

CURRICULUM VITAE

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Education Qualification(s)

Education	Organization	Year of award
Undergraduate B. Pharm	Babu Banarasi Das University (BBD University), Lucknow, INDIA	2007
Post-graduation M.S (Pharm)	National Institute of Pharmaceutical Education and Research, S.A.S. Nagar (NIPER), Mohali, INDIA	2009
Ph.D. (Pharmacology and Toxicology)	National Institute of Pharmaceutical Education and Research, S.A.S. Nagar (NIPER), Mohali, INDIA	2015
Post-Doctoral Experience (CSIR-Nehru Postdoctoral Fellow)	CSIR- Central Drug Research Institute (CSIR-CDRI), Lucknow, INDIA	1.10. 2014- 30.09.2017 (Three years)

Professional Experience (In Years)

Teaching Experience: 3.4 Years

Research Experience: 3 Years (Post Ph.D.)

Areas of Research

- Skeletal Muscle Biology
- Experimental Liver Fibrosis
- Reproductive Toxicity
- Sarcopenia
- Regulatory studies

Research Grants

S.No	Title of Project(s)	Funding Agency	Duration	Total grant	Role
1.	Mechanistic study of skeletal muscle loss in diabetic rat: Pharmacological/Nutraceutical Intervention(s)	University Grants Commission (UGC)	2 years (28.04.19 to 27.04.21)	10 Lakhs	PI
2.	Identifying the potential role of Angiotensin Receptor Blockers in sarcopenia of aging and disuse muscle atrophy	Science and Engineering Research Board (SERB)	2 years (13.11.2019 to 12.11.21)	30 Lakhs	PI

Publications

International

1. Pal S, Mittapelly N, Husain A, **Kushwaha S**, Chattopadhyay S, Kumar P, Ramakrishna E, Kumar S, Maurya R, Sanyal S, Gayen JR, Mishra PR, Chattopadhyay N, “A butanolic fraction from the standardized stem extract of *Cassia occidentalis* L delivered by a self-emulsifying drug delivery system protects rats from glucocorticoid-induced osteopenia and muscle atrophy”, **Scientific Reports**, 2020 Jan 13;10(1):195.
2. Kumar H, Chattopadhyay S, Das N, Shree S, Patel D, Mohapatra J, Gurjar A, **Kushwaha S**, Singh AK, Dubey S, Lata K, Kushwaha R, Mohammed R, Dastidar KG, Yadav N, Vishwakarma AL, Gayen JR, Bandyopadhyay S, Chatterjee A, Jain MR, Tripathi AK, Trivedi AK, Chattopadhyay N, Ramachandran R, Sanyal S, “Leprosy drug clofazimine activates peroxisome proliferator-activated receptor- γ and synergizes with imatinib to inhibit chronic myeloid leukemia cells”, **Haematologica**, 2020 Apr;105(4):971-986.
3. Gurjar AA[†], **Kushwaha S**[†], Chattopadhyay S[†], Das N[†], Pal S, China SP, Kumar H, Trivedi AK, Guha R, Chattopadhyay N, Sanyal S, “Long acting GLP-1 analog liraglutide ameliorates skeletal muscle atrophy in rodents”, **Metabolism**, 2020 Feb;103:154044.([†] Equal authorship)
4. Singh AK, Shree S, Chattopadhyay S, Kumar S, Gurjar A, **Kushwaha S**, Kumar H, Trivedi AK, Chattopadhyay N, Maurya R, Ramachandran R, Sanyal S, “Small molecule adiponectin receptor agonist GTDF protects against skeletal muscle atrophy”, *Molecular and Cellular Endocrinology*, 2017 Jan 5;439:273-285.
5. China SP, Pal S, Chattopadhyay S, Porwal K, **Kushwaha S**, Bhattacharyya S, Mittal M, Gurjar AA, Barbhuyan T, Singh AK, Trivedi AK, Gayen JR, Sanyal S, Chattopadhyay N, “Globular adiponectin reverses osteo-sarcopenia and altered body composition in ovariectomized rats”, **Bone**, 2017 Dec;105:75-86.

6. Yadav M, Singh AK, Kumar H, Rao G, Chakravarti B, Gurjar A, Dogra S, **Kushwaha S**, Vishwakarma AL, Yadav PN, Datta D, Tripathi AK, Chattopadhyay N, Trivedi AK, Sanyal S, "Epidermal growth factor receptor inhibitor cancer drug gefitinib modulates cell growth and differentiation of acute myeloid leukemia cells via histamine receptors", **Biochimica et. Biophysica Acta**, 2016 Oct;1860(10):2178-90.
7. Namoju RC, Khan S, Patel RS, Shera FY, Trivedi PP, **Kushwaha S**, Jena GB, "Pre-pubertal exposure of cytarabine-induced testicular atrophy, impaired spermatogenesis and germ cell DNA damage in SD rats", **Toxicology Mechanism and Methods**, 2014; Dec;24(9):703-12.
8. Shekh K, Khan S, Jena G, Kansara BR, **Kushwaha S**, "3-Aminobenzamide--a PARP inhibitor enhances the sensitivity of peripheral blood micronucleus and comet assays in mice", **Toxicology Mechanism and Methods**, 2014;Jun;24(5):332-41.
9. **Kushwaha S**, Jena GB, "Effects of nicotine on the testicular toxicity of streptozotocin-induced diabetic rat: intervention of enalapril", **Human and Experimental Toxicology**, 2014; Jun;33(6):609-22.
10. **S. Kushwaha** and G.B. Jena, "Telmisartan ameliorates the germ cell toxicity in STZ-induced diabetic rat: Studies on possible molecular mechanisms", **Mutation Research**, 2013; 755,11-23.
11. Ramanjaneyulu SV, Trivedi PP, **Kushwaha S**, Vikram A, Jena GB, "Protective role of atorvastatin against doxorubicin-induced cardiotoxicity and testicular toxicity in mice", **Journal of Physiology and Biochemistry**, 2013; Sep;69(3):513-25.
12. **S. Kushwaha** and G.B. Jena, "Enalapril Reduces Germ Cell Toxicity in Streptozotocin-Induced Diabetic Rat: Investigation on Possible Mechanisms", **Naunyn Schmiedebergs Archive of pharmacology**, 2012; 385, 111-124.
13. **S. Kushwaha**, A. Vikram and G.B. Jena, "Protective effects of enalapril in streptozotocin- induced diabetic rat: Studies with DNA damage, apoptosis and expression of CCN2 in the heart, kidney and liver", **Journal of Applied Toxicology**, 2012; 32, 662-672.
14. **S. Kushwaha**, A. Vikram, P.P. Trivedi and G.B. Jena, "Alkaline, Endo-III and FPG modified comet assay as biomarkers for the detection of oxidative DNA damage in rats with experimentally induced diabetes", **Mutation Research**, 2011; 726, 242-250.
15. Trivedi PP, **Kushwaha S**, Tripathi DN, Jena GB, "Cardioprotective effects of hesperetin against doxorubicin-induced oxidative stress and DNA damage in rat", **Cardiovascular Toxicology**, 2011;Sep;11(3):215-25.
16. Mughal A, Vikram A, **Kushwaha S**, Jena GB, "Simultaneous use of erythropoietin and prior bleeding enhances the sensitivity of the peripheral blood

micronucleus assay”, **Mutagenesis**, 2011; Mar;26(2):331-8.

17. Vikram A, **Kushwaha S**, Jena GB, “Relative influence of testosterone and insulin in the regulation of prostatic cell proliferation and growth”, **Steroids**, 2011; Mar;76(4):416-23.

18. S. Khan, T. Ahmed, C. Parekh, P.P. Trivedi, **S. Kushwaha** and G.B. Jena, “Investigation on Sodium valproate induced germ cell damage, oxidative stress and genotoxicity in male Swiss mice”, **Reproductive Toxicology**, 2011; 32, 385-94.

19. S. Kushwaha, D. N. Tripathi, A. Vikram, P. Ramarao and G.B. Jena, “Evaluation of multi-organ DNA damage by comet assay from 28 days repeated dose oral toxicity test in mice: A practical approach for test integration in regulatory toxicity testing”, **Regulatory Toxicology and Pharmacology**, 2010; 58,145-154.

20. Trivedi PP, **Kushwaha S**, Tripathi DN, Jena GB, “Evaluation of male germ cell toxicity in rats: correlation between sperm head morphology and sperm comet assay”, **Mutation Research**, 2010 Dec 21;703(2):115-21.

National

NA

Book Chapters

NA

Authored Books

NA

Edited Books

NA

Patents

	Inventors	Title and Application number
Awarded		NA
Published	1.Sabyasachi Sanyal, Harish Kumar, Naibedya Chattopadhyay, Ravishankar Ramachandran, Arun Kumar Trivedi, Sonal Shree, Anagha Ashok	Title: Combination of clofazimine and imatinib for effective therapy of myeloid leukemia Application Number: 16/117,156 (US Patent)

	<p>Gurjar, Sourav Chattopadhyay, Sapana Kushwaha Abhishek Kumar Singh, Shikha Dubey, Kiran Lata, Riyazuddin Mohammed, Jiaur Rahaman Gayen, Anil Kumar Tripathi</p>	
	<p>2.Sabyasachi Sanyal, Harish Kumar, Naibedya Chattopadhyay, Ravishankar Ramachandran, Arun Kumar Trivedi, Sonal Shree, Anagha Ashok Gurjar, Sourav Chattopadhyay, Sapana Kushwaha Abhishek Kumar Singh, Shikha Dubey, Kiran Lata, Riyazuddin Mohammed, Jiaur Rahaman Gayen, Anil Kumar Tripathi</p>	<p>Title: Combination of clofazimine and imatinib for effective therapy of drug-resistant myeloid leukemia</p> <p>Application Number: 201711030707 (Indian Patent)</p>
	<p>3.Naibedya Chattopadhyay, Subhashis Pal, Sudhir Kumar, Ramakrishna Eppalapally, Padam Kumar, Sapana Kushwaha, Jiaur Rahaman Gayen,</p>	<p>Title: Bioactive extract fraction of <i>Cassia occidentalis</i> and formulation thereof for bone regeneration</p> <p>Application Number: 16/434323 (US Patent)</p>

	Riyazuddin Mohammed, Sabyasachi Sanyal, Anagha Gurjar, Prabhat Ranjan Mishra, Naresh Mittapelly, Kamal Ram Arya, Brijesh Kumar, Srikanta Rath, Arun Kumar Trivedi, Maurya Rakesh	
	4. Naibedya Chattopadhyay, Subhashis Pal, Sudhir Kumar, Ramakrishna Eppalapally, Padam Kumar, Sapana Kushwaha, Jiaur Rahaman Gayen, Riyazuddin Mohammed, Sabyasachi Sanyal, Anagha Gurjar, Prabhat Ranjan Mishra, Naresh Mittapelly, Kamal Ram Arya, Brijesh Kumar, Srikanta Rath, Arun Kumar Trivedi, Maurya Rakesh	Title: Bioactive extract, fraction of <i>cassia occidentalis</i> and formulation thereof for bone regeneration Application Number: 201811021504 (Indian Patent)
Filed		NA

Research Supervision

	Completed	Ongoing
PG	05	03
Ph.D.	NIL	05
Post-Doctoral	NIL	NIL

Honors, Recognition and Awards

- Received **IUTOX Travel Award, 2020** to attend Society of Toxicology (SOT), 59th Annual Meeting and ToxExpo, USA (15 March, 2020 to 19 March, 2020) by International Union of Toxicology (IUTOX).
- Received **International Travel Support** (ITS/2020/000023) grant by Science and Engineering Research Board (SERB), Govt. of India to attend SOT 59th Annual Meeting and ToxExpo, USA (15 March, 2020 to 19 March, 2020). (*Couldn't avail due to COVID19 Pandemic*)
- Awarded prestigious Indian **CSIR-Nehru post-doctoral fellowship** in year 2014.
- Published interview as a recipient of “**International Toxicologist Travel Award Winner**” 2014 in Association of Scientists of Indian Origin (ASIO)—SOT Aug 2014 newsletter.
- Received **Association of Scientists of Indian Origin (ASIO) 2014 International Toxicologist Travel Award**. This award constitutes a plaque and a monetary award for attending 53rd SOT meeting, Arizona, USA.
- Received “**Graduate Student Travel Award**” by Society of Toxicology (SOT), USA to attend 53rd SOT meeting, Arizona, USA, 2014. This award constitutes a monetary award.
- Received **International Travel Support (ITS)** grant by Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India (SB/ITS-Y/04949/2013-2014).
- Awarded **Senior Research Fellowship (SRF)** by Council of Scientific & Industrial Research (CSIR), India for completion of Ph.D. (2012-2013)
- Received **Senior Research Fellowship (SRF)** by Department of Science & Technology (DST) for project entitled as “Influence of Hyperglycemia (Diabetes mellitus) on the Toxicity of Selected Antihypertensive Drugs: Intervention of Protective Agents” (Dec 2009-2011).
- Awarded **Women Scientists Scholarship**, by Technology Information, Forecasting and Assessment Council (TIFAC under Department of Science & Technology) in year 2009. (*Not availed*)

Membership of Professional Bodies

- Associate Member, Society of Toxicology (SOT), USA
- Associate Member, Society on Sarcopenia, Cachexia and Wasting Disorders, Germany
- Life Time Membership, Society of Toxicology (STOX), INDIA
- Life Time Membership, Indian Pharmacological Society (IPS), INDIA

Countries Visited

United State of America

Invited Lectures/Talks/Chair/Co-Chair in Seminar/Conference/Symposia/Workshops

- **Sapana Kushwaha*** Deepak Rawat and Anand Kumar, “Atenolol Improves Skeletal Muscle Architecture And Inhibits Immobilization-Induced Muscle Atrophy, Poster Number: 9-07, 13th International Digital Conference on Cachexia,

Sarcopenia and Wasting Diseases (SCWD), 11th -13th December 2020, Berlin, Germany, * **Presenting Author (e Poster presentation)**

- **Sapana Kushwaha*** and Gopabandhu Jena, “Effect of nicotine in diabetic rat ovary: A double edged sword” Society of Toxicology (SOT) 59th Annual Meeting and ToxExpo, Mar 15th -19th , 2020, Anaheim, California, USA * **Presenting Author (e Poster presentation)**
- Priyanka Prajapati, Areesh Zehra, Sapana Kushwaha*, “Comparative evaluation of Angiotensin Receptor Blockers (ARBs) against sarcopenia associated muscle atrophy via molecular docking” Translational Biomedical Research Society (TBRS), India, December 4-6th , 2020 (* Corresponding Author)
- Monu Kumar Kashyap, Anand Kumar, Deepak Rawat, Mahima and **S. Kushwaha***. “Evaluation of piperine as a potential antifibrotic agent against CCl4 – induced rat liver fibrosis” National Symposium On Integration of Natural Healthcare Systems And Modern Science: Potential Merits And Future Roadmap organized by Translational Biomedical Research Society (TBRS), India, , November 2nd to 3rd, 2019 (**Poster presentation and Awarded**) * Corresponding Author
- Priyanka Prajapati , Anand Kumar and **S. Kushwaha***. “Safety and Regulatory perspectives of Ayurvedic medicine: Current and Future prospects” National Symposium On Integration of Natural Healthcare Systems And Modern Science: Potential Merits And Future Roadmap organized by Translational Biomedical Research Society (TBRS), India, , November 2nd to 3rd, 2019 (**Poster presentation**) * Corresponding Author
- Deepak Rawat, Anand Kumar, Monu Kumar Kashyap, Mahima and **S. Kushwaha***. “Atenolol restores skeletal muscle architecture and protects against disuse skeletal muscle atrophy”, National Symposium On Integration of Natural Healthcare Systems And Modern Science: Potential Merits And Future Roadmap organized by Translational Biomedical Research Society (TBRS), India, , November 2nd to 3rd, 2019 (**Poster presentation**) * Corresponding Author
- Shyamsundar Pal China, Subhashis Pal, Konica Porwal, **S. Kushwaha**, Anagha Gurjar, Sourav Chattopadhyay, Abhishek Singh, Sabyasachi Sanyal and Naibedya Chattopadhyay. “Globular Adiponectin Reverses Trabecular Osteopenia In Ovariectomized Rats”. P418, 43rd Annual European Calcified Tissue Society Congress, European Calcified Tissue Society, Italy, May 2016 (**Poster presentation**).
- **S. Kushwaha** and G.B. Jena. (2014) ‘Telmisartan attenuates the somatic and germ cells damage in streptozotocin induced diabetic rat: Cellular and molecular mechanisms’. 53rd Annual Meeting of Society of Toxicology, Arizona, USA, March 23-27 (**Poster presentation**).
- **S. Kushwaha** and G.B. Jena. (2013) ‘Role of selected antihypertensive drugs in diabetes-associated toxic perturbation’. XXXIII Annual Conference of Society of Toxicology, (STOX) India for Synergy of Toxicology Research in SAARC Countries and National Symposia on “Toxico-genomic technologies in predictive toxicology”, “Alternatives to use of animals and in vitro models for modern toxicity testing” & “Phyto-remedial ameliorative approaches against environmental pollutants for human and animal health” Department of Pharmacology & Toxicology, College of

Veterinary Sciences and Animal Husbandry, DUVASU, Mathura, India, October 23-25 (**Oral presentation**).

- **S. Kushwaha** and G.B. Jena. (2013) 'Studies on the oxidative DNA damage, cell death and inflammatory responses in the germ cell of STZ induced diabetic rat: Comparison with atenolol vs nebivolol'. ICDC-2013- International Conference on Diabetes and Complications, Charusat University of Science and Technology (CHARUSAT), Changa, Gujrat, India, January 18-20 (**Poster presentation**).
- **S. Kushwaha** and G.B. Jena. (2012) 'Nicotine induced the ovarian toxicity in female SD rat: Studies on different molecular markers'. XXXII Annual Conference of Society of Toxicology (STOX), India and "International Symposium on New Paradigms in Toxicology (NPT-2012)". Indian Institute of Toxicology Research (IITR), Lucknow, December 5-7 (**Poster presentation**).
- **S. Kushwaha** and G.B. Jena. (2011) 'Germ cell damage in streptozotocin (STZ)-induced diabetic rat: Intervention of enalapril'. XXXI Annual Conference of Society of Toxicology (STOX), India and "Symposium on Current trends in Environmental Toxicology". IIS University, Jaipur, December 22-24 (**Oral presentation**).
- **S. Kushwaha**, A. Vikram and G.B. Jena. (2010) 'Protective effects of enalapril in streptozotocin-induced diabetic rat: Studies with DNA damage, apoptosis and expression of CCN2 in the heart, kidney and liver'. XXX Annual Conference of Society of Toxicology (STOX), India and "Symposium on Strategies for Safety Study Requirements for Herbal Formulations". Jamia Hamdard (Hamdard University), New Delhi, December 9-11 (**Poster presentation**).
- **S. Kushwaha**, R. Kaur and G.B. Jena. (2010) 'Methotrexate induced histological changes in the ovary of Juvenile and adult mice'. XXXV Annual Conference of Environmental Mutagen Society of India (EMSI) & International Symposium on "Mutagens and Genetic Diversity for Health and Agriculture". Punjab University, Chandigarh, March 12-14 (**Poster presentation**).
- P. P. Trivedi, **S. Kushwaha** and G.B. Jena. (2010) 'Correlation between sperm head morphology and sperm comet assay'. XXXV Annual Conference of Environmental Mutagen Society of India (EMSI) & International Symposium on "Mutagens and Genetic Diversity for Health and Agriculture". Punjab University, Chandigarh, March 12-14 (**Poster presentation**).

Additional Information (If Any)

Research paper 'Evaluation of multi-organ DNA damage by comet assay from 28 days repeated dose oral toxicity test in mice: A practical approach for test integration in regulatory toxicity testing' **S. Kushwaha**, D. N. Tripathi, A. Vikram, P. Ramarao and G.B. Jena. (2010) **Regulatory Toxicology and Pharmacology**, 58,145-154 has been cited for "OECD Guideline for The Testing of Chemicals, *In vivo* Mammalian alkaline comet assay and Rodent alkaline single cell gel electrophoresis (Comet) assay (***In vivo* Mammalian alkaline comet assay OECD GUIDELINE 489**).