



**BHOPAL MEMORIAL HOSPITAL & RESEARCH CENTRE**  
**DEPARTMENT OF RESEARCH**  
**RAISEN BYPASS ROAD, BHOPAL – 462 038 (MP)**

## **INSTITUTE**

Bhopal Memorial Hospital & Research Centre (BMHRC) is a 350 Bed Super Specialty Medical Institute administered by a Trust appointed by Hon'ble Supreme Court of India, charged with the responsibility of providing specialized care to the MIC exposed survivors or gas victims. The hospital provides free comprehensive treatment to the gas victims with the support of eight community-based out-reach centers.



## **DEPARTMENT**



With a mission to carry out research on long-term effects of MIC in the surviving population of the tragedy and other medical conditions a well equipped Research Department was established in January 2004. The research and clinical faculty have been working in multi-faceted directions with cross disciplinary approach on varied aspects of medical biotechnology including origin and evolution of cancer, molecular regulation of apoptosis, cellular and humoral immune abnormalities and pathobiology of various disease states. The Department offers molecular diagnostics services using both Real Time PCR (RT-PCR) and Flow Cytometry (FACS) platforms, the first among its kind in the entire state of Madhya Pradesh and Chattisgarh. The Department has been identified as one of the centers of excellence under Department of Biotechnology, Government of India for molecular screening and genetic counseling of  $\beta$ -Thalassaemia, an inherited genetic disorder. The Department is also participating as a collaborating center with University of California (USA) in a molecular epidemiological study aimed to understand the outbreak, pathogenesis and prevalence of viral encephalitis in South East Asia. The Hospital provides short-term trainings (for duration of one and two weeks) in area of medical biotechnology to under graduate and post graduate students of life sciences of different Colleges and Universities. More than 300 students across states of the country have been benefited by these trainings till date.

## **List of exercises conducted in Wet-Lab sessions**

### **Immunobiology**

1. Immuno-phenotyping
2. Lymphocyte, Neutrophil, Macrophages and Dendritic Cell Isolation
3. Lymphocyte Culture
4. Lymphocyte Proliferation Assay
5. Immune-signaling & Signal-transduction assays in Lymphocytes
6. Analysis for Th1/Th2 paradigm
7. Immuno-cytochemistry & Immuno-histochemistry
8. Western Blot Analysis
9. ELISA & EIA
10. Immuno-affinity Chromatography

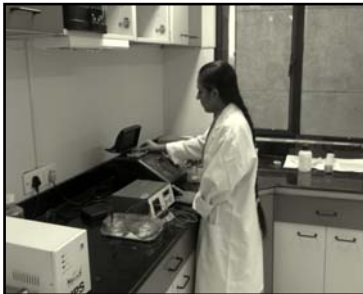
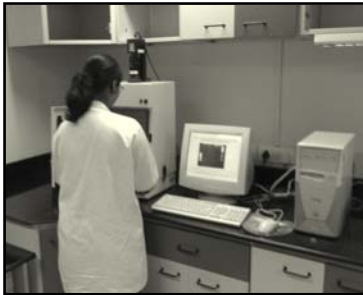


### **Cell Biology**

1. Apoptotic Assays by Flow Cytometry
2. DNA Cell Cycle & Ploidy Analysis by FACS
3. Flow Cytometry TUNEL Assay
4. Cytometric Bead Array for Apoptotic Cell Signaling Modulators
5. Expression Analysis
6. Animal Tissue Culture
7. Cloning
8. High Speed Centrifugation
9. Ultracentrifugation
10. Lyophilization

## Molecular Cytogenetics

1. Karyotyping
2. G-Banding
3. Fluorescence *In-situ* Hybridization
4. Spectral Karyotyping



## Molecular Biology

1. Genomic DNA Isolation & Quantification
2. Inter Simple Sequence Repeat PCR
3. Agarose Gel Electrophoresis
4. Poly-acrylamide Gel Electrophoresis
5. RNA Isolation & RT-PCR
6. Southern Hybridization
7. Elementary Sequencing
8. Apoptotic DNA Ladder Analysis

## Molecular Diagnostics

1. Real-Time monitoring for diagnosis of Mycobacterium tuberculosis, Hepatitis A virus, Hepatitis B virus, Hepatitis C virus, Human Immunodeficiency virus and BCR-ABL fusion proteins.
2. Leukemia/Lymphoma Diagnosis using Fluorescence Activated Cell Sorter.



## Miscellaneous

1. Routine Maintenance of Lab Instruments
2. Washing & Autoclave
3. Sterilization Protocols
4. Radio-Isotope handling and their disposal
5. Preparation of Stock & Working Reagents and storage
6. Vein-puncture and Routine Pathological Tests
7. Triple Distillation of Water



## List of Imported Equipments

CYTOMICS	GENOMICS	PROTEOMICS	MOLECULAR CYTOGENETICS	MISCELLANEOUS
FLOW CYTOMETRY	REAL TIME PCR	PROTEIN ELECTROPHORESIS SYSTEM	SPECTRAL KARYOTYPING SYSTEM	DEEP FREEZERS
ANIMAL TISSUE CULTURE FACILITY (LAMINAR AIR FLOW, CO <sub>2</sub> INCUBATORS, LIQUID NITROGEN CRYOPRESERVATION FACILITY)	PCR	GEL DOCUMENTATION UNIT	HYBRIDIZATION OVEN	DIGITAL BALANCE
ULTRACENTRIFUGE	HORIZONTAL & VERTICAL ELECTROPHORESIS SYSTEMS	DIGITAL SPECTROPHOTOMETER	WATER BATH	BIOLOGICAL GRADE DEIONIZATION WATER PURIFICATION SYSTEM
HIGH SPEED CENTRIFUGE	SEQUENCING GEL SYSTEM	CALIBRATED DENSITOMETER	MICROWAVE	RADIATION ISOTOPE LABELING FACILITY
INVERTED PHASE CONTRAST & FLUORESCENT MICROSCOPE	RADIATION DOSIMETER	SEMI DRY TRANSFER UNIT		DOUBLE DISTILLATION UNIT
INVERTED RESEARCH MICROSCOPE	GEL DRYER	ROCKING PLATFORM SHAKER		AUTOCLAVE
INCUBATOR SHAKER	SLOT BLOT APPARATUS	SPEED VAC		HOT AIR & COOLING INCUBATORS
TABLE TOP CENTRIFUGE	HIGH SPEED MICROCENTRIFUGE	LYOPHILIZER		pH METER
MAGNETIC STIRRER	SOUTHERN BLOTTING APPARATUS	ORBITAL SHAKER		HOMOGENIZER
AUTOMATED ROBOTIC LIQUID HANDLING SYSTEMS	UV-TRANSILLUMINATOR	VORTEX MIXER		
		TABLE TOP HIGH SPEED COOLING CENTRIFUGE		
		DIGITAL MICROCENTRIFUGE		

## **Director General**

### **Prof. (Dr.) Indraneel Mitra**

MBBS, MS, FRCS (England), Ph.D. (London), FASc, FNA

## **Director**

### **Brig. (Dr.) K.K. Maudar**

MBBS, MS, Ph D. (UK), FRCS (UK), FACS (US), SSAT (US)

## **Faculty**

### **Dr. Pradyumna Kumar Mishra**

M.Sc., M.Phil., Ph.D. (AIIMS/UOR), PDF (WISc, Israel)  
Assistant Research Professor

## **Technical Staff**

**Ms. S. Mansoor** - Jr Research Assistant  
**Mr. V.M.M. Ali** - Jr Research Assistant  
**Ms. N. Akhtar** - Jr Research Assistant  
**Dr. P. Bose** - Jr Research Assistant  
**Mr. G.V.R. Ram** - Jr Research Assistant  
**Mr. N. K. Khare** - Lab Technician  
**Ms. V. Fuley** - Lab Technician  
**Ms. E. Siddiqui** - Lab Technician  
**Mr. D. C. Yadav** - Lab Attendant

## **Address for Correspondence**



**Head**  
**Department of Research**  
**Bhopal Memorial Hospital & Research Centre**  
**Raisen Bypass Road**  
**Bhopal – 462 038 (MP)**  
**Tel.: 98261-27664**  
**Fax: 0755-2748309**  
**e-mail: [pkm\\_8bh@yahoo.co.uk](mailto:pkm_8bh@yahoo.co.uk)**