DEPARTMENT: Receptor Biology & Tumor Metastasis

HEAD OF THE DEPARTMENT: Dona Sinha, Ph.D
Senior Scientific Officer (SSO-I Grade)

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TEAM

Name	**Designation**
Students	
Dr. Bornita Das	SERB National Post Doctoral Fellow
Ms. Nivedita Sarkar	DST WOS-A Scientist
Ms. Priyanka Prasad	ICMR- Senior Research Fellow
Ms. Suchisnigdha Datta	ICMR- Junior Research Fellow

OBJECTIVES OF THE DEPARTMENT:

- Health impact of chronic low level arsenic exposure on rural population of West Bengal
- Epithelial mesenchymal transition and cancer metastasis
- Redox signaling in cancer biology
- Exploration of chemopreventive and chemotherapeutic properties of phytochemicals

EXTRAMURAL PROJECTS

PI/Mentor	**Project Title**	**Funding Agency**
Dr. Dona Sinha	Arsenic in groundwater, alterations in redox homeostasis and risk of carcinogenesis: A field study in West Bengal	Indian Council of Medical Research, New Delhi
	Modulation of NRF2 mediated redox homeostasis by green and black tea poplyphenols in arsenic-induced oxidative stress	WOS-A scheme, Dept. of Science and Technology, New Delhi
	Redox regulation of nuclear factor erythroid-245 (NF-E2) related factor Nrf2 in lung cancer by green and black tea polyphenols: Implication in cancer therapeutics	Indian Council of Medical Research, New Delhi
	Exploration of the role of diallyl disulphide on EMT in A549 lung cancer cells	SERB, Dept. of Science and Technology, New Delhi

INTRAMURAL PROJECT

PI	**Project Title**	**Funding Agency**

Dr. Dona Sinha	Impact of low level arsenic on airways of exposed population: study on cell survival and proliferative signaling pathway	Ministry of Health and Family Welfare, Govt. of India

SELECTIVE PUBLICATIONS

1. Sinha D*, Biswas J, Nabavi SM, Bishayee A. Tea phytochemicals for breast cancer prevention and intervention: From bench to bedside and beyond. **Semin Cancer Biol**. **2017; 46:33-54**
2. Prasad P and Sinha D*****. Low-level arsenic causes chronic inflammation and suppresses expression of phagocytic receptors. **Environ Sci Pollut Res**. **2017**; 24(12):11708-11721.
3. Sinha D*****, Sarkar N, Biswas J, Bishayee A. Resveratrol for breast cancer prevention and therapy: Preclinical evidence and molecular mechanisms. **Semin Cancer Biol**. **2016**; 40-41:209-232.
4. Prasad P, Mukherjee M, Saha H, Sinha D *****. Sputum Cytological Changes in Rural Women of West Bengal Chronically Exposed to Low Level Groundwater Arsenic Contamination. **Biomark J.** 2016. 2 (1):1-11
5. Dutta K, Prasad P, Sinha D *****. Chronic low level arsenic exposure evokes inflammatory responses and DNA damage. **Int J Hyg Environ Health.** 2015; 218(6):564-74.
6. Sinha D and Ray MR. Health effects of indoor air pollution due to cooking with biomass fuel. Eds Roberts **SM,** Kehrer **JP,** Klotz L-O in Studies on Experimental Toxicology and Pharmacology; Part of the series Oxidative Stress in Applied Basic Research and Clinical Practice, **Springer, 2015**, pp 267-302.
7. Mukherjee B, Bindhani B, Saha H, Sinha D*****, Ray MR. Platelet hyperactivity, neurobehavioral symptoms and depression among Indian women chronically exposed to low level of arsenic. **Neurotoxicol 2014**, 45:159-67.
8. Gupta P, Sinha D, Bandopadhyay R. Isolation and screening of marine microalgae chlorella sp. _pr1 for anticancer activity. **Int J Pharmacy Pharmaceutical Sci 2014,** 6(10):517-519.
9. Ghosh S, Balakrishnan K, Mukhopadhyay K, Sambandam S, Puttaswamy N, Chakraborty M, Ghosh P, Ray MR, Sinha D, Pyne S. Addressing disease burdens attributable to ambient and household air pollution in India: A review to scope future research priorities for carcinogenicity of air toxics. **J Ind Soc Agri Stat** 2014; 68(3):391-405.
10. Nanda DP, Dutta K, Ganguly KK, Hajra S, Mondal SS, Biswas J, Sinha D *****. MMP-9 as a potential biomarker for carcinoma of oral cavity: a study in eastern India. **Neoplasma 2014**, 6 (6): 747-757.
11. Das D, Bindhani B, Mukherjee M, Saha H, Biswas P, Dutta K, Prasad P, Sinha D *****, Ray MR. Chronic low level arsenic exposure reduces lung function in male population without skin lesions. **Int J Pub Health 2014**, 59(4):655-663.
12. Sinha D *****, Mukherjee B, Bindhani B, Dutta K, Saha H, Prasad P, Ray MR. Chronic low level arsenic exposure inflicts pulmonary and systemic inflammation. **J Cancer Sci Ther 2014**, 6(3): 62-69.
13. Sinha D ***,** Dutta K, Ganguly KK, Biswas J, Bishayee A. A novel synthetic oleanane triterpenoid suppresses adhesion, migration and invasion of highly metastatic melanoma cells by modulating gelatinase signaling axis**. Mol Carcinog**. 2015 ;54(8):654-67.
14. Pyne S, Biswas J, Sinha D. A new systems approach to combat arsenic induced carcinogenesis. **South Asian J Cancer 2013**; 2(2):82.
15. Sinha D*****, Biswas J, Bishayee A. Nrf2-mediated redox signaling in arsenic carcinogenesis: a review. **Arch Toxicol 2013**; 87(2):383-96
16. Sinha D*****, Biswas J, Sung B, Aggarwal BB, Bishayee A. Chemopreventive and

chemotherapeutic potential of curcumin in breast cancer. **Curr Drug Targets. 2012**; 13(14):1799-819.
17. Roy M, Sinha D**,** Mukherjee S, Biswas J. Curcumin prevents DNA damage and enhances the repair potential in a chronically arsenic exposed human population in West Bengal,India. **Eur J Cancer Prev 2011**, 20(2): 123-131.
18. Sinha D and Roy M. Antagonistic role of tea against sodium arsenite induced oxidative DNA damage and repair inhibition in Swiss albino mice. **J Environ Pathol Toxicol Oncol 2011**, 30(4):311-22**.**
19. Roy S, Mukherjee S, Sinha D, Roy M. Indian spice curcumin may be an effective strategy to combat the genotoxicity of arsenic in Swiss albino mice. **Asian Pac J Cancer Prev 2010**, 11:239-246**.**
20. Biswas J, Sinha D, Mukherjee S, Roy S, Siddiqi M, Roy M. Curcumin protects DNA damage in a chronically arsenic exposed population of West Bengal. **Hum Exp Toxicol 2010**, 29(6): 513-524.
21. Sinha D, Roy S, Roy M. Antioxidant potential of tea reduces arsenite induced oxidative stress in Swiss albino mice. **Food Chem Toxicol 2010**, 48: 1032-1039.
22. Sinha D, Mukherjee S, Roy S, Bhattacharya RK, Roy M. Modulation of arsenic induced genotoxicity by curcumin in human lymphocytes. **J Env Chem Ecotoxicol 2009**, Vol. 1(1) pp. 001-011.
23. Sinha D, Dey S, Bhattacharya RK, Roy M. In vitro mitigation of arsenic toxicity by tea polyphenols in human lymphocytes, **J Env Pathol Toxicol Oncol 2007**, 26(3): 207-220.
24. Roy M, Sinha D**,** Mukherjee S**,** Paul S, Bhattacharya RK. Protective effect of dietary phytochemicals against arsenite induced genotoxicity in mammalian V79 cells. **Ind J Exp Biol 2008**, 46: 690-697.
25. Sinha D, Roy M, Siddiqi M, Bhattacharya R.K. Modulation of Arsenic induced DNA damage by tea as assessed by single cell gel electrophoresis, **Int J Cancer Prev 2005**, 2(2): 145-154.
26. Sinha D, Siddiqi M, Bhattacharya RK, Roy M. Amelioration of Sodium Arsenite induced clastogenicity by tea extracts in Chinese hamster V-79 cells, **Env Pathol Toxicol Oncol 2005**, 24(2): 129-139.
27. Sinha D, Siddiqi M, Roy M, Bhattacharya RK. Arsenic induced micronuclei formation in mammalian cells and its counteraction by tea. **Env Pathol Toxicol Oncol 2005**, 24(1): 43-54.
28. Sinha D, Roy M, Dey S, Siddiqi M., Bhattacharya RK. Modulation of arsenic induced cytotoxicity by tea. **Asian Pac J Cancer Prev 2003**, 4(3): 233-238.
29. Roy M, Chakraborty S, Sinha D, Bhattacharya RK & Siddiqi M. Anticlastogenic, antigenotoxic and apoptotic activity of epigallocatechin gallate, a green tea polyphenol. **Mutat Res 2003**, 523-524: 33-41.

***Corresponding author**

ACADEMIC ACTIVITIES

Registered Ph.D Students: 4

Post Doctoral Fellow: 1

Short term UG/PG projects: 35

Integrative course work taught to Ph. D students:

- Cell structure and function and nuclear changes during carcinogenesis
- Nrf2, the redox transcription factor
- Cancer chemoprevention
- Epithelial Mesenchymal Transition

- Cell cycle

PATIENT CARE SERVICE:
Pulmonary function test performed for CNCI hospital patients