
BIOGRAPHICAL SKETCH

Monisha Dhiman, Ph.D.

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Current Position: Associate Professor, Department of Biochemistry and Microbial Sciences,
Central University of Punjab, Bathinda, Punjab, India

Citation Indices:

Citations	746
h-index	18
i10-index	19
RG score	30.50
Total Impact Factor	121

Areas of Interest/ specialization:

Trained in proteomics and disease-state specific bio markers analysis by 2-dimensional gel electrophoresis/Western blotting approach and by LC-MS/MS and MALDI-TOF-MS at University of Texas Medical Branch, Galveston (USA). Expertise include maintaining parasite, cell lines, handling/caring mouse colonies (knock-out, transgenic), cutting-edge molecular approaches, oxidative biochemistry and enzymology, inflammatory pathology etc.

Research interest and achievements.

My focus of research is to know whether ROS/RNS induced oxidative stress activates innate defense response during carcinogenesis and what role the antioxidants play in this regard. My ultimate goal is to delineate the complex interrelationships between the oxidative stress and inflammatory mediators, wherein the promise of antioxidant and anti-inflammatory therapies in controlling progressive disease conditions can be realized. Currently, I have following work undergoing or in pipeline:

- Inflammation and its molecular and cellular targets during carcinogenesis with special focus on inflammatory enzymes produced by phagocytes.
- Evaluating the mechanism involved in the toxicity of chemotherapeutic drugs, biochemistry of free radicals and role of antioxidants (DST funded).
- Development plasma/serum proteome with reference to the specific biomarkers of oxidative/nitrosative stress produced during the course of carcinogenesis and analysis for the identification of tumor-associated biomarkers (ICMR).
- Pollen induced allergies and role of oxidative and nitrosative stress.
- Serological studies to investigate the diagnostic and prognostic efficacy of the bio-markers of inflammation, oxidative stress and antioxidant status of human diseases such as cancer, diabetes and chronic heart diseases.
- To investigate the cause effect relationship between the environmental contaminants and hypertension in Malwa region of Punjab.

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Texas Medical Branch, Galveston, TX, USA	Research Scientist-I	Nov. 2010- May 2012	Oxidative stress response networks in human Chagasic cardiomyopathy
University of Texas Medical Branch, Galveston, TX, USA	Postdoctoral Training	2006- Oct. 2010	<i>Trypanosoma cruzi</i> Induced Oxidative Stress Immunology
Himachal Pradesh University, Shimla and Jawaharlal Nehru University, New Delhi, India	Ph.D	2002-06	Radiation and Cancer Biology
Himachal Pradesh University, Shimla, and Jawaharlal Nehru University, New Delhi, India	M.Phil.	2000-02	Radiation and Cancer Biology
Himachal Pradesh University, Shimla, India	M.Sc	1998-00	Zoology (Specialization in Radiation and Cancer Biology)
St Bede's college, Shimla, India	B.Sc	1995-98	Zoology, Chemistry and Botany

A. Positions and Honors**Positions Held:**

28 Dec 2015-till date Associate Professor, Centre for Biochemistry and Microbial Sciences, Central
University of Punjab, Bathinda, Punjab, India

01 July 2013-27 Dec 2015 Assistant Professor, Centre for Genetic Diseases and Molecular Medicine, Central
University of Punjab, Bathinda, Punjab, India

31 May 2012-June 2013 Assistant Professor, Centre for Biosciences, Central University of Punjab, Bathinda,
Punjab, India

2010- May 2012 Research Scientist-I, Department of Microbiology and Immunology, University of Texas
Medical Branch, Galveston, Texas, USA

2006-2010 Postdoctoral Research Fellow, Department of Microbiology and Immunology, University
of Texas Medical Branch, Galveston, Texas, USA

2012	Reviewer “Revista do Instituto de Medicina Tropical de São Paulo”
2011	Reviewer American Journal of Tropical Medicine and Hygiene
2010- till date	Reviewer Journal of Biomedicine and Biotechnology
2004-06	Senior Research Fellow, Department of Bio Sciences, Himachal Pradesh University, Shimla, India
2002-04	Junior Research Fellow, Department of Bio Sciences, Himachal Pradesh University, Shimla, India

Other Experience and Professional Memberships:

2013- till date	Editorial Board Member, J. of Cell Sci. and Mol. Bio
2010-till date	American Society of Tropical Medicine and Hygiene (ASTMH)
2010-till date	International Society for Infectious Diseases (ISID)
2010-till date	International Society for Heart and Lung Transplant (ISHLT)
2009	Certified for teaching and mentoring (Bromberg workshop in teaching and mentoring at UTMB, Galveston)
2008-till date	American Society for Microbiology
2007-till date	Society for Free Radical Biology and Medicine
2007	American Heart Association
2006	Certified “ Basic Radiation Safety in the Laboratory ”. University of Texas Medical Branch, Galveston, Texas, USA

Honors:

- 2017: Prof AR Rao Memorial **Young Scientist Award** from Society for Mitochondrial Research and Medicine (SMRM) organized by the Jawaharlal Nehru University (JNU), New Delhi, India 10-11 February 2017.
- 2017: **Merit certificate** for commendable work in Community Development Cell on 8th Foundation Day of Central University of Punjab, Bathinda.
- 2013: **SERB, Young Investigator Award, DST**
- 2012 Judge at Galveston County Science Fair at Moody Gardens Convention Center, Galveston, USA.
- 2011 Facilitator for the small group discussion for the Cell Biology course for medical students. UTMB, Galveston, USA.
- 2011 Valena C Martinez Sellers, **Monisha Dhiman** and Nisha Jain Garg Testing the efficacy of (a) recombinant antigens for diagnosis of *T. cruzi* infection and (b) biomarkers of Chagas Disease Best poster presentation Evaluation of Metabolic and Oxidant/Inflammation Status of Human Chagasic Patients. Best poster presentation in Medical Student Summer Research Program (MSSRP), at UTMB, Galveston, USA.
- 2011 Yun A. Coronado, **Monisha Dhiman**, and Nisha J. Garg, Evaluation of Metabolic and Oxidant/Inflammation Status of Human Chagasic Patients. Best poster presentation in Medical Student Summer Research Program (MSSRP), at UTMB, Galveston, USA.
- 2011 Judge at Medical Student Summer Research Program (MSSRP), UTMB, USA
- 2010 Second prize for oral presentation in **National Postdoc Appreciation Week**, symposium at UTMB, Galveston, USA.

- 2009 First prize in poster presentation in “**International Education Week**” organized by PAHO/WHO Collaborating Center for Training in International Health at UTMB, Galveston, USA.
- 2009 Travel award through the Burroughs Wellcome Trust to attend the **109th General Meeting, American Society for Microbiology**, Philadelphia, USA.
- 2008 Travel award through the Burroughs Wellcome Trust to attend the **108th General Meeting, American Society for Microbiology**, Boston, Massachusetts, USA.
- 2007 **Best poster award** for “Correlation of chronic inflammation and seropositivity in chagasic human serum”. Jasmine Pando, *Monisha Dhiman*, José Guillermo Estrada-Franco, Francisco Ramirez Aguilar, Sara Basquez Corzo, Gladys Molina Perez, Rosa Gallegos Sandoval, Nisha Garg. *Summer Undergraduate Research Program Poster Presentation. August 2007*, University of Texas Medical Branch, Galveston, Texas, USA.
- 2004-2006 Council for Scientific and Industrial Research (CSIR)/UGC- **Senior Research Fellowship**, New Delhi, India
- 2002-2004 Council for Scientific and Industrial Research (CSIR)/UGC- **Junior Research Fellowship**, New Delhi, India
- 1995-1998 Merit Fellowship from Himachal Pradesh University, **St Bede’s College** (Convent of Jesus & Mary), Shimla, India

B. Peer-reviewed publications

1. Raman Preet Kaur, Rubal, Raja Paramjeet Singh Banipal, Rajesh Vashistha, Monisha Dhiman and Anjana Munshi. (2018) Association of elevated levels of C-reactive protein with breast cancer, breast cancer subtypes and poor Outcome. Accepted in *Current Problems in Cancer*. [10.1016/j.currproblcancer.2018.05.003](https://doi.org/10.1016/j.currproblcancer.2018.05.003).
2. Singla, R., Gupta, K. B., Upadhyay, S., **Dhiman, M.**, & Jaitak, V. (2018) Design, Synthesis and Biological Evaluation of Novel Indole-Benzimidazole hybrids Targeting Estrogen Receptor Alpha (ER- α), *European Journal of Medicinal Chemistry*, 146: 206-2019. **Impact Factor (IF): 4.35**
3. Upadhyay, S., Sharma N., Gupta, K.B., **Dhiman, M.** (2018) Role of Immune System in Tumor Progression and Carcinogenesis. *Journal of Cellular Biochemistry* March 2018, DOI: 10.1002/jcb.26663 **(IF): 3.05**
4. Gupta, K.B., Upadhyay, S., Saini, R. G., **Dhiman, M.** (2018) Inflammatory Response of Gliadin Protein Isolated from Various Wheat Varieties on Human Intestinal Cell Line. *Journal of Cereal Sciences*, 81: 91-98, **(IF): 2.65**
5. R. Kaur, Rubal, **Dhiman, M.**, Vashitshta R., Munshi A. (2017) Serum Albumin Levels in Breast Cancer: Correlation with Overall Survival. *J Food Nutr Disor*, 6:5-15.
6. Singla R, Gupta KB, Upadhyay S, **Dhiman M**, Jaitak V (2018). Design, synthesis and biological evaluation of novel indole-xanthendione hybrids as selective estrogen receptor modulators. *Bioorg Med Chem*. 26(1):266-277. **(IF): 2.79**
7. Thakur S, **Dhiman M**, Mantha AK (2018). APE1 modulates cellular responses to organophosphate pesticide-induced oxidative damage in non-small cell lung carcinoma A549 cells. *Mol Cell Biochem*. 441(1-2):201-216. **(IF): 2.05**
8. Sarkar B, **Dhiman M**, Mittal S, Mantha AK. (2017). Curcumin revitalizes Amyloid beta (25-35)-induced and organophosphate pesticides pestered neurotoxicity in SH-SY5Y and IMR-32 cells via activation of APE1 and Nrf2. *Metab Brain Dis*. 32(6):2045-2061. **(IF): 2.63**.

9. Cholia RP, Kumari S, Kumar S, Kaur M, Kaur M, Kumar R, **Dhiman M**, Mantha AK. (2017) An *in vitro* study ascertaining the role of H₂O₂ and glucose oxidase in modulation of antioxidant potential and cancer cell survival mechanisms in glioblastoma U-87 MG cells. *Metab Brain Dis*. Oct;32(5):1705-1716. doi: 10.1007/s11011-017-0057-6. **(IF): 2.63**
10. Gill, Iqbal, Kaur, Sukhchain, Kaur, Navrattan, **Dhiman, M.**, Mantha, Anil K. (2017) Phytochemical Ginkgolide B attenuates A β (1-42)- induced oxidative damage and altered cellular responses in human neuroblastoma SH-SY5Y cells. *Journal of Alzheimer's Disease*; 60(s1):S25-S40.. **Impact Factor (IF): 4.1.**
11. María Zago, Yashoda Hosakote, Sue-jie Koo, **Dhiman M**, María Piñeyro, Adriana Parodi-Talice, Miguel Basombrio, Carlos Robello, and Nisha Garg (2016) TcI isolates of *Trypanosoma cruzi* exploit antioxidant network for enhanced intracellular survival in macrophages and virulence in mice" by. *Infection and Immunity*. May 24;84(6):1842-56. **(IF): 3.74**
12. **Dhiman M***, and Garg N. J, (2014) P47^{phox-/-} mice are compromised in expansion and activation of CD8+ T cells and susceptible to *Trypanosoma cruzi* infection. *PLOS Pathogens* Dec 4;10(12):e1004516. doi: 10.1371/journal.ppat.1004516 **(IF): 8.2.**
13. Kaur N, **Dhiman M**, Perez-Polo, JR, and Mantha AK (2015) Ginkgolide B Revamps Neuroprotective Role of APE1 and Mitochondrial OXPHOS Against A β (25-35)-Induced Neurotoxicity in Human Neuroblastoma Cells. *Journal of Neuroscience Research*. Jun;93(6):938-47. **(IF): 2.99.**
14. Thakur S, Sarkar B, Cholia RP, Gautam N, **Dhiman M**, Mantha AK. (2014) APE1/Ref-1 as an Emerging Therapeutic Target for Various Human Diseases: Phytochemical Modulation of its Functions. *Experimental Molecular Medicine*. 2014. Jul 18; 46: e106. doi: 10.1038/emm.2014.42. **(IF): 5.16**
15. Thakur S, **Dhiman, M**, Tell G, and Mantha AK. (2015) A Review on Protein-Protein Interaction Network of APE1/Ref-1 and its Associated Biological Functions *Cell Biochemistry & Function*. 2015 Apr;33(3):101-12. doi: 10.1002/cbf.3100. Epub 2015 Mar 19. **(IF): 2.134**
16. **Dhiman M.**, Wan X., Popov V. L., Vargas G., Garg N. J. (2013) MnSODtg Mice Control Myocardial Inflammatory and Oxidative Stress and Remodeling Responses Elicited in Chronic Chagas Disease. *Journal of American Heart Association* 2 (5): e000302. **(IF): 4.36**
17. **Dhiman M**, Coronado YA, Vallejo CK, Petersen JR, Ejilemele A, Nuñez S, Zago MP, Spratt H, Garg NJ. (2013) Innate immune responses and antioxidant/oxidant imbalance are major determinants of human Chagas disease. *PLoS Negl Trop Dis*. Aug; 7(8):e2364. **(IF): 4.8**
18. Eaves-Pyles T, Patel J, Arigi E, Cong Y, Cao A, Garg N, **Dhiman M**, Pyles RB, Arulanandam B, Miller AL, Popov VL, Soong L, Carlson E, Coletta C, Szabo C, Almeida I. (2013) Immunomodulatory and anti-bacterial effects of cystatin-9 against *F. tularensis*. *Mol Med*. Aug 2. doi: 10.2119/molmed.2013.00081. **(IF): 4.5**
19. Gupta S, Wan X., Zago M. P, Martinez Sellers V, Silva T S, Assiah D, **Dhiman M**, Nuñez S, Petersen J R, Vázquez-Chagoyán J, Estrada-Franco J G, Garg N J. (2013) Antigenicity and diagnostic potential of vaccine candidates in human Chagas disease. *PLoS Negl Trop Dis* 2013; 7(1):e2018 **(IF): 4.8**
20. Mantha AK, **Dhiman M**, Taglialatela G, Perez-Polo RJ, Mitra S. (2012) Proteomic study of amyloid beta (25-35) peptide exposure to neuronal cells: Impact on APE1/Ref-1's protein-protein interaction. *J Neurosci Res*. Jun; 90(6):1230-9. **(IF): 2.99**

21. **Dhiman M**, Paola M. Zago, Sonia Nunez, Federico Nunez-Burgio and Nisha Jain Garg. (2012) Cardiac-oxidized Antigens Are Targets of Immune Recognition by Antibodies and Potential Molecular Determinants in Chagas Disease Pathogenesis. *PLoS One* 7; (1):e28449. **(IF): 3.8**
22. **Dhiman M** and Garg NJ. (2011) Inhibition of NADPH-oxidase Attenuates *T cruzi*-induced Cardiac Pathology. *Journal of Pathology* (2011) Dec; 225(4):583-96. **(IF): 7.2**
23. Jose´ E. Aparicio-Burgos, Laucel Ochoa-Garcia, Jose´ Antonio Zepeda-Escobar, Shivali Gupta, **Monisha Dhiman**, Jose´ Simon Martinez, Roberto Montes de Oca-Jimenez, Margarita Val Arreola, Alberto Barbabosa-Pliego, Juan C. Vazquez-Chagoyan, Nisha Jain Garg (2011). Testing the Efficacy of a Multi-Component DNA-Prime/DNA-Boost Vaccine against *Trypanosoma cruzi* Infection in Dogs. *PLoS Negl Trop Dis* 5(5): 1-10. **(IF): 4.8**
24. Wen J-J, Gupta S, Guan Z, **Dhiman M**, Condon D, Lui CY, Garg NJ (2010). Phenyl-alpha-tert-butyl-nitrone and benzonidazole treatment controlled the mitochondrial oxidative stress and evolution of cardiomyopathy in chronic chagasic Rats. *J Amer College Cardiology*. 2010, 55(22):2499-508. **(IF): 16**
25. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. (2009) Increased myeloperoxidase activity and protein nitration are indicators of inflammation in chagasic patients. *Clinical and Vaccine Immunology*, **16(5)**: 660-666. **(IF): 3.08**
26. **Dhiman M**, Nakayasu ES, Hosakote YM, Reynolds BK, Wen JJ, Almeida IC and Garg NJ. (2008) Enhanced Nitrosative Stress during *Trypanosoma cruzi* Infection Causes Nitrotyrosine Modification of Host Proteins. Implications in Chaga's disease. *Am J Pathol*. **173 (3)**: 728-740 **(IF): 6.34**
27. Wen J-J[#], **Dhiman M**[#], and Garg NJ. (2008) Tissue-specific oxidative imbalance and mitochondrial dysfunction during *Trypanosoma cruzi* infection in mice. *Microbes Infect*. **10** 1201-1209. *Equal Contribution **(IF): 3.0**
28. Deep G, **Dhiman M**, Mendiz E, Rao AR and Kale RK. (2005) Chemo preventive Effects of Mustard Seeds in Chemically Induced Fore stomach and Uterine Cervix Tumors in Murine Model System. *Human & Experimental Toxicology*. **24 (6)**: 303-312. **(IF): 2.78**
29. Deep G, **Dhiman M**, Rao AR and Kale RK. (2005). Chemopreventive Potential of Triphala on Benzo(a)Pyrene Induced Forestomach Tumorigenesis in Murine Tumor Model System. *Journal of Experimental & Clinical Cancer Research*. **24 (4)** 555-563. **(IF): 4.43.**
30. **Dhiman M**, Malhotra N and Kale RK. (2004) Quercetin as a radiomodulator. *Indian Journal of Radiation Research*. **1(2)**: 18-19.

Equal contribution

Pubmed: <https://www.ncbi.nlm.nih.gov/pubmed/?term=monisha+dhiman>

C. Book chapters

1. Shishir Upadhyay, Kunj Bihari Gupta, Sukhchain Kaur, Rubal, Sandeep Kumar, Anil K. Mantha and **Dhiman M**^{*} (2017). Resveratrol: A Miracle Drug for Vascular Pathologies *Functional foods and Human Health*". Springer Publishers.

2. Kaur S, **Dhiman M**, and Mantha AK. Ferulic Acid: A Natural Antioxidant with Applications toward Neuroprotection against Alzheimer's disease. *Functional foods and Human Health*. 2017. Springer Publishers.
3. **Dhiman M***, Thakur S, Upadhyay S, Kaur A and Mantha A K (2014) "Oxidative Stress and Inflammation in Cardiovascular Diseases: Two Sides of the Same Coin". *Free Radicals in Human Health and Disease, Oxidative Stress and Human Health*. Springer Publishers.
4. Kaur N, Sarkar B, Mittal S, **Dhiman M**, Taglialatela G, Perez-Polo R.J., Mantha AK. (2014) "Oxidative Stress Events and Neuronal Dysfunction in Alzheimer's Disease: Focus on APE1/Ref-1 Mediated Survival Strategies." *Free Radicals in Human Health and Disease, Oxidative Stress and Human Health*. Springer Publishers.
5. Gupta S, **Dhiman M**, Wen JJ, Garg NJ. ROS signaling of inflammatory cytokines during *T. cruzi* infection. *Advances in Parasitology* (2011) 76:153-70. **IF): 6.00**

*Corresponding author

D. Workshops/Conferences

Organized

1. Organized One day seminar and panel discussion on the occasion of world cancer day titled 'Recent Trends in Cancer Therapy' on 04/02/2014 at Central University of Punjab.
2. Organized one day symposium on 'Recent Trends in Molecular Medicine' at Central University of Punjab on 05/12/2014.
3. **Served as Resource person in** DBT-Sponsored Training Course in Medical Genetics and Bioinformatics organized by Centre for Human Genetics and Molecular Medicine, March 2016
4. Organized **One day Confederation of Indian Industry (CII) and SERB, Department of Science and Technology**, Government of India sponsored outreach workshop of Prime Minister's Fellowship Scheme at Central University of Punjab, Bathinda campus on 03, May 2017.
5. Organized One day seminar in collaboration with National Institute of Social Defence, New Delhi, on "Socio-Legal and other Challenges for the Prevention of Drug Abuse in India: Existing Approaches and Agenda of Reform" on August 24-25, 2017.

E. Presentations made at national and international conferences.

INVITED PRESENTATIONS:

1. Guest lecture on "**Beneficial Effects of *Glycyrrhiza glabra* Extract in Doxorubicin-Induced Cardiotoxicity via Stabilising and Restoring the Mitochondrial Redox functions at International Symposium on Cancer Treatment and Prevention** organized by the Jawaharlal Nehru University (JNU), New Delhi, India 09-10 February 2018.
2. Expert lecture on "**Novel Approaches in Research for Agriculture and Biotechnology**" in Faculty Development programme at Baba Farid College, 17 January, 2018.
3. Invited lecture on "**Role of Medicinal Plant Extracts On Doxorubicin-Induced Cardiotoxicity**" at **6th International Conference on "Mitochondria in Health and Disease"** of Society for Mitochondrial Research and Medicine-India (SMRM) organized by the Jawaharlal Nehru University (JNU), New Delhi, India 10-11 February 2017.

4. **“Role of Mitochondria in Doxorubicin Induced Cardiotoxicity”** at International Conference on Current Trends in Biotechnology” organised by Vellore Institute of Technology, Vellore from December 8-10, 2016
5. Expert Lecture on “Trends In Immuno-technology: B and T- Cells Mechanisms and Experimental Advances”. **Baba Farid Group of Institutions**, Dept of Biotechnology, Bathinda, 22 September, 2016.
6. Chemotherapeutic Drug Induced Cardiomyocyte Toxicity: Evaluation of Ethno-Botanical Plants to Minimize the Cardiac Damage. **International Symposium on Role of Herbs in Cancer Prevention and Treatment”** held at School of Life Sciences, Jawaharlal Nehru University, New Delhi, Feb. 9 - 11, 2016.
7. The Prickly Poppy Pollen Induced Inflammation and Associated Signaling Pathways in Human Lung. **6th International Conference on Stem Cells and Cancer (ICSCC2015): Proliferation, Differentiation and Apoptosis**, Organized by International Centre for Stem cells and Cancer and Biotechnology, Pune, 2 – 5 October 2015.
8. Expert Lecture on “Recent Advances in Immunology and Molecular Biology: A Practical Approach”. **Baba Farid Group of Institutions**, Dept of Biotechnology, Bathinda, 28 September, 2015.
9. Doxorubicin-induced Toxicity in Cardiomyocytes. **International Symposium on Current Advances in Radiobiology, Stem Cells and Cancer Research** at JNU, New Delhi, India, February 19-21, 2015.
10. Prickly Poppy Pollen Induced Stress in Human Lung Carcinoma A549 Cells”. **4th Biennial ‘International Conference on New Developments in Drug Discovery from Natural Products and Traditional Medicines** at NIPER, Mohali, November 20-22, 2014.
11. Oxidative Stress induced Innate Immune Responses of A549 Lung Carcinoma Cells”. **5th International Conference on Stem Cells and Cancer (ICSCC-2014): Proliferation, Differentiation, and Apoptosis in** JNU Convention Centre, New Delhi, India, November 8-10, 2014.
12. **Dhiman M** and Garg NJ. Role of NADPH-Oxidase derived reactive oxygen species in chronic myocardial pathology in mice infected by *Trypanosoma cruzi*. **59th Annual Meeting of American Society of Tropical Medicine and Hygiene (ASTMH)**, Atlanta, Georgia. November 3-7, 2011
13. **Dhiman M** and Garg NJ. Role of NADPH Oxidase derived reactive oxygen species in progression of myocarditis during *Trypanosoma Cruzi* Infection. **National Postdoc Appreciation Week**, symposium at UTMB, September 2010.
14. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Myeloperoxidase-Induced Oxidative/Nitrosative Stress in Human Chagasic Patients. **108th General Meeting, American Society for Microbiology**, Boston, Massachusetts. June 2008.
15. **Dhiman M** and Garg NJ. Development of nitrosyl-plasma proteome in Chagas disease: Identification of novel diagnostic biomarkers. **14th Annual Meeting of Society for Free Radical Biology and Medicine, Washington DC**. November 2007.
16. **Dhiman M**, Malhotra N and Kale RK. Radiomodulatory Effects of Quercetin in Murine Splenocytes. **Biosparks**, Annual Research Festival organized by School of Life Sciences, Jawaharlal Nehru University (JNU), New Delhi. February 2005.

POSTER PRESENTATIONS:

1. **Shishir Upadhyay** “Modulatory Effect of Medicinal Plant Extract on Mitochondria Function in Doxorubicin-Induced Cardiotoxicity” in *6th Annual Conference of Society for Mitochondrial Research and Medicine-India and International conference on Mitochondria in Health and Disease* by Jawaharlal Nehru University, New Delhi; February, 2017
2. Shishir Upadhyay, Manisha Rani, Nidhi Sharma and **Dhiman M**. The modulatory effect of herbal extracts alleviate mitochondrial dysfunction of DOX-induced cardiotoxicity (H9c2)” in the *7th*

International Conference on Stem Cells and Cancer (ICSCC-2016): Proliferation, Differentiation, and Apoptosis, Goa; October, 2016.

3. Nidhi Sharma and **Dhiman, M.** Chemotherapeutic Drug Induced Cardiomyocyte Toxicity. International Symposium on Role of Herbs in Cancer Prevention and Treatment” held at School of Life Sciences, Jawaharlal Nehru University, New Delhi, 9 – 11 February, 2016
4. Upadhayay S. and **Dhiman M.** Oxidative Stress Induced Neo-antigen Formation and their Role in Innate Immune Responses in A549 Lung Carcinoma Cells. 83rd Annual meeting of the Society of Biological Chemists of India, Bhubaneswar. 17–21 December 2014.
5. Upadhayay S. and **Dhiman M.** Oxidative Stress induced Innate Immune Responses of A549 Lung Carcinoma Cells. 5th International Conference on Stem Cells and Cancer (ICSCC-2014):Proliferation, Differentiation, and Apoptosis. JNU Convention Centre, New Delhi, India, 8 - 10 November, 2014.
6. Pollen Induced Stress in Human Lung Carcinoma A549 Cells, Rekha Atri, A.K. Mantha and **Monisha Dhiman, Recent Trends in Molecular Medicine**, being organized by Central University of Punjab, Bathinda, 5 Dec, 2014
7. Wheat protein induced immune responses during Celiac disease, Kunj Bihari Gupta, A.K. Mantha, R. G. Saini and **Monisha Dhiman**, being organized by Central University of Punjab, Bathinda, 5 Dec, 2014
8. Dhiman M., Sukhbir Kaur and Nirmaljit Kaur. Inflammatory and Oxidative Stress Responses Activated by Pollen Extracts in Human Lung Carcinoma A549 Cells. **International Conference on Recent Advances in Cancer Prevention and Therapeutics**” being organised by Central University of Gujarat, 18th -21st Nov, 2013.
9. **Dhiman M** and Garg N.J. NADPH oxidase-derived Reactive Oxygen Species and the Pro-Inflammatory Responses in Mice Infected by *Trypanosoma cruzi*. **3rd Biennial International Conference on 'New Developments in Drug Discovery from Natural Products and Traditional Medicines'** DDNPTM at NIPER, SAS Nagar, India, November, 2012.
10. Vallejo C. K, **Dhiman M** and Garg N.J. A Comparison of Patient Plasma: Chagas Disease to Other Cardiomyopathies. **Medical Student Summer Research Program (MSSRP)**, at UTMB, 11 May 2012.
11. Martinez Sellers V. C., **Dhiman M** and Garg N.J. Testing the efficacy of (a) recombinant antigens for diagnosis of *T. cruzi* infection and (b) biomarkers of Chagas Disease. Evaluation of Metabolic and Oxidant/Inflammation Status of Human Chagasic Patients. **Medical Student Summer Research Program (MSSRP)**, at UTMB, June 2011.
12. Coronado Y. A., **Dhiman M**, and Garg N.J, Evaluation of Metabolic and Oxidant/Inflammation Status of Human Chagasic Patients. **Medical Student Summer Research Program (MSSRP)**, at UTMB, June 2011.
13. Lozano-Garcia Jose, **Dhiman M**, and Garg NJ. Role of NADPH-oxidase dependent reactive oxygen species in Chagas disease. **Medical Student Summer Research Program (MSSRP)**, poster presentation at UTMB, June 2010.
14. **Dhiman M** and Garg NJ. Activation of NADPH-Oxidase-reactive oxygen species-inflammatory cytokines pathway contributes to acute myocardial pathology in mice infected by *Trypanosoma cruzi*. **16th Annual Pathology Department Trainee Research Day**, University of Texas Medical Branch, Galveston, Texas, USA. May 2010.
15. **Dhiman M** and Garg NJ. Splenic activation of NADPH-Oxidase-reactive oxygen species-inflammatory cytokines pathway contributes to acute myocardial pathology in mice infected by *Trypanosoma cruzi*. **McLaughlin Colloquium 2010**, University of Texas Medical Branch, Galveston, Texas, USA. April 2010.

16. **Dhiman M** and Garg NJ. Inhibition of NADPH-oxidase Attenuates *T cruzi*-induced Cardiac Pathology. “**International Education Week**” organized by PAHO/WHO Collaborating Center for Training in International Health at UTMB, Galveston. November, 2009.
17. **Dhiman M** and Garg NJ. NADPH oxidase-derived Reactive Oxygen Species Enhance the Pro-Inflammatory Response in Mice Infected by *Trypanosoma cruzi*. **109th General Meeting, American Society for Microbiology**, Philadelphia, May 2009.
18. **Dhiman M**, Nakayasu E.S., Hosakote Y.M., Reynolds B.K , Wen J.J, Almeida I C and Garg NJ. Enhanced nitrosative stress during *Trypanosoma cruzi* infection causes nitrotyrosine modification of host proteins: Implications in Chagas disease. **Boston University School of Medicine’s 3rd Symposium on “Oxidative Post-translational modifications in the cardiovascular system”**. Boston. Oct 2008.
19. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Myeloperoxidase-Induced Oxidative/Nitrosative Stress in Human Chagasic Patients. **108th General Meeting, American Society for Microbiology**, Boston, Massachusetts. June 2008.
20. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Increased Myeloperoxidase Activity and Protein Nitration are Indicators of Chronic Inflammation in Chagasic Patients. **58th Annual Meeting of the Steele conference on Diseases in Nature Transmissible to Man (DIN), at Moody Garden Hotel, Galveston, Tx.** April 22-24 2008.
21. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Increased inflammation and oxidative stress in Chagasic Patients. **McLaughlin Colloquium 2008, University of Texas Medical Branch**, Galveston, Texas, USA. April 2008.
22. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Myeloperoxidase Activity and Protein Nitration are Indicators of Chronic Inflammation in Chagasic Patients. **Molecular Basis of Infectious Diseases (MBID) Retreat, Texas A&M Institute of Biosciences and Technology**, Houston. March 2008.
23. **Dhiman M**, Jasmine Pando, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Myeloperoxidase Activation and Increased Protein Nitration Oxidation in Chagasic Patients. **14th Annual Meeting of Society for Free Radical Biology and Medicine, Washington DC.** November 2007.
24. Pando J, **Dhiman M**, Estrada-Franco JG, Aguilar FR, Corzo SB, Perez GM, Sandoval RG, Garg NJ. Correlation of chronic inflammation and seropositivity in chagasic human serum. **Summer Undergraduate Research Program Poster Presentation. 2007, University of Texas Medical Branch, Galveston, Texas, USA.** August 2007.
25. **Dhiman M** and Garg NJ. Development of Nitrosyl-plasma proteome in Chagas disease: Identification of novel diagnostic biomarkers. **McLaughlin Colloquium 2007, University of Texas Medical Branch, Galveston, Texas, USA.** March 2007.
26. **Dhiman M**, Malhotra N and Kale RK. Quercetin as a radiomodulator. **International Conference on Recent Trends in Radiation Biology** organized by Bhabha Atomic Research Centre (BARC), Bombay. December 2004.
27. **Dhiman M**, Malhotra N and Kale RK. Radiation Response of Wild and Mutant Strains of *Spirulina platensis*. **International Conference on Trends in Cellular and Molecular Biology** organized by School of Life Sciences, Jawaharlal Nehru University (JNU), New Delhi. March 2003.
28. **Dhiman M**, Malhotra N and Kale RK. Effect of High Doses of Ionizing Radiation on Two Strains of *Spirulina platensis*. **Biosparks**, Annual Research Festival organized by School of Life Sciences, Jawaharlal Nehru University (JNU), New Delhi. February 2003.

29. **Dhiman M**, Malhotra N and Kale RK. The Radioresistance of *Spirulina platensis*. **International Conference on Radiation Damage** organized by Institute of Nuclear Medicine and Allied Sciences (INMAS) New Delhi. November 2002.

F. Current Grants

A. Project as Principal Investigator

Title: Chemotherapeutic Drug Induced Cardiomyocyte Toxicity: Evaluation of Ethno-Botanical Plants to Minimize the Cardiac Damage.

Funding Agency: Dept. of Science and Technology (DST) Fast Track

B. Project as Co - Principal Investigator

Principal Investigator: Dr. Anil K. Mantha

Title: Mitochondrial Oxidative DNA Damage-Repair in Alzheimer's disease: AP-endonuclease (APE1/Ref-1) as a Potential Therapeutic Target.

Funding Agency: Dept. of Science and Technology (DST), New Delhi

C. Project as Principal Investigator (completed)

Title: Molecular Mechanisms of Pollen-Mediated Stress in Human Epithelial Lung cell line.

Funding Agency: Central University of Punjab, Bathinda as Research Seed Money. **Rs. 3 Lakhs** for 2 years (2014-16).

G. Ongoing Research at CUPB

1. Supervised One PhD, five M. Phil. and Seventeen M. Sc. students for their dissertation research work
2. Currently supervising five MSc. and five Ph.D. students for research work towards their thesis.

H. PREVIOUS RESEARCH EXPERIENCE:

1. Current Research Interest

My focus of research is to know whether ROS/RNS induced oxidative stress activates innate defense response during carcinogenesis and what role the antioxidants play in this regard. My ultimate goal is to delineate the complex interrelationships between the oxidative stress and inflammatory mediators, wherein the promise of antioxidant and anti-inflammatory therapies in controlling progressive disease conditions can be realized.

Research interests:

- Role of oxidative and nitrosative stress in disease pathology and severity.
- Inflammation and its molecular and cellular targets during carcinogenesis with special focus on inflammatory enzymes produced by phagocytes.
- Evaluating the mechanism involved in the toxicity of chemotherapeutic drugs, biochemistry of free radicals and role of antioxidants (DST grant).

Development plasma/serum proteome with reference to the specific biomarkers of oxidative/nitrosative stress produced during the course of carcinogenesis and analysis for the identification of tumor-associated biomarkers

2. *Post Doctoral Fellowship*

Trypanosoma cruzi, a causative agent for Chagasic cardiomyopathy. Disease pathogenesis includes mitochondrial dysfunction and oxidative stress. In subsequent studies, we have found that treatment of *T. cruzi*-infected animals with an antioxidant and anti-parasite therapy (not the anti-parasite therapy alone) was effective in preventing the mitochondrial and cardiac oxidative pathology and preserving cardiac function. Based on these studies, we focussed on murine model system and human sera samples to understand patho-physiology of Chagas disease. I have developed a chagasic plasma proteome with an aim to identify the differentially expressed/released and/or modified proteins that would be specific/sensitive markers of cardiac disease status and provide insights into the pathological mechanisms associated with Chagas disease development. Emphasis has been laid on the empirical determination of various protein modifications such as protein carbonyl, 3-nitroTyr (3NT), and diTyr contents in the chagasic plasma samples compared to normal controls. In a second project I worked with chagasic human sera to see the correlation between the disease progression and inflammatory markers. I also used human sera to do some auto-immune related experiments as Chagas disease also shows some auto-immune disease like characteristics. My more recent project suggested that reactive oxygen species (ROS) is an important regulator of inflammatory cytokines in chagasic host. My inhibition studies with cultured and primary macrophages showed that NOX/ROS was a critical regulator of cytokine production in response to *T. cruzi* infection. *In vivo* studies using splenocytes of *T. cruzi* infected mice, with or without *in vitro* stimulation with parasite antigens, validated the above observations and demonstrated that inhibition of NOX by apocynin or DPI or use of ROS scavenger substantially inhibited the activation and proliferation of phagocytes and inflammatory mediators (IL-1, IL-6, IFN- γ , and TNF- α). I expanded my research towards identification of molecular and biochemical pathways that are perturbed and contribute to symptomatic progression of chronic Chagas disease. I utilized NADPH-oxidase, MnSOD and GPx knockout and transgenic mice to compare the role of mitochondrial ROS and NOX/ROS in signaling inflammation and disease pathology and severity. Results from these studies also elucidated the role of ROS in mediating inflammatory responses and signaling cascades animal models with chagasic cardiomyopathy which may have important implications for the development of a therapy designed to protect the host against the infection and the pathology induced by *T. cruzi* infections.

3. *Summary of Ph.D. research: “CHEMICAL MODIFICATION OF RADIATION EFFECTS ON MURINE SPLENOCYTES”.*

Radiation therapy is considered to be one of the most important and popular tools to cure cancer; the presence of hypoxic cells in tumors limits its success. To overcome this difficulty many efforts have been expended in search of agents, which either sensitize the cancer cells or protect the surrounding normal tissue.

Although number of chemicals have been examined for their radioprotective ability but radio-modulator which are already being used in field of medicine need to be explored further and also the modulators of plant origin are of great interest for their antioxidant profile, non-toxic nature and ubiquitous presence. Keeping this in mind two chemicals were tested for their radio-modulatory properties in the present work *Quercetin* is a polyphenolic flavonoid and one of the major dietary flavonoid regularly being consumed by human beings and *Chlorpromazine* which is one of the most typical drugs that interact with PI signaling pathway. Chlorpromazine is phenothiazine cationic amphiphilic drug, interacts with membrane phospholipids, thereby reducing the PKC activity in the membrane fraction and block excitatory processes.

Murine splenocytes isolated and cultured in RPMI medium were irradiated to various doses of gamma radiation (0-5Gy) with and without quercetin and chlorpromazine to assess the modulation of radiation induced oxidative damage at three levels namely: 1. **Damage to membranes** (studies done on lipid peroxidation, membrane fluidity, ATPase activity); 2. **Impaired antioxidant defense system** due to reactive oxygen species (ROS) generation (by estimating Glutathione-S-Transferase, Super-Oxide-Dismutase, DT-Diaphorase and Glyoxalase I enzyme activity); 3. **DNA damage** (by assessing the DNA fragmentation by spectrophotometric method, inter-nucleosomal fragment ladder formation, fluorescence microscopy and FACS analysis). In addition, two major damage indicators like Lactate Dehydrogenase (LDH) activity and nitric oxide levels were also estimated. An attempt was made to evaluate the radio-modifying potential of Quercetin and Chlorpromazine and their wide acceptability at clinical level by using various biological end points.

4. Summary of M. Phil research: “THE RADIO-RESISTANCE OF SPIRULINA PLATENSIS”.

Stress in any environmental factor potentially unfavorable to living organisms including alteration in their metabolic or physiological activity. In present work gamma radiation was used as stress to the alkaliophilic cyanobacteria *Spirulina platensis* and one of its vandate resistant mutants. The wild and mutant types of culture of *Spirulina* were irradiated and studied for important biological parameters including the protein content, pigment content (chlorophyll a, phycocyanin and phycoerythrin), β carotene content, lipid peroxidation, nitric oxide levels and phosphatase activity. This study indicated that the radio-resistant nature of *Spirulina* was due to presence of high levels of antioxidant, which are not affected by the high, very high doses of gamma radiation. The cell survival studies revealed that the vandate resistant mutant was more resistant to radiation than the wild type as it was not adversely affected rather changes in cellular machinery in response to vandate helped *Spirulina* in combating radiation stress.

5. Summary of M. Sc. Project: “Effect of gamma radiation on the chick spinal cord”.

The study involved the investigation of the effect of gamma radiation on the various chick tissues importantly the spinal cord, which is considered to be the most resistant tissue of the central nervous system (CNS). The studies included the wax embedded sectioning to observe the histopathological changes in the spinal cord after gamma irradiation.

6. Other research work carried out:

1. Trained nursing student **Cecilia Vallejo** of UTMB under Medical Student Summer Research Program (MSSRP), April-May 2012
2. Trained first year medical student **Valena C Martinez Sellers** of UTMB under Medical Student Summer Research Program (MSSRP), May-June 2011
3. Trained first year medical student **Yun A. Coronado** of UTMB under Medical Student Summer Research Program (MSSRP), May-June 2011
4. Trained first year medical student **Juan J Vizcaino** of UTMB under T35 Training Program, May-July, 2009.
5. Guided and work planned for a undergraduate student **Jasmine Pando** from New Mexico State University, Las Cruces, NM, under Summer Undergraduate Research Program at University of Texas Medical Branch, Galveston, Tx. June-August, 2007.
6. Planned and guided two students for their M Sc. projects under supervision of Prof. R.K. Kale.

“Influence of Divalent Cations on the Radiation Induced Oxidative Stress” for Mr. Vijay Kumar, School of Life Sciences, Jawaharlal Nehru University (JNU), New Delhi. December, 2003 – April, 2004.

“*Modulation of Radiation Induced Oxidative Stress with Quercetin*” for Mr. Bheem Ratna Rawat, School of Life Sciences, Jawaharlal Nehru University (JNU), New Delhi. December, 2003 – April, 2004.

I. EXTRACURRICULAR ACTIVITIES:

1. Represented Central University of Punjab in “Festival of Innovation” at Rashtrapati Bhawan, March 8, 2017
2. Academic and Administrative Committee of the centre : Convener
3. Board of Studies: Member
4. School Board Member: Member
5. School Admission Committee: Member Secretary
6. Editorial Board Newsletter
7. Earn While you Learn Scheme (Coordinator)
8. Community Development Cell /Unnat Bharat Abhiyaan: Nodal officer
9. Mess Advisory Committee
10. NSS: Programme officer Unit II
11. Member, Rashtriya Avishkaar Abhiyaan
12. Member, International Collaboration Cell
13. Faculty Advisor: Vardaan Club
14. Annual Report Committee
15. Room allotment Committee
16. Day Care Centre: Member (September, 2012-May, 2018)

J. REFERENCES:

a. Post-doctoral Mentor:

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