Central Research Lab

Era's Lucknow Medical College & Hospital,

Lucknow-226003

BRIEF SUMMARY OF LAB

The Central Research Lab (CRL) was established on March 27th, 2009, equipped with advances facilities. Functioning as a cornerstone for academic excellence, the CRL plays a pivotal role in supporting the core research projects and thesis work of MBBS, M.D., and Ph.D. students. Beyond research, it actively engages in the undergraduate teaching of MBBS students and paramedical staff. This is achieved through a multifaceted approach, including traditional lectures, insightful seminars, dynamic poster presentations, hands-on demonstrations, interactive tutorials, and specialized postgraduate training initiatives. Additionally, the CRL provides practical training in Molecular Diagnostics, equipping students with the skills necessary for advanced diagnostic techniques at the molecular level.

FACILITIES AVAILABLE IN LAB

The Central Research Lab (CRL) at ELMC&H is at the forefront of advanced biomedical research, boasting state-of-the-art facilities, including the Molecular Diagnostics Unit and Molecular Biology Lab. It is engaged in genetic-level research, exploring molecular mechanisms and genetic polymorphism. Focused on Human Genetics, Genome Analysis, and Gene Expression, the studies aim to discover genetic biomarkers for early disease diagnosis, including diabetes, glaucoma, hypertension, and more. The expertise extends to genetic polymorphism studies, metabolic disorders, ophthalmic disorders, cancer research, and molecular rheumatology. Notably, mutation studies in genes like c-kit in leukemia and genetic polymorphism studies for risk prediction in North Indians are also conducted. The experimental approach encompasses genetic screening, molecular diagnosis, and techniques like Gel Electrophoresis, PCR-probes, and RT-PCR analyses. With ongoing projects in gene polymorphism, gene expression, and micro-RNA analysis, it contributes to reputable international journals. Looking ahead, the focus is on precision medicine for hematological disorders, diabetes, and dyslipidemia, leveraging bioinformatics and drug-related approaches for tailored therapeutics. The CRL also plays a crucial role in education, providing short-term research training and dissertation opportunities for students. Over eighty students

have received training so far through PCR and RT-PCR workshops for medical practitioners and research fellows. It also actively participates in research conferences and seminars, gathering recognition for the contributions to this field.

AVAILABLE INSTRUMENTS IN LAB

1. Real Time PCR(ABI step one Plus)
2. PCR Machines
3. Gel documentation system
4. Gel Electrophoresis
    a) Vertical Electrophoresis x 2
    b) Horizontal Electrophoresis x 2
5. Electronics Balance
6. Cooling Centrifuge x 2
7. Deep Freezer (-20^{0}C) x 2
8. Refrigerator x 2
9. Milli Q water purification system
10. Hot air oven x 2
11. Magnetic Stirrer
12. Water bath x 3
13. Metabolic Water bath Shaker
14. Microwave oven
15. Laminar air flow
16. Table centrifuge
17. Spinator
18. Autoclave
19. Rota-evaporator
20. Bio Safety Cabinet
21. Test Tube dryer
22. UV-Transilluminator
23. Vortex Shaker x 2
24. pH meter
25. Hybridization oven

26. Western blotting system
27. Pipettes x 20
28. Flourimeter
29. Nanodrop (Thermo 2000C model)

RUNNING PROJECT LIST

- Association of genetic polymorphism of eNOS AR,ACE I/D and GST1/M1 with the risk of prostate cancer
- Association of CHEK2, LIG4, XPD, XRCC4 and XRCC6 genes polymorphism of DNA repair pathway with risk of newly diagnosed chronic phase chronic myeloid leukemia in North Indian population.
- Association of apoptotic pathway genes polymorphism with newly diagnosed chronic phase-Chronic Myeloid Leukemia.
- Association of pro-thrombotic genes with Acute Coronary Syndrome through screening of single nucleotide polymorphisms.
- Association of Thrombospondin-2, APOC3, APOB and PCSK 9 genes polymorphism with coronary artery disease.
- Genetic Polymorphism in Renin-Angiotensin-Aldosterone Pathway Related Genes (ACE, AGT, AGTR1 and CYP11B2) and their Association with Chronic Kidney Disease: A Case-Control study.
- Association of insulin receptor (INSR) and insulin receptor substrate (IRS-1) and (IRS-2) genetic polymorphism with glucose intolerance in PCOS patients.

COMPLETED PROJECT LIST

- Role of circulating micro-RNA's as a biomarker for Type II Diabetes Mellitus.
- Helicobacter pylori infection, Micro-RNA (335 & 149) expression and presence of Cancer Stem Cell markers CD133+ CD44+ in Carcinoma Gall Bladder with or without Cholelithiasis; A Correlative study
- Correlation of AgNOR pleomorphism with HPV positivity in cervical carcinogenesis for extrapolating as first line screening investigation.
- Co-relative significance of inflammatory pathway gene polymorphisms - interleukin -1-RN, 1β (-511C/T and+3953C/T), 6(174A/G) and 10(-1082 A/G and -819C/T), with interleukin serum levels and intensity of angiogenesis in the progression of HPV positive cervical cancer.

- To study the anticancer activity of aqueous plant Extracts on Breast cancer cell lines and Expression of BRCA1, BRCA2, ATM, CHEK2 and TP53 genes
- Role of Oxidative stress and genetic polymorphisms in Indian patients with primary open angle glaucoma.
- Association of PPARG2, MTHFR, ACE I, FABP2 and FTO genes polymorphism in cases with type 2 diabetes mellitus in Northern India.
- Screening of c-Kit gene mutations in Human acute myeloid Leukemia cases in Northern India.
- Association of GRL, GSTP1, TCF7L2 and TLR4 genes polymorphism with type 2 diabetes mellitus and its secondary complications in North Indian population.
- Association of COL4A1, PON1, AT1R, CD14 and TNF-αGenes Polymorphisms with coronary artery disease

FUTURE PROJECT LIST

- Implication of Next Generation Sequencing analysis in chronic myeloid leukemia
- Multiomics based molecular profiling for the prediction of treatment free remission in chronic phase-chronic myeloid leukemia.
- Implication of DNA repairs genes on risk, prognosis and therapy outcome of serous ovarian cancer.