UNIVERSITY OF CALCUTTA

Department of Botany

FACULTY ACADEMIC PROFILE/CV

Full name of the faculty member: Rita Kundu
Designation: Professor in Botany
Specialisation: Cell Biology and Genetics

Contact information :
Email : kundu_rita@yahoo.co.in;

Academic qualifications:

College/ university from which the degree was obtained	Abbreviation of the degree
University of Calcutta	BSc in Botany
University of Calcutta	MSc in Botany
University of Calcutta	Ph D in Botany

Research interests:

- **Cell Biology of cancer cells**- Unregulated cell proliferation is one of the most important characteristic feature of cancer cells. Our target is to induce cell death either through apoptosis /autophagy /any other way, in the cervical cancer cell lines using traditional medicinal plants and other organic sources (marine/ fresh water algal compounds, microbial compounds, synthetic organic compounds)to regulate cell proliferation. At the same time, we are also interested in identifying the bioactive compounds and their mode of action in regulating cell proliferation.

- **Plant biology-** Contamination of arable soil with cadmium (Cd) is a major agricultural problem worldwide. Being highly mobile, Cd can be taken up by the plants and get accumulated in the aerial parts and grains. Crops, particularly irrigated rice (*Oryza sativa*) are suggested as the main source of cadmium intake in human (United Nation Environment Programme,2008) causing serious threat for human health. As of now, there is no existing data regarding cadmium content of the rice grain and the rice growing fields of West Bengal. Therefore, it is important to study the cadmium status of the landraces and cultivars growing in West Bengal (both kharif and boro). Our research also encompasses cadmium amelioration in rice.

  In the context of sustainable agriculture, applications of nanofertilizers are widely encouraged for increasing crop production. Utilizations of nanofertilizers are potentially effective in reducing the overuse of different agrochemicals which are toxic for human health. We are interested to study the use of nanocomposites for plant growth enhancement and at the same time want to improve nitrogen utilization efficiency in rice with the help of urea-nanocomposites under lab and field conditions.

Research group:

Researchers awarded Ph.D degrees:

Dr. Suparna Pal

Dr. Raikamal Pal

Dr. Subhabrata Paul

Submitted Thesis:

Indira Majumder

Arpita Mondal

Researchers pursuing Ph.D :

Surupa Paul (SVMCM-fellow)

SnehalataMajumdar (DBT-SRF)

Asmita Pal (UGC-SRF)

Alivia Paul (Project Fellow)

Preeti Verma (UGC-SRF)

Titir Guha (CSIR-SRF)

Falguni Barman (UGC-JRF)

Sonali Nath (UGC-JRF)

Projects :

Completed projects :

a. Identification of metallophytes with lead tolerance capability and the study of biochemical parameters therein funded byUGC

b. Induction of premature chromosome condensation by base analogues purine derivatives, their possible use in control of cell proliferation funded by ICMR
c. Evaluation of antiproliferative potential of some medicinal plant extracts on Cervical cancer cell lines funded by WBDBT
d. Evaluating the Cytotoxic properties of some major algae from Sundarban mangrove ecosystem on selected cell line funded by WB-DST.

Current project :

Selection of low cadmium accumulating local rice genotypes of West Bengal and identification of candidate transporter genes responsible for cadmium accumulation by WB DBT.

Selected list of publications:

A. Journals

Pal R, Kundu R(2015): Risk assessment of some selected vegetables grown in metal contaminated soilsupplements. Proc. Natl. Acad. Sci. ,India, Sect. B Biol. SciDOI:10.1007/s40011-015-0491-3.

Chirantani Mukherjee, Subhabrata Paul, Rita Kundu(2015): Comparative evaluation of anti-proliferative activity of *Solanum nigrum*methanolic and aqueous extract on HeLa, SiHa and C33A cells; International Journal of Pharmacy and Pharmaceutical Sciences, Vol 7, Issue 4, 320-324 ISSN- 0975 – 1491

Indira Majumder, Subhabrata Paul, Rita Kundu (2015): Anti- cancerous and anti-tumorous activity of algae- a review; International Journal of Innovative Pharmaceutical Sciences and Research; Rita Kundu et.al / 3 (2), 72-89 ISSN (online) 2347-2154

Sayani Chatterjee, Indira Majumder, Sudeshna SenRoy and Rita Kundu(2015) :A comparative account of anti- proliferative effects of *Catenella sp.* on different cervical cancer cell lines; International Journal of Innovative Pharmaceutical Sciences and Research; Rita Kundu et.al/ IJIPSR/ 3(3), 203-211 ISSN (online)2347-2154

Paul S, Chakraborty S, Mukherjee A, Kundu R (2015): Evaluation of cytotoxicity and dna damaging activity of three plant extracts on cervical cancer cell lines. Int J Pharm Sci Rev Res,31(1),183-189

Iswarya V, Manivannan j, De A, Paul S, Roy R, Johnson JB, Kundu R, Chandrasekaran N, Mukherjee A, Mukherjee Amitava (2015): Surface capping and size-dependent toxicity of gold nanoparticles on different trophic levels.Environ Sci Pollut Res.DOI.10.1007/s11356-015-5683-0

PriyaGoswami, Subhabrata Paul, Ritesh Banerjee, Rita Kundu, Anita Mukherjee, Betulinic acid induces DNA damage and apoptosis in SiHa cells. Mutation Research/Genetic Toxicology and Environmental Mutagenesis. Doi: 10.1016/j.mrgentox.2018.02.003

Subhabrata Paul, Rita Kundu. Induction of apoptosis by fatty acid rich fraction of *Solanumnigrum* on cervical cancer cell lines International Journal of Pharmacy and Pharmaceutical Sciences, 2017,

Vol 9, Issue 11,199-206

Debashis Patra, Subhabrata Paul, Indira Majumder, NayimSepay, SachinathBera, Rita Kundu, Michael G. B. Drew and Tapas Ghosh, Dalton Trans., 2017,46, 16276-16293

Debashis Patra, Subhabrata Paul, NayimSepay, Rita Kundu& Tapas Ghosh Structure-activity relationship on DNA binding and anticancer activities of a family of mixed-ligand oxidovanadium(V) hydrazone complexes, Journal of Biomolecular Structure and Dynamics, 2017.

Snehalata Majumdar, TitirGuha and Rita Kundu. MTT Assay for Cytotoxicity Assessment in Oryza sativa Root Tissue, Bioprotocol, 2017, Vol 7, Issue 22, 2620

Swagata Karak, Jayashree Acharya, Sainiara Begum, Indira Mazumdar, Rita Kundu, Bratati De, Essential oil of Piper betle L. leaves: Chemical composition, antiacetylcholinesterase, anti-β-glucuronidase and cytotoxic properties, Journal of applied research on medicinal and aromatic plants.doi. 10.1016/j.jarmap.2018.06.006

Subhabrata Paul, Rita Kundu. ROS mediated DNA damage and induction of apoptosis in cervical cancer cells by Heliotropiumindicum L. Journal of Applied Pharmaceutical Science Vol. 8(08), pp 092-106, August, 2018

Indira Majumder, Subhabrata Paul, Rita Kundu. Induction of autophagy in human cervical cancer cell line (siha) by Chaetomorphalinum (muller) kütz. International Journal of Pharmacy and Pharmaceutical Sciences. Vol 10, Issue 6, 2018

Majumdar, S., Chakraborty, B., Kundu, R., 2018. Comparative analysis of cadmium-induced stress responses by the aromatic and non-aromatic rice genotypes of West Bengal. Environ. Sci. Pollut. Res. 1-11. doi: 10.1007/s11356-018-1966-6.

Guha, T., Ravikumar, K.V.G., Mukherjee, A., Mukherjee, A.,Kundu, R., 2018. Nanopriming with zero valent iron (nZVI) enhances germination and growth in aromatic rice cultivar (*Oryzasativa c*v. Gobindabhog L.). Plant Physiology and Biochemistry. 127, 403-413. doi: org/10.1016/j.plaphy.2018.04.014.

Mondal, A., Kundu, R., 2018. Study of early response in castor (*Ricinuscommunis* L.) seedlings under cadmium and zinc stress. International Journal of Pharmacy and Biological Sciences. 8(2): 789-800.

Membership of Learned Societies:

Life Member of Botanical society of Bengal
Life Member of Plant Physiology forum
Life Member of Prabir Chatterjee Research Foundation
Life Member of Archana Sharma Foundation of Calcutta
Life Member of Indian Science Congress Association