mosaic virus resistance in cowpea (<i>Vigna unguiculata</i> (L.) Walp) | Pursuing | P K Jaiwal |
| 24. | Deep Shikha | Introduction of CoQ10 biosynthesis into rice (<i>Oryza sativa</i>) endosperm to improve nutritional and agronomical performance | -do- | -do- |
| 25. | Kapil | Metabolic engineering of wheat with <i>dps</i> gene for biosynthesis of an antioxidant CoQ10 for its nutritional enhancement | -do- | -do- |
| 26. | Honey Yadav | Engineering of mevalonate pathway, decaprenyl diphosphate synthase, and polyprenyl transferase genes in wheat for the production of coenzyme Q10 | -do- | -do- |
| 27. | Sapna | Engineering <i>Camelina sativa</i> for insulin and C-peptide production | -do- | -do- |

Research Projects Undertaken

| S. No. | Project title | Duration | Funding agency | Funds sanctioned | Name of PI /Co-PI |
|--------|---|---------------------|-------------------|------------------|-------------------------------------|
| 1. | Regeneration of salt tolerant legumes through tissue culture | 3 years (1988-90) | UGC, New Delhi | 0.70 lakhs | P K Jaiwal (PI) |
| 2. | Development of salt tolerant genotypes of mungbean through tissue culture Selection (Young Scientist Research Project) | 3 years (1990-93) | DST, New Delhi | 5.0 lakhs | P K Jaiwal (PI) |
| 3. | Genetic transformation of a grain legume <i>Vigna radiata</i> by <i>Agrobacterium</i> -mediated gene transfer | 3 years (1995-98) | DBT, New Delhi | 18.0 lakhs | P K Jaiwal (PI) |
| 4. | Role of Proline and ABA in mungbean salt tolerance | 3 years | DST, New Delhi | 29.0 lakhs | R. P.Singh (PI) P K Jaiwal CO-PI |
| 5. | Pyramiding of insect resistance genes in pigeonpea plants by particle bombardment of meristems | 3 years (2000-2003) | CSIR, New Delhi | 15.0 Lakhs | P K Jaiwal (PI) |
| 6. | Development of efficient regeneration and transformation system for <i>Vigna</i> species | 3 years (2003-05) | DBT, New Delhi | 50.0 lakhs | P K Jaiwal (PI) & R P Singh (Co-PI) |
| 7. | Engineering MYMV resistance in mungbean (<i>Vigna radiata</i>)(HSCST/150) | 2 years (2007-2009) | HSCST, Chandigarh | 5.82 lakhs | P K Jaiwal (PI) |
| 8. | Development of yellow mosaic virus resistance in blackgram (<i>Vigna mungo</i> L. Hepper): Transformation of blackgram with MYMV-Vig genes” BT/PR7866/AGR/02/379/2006 | 3 years (2006-2009) | DBT, New Delhi | 28.69 lakhs | P K Jaiwal (PI) |
| 9. | Development of salt tolerant legume for sustainable agriculture and nutrition: Identification of QTLs/genes (Indo-Japan Collaboration for Sci &Tech) (DST/INT/JAP/P-63/08) | 2 years (2008-2010) | DST, New Delhi | 4.04 lakhs | P K Jaiwal (PI) |
| 10. | Metabolic engineering of CoQ10 in wheat (<i>Triticum aestivum</i> L.) 36-161/2008/(SR) | 3 years | UGC, New Delhi | 8.61 lakhs | P K Jaiwal (PI) |
| 11. | Development of yellow mosaic virus resistance in black gram | 2 years (2011- | DBT, New Delhi | 17.16 lakhs | P K Jaiwal (PI) & |

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|-----|--|-------------------|----------------------|------------|---------------------------|
| | (<i>Vigna mungo</i> L. Hepper): Transformation of blackgram and cowpea with MYMV-vig genes (BT/PR3342/AGR/02/820/2011) | 2013) | | | Darshna Chaudhary (Co-PI) |
| 12. | Biofortification of wheat (<i>Triticum aestivum</i>) with a potent antioxidant, CoQ10 for nutritional enhancement and abiotic stress tolerance (SERB/SB/SO/PS/67/2013) | 3 years (2014-17) | SERB, DST, New Delhi | 32.0 lakhs | P K Jaiwal (PI) |

Awards/prizes/medals

- ◆ UGC-BSR Faculty Fellowship (2017-18)
- ◆ Merit certificate for standing first class second in University in M.Sc. exams
- ◆ Awarded **DBT Overseas Associateship by DBT, New Delhi**
- ◆ Awarded **INSA Visiting Associateship, INSA, New Delhi**
- ◆ 10th International Association Plant Tissue Culture & B Congress fellowship recipient, June 2002
- ◆ Prof H S Srivastava **Gold medal** by the National Academy of Environmental Sciences, India for contributions in plant sciences

Meetings/Conferences Organized

1. Organized 2nd Review meeting of DBT network project on Development of virus resistant transgenic plants at MDU, Rohtak on July 10, 2008 sponsored by DBT, New Delhi.
2. Convenor, National Workshop on “**Genomics in Crop Improvement**” at the Centre for Biotechnology, MDU, Rohtak from Feb. 27-28, 2014. Sponsored by UGC, Dr RK Foundation and Prof HS Srivastava Foundation.
3. Course-Director of a **DBT short-term training course on “Plant Transgenic Technologies”** organised at the Centre for Biotechnology, MDU from Oct 1 -16, 2014 sponsored by DBT, New Delhi.
4. Convenor of a one-day seminar on ‘Antimicrobials’ organised at the Centre for Biotechnology, MDU on March 26, 2015 sponsored by UGC-SAP .

Lectures Delivered

At International Levels

- *Invited lecture on Gene transfer in *Vigna* species at 14th International Workshop on Genetic Resources and Comparative Genomics of soybean and Vigna. National Institute for Agrobiological Sciences (NIAS), Tsukuba, **Japan**, Sept 13 to 19, 2009
- * Invited by Chinese Academy of Agricultural Sciences, Beijing, China for a series of lectures on “ Genetic transformation of mungbean: Problems and Approaches” at Institute of Crop Sciences, CAAS, Beijing, Jiangsu Academy

of Agricultural Sciences (JAAS) and Hebei Academy of Agriculture and Forestry Sciences (HAAFS), China from Nov. 28 to Dec. 5, 2009.

*Delivered a talk on 'Genetic transformation of mungbean (*Vigna radiata*)' at a workshop on Modern Breeding Techniques at Intl. Institute of Plant Biotech for developing countries, University of Ghent, Ghent, Belgium, Aug 14-23, 2007

*Delivered an invited talk on 'Transgenic route for developing mungbean resistant to MYMV' at Final workshop and planning meeting DFID-AVRDC mungbean project organised by Dept for International Development, UK and Asian Vegetable Research and Development Centre, Taiwan, May 27-31, 2004.

At National Level

* Invited for a plenary lecture on "Genetic transformation of Legumes: Problems and Approaches" at a International Conf. on Grain Legumes: Quality Improvement, Value Addition and Trade, Indian Institute of Pulses Research (IIPR), Kanpur, 14-16 February 2009

* Delivered an invited lecture on 'Transgenic plants' at a refresher course in Biology organized by Dept of Zoology, Govt College, Rohtak. (May, 2008)

* Delivered an invited lecture on 'Gene transfer in plants' at a seminar organized by Govt. College, Gurgoan (Feb., 2010)

*Delivered invited talk on "Chickpea regeneration and genetic transformation" at one-day workshop on regeneration and transformation of chickpea organized by National Centre for Plant Genome Research (NCPGR), JNU campus, New Delhi held on Nov. 30, 2000.

*Invited to deliver a talk on "Towards genetic engineering of mungbean resistant to yellow mosaic virus, bruchids and herbicide phosphinothricin" at Natl Sym. on Plant Biotechnology and Molecular Biology and 24th meeting of Plant Tissue Culture Campus, New Delhi, Univ. of Delhi-South Campus, New Delhi.

*Delivered an invited lecture on 'Molecular biology of abiotic stresses' at refresher course in botany organized by Dept of Botany, CCS Meerut Univ., Meerut.

*Delivered an invited lecture on 'Genetic transformation of legumes' at workshop organized by Dept of Biotechnology and Mol. Biol., CCS HAU., Hisar, 2003

*Delivered an invited lecture on 'Transgenic mungbean – a case study' at workshop organized by Dept of Biotechnology and Mol. Biol., CCS HAU., Hisar, Dec 15, 2005.

*Delivered invited lectures twice on 'Genetic transformation' at a refresher courses in Life Sciences organized by School of Life Science, JNU, New Delhi, on Jan 12, 2004 and Jan 25, 2006.

*Delivered an invited lecture on 'Transgenics in legumes' at workshop organized by Dept of Biotechnology and Mol. Biol., CCS HAU., Hisar, Nov 25, 2006

Conferences/workshop/symposium attended (selected one)

International

#Attended and presented a paper at an International conference Dept of Soil, Plants and insects University of Massachusettes, Amhrest, USA (Oct., 2007)

Attended an International conference on Abiotic stress held at Intl. Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, Nov., 2006

Attended an International Conference on 'Plant Biotechnology-2002 and beyond' Xth IAPTC & B congress June 23-28, 2002 at Orlando, Florida, USA.

Attended and presented a paper at 4th International Food Legumes Research Conf. on Food Legumes for Nutritional Security & Sustainable Agriculture organised by Indian society of Genetics & Plant Breeding at IARI New Delhi Oct.18-22, 2005.

Attended and presented a paper at 2nd International congress of Plant Physiol. On Sustainable Plant Productivity under Changing environment organised by Indian Soc. Plant Physiol. & Intl. Assoc. Plant Physiol. at IARI , New Delhi Jan. 12, 2003

Participated in an International Conference on ‘Trends in Cellular and Molecular Biol. held at School of Life Sciences, JNU, New Delhi March 6-8, 2003

National (only selected)

Participated and presented a paper in a Conference on ‘Current Scenario of Rapeseed Mustard in India’ held at Chokhi Dhani, Jaipur Sept 30, 2006

Participated and presented a paper in a Conference on ‘Resource Development and Marketing Issues in Rapeseed Mustard’ held at National Institute of Agricultural Marketing, Jaipur, March 28-29, 2005

Actively participated in a National Seminar on ‘Genetically modified organisms – biosafety aspects’ held at Dept of Botany, Univ of Delhi, March 10-11, 2005

Participated in a Patent Awareness Workshop organised by Patent Information Centre, Hisar at MDU, Rohtak on Dec 30, 2005

Participated and presented a paper in a National Symposium on ‘Improving crop productivity in an eco-friendly environment: Physiological and Molecular Approaches’ held at GB Pant Univ. of Agriculture & Technology, Pantnagar, Oct. 15 to 17, 2003

Actively participated in a National Convention on ‘Transgenic Rapeseed Mustard – an assessment’ held at India Intl. Centre, New Delhi, Jan 16-17, 2002

Participated in a Workshop on ‘Patenting Awareness’ held at Univ of Delhi South Campus, New Delhi, Oct. 15, 2001

Member of Editorial board of

- **Associate Editor** of the journal ‘**Physiol. Mol. Biol. Plants**’ published by Springer, India
- **Editor** of the journal on ‘**Plant Biotechnology and Mol. Biol.**’ (Soc. for Biology and Biotech.) Kottayam,
- Editorial board member of **Brassica**, Mustard Research and Promotion consortium, New Delhi
- Editorial board member of **Medicinal Plants**, New Delhi

Membership of learned Societies

- ◆ **International Association** for Plant Tissue Culture
- ◆ Society for Biochemistry and Biotechnology, IARI, New Delhi
- ◆ Indian Society for Pulse Research, IPRI, Kanpur
- ◆ Indian Academy of Sciences, Bangalore

Training courses / workshops / refresher courses attended

- Attended and actively participated in a short course on “Applications of Biotechnology in Agriculture and Forestry” sponsored by ICAR, New Delhi and organized by Dept. Of Genetics, CCS Haryana Agriculture University, Hisar from Sept. 18-27, 1989
- Attended and actively participated in a short course on “Recent Trends in Plant Tissue Culture and Plant Transformation” sponsored by DBT and Organized by NCL, Pune from Feb 19- March 4, 1990
- Attended **four** Refresher courses on Biotechnology and Botany organized by Academic Staff College, J N U, New Delhi and Academic Staff College, H P Univ., Shimla, Academic Staff College, BHU, Varanasi and Academic Staff College, Panjab Univ., Chandigarh

Research Publications

Research Papers = 92

Books = 15

Book chapters = 24

Toal publications= 131

Research papers:

1. Sainger M, Jaiwal A, Sainger P A, Chaudhary D, Jaiwal R and **Jaiwal PK** *Advances in genetic improvement of Camelina sativa for biofuel and industrial bioproducts*, Renewable and Sustainable Energy Reviews, 2017, 68: 623-637. (Impact factor-8.05).
2. Badola A, Madanpotra S, **Jaiwal PK**, Transformation of mungbean plants for abiotic stress tolerance by introducing codA gene for an osmoprotectant glycine betaine. J. Plant Stress Physiol., 2017, 3: 5-11. (Impact factor-not available)
3. Balhara M, Chaudhary R, Ruhil S, **Jaiwal PK** and Chhillar AK. *Siderophores, iron scavengers: the novel and promising targets for pathogen specific antifungal therapy*, Expert Opinion on Therapeutic Targets, 2016, 20:1477-1484 (Impact factor-4.78)
4. Aggarwal V, Malik J, Prashant J, **Jaiwal PK** and Pundir CS *Amperometric determination of serum total cholesterol with nanoparticles of cholesterol esterase and cholesterol oxidase*, Analytical Chemistry 2016, 500: 6-11. (Impact factor-2.24)
5. Sehrawat N, Yadav M, Bhat KV, Sairam RK, **Jaiwal PK**. *Introgression of mungbean yellow mosaic virus resistance in Vigna mungo (L.) Hepper and purity testing of F1 hybrids using SSRs*. Turk J Agric For, 2016, 40: 95-100 Impact factor-1.311.
6. Parmar SS, Jaiwal A, Dhankher OP and **Jaiwal PK**. *CoQ10 production in plants: Current status and future prospective*. Critical Review in Biotechnology, 2015, 35: 152–164. (Impact factor-7.51)
7. Birla D, Malik K, Sainger M, Chaudhary D, Jaiwal R and **Jaiwal PK**, *Progress and challenges in improving the nutritional quality of rice (Oryza sativa L.)*, Critical

- Reviews Food Sci & Nutrition, 2015 DOI:10.1080/10408398.2015.1084992 (Impact factor-6.14).
8. Kappor S, Chaudhary D, Parmar SS, Sainger M, **Jaiwal PK**, *Agrobacterium-mediated sesame transformation*. In: *Agrobacterium* protocols, Methods in Molecular Biology, Springer, 2015, 1224:37-45. (Impact factor-Not available)
 9. Sainger M, Chaudhary D., Dahiya S., Jaiwal R. and **Jaiwal PK**, *Development of an efficient in vitro plant regeneration system amenable to Agrobacterium-mediated transformation of a recalcitrant grain legume blackgram (Vigna mungo L. Hepper)*, *Physiol. Mol. Biol Plant* (Springer), 2015, 21: 505-517. (Impact factor- 1.35).
 10. Sehrawat N, Yadav M, Bhat KV, Sairam RK and **Jaiwal PK**. *Hybridization between salt resistant and salt susceptible genotypes of mungbean [Vigna radiata (L) Wilczek] and purity testing of the hybrids using SSRs markers*, *Journal of Integrative Agriculture* (Elsevier), 2016, 15:521-527. (Impact factor-0.724)
 11. Sehrawat N, Yadav M, Bhat KV, Sairam RK and **Jaiwal PK**, *Effect of salinity on mungbean (Vigna radiata L.) during consecutive summer and spring seasons*, *J. Agri. Sci.* (2015) 60:23-32. (Impact factor 1.103).
 12. Parmar, SS; **Jaiwal, PK**; Agarwal, N; Kaushik, SK, Optimization and validation of agrobacterium-mediated genetic transformation for commercial Indian bread wheat (*Triticum aestivum* L.) cultivars using mature embryo, *Journal of Cell & Tissue Research*, 2015, 15:5301-5308. (Impact factor-Not available)
 13. Sehrawat N, Bhat KV, Sairam RK and **Jaiwal PK**, *Screening of mungbean [Vigna radiata (L.) Wilczek] genotypes for salt tolerance*, *International Journal of Plant, Animal and Environmental Sciences*, 2014 4: 36-43. (Impact factor-**1.028**).
 14. Sehrawat N, Yadav M, Bhat KV, Sairam RK and **Jaiwal PK**, *Evaluation of mungbean genotypes for salt tolerance at early seedling growth stage*, *Biocatalysis and Agricultural Biotechnology*, 2014, 3: 108–113. Elsevier, (Impact factor -1.64).
 15. Sehrawat N, Bhat KV, Kaga A, Tomooka N, Yadav M and **Jaiwal PK**, *Development of new gene-specific markers associated with salt tolerance for mungbean (Vigna radiata L. Wilczek)*, *Spanish Journal of Agricultural Research*, 2014, 12: 732-741. (Impact Factor- 0.760).
 16. Sehrawat N, Yadav M and **Jaiwal PK**, *Development of an efficient in vitro regeneration protocol for rapid multiplication and genetic improvement of an important endangered medicinal plant Psoralea corylifolia*. *Asian J Plant Sci and Res*, 2013, 3:88-94. (Impact factor-0.676).
 17. Sehrawat N, Bhat KV, Sairam RK and **Jaiwal PK**, *Identification of salt resistant wild relatives of mungbean (Vigna radiata (L.) Wilczek)*, *Asian J Plant Sci and Research*, 2013, 3:41-49. (Impact factor-0.676).
 18. Sehrawat N, **Jaiwal PK**, Yadav M, Bhat KV, and Sairam RK, *Salinity stress restraining mungbean (Vigna radiata (L.) Wilczek) production: Gateway for genetic improvement*. *Intl J Agri Crop Sci.*, 2013, 6: 505-509. (Impact factor-0.876).

19. Sehrawat N, Bhat KV, Sairam RK and **Jaiwal PK**, *Identification of salt resistant wild relatives of mungbean (Vigna radiata (L.) Wilczek)*, Asian J Plant Sci and Research, 2013, 3:41-49.
(Impact factor-0.676).
20. Parmar SS, Sainger M, Chaudhary D and **Jaiwal PK**, *Plant regeneration from mature embryo of commercial Indian bread wheat (Triticum aestivum L.) cultivar*. Physiol. Mol. Biol. Plants, 2012, 18: 177-183.
(Impact factor =1.35)
21. Chhikara S, Dutta I, **Jaiwal PK** and Dhankher OP, *Developing an Agrobacterium-mediated transformation method for of Crambe abyssinica*, Industrial Crops and Products, 2012, 37: 457-465.
(Impact factor = 3.449)
22. Chhikara S, Chaudhury D, Dhankher OP and **Jaiwal PK**, *Combined expression of barley class II chitinase and type I ribosome inactivating protein in transgenic Brassica juncea provide protection against fungus Alternaria brassicae*, Plant Cell Tiss. Org. Cult., 2012, 108: 83-89.
(Impact factor = 2.39)
23. Chikkara S, Chaudhary D, Sainger M. and **Jaiwal PK**, *A non-tissue culture approach for generating the transgenics of Indian mustard (Brassica juncea)*. In Vitro Cellular & Developmental Biol. Plants, 2012, 48:7-14.
(Impact factor = 1.152).
24. Chhabra G, Chaudhary D, Sainger M and **Jaiwal PK**, *Genetic transformation of an Indian isolate of Lemna minor by Agrobacterium tumefaciens and recovery of transgenic plants*. Physiol. Mol. Biol. Plants, 2011,17: 129-136,
(Impact factor-1.35).
25. Kumar R., Mandal B., Geetanjali S., Jain R.K. and **Jaiwal PK**, *Genome organization and sequence comparison suggest intraspecies incongruence in M RNA of Watermelon bud necrosis virus*, Archives of Virology, 2010, 155: 1361-1365.
(Impact factor-2.255).
26. Yadav M, Chaudhary D, Singh RP and **Jaiwal PK**, *Agrobacterium-mediated genetic transformation of (Sesamum indicum)*, Plant Cell Tiss. Org. Cult., 2010, 103: 377-386.
(Impact factor-2.390).
27. Chaudhary D, Sainger M, Sahoo L and **Jaiwal PK**, *Genetic transformation of Vigna species: Current status and future prospectives*, In: 14th International Workshop on Genetic Resources and Comparative Genomics of soybean and Vigna. National Institute for Agrobiological Sciences (NIAS), Tsukuba, Japan, 2010, pp 1-8.
28. Chhabra G., Deepika, Aggarwal V. and **Jaiwal PK**, *In vitro multiplication of Psoralea corylifolia-an endangered medicinal plant*. MR Intl. J. Engg. Tech., 2009, 1:79-84.
(Impact factor-Not available)

29. Chhabra G, Madan and **Jaiwal PK**, *TDZ induced direct shoot organogenesis and somatic embryogenesis in Lentil (Lens culinaris)*, Physiol. Mol. Biol. Plants, 2008, 14: 347-353.
(Impact factor-1.35)
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