

BIONE

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Born and brought up in Shillong in East Khasi Hills district of Meghalaya, Dr. Subhash Medhi is serving as an Assistant Professor in the Department of Bioengineering and Technology, Gauhati University since February 2010. He completed his B.Sc. (Biotechnology) from St. Anthony's College Shillong (1999), M.Sc. (Biotechnology) from Gauhati University (2002) following which he joined ICAR Regional Research Complex for NEH Region, Barapani, Maghalaya in the Division of Animal Health (2002-03) as a Research Fellow. Thereafter he served as a faculty member in the Department of Biotechnology at Cyber Research Training Institute, Burdwan (University of Burdwan) from 2003-2005. After qualifying in the CSIR-UGC NET (2004), he joined Maulana Azad Medical College in an ICMR project as a Senior Research Fellow (2005-2009) and was awarded with ICMR-SRF, Individual Fellowship (2009-2010) and worked under the supervision of Dr. Premashis Kar, Director & Professor, Department of Medicine, Maulana Azad Medical College, New Delhi. During this period, he also worked as Clinical Research Coordinator for some well-known drugs companies like Bristol-Myers Squibb, Novartis and Lambda Therapeutics (2007-2010). Under the joint supervision of Prof. P. Kar and Dr. M. Deka, he was awarded Ph.D. by Gauhati University in the Year 2011 for his research on "Host Genetic Factors TLR3 and MAVS in Hepatitis C Virus Infection". As a group leader in the Laboratory of Molecular Virology and Oncology (LMVO) in the Department of Bioengineering and Technology, Gauhati University, he has completed three DBT-funded twinning projects in collaboration with Assam University, Diphu campus, Gauhati Medical College and Hospital, Maulana Azad Medical College, New Delhi, Jamia Millia Islamia, New Delhi, G.B. Pant Hospital, New Delhi and Assam Medical College, Dibrugarh.

Presently, under his leadership, LMVO is conducting a Department of Health Research (DHR) sponsored training programme on Molecular Biology/Molecular diagnostics (2018-2022) for students and researchers at regular intervals. LMVO is also designated as a Regional Research Centre along with Virology Laboratory of ICMR-RMRC for Molecular detection of Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D and Hepatitis E from all the major hospitals of Northeast India. Under his supervision, three Ph.D. scholars have so far been awarded degree and two others are currently on the verge of submitting their thesis. Dr. Medhi has 35 publications to his credit in both National and International peer-reviewed journals and books. Over the past decade, he visited Singapore, UK, Austria, France, Greece, Netherlands and Belgium on research and academic assignments. During his

academic career of more than one decade, he has received the following fellowships, honours and awards:

1. 1st Prize for the Best Paper presented in the Oral Plenary Session at Annual Conference of the Indian Association for the Study of Liver.
2. Indian Society of Gastroenterology WIN-Medicare Award-2008 for Best Poster presentation in the 49th Annual Conference of the Indian Society of Gastroenterology.
3. Travel award by World Congress of Gastroenterology (WCG) in the Basic Scientist category (Awarded to the top 100 papers worldwide) to attend the WCOG conference at London from 21-25 Nov. 2009.
4. Young Investigator Bursary award by European Association for Study of Liver (EASL) to attend the EASL International Liver congress at Vienna, Austria, from 14-18 April 2010.
5. Young Investigator Bursary award by EASL to attend the EASL Monothematic Conference on Alcoholic Liver Disease held at Athens, Greece from 10-12 Dec. 2010.
6. Young Investigator Bursary award by EASL to attend the EASL Monothematic Conference: Translational Research in Chronic Viral Hepatitis - Bridging Basic Science and Clinical Research from 29-30 Nov. 2013.
7. ICMR International Fellowship for Young Biomedical Scientists 2013-14 to work for 6 months with Prof. Gustavo J. Gutierrez, Professor and Principal Investigator, Laboratory of Cell Cycle Control, Unit of Cellular Genetics, Department of Biology, Vrije Universiteit Brussel.
8. Elected member of the National Academy of Medical Sciences (India), 2017



Members of the Laboratory of Molecular Virology and Oncology

Alumni of LMVO their research and current positions:



Name of the Research Scholar: Dr. Snigdha Saikia

Title of the research work: “The impact of local food habit as a risk factor and the molecular mechanism (s) associated with the development of oesophageal cancer from Northeast India”

Present Place of work: Indian Institute of Technology, Guwahati (IITG), Working as: Institutional Post Doctoral Fellow (IPDF)

Research summary: Oesophageal Cancer (EC) is one of the common cancers, especially in Asia, and is the sixth leading cause of cancer deaths worldwide. Her work was based on molecular and epigenetic studies on genes involved in the development of cancer. Methylation and mRNA level of expression of RUNX3 and MGMT, and polymorphism of XRCC1 and XPD were evaluated as molecular mechanisms in the tissue and blood samples of oesophageal cancer patients. She also studied the different risk factors present in the EC patients such as smoking, tobacco, alcohol, betel quid and smoked food such as “*kolakhar*” including different processed foods from Northeast India which have been found to contain Nitrosamine (NA) and Polycyclic Aromatic Hydrocarbons (PAH) that are known potent carcinogens.



Name of the Research Scholar: Mousumi Dutta

Title of the research work: Genetic polymorphism of human leukocyte antigen (HLA) and immunomodulation of inflammatory cytokines in influenza infected population of Assam, India.

Place of work: ICMR-RMRC, Dibrugarh

Current position: DST Women Scientist at ICMR-RMRC

Research summary: Influenza epidemic occurs all the year round with seasonal pattern around the globe. The epidemiological variation reflects the changing antigenic characteristics of influenza viruses and subsequent spread of the disease, which includes several factors such as transmissibility of the virus and host susceptibility. In her study, year-round influenza virus activity was determined along with the identification of different influenza subtypes (influenza A(H1N1)pdm09, H3N2 and influenza-B) circulating in the population. Influenza viruses peaked its activity in the months of June and July and were mostly detected in females with mean age of 40 years. Polymorphism of HLA class-I (A and B) and Class-II (DRB1) was identified in influenza infected population of Assam, along with a control group. Higher levels of IL-6, IL-10, TNF- α and IFN- γ were expressed in cases infected with influenza A(H1N1)pdm09 virus compared to cases infected with H3N2 and influenza-B. Thus, differential cytokine expression recorded during the study against influenza virus infection may provide strategies for therapeutics and to modulate disease severity.

Students on the verge of submission of thesis



Name of the Research Scholar: Rituraj Bharadwaj

Title of the research work: Evaluation of Nano-formulation Encapsulating Anti-neoplastic Drugs against Oral Squamous Cell Carcinoma

Place of work: Laboratory of Molecular Virology and Oncology, Department of Bioengineering & Technology, Gauhati University.

Current position: Associate professor cum Vice Principal, Rahman Institute of Pharmaceutical Science and Research.

Research Summary: Oral Cancer is one of the most common types of cancer prevailing among men in India as well as throughout the globe. Chronic consumption of alcohol, betel quid and both smoking and smokeless tobacco can be figured as the prominent cause for oral cancer. The research being pursued by Rituraj aims to formulate nanoparticles loaded with selective anticancer drugs and their evaluation against oral cancer in animal model.

Name of the Research Scholar: Prajjalendra Barooah

Title of the research work: Association of Genetic and Immunological markers for prediction of treatment response in Hepatitis C Virus Infection from North East India

Place of work: Laboratory of Molecular Virology and Oncology, Department of Bioengineering & Technology, Gauhati University.



Current position: Research Associate, Guwahati Biotech Park, Guwahati

Research Summary: HCV infection is an important cause of liver disease with more than 170 million people as chronic carriers of HCV. These patients are at an extremely high risk of developing liver cirrhosis and/or hepatocellular carcinoma (HCC). Around 1 million people are chronically infected with HCV in India, with areas such as Northeast India and Punjab representing hotspots of HCV infection. Mr. Prajjal's research is aimed at identifying host factors that influence treatment outcome in Chronic HCV patients and determine unique predictive markers in North East Indian population.

Current Research Scholars

1. Ms. Chenole Keppen



Nasopharyngeal carcinoma (NPC) is a rare malignancy in most regions of the world, however, high incidence of NPC has been reported in Southern China, Arctic Inuit, South East Asia, Polynesians islands and North Africa. Nagaland has the highest incidence of NPC in India. Among the host genetic markers implicated with NPC, the Major Histocompatibility Complex (MHC) genes have shown to have strong and consistent association with NPC. Ms. Chenole's current research seeks to carry out high resolution typing of the HLA class I and class II to understand its role with NPC in Nagaland.

2. Jayshree Talukdar



The transforming growth factor β (TGF β) signaling pathway plays a key role in various biological processes like tumor development, fibrosis, embryonic development, wound healing, immunity regulation etc. Deregulation of this pathway has been observed in the pathogenesis of numerous diseases including cancer and vascular disorders. The members of Smad family play an important role in regulating gene expression in the TGF β pathway. Her study focuses on the expression of TGF- β signalling genes with risk of esophageal cancer and the association of some pro inflammatory and anti inflammatory cytokines with oesophageal cancer.

3. Manas Kalita



Manash Jyoti Kalita is presently working as a Research Scientist-I in an ICMR Task Force project and also pursuing his Ph.D. in Biotechnology from Gauhati University. His current work mainly focuses on the molecular epidemiological study on the entire spectra of Hepatitis virus infection prevailing in the region, which includes genotyping of the virus up to subtype level and also their phylogenetic relationship.

4. Jasmine Sultana



Jesmin Sultana has completed her B. Pharm. from Girijananda Choudhury Institute of Pharmaceutical Sciences, Azara, Guwahati (2014) and M. Pharm. (Pharmacology) from Roland Institute of Pharmaceutical Sciences, Brahmapur, Odisha (2016). Currently she is working on anticancer effect of certain plant extracts on liver cancer.