CURRICULUM VITAE

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Education

2023 Doctor of Philosophy, Dept of Endocrinology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, UP, India
2015 Master of Science in Biotechnology.
2013 Bachelor of Science in Biotechnology.

Positions and Employment

- 2025- Till to date Scientist C, CSIR-Indian Institute of Toxicology Research, Lucknow
- 2023-2025 : Research Associate and Project Research Scientist II, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, UP, India Lucknow, India.

Honours and Awards

- 2023: Selected a Finalist in BBA-Rising Star (Mol Basis of Diseases) Elsevier for contribution in fatty liver diseases
- 2021 : Awarded with Prof. S.S. Agarwal award for best research paper by Hon'ble President Shri Ram Nath Kovind Ji.
- 2015 : DBT-Biotech Industrial Training Programme India.
- 2015 : University First Rank Holder.
- 2013: All India Combine Entrance Exam of Biotechnology (CEEB-2013), India.

Research Summary

I hold a PhD in Molecular Metabolism and Endocrinology, with strong expertise in elucidating the molecular mechanisms underlying metabolic diseases. During my doctoral research, I focused on identifying therapeutic targets and regulatory pathways involved in fatty liver disease, diabetes, and lipid metabolism using molecular, cellular, and animal model approaches. My work also explored epigenetic regulation in metabolic diseases. Currently, my research focuses on understanding how environmental contaminants influence hepatic lipid metabolism and contribute to metabolic liver diseases. At present, my research focuses on understanding how environmental contaminants affect hepatic lipid metabolism and contribute to the growing burden of metabolic liver diseases. This work aims to elucidate the molecular and regulatory mechanisms through which environmental exposures exacerbate metabolic dysfunction.

Research Article

1. Singh MM, Shahi A, Chaturvedi CP, **Rajak S**, Yadav A, Kumar A, Gupta A, Sinha RA. Inhibition of histone-lysine N-methyltransferase G9a exacerbates alcoholic steatohepatitis (ASH) in mice. Biochem Biophys Res Commun. 2026 Jan 1;794:153072. doi: 10.1016/j.bbrc.2025.153072. Epub 2025 Nov 29. ***(IF- 2.3)***
2. Gupta P, Tewari A, **Rajak S**, Shahi A, Yadav A, Raza S, Sinha RA. Dehydroepiandrosterone (DHEA)-induced autophagy protects against lipotoxicity in hepatic cells. Mol Cell Endocrinol. 2025 Sep 1;606:112584. doi: 10.1016/j.mce.2025.112584. Epub 2025 May 21. ***(IF- 4.1)***
3. **Rajak S**, Shah A, Yadav A, Shahi A, Raza S, Singh MM, Chaturvedi CP, Sinha RA. Inhibition of methyltransferase G9a aggravates phenotypic severity of hepatic lipotoxicity in non-alcoholic steatohepatitis (NASH). Biochem Biophys Res Commun. 2025 Jan; 743:151171. doi: 10.1016/j.bbrc.2024.151171. Epub 2024 Dec 11. ***(IF- 2.6)***
4. Rajak S, Tewari A, Raza S, Gupta P, Chakravarti B, Anjum B, Tripathi M, Singh BK, Yen PM, Goel A, Ghosh S, Sinha RA. Pharmacological inhibition of CFTR attenuates nonalcoholic steatohepatitis (NASH) progression in mouse. Biochim Biophys Acta Mol Basis Dis. 2023 Feb 6;1869(4):166662. doi: 10.1016/j.bbadis.2023.166662. ***(IF- 5.2)***
5. Rajak S, Gupta P, Anjum B, Raza S, Tewari A, Ghosh S, Tripathi M, Singh BK, Sinha RA. Role of AKR1B10 and AKR1B8 in the pathogenesis of nonalcoholic steatohepatitis (NASH) in mice. Biochim Biophys Acta Mol Basis Dis. 2022 Apr 1; 1868(4):166319. doi: 10.1016/j.bbadis.2021.166319. Epub 2021 Dec 23. ***(IF- 5.2)***
6. **Rajak S**, Iannucci LF, Zhou J, Anjum B, George N, Singh BK, Ghosh S, Yen PM, Sinha RA. Loss of ULK1 Attenuates Cholesterogenic Gene Expression in Mammalian Hepatic Cells. *Front Cell Dev Biol*. 2020 Sep 30; 8:523550. doi: 10.3389/fcell.2020.523550. (IF- 5.5)
7. **Rajak S**, Xie S, Tewari A, Raza S, Wu Y, Bay BH, Yen PM, Sinha RA. MTORC1 inhibition drives crinophagic degradation of glucagon. *Mol Metab*. 2021 Nov; 53:101286. doi: 10.1016/j.molmet.2021.101286. Epub 2021 Jul 2. ***(IF- 8.0)***
8. **Rajak S,** Raza S, Tewari A, Yadav S, Ghosh S, Yen PM, Sinha RA. Autophagic protein ULK1 regulates FOXM1 signalling in human hepatoma cells. *BiochemBiophys Res Commun*. 1072020 Nov 19;532(4):570-575. doi: 10.1016/j.bbrc.2020.08.068. Epub 2020 Sep 6. (IF- 3.1)
9. **Rajak S,** Hussain Y, Singh K, Tiwari S, Ahmad B, Bharti S, Prakash P. Cellular Fibronectin Containing Extra Domain A Causes Insulin Resistance via Toll-like Receptor 4. *Sci Rep*. 2020 Jun 4;10(1):9102. doi: 10.1038/s41598-020-65970-6. ***(IF- 4.1)***
10. Raza S, Rajak S, Srivastava J, Tewari A, Gupta P, Chakravarti B, Ghosh S, Chaturvedi CP, Sinha RA. ULK1 inhibition attenuates telomerase activity in hepatic cells. Biochim Biophys Acta Mol Cell Res. 2022 Dec;1869(12):119355. doi: 10.1016/j.bbamcr.2022.119355. Epub 2022 Sep 14. ***(IF- 5.2)***
11. Shahi A, Yadav A, **Rajak S**, Raza S, Tewari A, Gupta P, Sinha RALiver-specific thyroid hormone receptor-β agonism alleviates alcoholic steatohepatitis (ASH) in mice. Biochem Biophys Res Commun. 2024 Nov 19;734:150742. doi: 10.1016/j.bbrc.2024.150742. Epub

2024 Sep 24. ***(IF- 2.6)***

12. Uzair M, Singhal C, Ali A, **Rajak S**, Kapoor A, Agarwal SK, Tiwari S, Pande S, Prakash P. Myocardial ischemia-reperfusion injury released cellular fibronectin containing domain A (CFN-EDA): A destructive positive loop amplifying arterial thrombosis formation and exacerbating myocardial reperfusion injury. Thromb Res. 2024 Jun;238:117-128. doi: 10.1016/j.thromres.2024.04.026. Epub 2024 Apr 30***. (IF- 10.6)***

13. Raza S, Shahi A, Medhe P, Tewari A, Gupta P, **Rajak S**, Chakravarti B, Sinha RA. Fructose-induced perturbation in cellular proteostasis via RPS6KB1 promotes hepatic steatosis. Biochim Biophys Acta Mol Cell Res. 2024 Jan;1871(1):119597. doi: 10.1016/j.bbamcr.2023.119597. Epub 2023 Sep 22***. (IF- 4.1)***

14. Archana Tewari, **Rajak S**, Sana Raza, Pratima Gupta, Bandana Chakravarti, Jyotika Srivastava, Chandra P. Chaturvedi, and Rohit A. Sinha. Targeting Extracellular RNA Mitigates Hepatic Lipotoxicity and Liver Injury in NASH. Cells **2023**, 12, 1845. doi.org/10.3390/cells12141845. ***(IF- 6.0)***

15. Chakravarti B, Rajput S, Raza S, Rajak S, Tewari A, Gupta P, Upadhyay A, Chattopadhyay N, Sinha RA. Lipoic acid blocks autophagic flux and impairs cellular bioenergetics in breast cancer and reduces stemness. Biochim Biophys Acta Mol Basis Dis. 2022 Oct 1;1868(10):166455. doi: 10.1016/j.bbadis.2022.166455. Epub 2022 Jun 6. ***(IF- 5.2)***

16. Pal S, Singh M, Porwal K, **Rajak S**, Das N, Rajput S, Trivedi AK, Maurya R, Sinha RA, Siddiqi MI, Sanyal S, Chattopadhyay N. Adiponectin receptors by increasing mitochondrial biogenesis and respiration promote osteoblast differentiation: Discovery of isovitexin as a new class of small molecule adiponectin receptor modulator with potential osteoanabolic function. *Eur J Pharmacol*. 2021 Dec 15; 913:174634. doi: 10.1016/j.ejphar.2021.174634. Epub 2021 Nov 14. ***(IF- 5.0)***

17. Pal S, Porwal K, **Rajak S**, Sinha RA, Chattopadhyay N. Selective dietary polyphenols induce differentiation of human osteoblasts by adiponectin receptor 1-mediated reprogramming of mitochondrial energy metabolism. *Biomed Pharmacother*. 2020 Jul; 127:110207. doi: 10.1016/j.biopha.2020.110207. Epub 2020 May 16. (***IF- 6.5)***

18. Hussain Y, Singh J, Raza W, Meena A, **Rajak S**, Sinha RA, Luqman S. Purpurin ameliorates alcohol-induced hepatotoxicity by reducing ROS generation and promoting Nrf2 expression. *Life Sci.* 2022 Nov 15; 309:120964. doi: 10.1016/j.lfs.2022.120964. Epub 2022 Sep 14. ***(IF- 6.1)***

19. Daniel PV, Dogra S, Rawat P, Choubey A, Khan AS, **Rajak S,** Kamthan M, Mondal P. NF-κB p65 regulates hepatic lipogenesis by promoting nuclear entry of ChREBP in response to a high carbohydrate diet. *J Biol Chem*. 2021 Jan-Jun; 296:100714. doi: 10.1016/j.jbc.2021.100714. Epub 2021 Apr 27. ***(IF- 5.5)***

20. Upadhyay A, Anjum B, Godbole NM, **Rajak S,** Shukla P, Tiwari S, Sinha RA, Godbole MM. Time-restricted feeding reduces high-fat diet-associated placental inflammation and limits adverse effects on fetal organ development. *BiochemBiophys Res Commun.* 2019 Jun 25;514(2):415-421. doi: 10.1016/j.bbrc.2019.04.154. Epub 2019 May 1**. (*IF- 2.5)***

Review Articles/ Commentary

1. **Rajak S**, Shahi A, Yadav A, Medhe P, Sinha RA. Microplastics in metabolic dysfunction-associated steatotic liver disease: An emerging threat to liver health. World J Hepatol. 2025 Dec 27;17(12):111198. doi: 10.4254/wjh.v17.i12.111198. ***(IF- 2.7)***

2. Singh MM, Shah A, **Rajak S**, Chaturvedi CP, Sinha RA. Histone lactylation: A key epigenetic modulator in the pathogenesis of metabolic dysfunction-associated steatohepatitis and alcoholic steatohepatitis. World J Hepatol. 2025 Dec 27;17(12):111153. doi: 10.4254/wjh.v17.i12.111153. ***(IF- 2.7)***

3. Rajak S, Dynamics of cellular plasticity in non-alcoholic steatohepatitis (NASH). Biochim Biophys Acta Mol Basis Dis. 2024 Apr;1870(4):167102. doi: 10.1016/j.bbadis.2024.167102. Epub 2024 Feb 28. Corresponding author. ***(IF- 4.2)***

4. **Rajak S,** Raza S, Tewari A, Sinha RA. Environmental Toxicants and NAFLD: A Neglected yet Significant Relationship. *Dig Dis Sci*. 2022 Aug;67(8):3497-3507. doi: 10.1007/s10620-021-07203-y. Epub 2021 Aug 12. ***(IF- 3.8)***

5. **Rajak S,** Raza S, Sinha RA. ULK1 Signaling in the Liver: Autophagy Dependent and Independent Actions. *Front Cell Dev Biol.* 2022 Feb 18; 10:836021. doi: 10.3389/fcell.2022.836021. ***(IF- 5.5)***

6. **Rajak S,** Yen PM, Sinha RA. MTORC1-dependent crinophagy regulates glucagon content in pancreatic α-cells. *Autophagy.* 2021 Oct;17(10):3269- 3270. doi: 10.1080/15548627.2021.1961074. Epub 2021 Aug 12***. (IF- 16.0)***

7. Raza S, **Rajak S**, Singh R, Zhou J, Sinha RA, Goel A . Cell-type specific role of autophagy in the liver and its implications in non-alcoholic fatty liver disease.. World J Hepatol. 2023 Dec 27;15(12):1272-1283. doi: 10.4254/wjh.v15.i12.1272. ***(IF- 2.7)***

8. Raza S, **Rajak S**, Yen PM, Sinha RA. Autophagy and hepatic lipid metabolism: mechanistic insight and therapeutic potential for MASLD. NPJ Metab Health Dis. 2024;2(1):19. doi: 10.1038/s44324-024-00022-5. Epub 2024 Aug 2.

9. Sinha RA, **Rajak S,** Singh BK, Yen PM. Hepatic Lipid Catabolism via PPARα- Lysosomal Crosstalk. *Int J Mol Sci*. 2020 Mar 31;21(7):2391. doi: 10.3390/ijms21072391. ***(IF- 5.9)***

10. Raza S, **Rajak S,** Tewari A, Gupta P, Chattopadhyay N, Sinha RA, Chakravarti B. Multifaceted role of chemokines in solid tumors: From biology to therapy. *Semin Cancer Biol*. 2022 Jan 1;86(Pt 3):1105-1121. doi: 10.1016/j.semcancer.2021.12.011. Epub ahead of print. ***(IF- 16.0)***

11. Raza S, Tewari A, **Rajak S,** Sinha RA. Vitamins and non-alcoholic fatty liver disease: A Molecular Insight⋆. *Liver Res*. 2021 Jun;5(2):62-71. doi: 10.1016/j.livres.2021.03.004. Epub 2021 Apr 4.

12. Raza S, **Rajak S,** Upadhyay A, Tewari A, Anthony Sinha R. Current treatment paradigms and emerging therapies for NAFLD/NASH. *Front Biosci* (Landmark Ed). 2021 Jan 1;26(2):206-237. doi: 10.2741/4892.

13. Raza S, **Rajak S,** Anjum B, Sinha RA. Molecular links between non-alcoholic fatty liver

disease and hepatocellular carcinoma. *Hepatoma Res.* 2019 Dec 11; 5:42. doi: 10.20517/2394-5079.2019.014.

Scientific Conference

1. Jan 2020:- Poster Presentation entitled "*Crinophagy reduces glucagon turnover via mTORC1*. "International Conference on Autophagy and Lysosomal Diseases organized by IISc Bangalore.
2. Dec 2018: Poster Presentation entitled "*ULK1 negatively regulates cholesterol biosynthesis* "organized by Dept of Molecular Medicine and Biotechnology SGPGIMS, Lucknow.
3. Nov 2017: Poster Presentation entitled "*Standardization and characterization of a mice model of pre-diabetes induced by high fat diet*'' organized by Molecular Medicine Lifestyle Diseases CSIR-Central Drug Research Institute, Lucknow.
4. Nov 2017: Poster Presentation entitled "*Metformin may not treat early induced diabetes in non-obese rat mode*l" organized by Molecular Medicine Lifestyle Diseases CSIR-Central Drug Research Institute, Lucknow.

Membership

- ❖ Lifetime member of Association of Scientists and Technologists for Research in Toxicology and Allied Sciences (ASTRA).

Editorial Board Member (Journal)

- ❖ Scientific Report

Peer Reviewer for Scientific Journals

- BMC- Gastroenterology
- Phytotherapy Research
- Communication Biology
- Scientific Report
- Frontiers in Endocrinology, Molecular and Cellular Developmental, Pharmacology
- Elsevier BBA-Molecular Basis of Diseases
- MDPI journals
- Dove Press

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