




## Faculty Details proforma for DU Web-site

Title	Dr.	First Name	Renu	Last Name	Deswal	Photograph
Designation		Associate 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		rdeswal@botany.du.ac.in renudeswal@yahoo.co.in				
<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.</b> (Gen. 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>						
<p>2006 – till date: Associate Professor, Department of Botany, University of Delhi. February, 2001 - 2006: Reader, Department of Botany, University of Delhi.</p> <p>September, 1998- February, 2001: Staff Scientist III&amp;II, National Centre for Plant Genome Research, Jawaharlal Nehru University, New Delhi.</p> <p>June, 1995 – September, 1998: Research Scientist, Centre for Plant Mol. Biol., Jawaharlal Nehru University, New Delhi.</p> <p>March, 1994 – June, 1995: Research Associate, School of Life Sciences, Jawaharlal Nehru University, New Delhi.</p>						
<b>Administrative Assignments</b>						
<p>2011- till date Deputy Proctor, North Campus</p> <p>2007 – 2010, Member, Interim Committee against Sexual Harassment, Science Cluster.</p>						

2011- till date Member, Apex Complaints Committee against Sexual Harassment
<b>Areas of Interest / Specialization</b>
Molecular Plant Physiology, Nitric oxide and cold stress signaling, Functional Genomics (Proteomics).
<b>Subjects Taught</b>
<p><i>Ph.D.</i> Participating in teaching Ph.D. course work</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 Ms. Sunita Ray Ms. Yaiphabi Ms. Nidhi Sharma</p>
<b>Research Guidance</b>
<p><b><i>Supervision of awarded Doctoral Thesis: Seven</i></b></p> <ol style="list-style-type: none"> <li>1. Tripathy K. Manas, 2013 Role of small GTPases in abiotic stress in Rice Thesis submitted- Univ. of Delhi,</li> <li>2. **Abat Jasmeet K. 2010 S-nitrosoproteome analysis and target validation from Kalanchoe pinnata and Brassica juncea: differential modulation of <i>Brassica juncea</i> S-nitrosylome by cold stress . Thesis submitted – University of Delhi</li> <li>3. Sharma Pragya 2009 Puriifcation of Calmodulin, Calmodulin binding proteins and cloning of PP2A phosphatase domain from <i>B.juncea</i> Thesis submitted – University of Delhi</li> <li>4. Sehgal Pooja 2009 Cloning and Characterization of Nitric Oxide Synthase (NOS) from <i>B. juncea</i> seedlings Thesis submitted – University of Delhi</li> <li>5. *Srivastava Divya 2008 Isolation of genes conferring salt tolerance in <i>Arachis hypogaea</i> , – Thesis submitted-University of Delhi ,</li> <li>6. *Jain Shalu 2008 Biochemical and Molecular Studies in stress tolerant vs. sensitive cell lines of <i>Arachis hypogaea</i>. Thesis submitted – University of Delhi ,</li> <li>7. *Datta Ajashwrata 2008 Molecular and Abiotic Stress Signal Transduction Studies on TIA Biosynthetic Pathway Genes in Periwinkle</li> </ol>

Thesis submitted – University of Delhi

1. Joint supervisors from Jawaharlal Nehru University

**\*\* Best thesis award Dr. Rangaswamy medal**

**Supervision of Doctoral Thesis, under progress: Four**

1. Ankita Sherawat, Redox Proteomics Date of Registration – 20 April,, 2010
2. Ravi Gupta –Proteome analysis of seabuckthorn , Date of registration 1.10.. 2010
3. Prakriti Kashyap CBF dependent cold stress signaling in three dicots Brassica, tomato and seabuckthorn, Date of registration 1.3..2011
4. Bhavna Sharma H. Rhamnoides leaf and berry proteome mining for antifreeze proteins  
Date of Registration 3.6.2013

**Supervision of awarded M.Phil dissertations: Thirteen**

1. Bhavna Sharma 2013 Detection and characterization of antifreeze activity in leaf and berry of *H. rhamnoides*
2. Shruti Sharma 2011/12 Purification and Biochemical characterization of Dioscorin from *D. alata*
1. Sinha Somya 2008-09 Cloning of Bj NOS and its expression analysis in *B. juncea* seedlings
2. Yadav Akhilesh 2007-08 Cloning and characterization of C-Repeat Binding Factor from cold hardy plant seabuckthorn
3. Pravin Iffat 2006 Analysis of tyrosine phosphatase activity under various abiotic stress  
a. conditions in *In Brassica juncea* seedlings.'
4. Thakur Pratibha 2005 Optimization of in vivo Nitrate Reductase activity in *Brassica juncea* seedlings under normal and abiotic stress conditions
5. Chowdhary G. K. 2004 Molecular cloning of a C-repeat binding factor from *Brassica juncea* and analysis of freeze induced protein/s.
6. Abat Jasmeet K. 2004 Proteomics approach to identify nitric oxide responsive  
a. proteins during *Bryophyllum pinatum* bud differentiation
7. Sharma Nidhi 2003 Identification of cold induced heat stable CaM Binding proteins from *B.juncea* seedlings
8. Maurya Arun K. 2003 Nitric Oxide in plants
9. Singh Rohini 2002 Epiphyllous bud differentiation in *Bryophyllum*- a probable role of calcium signalling
10. Sharma Pragya 2002 Phosphorylation studies under low temperature stress in *Brassica juncea* seedlings
11. Sharma Sudhir 2002 Investigation on role of phosphorylation during epiphyllous bud formation

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

1. Sehrawat A., Gupta R., **Deswal R.**, Nitric oxide and cold stress signaling cross talk, evolution of novel signaling mechanism. *Proteomics* (2013) DOI: 10.1002/pmic.201200445 \
2. Dutta, A., Sen, J., **Deswal R.**, New evidences about strictosidine synthase (Str) regulation by salinity, cold stress and nitric oxide in *Catharanthus roseus*. *Journal of Plant Biochemistry and Biotechnology* (2013): 22, 124-131
3. 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., A decade of plant proteomics in South Korea: the International plant proteomics organization (INPPO) perspective and involvement. *Plant Omics Journal* (2012): 5, 458-465.
4. 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.
5. Sehrawat A., **Deswal R.**, Protein Tyrosine Nitration in Abiotic Stress in Plants. *Plant stress* (2012): 6, 77-88.
6. Talwar P.S., Gupta R., Maurya A.K., **Deswal R.**, *Brassica juncea* nitric oxide synthase like activity is stimulated by PKC activators and calcium suggesting modulation by PKC-like kinase. *Plant Physiol Biochem.* (2012): 60, 157-164.
7. Gupta R., **Deswal R.**, Low temperature stress modulated secretome analysis and purification of antifreeze protein from *Hippophae rhamnoides*, a Himalayan wonder plant. *J Proteome Res.* (2012): 4, 2684-96.
8. Tripathy, M.K., Tyagi, W., Goswami, M., Kaul, T., SinglaPareek, S.L., **Deswal, R.**, Reddy, M.K., Sopory, S.K.. Characterization and Functional Validation of Tobacco PLC Delta for Abiotic Stress Tolerance. *Plant Molecular Biology Reporter* (2012): 30, 488-497.
9. Jain, S., Kumar, D., Jain, M., Chaudhary, P., **Deswal, R.**, Sarin, N.B.. 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* (2012): 109, 19-31.
10. Abat J.K., **Deswal R.**, Nitric Oxide Modulates the Expression of Proteins and Promotes Epiphyllous Bud Differentiation in *Kalanchoe pinnata*. *Journal of Plant Growth Regulation* (2012): 32, 92-101.
11. Deswal, Renu and Jasmeet K Abat. 2009. Differential modulation of S-nitrosoproteome of *Brassica juncea* by low temperature: changes in S-nitrosylation of Rubisco is responsible for the inactivation of its carboxylase activity **Proteomics**. 9(18): 4368-4380.

### ***Other publications (Three years)***

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.

Jasmeet Kaur Abat and Renu Deswal (2011) Nitric Oxide, S-nitrosoproteome and Abiotic Stress Signaling in Plants. In Omics and Plant abiotic stress tolerance (Tuteja N., Gill S. S. and Tuteja R. Eds.) Bentham publishers, USA pgs.133-142.

Pragya Sharma, Ravi Gupta and Renu Deswal (2010) Calmodulin, calmodulin binding proteins and their role in abiotic stresses In Current Trends in Plant Biology (Eds. Trivedi, P.C. and Sopory, S.K.) Aavishkar Publishers and Distributors, Jaipur, Raj , India 9pgs. 89-105).

Abat, Jasmeet Kaur and Renu Deswal. 2009. Post Translational modifications of proteins by Nitric Oxide - a new tool for metabolome regulation. In *Nitric Oxide in plant physiology*, (eds. S Hayat, M Mori, J Pichtel and A Ahmad),. Wiley-Vch, Germany: pgs. 189-200

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

1. \*Ankita Sehrawat and Renu Deswal. S-nitrosylation analysis in Brassica juncea nuclear proteome in NATIONAL SYMPOSIUM ON BIOTECHNOLOGY: PRESENT STATUS AND FUTURE 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
1. 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

2. 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.
- **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
- 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.
- 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,
- 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

\* Jasmeet Kaur Abat, Ankita Sherawat and Renu Deswal (2010) S-NITROSOPROTEOME ANALYSIS IN B.JUNCEA HINTS AT WIDE SPECTRUM METBOLOME REGULATION & SPATIAL DISTRIBUTION OF TARGETS. In N2010, **5<sup>th</sup> International Nitrogen Conference 2010**, 3 to 7 December 2010, The Ashok, New Delhi **Organized by Indian Nitrogen Group (ING-SCON) & International Nitrogen Initiative (INI)**

**Ms. Ankita was awarded a cash prize of Rs. 5000 for presenting this work.**

- Invited paper Ravi Gupta and Renu Deswal (2010) Proteome analysis of seabuckthorn, the Himalayan gold bush to fish executors of cold tolerance for crop improvement in National Conference on Seabuckthorn: Promoting Health and Protecting Environment (26-27 Nov.2010) at IARI, New Delhi
- Jasmeet Kaur Abat and Renu Deswal 2010. Cold stress induced S-nitrosylation- A potential mechanism for photosynthesis inhibition in *B juncea*. In **5<sup>th</sup> AOHUPO Congress, 14th ADNAT Convention 1st PSI conference New perspectives in proteome research**, Feb. Centre for Cellular and Molecular Biology, Hyderabad, India..

- JK Abat and Renu Deswal. 2009. Apoplastic s-nitrosylated proteins of *Brassica Juncea*: potential nitric oxide sensors. Paper presented at the 34<sup>th</sup> FEBS Congress, *Life's Molecular Interactions*, July 4-9, 2009, Viena .

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

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

**Position in Project:** Co-PI

**Period:** 2010 - 2011

**Funding Agency:** DST PURSE

**Grant:** 60 lakhs

**Name of Project:** A genomics and proteomics approach to identify, purify and clone antifreeze proteins from seabuckthorn seedling.

**Position in Project:** PI

**Period:** 2009 - 2012

**Funding Agency:** DBT

**Grant:** 50 lakhs

**Name of Project:** Proteomics approach for partial Characterization of S-nitrosoproteome of B juncea and to study expression of major S-nitrosylated proteins under abiotic and nitrosative stress conditions.

**Position in Project:** PI

**Period:** 2006 - 2010

**Funding Agency:** CSIR

**Grant:** 15 lakhs

**Name of Project:** Comparision of CBF mediated signalling in Two LT tolerant and two LT sensitive crops.

**Position in Project:** PI

**Period:** 2006 - 2009

**Funding Agency:** DST

**Grant:** 38 lakhs

**Name of Project:** Nitric oxide signalling during Bryophyllum bud differentiation.

**Position in Project:** PI

**Period:** 2005 - 2007

**Funding Agency:** UGC

**Grant:** 8.5 lakhs

**Name of Project:** Molecular cloning of Cold binding Factor in tomato: Over-expression and purification to raise antibodies.

**Position in Project:** PI

**Period:** 2004 - 2007

**Funding Agency:** DRDO

**Grant:** 20.6 lakhs

#### Awards and Distinctions

Awarded Department of Biotechnology, Govt. of India, Overseas Fellowship for six months to University of Western Ontario, Canada, 2006/07.

Awarded fellowship for International training programme on Modern Biotechnological Methods at National Biotechnology Institute, Brunswick, Germany for two months, 1999.

European Molecular Biology Organization (EMBO) fellowship for training course cum workshop on membrane receptors held in Hungary (Debrecen), 1998.

Fellowship by Federation of European Biochemical Society (FEBS) for theoretical and practical course on membrane channels and transporters, Hungary, 1998.

Best paper presentation award at 67<sup>th</sup> Annual General Body meeting of Society of Biological Chemists, held at Jawaharlal Nehru University, New Delhi, 19-21 Dec, 1998.

#### Association With Professional Bodies

**Member, Board of studies in Botany, Maharshi Dayanand University, Rohtak, Haryana since 2011**

**Reviewing** Reviewer For :

FEBS journal, Planta, Nitric oxide , Plant Growth Regulation , Journal of Proteome Research , Journal of Proteomics , Proteome Science Journal , Proteomics , Plant Physiology and Molecular Biology  
PLOS one , Botanica Helvetica (Swiss Botanical Society) , In vitro Biology-plants, J of Bioscience, Plant Science and Plant Cell Reports

#### **Memberships**

Executive Committee member, Development Chair and country representative for International Plant Proteomics Organization (INPPO), Japan.

Invited Member, New York Academy of Sciences, New York, U.S.A.

Full Member, Third World Organization for Women in Science (TWOWS), Italy.

Member, Society of Biological chemist, (SBC), India.

Life Member, Biotechnology Society of India.

Life Member, Indian Science Congress Association, Kolkata, India.

Life Member, Indian Society for Plant Physiology, New Delhi, India.



Member, International Plant Growth Substances Association, 2004-2007.

Member, European Federation of Biotechnology.

Life Member, Proteomics Society of India.

#### Other Activities

Member, Gyanodaya express Committee and accompanied girl students in Goa/Bangalore sector of the train journey in July 2012

Participating Faculty for Life Sciences Refresher Course (2011) for college teachers held in Zoology Department

Member, Department Research Committee (2008 onwards)

Member, M.Phil Committee of Department (2007 onwards)

Member, Department Purchase Committee (2008/09)

Member, syllabus revision Committee (2004,2008/09)

Member, Departmental Committee against Sexual Harassment (2003-2007)

#### **Delivered Lectures (Five years)**

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.

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,

Chaired a session in National Conference on Seabuckthorn: Promoting Health and Protecting Environment (Nov.2010) at IARI, New Delhi

Invited paper Ravi Gupta and Renu Deswal (2010) Proteome analysis of seabuckthorn, the Himalayan gold bush to fish executors of cold tolerance for crop improvement in National Conference on Seabuckthorn: Promoting Health and Protecting Environment (26-27 Nov.2010) at IARI, New Delhi.

.Renu Deswal 2010 Invited lecture in TWOWS general assembly and international conference entitled Women Scientists in a Changing World, 27-30 June, Beijing, China.

Renu Deswal Key note address 2009 “Identifying and characterizing antifreeze proteins in apo-plastome of seabuckthorn seedlings”.. In 4th International Seabuckthorn Conference in Russia Sep.

Renu Deswal Invited lecture “Cold stress induced S-nitrosylation mediated Rubisco inhibition in Brassica juncea - a potential mechanism for photosynthetic inhibition and yield loss”, Centre for Plant Biotechnology, Hisar, Haryana, India 5<sup>th</sup> Dec, 2009.

Abat, Jasmeet K, Ravi Gupta and Renu Deswal. 2009. Proteomics And Genomics Analysis Of Seabuckthorn To Search For Cold Relevant Proteins And Genes. Abstract of invited lecture for “National conference on Seabuckthorn & Environment: High Altitude Perspectives” in Leh, India.

Invited lecture “Novel targets and insights about S-nitrosylated proteins from a CAM plant Kalanchoe pinnata, indicating large scale metabolome modification by S-nitrosylation” in Trends in Cellular and Molecular Biology, Jawaharlal Nehru University, India , 6th Jan. 2008.

Invited lecture “Molecular And Biochemical Evidence For Nitric Oxide Signaling And Its Components in Brassica juncea” in National Seminar on Physiological and Biotechnological Approaches to Improve Plant Productivity, Centre for Plant Biotechnology, Hisar, Haryana, India 15th March, 2008.

***Judging various events***

Botanical Trip to kerala 2013

For annual DUBS function in the Department (2002 onwards every year).

For the college students in Science Quiz (2002 onwards every year)

Participated in discussion “Progress of science in India after independence” on All India Radio, 2007.

Botanical Excursion to Shimla, H.P. in 2005 for M.Sc.

Summer Trainees –Fifteen trainees trained in basic Mol. Biol. and Proteomics techniques.



Signature of Faculty Member

