




## Faculty Details proforma for DU Web-site-2016

Title	Dr.	First Name	Renu	Last Name	Deswal	Photograph
Designation		Professor				
Address Office		Molecular Plant Physiology and Proteomics Laboratory (Lab. # 21) Room # 12, Botany Department, University of Delhi, Delhi - 110007.				
Phone No Office		Nil				
Residence		91-11-25453208				
Mobile		91-11-9711742276				
Email		<a href="mailto:rdeswal@botany.du.ac.in">rdeswal@botany.du.ac.in</a> renudeswal@yahoo.co.in deswalr@hotmail.com				
<b>Educational Qualifications</b>						
Degree		Institution			Year	
<b>Ph.D.</b>		Ph.D. (Biochemistry), Jawaharlal Nehru University, New Delhi.			1994	
<b>M.Phil.</b>		M.Phil. (Life Sciences), Jawaharlal Nehru University, New Delhi.			1988-89	
<b>PG</b>		M.Sc. (Life Sciences), Jawaharlal Nehru University, New Delhi			1987	
<b>UG</b>		<b>B.Sc. (Gen. B)</b> , University of Delhi			1985	
<b>Any other qualification</b>		Bioinformatics Courses (Online), Singapore University			2005	
		Radiation safety Officer course, AERB, India			2010	
<b>Career Profile</b>						
2009-continuing Professor, Department of Botany, University of Delhi 2006 – 2008: Associate Professor, Department of Botany, University of Delhi. February, 2001 - 2006: Reader, Department of Botany, University of Delhi. 1998- 2001: Staff Scientist III&II, National Centre for Plant Genome Research, Jawaharlal Nehru University, New Delhi.  1995 – 1998: Research Scientist, Centre for Plant Mol. Biol., Jawaharlal Nehru University, New Delhi. 1994 – 1995: Research Associate, School of Life Sciences, Jawaharlal Nehru University, New Delhi.						
<b>Administrative Assignments</b>						
2011- 2016, Deputy Proctor, North Campus 2014 – Member , Internal Complaints Committee 2011- 2014 Member, Apex Complaints Committee against Sexual Harassment 2007 – 2010, Member, Interim Committee against Sexual Harassment, Science Cluster.						
<b>Areas of Interest / Specialization</b>						
Molecular Plant Physiology, Nitric oxide and cold stress signaling, Functional Genomics (Proteomics).						

Subjects Taught
<p style="text-align: center;"><i>Ph.D.</i></p> <p>Ph.D. course work M.Phil Current topics in Genetics and Molecular Biology</p> <p><i>M.Sc.</i> BOT 103 Physiology and Biochemistry BOT 307 Proteomics and Genomics (Elective paper) BOT 408 Topics in Plant Physiology and Biochemistry BOT 409 M.Sc. Dissertations – three</p>
Research Guidance
<p><b><i>Supervision of awarded Doctoral Thesis: Two in 2015, Nine till date.</i></b></p> <ol style="list-style-type: none"> <li><b>1. Ravi Gupta 2015 – Mining of extracellular proteome of <i>Hippophae rhamnoides</i> seedlings for purification and characterization of antifreeze proteins</b></li> <li><b>2. Ankita Sherawat 2015 S.nitrosoproteome analysis in <i>Brassica juncea</i> from apoplast to nucleus indicates Nitric oxide (NO) and cold stress cross-talk in stress, signaling and redox related pathways.</b></li> <li><b>3. Prakriti Kashyap CBF dependent cold stress signaling in three dicots <i>Brassica</i>, tomato and seabuckthorn, Date of registration 1.3..2011 Thesis submitted in 2016</b></li> </ol> <p><b><i>Supervision of Doctoral Thesis, under progress: Six</i></b></p> <ol style="list-style-type: none"> <li>1) Bhavna Sharma H. <i>Rhamnoides</i> leaf and berry proteome mining for antifreeze proteins. Date of Registration 3.6.2013</li> <li>2) Shruti Sharma Proteome analysis of <i>Dioscorea alata</i> in search for Biochemical and Molecular markers. Date of Registration 23.12.2013</li> <li>3) Meenakshi Arya Analysis of Cuticular proteome in <i>Brassica</i> sp. Date of Registration – 22 Sep. 2014</li> <li>4) Sougrakpam Yaiphabi Chanu Post translational modifications in Cuticle proteome. Date of Registration- 17/02/2015 Satya Prakash Study of Redox sensitive sub-proteome in <i>B. juncea</i> . Date of Registration- 16/02/2015</li> <li>5) Priyanka Babuta Analysing de nitrosylation in <i>B.juncea</i> D.O.R- Jan 2016</li> </ol> <p><b><i>Supervision of awarded M.Phil dissertations: One (as detailed below) in 2015/2016 , Fifteen till date</i></b></p> <ol style="list-style-type: none"> <li>1. Priyanka Babuta 2014/15 –Cloning of GSNO reductase and its Biochemical analysis from <i>Brassica juncea</i>.</li> <li><b>2. M.Phil Under Progress- One Neha, Brassicaceae members as functional foods.</b></li> </ol>

**1. Research papers published in Refereed/Peer Reviewed Journals (Five years)**

Shruti Shrma, Ankita Sehrawat and Renu Deswal (2016) Asada-Halliwell pathway maintains redox status in *Dioscorea alata* tuber which helps in germination .

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2. Kashyap P, Sehrawat A, and Deswal R (2015). Nitric oxide modulates *Lycopersicon esculentum* C-repeat binding factor 1 (LeCBF1) transcriptionally as well as post-translationally by nitrosylation. Plant Physiology and Biochemistry 96, 115-123 DOI:10.1016/j.plaphy.2015.07.032. (Impact Factor-2.35)
3. Tripathy M.K, Tiwari B.S, Reddy M.K, Deswal R, and Sopory S.K, (2015). Ectopic expression of PgRab7 in rice plants (*Oryza sativa* L.) results in differential tolerance at the vegetative and seed setting stage during salinity and drought stress. Protoplasma DOI: 10.1007/s00709-015-0914-2 (Impact Factor: 2.65).
4. Chakraborty S, Deswal R, Chakraborty N (2015). Plant proteomics: A potential approach for food security. Nature India Special Issue: Proteomics Research in India. DOI:10.1038/nindia.2015.121.
5. Luthje S, Deswal R. Aggarwal GK (2015) Editor, Proteomics Special Issue “ Plant-based Foods: Seed, Nutrition and Human Health,” Issue 10, Page 1631-1770. (Impact factor-3.9)
6. Shrivastava, D. C., Kisku, A. V., Saxena, M., Deswal R. and Sarin, N. B. (2015). Over-expression of CuZnSOD from *Arachis hypogaea* alleviates salinity and drought stress in tobacco has now been published in the following paginated issue of Plant Cell Reports: Volume 34, Issue 7 (2015), Page 1109-1126 (Impact factor- 2.936)
7. Shrivastava, D. C., Kisku, A. V., Saxena, M., Deswal R. and Sarin, N. B. (2015). Stress inducible cytosolic ascorbate peroxidase (Ahcapx) from *Arachis hypogaea* cell lines confers salinity and drought stress tolerance in transgenic tobacco. **Nucleus**. -0134-3. (Impact factor-0.00, citations-0)
8. Gupta R; Deswal R (2014) Refolding of  $\beta$ -stranded Class I Chitinases of *Hippophae rhamnoides* enhances the antifreeze activity during cold acclimation. PLOS One doi-10.1371/journal.pone.0091723. (Impact factor-3.73).
9. Sehrawat A, Deswal R (2014). Sub-proteome S-nitrosylation analysis in *Brassica juncea* hints at the regulation of Brassicaceae specific as well as other vital

metabolic pathway(s) by nitric oxide and suggests post-translational modifications cross-talk. *Nitric Oxide*, 43 (1), 97–111. (**Impact factor- 3.1**)

10. Sharma B, and Deswal R (**2014**). Antifreeze proteins in plants: an overview with an insight into the detection techniques including Nanobiotechnology. *Journal of Proteins and Proteomics*, 5 (2), May-August 2014, pp. 89-107) (**Impact factor- 0.5**).
11. Gupta R, and Deswal R (**2014**). Antifreeze proteins-enabling plants to survive in the freezing conditions. *Journal of Biosciences* 39(5):931-44. (**Impact factor-1.939**)
12. Sehrawat A, **Deswal R** (2014) S-nitrosylation analysis in *B. juncea* apoplast highlights the importance of nitric oxide in cold stress signaling. *J. Proteome Res.* DOI.10.1021/PR500082 u
13. Ankita Sehrawat, Jasmeet Kaur Abat & **Renu Deswal** (**2013**) RuBisco depletome improves proteome coverage of cold responsive S-nitrosylated targets in *Brassica juncea*. *Frontiers in Plant Science*. 13, 1816-1835.
14. **Renu Deswal**, Ravi Gupta, Vivek Dogra, Raksha Singh, Jasmeet Kaur Abat, Abhijit Sarkar, Yogesh Mishra, Vandana Rai, Yelam Sreenivasulu, Ramesh Sundar Amalraj, Manish Raorane, Ram Prasad Chaudhary, Ajay Kohli, Ashok Prabhakar Giri, Niranjana Chakraborty, Sajad Majeed Zargar, Vishwanath Prasad Agrawal, Ganesh Kumar Agrawal, Dominique Job, Jenny Renaut, Randeep Rakwal. *Plant Proteomics in India and Nepal: Current Status and Challenges Ahead. Physiology and Molecular Biology of Plants* (**2013**). 19,461-477.
15. Sehrawat A., Gupta R., **Deswal R**, (**2013**) Nitric oxide and cold stress signaling cross talk, evolution of novel signaling mechanism. *Proteomics*
16. Dutta, A., Sen, J., **Deswal R**, (**2013**) New evidences about strictosidine synthase (Str) regulation by salinity, cold stress and nitric oxide in *Catharanthus roseus*. *Journal of Plant Biochemistry and Biotechnology* (22, 124-131
17. Abat JK, and **Deswal R** (**2013**). Nitric Oxide Modulates the Expression of Proteins and Promotes Epiphyllous Bud Differentiation in *Kalanchoe pinnata*. *Journal of Plant Growth Regulation*, 32, 92-101. (**Impact Factor-2.8**)
18. Lee S.J., Kang K.Y., Jwa N.S., Kim DW, Agrawal GK, Sarkar A., **Deswal R.**, Renaut J.,

Dominique J., Rakwal R., Kim S.T., **(2012)**: A decade of plant proteomics in South Korea: the International plant proteomics organization (INPPO) perspective and involvement. *Plant Omics Journal* 5, 458-465.

19. Agrawal G.K, Sarkar A., Agrawal R., Ndimba B.K., Tanou G., Dunn M.J., Kieselbach T., Cramer R., Wienkoop S., Chen S., Rafudeen M.S., **Deswal R.**, Barkla B.J., Weckwerth W., Heazlewood J.L., Renaut J., Job D., Chakraborty N., Rakwal R., Boosting the globalization of plant proteomics through INPPO: current developments and future prospects. *Proteomics (2012)*: 12, 359-68.
20. Sehrawat A., **Deswal R.**, Protein Tyrosine Nitration in Abiotic Stress in Plants. *Plant stress (2012)*: 6, 77-88.
21. Talwar P.S., Gupta R., Maurya A.K., **Deswal R.**, **(2012)**: *Brassica juncea* nitric oxide synthase like activity is stimulated by PKC activators and calcium suggesting modulation by PKC-like kinase. *Plant Physiol Biochem.* 60, 157-164.
22. Gupta R., **Deswal R.**, (2012): Low temperature stress modulated secretome analysis and purification of antifreeze protein from *Hippophae rhamnoides*, a Himalayan wonder plant. *J Proteome Res.* 4, 2684-96.

a.

23. Tripathy, M.K., Tyagi, W., Goswami, M., Kaul, T., SinglaPareek, S.L., **Deswal, R.**, Reddy, M.K., Sopory, S.K.. **(2012)**: Characterization and Functional Validation of Tobacco PLC Delta for Abiotic Stress Tolerance. *Plant Molecular Biology Reporter* 30, 488-497.
24. Jain, S., Kumar, D., Jain, M., Chaudhary, P., **Deswal, R.**, Sarin, N.B.. **(2012)**: Ectopic overexpression of a salt stress-induced pathogenesis-related class 10 protein (PR10) gene from peanut (*Arachis hypogaea* L.) affords broad spectrum abiotic stress tolerance in transgenic tobacco. *Plant Cell, Tissue and Organ Culture* 109, 19-31.

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b. **Other publications (Three years)**

Sehrawat. A, and Deswal, R. (2015) Dissecting nitric oxide signaling in nucleus: role of S-nitrosylation in regulating nuclear proteins. In a Springer book "Reactive oxygen and nitrogen species signaling and communication in plants" Igamberdiev International Publishing Switzerland.

Gupta R and Deswal R (2014) Proteomic Characterization of the Cold Traits in Seabuckthorn. Seabuckhorn-A multipurpose wonder plant. In Singh V (ed.), Daya Publishing House, India, pp 202-211.

Sarkar A, Islam MT, Zargar SM, Dogra V, Kim ST, Gupta R, Deswal R, Bagler G, Sreenivasulu Y, Waditee-Sirisattha R, Sirisattha S, Rohila JS, Raorane M, Kohli A, Kim DW, Saidajan AA, Agrawal GK and Rakwal R (2014) Proteomics Potential and Contribution towards Sustainable Agriculture. In Nouredine B (ed.), CRC Press, Taylor & Francis Group, London,

In press.

Sharma B, Gupta R and Deswal R (2013) Seabuckthorn-The New Age Sanjeevani. The Botanica. In Kapoor R (ed.) India, pp 44-52.

Kashyap P., **Deswal R.**, CBF dependent cold stress signaling relevant post translational modifications. Book: Stress Signaling in plants: Genomics and Proteomics Perspective (2013) ISBN: 978-1-4614-6371-9, Chapter 6.

Tripathy M.K., Reddy M.K., **Deswal R.**, Sopory S.K., Towards developing transgenic rice for salinity and drought tolerance: role of RaB7. In: Mulalidharan K and Siddiu EA, eds.. International Dialogue on perception and prospects of designer Rice. Society for Advancement of Rice Research, Directorate of Rice Research, Hyderabad, 500030, India, (2013): pp 228-237.

#### ***Participation as Paper/Poster Presenter (Five years)***

Invited lecture (2015) on “Antifreeze Proteins from a Himalayan Shrub Seabuckthorn and their Potential Biotechnological Applications” on the “International Conference on Low Temperature Science and Biotechnological Advances” at NASC Complex, New Delhi, India, from 27<sup>th</sup>-30<sup>th</sup> April

Sharma, B and Deswal, R.(2015) presented paper on “Purification of Chitinases, the Dual Functioning Proteins from *Hippophae rhamnoides* a Cold Tolerant Himalayan Shrub and Testing its Efficacy for Cryopreservation of RBCs” on the “International Conference on Low Temperature Science and Biotechnological Advances” at NASC Complex, New Delhi, India, from 27<sup>th</sup>-30<sup>th</sup> April.

Invited lecture (2015) on “Nitrosylation analysis in Indian mustard, opening novel avenues of biotechnological applications for human as well as plants” symposium on Nitric oxide: From research to applications held on 6<sup>th</sup> April at Paintal Memorial Golden Jublie Auditorium, VP Patel Chest Institute, University of Delhi.

Sehrawat A, Gupta R, Sharma B and Deswal R (2014). Presented a poster on “Proteome and S-nitrosoproteome analysis suggest a cross talk between nitric oxide and cold stress signalling” in the "International Symposium on Plant Signaling and Behaviour" in the Department of Botany, University of Delhi, Delhi, India, held from 7<sup>th</sup>-10<sup>th</sup> March, 2014.

Renu Deswal\*(2014) Ambushing the Himalayan gold bush for antifreeze proteins with potential biotechnological applications In PSI conference, IIT Bombay Sep.2014.

Deswal R (2014). Invited lecture Bird’s eye view of nitrosylation in cold stress signaling in

*B.juncea*.and 1<sup>st</sup> INPPO World Congress in Hamburg University, 31<sup>st</sup> Aug-6 Sep. 2014, Hamburg, Germany.

Chaired a session on “Post Translational Modifications” in 1<sup>st</sup> INPPO World Congress in Hamburg University, 31<sup>st</sup> Aug, 2014 Germany.

Invited Inaugural lecture “Understanding the regulation of cold stress adaptome”6<sup>th</sup>Sep. 2013, ‘TARU’ Gargi College Botanical Society, Gargi College, University of Delhi, Delhi

Gupta R and Deswal R (2013). Proteomic Analysis to Decipher Cold Traits in Seabuckthorn. In the Proceedings of 6th International Seabuckthorn Conference, held at Potsdam, Germany, 141-148.

Ankita Sehrawat and Renu Deswal. S-nitrosylation analysis in *Brassica juncea*

1. nuclear proteome in NATIONAL SYMPOSIUM ON BIOTECHNOLOGY: PRESENT STATUS AND FUTUR PROSPECTS (MARCH 15-16, 2013) DEPARTMENT OF BIOTECHNOLOGY DEENBANDHU CHHOTU RAM, UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, HARYANA INDIA held on 15-16<sup>th</sup> March 2013
2. Prakriti Kashyap and Renu Deswal Isolation of full length cDNA encoding chitinase from *Hippophae rhamnoides*, expression in prokaryotic system and purification in NATIONAL SYMPOSIUM ON BIOTECHNOLOGY: PRESENT STATUS AND FUTURE PROSPECTS (MARCH 15-16, 2013) in DEPARTMENT OF BIOTECHNOLOGY DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, HARYANA INDIA held on 15-16<sup>th</sup> March 2013
3. Shruti Sharma and Renu Deswal Purification and characterization of Dioscorin from *Dioscorea alata* and regulation of its activities by nitric oxide in NATIONAL SYMPOSIUM ON BIOTECHNOLOGY: PRESENT STATUS AND FUTURE PROSPECTS (MARCH 15-16, 2013) in DEPARTMENT OF BIOTECHNOLOGY DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, HARYANA INDIA held on 15-16<sup>th</sup> March 2013
4. Renu Deswal Invited lecture “Nitric oxide based post-translational modifications (PTMs) support NO and cold stress signalling cross talk in plants”.In International symposium on Proteomics beyond IDs----and 4<sup>th</sup> Annual Meeting of Proteomics Society (India) 22-24<sup>th</sup> Nov. 2012.

- Best poster award

Sehrawat, A., Abat J.K., **Deswal, R.**, 2011 “S-nitrosoproteome analysis in Rubisco depletome and Apoplastome in *Brassica juncea*, emphasizing its role in cold stress responses”. In 80<sup>th</sup> Annual meeting of the Society of Biological Chemists (India), CIMAP, Lucknow, India.

5. **Deswal, R.**, 2011 *Brassica juncea* S-nitroso-targetome modulation by cold stress explains cold stress mediated photosynthesis inhibition” in The Indian Proteomics conference,

Trends in Translational Proteomics, IPCON, Jawaharlal Nehru University, New Delhi

6. Kashyap, P., **Deswal, R.**, 2011 "Cloning of transcription factors regulating CBF dependent cold stress signalling from *Brassica juncea*." In 80<sup>th</sup> Annual meeting of the Society of Biological Chemists (India), CIMAP, Lucknow, India.
7. Invited Lecture "*Brassica juncea* S-nitroso-targetome modulation by cold stress explains cold stress mediated photosynthesis inhibition" in The Indian Proteomics Conference, Trends in Translational Proteomics, IPCON2011 3-5<sup>th</sup> April, 2011, Jawaharlal Nehru University, New Delhi,
8. Sehrawat, A., Abat J.K., **Deswal, R.**, 2011 Cold stress Modulates *Brassica juncea* Nitrosoproteome, Inhibits Rubisco Explaining Photosynthetic Down Regulation Observed in Cold stress. In 3<sup>rd</sup> International Symposium on "Frontiers in Agriculture Proteome Research: Contributions in Proteomics Technology in Agricultural Sciences, Tsukuba Science City, Japan
9. Invited lecture "Nitric oxide based post-translational modifications (PTMs) support NO and cold stress signalling cross talk in plants". In International symposium on Proteomics beyond IDs----and 4<sup>th</sup> Annual Meeting of Proteomics Society (India) 22-24<sup>th</sup> Nov. 2012.
10. Invited Lecture "*Brassica juncea* S-nitroso-targetome modulation by cold stress explains cold stress mediated photosynthesis inhibition" in The Indian Proteomics Conference, Trends in Translational Proteomics, IPCON2011 3-5<sup>th</sup> April, 2011, Jawaharlal Nehru University, New Delhi,
11. Renu Deswal 2010 Invited lecture in TWOWS general assembly and international conference entitled Women Scientists in a Changing World, 27-30 June, Beijing, China

#### **other ACHIEVEMENTS-**

#### **AWARDS/ ACHIEVEMENTS :**

- ❖ Editor of Journal of Proteins and Proteomics, a Proteomics Society of India 's official Journal.
- ❖ Appointed Editor for Frontiers in Plant Physiology.
- ❖ National Award for significant contribution in Seabuckthorn research by Seabuckthorn Association of India at "The 7<sup>th</sup> Conference of the International Seabuckthorn Association (ISA2015)" held at NASC Complex, New Delhi, India, 2015.
- ❖ Appointed Academic Committee Member For Central Institute For Medicinal And Aromatic Plants Lucknow.



- ❖ Organized 2<sup>nd</sup> Plant Proteomics Workshop/training Programme at Department of Botany, University of Delhi, Delhi, December 21-26, (2015).

## 12. Research Projects (Major Grants/Research Collaboration)

### **Name of Project:**

A search for Molecular, Biochemical, Morphological (phenotypic) markers for different growth stages of *D.alata* tuber and their relation with the redox status.

**Position in Project:** -PI

**Period:** 2015-18

**Funding Agency:** UGC

**Grant:** 10 lakhs

**Name of Project:** Structure, function, development and evolution of plant cuticular wax

**Position in Project:** Co-PI

**Period:** 2014 - 2019

**Funding Agency:** DST PURSE Phase II

**Grant:** 60 lakhs

**Name of Project:** Dioscorins, yam storage proteins—do they have a defensive role to play?

**Position in Project:** Co-PI

**Period:** 2010 - 2014

**Funding Agency:** DST PURSE Phase I

**Grant:** 60 lakhs