OFFICE OF THE PRINCIPAL INVESTIGATOR : : MULTIDISCIPLINARY RESEARCH UNIT
ASSAM MEDICAL COLLEGE & HOSPITAL, DIBRUGARH, ASSAM
(Ph: 0373-2303210)

No. 2015/AMC/MRU/.36 **Date:** 30/05/2015

To,
Dr. Ajit Mukherjee,
Scientist F, ICMR,
Ansari Nagar, New Delhi-110029.

Sub: Note from the Principal Investigator, MRU, Assam Medical College, Dibrugarh.

Sir,
Right from its establishment and functioning, the MRU at Assam Medical College, Dibrugarh has provided the much needed platform to the faculty members, post graduate students and other researchers from Assam Medical College as well as neighboring institutes, to carry out various research and project related work. The results obtained so far have at least fulfilled some of the expectations pertaining to bio-medical research and public health in this region. The Annual Progress Report (2012-13 & 2013-14) covers some of such works and results.

This year also we have tried to carry on various important research activities, either indigenously or with financial aids from various authorities, to continue the service towards society, especially in the field of Medical research and I am happy to present this Annual Progress Report (2014-15) giving an account of those works.

I would also like to mention that there has been a slight problem with the disbursement of funds lately which has already been communicated to you earlier. It would help us immensely if the matter can be sorted out at the earliest.

Looking forward to your on-going help and cooperation in the future as well.

Regards

Dr. A. K. Adhikari
Principal Investigator
Multidisciplinary Research Unit,
& Principal-cum-chief Superintendent,
AMCH.

Principal Investigator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

ANNUAL PROGRESS REPORT OF THE ONGOING MULTIDISCIPLINARY RESEARCH UNIT (MRU) OF ICMR AT ASSAM MEDICAL COLLEGE (AMC), DIBRUGARH

(A) Annual progress reports for the years: 2015 -16 on the following aspects: (From page no. 2 to page no. 28)

Physical: (From page no. 2 to page no. 4)

(i) Number of rooms with dimensions and individual rooms and nature of laboratories set (such as Biochemistry, Microbiology, Pathology etc.)
(ii) Number and types of equipments installed
(iii) Number and categories of personnel in these laboratories

Financial: (From page no. 5 to page no. 9)

(i) Expenditure statement (salary, equipments, consumables and training etc.)
(ii) Unspent balance after each financial year
(iii) Further budgetary requirement in 2016-17

Scientific: (From page no. 10 to page no. 13)

(i) Number of studies completed (list)
(ii) Number of studies initiated/ carried out (list)
(iii) Proposed areas of further research addressing important public health issues
(iv) Number of publications in peer reviewed journals till September 2016

(B) Utilization of the laboratory: (From page no. 14 to page no. 23)

How many studies have been planned and carried out with the support from AMC, Dibrugarh, ICMR and other agencies along with the following details:

(i) Principal Investigator and other members of the team
(ii) Subject/ area of each research study
(iii) Departments (interdisciplinary programmes) in each research study
(iv) Name the departments of AMC taking benefit from MRU (viz, MD/MS thesis, individual projects, Ph.D. scholars etc.)

A write-up of 2-3 pages on each research activity/ programme will be required.

(C) Leads for clinical/ public health from the studies undertaken as above (Page no. 24)

A. Annual progress reports for the years: 2015 -16:

Physical

1. Total Floor area of the Laboratory:

44 ft X 57.3 ft = 2521.2 sq.ft.

a. **Biochemistry section:** 13′ X12′

b. Pathology section:

i. Histopathology: 10.6′ X5.3′
ii. Cell counter area: 21′ X9′

c. Microbiology including Molecular Biology section:

i. Elisa room: 15′ X9′
ii. Pre-PCR area: 16′ X 12′
iii. PCR area: 12′ X10′
iv. Post PCR & Data processing: 12′ X7′
v. Tissue culture room:11′ X 9′
vi. Sample Processing area: 11′ X9′
vii. Media Preparation area: 11′ X9′
viii. Washing room: 17′ X9′

d. Computer section: 13′ X8′

e. Dark room: 10′ X5′

f. Common storage area for Deep freezers.

2. Number and types of equipments installed:

Sl. No.	Name of equipment	Number allotted	Number purchased
1	**Hematological analyzer**	1	1
2	**Autoanalyser**	1	1
3	**Tissue Processor**	1	0
4	**Cryostat**	1	1
5	**Microscope**	4	1
6	**Centrifuge**		
	a. Table top non refrigerated centrifuge	1	1
	b. Table top refrigerated centrifuge	2	2
	c. Microfuge (Refreigerated)	2	2
	d. Ultracentrifuge	1	1
7	**Refrigerator and deep freezer**		
	a. Ordinary Freeze	2	0
	b. Minicold Lab	1	1
	c. -20 C Freezer	2	2
	d. -70 C Freezer	2	2
8	**Molecular Biology Lab**		
	a. Thermal Cycler	1	1
	b. Microfuge	1	1
	c. Centrifuge	1	1
	d. Ordinary Refrigerator	1	0
	e.Biosafety cabinet	1	1
	f. -20 C freezer	1	1
	g. Water bath	2	2
	h. Gel doc	1	1
	i. Hybridisation oven	1	1
	j. Microwave oven	1	0
	k. Electrophoresis system	1	1
	l. Gel dryer	1	0
	m. Spectrophotometer	1	1
	n. Real-time PCR	1	1
	o. Ph meter	2	2
	p. Electronic weighing balance	1	1
	q. Vortex mixers	2	0
	r. Ice flaking machine	1	1
	s. Micropipettes	4 sets	4 sets
9	**Water purification system**	1	1
10	**Sterilization Room**		

	a. Autoclave	3	3
	b. Hot air oven	3	3
11	**ELISA Reader**		
	a. Reader	2	2
	b. Washer	2	2
	c. Micropipettes	3 sets	3 sets
12	**Histopathology section**		
	a. Microtome	1	1
	b. Electronic weighing balance	1	1
13	**Tissue culture**		
	a. Biosafety cabinet	1	1
	b. CO2 incubator	1	1
	c. Automatic pipettes		1 set
	d. Table top centrifuge	1	1
	e. Positive pressure filtration system	1	0
14	**Minor equipment**		
	a. magnetic stirrer	1	0
	b. Multichannel pipettes	4X4 sets	4X4 sets
	c. tissue homogenizer	2	1
	d. Ultra sonicator	1	1
	e. Incubator	1	1
	f. Shaker incubator	1	1
	g. Ice flaking machine	1	0
15	**Computer with printer and internet facility**	2	2
16	**Anoxomat anaerobic system** (as per approval)		1
17	**Generator** (as per approval)		1

3. <u>Number and categories of personnel in these laboratories</u>:

The following personnel are employed on a contractual basis for the entire laboratory as per the MRU establishment guidelines:

(i) Research Scientist II: Dr. Saurav Jyoti Patgiri, M.D. Microbiology.(from 05/07/13 to 01/05/16)

(ii) Research Scientist I: Dr. Himangshu Mazumdar, M.D. Biochemistry.(from 10/09/13 to 04/01/16)

(iii) Laboratory technicians:

a. Mr. Manas Pratim Borah (from 28/03/16 to till date)
b. Miss Lunamoni Phukan (from 11/08/16 to till date)
c. Ms. Soni Begum (from 04/07/13 to 31/08/14)
d. Mr. Sumit Gupta (from 07/01/13 to 31/08/14)
e. Mr. Utpal Bezbarua (from 28/10/14 to 16/03/15)
f. Mr. Dipak Kalita. (07/04/15 to 30/05/16)
g. Mr. Dipankar Borah (07/04/15 to 30/05/16)

In addition, other Departmental staff, Post-graduate students and Faculty members use the laboratory facilities for their respective work as and when necessary.

Financial

For Financial year 2015-2016:

Period: 01.01.2016 – 31.03.2016 (Last 3 months of Financial Year 2015-2016)

i) Statement of Account:

STATEMENT OF ACCOUNT

(Financial year from 1st April, 2014 to 30th Sep, 2014)

1. Sanction letter No. : No. 49/9/RMRC/10/NCD-II Date : 28-03-2012
2. Total Project Cost : Rs. 6,00,00,000.00 (Rupees six crore only)
3. Sanction /Revised Project cost (if applicable) : No.
4. Date of commencement of Project : 08-08-2012
5. Statement of Expenditure : From April to September 2014

1	2	3	4	5	6	7	8
S. No.	**Sanctioned / Head**	**Opening Balance as on (01-04-13)**	**Funds received/ generated**	**Funds allocated from existing balance** vide ICMR Letter No. 49/9/RMRC/10-RCH Dated: **30.06.2014 (Rs. 16,60,440.00)**	**Expenditure from April to September 2014 (6 months)**	**Balance as on 30.09.2013 (including committed amount for Equipments and power backup system)** Column (3 - 6)	**Remarks**
1.	Salaries	465877.00	-	910440.00	10,60,987.00	-5,95,110.00	-
2.	Permanent Equipments	1360263.00	-		72,141.00#	12,88,122.00	#Payment made for Anoxomat Cylinders and customs clearance. ***Committed Rs. 1,91,164.00** for Thermo Scientific Rotors (Ref. No. 49/9/RMRRCH Dated: 27.09.13)
3.	Consumable	-193180.00	-	400000.00	4,06,661.00	-5,99,841.00	-
4.	Contingencies	115446.00	-	250000.00	2,57,993.00	-1,42,547.00	-
5.	Training	26482.00	-	100000.00	99,407.00	-72,925.00	-
6.	Overhead Expenses	-	-	-	-	-	-
7.	Others (if any) *Bank Interest	1,00,000.00* 12,43,261.00		-	-	1,00,000.00 12,43,261.00	***Leftover money after purchase of Power back up system.** Purchase made as per ICMR Memo No. 49/9/RMRC/10-RCN Dated: 28-03-2013.
8.	**Total**	31,18,149.00	Nil	16,60,440.00	18,97,189.00**	12,20,960.00	**10,29,796.00** (*balance after deducting committed amount) **Excess expenditure is due to withdrawal of arrears vide ICMR Letter No. 49/9/RMRC/2010-RCH Dated: **50.09.2014.**

Signature of the Co-ordinator
Co-ordinator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Principal Investigator
Principal,
Assam Medical College,
Dibrugarh.

Signature of the Accounts Officer of the Institute
Accountant
Assam Medical College
Dibrugarh

UTILISATION CERTIFICATE

(Period April '14 to September '14)

Certified that out of **Rs. 31,18,149.00 (Rupees Thirty one lakhs eighteen thousand one hundred and forty-nine only)** as opening balance on 01-04-2014 in favour of Establishment of an ICMR Research Unit in Assam Medical College, Dibrugarh a sum of **Rs. 18,97,189.00 (Rupees Eighteen lakhs ninety-seven thousand one hundred and eighty nine only)** has been utilized under the Permanent equipments, Salary, Consumables, Contingency and Training heads for which it was sanctioned.

The Balance as on 31.09.2014 (including the committed amount for Rotors) is Rs. 12,20,960.00 (Rupees Twelve lakhs twenty thousand nine hundred and sixty only).

The effective balance after deducting the committed amount is Rs. 10,29,796.00 (Rupees Ten lakhs twenty nine thousand seven hundred and ninety six) only.

Signature of the Co-ordinator

Co-ordinator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Accounts Officer of the Institute

Assam Medical College
DIBRUGARH

Signature of the Principal Investigator

Principal Investigator
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Head of the Institute

Principal,
Assam Medical College
Dibrugarh

1st half Yearly report: Period: 01.04.2016 – 30.09.2016

i) Statement of Account:

STATEMENT OF ACCOUNT

(Financial year from 1st Oct, 2014 to 31st March, 2015)

1. Sanction letter No. : No. 49/9/RMRC/10/NCD-II Date : 28-03-2012
2. Total Project Cost : Rs. 6,00,00,000.00 (Rupees six crore only)
3. Sanction /Revised Project cost (if applicable) : No.
4. Date of commencement of Project : 08-08-2012
5. Statement of Expenditure : From October 2014 to March 2015

1	2	3	4	5	6	7	8
S. No.	Sanctioned / Head	Opening Balance as on (01-10-14)	Funds received/ generated	Expenditure from October 2014 to March 2015 (6 months)	Balance as on 31.03.15 Column (3+4 - 5)	Pending payments (Committed amount due to unavailability of funds)	Remarks
1.	Salaries	-5,95,110.00	Nil	936443.00	-1531553.00		-
2.	Permanent Equipments	12,88,122.00	Nil	191164.00	1096958.00		**Payment of Rs. 1,91,164.00** for Thermo Scientific Rotors (Ref. No. 49/9/RMRRCH Dated: 27.09.13)
3.	Consumable	-5,99,841.00	Nil	165578.00	-765419.00	215023.00	-
4.	Contingencies	-1,42,547.00	Nil	31326.00	-173873.00	213005.00	-
5.	Training	-72,925.00	Nil	78962.00	-151887.00		-
6.	Overhead Expenses	-	Nil	-			-
7.	Others (if any) Bank Interest **Bank Interest	*1,00,000.00 12,43,261.00	 1,83,019.00	-	1,00,000.00 12,43,261.00 1,83,019.00		***Leftover money after purchase of Power back up system.** Purchase made as per ICMR Memo No. 49/9/RMRC/10-RCN Dated: 28-03-2013. **Bank Interest for the period 1.04.14 to 31.03.2015 (1 year)
8.	Total	12,20,960.00	1,83,019.00	1403473.00	506.00	4,28,028.00	**Rs. 4,27,522.00** Pending payment due to non-disbursement of any funds for the period of Oct'14 to Mar'15.

Signature of the Co-ordinator
Co-ordinator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Principal Investigator
Principal Investigator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Accounts Officer of the Institute
Finance & Accounts Officer (F.A.O.)
Assam Medical College
Dibrugarh

UTILISATION CERTIFICATE

(Period Oct'14 to Mar'15)

Certified that out of **Rs. 12,20,960.00 (Rupees Twelve lakhs twenty thousand nine hundred and sixty only)** as opening balance on 01-10-2014 & **Rs. 1,83,019 (Rupees One Lakh eighty three thousand and nineteen only)** of Bank Interest generated in favour of Establishment of an ICMR Research Unit in Assam Medical College, Dibrugarh a sum of **Rs. 14,03,473.00 (Rupees Fourteen lakhs Three thousand Four hundred and Seventy Three only)** has been utilized under the Salary, Permanent Equipments, Consumables, Contingency and Training heads for which it was sanctioned.

The Balance as on **31.03.15** (excluding committed amount under the Consumables and Contingency head) is **Rs. 506.00** (Rupees Five hundred and six only).

Total bills amounting to Rs. Rs. 4,27,522.00 (Rupees Four Lakhs Twenty Seven thousand Five hundred and Twenty two only) is still awaiting payment due to non-disbursement of any funds for the period of Oct'14 to Mar'15.

Signature of the Co-ordinator

Co-ordinator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Accounts Officer of the Institute

Finance & Accounts Officer (F.A.O.)
Assam Medical College
Dibrugarh

Signature of the Principal Investigator

Principal Investigator,
Multi-Disciplinary Research Laboratory,
Assam Medical College & Hospital

Signature of the Head of the Institute

Principal
Assam Medical College
Dibrugarh

Budgetary requirements for 2015-2016:

Sl. No.	Heads		Scale/ allotted fund	Yearly expenses
1	Salary (as per revised scale)	Scientist II	Rs. 60218 / month (including HRA)	Rs. 722616.00
		Scientist I	Rs. 56963/ month ((including HRA))	Rs. 683556.00
		Lab Technician 1	Rs. 23122/ month	Rs. 277464.00
		Lab Technician 2	Rs. 16560/month	Rs. 198720.00
2	Contingency		Rs. 250000.00 / 6 months	Rs. 500000.00
3	Training		Rs. 100000.00 / 6 months	Rs. 200000.00
4	Consumables		Rs. 400000.00 / 6 months	Rs. 800000.00
Total for 1 financial year 2015-16: **Rupees Thirty three lakhs Eighty two thousand Three hundred and Fifty six only.**				**Rs. 33,82,356.00**

Scientific

(i) **Number of studies initiated/ carried out (list):**

No. of studies completed : 12

S/No.	Project / Thesis	Title
1	Project (Intramural)	Assessment of oxidative stress correlating the levels of antioxidant enzymes and non-dietary antioxidants with extent of lipid peroxidation in drug naïve Schizophrenia patients in Assam.
2	Project (Intramural)	Sero-surveillance of Taenia solium IgG antibodies in Acute Encephalitis Syndrome cases.
3	Post graduate thesis	Occurrence of Respiratory Syncytial virus, Influenza A and B virus, Parainfluenza 1, 2, 3 virus and Human Metapneumovirus in Acute Respiratory Tract Infection in paediatric patients – A hospital based study.
4	Post graduate thesis	Spectrum of bacterial pathogens causing Community Acquired Pneumonia in children under 5 years of age.
5	Post graduate thesis	Evaluation of the virulence factors of Candida albicans isolated from HIV positive patients.
6	Post graduate thesis	Serotyping of Dengue virus circulating in Assam.
7	Post graduate thesis	Iron regulatory protein expression in tuberculosis patients.
8	Post graduate thesis	Study of polymorphism of xeroderma pigmentosum complementation group C (XPC), XPD in chronic liver disease and healthy individuals.
9	Post graduate thesis	A clinical and serological study of childhood neurocysticercosis with suggestive lesion on CT scan brain.
10	Post graduate thesis	hs-CRP and serum C3 level as a marker of clinical severity and outcome in uncomplicated and complicated plasmodium falciparum malaria.
11	Post graduate thesis	A study of correlation of serum vitamin d3 level with disease activity of systemic lupus erythematosus.
12	Project (Extramural) - ICMR	Blood zinc levels in children with severe Pneumonia and effects of zinc supplementation.

No. of studies going on : 8

S/No.	Project/ Thesis	Title
1	Post graduate thesis	Association of Helicobacter pylori virulence factors with upper gastrointestinal and extra-intestinal diseases in adults.
2	Ph. D. thesis	Isolation and characterization of Helicobacter pylori from gastric biopsy specimen.
3	Project (Extramural) - ICMR	A study of comparative evaluation of conventional and molecular methods for detection of childhood bacterial pneumonia – A hospital based study
4	Project (Extramural) - ICMR	Characterization of virulence markers in Shigella species and its correlation with disease manifestation in patients with diarrhea and dysentery
5	Project (Extramural) - DBT	Associations of DNA repair enzyme and frequency of p53 mutation in chronic liver disease patients with aflatoxin exposure from Assam.
6	Post graduate thesis	Serum zinc and magnesium levels in children with febrile seizure; a hospital based study.
7	Post graduate thesis	Polymorphisms in the NRAMP1 gene in pulmonary tuberculosis patients.
8	Project (Extramural) - ICMR	Association of inflammatory biomarkers in newly diagnosed type-2 diabetic with atherosclerotic changes.

No. of studies initiated : nil

ii) **Proposed areas of further research addressing important public health issues:**

The following areas will be focused in future to carry out research work addressing important public health issues.

a. Malignancy
b. Hepatitis B infection in cirrhosis of Liver
c. Hepatitis B infection in Rheumatoid arthritis patients on immunosuppressive therapy.

A no. of projects have been been approved under the ICMR, New Delhi. Some Post graduate thesis has also been approved. Proper research work will be started once the sanction process is over and funds are delivered.

List of approved projects:

Sl No.	Topic	Project/ Thesis	Name of PI/ Guide
1	Germline mutation spectra of BRCA 1 and BRCA 2 gene in Multiethnic breast cancer patients from NE Region based on Sequencing.	Project (Extramural) ICMR	Dr. Gayatri Gogoi, Assistant Professor, Department of Pathology, Assam Medical College & Hospital
2	Evaluation of immunohistochemistry in diagnosis and subtyping of Non Hodgkins lymphoma as compared to histopathologic examination: A hospital based study.	Project (Extramural) ICMR	Dr. Mondita Borgohain Professor, Department of Pathology, Assam Medical College & Hospital
3	Occult Hepatitis B Virus Infection in HBsAg negative patients with cirrhosis of Liver	Post graduate thesis	Dr. A. K. Das Professor, Department of Medicine, Assam Medical College & Hospital
4	Occult Hepatitis B in patients with Rheumatoid Arthritis undergoing immunosuppressive therapy.	Post graduate thesis	Dr. A. K. Das Professor, Department of Medicine, Assam Medical College & Hospital

iii) **Number of publications in peer reviewed journals till September, 2016:**

Published: 5

I. Himangshu Mazumdar, Kamala Deka, Saurav Jyoti Patgiri, Satya Kr. Dutta, Atindra Kr. Adhikari, Lahari Saikia, Md. Ezaz Hussain. **Assessment of lipid peroxidation and antioxidant profile in drug naïve schizophrenia patients in Assam. Indian Journal of Medical Biochemistry. Vol 18, No. 2, 2014; P7-14**

II. Saurav Jyoti Patgiri, Himangshu Mazumdar, Lahari Saikia. **Seroprevalence of cysticercus antibodies in japanese encephalitis patients in upper assam, india: a hospital based study. Journal of Clinical and Diagnostic Research [serial online] 2016 May [cited: 2016 Nov 8]; 10:DC21-DC23.**

III. Anisha Sarma, Bibhuti Bhusan Hazarika, Saurav Jyoti Patgiri, Soni Begum, Md. Ezaz Hussain. Isolation of Helicobacter pylori from gastric biopsy specimens and evaluation of common contaminants associated with H. pylori cultures. Int J Med Res Prof.2016; 2(2); 161-64.

IV. Anusmita Das, Saurav J Patgiri, Lahari Saikia, Pritikar Dowerah Reema Nath. **Bacterial Pathogens Associated with Community-acquired Pneumonia in Children Aged Below Five Years.** INDIAN PEDIATRICS, VOLUME 53, MARCH 15, 2016;P 225-27

V. Partha Pratim Das, Saurav Jyoti Patgiri, Lahari Saikia, Debosmita Paul. **Recent Outbreaks of Diphtheria in Dibrugarh District, Assam, India**. J Clin Diagn Res. 2016 Jul;10(7):DR01-3. doi: 10.7860/JCDR/2016/20212.8144. Epub 2016 Jul 1.

Accepted for publication: 1

i. Title: Estimation of biofilm, proteinase and phospholipase production of the candida species isolated from the oropharyngeal samples in the HIV infected patients.
Authors: Dr. Vicky Lahkar, Dr. Lahari Saikia, Dr. Saurav Jyoti Patgiri, Dr. Reema Nath, Dr. Partha P. Das.
Submitted to: Indian Journal of Medical Research

B. Utilization of the laboratory:

Ongoing Projects:

A total of 7 (Seven) studies are being carried out presently in the Multi-disciplinary Research Unit (MRU) with the support from AMC, Dibrugarh, ICMR and other agencies.

Summary of Ongoing projects:

S/ No.	Topic	PI/ Guide	Date/Month of initiation	Project/ Thesis	Summary
1	Association of Helicobacter pylori virulence factors with upper gastrointestinal and extra-intestinal diseases in adults.	Dr. L. Saikia Prof. & HOD Dept. of Microbiology, AMCH	June 2014	PG Thesis	Till date 300 samples have been collected. All of them have been processed for culture and Rapid Urease test. collected Block preparation done, 300 slides have been prepared. 300 samples have been processed for DNA extraction. PCR done in 300 samples. Rapid Urease test positive: 166 UreA gene positive: 166 Cag A gene positive: 88 Vac A gene positive: 38 Histopathology slide positive : 164
2	Isolation and characterization of Helicobacter pylori from gastric biopsy specimen.	Dr. L. Saikia Prof. & HOD Dept. of Microbiology, AMCH	June 2014	Ph. D. Thesis	Till date, about 350 gastric biopsy collected, out of which about 150 have been processed DNA extraction and PCR of UreA gene. Those samples which are positive for UreA gene will be processed for culture. Till date, out of 150, 45 samples are positive for UreA gene PCR.
3	Association of DNA repair enzyme and frequency of p53 mutation in chronic liver disease patients with aflatoxin exposure from Assam.	Dr. Anup Kr. Das, Professor, Dept. of Medicine AMCH	October 2014	Project (Extramural) - DBT	Till date 200 samples collected from Patients of HBV positive chronic liver disease. 150 samples tested for XPD,XPC and XRCC1 polymorphism. Out of which 20 samples positive for XPD polymorphism , 35 samples positive for XPC polymorphism and 10 samples positive for XRCC1 polymorphism.
4	Characterization of virulence markers in Shigella species and its correlation with disease manifestation in patients with diarrhea and dysentery	Dr. Gargi Choudhury Assistant Professor of Microbiology, AMCH	January 2016	Project (Extramural) –ICMR	Till date 229 stool/rectal swab samples have been collected and processed for culture. Out of which 20 number of Shigella species isolated. DNA extraction done in 19 isolates. PCR for *SHET 1A, SHET 1B, ipah* and *ial* gene performed. We found *ipah* and *ial* gene positive in 12 isolates till date.

5	A study of comparative evaluation of conventional and molecular methods for detection of childhood bacterial pneumonia – A hospital based study	Dr. Aparna Sonowal Demonstrator of Microbiology, AMCH	March 2016	Project (Extramural) –ICMR	Till date 108 clinical samples collected and processed for culture. DNA extraction done from 61 isolates.
6	Association of inflammatory biomarkers in newly diagnosed type-2 diabetic with atherosclerotic changes.	Dr. Keshab Bora Demonstrator of Biochemistry, AMCH	March, 2016	Project (Extramural) –ICMR	Till now 10 samples have been collected and stored. Total number of cases required for the study is 80.
7	Serum zinc and magnesium levels in children with febrile seizure; a hospital based study.	Dr. Aditi Baruah Associate Professor, Deptt. of Paediatrics, AMCH	June 2016	PG Thesis	Total number of samples collected: Cases 37 and control 38. Total number samples processed: Cases 36 and control 38.
8	Polymorphisms in the NRAMP1 gene in pulmonary tuberculosis patients.	Dr. Debosmita Paul	June 2016	PG Thesis	22 numbers of samples from Tuberculosis patients, 13 numbers from Latent TB cases and 20 samples from household contacts have been collected. DNA extraction done in 28 samples. PCR done in 16 samples. RFLP done in 4 samples.

Details of Ongoing Projects:

Project no. 1:

Title: Association of Helicobacter pylori virulence factors with upper gastrointestinal and extra-intestinal diseases in adults.

Name of Guide: Dr. Lahari Saikia, Professor & HOD, Dept. of Microbiology, AMCH.
Name of Co-guide 1: Dr. Ratna Kanta Bhuyan, Prof. & HOD, Dept. of Surgery, AMCH.
Name of Co-guide 2: Dr. Mondita Borgohain, Professor, Dept. of Pathology, AMCH.
Name of Co-guide 3: Dr. B. N. Mahanta, Asso. Professor, Dept. of Medicine, AMCH.
Name of the student: Dr. Bibhuti Bhusan Hazarika, PGT, Dept. of Microbiology, AMCH.

Departments involved: Dept. of Microbiology & MRU, AMCH.

Objectives:
1. To assess Helicobacter pylori virulence factors, cagA and vacA, in upper gastrointestinal diseases.

2. To assess the association of Helicobacter pylori infection with glycosylated hemoglobin (HbA1C).

Study subject: Adult patients who will undergo upper gastrointestinal endoscopy because of dyspeptic complaints at Assam Medical College and Hospital will be included in the study.

Study period: A period of 1 year has been proposed for sample collection, processing, analysis and interpretation of results.

Study design: The proposed study will be a Prospective cross sectional study.

Sample size: A total of 300 consecutive cases will be included in the study.

Progress till date: Till date 300 samples have been collected. All of them have been processed for culture and Rapid Urease test. 300 histopathology slides have been prepared. 300 samples have been processed for DNA extraction. PCR done in 300 samples.

Rapid Urease test positive: 166
UreA gene positive: 166
Cag A gene positive: 88
Vac A gene positive: 38
Histopathology slide positive: 164

Project no. 2:

Title: Isolation and characterization of Helicobacter pylori from gastric biopsy specimen.

Name of Guide: Dr. Lahari Saikia, Professor & HOD, Dept. of Microbiology, AMCH.
Name of the candidate: Anisha Sarma, M.Sc. Microbiology.

Departments involved: Multi-disciplinary Research Unit (MRU), AMCH.

Objectives:
1. Isolation and phenotypic and genotypic characterization of Helicobacter pylori from gastric biopsy specimen.

Study subject: Patients from all age group attending Assam Medical College & Hospital and undergoing upper gastrointestinal endoscopy for suspected gastritis, gastric ulcer diseases and gastric carcinoma will be included in the study. Among them endoscopy proven diseases will be included as cases and the rest will be included as controls.

Study period: A time period of 3 years have been proposed for completion of the study including sample collection, processing and result analysis.

Study design: The proposed study will be a Prospective case control study.

Sample size: All consecutive non repeat cases attending Assam Medical College & Hospital during the study period will be included.

Progress till date: Till date, about 350 gastric biopsy collected, out of which about 150 have been processed DNA extraction and PCR of UreA gene. Those samples which are positive for UreA gene will be processed for culture. Till date, out of 150, 45 samples are positive for UreA gene PCR.

Project No. 3:

Title: Association of DNA repair enzyme and frequency of p53 mutation in chronic liver disease patients with aflatoxin exposure from Assam.

Name of PI (Parent Institute): Dr. Anup Kr. Das, Professor, Dept. of Medicine, AMCH.
Name of PI (Collaborating Institute): Dr. Premanish Kar, Director Professor, Dept. of Medicine, MAMC.
Co PI: Dr. Subhash Medhi, Assist. Professor, Dept. of Biological Science, Gauhati University.
Co PI: Md. Ghaznavi Idris, Assist. Professor, Dept. of Biological Science, Gauhati University.

Departments involved: Dept. of Medicine, AMCH, Dept. of Medicine, MAMC, Dept. of Biological Science, GU &MRU, AMCH.

Hypothesis: There exists a selection pressure between environmental factors determined by the food habits, life style during evolution that might determine the genetic factors for liver disease in Assam and North east in particular

Key questions: To determine the presence of aflatoxins in food stuff, urine, and blood samples that will be collected from various sources and periods and to find the relation between the aflatoxins and its effect on possible risk factor for chronic liver disease and liver cancer in Assam.

Study subject: Patients with hepatocellular carcinoma (HCC) and chronic liver disease without HCC admitted in Medicine wards of Assam Medical College & Hospital during the study period will be enrolled for the study.

Study period: A time period of 3 years have been proposed for completion of the study including sample collection, processing and result analysis.

Study design: The proposed study will be a Prospective case control study.

Sample size: A total of 100 HCC patients and 200 patients with chronic liver disease without HCC will be enrolled in the study. An equal number of age and sex matched healthy individuals will also be enrolled in the study.

Progress till date: Till date 200 samples collected from Patients of HBV positive chronic liver disease. 150 samples tested for XPD, XPC and XRCC1 polymorphism. Out of which 20 samples positive for XPD polymorphism, 35 samples positive for XPC polymorphism and 10 samples positive for XRCC1 polymorphism.

Project No. 4:

Title: Characterization of virulence markers in Shigella species and its correlation with disease manifestation in patients with diarrhea and dysentery

Name of PI (Parent Institute): Dr. Gargi Choudhury, Assistant Professor, Dept. of Microbiology, AMCH.
Co PI: Dr. Aparna Sonowal, Demonstrator, Dept. of Microbiology, AMCH..
Co PI: Dr. Mithu Medhi, Assistant Professor, Dept. of Microbiology, AMCH.
.
Departments involved: Dept. of Microbiology & MRU, AMCH.

Hypothesis: Shigellosis is known to be a major cause of acute diarrhoea/dysentery in our part of the country. Rapid emergence of antibiotic resistance warrants continuous monitoring of sensitivity pattern of *Shigella* isolates. The pathogenic potential of the ShET-1B subunit was observed in relation to dehydration and ShET-2 related to the intestinal injury evidenced by the presence of bloody diarrhea in some studies. The major virulence genes of *Shigella* species derived from bacillary dysentery/diarrhoea examined for PCR will help to investigate the relationship with symptoms of shigellosis.

Key questions: To perform the molecular characterization of virulence factors of Shigella species, to find out the antibiotic sensitivity pattern of Shigella spp and to evaluate the association between the presence or absence of virulence factors with antibiotic resistance patterns if any.

Study subject: All consecutive diarrhea/dysentery stool/rectal swab samples will be cultured and all Shigella isolates will be taken up for molecular characterization.

Study period: A time period of 3 years have been proposed for completion of the study including sample collection, processing and result analysis.

Study design: Cross-sectional study.

Sample size: Based on departmental data over the past few years, a total of approximately 1200 cases are expected to be included in the study over a period of 3 years. The isolation rate for Shigella being around 5% in the department, approximately 60 isolates should be obtained.

Progress till date: Till date 229 stool/rectal swab samples have been collected and processed for culture. Out of which 20 number of Shigella species isolated. DNA extraction done in 19 isolates. PCR for *SHET 1A*, *SHET 1B*, *ipah* and *ial* gene performed. We found *ipah* and *ial* gene positive in 12 isolates till date.

Project No. 5:

Title: A study of comparative evaluation of conventional and molecular methods for detection of childhood bacterial pneumonia – A hospital based study

Name of PI (Parent Institute): Dr. Aparna Sonowal, Demonstrator, Dept. of Microbiology, AMCH.
Co PI: Dr. Aditi Barua, Associate Professor, Dept. of Paediatrics, AMCH
Co PI: Dr. Mithu Medhi, Assistant Professor, Dept. of Microbiology, AMCH.
.
Departments involved: Dept. of Pediatrics, Dept. of Microbiology & MRU, AMCH.

Hypothesis: The establishment of microbiological diagnosis of childhood pneumonia using conventional methods is difficult. The advent of polymerase chain reaction (PCR) technology has provided new perspectives into the diagnostics of infectious diseases. Lower respiratory tract infections result in a high degree of morbidity and mortality, but a definitive microbiological certain organisms may be difficult or time consuming. Molecular techniques have the potential to improve diagnostic yield and decrease the time required for pathogen identification.

Key questions: To determine the spectrum of bacterial pathogens in children attending the Pediatric Outpatient Department and Pediatric Ward at Assam Medical College and Hospital, Dibrugarh with community acquired pneumonia. Also to compare conventional bacterial culture (throat swab and blood culture) with PCR analysis of Throat swabs in the diagnosis of bacterial pathogens responsible for childhood pneumonia.

Study subject: All consecutive cases of pneumonia (for duration of 2 years and 6 months) in children below 5 years age group will be taken for bacteriological investigations with the primary objective of understanding the etiology of pneumonia caused by bacterial pathogens. Target population is approximately 200 patients for the entire study period.

Study period: A time period of 3 years have been proposed for completion of the study including sample collection, processing and result analysis.

Study design: Hospital based Prospective study.

Sample size: Target population is approximately 200 patients for the entire study period.

Progress till date: Till date 108 clinical samples collected and processed for culture. DNA extraction done from 61 isolates.

Project No. 6:

Title: Association of inflammatory biomarkers in newly diagnosed type-2 diabetic with atherosclerotic changes.

Name of PI (Parent Institute): Dr. Keshab Bora, Demonstrator, Dept. of Biochemistry, AMCH.
Co PI: Dr. Sanjib Kakati, Professor, Dept. of Medicine, AMCH
Co PI: Dr. Subhalakshmi Das, Associate Professor, Dept. of Medicine, AMCH.
Co PI: Dr. Lipee Nath Dhanowar, Demonstrator, Dept. of Radiology, AMCH.

Departments involved: Dept. of Medicine, Dept. of Biochemistry, Dept. Of Radiology & MRU, AMCH.

Hypothesis: Inflammatory biomarkers (IL-6, IL-18, Fibrinogen, ApoB 100 and hsCRP develop atherosclerotic changes which are associated with increased cardiovascular morbidity and mortality in Type 2 Diabetics.

Key questions: To study Inflammatory biomarkers (IL-6, IL-18, Fibrinogen, ApoB 100 and hsCRP in newly diagnosed Type 2 Diabetics and to compare the serum values of these biomarkers with healthy individuals. To find out the correlation of these biomarkers with cardiovascular risk factors (ApoB-100 and fasting lipid profile). To observe the association of these bio markers with atherosclerotic changes.

Study subject: Newly diagnosed diabetes mellitus patients without cardiovascular sign and symptoms attending OP and IPD of AMCH. Equal number of age & sex matched healthy individuals.

Study period: Two years for collection of data, Six months for data analysis.

Study design: Case control Hospital based study.

Sample size: A sample size of Forty (40) of age group 25-50 years of both sexes will be randomly selected. Equal number of age & sex matched healthy individuals.

Progress till date: Till date 10 clinical samples collected.

Project No. 7:

Title: Serum zinc and magnesium levels in children with febrile seizure; a hospital based study.

Name of Guide: Dr. Aditi Baruah, Associate Professor, Dept. of Paediatrics, AMCH.
Name of Co-guide 1: Dr. Monigopa Das, Associate Prof. Dept. of Biochemistry, AMCH.

Name of the student: Dr. Pamela Debroy, PGT, Dept. of Paediatrics, AMCH.

Departments involved: Dept. of Paediatrics & MRU, AMCH.

Objectives:
1. To assess the serum Zinc and Magnesium level in children with febrile seizure in comparison to febrile children without seizure.

Study subject: All children in the age group 6 months to 60 months admitted in the Dept. of Paediatrics, AMCH with fever with and without convulsion during the study period.

Study period: A period of 1 year (June 2016- May 2017)

Study design: The Hospital based comparative cross sectional study.

Sample size: All children coming with febrile seizure during the study period. Equal numbers of age and sex matched children with cases with fever without seizure.

Progress till date: Till date a total number of samples collected: Cases 37 and control 38.
Total number samples processed:
Cases 36 and control 38.

Project No. 8:

Title: Polymorphisms in the NRAMP1 gene in pulmonary tuberculosis patients.

Name of Guide: Dr. Lahari Saikia, Professor, Dept. of Microbiology, AMCH.

Name of the student: Dr. Debosmita Paul, PGT, Dept. of Microbiology, AMCH.

Departments involved: Dept. of Microbiology & MRU, AMCH.

Objectives:

1. To evaluate the distribution of NRAMP1 gene polymorphisms among pulmonary tuberculosis patients in Assam Medical College & Hospital

Study subject: 20 cases of smear positive /culture positive pulmonary tuberculosis, 20 Latent TB cases attending Assam Medical College & Hospital and 20 ethnically matched healthy controls in age group 15-45 years.

Study period: A period of 1 year (June 2016- May 2017)

Study design: Case control study.

Sample size: 20 cases of smear positive /culture positive pulmonary tuberculosis, 20 Latent TB cases and 20 ethnically matched healthy controls in age group 15-45 years.

Progress till date: 22 numbers of samples from Tuberculosis patients, 13 numbers from Latent TB cases and 20 samples from household contacts have been collected. DNA extraction done in 28 samples. PCR done in 16 samples. RFLP done in 4 samples.

Projects initiated: Nil

Utilization of laboratory equipments:

The laboratory equipments are used by MRU staff members as well as faculty members and post graduate students of various departments for different projects and post graduate thesis work.

Name of the equipment		Departments taking benefit	Purpose
Deep freezers & Refrigerators	-80 ºC	• MRU • Dept. of Microbiology • Dept. of Pediatrics • Dept. of Anatomy	Sample storage for project and post graduate thesis.

		• Dept. of Psychiatry	
	-70 ºC	• MRU • Dept. of Pediatrics • Dept. of Medicine	Sample storage for project purpose.
	-20 ºC	• MRU • Dept. of Microbiology • Dept. of Anatomy	Sample storage for post graduate thesis.
	2 – 8 ºC	• MRU • Dept. of Microbiology • Dept. of Medicine	Storage of reagents for project and post graduate thesis.
Incubator		• MRU • Dept. of Pharmacology • Dept. of Microbiology	Post graduate thesis work and projects.
Centrifuge/ Micro-centrifuge (Refrigerated/Non refrigerated)		• MRU • Dept. of Microbiology • Dept. of Medicine • Dept. of Anatomy • Dept. of Pharmacology • Dept. of Pediatrics	Post graduate thesis work and projects.
Hot Air oven		• MRU • Dept. of Microbiology • SSUHS	Post graduate thesis and Ph. D thesis work
Water bath		• MRU • Dept. of Medicine • Dept. of Microbiology	Post graduate thesis/ PhD thesis work and projects.
Ice flake maker		• MRU • Dept. of Pediatrics • Dept. of Microbiology • Dept. of Medicine	Post graduate thesis and project work.
pH Meter		• MRU • Dept. of Pharmacology • Dept. of Microbiology	Academic and post graduate thesis work.
Microscope		• MRU • Dept. of Microbiology • Dept. of Pathology	Academic, project/post graduate thesis work.
Microtome		• MRU • Dept. of Pathology • Dept. of Microbiology	Academic and post graduate thesis work.
Anoxomat anaerobic system		• MRU • Dept. of Microbiology	Post graduate thesis/ PhD

	• SSUHS	thesis and project work.
5 part Hematological Analyzer	• MRU • Dept. of TB & Chest Disease • Dept. of Pediatrics • Dept. of Microbiology	Post graduate thesis and project work.
Semi-automated Biochemical Analyzer	• MRU • Dept. of Pediatrics • Dept. of Microbiology	Post graduate thesis and project work.
Automated Biochemical Analyzer	• MRU • Dept. of TB & Chest Disease • Dept. of Pediatrics	Post graduate thesis and project work.
Spectrophotometer	• MRU • Dept. of Psychiatry • Dept. of Microbiology • Dept. of Medicine	Post graduate thesis and project work.
Electrophoresis system	• MRU • Dept. of Microbiology • Dept. of TB & Chest Disease	Post graduate thesis and project work
Conventional PCR	• MRU • Dept. of Microbiology	Post graduate thesis and project work
Real Time PCR	• MRU • Dept. of Microbiology	For CDC AES project

C) <u>Leads for clinical/ public health from the studies undertaken as above</u>:

Sl No.	Published Article	Summary
1	**Assessment of oxidative stress correlating the levels of antioxidant enzymes and non-dietary antioxidants with extent of lipid peroxidation in drug naïve schizophrenia patients in Assam.**	Indication of oxidative stress was evidenced in this study in cases with schizophrenia especially those with negative symptoms. Mean serum Malondialdehyde (MDA) level was found to be higher in cases (especially with negative symptoms) than in controls. Whereas mean serum Superoxide dismutase (SOD) activity, serum bilirubin and uric acid concentrations were found to be lower. MDA showed weak inverse correlation with SOD activity, but a very weak positive correlation with bilirubin and uric acid levels.
2	**Seroprevalence of cysticercus antibodies in Japanese Encephalitis patients in upper Assam, India: a hospital based study.**	The study proves that the association of Cysticercosis and JE holds true in this region. The association of Cysticercosis with JE was found to be statistically significant (14.6%, $p = 0.0019$) in the cases with reference to the controls (3.7%). Moreover, the co-infections were found to be more common in case of adults (19.32%, $p = 0.0360$); with males having a greater odds (5.25, $p = 0.0008$) of harbouring the parasite as compared to females.
3	**Isolation of *Helicobacter Pylori* from Gastric Biopsy Specimens and Evaluation of Common Contaminants Associated with *H. Pylori* Cultures.**	H. pylori were isolated by culture from nine specimens out of 100. Rapid urease tested positive for 75 specimens. Contamination of the culture media rendered low rate of isolation of H. pylori as compared to detection by rapid urease test, leading to false negative results and affecting the sensitivity and specificity of the culture techniques.
4	**Bacterial Pathogens Associated with Community-acquired Pneumonia in Children Aged Below Five Years.**	Bacterial pathogens were detected in 64.4% of cases. *Streptococcus pneumoniae* and *Hemophilus influenzae* were most frequently detected. The performance of PCR analysis and culture were identical for the typical bacterial pathogens; atypical pathogens were detected by PCR analysis only.
5	**Recent Outbreaks of Diphtheria in Dibrugarh District, Assam, India.**	We investigated three outbreaks of diphtheria in Dibrugarh district, Assam in two consecutive years -2015, 2016. Out of the 10 confirmed cases, 2 and 7 were in the first two outbreaks while only one in the third outbreak respectively. All the cases were of age > 10 years, unimmunized or partially immunized. The overall mortality was 20%. PCR results revealed all the culture positive isolates to be *tox* gene and rpoB gene positive. Diphtheria is a resurgent problem in our region with a significant age shift towards adult.

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