

# DURJOY MAJUMDER, Ph.D.

Assistant Professor, Department of Physiology,  
West Bengal State University  
Tel: +91-8648813686 (Mo), e-mail: durjoy103@gmail.com



**Academic Qualification:** M.Sc., Ph.D., CSIR-UGC NET with Fellowship

## Research Interest/ specialization

Cancer Immunology, Gene Expression, Cancer Systems Biology, Systems Pharmacology.

## Research Highlights in Brief

1. High protein diet is beneficial in protecting the damaging effect of proteolytic enzymes in starvation (Master's Dissertation).
2. Established the molecular mechanism of immune evasion in hematological malignancies and proposed the case specific cell based therapies for leukemic patients. A rationale has been proposed for using PMNs in the management of leukemia (Ph.D. Thesis).
3. Analyzed HLA (Human Lymphocytic Antigen) transcriptosome and proposed the molecular rationale of HLA gene regulation by comparing the strength of constitutive and induced expression profiles (Ph.D. Thesis).
4. Delineation of cancer cachexia in leukemia by ultrastructural analysis of RBCs from leukemic patients.
5. Developed an automated algorithm for identification of pre-leukemia from peripheral blood – has implication in preventive oncology.
6. Conventionally gene regulation is understood by forceful perturbation of genetic network in *in vitro* system. We have developed an Information Theory based Multivariate analytical model for understanding of gene regulation and/or down-stream target identification for human cancer. Further, a computational algorithm has been developed to handle big data analysis.
7. Developed an *in silico* assessment of pharmacological and toxicological evaluation of cancer drugs and proposed alternative methodology for the replacement of animal use and long-term assessment.
8. Psycho-neural control of immune regulation.
9. Developed an analytical (dynamical) model that can make a comparative assessment of different chemo-therapeutic strategies like conventional maximum tolerable dosing, anti-angiogenic drugs and metronomic chemotherapeutic dosing strategy, thereby long-term assessment of therapeutic outcome in cancer. Toxicity assessment and/or clinically relevant qualitative assessment can also be monitored by this model. This may help for *apriori* designing of suitable therapy of individual patients.
10. Developed an analytical (dynamical) model that can make a comparative assessment between different chemo-therapeutic, immune-boosting, stem-cell and immuno-gene therapy based strategies for the treatment of leukemia. This model also capable of predicting chronic GVHD for bone marrow transplantation. This may help for *apriori* designing of suitable therapy of individual patients. Further, control engineering approaches have been adopted within the model to monitor long-term assessment. Initiatives have been taken to tune the simulation outputs with the clinical data.

11. Established new philosophical approach called “Middle-out Rationalist Approach (**MORA**)” in the area of Systems Biology. This could be ideal for translating Systems Biology to clinical arena, specially for poor Asian and SAARC countries. To translate this view in clinical arena, several bottlenecks have been identified and hence, towards its implementation in developing and low income countries, proposed several policy related changes have been proposed.

### **Selected Publications**

1. **Majumder D\*** (2020) Development of MatLab Coding for Early Detection of Leukemia through Automated Analysis of RBCs, **Current Cancer Therapy Reviews**, 16: 152-164, 1573-3947 (Print); 1875-6301 (Online).
2. Mukherjee S, Chatterjee G, Ghosh M, Das B, **Majumder D\*** (2016). Efficiency and toxicity assessment of different antibody based anti-angiogenic drugs by computational docking method, **Advances in Bioinformatics**, Volume 2016 (2016), Article ID 7053712, 11 pages, <http://dx.doi.org/10.1155/2016/7053712>, ISSN: 1687-8035 .
3. Das B, **Majumder D\*** (2014). Interactions of Transcription Factors in HLA Class I transcriptosome, **International Journal of Computer Information Systems & Industrial Management Applications**, 6:592-602, ISSN: 2150-7988.
4. **Majumder D\***, Mukherjee A. (2011) A passage through systems biology to systems medicine: adoption of middle-out rational approaches towards the understanding of clinical outcome in cancer therapy, **Analyst**, 136: 663-678, doi: 10.1039/c0an00746c, According to BioMedLib this paper is placed at the 1<sup>st</sup> rank of the published paper in the area of Systems Biology in the year 2011, hold within the top 5 paper in 2014.
5. **Majumder D**, Bandyopadhyay D, Chandra S, Mukhopadhyay A, Mukherjee N, Bandyopadhyay SK, Banerjee S. (2005) Analysis of HLA class Ia transcripts in human leukemias, **Immunogenetics**, 57:579-589.

### **Teaching Experience (Post-graduate)**

1. Working as a Assistant Professor at the Department of Physiology, West Bengal State University (**WBSU**), Barasat, North 24 Parganas, West Bengal. from March 20, 2009 to uptilil now. (Duration more than 7 years 11 months)
2. Worked as a Lecturer of Bioinformatics (Tenure position) at the Purabi Das School of Information Technology, Bengal Engineering & Science University (**BESU**), Shibpur, (presently Indian Institute of Engineering Science & Technology) West Bengal from March 01, 2006 to March 19, 2009. (Duration: 3 years 19 days).

### **Guest / Adjunct teaching :**

3. M.Sc. Food & Nutrition, West Bengal State University (WBSU)
4. M.Tech. (Pharmacoinformatics), National Institute of Pharmaceutical Education & Research (NIPER), Kolkata.
5. M.Sc. Molecular Biology & Biotechnology, University of Kalyani, West Bengal.
6. M.Tech., Occupational Health & Safety Engineering, Bengal Engineering & Science University.
7. PGDBI Bioinformatics, School of Information Technology, Bengal Engineering & Science University, Shibpur, West Bengal.

## Research Guidance

### M.Tech. Thesis:

1. Pradip Maiti, M.Tech. (Safety & Occupational Health Engineering), 2010, BESU.
2. Sudipta Bhattacharya, M.Tech. (IT) 2009, BESU.
3. Indrajit Pan, M.Tech. (IT) 2009, BESU.
4. Manas Chattopadhyaya, M.Tech. (IT) 2009, BESU.
5. Arnab Pal, M.Tech. (IT) 2009, BESU.
6. "Avishek Das, M.Tech. (IT) in 2009 , BESU.

### Ph.D. Thesis

- Mr. Probir Kumar Dhar, M.Tech. ( Thesis title – Application of Control Theory in The Understanding of Cancer Treatment Dynamics) awarded on 2018 with Ph.D. (Engineering) of Jadavpur University.
- Mr. Biswajit Das, (Thesis title – An Analytical Approach for Understanding of HLA Gene Regulation) awarded on Jan 2021 with Ph.D. Science in Physiology from WBSU.

## Research Experience

- Dept. of Hematology, School of Tropical Medicine, Kolkata
- Dept. Of Medical Genetics, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow
- Biophysics & Structural Genomics Division, Saha Institute of Nuclear Physics, Kolkata
- Dept. of Computer Science & Technology (CST), Bengal Engineering & Science University, Shibpur (BESUS), presently IEST

## Awards & Fellowships

1. CSIR-UGC NET Fellowship (26<sup>th</sup> July, 2000 to 26<sup>th</sup> July, 2005).
2. SRF, DST, Govt. of India (11<sup>th</sup> Sept., 1999 to 31<sup>st</sup> March, 2000).
3. Prof. J.B. Chatterjee Memorial research Fellowship, Department of Health & Family Welfare, Govt. of West Bengal (31<sup>st</sup> Jan., 1996 to 31<sup>st</sup> Jan 1998).

## Invited Lecture

1. TM's 3rd World Genetics & Genomics Online Conference, 2014), Nature Events Directory: [http://www.nature.com/natureevents/science/events/24755-TM\\_s\\_3rd\\_World\\_Genetics\\_Genomics\\_Online\\_Conference](http://www.nature.com/natureevents/science/events/24755-TM_s_3rd_World_Genetics_Genomics_Online_Conference)).
2. TM's 2nd World Genetics & Genomics Online Conference 2013, Nature Events Directory: [http://www.nature.com/natureevents/science/events/19533-TM\\_s\\_2nd\\_World\\_Genetics\\_Genomics\\_Online\\_Conference\\_Free](http://www.nature.com/natureevents/science/events/19533-TM_s_2nd_World_Genetics_Genomics_Online_Conference_Free)).
3. Saha Institute of Nuclear Physics, Kolkata, January 17, 2013.
4. TM's 1<sup>st</sup> World Genetics & Genomics Online Conference, 2012), Nature Events Directory: [http://www.nature.com/natureevents/science/events/15428-TM\\_s\\_1st\\_World\\_Genetics\\_Genomics\\_Online\\_Conference](http://www.nature.com/natureevents/science/events/15428-TM_s_1st_World_Genetics_Genomics_Online_Conference))
5. "Systems biology approaches for the analysis of therapeutic outcome of cancer" presented in the AICTE, Govt. of India funded workshop 'Bioinformatics: State of the Art and Future Prospects' held on February 2007 at the Bengal College of Engineering and Technology, Durgapur, West Bengal.