Dr. MAHENDRA PRATAP SINGH

Associate Professor
+91-90125-57982
Email: mprataps01@gmail.com, mahendra.zool@ddugu.ac.in
Room No. 204
Department of Zoology, Pant Bhawan
DDU Gorakhpur University
Civil lines, Gorakhpur-273009, India

PROFESSIONAL EXPERIENCE

Associate Professor Since 23rd November 2022 at DDU Gorakhpur University, Gorakhpur, India

Professor: September 2022-22nd November 2022 at **the** School of Bioengineering and Biosciences, LovelyProfessional University, Phagwara-144411, Punjab, INDIA

Associate Professor: August 2019 to August 2022 at the School of Bioengineering and Biosciences, LovelyProfessional University, Phagwara-144411, Punjab, INDIA
Assistant Professor: Jan 06, 2016, to July 2019 at School of Bioengineering and Biosciences, Lovely Professional University, Phagwara-144411, Punjab, INDIA

Postdoctoral Fellow: May 2013 to April 2015 at the Department of Biochemistry and MolecularBiology, Yeungnam University College of Medicine, Daegu, South Korea

Postdoctoral Research Fellow: May 2012 to Nov 30, 2012, at the Department of Physiology, Schoolof Medicine, Tulane University, New Orleans, LA, USA (May 2012--Nov, 2012).

Postdoctoral Research Associate: June 2010 to May 2012 at the Department of Nutrition, Universityof Nebraska-Lincoln, NE-68583, USA.

Total citations: 861
h-index: 14
i10 index: 20

EDUCATION

Ph.D. (2010) (specialization in Biochemical, Cellular & Molecular Toxicology) from CSIR - Indian Institute of Toxicology Research & Lucknow University of Lucknow (NAAC A^{++} accredited), Lucknow- 226001 INDIA

Thesis title: Cellular and molecular studies on the toxic effects of selected volatile organic compounds in *Drosophila melanogaster*

M.Sc. (First Class) Zoology (specialization in Environmental Toxicology), 2002-03: Department of Zoology, Faculty of Science, Dayalbagh Educational Institute (Deemed University), Agra-

282005 INDIA

B.Sc. Honors (First Class) Zoology (specialization in cell biology), 2000--01: Department of Zoology, Faculty of Science, Dayalbagh Educational Institute (Deemed University), Agra- 282005 INDIA

SUMMARY OF PROFESSIONAL EXPERIENCE

Full-time Faculty:

A teacher has the greatest and most sensitive responsibility for shaping students, who, in turn, determine the future of a nation/world. From my perspective, a teacher is a facilitator, moderator, and guide. Biology is something that we are all exposed to every day, and acquainting the student with the same is what makes me excited about teaching. I have been teaching since January 2016 at Lovely Professional University, Punjab, India, and I am taking courses such as Drosophila biology, the biology of fish, parasitology & immunology, animal diversity, and animal behavior, along with laboratory courses (Human Physiology, Cell Biology, Immunology, and Molecular Biology) for undergraduate and graduate students. Currently, several master's students (24 awarded), 1 MPhil candidate, and 4 doctoral candidates and 3 Ph.D.s awarded are mentored.

POST-DOCTORAL RESEARCH (SOUTH KOREA; 2013--2015):

Drug-induced liver injury is one of the leading causes of drug withdrawal from the market. Acetaminophen overdose is the most frequent cause of acute liver injury. Acetaminophen (300 mg/kg body weight) severely damaged the liver of MsrA-deficient mice (*MsrA*$^{-/-}$) compared with that of wild-type (*MsrA*$^{+/+}$)-treated mice after 6 hours. Our results demonstrated that MsrA rescues the liver from the acute toxicity of APAP, and this protection is associated with reduced ROS production and reduced expression of hepatotoxicity markers(*Singh* et al., *2017a, BBRC* and *Singh* et al., *2017b, BBRC*).

We also investigated the role of MsrA in lipopolysaccharide (LPS; a potent endotoxin)-induced proinflammatory immune responses in mice. We used wild-type (*MsrA*$^{+/+}$) and MsrA gene-deleted (*MsrA*$^{-/-}$) mice as in vivo models, and bone marrow-derived macrophages (BMMs) were isolated from wild-type and MsrA knockout mice as in vitro models. We analyzed several cytokines, including IL-6 and TNF-α, and downstream signaling molecules, such as MAP kinases, to confirm our hypothesis (*Singh* et al., *2017c, ABB*).

POST-DOCTORAL RESEARCH (UNITED STATES; JUNE 2010- DECEMBER 2012):

We examined the role of biotinylation (posttranslational modification of histones) in nucleosomal assembly. Histone modifications play crucial roles in the control of gene activity, nuclear architecture, and genomic stability. Nucleosomes are the basic units of chromatin in eukaryotes and consist of an octamer of histone core proteins wrapped by ~147bp of DNA. Biotinylation of lysine (K) residues of histones H3 and H4 by holocarboxylase synthetase (HLCS) is a rare epigenetic repression mark, e.g., H4K16bio. Here, we tested the hypothesis that H4K16bio contributes to nucleosome condensation and, therefore, gene repression. Mutants of recombinant histone H4 were generated in which K16 replaced cysteine (H4K16C) for subsequent chemical biotinylation with a thiol-reactive reagent (H4K16Cbio). Nucleosomes were constructed through salt dialysis using recombinant histones and the '*Widom 601'* DNA sequence. In this study, we concluded that the biotinylation of H4 increases the nucleosomal affinity for DNA. Histone biotinylation contributes to gene repression, in addition to the emerging role

of HLCS as a member of a multiprotein gene repression complex in human chromatin (*Archives of Biochemistry and Biophysics*; *Singh* et al., *2013*).

DOCTORAL RESEARCH (CSIR-IITR, LUCKNOW, 2004--2010):

I used the *Drosophila* model system in my doctoral research, and I examined the cellular and molecular toxicity induced by monocyclic aromatic hydrocarbons (MAHs), particularly benzene, toluene, and xylene, in *Drosophila*. My primary goal was to investigate the toxicity of benzene, toluene, and xylene via different stress genes, particularly heat shock genes (*hsp90, hsp70, hsp60,* and *hsp26*), reactive oxygen species (ROS) generation, oxidative stress markers, and drug-metabolizing enzymes. Furthermore, we evaluated genotoxicity and apoptotic markers in fruit flies and studied the amelioration of these markers due to nutraceuticals such as quercetin and curcumin in wild-type and transgenic strains of *D. melanogaster*. I showed that transgenic *Drosophila* with genes of interest could be used for the assessment of chemical-induced toxicity and that Hsp70 expression can be designateda first-tier bioindicator/biosensor of cellular stress (*Singh* et al., *2009, 2010, 2011 & 2018).*

Research Guidance, Ph.D. Scholars

S.N.	Name of Research Scholar	Thesis topic	Remark
1.	**Ranjana Himalian**	Cellular, biochemical and molecular studies on neurodegenerative diseases using *Drosophila melanogaster*: an alteration via nutraceuticals	**Awarded 2022**
2.	**Sumaira Yousuf**	Ameliorative effects of selected medicinal herbs on acetaminophen-induced hepatotoxicity in mice	**Awarded 2023**
3.	**Shabnam Shabir**	Studies on rotenone-induced neurodegeneration in *Drosophila melanogaster* and its modulation through green engineered nanoparticles	**Awarded 2023**
4.	Simran	Effect of Polyethylene terephthalate (PET) microplastic on the biological activities and heat shock proteins of *Drosophila melanogaster*	Pre-Submission
5	Neha Rana	Phytofabrication of *Hippophae rhamnoides* (see buckthorn) mediated Silver nanoparticles against CCl_4 induced hepatotoxicity in mice	Pursuing
6	Palak Sharma	Analysis of Anti depressant drugs in Forensic Matrices using Instrumental techniques	Thesis Submitted 2024
7	Shweta Singh	Investigation of binding capability of organic pesticides with biological receptors using experimental and computational approaches	Thesis Submitted 2024

RESEARCH GUIDANCE MPHIL & PG STUDENTS

S.N.	Name of Student	Dissertation topic	Remark
1.	Humera Hamid M.Phil	Comparative effects of different nutraceuticals on chlorpyrifos triggered neurotoxicity in *Drosophila melanogaster*	Awarded
2.	Aayushi Taneja	Role of sulforaphane in carcinogen exposed *Drosophila melanogaster* at suborganismal and organismal level	Awarded
3.	Aishwarya Chambyal	Effect of nanoparticals (NP) at organismal and cellular level in *Drosophila*	Awarded
4.	Aman Singh Deopa	Construction of Silver Nanoparticles (AgNPs) and Cobalt Nanoparticles (CoNPs) using Urtica dioica and analysis of inhibitory effects of synthetic NPs on microbial culture	Awarded
5.	Amanjot Kaur	Role of selected environmental contaminant on apoptosis in fruit fly: An alteration by extract of *Punica granatum*	Awarded
6.	Bisma Fareed	Green synthesis of Silver Nanoparticles (Ag NPs) and role of Ag NPs on the cytotoxicity and reproduction in *Drosophila melanogaster*	Awarded
7.	Gargy Bathla	Effect(s) of Acetaminophen and Diclofenac on the development and survival of wild type *Drosophila melanogaster* (Oregon R+)	Awarded
8.	Gouri Chopra	Cellular and biochemical studies on the stress proteins using *Drosophila melanogaster* as an in vivo model system for neurodegenerative diseases	Awarded
9.	Ifla Muzaffar	The hazardous effects of selected heavy metals in *Drosophila*: An attenuation by nutraceuticals	Awarded
10.	Kajal	The role of primary defense system(s) in *Drosophila* exposed to hydroquinone and benzoquinone	Awarded
11.	Maqsood Ahmed	Green synthesis of silver and copper nanoparticles using Himalayan herbs and impact assessment on antimicrobial activities and cytotoxic studies in *Drosophila*	Awarded
12.	Mohit Patidar	Fabrication of copper and silver NPs via green synthesis using *Tinospora cordifolia* and their impact on prokaryotic & eukaryotic system	Awarded
13.	Munazir Zahoor	Cytotoxic and reproductive studies of selected heavy metals in *Drosophila*: modulation by pomegranate extract	Awarded
14.	Neha Devi	The hazardous effects of organophosphate pesticides in *Drosophila melanogaster*: A modulation by nutraceuticals	Awarded

15.	Neha Gautam	Impact of industrial chemical(s) of Punjab region on the reproductive performance of male and female *Drosophila*	Awarded
16.	Nusrat Nabi	Impact assessment of widely used chemicals in the apple orchids of J & K using *D. melanogaster* as an animal model system	Awarded
17.	RIYA CHAKRABARTY	Biochemical and Cellular Studies on differential sugar treated *Drosophila:* Modulation of gene(s) in diabetes phenotype	Awarded
18.	Rubina Thapa	Effects of azithromycin and cefixime on the organismal level of wild type *Drosophila melanogaster* (Oregon R^+)	Awarded
19.	Sanchina Raj Raina	Green synthesis of silver and cobalt nanoparticles using nettle leave and its effect on wild type *Drosophila melanogaster* (Oregon R^+)	Awarded
20.	Savita Kumari	Modulatory effects of herbal extract on the oxidative stress, aging and longevity using Drosophila as an animal model system	Awarded
21.	Simran	Organismal and suborganismal studies on the effects of Nanosized plastic, Microsized plastic and phthalates in *D. melanogaster* (Oregon R^+)	Awarded
22.	Sumit Kumar	Role of nutraceuticals on metabolic diseases by using in vitro and in vivo models	Awarded
23.	Supreet Kaur	Role of stevia on the development and longevity of *Drosophila melanogaster*	Awarded
24.	Swati Sinha	Role of herbal extracts on reproduction and behavior of *Drosophila melanogaster*	Awarded
25.	Twinkle	Generation of neurodegenerative phenotype using *Drosophila melanogaster* through neurotoxic chemicals and prevention of neurodegeneration by herbal extract	Awarded
26	Rajeev Rai	Role of Indian diet in the prevention of neurodegenerative disorders	Awarded
27	Harshita Pandey	Indian diet in prevention of polycystic ovarian syndrome	Awarded

AWARDS AND FELLOWSHIPS

1. Research Appreciation Award, 2018 at Lovely Professional University, Punjab, India
2. Research Appreciation Award, 2017 at Lovely Professional University, Punjab, India
3. Senior Research Fellowship (SRF) from the University Grants Commission, India, from March2006--2009.
4. The Junior Research Fellowship (JRF) was awarded by the University Grants Commission

(UGC), India, from March 2004 to March 2006 (Certificate No. F.NO.10-2(5)2003(I)-EU. II Roll No. 300017).

Administrative responsibilities

1. Coordinator, Centre for Genomics and Bioinformatics, DDU Gorakhpur University (11.05.23 to present).

2. Coordinator, University Help and Support Centre, DDU, Gorakhpur University (February 2023 to October 2023)

3. Co-coordinator, International Cell, DDU Gorakhpur University (30.11.22 to October 2023).

4. Co-coordinator, Information Technology Cell (ITC) DDU Gorakhpur University (12.12.22 to October 2023)

5. Examiner of DDU Gorakhpur University, Gorakhpur

6. Examiner of RML Awadh University, Ayodhya

7. Member, Departmental purchase committee

8. Member, IQAC, DDU Gorakhpur University

9. Member, Ranking Cell, DDU Gorakhpur University

10. Assistant Centre Superintendent for M.Sc. paper evaluation

11. Convener, Departmental Placement Cell, DDU Gorakhpur University

12. Member, Departmental Research Committee, DDU Gorakhpur University

INTECTUAL PROPERTY RIGHTS

1. Copyright on Literary/dramatic work the graphical abstract **entitled "**present the Cellular, biochemical and molecular studies On neurodegenerative diseases using *Drosophila melanogaster*: an alternate via Nutraceuticals" registration no. **L-130476/2023**

2. Copyright on Literary/dramatic work the graphical abstract present the therapeutic applications of phyto nanotechnology for the treatment of neurodegeneration. Registration no**. L-130386/2023**

3. Copyright on Literary/dramatic work the graphical abstract present the fabrication of green engineered zinc oxide nanoparticles and its therapeutic biomedical applications. Registration no. **L-127809/2023**

4. The purpose of this study is to explore the hepatoprotective effects of medicinal plants in mice via nrf2 signaling. Registration no. **L-130381/2023**

5. Copyright on Literary/dramatic work the purpose of study is to present the Toxicological profile of Polyethylene terephthalate (PET) using *Drosophila melanogaster* as an in vivo model. Registration no. **L-134989/2023**

MEMBERSHIP

1. Life member of BIOCLUES (BIOinformatics CLUb for Experimenting Scientists)
2. Life member of the Indian Science Congress Association (ISCA)

3. International Society of Zoological Sciences (ISZS)
4. Indian Society of Cell Biology (ISCB)
5. American Society of Nutrition (ASN)
6. Korean Society of Biochemistry and Molecular Biology (KSBMB)

Reviewer of following journals:

1. Chemosphere
2. Ecotoxicology and Environmental Safety
3. Frontiers in Genetics
4. Frontier cell and developmental biology
5. Cellular & Molecular Biology
6. Pollution Research
7. Research Journal of Pharmacy and Technology
8. Toxicology International
9. Canadian Journal of Physiology and Pharmacology
10. Biology
11. Biomolecules
12. Molecules
13. Antioxidants
14. Cells
15. Cancers
16. Journal of Personalized Medicine
17. Life
18. Waters
19. Brain Science
20. Applied Sciences
21. Pharmaceuticals
22. Pharmaceutics
23. International Journal of Molecular Sciences
24. Basic & Clinical Pharmacology & Toxicology
25. Food
26. Scientific Reports
27. Molecular Neurobiology
28. Journal of Hazardous Materials
29. Pharmacological Research – Reports

Associate Editor

Frontiers in Aging Neuroscience
Frontiers in Nutrition

Membership in Scientific Organizations

- Life member of the Indian Science Congress Association (ISCA)
- International Society of Zoological Sciences (ISZS)
- Indian Society of Cell Biology (ISCB)
- American Society of Nutrition (ASN)
- Korean Society of Biochemistry and Molecular Biology (KSBMB)

- BIOinformatics CLUb for Experimenting Scientists (BIOCLUES)

TECHNICAL EXPERTISE

Mouse handling and surgery

I have extensive experience in handling wild-type and knockout mouse lines (MsrA and MsrB), mouse surgery, hepatocyte isolation from wild-type and knockout mice, mouse embryonic fibroblast (MEF) isolation, and bone marrow-derived macrophage (BMDM) isolation. Additionally, there is experience in handling laboratory rats.

Mammalian cell culture

Extensive methods have been used to maintain and culture MCF-7 cells, MCF-10A cells, human embryonic kidney293 (HEK-293) cells, Jurkat cells, rat thoracic aortic smooth muscle (RTASM), mouse mesangialcells (MMCs), mouse embryonic fibroblasts (MEFs), and mouse primary

Drosophila biology

With extensive experience in handling Drosophila (wild-type, transgenic, and mutant), Drosophila stocks are maintained, and genetic crosses and cultures are performed. Classic biological techniques, such as fecundity, fertility, reproductive performance, emergence assays, survival assays, and hatchability, are used.

Bacterial Culture

Extensive experience in bacterial culture (*E. coli*) at the small scale as well as the large scale

Transfection

Transient and stable transfection by siRNA technology via electroporation and Lipofectamine and transient transfection of cDNAs via electroporation for overexpression in mammalian cells

Cell Biology

Single-cell preparation from Drosophila midgut tissue, TUNEL assay, acridine orange staining by fluorescence microscopy, Annexin-V affinity assay by flow cytometry, mitochondrial membrane potential (JC-1 staining), PARP activity, and PI staining for cell cycle studies, and ROS (by DHE & $DCFH_2$-DA) measurement by flow cytometry (FACS analysis)

Microscopy

We are well experienced with stereo, bright field, inverted phase contrast, and fluorescencemicroscopy, as well as working knowledge of confocal microscopy.

Molecular, immunological and biochemical techniques:

- Site-directed mutagenesis and transformation
- Plasmid isolation and purification (at the small, medium, and large scales)
- DNA and RNA isolation, quantification, and agarose gel electrophoresis.
- Extensive experience in cDNA synthesis; PCR/Reverse-transcriptase Polymerase Chain Reaction, Real-time PCR (qRT–PCR)

- Bacterial cloning and subcloning
- Protein estimation and 1D-polyacrylamide gel electrophoresis (SDS–PAGE)
- Western blotting
- Bone marrow-derived macrophage (BMDM) isolation
- ELISA for cytokine measurement (TNFα, IL-1β, and IL-6)
- Chromatin immunoprecipitation (ChIP) assay
- Expression and purification of recombinant proteins
- Electrophoretic mobility shift assay (EMSA)
- Synthetic nucleosome preparation and sample preparation for atomic force microscopy
- Tissue histology, fixation, embedding, sectioning, and H&E staining

LIST OF RESEARCH PUBLICATIONS

Peer-Reviewed Journals (Scopus or SCI journals)

1. Rayees et al., 2024*. The potential mechanism and role of antioxidants in mitigating oxidative stress in patients with Alzheimer's disease ***Frontiers in Bioscience-Landmark*** (Accepted)
2. Rana N, ……..**Singh MP*** (2024). Phytofabrication, characterization of silver nanoparticles using *Hippophae rhamnoides* berries extract and their biological activities. ***Frontiers in Microbiology*****. 2024**; 15: 1-14 | https://doi.org/10.3389/fmicb.2024.1399937
3. Sharma P. et al., (2024). Optimized QuEChERS Methodology for Reliable LC-MS/MS Quantification of Sertraline and Fluoxetine Hydrochloride in Biological Samples. ***Natr Resour Human Health*** 2024: 1-7 http://dx.doi.org/10.53365/nrfhh/190932
4. Kauts S, Mishra Y, **Singh MP***. Impact of Polyethylene Terephthalate Microplastics on *Drosophila melanogaster* Biological Profiles and Heat Shock Protein Levels. ***Biology*****.** 2024; 13(5):293.
5. Sajad M, Shabir S, Singh SK, Bhardwaj R, Alsanie WF, Alamri AS, Alhomrani M, Alsharif A, Vamanu E and **Singh MP*** (2024) Role of nutraceutical against exposure to pesticide residues: power of bioactive compounds. ***Frontier in Nutrition***. 11:1342881. doi: 10.3389/fnut.2024.1342881
6. Kauts S, Shabir S, Yousuf S, Mishra Y, Singh SK and **Singh MP*** (2023). The evidence of in-vivo and in-vitro studies on microplastic and nano plastic toxicity in mammals: A possible threat for an upcoming generation? ***Physics and Chemistry of the Earth***
7. Kauts, S.; Mishra, Y.; Yousuf, S.; Bhardwaj, R.; Singh, S.K.; Alshabrmi, F.M.; Abdurahman, M.; Vamanu, E.; **Singh M.P***. Toxicological Profile of Polyethylene Terephthalate (PET) Microplastic in Ingested *Drosophila melanogaster* (Oregon R^+) and Its Adverse Effect on Behavior and Development. ***Toxics*** **2023**, *11*, 782. https://doi.org/10.3390/toxics11090782
8. Shabir et al., **Singh MP*,** Therapeutic Potential of Green-Engineered ZnO Nanoparticles on Rotenone-Exposed *D. melanogaster* (Oregon R^+): Unveiling Ameliorated Biochemical, Cellular, and Behavioral Parameters**.** ***Antioxidants*** **2023**, *12*, 1679. https://doi.org/10.3390/antiox12091679
9. Sahoo, S.; Sharma, S.; **Singh, M.P**.; Singh, S.K.; Vamanu, E.; Rao, K.H. Metabolic and Phenotypic Changes Induced during N-Acetylglucosamine Signalling in the Fungal Pathogen *Candida albicans*. ***Biomedicines*** **2023**, *11*, 1997. https://doi.org/10.3390/biomedicines11071997
10. Rana, N.; Singh, S.K.; Banu, N.A.; Hjazi, A.; Vamanu, E.; **Singh, M.P*** The Ethnopharmacological Properties of Green-Engineered Metallic Nanoparticles against Metabolic Disorders. ***Medicina*** **2023**, *59*, 1022. https://doi.org/10.3390/medicina59061022
11. Yousuf Sumaira et al., **Singh MP*** Investigation of the Protective Effects of Urtica dioica, Capsella bursa-pastoris and Inula racemosa on Acetaminophen-Induced Nephrotoxicity in Swiss Albino Male Mice. ***Appl. Sci. 2023, 13, https://doi.org/10.3390/app13063925*****.**
12. Yousuf S, Shabir S, Kauts S, Minocha T, Obaid AA, Khan AA, Mujalli A, Jamous YF,

Almaghrabi S, Baothman BK, Hjazi A, Singh SK, Vamanu E, **Singh MP***. Appraisal of the Antioxidant Activity, Polyphenolic Content, and Characterization of Selected Himalayan Herbs: Anti-Proliferative Potential in HepG2 Cells. ***Molecules. 2022; 27(23):8629.*** https://doi.org/10.3390/molecules27238629

13. **Singh MP***, Shabir S, Deopa AS, Raina SR, Bantun F, Jalal NA, Abdel-razik NE, Jamous YF, Alhumaidi MS, Altammar KA, Hjazi A, Singh SK, Vamanu E. Synthesis of Green Engineered Silver Nanoparticles through *Urtica dioica*: An Inhibition of Microbes and Alleviation of Cellular and Organismal Toxicity in *Drosophila melanogaster*. ***Antibiotics. 2022; 11(12):1690.*** https://doi.org/10.3390/antibiotics11121690
14. Guleria K, Sehgal A*, Bhat IA, Singh SK, Vamanu E, **Singh MP***. Impact of Altering the Ratio of Black Tea Granules and Ocimum gratissimum Leaves in a Binary Infusion on Radical Scavenging Potential Employing Cell Free Models and Ex Vivo Assays. ***Applied Sciences 2022, 10632***. https:// doi.org/10.3390/app122010632
15. Chopra G**,** Shabir S, Yousuf S, Kauts S, Bhat SA, Mir AH, **Singh MP* (2022)**. Proteinopathies: Deciphering Physiology and Mechanisms To Develop Effective Therapies For Neurodegenerative Disease. ***Molecular Neurobiology*** 10.1007/s12035-022-03042-8
16. **Singh MP*,** Himalian R, Shabir S, Obaid A, Alamri AS, Galanakis CM, Singh SK, Vamanu E. Protection of Phyto extracts against rotenone-induced organismal toxicities in *Drosophila melanogaster* via Attenuation of ROS generation. ***Applied Sciences 2022, 12, 9822***
17. Mishra SK, Balendra V, Esposto J, Obaid AA, Maccioni RB, Jha NK, Perry G, Moustafa M, Al-Shehri M, **Singh MP,** Khan AA, Vamanu E, Singh SK (2022). Therapeutic antiaging strategies. ***Biomedicines*** 10, 2515. https://doi.org/10.3390/biomedicines10102515
18. Cherian J, Sehgal A, Singh SK, Vamanu E, **Singh MP***. 2'-Hydroxyflavanone: A bioactive compound that protects against cancers. ***Applied Sciences, 2022, 12, 9543.***
19. **Singh MP*,** Mahendra Singh, Chakrabarty R, Shabir S, Yousuf S, Obaid A, Moustafa M, Al-Shehri M, Al-Emam, Alamri AS, Alsanie WF, Alhomrani M, Shkodina A, Singh SK (2022)**.** Influence of the gut microbiota on the development of neurodegenerative diseases. ***Mediators of Inflammation (2):1-12*** 10.1155/2022/3300903
20. Shabir S, Yousuf S, Singh SK, Vamanu E, **Singh MP* (2022)**. Ethnopharmacological effects of *Urtica dioica*, *Matricaria chamomilla*, and *Murraya koinegii* on rotenone exposed *D. melanogaster*: An attenuation of cellular, biochemical and organismal markers. ***Antioxidants 2022, 11, 1623.***
21. Yousuf S, Shabir S, **Singh MP* (2022)**. Protection against drug-induced liver injuries through nutraceuticals via amelioration of Nrf-2 signaling. ***Journal of the American Nutrition Association*** DOI: 10.1080/27697061.2022.2089403
22. Chakravarty R, Yousuf S, **Singh MP* (2022)**. Contributive role of hyperglycemia and hypoglycemia toward the development of Alzheimer's Disease. ***Molecular Neurobiology59(7): 4274-4291***
23. Rahimi S, **Singh MP**, Jeena Gupta (**2022**). Adverse effects of textile dyes on antioxidant enzymes and cholinesterase activities in *Drosophila melanogaster* (Oregon R+). ***Drug and Chemical Toxicology 45(3):1131-1139***
24. Himalian R**, Singh MP* (2022).** A Comparative account on Antioxidant Activities, Total Phenolic and Flavonoid Contents of *Punica granatum, Carica papaya, Foeniculum vulgare, Trigonella foenum-graecum,* and *Urtica dioica*: An In Vitro Evaluation. ***Research J. Pharm. and Tech. 15(3): 1-9***
25. Himalian R, Singh SK, **Singh MP*,** (2021). Ameliorative role of nutraceuticals on neurodegenerative diseases using the *Drosophila melanogaster* as a discovery model to define bioefficacy. ***Journal of the American College of Nutrition*** **Jun 14;1-29**.
26. **Singh MP***, Twinkle and R. Himalian (2021). Generation of neurodegenerative phenotype using *Drosophila melanogaster* through paraquat treatment and amelioration by *Tinospora cordifolia* (giloy). ***Res. J. Pharm. and Technol 14 (6) 1-7***
27. **Singh MP***, Hamid H, Himalian R (2021), "Comparative role of nutraceuticals on chlorpyrifos

induced neurotoxicity in *Drosophila melanogaster*". ***Toxicology International 28(1), 7-16***

28. **Singh MP***, Priyadarsi P, Jaiswal S, Adity, Singh N (2020) Occurrence And ToxicitiesOf Heavy Metals: Amelioration By *Asparagus Racemosus* & *Urtica dioxide*. ***Plant Archives*** 20(2): 2562-2570
29. Singh N, **Singh MP*** (2020). The advent of CRISPR Cas9–a new generation of genome editing tools (a review). ***Plant Cell Biotechnology and Molecular Biology*, 74-82.**
30. Kaur A and **Singh MP*** (2019) A Mini-Review On Environmental Contaminant Induced Programmed *Cell Death In Fruit Fly.* ***Research J. Pharm. and Tech. 12(12): 1-7.***
31. Kapoor D[#], **Singh MP**[#] et al (2019) Modulation of the Functional Components of Growth, Photosynthesis and Antioxidant Stress Markers in Cadmium Exposed *Brassica juncea* L. ***Plants 8 (230) 1-13 [#]equally contributed.***
32. Sharma D, **Singh MP**, Vimal D, Kumar S, Kar Chowdhuri D (2018). Benzene-induced resistance in exposed *Drosophila melanogaster*: outcome of improved detoxification and gene modulation. ***Chemosphere, 201: 144-158***
33. Kim KY, Kwak GH, **Singh MP**, Kim HY (2017). Selenoprotein MsrB1 deficiency exacerbates acetaminophen-induced hepatotoxicity via increased oxidative damage. ***Arch. Biochem. Biophys 634: 69-75***
34. **Singh MP**, Kim KY, Baek SH, Kim HY (2017)**.** Methionine sulfoxide reductase A protects against lipopolysaccharide-induced septic shock and negatively regulates proinflammatory responses. ***Arch. Biochem. Biophys 631: 42-48.***
35. **Singh MP**, Kwak, GH, Kim KY, Kim HY (2017). Methionine sulfoxide reductase A protects hepatocytes against acetaminophen-induced toxicity via regulation of thioredoxin reductase 1 expression. ***Biochem. and Biophys. Res. Comm.* 487: 695- 701.**
36. **Singh MP,** Kim KY, Kim HY (2017). Methionine sulfoxide reductase A deficiency exacerbates acute liver injury induced by acetaminophen. ***Biochem. and Biophys. Res. Comm.* 484:189-194.**
37. **Singh MP,** Wijeratne SKK, Zempleni J (2013). Biotinylation of lysine 16 inhistone H4 contributes toward nucleosome condensation. ***Arch. Biochem. Biophy.* 529: 105–111.**
38. **Singh MP**, Mishra M, Sharma A, Shukla AK, Mudiam MK, Patel DK, Ram KR, Chowdhuri DK (2011). Genotoxicity and apoptosis in *Drosophila melanogaster* exposed to benzene, toluene, and xylene: Attenuation by quercetin and curcumin. ***Toxicol Appl Pharmacol. 253(1):14-30.***
39. Mudiam MK**, Singh MP**, Chowdhuri DK, Murthy RC (2010). Quantitativeevaluation of benzene, toluene, and xylene in the larvae of *Drosophila melanogaster* by solid-phase microextraction/gas chromatography/mass spectrometry for potential use in toxicological studies. ***J AOAC Int. 93(5):1595-9.***
40. **Singh MP**, Ram KR, Mishra M, Shrivastava M, Saxena DK, Chowdhuri DK (2010). Effects of coexposure of benzene, toluene, and xylene to *Drosophila melanogaster*: alteration in *hsp70, hsp60, hsp83, hsp26*, ROS generation, and oxidative stress markers. ***Chemosphere. 79(5):577-87.***
41. **Singh MP**, Reddy MM, Mathur N, Saxena DK, Chowdhuri DK (2009). Inductionof *hsp70, hsp60, hsp83,* and *hsp26* and oxidative stress markers in benzene, toluene, and xylene exposed *Drosophila melanogaster*: the role of ROS generation. ***Toxicol Appl Pharmacol. 235(2):226-43.***
42. Bhargav D, **Singh MP**, Murthy RC, Mathur N, Misra D, Saxena DK, Kar Chowdhuri D (2008). Toxic potential of municipal solid waste leachates in transgenic *Drosophila melanogaster* (*hsp70-lacZ*): *hsp70* as a marker of cellular damage. ***Ecotoxicology Environ Saf. 69(2):233-45.***

(*Corresponding author)

in UGC care listed journals:

43. Aishwarya Chambyal and **Singh MP*** (2019). This is a short review on the toxicities caused bygreen engineered silver nanoparticles (Ag NPs). **Journal of Emerging Technologies**

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44. Ranjana Himalian and **Singh MP*** (2019). Nature's gift to an organism: heat shock proteins. **International Journal of Research and Analytical Review** *6(2): 1075-1082.*

45. Ranjana Himalian & **Singh MP*** (2019). Impact of rotenone on the climbing ability and survival of wild-type *Drosophila melanogaster* (Oregon R^{+}). **Think India**. SSN: 0971- 1260 Vol-22-Issue-17-September-2019.

46. Singh MP* & Supreet Kaur (2019). Effects of dried stevia leaves and stevia extract on the emergence pattern and survival of *Drosophila melanogaster*. **Think India.** SSN: 0971-1260 Vol-22-Issue-17-September-2019.

47. Swati Sinha & **Singh MP***(2019). Review on benefits of North Eastern Herb Eryngium foetidum on Parkinson disease. **Think India.** SSN: 0971-1260 Vol-22-Issue-17-September-2019

48. Kajal and **Singh MP*** (2018). A Mini-Review on the Toxicities Induced By Benzene andits Metabolites. **International Journal of Research and Analytical Review *5 (4): 145- 150.***

49. Yousuf S and **Singh MP*** (2020). A Mini-Review on Liver Injuries among Humans Due To Drugs And Consumption Of Alcohol. European Journal of Molecular & Clinical Medicine. 7 (7): 4268-4276

Abstract Published

1. Singh MP and Zempleni (2012). Biotinylation of K16 in histone H4 causes chromatin condensation. ***The FASEB Journal. 26:116.5***

2. Kar Chowdhuri D, Sharma A, Gupta SC, **Singh MP**, Ravi Ram K (2011). From Fruit Fly to Environment: Toxicological Perspectives. Alternatives to laboratory animals **(*ATLA*) *39 (1): 77-77***

Book

1. Singh, MP. Benzene, Toluene and Xylene Induced Cytotoxicity in *Drosophila*" (ISBN 978-3-639-71807-2), Scholar Press (2014)

Book Chapters (International publishers)

1. Shabir S and **Singh MP*** (2022) The aging: introduction, theories, principles, and future prospective. **Anti-Aging Drug Discovery on the basis of Hallmarks of Aging. *Elsevier***, ISBN:

9780323902359

2. Yousuf S and **Singh MP*** (2022) Stem cell-based therapy as antiaging perspective. **Anti-Aging Drug Discovery on the basis of Hallmarks of Aging**. ***Elsevier***, ISBN: 9780323902359
3. Kapoor D, Pujari M, **Singh MP* (2020)** Genomics and Genetic Engineering of Rice for Resistance to Different Insect Pests. In: Roychoudhury A. (eds) Rice Research for Quality Improvement: Genomics and Genetic Engineering. Springer, Singapore.https://doi.org/10.1007/978-981-15-5337-0_6.
4. Kapoor D and **Singh MP* (2021)**. Heavy metal contamination in water and its possible sources. **Heavy Metals in the Environment. Elsevier** 179-189 ISBN 978-0-12-821656-9.00010-9
5. Kapoor D and **Singh MP* (2021)**. Nanoparticles: Sources and Toxicity Nanomaterials and physiological and biochemical responses of plants" ***Springer International Publishing*** 2020. ISBN 978-3-030-36740-4_9
6. **Singh MP***, Himalian R. Monocyclic Aromatic Hydrocarbons (MAHs) Induced Toxicity in Drosophila: How Close How Far? Trends in Insect Molecular Biology (2018). ***Springer International Publishing***. ISBN 978-3-319-61342-0
7. Zempleni, J, Eng WK, **Singh MP**, Baier SR. Biochemistry of biotin. Food and Nutritional Components in Focus No. 4, Chapter 10, pages 146--157. Edited by Victor R. Preedy, ***Royal Society of Chemistry, London, UK*** (2013). ISBN 978-1849733694
8. Zempleni J, Liu D, Teixeira DC, **Singh MP**. Mechanisms of Gene Transcriptional Regulation through Biotin and Biotin-Binding Proteins in Mammals. Vitamin-Binding Proteins: Functional Consequences Pages 219-231, ***CRC Press*** (2013). ISBN 9781439880166.

(Corresponding author*)**

Book Chapters (National publisher)

1. Ifla Muzaffar & **Singh MP*.** (2019). Existence of hazardous heavy metals through occupation and nonoccupational exposure. **Laxmi Publication**
2. Neha Devi & **Singh MP*** (2019). Organophosphate Pesticides Mediated Toxicities And Amelioration by Nutraceuticals. **Laxmi Publication**
3. Neeraj Bala, Kajal & **Singh MP*** (2019). Toxicity of Benzene Metabolites. **Laxmi Publication**

Research Paper Presented in National/International Conferences

1. Jeenu Cherian, **Singh MP.** Role of Hydroxyflavanone in Human Health and Protection against Diseases. International conference on sustainability Life on earth 2021(ICS-LOE 2021), LPU, India. Dec 17-18, 2021.

2. Neha Rana, Najitha Banu, **Singh MP**. Effect of chamomile-mediated silver nanoparticles on the life span and health of *Drosophila melanogaster*. International conference on sustainability Life on earth 2021(ICS-LOE 2021), LPU, India. Dec 17-18, 2021.
3. Shabnam Shabir, **Singh MP**. Comparative efficacy and characterization of phytochemical composition, phenolic and flavonoid content, and antioxidant capacity of *Urtica dioica*, *Matricaria chamomilla*, and *Murraya koenigii*. International conference on sustainability Life on earth 2021(ICS-LOE 2021), LPU, India. Dec 17-18, 2021.
4. Sumaira Yousuf, **Singh MP**. Comprehensive quality assessment on the basis of specific bioactive profiles and the antioxidant activity of medicinal plants via HPLC and FT-IR. International conference on sustainability Life on earth 2021(ICS-LOE 2021), LPU, India. Dec 17-18, 2021.
5. Ranjana Himalian, **Singh MP**. SEM studies revealed the effects of nutraceuticals on the eyes of rotenone-treated

   induced neurodegeneration in *D. melanogaster* (Oregon R^{+}). International conference on sustainability Life on earth 2021(ICS-LOE 2021), LPU, India. Dec 17-18, 2021.
6. Ranjana Himalian, **Singh MP**. In vitro evaluation of phenolic, flavonoid, and antioxidant activity of different parts of pomegranate (*Punica granatum*), Indian Science Congress at LPU, Jalandhar, India, Jan 3-7, 2019.
7. **Singh MP** and Zempleni J. Biotinylation of lysine 16^{th} residue in histone H4 cause chromatin condensation. Nutrigenomics Retreat University of Nebraska, Lincoln, NE (USA), May 14, 2012.
8. **Singh MP** and Zempleni J. Biotinylation of K16 in histone H4 causes chromatin condensation. Experimental Biology 2012 held at San Diego, CA (USA), April 21-25, 2012.
9. **Singh MP** and Zempleni J. Effects of Biotinylation of Lysine-16 in Histone H4 on Nucleosomal Assembly. Nutrigenomics Retreat University of Nebraska, Lincoln, NE (USA), Feb 28, 2011.
10. **Singh MP**, M.M. Krishna Reddy, D.K. Saxena, D. Kar Chowdhuri, Induction of heat shock genes and oxidative stress markers in benzene, toluene, and xylene exposed *Drosophila melanogaster:* Role of ROS generation. Presented at XXII All India Cell Biology Conference & Symposium on Stem Cells and Pattern Formation, Agharkar Research Institute, Pune, India, 4^{th} to 6^{th} December 2008.
11. **Singh MP**, Saxena DK, Chowdhuri DK, Induction of Hsp70 Oxidative Stress Markers And Apoptosis Against Benzene, Toluene And Xylene Exposure in Transgenic *Drosophila melanogaster* (*hsp70-lacZ*), presented at 30^{th} All India Cell Biology Conference and Symposium on "Molecules to Compartments: Cross-talks and Networks" Venue: Department of Zoology, University of Delhi, India, February 02-04, 2007.
12. Devyani Bhargav, **Singh MP**, PK Tandon, RC Murthy, and DK Chowdhuri. Toxicity evaluation of leachates from municipal solid waste in *Drosophila melanogaster*, presented at 29^{th} All India Cell Biology Conference and Symposium on "Gene to Genome: Environment and Chemical Interaction" Venue: IITR (CSIR) Lucknow, India, January 17-20, 2006.

13. Gupta SC, Siddique HR, **Singh MP**, Saxena DK and Kar Chowdhuri D. Hazardous effect of organophosphate compound, chlorpyrifos in transgenic *Drosophila melanogaster* (*hsp70-lacZ*): Correlations among stress response, antioxidant defense system, and cell death., presented at 29th All India Cell Biology Conference and Symposium on "Gene to Genome: Environment and Chemical Interaction" Venue: IITR (CSIR) Lucknow, India, January 17-20, 2006.

Symposium/Conference attended

1. Indian Science Congress, LPU Jalandhar, 3-7 January 2019 (as Master of Ceremony in Scientific Sessions)
2. International Symposium on Prognostic and Predictive Factors in Cancer Management at CSM Medical University, Lucknow, India on 15th and 16th December 2008.
3. An international update on basic and clinical neuroscience advances and XXIV annual conferences of Indian Academy of Neurosciences, at Indian Institute of Toxicology Research, Lucknow, India on December 17-20, 2006.
4. International Conference on Toxicology, Environment and Occupational Health (ICTEOH – 2005), Lucknow, India, November 14-17, 2005.

Training /Workshops

1. Two weeks Refresher course in Zoology by MMTTP & DDU Gorakhpur University as Assistant Coordinator dated 3-16 January, 2024.
2. One-week training workshop on "Trends and Prospects in Biorefinery" organized by NIT Jalandhar from 10--14 June 2020 through Google Meet (online platform).
3. Webinar on Drosophila as an alternative experimental model in research on May 25, 2020, as a resource person (speaker) through Zoom (online platform) organized byHRDC, Lovely Professional University, Phagwara, Punjab (INDIA)
4. One-week training workshop on IPR and innovative entrepreneurship organized by NIT Jalandhar from 1--5 March 2019.
5. Four-day National Workshop on Basic Techniques in Biotechnology (7 - - 10 March2018) as **Resource Person** at HRDC, Lovely Professional University, Phagwara, Punjab (INDIA)
6. 5th CSIR Technology Led Entrepreneurship Program (TLEP) organized by the Council ofScientific and Industrial Research (New Delhi) and Indian Institute of Chemical Technology (IICT) Hyderabad and managed by the faculty of the Indian Institute of Management (IIM), Bangalore, at IICT Hyderabad, 2nd--28th June 2008.
7. Alternatives, animal welfare and the curriculum at Indian Institute of Toxicology Research, Lucknow, India; 28th August 2004.
8. Training workshop on scientific communication at the Indian Institute of Toxicology Research,Lucknow, India; July 24, 2004.

COMPUTER SKILLS

Well-versed with important software packages for image analysis (gel documentation, Cellquest, DNA star for edit sequence and primer design), FemtoScan for AFM image analysis, EndNote, and different statistical software packages such as Graph Pad Prism® 5, SPSS 14, StatView,

Origin and well acquainted with the online literature search.

EXTRACURRICULAR ACTIVITES

Playing badminton and trekking

RESEARCH INTEREST

My long-term career goal is to make a valuable contribution to the field of 'METABOLIC DISEASES' using nutraceuticals, especially its role in prevention/therapeutics. I want to use my skills in basic/translational science by using biochemical, pharmacological, cellular, and molecular approaches to achieve my long-term career goal.

TEACHING INTEREST

Animal Biology & Evolution, # Drosophila Biology, # Biochemistry, Cell &Molecular Biology, # Parasitology & Immunology, # Environmental Toxicology

COUNTRY VISITED: United States of America and South Korea

PERSONAL DETAILS

Nationality:	Indian
Gender:	Male
Marital Status:	Married
Children:	Two (one daughter and one son)

Permanent Residential Address: Dr. Mahendra P. Singh S/O Mr. Nek Ram, H. No. 328, HansNagar, Near Mayank Garden, Radha Raman Road, Mainpuri-205001 (UP), INDIA
Ph.+91- 9012557982 Email: mahendra.zool@ddugu.ac.in