




Faculty Details proforma for DU Web-site

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cc: director@ducc.du.ac.in)

Title	Professor	First Name	Amar	Last Name	Kumar	Photograph
Designation		Professor				
Address		Botany Department Delhi University Delhi 110007 India				
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	Residence					
	Mobile	+ 91 9871515733				
Email		akumar23j@gmail.com akumar@botany.du.ac.in				
Web-Page						
Educational Qualifications						
Degree		Institution			Year	
Ph.D.		Nottingham University, Nottingham			1983	
PG		Nottingham University, Nottingham			1978	
UG		Patna University, Patna			1974	
Any other qualification						
Career Profile						
<p>2008-to date- Professor of Botany, University of Delhi, Delhi, India, Teaching & Research: Investigation of plant disease resistance mechanisms; Genetic manipulation of crop plants; Plant retrotransposon biology</p> <p>2002- 2008- Principal Scientific Officer (Band 4), Plant Molecular Biologist and Research Leader in the Plant Pathology Programme, Scottish Crop Research Institute, Dundee, Scotland- Genetic manipulation in plants to study plant-nematode interactions; Plant retrotransposon biology.</p> <p>2005-2006- I spent one year sabbatical as a visiting Professor in Professor Valerie M. Williamson's laboratory, Department of Nematology, University of California Davis, California, USA- Investigation on plant-nematode interactions.</p> <p>1990-2002- Senior Scientific Officer (Band 5)- Scottish Crop Research Institute, Dundee, Scotland- Genetic manipulation in plants to study plant disease resistance mechanisms; Plant retrotransposon biology.</p> <p>1987-90- Higher Scientific Officer- Scottish Crop Research Institute, Dundee, Scotland- Plant regeneration and genetic manipulation in plants for disease resistance.</p> <p>1985-87- University Research Fellow - Genetics Department, Leeds University, Leeds, U.K- Development of in vitro culture and plant regeneration systems from embryos of wheat.</p> <p>1983-85- AFRC Postdoctoral Research Fellow- Biochemistry Department, Southampton University, Southampton, U.K- Development of methods for transfer of cytoplasmic organelles in plants by somatic hybridization and micro-injection.</p>						

Administrative Assignments
<p>Departmental Administrative work, which includes: Active participation in M.Sc. Syllabus revision and organization of host-parasite interaction courses. Member of Science Faculty Committee. Member of the Selection Committee for Teaching Assistantship in Botany and Genetics. Member of Managing Committee of International Students. The Department of Biotechnology nominee in the Institute of Biosafety Committee (IBSC). Member of the Departmental Research Committee (DRC) in the Department of Plant Molecular Biology, South Campus.</p> <p>Many other day-to-day activities for smooth functioning of the department. Reviewing scientific papers for International journals.</p>
Areas of Interest / Specialization
<p>Molecular aspects of plant disease resistance, plant nematode interactions, plant genetics and genomics, nematode genomics, plant retrotransposons biology and genome evolution, polyamine metabolism, genetic transformation, plant tissue culture, plant protoplasts, somatic hybridization, crop improvement, main crop species worked on: potato, tomato, petunia and tobacco.</p>
Subjects Taught
<p>For Year 20010-2011 I will be engaged in teaching & examining following papers:</p> <ol style="list-style-type: none"> 1. Core Courses: Cell and Molecular Biology and Pathogens and Pest of Crop plants 2. Elective Courses: Genetic and Biotechnology of Crop Plants and Molecular Interactions of Plants with symbionts, Pathogens and Pests. 3. Guest lectures in other M. Sc. papers
Research Guidance
<p><i>List against each head (If applicable)</i></p> <ol style="list-style-type: none"> 1. <i>Supervision of awarded Doctoral Thesis- Nil</i> 2. <i>Supervision of Doctoral Thesis, under progress- 5 PhD students</i> 3. <i>Supervision of awarded M.Phil. dissertations- Nil</i> 4. <i>Supervision of M.Phil. dissertations, under progress- Nil</i> <p>In the past, I have supervised 5 PhD students, 5 post-doctoral scientists and several undergraduate students and visiting scientists in my laboratory on subject ranging from plant tissue cultures, genetic manipulation, polyamine metabolism, retrotransposons biology and plant disease resistance.</p>
Publications Profile
<p><i>List against each head (If applicable) (as Illustrated with examples)</i></p> <ol style="list-style-type: none"> 1. <i>Books/Monographs (Authored/Edited)</i>

1. **KUMAR, A.** 1994. Somaclonal variation in potato. In: Bradshaw, J.E. and Mackay, G.R. eds. Potato Genetics. CAB International, 197-212.
2. **KUMAR, A.,** COOPER-BLAND, S., WATTERS, J., MURRANT, A.F. MOSS, J.P. 1994. Development of genetic transformation of groundnut, with special reference to plant virus genes. In: ODA Compendium of Research in Plant Sciences, 52-54.
3. **KUMAR A AND MINOCHA SC.** 1998. Transgenic manipulation of polyamine metabolism. In: Transgenic Plant Research, ed. Lindsey K., 187-199. Harwood Academic Pub. The Netherlands.
4. **KUMAR A** (2004) Retrotransposons and their contributions to plant genome and gene evolution. Encyclopedia of Plant and Crop Science, (ed. Goodman, RM), Marcel Dekker, Inc. New York, pp. 1-4.
5. KAUR, P, PATIAL, V., **KUMAR, A.** (2010). Biotechnological approaches for producing Nematode resistant crop plants. Biotechnology for Sustainable Development: Achievements and Challenges. (eds. Hasnain, SE, Rashmi, Bhavanath, J, Sharan, RN), McGraw Hill Education, India 2010, 215-224.

Laboratory Manuals

1. DRAPER, J., SCOTT, R.J., **KUMAR, A.** DURRY, G. 1988. Protoplast mediated transformation methods. In: Plant genetic transformation and gene expression- a laboratory guide, 161-198. Blackwell Scientific Pub.
2. **KUMAR, A** 1994. *Agrobacterium*-mediated transformation of potato genotypes. In: Gartland, K.V. Davey, M.R. eds. *Agrobacterium* Protocols. Methods in Molecular Biology. The Humana Press, USA, 121-128.
3. GRAHAM, J., McNICOL, R.J. **KUMAR, A.** 1994. *Agrobacterium*-mediated transformation of soft fruit *Rubus*, *Ribes* and *Fragaria*. In: Gartland, K.V. Davey, M.R. eds. *Agrobacterium* Protocols. Methods in Molecular Biology. The Humana Press, USA, 129-134.

2. *Research papers published in Refereed/Peer Reviewed Journals*

1. **KUMAR, A.,** WILSON, D. COCKING, E.C. 1981. Polypeptide composition of Fraction 1 proteins of the somatic hybrid between *Petunia parodii* and *P. parviflora*. BIOCHEMICAL GENETICS 19, 255-260.
2. **KUMAR, A.,** COCKING, E.C., BOVENBERG, W. KOOL, A. 1982. Restriction endonuclease analysis of chloroplast DNA in interspecific somatic hybrid of *Petunia*. THEORETICAL AND APPLIED GENETICS 62, 377-383.
3. DAVEY, M.R. **KUMAR, A** 1983. Higher plant protoplasts: retrospect and prospect. In: Giles, K.L. ed. Plant Protoplasts. INTERNATIONAL REVIEW OF CYTOLOGY, Supp. 16, 219-263. Academic Press, New York.
4. **KUMAR, A** COCKING, E.C. 1987. Protoplast fusion: a novel approach to organelle genetics. AMERICAN JOURNAL OF BOTANY 74, 1289-1303.
5. MORRIS, P.C., **KUMAR, A,** BOWLES, D.J. CUMING, A.C. 1990. Osmotic stress and abscisic acid induce

- expression of the wheat *Em* genes. EUROPEAN JOURNAL OF BIOCHEMISTRY 190, 625-630.
6. GRAHAM, J., McNICOL, R.J. **KUMAR, A.** 1990. Use of the GUS gene as a selectable marker for *Agrobacterium*-mediated transformation of *Rubus*. PLANT CELL, TISSUE AND ORGAN CULTURE 20, 35-39.
 7. **KUMAR, A.** FORREST, J.M.S. 1990. Reproduction of the potato cyst nematode *Globodera rostochiensis* on transformed root cultures of *Solanum tuberosum* cv. Desiree. JOURNAL OF NEMATOLOGY, 22, 395-398.
 8. RAMSAY, G. **KUMAR, A.** 1990. Transformation of *Vicia faba* cotyledon and stem tissues by *Agrobacterium rhizogenes*: Infectivity and cytological studies. JOURNAL OF EXPERIMENTAL BOTANY 41, 841-847.
 9. ROBERTS, M.R., **KUMAR, A.**, SCOTT, R.J. DRAPER, J. 1990. Ac transposition in transgenic callus tissues of Flax *Linum usitatissimum*. PLANT CELL REPORTS 9, 406-409.
 10. FLAVELL, A.J., DUNBAR, E., ANDERSON, R., PEARCE, S., HARTELY, R. **KUMAR, A** 1992. Ty1-*copia* group retroelements ubiquitous and heterologous in higher plants. NUCLEIC ACIDS RESEARCH 20, 3639-3644.
 11. FLAVELL, A.J., SMITH, D.B. **KUMAR, A.** 1992. Extreme heterogeneity of Ty1-*copia* group retrotransposons in plants. MOLECULAR & GENERAL GENETICS 231, 233-242.
 12. RAINERI, D., JORDAN, P. **KUMAR, A.** 1992. Restoration of fertility in cytoplasmic male sterile *Nicotiana tabacum* cytoplasm N. bigelovii by protoplast fusion with X-irradiated protoplasts of *N. tabacum* SR1. JOURNAL OF EXPERIMENTAL BOTANY 43, 195-203.
 13. BARKER, H., REAVY, B., **KUMAR, A**, WEBSTER, J. MAYO, M. 1992. Restricted virus multiplication in potato transformed with the coat protein gene of potato leafroll luteovirus: Similarities with a type of host gene-mediated resistance. ANNALS OF APPLIED BIOLOGY 120, 55-64.
 14. ROBERTS, M.R., FOSTER, G., BLUNDELL, R.P., ROBINSON, S.W., **KUMAR, A**, DRAPER, J. SCOTT, R. 1992. Gametophytic and sporophytic expression of an anther specific *Arabidopsis thaliana* gene. THE PLANT JOURNAL 3, 111-120.
 15. TAYLOR, M.A., MAD ARIF, S.A., **KUMAR, A.**, DAVIES, H.V., SCOBIE, L.A., PEARCE, S.R. FLAVELL, A.J. 1992. Expression and sequence analysis of cDNAs during the early stages of tuberisation in different organs of the potato plant *Solanum tuberosum* L. PLANT MOLECULAR BIOLOGY 20, 641-651.
 65. TAYLOR, M.A., MAD ARIF, S.A., PEARCE, S.R., DAVIES, H.V., **KUMAR, A** GEORGE, L.A. 1992. Differential expression and sequence analyses of ribosomal protein genes induced in stolon tips *Solanum tuberosum* L. during the early stages of tuberisation. PLANT PHYSIOLOGY 100: 1171-1176.
 17. TAYLOR, M.A., **KUMAR, A.**, GEORGE, L.A. DAVIES, H.V. 1992. Isolation and molecular characterisation of a tuberisation-related cDNA clone from potato *Solanum tuberosum* L. PLANT CELL REPORTS, 11: 623-626.
 18. BARKER, H., REAVY, B., WEBSTER, K.D., JOLLY, C.A., **KUMAR, A.** MAYO, M.A. 1993. Relationship

between transcript production and virus resistance in transgenic tobacco expressing the potato leafroll virus coat protein gene. *PLANT CELL REPORTS*, 13: 54-58.

19. BROWN, J.W.S., SIMPSON, G.G., CLARK, G., LYON, J., **KUMAR, A.** SIMPSON, C. 1993. Detection of antisense transcripts in transgenic plants by RT-PCR. *THE PLANT JOURNAL*, 4: 883-885.

20. BARKER, H., WEBSTER, K.D., JOLLY, C.A., REAVY, B., **KUMAR, A** MAYO, M.A. 1994. Enhancement of resistance to potato leafroll virus multiplication in potato by combining the effects of host genes and transgenes. *MOLECULAR PLANT-MICROBE INTERACTIONS*, 7: 528-530.

21. COOPER-BLAND, S., DE,MAINE, M.J., FLEMING, M.L.M.H., PHILLIPS, M.S., POWELL, W. **KUMAR, A** 1994. Synthesis of intraspecific somatic hybrid of *Solanum tuberosum*: Assessments of morphological, biochemical and nematode *Globodera pallida* resistance characteristics. *JOURNAL OF EXPERIMENTAL BOTANY* 45, 1319-1325.

22. MAD ARIF, S.A., TAYLOR, M.A., GEORGE, L.A., BUTLER, A.R., BURCH, L.R., DAVIES, H.V., STARK, M.J.R. **KUMAR, A** 1994. Characterisation of the S-adenosylmethionine decarboxylase SAMDC gene of potato. *PLANT MOLECULAR BIOLOGY* 26, 327-338.

23. WARD, A.C., PHELPSTEAD, J., GLEADALE, A.E., BLACKWALL, NW., COOPER-BLAND, S.C., **KUMAR, A.**, POWELL, W., POWER, J.B. DAVEY, M.R. 1994. Interspecific somatic hybrids between dihaploid *Solanum tuberosum* L. and wild species, *S. pinnatisectum* Dun. *JOURNAL OF EXPERIMENTAL BOTANY* 45, 1433-1440.

24. **KUMAR, A**, COLEMAN, M., WHITTY, P. LYON, J. 1994. *Agrobacterium*-mediated transformation of five wild *Solanum* species using *in vitro* microtubers. *PLANT CELL REPORTS* 14, 324-328.

25. FLAVELL, A.J., PEARCE, S.R. **KUMAR, A.** 1994. Plant transposable elements and the genome. *CURRENT OPINION IN GENETICS AND DEVELOPMENT* 4, 838-844

26. GANAL, W.M., SIMON, R., BROMMONSCHENKEL, S., ARNDT, A., TANKSLEY, S.D., PHILLIPS, M. **KUMAR, A** 1995. Genetic mapping of a wide spectrum nematode resistance gene, *Hero*, against *Globodera rostochiensis* in tomato. *MOLECULAR PLANT-MICROBE INTERACTIONS*. 8: 886-891.

27. PEARCE, S.R.FLAVELL, A.J, **KUMAR, A.**1995 Activation of the Ty1- *copia* retrotransposons of potato *Solanum tuberosum* during protoplast isolation. *PLANT CELL REPORTS*.15: 949-953.

28. PEARCE, S.R., HARRISON,G., DONGTAO, L., HESLOP-HARRISON, J.S., FLAVELL, A.J. **KUMAR, A** 1996. The Ty1-*copia* group retrotransposons in the *Vicia* species: characterisations of copy number, the level of sequence heterogeneity and chromosomal localisation. *MOLECULAR AND GENERAL GENETICS IN PRESS*. 250: 305-313.

29. KUMAR, A 1996. The adventures of Ty1-*copia* retrotransposons in plants. *TRENDS IN GENETICS*. 12:41-43

30. **KUMAR, A**, TAYLOR, M.A.,MAD ARIF, S.A. DAVIES, H.V. 1996. Potato plants expressing antisense and sense S-adenosylmethionine decarboxylase SAMDC transgenes show altered levels of polyamines and ethylene: antisense plants display abnormal phenotypes. *THE PLANT JOURNAL*. 9:147-158.

31. COOPER-BLAND, S., DE,MAINE, M.J., STEWART, H.E., FLEMING, M.L.M.H. Phillip M. **KUMAR, A.** 1996. Intraspecific somatic and sexual hybridisation between dihaploid lines of *Solanum tuberosum* L.: Evaluation of morphological resistance to late blight *Phytophthora infestans* Mont. de Bary. EUPHYTICA. 90: 209-216.
32. PEARCE SR, HARRISON G, HESLOP-HARRISON PJS, FLAVELL AJ, **KUMAR A.** 1996. Characterization and genomic organization of Ty1-*copia* group retrotransposons in rye (*Secale cereale*). GENOME, 40:617-625.
33. PEARCE SR, PICH U, HARRISON G, FLAVELL AJ, HESLOP-HARRISON JSP, SCHUBERT I, **KUMAR A.**1996. The Ty1-*copia* group retrotransposons of *Allium cepa* are distributed throughout the chromosomes but are enriched in the terminal heterochromatin CHROMOSOME RESEARCH, 1996, 4:357-364.
34. HESLOP-HARRISON JS, BRANDES A, TAKETA S, SCHMIDT T, VERSHININ AV, ALKHIMOVA EG, KAMM A, DOUDRICK RL, SCHWARZACHER T, KATSIOTIS A, KUBIS S, **KUMAR A**, PEARCE SR, FLAVELL AJ, HARRISON GE. 1997. The chromosomal distributions of Ty1-*copia* group retrotransposable elements in higher plants and their implications for genome evolution. GENETICA, 100:197-204.
35. FLAVELL AJ, PEARCE SR, HESLOP-HARRISON JSP, **KUMAR A** 1997. The evolution of Ty1-*copia* group retrotransposons in eukaryote genomes. GENETICA, 100:185-195.
- 36. KUMAR, A**, ALTABELLA, MR., TAYLOR, MA., TIBURCIO, AK. 1997. Recent advances in polyamine research. TRENDS IN PLANT SCIENCES. 2: 127-130.
37. BLOK VC, EHWAETI M, FARGETTE M, **KUMAR A**, PHILLIPS MS, ROBERTSON WM. TRUDGILL DL. 1997. Evolution of resistance and virulence in relation to the management of nematodes with different biology, origin and reproductive strategies. NEMATOLOGICA. 43: 1-13.
38. **KUMAR A**, PEARCE SR, MCLEAN K, HARRISON G, HESLOP-HARRISON JS, WAUGH R, FLAVELL AJ. 1997. The Ty1-*copia* group of retrotransposons in plants: genomic organisation, evolution, and use as molecular markers. GENETICA. 100:205-217.
39. WAUGH R, MCLEAN K, FLAVELL AJ, PEARCE SR, **KUMAR A**, THOMAS BBT, POWELL W 1997. Genetic distribution of Bare-1-like retrotransposable elements in the barley genome revealed by sequence-specific amplification polymorphisms (S-SAP). MOLECULAR & GENERAL GENETICS, 253:687-694.
- 40. KUMAR, A.** 1998. The evolution of plant retroviruses: moving to green pasture. TRENDS IN PLANT SCIENCES, 3:371-374.
- 41. KUMAR, A** AND BENNETZEN JL. 1999. Plant retrotransposons. ANNUAL REVIEW OF GENETICS. 33, 479-532.
42. GATEHOUSE AMR, DAVISON GM, STEWART JN, GATEHOUSE LN, **KUMAR A**, GEOGHEGAN, IE, BIRCH ANE, GATEHOUSE JA. 1999. Concanavlin A inhibits development of tomato moth (*Lacanobia oleracea*) and peach-potato aphid (*Myzus persicae*) when expressed in transgenic potato plants. MOLECULAR BREEDING, 5:711-717.
43. PEARCE SR, STUART-ROGERS C, KNOX MR, **KUMAR A**, ELLIS THN, FLAVELL AJ. 1999. Rapid isolation of plant Ty1-*copia* group retrotransposon LTR sequences for molecular marker studies. PLANT JOURNAL,

19:711-717.

44. GRIBBON BM, PEARCE SR, KALENDAR R, SCHULMAN AH, PAULIN L, JACK P, **KUMAR A**, FLAVELL A.J. 1999. Phylogeny and transpositional activity of Ty1- *copia* group retrotransposons in cereal genomes MOLECULAR & GENERAL GENETICS, 261:883-891.

45. PEARCE SR, KNOX MR, ELLIS THN, FLAVELL AJ, **KUMAR A**. 2000. Pea Ty1- *copia* group retrotransposon: transpositional activity and use as markers to study genetic diversity in *Pisum*. MOLECULAR & GENERAL GENETICS, 263:898-907.

46. HARRIS N, FOSTER JM, **KUMAR A**, DAVIES HV, GEBHARDT C, WRAY JL. 2000. Two cDNAs representing alleles of the nitrate reductase gene of potato (*Solanum tuberosum*) cv. Desiree): sequence analysis, genomic organisation and expression. J. EXPERIMENTAL BOTANY, 51:1017-1026.

47. **KUMAR, A**, HIROCHIKA, H. 2001. Application of retrotransposons as genetic tools in plant biology. TRENDS IN PLANT SCIENCES. 6:127-131.

47. WITTE CP, HIEN L, BUREAU T, **KUMAR A**. 2001. Terminal-repeat retrotransposons in miniature (TRIM) are involved in restructuring the host-plant genome. PROCEEDINGS OF NATIONAL ACADEMY OF SCIENCES, USA. 98: 13778-13783.

48. ERNST K, **KUMAR A**, PHILLIPS MP, GANAL M. 2002. The broad-spectrum potato cyst nematode resistance (*Hero*) gene in the only member of a large gene family of NBS-LRR genes with an unusual amino acid repeats in the LRR region. PLANT JOURNAL 31: 127-136.

49. SOBCHAK M, AVROVA A, JUPOWICZ J, PHILLIPS MS, ERNST K, **KUMAR A** (2005). Characterisation of susceptibility and resistance responses to potato cyst nematode (*Globodera* species) infection of tomato lines in the absence and presence of the broad-spectrum nematode resistance *Hero* gene. MOLECULAR PLANT-MICROBE INTERACTIONS. 18: 158-168.

50. CHESNAY C, **KUMAR A**, PEARCE, SR. 2006. Genetic diversity of SIRE-1 retroelements in annual and perennial species *Glycine* species revealed using SSAP. CELLULAR AND MOLECULAR BIOLOGY LETTERS. 11: 103-130.

51. WILLIAMSON, V. M., **KUMAR, A**. 2006. Nematode resistance in plants: the battle underground. TRENDS IN GENETICS. 22: 396-403.

52. JONES J, **KUMAR A**, LILIYA PYLYPENKO, THIRUGNANASAMBANDAM A, CATHERINE J. LILLEY, MARK PHILLIPS & VIVIAN C. BLOK (2008). Identification and functional characterisation of effectors in Expressed Sequence Tags from various life cycle of the potato cyst nematode *Globodera pallida*. MOLECULAR PLANT PATHOLOGY, 10: 815-828.

a) *Research papers published in Academic Journals other than Refereed/Peer Reviewed Journals*

1. BARKER, H., REAVY, B., **KUMAR, A.**, MAYO, M.A., SOLOMON-BLACKBURN, R.M. WOODFORD, J.A.T. 1991. Resistance to potato leafroll luteovirus. Annual Report of the Scottish Crop Research Institute, 1990, 78-80.

2. COOPER-BLAND, S., BAIRD, E., **KUMAR, A.**, DE,MAINE, M. POWELL, W. 1991. Somatic hybridisation

of potato by protoplast fusion. Annual Reports of Scottish Crop Research Institute, 1990, 31-33.

3. KUMAR, A., GRAHAM, J., WHITTY, P. LYON, J. 1992. Genetic transformation in plants. Annual Report of the Scottish Crop Research Institute, 1991, 29-32.

4. COOPER-BLAND, S., WATTERS, J. **KUMAR, A.** 1993. Plant regeneration and transformation studies in groundnut *Arachis hypogaea* L. Annual Report of the Scottish Crop Research Institute 1992, 33-36.

5. TAYLOR, M.A., MAD ARIF, S.A., DAVIES, H. **KUMAR, A.** 1993. The molecular basis of tuberisation in potato. Annual Report of the Scottish Crop Research Institute 1992, 44-47.

6. KUMAR, A., MAD ARIF, S.A., TAYLOR, M.A. STARK, M.R. 1994. Characterisation of the S-adenosylmethionine decarboxylase SAMDC gene of potato. Annual Report of the Scottish Crop Research Institute 1993, 36-38.

7. KUMAR, A., COOPER-BLAND, S., DE,MAINE, M.J., STEWART, H.E., FLEMING, M.L.M.H. Phillip M. Powell, W. 1994. Intraspecific somatic hybridisation between dihaploid lines of *Solanum tuberosum* L. Annual Report of the Scottish Crop Research Institute 1994, 9-12.

8. KUMAR, A., PEARCE, S.R., FLAVELL, A.J., HARRISON, G. HESLOP-HARRISON, J.S. 1995. The Ty1- *copia* group retrotransposons in plants. Annual Report of the Scottish Crop Research Institute 1994, 6-9.

b) Research papers published in Refereed/Peer Reviewed Conferences

1. KUMAR, A. COOPER-BLAND, S. 1986. Organelle genetics of somatic hybrid-cybrid progeny in higher plants. In: Mantell, S.H., Chapman, G.P. and Street, P.F.S. eds. Proceedings of Second Wye International Symposium on The Chondriome Chloroplast and Mitochondrial Genome, 244-271. Longman, London.

2. KUMAR, A., COOPER-BLAND, S. POWELL, W. 1992. Transfer of disease resistance genes in crop plants: The role of biotechnology. Proceedings of plant-host parasite interactions, Senegal, North West Africa. International Foundation of Sciences, 475-490.

3. KUMAR, A, MACLEOD MR, MAD ARIF S, DAVIES, HV, TAYLOR MA. 1998. A molecular approach to study the role of polyamines and ethylene in plants development. In: Biogenically active amines in food-COST 917. European Research Development, eds. Bardocz s, White A, Tibericio AF, 43-52.

4. COOPER-BLAND,S., BAIRD, E., **KUMAR, A., DE,MAINE, M., FORSTER, B.P., WAUGH, R. and POWELL, W.** (1998). Inter- and intra-specific somatic hybridisation in potato and molecular characterisation of hybrids using randomly amplified polymorphic DNA (RAPD) markers. In: New genetical approaches to crop improvement (ed. S.S.M. Naqvi), Atomic Energy Research Centre, Tando Jam 70060, Pakistan, 605-618.

c) Research papers Published in Conferences/Seminar other than Refereed/Peer Reviewed Conferences

1. KUMAR, A. COOPER-BLAND, S. 1986. Organelle genetics of somatic hybrid-cybrid progeny in higher plants. In: Mantell, S.H., Chapman, G.P. and Street, P.F.S. eds. Proceedings of Second Wye International Symposium on The Chondriome Chloroplast and Mitochondrial Genome, 244-271. Longman, London.

2. **KUMAR, A.**, COOPER-BLAND, S. POWELL, W. 1992. Transfer of disease resistance genes in crop plants: The role of biotechnology. Proceedings of plant-host parasite interactions, Senegal, North West Africa. International Foundation of Sciences, 475-490.

3. **KUMAR, A, MACLEOD MR, MAD ARIF S, DAVIES, HV, TAYLOR MA. 1998. A molecular approach to study the role of polyamines and ethylene in plants development. In: Biogenically active amines in food-COST 917. European Research Development, eds. Bardocz s, White A, Tibercio AF, 43-52.**

4. COOPER-BLAND,S., BAIRD, E., **KUMAR, A.**, DE,MAINE, M., FORSTER, B.P., WAUGH, R. and POWELL, W. (1998). Inter- and intra-specific somatic hybridisation in potato and molecular characterisation of hybrids using randomly amplified polymorphic DNA (RAPD) markers. In: New genetical approaches to crop improvement (ed. S.S.M. Naqvi), Atomic Energy Research Centre, Tando Jam 70060, Pakistan, 605-618.

Meeting Reports

KUMAR A, BENNETZEN JL. 2000. Retrotransposons: central players in the structure, evolution and function of plant genomes. TRENDS IN PLANT SCIENCES, 5:509-510.

3. *Other publications (Edited works, Book reviews, Festschrift volumes, etc.)*

Popular Articles

KUMAR, A. FORSTER, B.P. 1994. Biotechnology of the potato. BIOLOGICAL SCIENCES REVIEW 7:22-24.

Conference Organization/ Presentations (in the last three years)

List against each head (If applicable)

1. *Organization of a Conference*

I have been involved in organising international meetings (e.g., EC Biodiversity meetings on plant retrotransposons and European Society of Nematologists Symposium and acted as Chairperson for the sessions on plant retrotransposons in the 6th International Congress of Plant Molecular Biology in Quebec, Canada, 2000 and for several EC funded meetings.

2. *Participation as Paper/Poster Presenter*

Invited speaker

Invited to give a research talk in a National Conference on “ Genomics for Sustainable Food & Nutritional Security” at Central Potato Research Institute, Shimla, 26th September 2011.

Invited to give a research talk in “National Symposium on Abiotic and Biotic Management in Vegetable Crops” organized by Indian Society of Vegetable Science at IIVR, Varanasi, April 12-14, 2013

Invited to give a research talk in a Faculty development Programme on “Interdisciplinary Approache to Bioscience Research” at Amity Institute of Biotechnology, Amity University, Noida UP., May 8-10, 2013.

Invited regularly to international meetings (e.g., Genetic Society, Society of Experimental Biology, International Society Plant Molecular Biology, International Symposium on the Molecular Biology of the Potato, EC funded meetings, EUCARPIA and European Science Foundation meetings, etc. and universities (Aberdeen, Dundee, Leeds, St Andrews, Barcelona (Spain), Düsseldorf (Germany), Helsinki (Finland) to give research talks.

During my sabbatical in the University of California Davis, I was invited to give research talks at the universities of California Davis, Riverside and university of Georgia, Athens in, 2005-06.

Invited to give a talk on plant retrotransposons in the 7th International Congress of Plant Molecular Biology, Barcelona, Spain in 2003.

Invited to give a talk on characterisation and cloning of a wide spectrum nematode resistance gene (*Hero*) of tomato (*Lycopersicon esculentum* L.). In: Proceeding of Eucarpia XVI Congress, Edinburgh in 2001.

Invited to give a plenary lecture on 'Retrotransposons and Genomic Diversity in Plants' a meeting on 'Plant Biotechnology and Biodiversity' in the Universidade de Tras-os-Montes, Villa Real, Portugal in 1999.

Invited to give a research talk on plant polyamines metabolism in the Gordon Research Conference (GRC), Hampshire, USA in 1997.

Invited to give a talk on plant retrotransposons in the European Science Foundation organised meeting on "Evolution and Role of Transposable Elements, Gif-sur-Yvette, France, 1996

Invited to 3rd International Symposium on the Molecular Biology of the Potato to give talks on "The coat-protein-mediated resistance to potato leafroll virus (PLRV) in potatoes, the University of California, Santa Cruz, USA, 1993

Invited as a plenary speaker in the Czechoslovakia Congress, Olumouc to give a talk on "Protoplast Biotechnology" in 1990.

Invited to give a talk on "Organelle genetic of somatic hybrid-cybrid progeny in higher plants in the 2nd Wye International Symposium on the Condriome- chloroplast and mitochondrial genomes, Wye College, UK, 1985.

Abstracts

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76. COOPER-BLAND, S., KUMAR, A., PIRRIE, A., PENTAL, D. COCKING, E.C. 1986. Characterisation of somatic hybrids between *Nicotiana tabacum* NR- and *N. glutinosa* WT and their backcrossed several progeny. VI International Congress of Plant Tissue Culture Abstracts, 104. University of Minnesota, USA.

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79. COOPER-BLAND, S., BAIRD, E., DE,MAINE, M., KUMAR, A., FORSTER, B.P., WAUGH, R. POWELL, W. 1989. Toward somatic hybridisation of dihaploid potato lines. 49th Summer School Conference Abstracts. Nottingham University, UK.
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81. KUMAR, A., REAVY, B. MAYO, M.A. 1989. Production of transgenic potato plant containing the coding sequence for coat protein of potato leafroll virus. Horticultural Biotechnology Symposium Abstracts. University of California, Davis, USA.
82. GRAHAM, J., McNICOL, R.J. KUMAR, A. 1989. Development and utilisation of genetic transformation method in the genus *Rubus*. Horticultural Biotechnology Symposium Abstracts. University of California, Davis, USA.
83. GLEADALE, A.E., PHELPSTEAD, J.S., DAVEY, M.R., POWER, J.B. KUMAR, A. 1990. Plantlet regeneration from leaf and stem explants of wild *Solanum* species and dihaploid *Solanum tuberosum*. VIIth International Congress on Plant Tissue and Cell Culture Abstracts. Amsterdam, The Netherlands.
84. MALLIKARJUNA, M., KUMAR, A., POWELL, W., MOSS, J.P. SASTRI, D.C. 1991. Preliminary experiments on transformation of tissues and organs of *Arachis* species. International Workshop on Biotechnology and Crop Improvement in Asia Abstracts. ICRISAT, Hyderabad, India.
85. KUMAR, A., WHITTY, P., LYON, J., HOWARD, S. JONES, J. 1991. Transposition of *Ac* element in potato. Second International Potato Molecular Biology Symposium Abstracts. St Andrews University, UK.
86. COOPER-BLAND, S., BAIRD, E., DE,MAINE, M., KUMAR, A. POWELL, W. 1991. Intra- and interspecific somatic hybridisation in potato. Third International Congress on the Molecular Biology of Plant Growth and Development. Tucson, USA.
87. FORSTER, G.D., ROBERTS, M.R., BLUNDELL, R.P., KUMAR, A., SCOTT, R.J. DRAPER, J. 1991. Regulation of a transposing DS-YAC vector via a microspore-specific promoter. Abstracts of the Third International Congress on Molecular Biology of Plant Growth and Development, Tucson, USA, 1991, 1770.
88. KUMAR, A., SMITH, D.B. FLAVELL, A. 1991. Extreme heterogeneity of Copia-Ty family retrotransposons in potato. Abstracts of the Second International Potato Molecular Biology Symposium, St Andrews, UK, 15.
89. COOPER-BLAND, S., WATTERS, J. KUMAR, A. 1992. Evaluation of plant regeneration and genetic

transformation systems in groundnut *Arachis hypogaea* L.. In: Current Research on Transformation and Regeneration of Groundnut and Utilisation of Viral Genes for Inducing Resistance to Viral Diseases Abstracts, 1992, Wageningen, The Netherlands.

90. KUMAR, A. 1992. Genetic engineering approaches for developing resistance to viral diseases in potato and groundnut plants. In: Conference on Biotechnologies for Tropical Plant Protection Abstracts, p. 32, Kuala Lumpur, Malaysia, 1992.

91. MALLIKARJUNA, N., SASTRI, D.C., MOSS, J.P., KUMAR, A. POWELL, W. 1992. Tissue and organ culture and regeneration in *Arachis hypogaea* and its wild relatives. Biotechnology and Crop Improvement in Asia, p. 155. ICRISAT, Hyderabad, India.

92. TAYLOR, M.A., MAD ARIF, S.A., DAVIES, H.V. KUMAR, A. 1992. Expression and sequence analysis of cDNAs induced in stolon tips of potato during the early stages of tuberisation. Journal of Experimental Botany 43, No. 250 suppl., P10.87.

92. MAD ARIF, S.A., TAYLOR, M.A. KUMAR, A. 1993. Molecular characterisation of a cDNA clone of S-adenosylmethionine decarboxylase SAMDC gene of potato. Abstracts of the International Symposium on Genetic Manipulation of Plant Metabolism and Growth, Norwich, UK, p. 20.

93. KUMAR, A., HARDING, J., LYON, A., BARKER, H., WEBSTER, K., REAVY, B. MAYO, M. 1993. Molecular and functional analysis of the coat protein gene of potato leafroll virus in transgenic potato plants. 3rd International Potato Molecular Biology Symposium, University of Santa Cruz, California, USA, p. 38.

94. TAYLOR, M.A., MAD ARIF, S.A., KUMAR, A. DAVIES, H.V. 1993. Changes in gene expression associated with tuberisation in potato. 3rd International Potato Molecular Biology Symposium, University of Santa Cruz, California, USA, p. 23.

95. KUMAR, A., MAD ARIF, S., TAYLOR, A., GEORGE, L., BURCH, L., DAVIES, H., BULTER, A. STARK, M. 1994. Molecular and functional analysis of the cDNA clone of S-adenosylmethionine decarboxylase SAMDC of potato. Journal of Experimental Botany Suppl 45, 43.

96. PEARCE, S.R., KUMAR, A., DUNKETT, G. FLAVELL, A.J. 1994. Ty1-*copia* group retrotransposons in higher plants. Abstracts of PMB II-BBSRC Meeting, Norwich, 80.

97. PEARCE, S.R., KUMAR, A. FLAVELL, A.J. 1994. Ty1-*copia* group retrotransposons in *Solanum tuberosum*. Abstracts of PMB II-BBSRC Meeting, Norwich.

98. HARRIS, N., FORSTER, J.M., KUMAR, A., DAVIES, H.V. WRAY, J.L. 1994. Nitrogen economy of the potato. Abstracts of EC Biotech Meeting, Rothamsted Experimental Station, Harpenden, UK, pp. 66.

99. HARRIS, N., FORSTER, J.M., KUMAR, A., DAVIES, H.V. WRAY, J.L. 1995. Nitrogen economy of the potato. Journal of Experimental Botany Suppl. 46, 46.

100. STEPHEN, R., PEARCE, S.R., HARRISON, G., DONGTAO, L., HESLOP-HARRISON, J.S., FLAVELL, A.J. KUMAR, A. 1995. The Ty1-*copia* group transposons in the Vicia species: characterisation of copy number, the level of sequence heterogeneity and chromosomal localisation. Journal of Experimental Botany 46, L6.

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Biology meeting on Unifying Plant Genomes, Cambridge, U.K. 32.

102. KUMAR, A., PEARCE, S.R., FLAVELL, A.J. 1996. Ty1-*copia* group retrotransposons in higher plants. Abstract of Evolution and role of Transposable elements. ESF meeting Gif-sur-Yvette, France, 12.

103. PEARCE, S.R., STUART-ROGERS, C., MILL, B., VERSHININ, A., KNOX, M., HARRISON, G., HESLOP-HARRISON, J.S., JACK, P., ELLIS NHR., KUMAR, A., FLAVELL, A.J. 1996. Ty1-*copia* group retrotransposons as markers for genetic analysis and biodiversity assessment in angiosperms. 5th International Congress of Plant Molecular Biology, Singapore, 1996 p.255.

104. PEARCE, S.R., HARRISON, G., HESLOP-HARRISON, J.S., KUMAR, A., FLAVELL, A.J. 1997. Ty1-*copia* group retrotransposons in *Vicia* species. Abstract of Angiosperm Genome Size Discussion Meeting at Royal Botanic Garden, London, UK, P. 26.

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112. KUMAR A, ERNST K, SOBZACK M, PHILLIPS MS, GANAL M. 2000. Functional characterisation a broad-spectrum nematode resistance gene (*Hero*) of tomato (*Lycopersicon esculentum*). In: Proceeding of Eucarpia XVI Congress in Edinburgh, UK, pp. 14.

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115. KUMAR A, ERNST K, SOBZACK M, PHILLIPS MS, GANAL M. 2003. Isolation and Functional characterisation a broad-spectrum nematode resistance gene (*Hero*) of tomato. In: Proceeding of 7th

114. Kumar A, Kalender R, Witte P, Wright F, Marshall D, Hirochika H, Schulman AL, Dunn M, Goff S. 2003. Genomic organisation, evolution and impact of TRIM elements in plant genomes. In: Proceeding of 7th International Congress of Plant Molecular Biology, Barcelona. pp. 451.

115. KALENDER R, **KUMAR A**, PELEG, P.F, MUNDIE, S. VICIENT, C, WAUGH, R SCHULMAN AL, 2005. TRIM and LARD: widespread, insertionally polymorphic but nonautonomous classes of retroelements. Plant and Animal Genome- 2005, San Diego, USA.

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117. John Jones, Liliya Pylypenko, Amar Kumar, Thirugnanasambandam A , Catherine J. Lilley, Mark Phillips & Vivian C. Blok (2008). Functional characterisation of pathogenicity genes identified in Expressed Sequence Tags of the potato cyst nematode *Globodera pallida*. Proceedings of the Second COST 872 Annual Meeting, 26th-29th May, Postojna, Slovenia.

118. John Jones, Amar Kumar, Liliya Pylypenko, Thirugnanasambandam A., Catherine J. Lilley, Mark Phillips & Vivian C. Blok (2008). Functional Analysis of parasitism gene families in the potato cyst nematode Invited talk: Alnarp University, Sweden, October 2008.

119. John Jones, Amar Kumar, Liliya Pylypenko, Amar Thirugnanasambandam, Catherine J. Lilley, Mark Phillips & Vivian C. Blok (2008). Exploiting genomics to understand plant-nematode interactions. Invited talk: Abstracts of the "Offered papers in Nematology" AAB Meeting, Linnean Society, London, December 2008.

120. Kumar, A. (2009) characterization of transcriptome from various life cycle stages of the potato cyst nematode *Globodera pallida* to explore parasitism genes. In Preceding of The 6th Solanaceae Genome Congress, New Delhi, 2009, p41.

121. Bhardwaj AR, Joshi G, Goel S, Jagannath A, Kumar A, Katiyar-Agarwal A. 2012. Genome-wide perspective of high temperature, salinity and drought responsive small RNAome in Indian mustard. International conference on plant biotechnology for food security: New frontiers. Abstract- GB-47).

Research Projects (Major Grants/Research Collaboration)

On going Research projects:

1. Awarded DU-DST-PURSE grant to work on "Genetic and genomic approaches for improvement of the oilseed crop, *Carthamus tinctorius* (Safflower) in collaboration with Drs Shailendrs Goel, Manu Agarwal, Arun Jagannath., Botany Department, Delhi University., Delhi, India.
2. Awarded DBT grant to work on "Characterization and manipulation of non-coding and coding RNAs involved in potato tuberization in collaboration with Dr Manu Agrawal, Botany Department, Delhi University.
3. Awarded National Fund of Basic, Strategic and Frontier Application Research in Agriculture (NFBSFARA), ICAR) grant to work on "Understanding plant-nematode interaction: Identification of plant and nematode genes involved in disease development" in collaboration with Dr Surekha Katiyar-Agrawal, Plant Molecular Biology, South Campus, Delhi University, Dr Ravi Shankar, Bioinformatics Department, IHB, Palampur, HP.

4. Awarded DU-DST-PURSE grant to work on “Investigation on the role of storage proteins from *Dioscorea* yam tubers in plant defense” in collaboration of Prof. R. Geeta and Dr. Renu Deswal, Botany Department, Delhi University. Delhi, India.

Awarded DU-Strengthen R &D Doctoral Research Programme to work on “Molecular aspects of plant nematode interaction”. Also, Currently collaborating with Professor Valerie Williamson, University of California, Davis, USA; Dr Eric Grenier, INRA UMR Bio3P, France, on plant nematode resistance projects.

A project on Plant retrotransposons biology

In the past:

Awarded one year sabbatical as visiting Professor to work on plant and nematode interactions in Professor Valerie Williamson’s laboratory, Nematology department, University of California, USA and was jointly funded by my research institute (SCRI) and University of California Davis, USA.

Obtained several European Commission (EC) grant in collaboration with other European scientists (e.g., EC Framework IV on plant retrotransposons (1992-96) (Professor Alan Schulman, University of Helsinki, Finland; Professor Heslop-Harrison, University of Leicester, UK; Dr. Andy Flavell, University of Dundee, etc.) and EC Framework V grant on plant Nematodes resistance (1999-2003), Dr Karin Ernst, Düsseldorf, Germany and Dr Eric Granier, France, etc.).

Obtained a Royal Society Visiting Fellowship for Dr. Mirek Sobczak (University of Warsaw, Poland) to visit my lab for a year (1997-98) to work on plant and nematode interactions at cellular level.

Obtained Overseas Developmental Administration (ODA) grant to work on “Genetic manipulation of groundnuts (*Arachis hypogaea*) from 1991-94, which allowed a visiting scientist (Dr. Nalini Mallikarjuna) from ICRISAT (Hyderabad, India) to get trained in my laboratory and my visit to ICRISAT.

I have obtained several times BBSRC, SERC, ODA, British Council, NATO and EC grants to support my research and my lab members.

Awards and Distinctions

Association With Professional Bodies

1. *Editing*

2. *Reviewing*

Acted as referee for several international journals (e.g., Nature, Science, Plant Cell, PNAS, Plant Journal, Genome Research, Nucleic Acid Research, Plant Molecular Biology, Plant Physiology, Molecular Genomics and Genetics, Molecular Plant Microbe Interactions, Trends series).

3. *Advisory*

Acted as external referee for the international grant funding authorities (e.g. BBSCR, EC, Austrian

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Academy of Sciences and NSF (USA) grants) and university tenure positions (Leeds and Sussex and Montreal (Canada), **Member of the National Fund for Basic Research (NFBSRAFA) Committee.**

4. *Committees and Boards*

Member of Advisory Committee of Directorate of Maize Research

5. *Memberships*

International Society of Phytomorphology

6. *Office Bearer*

Other Activities

Signature of Faculty Member

- You are also requested to also give your complete resume as a DOC or PDF file to be attached as a link on your faculty page.

