Brief description of the work done

- Molecular alterations in various cell types, like, T cells, B cells, monocytes, macrophages, dendritic cells, myeloid derived suppressor cells in murine and human cancers are studied with special reference to its modulation by NLGP.
- NLGP mediated normalization of vascular angiogenesis is studied in immunocompetent and immune-compromised mice models.
- Role of non-hematopoietic stromal cells, e.g. pericytes and mesenchymal stem cells in immune alteration, thereby, progression of cancer are studied in relation to NLGP.
- Influence of tumor-associated pericytes is investigated on CD4+ and CD8+ T cell functions.
- Molecular mechanism to mesenchymal stem cell mediated suppression of T cell functions is investigated.
- Molecular mechanism of downregulation of VEGF and HIF1a by NLGP in cancer cells is investigated in normoxic and hypoxic conditions.
- Generation of central and effector memory responses during and after NLGP mediated tumor eradication is investigated.
- Significance of thymic atrophy in cancer and its modulation by NLGP, in relation to age associated thymic alterations, are under study.
- Role of RGSS in differential apoptotic behavior of tumor associated pericytes in tumor and non-tumor microenvironment is studied.
- Regulation of T cell functions in hypoxic tumor microenvironment and its correction by NLGP is under study.
- Role of NLGP in intervening the initiation-promotion protocol during 4-nitroquinoline-1-oxide mediated tongue carcinogenesis, especially during epithelial mesenchymal transition are also being evaluated.
- Role of T cells in regulation of cancer stem cells under the immunomodulation of NLGP are under study.
- Molecular mechanisms of cancer progression in tumor hosts with type I/type II diabetes with reference to the alteration in cancer immune-surveillance and its correction by NLGP are being investigated.
- The role of tumor residing Immunosuppressor cells in generation of multidrug resistance in murine lymphoma and immunomodulation by NLGP are under study.
- Influences of cancer associated adipocytes in the progression of mammary carcinogenesis in obese conditions are being studied in relation to immune evasion.

Extramural projects

1. Influence of tumor-associated pericytes on CD8+ T cell functions

   Principal Investigator
   Dr. Anamika Bose
   Sponsor: DST


   Principal Investigator
   Dr. Sudeshna Mukherjee
Projects for students

1. Generation and functions of tumor antigen specific memory phenotypes within CD8+ T-cells under influence of Neem Leaf Glycoprotein - by Sarbari Ghosh
   Sponsor: DST

2. An effort to reduce the immunosuppressive effects of mesenchymal stem cells in cancer by neem leaf glycoprotein - Focus on T cells – by Tithi Ghosh
   Sponsor: CNCI

3. Studies on modulation of metastasis in mouse melanoma and carcinoma by neem leaf glycoprotein: Involvement of immune system - by Abhishek Bhuiya
   Sponsor: CSIR

4. Targeting myeloid derived suppressor cells and T cells crosstalk with neem leaf glycoprotein to prevent immunosuppression in cancer - by Madhurima Sarkar
   Sponsor: ICMR/CNCI

5. Studies on tumor induced thymic atrophy in mice in relation to T cell differentiation and death: Critical modulation by Neem Leaf Glycoprotein - by Ipsita Guha
   Sponsor: CNCI

   Sponsor: UGC

7. Studies on the mechanism of Neem Leaf Glycoprotein (NLGP) mediated down-regulation of VEGF in tumors: Special emphasis on HIF degrading pathway- by Akata Saha
   Sponsor: CSIR

8. Elucidation of the role of neem leaf glycoprotein on defective CD8 T cell functions within hypoxic tumor microenvironment with special reference to signaling and metabolic pathways- by Partha Nandi
   Sponsor: DST

9. Intervention by neem leaf glycoprotein on the initiation-promotion protocol during 4-nitroquinoline-1-oxide mediated tongue carcinogenesis: Special emphasis on epithelial mesenchymal transition- by Juhina Das
   Sponsor: DBT

10. Identification of signaling gateway of neem leaf glycoprotein on macrophages and dendritic cells- by Nilanjana Ganguly
    Sponsor: CSIR

11. Understanding the mechanism of cancer progression in tumor hosts with type I/type II diabetes with reference to alteration in cancer immune-surveillance: Correction by NLGP – Anirban Sarkar
    Sponsor: UGC

12. Understanding the role of T cells in Regulation Of cancer stem cells: Influence of NLGP driven immunomodulation- by Mohona Chakrovarti
    Sponsor: UGC

13. Study of the role of tumor residing Immunosuppressor cells of the generation of multidrug resistance in murine lymphoma with the immunomodulation by Neem Leaf Glycoprotein- by Sukanya Dhar
    Sponsor: DST

Recent Publications


Detail is available at PubMed, NCI

Other academic activities

PhD awarded

1. Mr. Kuntal Kanti Goswami awarded PhD (Science) degree in the year 2016 from University of Calcutta for his thesis entitled, “Tumor microenvironment induced conversion of classical M1 macrophages to alternative M2 type tumor associated macrophages: Modulation by NLGP” under supervision of Dr. R. Baral

2. Ms. Sarbari Ghosh, Ms. Tithi Ghosh have submitted their Theses to Calcutta University.

PhD ongoing

1. Thesis work of Madhurima Sarkar and Avishek Bhuniya are completed---thesis under preparation.

2. Thesis work of Ipsita Guha, Shayani Dasgupta and Akata Saha, Partha Nandi and Nilanjan Ganguly are under progress. All of them are registered in either Calcutta or Jadavpur University


Short Term Project

Nine students (B.Sc, M.Sc, B. Tech, M. Pharm) from different universities and institutions trained in the department for 1-6 months duration

Reviewer of Journals

Dr. Baral acted as an honorary reviewer of several international journals, like, Int. J. Cancer, PLoS One, Vaccine, Int Immunopharmacol, Tumor Biology etc.
Dr. Anamika Bose acted as an honorary reviewer of international journals, like, Blood, Melanoma Research, J Ethnopharmacology. She also acted as a grant reviewer of KWF Kankerbestrijding (Dutch Cancer Society)

Conference/Symposium/Workshop

Dr. R. Baral organized a one day symposium on the occasion of World Immunology Day, 29th April, 2017, at Chittaranjan National Cancer Institute (CNCI), Kolkata, in association with Indian Immunology Society to develop awareness among young undergraduate and postgraduate students about both history as well as recent trends in immunology. Prof. P. K. Ray former Director, CNCRC, ITRC and Bose Institute, Prof. Subrata Majumder, Scientist and Chairman, Department of Molecular Medicine, Bose Institute, Kolkata, Utpala Chattopadhyay, Former Head IRID as well as Former Director, CNCI, Kolkata, Prof. Swapna Choudhuri, Senior Scientist, School of Tropical Medicine, Kolkata and Dr. Pradip Mazumder, an industrial representative, were the invited speakers of the symposium.

Dr. R. Baral organized a Scientific Meet as a General Secretary of Indian Association for Cancer Research, West Bengal Chapter on 16th June, 2016. Prof. Samit Chattopadhyay, Director, IICB and Prof. Partha P. Mazumder, Director, NIBMG, Kolkata presented their work as an invited speaker. WID

Invited Lectures

Dr. Rathindranath Baral presented a paper entitled, Neem Leaf Glycoprotein in Cancer Therapy In: 1st Global Neem Trade Fair, 25-27 February, 2016, held at Mumbai.


Award winning Poster Presentation

Mr. Avishek Bhuniya presented a poster entitled, “Neem leaf glycoprotein attenuates carcinoma and melanoma metastasis by editing DC-CD8+T cell interaction and angiogenesis”. In: 35th Annual Convention of Indian Association for Cancer Research, Asian Clinical Oncology Society, New Delhi. April 8-10, 2016. This work received IACR Award for Best Poster.

Other poster presentations


associated mesenchymal stem cells inhibit naïve T cell expansion by blocking cysteine export from dendritic cells. In: 42nd Annual Conference of Indian Immunology Society, Rajendra Memorial Research Institute of Medical Sciences, Patna, October 9-11, 2015.


Oral presentation


Miscellaneous

Director, CNCI, Standing Academic Council, CNCI and Governing Body, CNCI approved the proposal for collaboration of CNCI with eligible non-government company to develop the molecule NLGP as a drug.