


## Brief Curriculum Vitae

<b>1</b>	<b>Name &amp; Affiliation</b>	<p><b>Prof Neelam Sangwan, FNA, FNAAS</b>  <b>Head,</b>  <b>Department of Biochemistry,</b>  <b>School of Interdisciplinary and Applied Life Sciences,</b>  <b>Central University of Haryana, Mahendergarh</b>  <b>Haryana</b>  Phone : +91-09415766696 (Mobile)  e-mail: <a href="mailto:drneelamsangwan@gmail.com">drneelamsangwan@gmail.com</a>  <a href="mailto:nsangwan@cuh.ac.in">nsangwan@cuh.ac.in</a></p>
		
<b>2</b>	<b>Education, employment and academic assignments</b>	<ol style="list-style-type: none"> <li>1. M.Sc (Biochem), University of Lucknow, Lucknow</li> <li>2. Ph.D, University of Lucknow, Lucknow</li> <li>3. Proficiency in German Language, University of Lucknow, Lucknow</li> <li>4. Certificate Course in Yoga, University of Lucknow, Lucknow</li> <li>5. Visiting Scientist, Noble Foundation, USA</li> <li>6. Visiting Scientist, John Innes Centre, Norwich, UK</li> <li>7. Professor, Academy of Scientific and Innovative Research (AcSIR)</li> <li>8. Chief Scientist, CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow-(2019)</li> <li>9. Scientist B, CIR-CIMAP, Lucknow to Senior Principal Scientist (1992-2009)</li> <li>10. Scientist B, CSIR-Complex (now CSIR-Institute of Himalayan Bioresource Technology IHBT, Palampur, Kangra, HP) 1989-1992</li> </ol>
<b>3</b>	<b>Honours / Awards / Distinctions</b>	<p><b>Academy Fellowships</b></p> <ul style="list-style-type: none"> <li>➤ Fellow Indian National Science Academy (INSA), N Delhi</li> <li>➤ Fellow, National Academy of Agricultural Sciences (NAAS), N Delhi</li> <li>➤ Member, National Academy of Sciences, India (NASI, Allahabad)</li> <li>➤ Member, Society of Biological Chemists (SBC), India</li> <li>➤ Member, Indian Science Congress Association (ISCA), India</li> </ul> <p><b>Early Career Research Fellowships</b></p> <ul style="list-style-type: none"> <li>➤ BOYSCAST Fellowship</li> <li>➤ INSA-Royal Society, UK Fellowship</li> <li>➤ Dr K S Krishnan Fellowship (DAE), India</li> <li>➤ UGC Research Fellowship</li> </ul> <p><b>Awards/Honours</b></p> <ul style="list-style-type: none"> <li>➤ INSA Medal for Young Scientist,</li> <li>➤ NAAS Young Scientist Award;</li> <li>➤ ISCA-Prof Hira Lal Chakravorty Award;</li> <li>➤ CSIR-Technology Award from Dr Harshvardhan, Minister of Science and Technology (as PI and leader)</li> <li>➤ DBT-Women Leaders in Crop Science delegate to Cambridge University, UK under Newton Bhabha Programme</li> </ul>

6	<b>Expert Committee member</b>	<ul style="list-style-type: none"> <li>• Subject expert committee member of CSIR, Central University, ASRB (served)</li> <li>• Task force member UPCST (Served), DBT, CSIR</li> </ul>
7	<b>Review of projects and manuscripts</b>	<ul style="list-style-type: none"> <li>• Projects from national funding agencies CSIR, ICMR, DBT and DST</li> <li>• Projects from international funding agencies NIH-USA, Israel Govt</li> <li>• Publications from about 40 International Journals</li> <li>• Managing Editor-Plant Growth regulation (Springer)</li> </ul>
8	<b>Examinership</b>	<ul style="list-style-type: none"> <li>• Ph.D, M.Tech. and MSc. Thesis/dissertation of IIT, DU, BHU, JNU, AKTU and other Universities</li> <li>• Doctoral advisory committee (DAC) member for JNU and AcSIR</li> </ul>
9	<b>Human Resource mentored</b> PhD., MPhil, M.Tech, M.Sc Students supervised :~ 50 (CSIR, ICMR, DBT, TWAS, Raman Fellowship) Mentored Women Scientist: DST, DBT-Biocare KVPY Fellow, Three academy summer interns	
14	<b>Areas of Research</b>	<ol style="list-style-type: none"> <li>1. Medicinal and Aromatic Plants (MAPs), and Nutraceuticals</li> <li>2. Biosynthesis of Natural Products</li> <li>3. Plant Secondary Metabolism</li> <li>4. Functional Genomics of MAPs</li> <li>5. Transcriptome, Genome Sequencing, Assembly and Mapping of Metabolic Pathways</li> <li>6. Recombinant Protein Expression and Characterization</li> <li>7. Transgenic Plants for Stress Tolerance</li> <li>8. Transgenic Plants for Modulation of Secondary Metabolites</li> <li>9. Chemotypes and Phytochemicals-Terpenoid/Steroid and others</li> <li>10. Trichomes-Structural and Functional Characterization</li> <li>11. Cross Talk of pathways across intracellular compartments</li> <li>12. Mechanisms in plants for abiotic (drought, heavy metal) stress</li> <li>13. Phytochemical Based Pharmacological Properties such as Neuroprotection, Anti-Inflammatory (in Collaboration)</li> </ol> <p><b>MAPs:</b>  <i>Withania somnifera (ashwagandha), W. coagulens, Ocimum species (Tulasi), Pelargonium (Rose scented geranium) species, Mentha species, Artemisia annua, Centella asiatica, Aroma grasses, Dioscoria sps, Gymnema Sylvester, Boerhavia diffusa</i></p>
15	<b>Major translational leads</b>	<ul style="list-style-type: none"> <li>• Optimized Ashwagandha extracts/preparation/formulation and phytochemical processes for pharmacological activities such as immunomodulatory, neuroactive, anti-oxidant etc;</li> <li>• Ashwagandha variety NMITLI-118 (Released 2009)</li> <li>• Ashwagandha variety NMITLI-101 are lead varieties (Released 2015 from Vigyan Bhawan by Honorable minister Dr Harshvardhan))</li> <li>• Ashwagandha basic and translational work-Winner of CSIR Technology Award 2015</li> <li>• Chemotypes of Ashwagandha</li> </ul>
16	<b>External agency and other Grants/Projects</b>	<ul style="list-style-type: none"> <li>➤ Department of Science and Technology (DST),</li> <li>➤ Department of Biotechnology (DBT)</li> <li>➤ Indian National Science Academy (INSA),</li> <li>➤ New Millennium Indian Technology Leadership Initiative (NMITLI)</li> </ul>

		➤ CSIR (Network, MLPs, FTT),
17	<b>Publications</b>	<ol style="list-style-type: none"> <li>1. About 90 publications in high impact factor International journals</li> <li>2. Book Chapters (Six)</li> <li>3. Patents (Four)</li> <li>4. International/National conference proceedings</li> <li>5. <b>Citations:</b> More than 4500 citations,</li> </ol>
18.	<b>Social outreach and responsibilities</b>	<ul style="list-style-type: none"> <li>• Nodal Scientist (CSIR-CIMAP) KVS Jigyasa Program of UP state (2017-2019), co-ordinated visits and workshops for bright young students of KVS for inculcating scientific temperament</li> <li>• Participated in CSIR-program on MAPs cultivation and future prospects in villages of UP under rural development programme</li> <li>• Chairperson-ICC</li> </ul>

#### Selected Research Publications:

- Maurya, S., Chandra, M., Yadav, R.K. Narnoliya LK, Sangwan RS, Bansal S, Sandhu P, Singh U, Kumar D, **Sangwan NS** (2019) Interspecies comparative features of trichomes in *Ocimum* reveal insights for biosynthesis of specialized essential oil metabolites Protoplasma <https://doi.org/10.1007/s00709-018-01338-y>
- Nilofer A, Singh AK, Kumar D, Kaur P, **Sangwan NS**, Singh S (2018) A novel method for survival of rose-scented geranium (*Pelargonium graveolens* L.) mother plants under extreme climatic conditions. Industrial Crop Products 126: 227-237
- Bansal S, Narnoliya LK, Mishra M, Chandra M, Yadav RK & **Sangwan NS** (2018) HMG-CoA reductase from Camphor Tulsi (*Ocimum kilimandscharicum*) regulated MVA dependent biosynthesis of diverse terpenoids in homologous and heterologous plant systems Scientific Reports 8:3547 DOI:10.1038/s41598-017-17153-z
- Tripathi S, Sangwan RS, Narnoliya, LK, Srivastava, Y, Mishra B, **Sangwan NS** (2017) Transcription factor repertoire in Ashwagandha (*Withania somnifera*) through analytics of transcriptomic resources: Insights into regulation of development and withanolide metabolism- Scientific Reports doi:10.1038/s41598-017-14657-6
- Yadav RK, Sangwan RS, Srivastava AK, **Sangwan NS** (2016) Prolonged exposure to salt stress affects specialized metabolites-artemisinin and essential oil accumulation in *Artemisia annua* L.: metabolic acclimation in preferential favour of enhanced terpenoid accumulation Protoplasma DOI 10.1007/s00709-016-0971-1.
- Yadav RK, Sangwan RS, Srivastava AK, Maurya S, **Sangwan N S** (2015) Comparative profiling and dynamics of artemisinin related metabolites using efficient protocol and expression of biosynthetic pathway genes during developmental span of two elite varieties of *Artemisia annua* L. J Plant Biochem Biotech 24: 167-175.
- Ahmad H, Samuel SS, Khandelwal K, Arya A, Tripathi S, Agrawal S, **Sangwan, NS**, Shukla R, Dwivedi AK (2016) Enduring protection provided by NMITLI118RT+ and its preparation NMITLI118RT+ CFM against ischemia/reperfusion injury in rats. RSC Advances 6:42827-42835
- Jadaun JS, **Sangwan Neelam S**, Narnoliya L, Tripathi S, Sangwan RS (2015) *Withania coagulans* tryptophan decarboxylase gene cloning, heterologous expression, and catalytic characteristics of the recombinant enzyme-Protoplasma DOI 10.1007/s00709-015-0929-8
- Gupta P, Goel R, Agarwal A, Asif M, **Sangwan Neelam**, Sangwan RS, Trivedi P (2015) Comparative transcriptome analysis of different chemotypes elucidates withanolide biosynthesis pathway from medicinal plant *Withania somnifera*. Scientific Reports 5: 18611.21. doi: 10.1038/srep18611 (Impact Factor 5.578)

- Verma G, Mishra S, **Sangwan NS** and Sharma S (2015) Reactive oxygen species mediate axis-cotyledon signaling to induce reserve mobilization during germination and seedling establishment in *Vigna radiata*. J Plant Physiol 184, Pages 1-106: 79-88
- Tiwari P, Sangwan RS, **Sangwan NS**. (2016) Plant secondary metabolism linked glycosyltransferases: An update on expanding knowledge and scopes. Biotechnology Advances doi:10.1016/j.biotechadv.2016.03.006 (IF 9.950; Corresponding author)
- Mishra S, Bansal S, Sangwan RS, **Sangwan NS** (2016) Genotype independent and efficient Agrobacterium-mediated genetic transformation of the medicinal plant *Withania somnifera* Dunal. J Plant Biochem Biotechnol 25:191-198 (Corresponding author)
- Singh J, Sabir F, Sangwan RS, Narnoliya LK, Saxena S, **Sangwan Neelam S** (2015) Enhanced secondary metabolite production and pathway gene expression by leaf explants-induced direct root morphotypes are regulated by combination of growth regulators and culture conditions in *Centella asiatica* (L.) urban. Plant Growth Regulation 75, 55-66 DOI 10.1007/s10725-014-9931-y
- Singh J, Sangwan RS, Gupta S, Saxena S, **Sangwan Neelam S** (2014) Profiling of triterpenoid saponin content variation in different chemotypic accessions of *Centella asiatica* L. Plant Genetic Resources: Characterization and Utilization; 1–4 doi:10.1017/S1479262114000860
- Rastogi S, Meena S, Bhattacharya A, Ghosh S, Shukla RK, **Sangwan Neelam S**, Lal RK, Gupta MM, Lavania UC, Gupta V, Nagegowda DA and Shasany AK (2014) De novo sequencing and comparative analysis of holy and sweet basil transcriptomes. BMC Genomics, 15:588 doi:10.1186/1471-2164-15-588
- Srivastava S, Sangwan RS, Tripathi S, Mishra B, Narnoliya LK, Misra LN and **Sangwan Neelam S** (2015) Light and auxin responsive cytochrome P450s from *Withania somnifera* Dunal: cloning, expression and molecular modelling of two pairs of homologue genes with differential regulation Protoplasma DOI 10.1007/s00709-015-0766-9
- Mishra S, Bansal S, Sangwan RS and **Sangwan Neelam S** (2015) Genotype independent and efficient Agrobacterium-mediated genetic transformation of the medicinal plant *Withania somnifera* Dunal Journal of Plant Biochemistry Biotechnology DOI: 10.1007/s13562-015-0324-8
- Rajakani, R, Narnoliya, L, **Sangwan Neelam S**, Sangwan R.S. and Gupta V (2014) Subtractive transcriptomes of fruit and leaf reveal differential representation of transcripts in *Azadirachta indica*. Tree Genetics and Genomes. DOI 10.1007/s11295-014-0764-7
- Tiwari P, Sharma P, Khan F, **Sangwan Neelam S**, Mishra BN and Sangwan RS (2015) QSAR and docking studies on gymnemic acid analogues for antidiabetic activity targeting PPAR $\gamma$ . Current Computer-aided Drug Design 11: 57-71.
- Khedgikar V, Ahmad N, Kushwaha P, Gautam J, Nagar GK, Singh D, Trivedi PK, Mishra PR, **Sangwan Neelam S**, Trivedi R (2014) Preventive effects of Withaferin A isolated from the leaves of an Indian Medicinal Plant *Withania somnifera* (L.): Comparisons with 17- $\beta$ -Estradiol and Alendronate. Nutrition DOI: 10.1016/j.nut.2014.05.010
- Mishra S.K, **Sangwan Neelam S**, Srivastava, M.K, Mishra B, and Sangwan R S (2014) Proteomic identification of a fucosyltransferase from petals of milk thistle, *Silybum marianum*. Plant Genetic Resources: Characterization Utilization 1-5
- Mishra B, Sangwan RS, Mishra S, Jadaun JS, Sabir F and **Sangwan NS** (2014) Effect of cadmium stress on inductive enzymatic and nonenzymatic responses of ROS and sugar metabolism in multiple shoot cultures of Ashwagandha (*Withania somnifera*). Protoplasma doi. 10.1007/s00709-014-0613-4

- Chandra M, **Sangwan NS**, Kumar H, Singh AK, Kalra A (2014) dl-2 Aminobutyric acid and calliterpenone are the potential stimulators of Trichoderma cellulose activities. *Biomass and Bioenergy* 62, 212-21
- Narnoliya LK, Rajakani R, Sangwan RS, Gupta V and **Sangwan NS** (2014) Comparative transcripts profiling of fruit mesocarp and endocarp relevant to secondary metabolism by suppression subtractive hybridization in *Azadirachta indica* (neem). *Molecular Biology Reports* 10.1007/s11033-014-3174-x
- Siddique AA, Joshi P, Misra LN, **Sangwan Neelam S**, Darokar MP (2014) 5,6-De-epoxy-5-en-7-one-17-hydroxy withaferin A, a new cytotoxic steroid from *Withania somnifera* L. Dunal leaves, *Natural Product Research* DOI:10.1080/14786419.2013.871545
- Yadav, R K, Sangwan, R S, Sabir F, Srivastava, AK. and **Sangwan Neelam S** (2014) Effect of prolonged water stress on specialized secondary metabolites, peltate glandular trichomes, and pathway gene expression in *Artemisia annua* L. *Plant Physiology and Biochemistry* 74: 70-83; dx.doi.org/10.1016/j.plaphy.2013.10.023
- Mishra SK, Sangwan Neelam S and Sangwan R S (2014) Physico-kinetic and functional features of a novel  $\beta$ -glucosidase isolated from milk thistle (*Silybum marianum* Gaertn.) flower petals. *J Plant Biochem Biotech* 23: 379-388
- Bose SK, Yadav RK, Mishra S, Sangwan RS, Singh AK, Mishra B, Srivastava AK and **Sangwan Neelam S** (2013) Effect of gibberellic acid and calliterpenone on plant growth attributes, trichomes, essential oil biosynthesis and pathway gene expression in differential manner in *Mentha arvensis* L. *Plant Physiol Biochem* 66:150-158
- Sharma P, **Sangwan Neelam S**, Bose, S K and Sangwan R S (2013) Biochemical characteristics of a novel vegetative tissue geraniol acetyltransferase from a monoterpene oil grass (Palmarosa, *Cymbopogon martinii* var. Motia) leaf- *Plant Science* 203-204: 63-73
- Kushwaha AK et al (2013) Tropine forming tropinine reductase gene from *Withania somnifera*: Biochemical characteristics of the recombinant enzyme and novel physiological overtones of tissue wide gene expression patterns. *PloS one* 8 (9) e744777
- Khedgikar, V, Kushwaha, P, Gautam, J, Verma A, Changkija B, Kumar A, Sharma S, Nagar GK, Singh D, Trivedi PK, **Sangwan N S**, Mishra PK, Trivedi R (2013) Withaferin A: a proteasomal inhibitor promotes healing after injury and exerts anabolic effect on osteoporotic bone. *Cell Death and Disease* 01/2013; 4:e778 (IF 5.014)
- Sangwan et al (2013) De novo sequencing and assembly of *Centella asiatica* leaf transcriptome for mapping of structural, functional and regulatory genes with special reference to secondary metabolism. *Gene* 525: 58-76 <http://dx.doi.org/10.1016/j.gene.2013.04.057>
- Kushwaha AK, **Sangwan Neelam S**, Tripathi S and Sangwan RS (2013) Molecular cloning and catalytic characterization of a recombinant tropine biosynthetic tropinone reductase from *Withania coagulans* leaf. *Gene* 516: 238-247 <http://dx.doi.org/10.1016/j.bbr.2011.03.031>
- Sabir, F, Mishra, S., Sangwan, R.S., Jadaun, J S. and **Sangwan, Neelam S** (2013) Qualitative and quantitative variations in withanolides and expression of some pathway genes during different stages of morphogenesis in *Withania somnifera* Dunal. *Protoplasma* 250: 539-549. DOI 10.1007/s00709-012-0438-y
- Rajakani, R, Narnoliya, L, **Sangwan Neelam S**, Sangwan R.S. and Gupta V (2013) Activated charcoal-mediated RNA extraction method for *Azadirachta indica* and plants highly rich in polyphenolics, polysaccharides and other complex secondary compounds. *BMC Research Notes* 6:125- doi:10.1186/1756-0500-6-125

- Mishra S K, **Sangwan Neelam S** and Sangwan, R.S (2012) Comparative physico-kinetic properties of a homogenous purified  $\beta$ -glucosidase from *Withania somnifera* leaf. Acta Physiol Plant 35: 1439-1451 DOI 10.1007/s11738-012-1183-8
- Chaurasiya, ND, **Sangwan NS**, Sabir, F, Misra, LN, Sangwan R S (2012) Withanolide biosynthesis recruits both mevalonate and DOXP pathways of isoprenogenesis in Ashwagandha *Withania somnifera* L. (Dunal). Plant Cell Reports 31: 1889-1897. DOI 10.1007/s00299-012-1302-4
- Mishra, S, Sangwan, RS, Bansal, S and **Sangwan NS** (2012) Efficient transgenic plant production of *Withania coagulans* (Stocks) Dunal mediated by *Agrobacterium tumefaciens* from leaf explants of in vitro multiple shoot culture. Protoplasma 250: 451-458. DOI 10.1007/s00709-012-0428-0
- Chandra M, Kalra A, **Sangwan NS** and Sangwan RS (2012) Kinetic and proteomic features of an extracellularly secreted homogeneity purified  $\beta$ -glucosidase of *Trichoderma citrinoviride*. Molecular Biotechnology-53: 289-299 DOI: 10.1007/s12033-012-9526-7;
- Sabir F. Sangwan R.S., Kumar R. **Sangwan NS** (2012) Salt Stress Induced responses in Growth and Metabolism in Callus Cultures and Differentiating in vitro Shoots of Indian Ginseng (*Withania somnifera* Dunal). J. Plant Growth Regul 31: 537-548 DOI10.1007/s00344-012-9264-x
- Misra LN, Misra P, Pandey A, Sangwan RS and **Sangwan NS** (2012) 1, 4 dioxane and ergosterol derivatives from *Withania somnifera* roots. J. Asian Nat. Prod Res-14: 39-45.
- Sabir F, Sangwan, RS, Singh J, Pathak, N, Mishra, LN, **Sangwan, NS** (2011) Biotransformation of withanolides by cell suspension cultures of *Withania somnifera* (Dunal)– Plant Biotechnology Reports-5, 12-134. DOI 10.1007/s11816-011-0165-4
- Sabir, F, Kumar A, Tiwari, P., Pathak, N Sangwan, RS, Bhakuni, RS, **Sangwan NS** (2010) Bioconversion of artemisinin to its nonperoxidic derivative deoxyartemisinin through suspension cultures of *Withania somnifera* Dunal- Z. fur Naturforschung- 65c, 607-612
- Chaurasiya ND, Sangwan RS, Mishra L N, Tuli R, **Sangwan NS** (2009) Metabolic clustering of a core collection of Indian ginseng *Withania somnifera* Dunal through DNA, Isoenzyme, polypeptide and withanolide profile diversity. Fitoterapia 80:496-505
- Sharma PK, **Sangwan NS**, Mishra B.N. and Sangwan RS (2009) Coherent ontogenic dynamics of geraniol acetyltransferase activity and geranyl acetate concentration in flowers and leaves of aroma grass *Cymbopogon martini* var Motia. Plant Growth Regulation, 57:103–10851.
- Chandra M, Kalra A, **Sangwan NS**, Gaurav SS, Darokar MP, Sangwan RS (2009). Development of a mutant of *Trichoderma citrinoviride* for enhanced production of cellulases. Bioresource Technology 100: 1659-62
- Sangwan R.S, Chaurasiya ND, Lal, P., Mishra L N, Tuli R and **Sangwan NS** (2008). Root contained withanolide A is inherently de novo synthesized within roots in Ashwagandha (*Withania somnifera*). Physiologia Plantarum 133: 278-87
- Sangwan RS, **Sangwan NS**, Chaurasiya ND, Sharma PK, Mishra SK, Tyagi BR and Srivastava AK (2008) Carbonate extraction process for metabolic, isozymic and proteomic profiling of rose-scented geranium (Pelargonium sp), a hyper-acidic plant. Phytochemical Analysis 19: 104
- Misra L, Mishra P, Pandey A, Sangwan RS, **Sangwan NS** and Tuli R (2008) Withanolides from *Withania somnifera* roots. Phytochemistry 69:1000-1005.
- Sabir F, Sangwan RS, Chaurasiya ND, Misra LN, and **Sangwan NS** (2008). In vitro withanolides production by *Withania somnifera* Dunal cultures. Zeitschrift fur Naturforschung-63c, 409-412

- Chaurasiya ND, Uniyal GC, Lal P, Mishra L N, **Sangwan NS**, Tuli R and Sangwan RS (2007). Analysis of withanolides in root and leaf of *Withania somnifera* by HPLC with photo diode array and evaporative light scattering detection. *Phytochem Analysis* 19: 148-154
- Sangwan RS, Chaurasiya ND, Lal P, Misra LN, Uniyal GC, Tuli R, and **Sangwan NS** (2007). Withanolide A biogenesis in shoot cultures of Ashwagandha (*Withania somnifera* Dunal). *Chem Pharm Bull* 55: 1371-1375
- **Sangwan NS**, Sharma PK and Sangwan RS (2007) Geranyl acetate esterase is commonly present but linalyl acetate esterase occurrence is highly limited in plants. *Flavour and Fragrance Journal* 22; 169-173
- Sabir F, Sangwan Neelam S, ND Chaurasiya, L N Misra, R Tuli and R S Sangwan (2007) Micro-propagation of *Withania somnifera* L. accessions from axillary meristem for rapid propagation and consistent withanolide productivity. *J Herbs Spices Med Plants* 13: 118-128
- Sharma PK, Sangwan RS and Sangwan Neelam S (2005) TCA facilitated coenzyme A- SH stabilization based end point spectrophotometric DTNB-assay for plant terpene alcohol acetyl transferases (AATs). *Analytical Biochemistry* 346: 176-178
- Misra LN, Lal P, Sangwan RS, Sangwan Neelam S, Uniyal GC and Tuli R (2005) Unusually sulfated and oxygenated steroids from *Withania somnifera*. *Phytochemistry* 66: 2702-2707
- Shukla N, Sangwan Neelam S, Misra HO and Sangwan RS (2004) Characterization of *Boerhavia diffusa* L mutant lines by RAPD and isozyme selected for agronomically valuable traits. *J Gen Breeding* 58: 37-46
- Sangwan RS, Chaurasiya ND, Misra LN, Lal P, Uniyal GC, Sharma R, Sangwan Neelam S, Suri KA, Qazi GN and Tuli R (2004) Phytochemical variability in commercial herbal products and preparations of *Withania somnifera* (Ashwagandha). *Current Science* 86:461-465
- Tyagi BR, Tripathi A, Singh H, Sangwan RS, **Sangwan Neelam S** and Naqvi AA (2003) Narrowly lobed leaf of rose-scented geranium (*Pelargonium* species), a chemically induced mutation for leaf shape. *J Genet Breeding* 57:115-124
- Sharma S, **Sangwan Neelam S** and Sangwan RS (2003) Developmental process of essential oil glandular trichomes collapsing in menthol mint. *Current Science* 84: 544-550
- **Sangwan Neelam S**, Yadav U and Sangwan RS (2003) Genetic diversity among elite varieties of the aromatic grasses, *Cymbopogon martinii*. *Euphytica* 130: 117-130
- Nayak S, Srivastava G, Debata, BK and Sangwan Neelam S (2003) Evaluation of agronomically useful somaclonal variants in Jamrosa (a hybrid *Cymbopogon*) and detection of genetic changes through RAPD. *Plant Science* 164: 1029-1035
- Shukla N, **Sangwan Neelam S**, Misra HO and Sangwan RS (2003) Genetic diversity in *Boerhavia diffusa* L. of different geographic locations in India using RAPD markers. *Gen Res Crop Evol* 50: 587-601
- **Sangwan Neelam S**, Yadav U and Sangwan RS (2001) Molecular analysis of genetic diversity in elite Indian cultivars of essential oil trade types of aromatic grasses (*Cymbopogon* species). *Plant Cell Reports* 20: 437-444
- Sangwan RS, Yadav U and Sangwan Neelam S (2000) Isolation of genomic DNA from defatted oil seed residue of opium poppy (*Papaver somniferum*). *Plant Molecular Biology Reporter* 18: 256-70
- Sangwan et al (1999). RAPD profile based genetic characterization of chemotypic variants of *Artemisia annua* L. *Intl Bioch Mol Biol Intl (IUBMB Life)* 47, 935-944

Book Chapters (selected):

- Sangwan N.S., Tripathi, S., Srivastava, Y., Mishra, B. and Pandey N., 2017 Phytochemical Genomics of Ashwagandha. In *Science of Ashwagandha: Preventive and Therapeutic Potentials* (pp. 3-36). Edi: A Kaul, Wadhwa R, Springer, Cham.
- Sangwan NS, Jadaun J, Tripathi S, Mishra B, Narnoliya LK 2017 Plant metabolic engineering Omics approaches in plant metabolic engineering in Omics Technology and bioengineering: Towards improving quality of life; Edi: D Barh and Vasco Azevedo ISSN no 9780128046593 (Hard copy); Elsevier, Academic Press (<https://doi.org/10.1016/C2015-0-01634-3>)
- Sangwan, N S, Tiwari, P, Mishra SK, Yadav RK, Tripathi S, Kushwaha, AK Sangwan RS (2015) Plant Metabolomics: An Overview of Technology Platforms for Applications in Metabolism: The Omics of Plant; Edi: Barh D, Khan MS, Davies E, ISBN: ISBN:978-81- 322-2171-5, Publisher: Springer PlantOmics: The Omics of Plant Science 2015, pp 257-298 Date: 06 Feb 2015
- Sangwan Neelam S and Sangwan R S (2014) *Secondary metabolites of traditional medical plants – case study Ashwaganda* in Applied Cell Technology in Plant Cell Monographs editors Zdeněk Opatrný and P Nick Springer, Germany (*Invited article; Corresponding author*) pp325-367