

**DEPARTMENT OF PATHOLOGY, DR. RAM MANOHAR LOHIA INSTITUTE OF
MEDICAL SCIENCES, LUCKNOW.**

1. FACULTY:

1. **Prof. Nuzhat Husain**, Professor and Head
2. **Dr. Pradyumn Singh**, Professor
3. **Dr. Anurag Gupta**, Professor Junior Grade
4. **Dr. Subrat Chandra**, Professor Junior Grade
5. **Dr. Namrata P. Awasthi**, Professor Junior Grade
6. **Dr. Kiran Preet Malhotra**, Professor Junior Grade
7. **Dr. Saumya Shukla**, Associate Professor
8. **Dr. Nidhi Anand**, Associate Professor

- 2. FACILITIES AVAILABLE:** The department of Pathology started functioning with diagnostic services for the institute in Jan 2012. The department has facilities for high end investigations not available at most government hospitals in the state. The department is focused to act as a cost effective referral service for the benefit of residents of Uttar Pradesh and to avoid diagnostic difficulties for poor patients. We are providing a large range of investigations at low cost and high quality. The department is also high on research activity and several research proposals are functional in the department. A high publication output exists and collaborations have been established with several centres. The department also provides support for large scale facility for cancer screening program for example PAP screening of populations for diagnosis of cancer cervix etc.

Quality control: The department participates in various EQAS programs in various sub-sections including EQAS programs run by PGIMER for Cytopathology, AIIMS for histopathology, QC mark for Immunohistochemistry, UK NEQAS for Her2neu immunohistochemistry, Biorad EQAS for Hematology and Immunology and ISHBT-CMC Vellore EQAS for Hemostasis Program.

The department is divided into the following sub-specialty labs:

- i. **Histopathology laboratory:** Histopathology laboratory is providing routine diagnostic and specialized histopathology as well as Immunohistochemistry services. Histopathology lab is well equipped with automated tissue processors, Autostainers and Autoimmunostainers for managing large numbers of patient samples with rapid turnaround time.
- ii. **Frozen section facility** is performed on regular basis whenever requested by the surgeons. Frozen section facility is being used for preoperative diagnosis, evaluation of resection margins, sentinel nodes etc.
- iii. **Immunofluorescence:** Immunofluorescence facility for renal & skin biopsies is available in our department.
- iv. **Immunohistochemistry:** Extensive list of antibodies is available for immunophenotyping of tumors. The technique and panels have been optimized and are being used routinely. Both manual and automated techniques (Dako Autoimmunostainer and Ventana autoimmunostainer) are used. Main focus of the work is in Oncopathology. Predictive and prognostic markers are evaluated in breast cancers, gall bladder cancers, oral cancer, prostatic cancer, cervical cancer, thyroid tumors and brain tumors.
- v. **Renal Pathology:** Routine and Immunofluorescence reporting for native and transplant renal biopsies is available.
- vi. **Neuromuscular Pathology:** Specialized skeletal muscle biopsy reporting is performed. An extensive panel of enzyme Histochemistry and Immunohistochemistry for snap frozen muscle biopsies is available in the Department. Nerve biopsies including all relevant special stains are also routinely reported.
- vii. **Cytopathology:** FNAC, exfoliative cytology, liquid based cytology, squash smears, imprint smears and fluid cytology are routinely done. DNA ploidy studies are available in Flow Cytometry. Thin prep cytology system from Hologic USA is used for both gynaecological and surgical pathology. Cytocentrifuge is also available. Autostainer is used for standardized staining.

Immunocytochemistry on alcohol fixed slides & cell block preparation with IHC is available. FNA- Flow Cytometry for lymphomas & soft tissue is also available.

- viii. **Haematology Lab:** A well-equipped haematology lab is functioning with the high end facilities for Flow cytometry, automated cell counters, advanced coagulation testing and testing for hemoglobinopathies. Haematology Laboratory offers a wide range of tests, using advanced automated technology, as well as consultative services in the diagnosis of haematological disorders.
- ix. **Flowcytometry:** Four colour Flow Cytometer FACS Calibur from BD Biosciences is functioning since the last 7 years and is utilized for Leukemia and Lymphoma immunophenotyping, stem cell enumeration, HLA B27 assay, Lymphocyte subset typing, Ploidy studies as well as for research applications. Recently a **10 Colour Flow cytometer BD FACS CANTO** system has been installed in the department which will be utilized for more advanced applications like Sepsis monitoring, MRD evaluation etc.
- x. **Immunopathology Lab:** RMLIMS institute provides complete serology profile. A wide range of tests are available at our institution including: Hormones, Tumor Markers, Drug Assays, Immunology, Auto Immune Antibodies, Immunoglobulins, Protein electrophoresis, and other tests.
- xi. **Molecular Pathology Lab:** Molecular Pathology Laboratory at the Institute is a full-service diagnostic and research laboratory that is focused on performing cutting-edge clinical molecular tests for inherited disorders, leukaemia, lymphomas, solid tumors and infectious diseases. Molecular genetics, DNA, RNA qualitative assays along with cytogenetic experiments facility, DNA sequencing, BCR-ABL for CML by Conventional & RT-PCR are done. Routine detection of HPV is also done using Conventional and real time PCR. PCR for EGFR Mutations and FISH for ALK gene in lung carcinomas and MGMT gene Hypermethylation in Astrocytomas, 1p19q co-deletions in oligodendrogliomas, molecular characterization of gliomas using IDH, ATRX

and p-53.Micronucleus assay, chromosomal aberrations, H2AX assay for detecting DNA damage, Annexin V and PI for cell apoptosis are also performed. **Next generation sequencer** has been installed with currently available panels for lung, colon and 50 gene Hot spots panel for oncology.

- xii. **Telepathology:** A web based telepathology link has also been created. Further expansion and invitation of consultants in India and abroad for linking in this network is in pipeline. The slide scanning facility allows E-slides to be prepared and viewed by consultants at distant sites.

HIS and online reporting facilities: The department has an integrated structured online reporting system (College of American Pathologists/ AJCC based) for cytopathology, histopathology and hematology.

List of staff :

| Name | Designation | Nature of Jobs |
|-----------------------------|--------------------|-----------------------|
| Mr. Ravindra Kumar | Lab Technician | Permanent |
| Mrs. Priyanka Pandey | Lab Technician | Permanent |
| Mr. Abhishek Bajpai | Lab Technician | Permanent |
| Mrs. Richa Saran Chaturvedi | Lab Technician | Permanent |
| Mr. Manish Kumar Upadhyay | Lab Technician | Permanent |
| Mr. Pradeep Kumar | Lab Technician | Permanent |
| Mr. Dileep Kumar | Lab Technician | Permanent |
| Mr. Deep Chandra Joshi | Lab Technician | Permanent |
| Mr. Om Pal | Lab Technician | Permanent |
| Mr. Rajveer Singh Ghalot | Lab Technician | Permanent |
| Mr. Swatantra Bharti | Lab Technician | Permanent |
| Mr. Tamradhwaj Rao | Lab Technician | Permanent |
| Mr. Sanjeev Kumar | Lab Technician | Permanent |

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|-------------------------|----------------|-------------|
| Mr. Ran Bahadur | Lab Technician | Permanent |
| Mr. Karim Mansoori | Lab Assistant | Permanent |
| Mr. Vijay Kumar | Lab Assistant | Permanent |
| Mr. Pradeep Kr. Rawat | Lab Attendant | Permanent |
| Mrs. Gargie Upadhyay | Lab Technician | Contractual |
| Mr. Vikas Tripathi | Lab Technician | Contractual |
| Mr. Vishal Pandey | Lab Technician | Contractual |
| Mr. Ramtesh Kumar | Lab Technician | Contractual |
| Mr. Brijesh Kumar | Lab Technician | Contractual |
| Mr. Vipin Kumar | Lab Technician | Contractual |
| Mr. Deepak Kumar | Lab Technician | Contractual |
| Mr. Vikas Tripathi | Lab Technician | Contractual |
| Ms. Jyoti Tripathi | Lab Technician | Contractual |
| Mr. Nitesh Kumar | Lab Technician | Contractual |
| Mr. Talib | Lab Technician | Contractual |
| Mr. Vishal Rai | Lab Technician | Contractual |
| Mr. Piyush Yadav | Lb Technician | Contractual |
| Ms. Priya Raguvanshi | Lab Technician | Contractual |
| Mr. Deepak Kumar | Steno typist | Contractual |
| Mrs. Suchita Srivastava | Clerk | Contractual |
| Ms. Chitra Singh | Clerk | Contractual |
| Mr. Ashish Kumar | Clerk | Contractual |
| Mr. Shivam Kumar | Clerk | Contractual |
| Ms. Shazma Majid | Clerk | Contractual |
| Ms. Shashi Prabha Yadav | Clerk | Contractual |
| Ms. Shabnam Khatoon | Clerk | Contractual |
| Mrs. Pooja Kashyap | Store Keeper | Contractual |
| Mrs. Preeti Pandey | Record Clerk | Contractual |

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|-------------------|-----------|-------------|
| Mr. Mewa Lal | Attendant | Contractual |
| Mr. Prahlad | Attendant | Contractual |
| Mr. Vishal | Attendant | Contractual |
| Mr. Sunil | Sweeper | Contractual |
| Mr. Amit | Sweeper | Contractual |
| Mr. Gurudeen | Sweeper | Contractual |
| Mr. Mahfooz Ahmad | Driver | Contractual |

Research Staff:

| Name | Designation | Nature of Jobs | Qualification |
|---------------------------|----------------------------------|-----------------------|----------------------|
| Dr. Sridhar Mishra | Research Associate (ICMR) | Research Staff | M.Sc., Ph.D |
| Dr. Swati | Research Associate (CSIR) | Research Staff | M.Sc., Ph.D |
| Mr. Anumesh Pathak | Senior Research Fellow (ICMR) | Research Staff | M.Sc |
| Mr. Rahul Kumar Pandey | Senior Research Fellow (ICMR) | Research Staff | M.Sc. |
| Mr. Adil Husain | Junior Research Fellow (CSIR) | Research staff | M.Sc. |
| Ms. Priya Singh | Lab technician | Contractual | M.Sc |

State Referral Lab Project: The Pathology and Microbiology departments of Dr. Ram Manohar Lohia Institute of Medical Sciences (RMLIMS) have been upgraded to “State Referral Centre for Lab Investigations (SRCLI)” as per Government Order No. 519/ 71- 2- 13- R M-9/ 2012 Dated 9 April 2013. The aim of the referral centre is to provide high end investigations at low cost in government sector, with quality assurance and short turnaround time. Long term goal of the centre is to enhance quality of diagnostic, Medicine, Academics, Teaching & Research in this field. These centres also provide a strong network to assist in screening programs using pathology and microbiology tests for infectious disease and cancer. The main focus is on cancer cervix, breast and oral cancer. The centre is located at RMLIMS and acts as a referral for other state medical colleges, government institutes & district hospitals in the state of U.P. Facilities for patient testing & academic work not available in the State Medical Colleges/ Government Institutes/ district hospitals have been referred to SRCLI directly or through dedicated nodal collection centres set up at the referring hospitals.

The following nodal centres are established as below:

1. Main referral centre at RMLIMS
2. Referral centre at Maharani Laxmi Bai Medical Collage, Jhansi
3. Referral centre at District Hosipital , Barabanki
4. Referral centre at Bhau Roa Devrus Hospital, Lucknow

UPHSSP: In May.-2015 the Government of Uttar Pradesh has adopted a public private partnership policy for the health sector for strengthening the quality of Laboratory diagnostic services under the scheme Uttar Pradesh Health Systems Strengthening Project (UPHSSP).

INVESTIGATIONS AVAILABLE:

Cytopathology:

1. Cytology Slide Review
2. Fine Needle Aspiration Cytology (FNAC)
3. Fluid/CSF Cytology for Malignant Cells
4. ImmunoCytochemistry-Single Marker
5. ImmunoCytochemistry-Complete Panel
6. Imprint Smear
7. Liquid Based Cytology (PAP)-Gynaec
8. PAP Smear – Conventional
9. Scrape Smear
10. Squash Smear
11. Urine Cytology

Hematology:

1. Absolute Eosinophil Count (AEC)
2. Acute Leukaemia Panel
3. APTT
4. Bleeding Time
5. Blood Grouping/ABO RH Typing
6. Body fluid
7. Body Fluid DLC
8. Body Fluid Total Cell Count
9. Bone Marrow Biopsy
10. Bone Marrow Aspiration
11. Bone Marrow Aspiration/ Biopsy Procedure
Charges
12. BT
13. CBC (Complete Blood Count)
14. Cerebro-Spinal fluid (CSF)
15. Classical Bethesda Assay
16. CLL Panel
17. Clonality Panel
18. CLPD Panel
19. D-Dimer
20. Direct Antiglobulin test (DCT)
21. DLC
22. E.S.R. (Westergren)
23. Factor VIII Assay
24. FDP
25. GBP
26. GBP(Include With CBC)
27. GLUCOSE
28. Glucose Tolerance Test
29. Haemoglobin
30. Hb Separation & quantitation by HPLC
31. Hematocrit(PCV)
32. HLA B27
33. Indirect Antiglobulin Test (ICT)
34. Peritoneal/Ascitic fluid
35. Plasma Fibrinogen

36. Platelet Count
37. Pleural fluid
38. Prothrombin Time(PT)/ INR
39. RBC Count
40. Red Cell antibody titer
41. Red Cell Indices (MCV, MCH, MCHC)
42. RETICULOCYTE COUNT
43. Review of Outside BM Slides
44. Rh Antibody Titre

45. SEMEN ANALYSIS
46. Sepsis panel by flow Cytometry
47. Sickling Test
48. Specific Single Test
49. STEM CELL COUNT
50. TLC
51. Urine Fat/Chyle/ Triglyceside
52. URINE R/M

Histopathology:

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| <ol style="list-style-type: none"> 1. Biopsy - Bone Marrow 2. Biopsy - Large 3. Biopsy - Small 4. Biopsy Review - Slides/Block 5. Muscle Biopsy 6. Muscle Biopsy with single IHC marker 7. Muscle Biopsy with two IHC marker 8. Muscle Biopsy with three or more IHC marker 9. Renal Biopsy 10. Nerve Biopsy 11. Skin Biopsy with Immunofluorescence 12. Skin Biopsy with Immunofluorescence | <ol style="list-style-type: none"> 13. Frozen Section 14. Slides /Blocks for referral 15. Issue of Histopathology Slides/Block 16. Immunofluorescence 17. Immunohistochemistry - Single Marker 18. Immunohistochemistry Block For ER, PR Her2neu 19. Immunohistochemistry (IHC)-Complete Panel 20. Immunohistochemistry - Lymphoma Typing 21. Immunohistochemistry - EGFR mutation in lung cancer |
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Immunopathology

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| <ol style="list-style-type: none"> 1. Serum Free Kappa Light Chain | <ol style="list-style-type: none"> 2. Serum Free Lambda Light Chain |
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3. Serum Alpha Fetoprotein (AFP)
4. Serum Beta HCG
5. Serum Beta-2 Microglobulin
6. Serum CA 19.9
7. Serum CA-125
8. Serum CEA
9. Serum Cortisol
10. Serum DHEA Sulphate
11. Serum Estradiol (E2)
12. Serum Estriol Unconjugated (E3)
13. Serum Luteinising Hormone (LH)
14. Serum Follicle Stimulating Hormone (FSH)
15. Serum Prolactin
16. Serum Free T3
17. Serum Free T4
18. Serum T3
19. Serum T4
20. Serum Thyroid Stimulating Hormone (TSH)
21. Serum Thyroid Profile (Group test)
22. Serum Anti-TPO Antibodies
23. Serum Thyroglobulin
24. Serum Intact-PTH
25. Serum Prostate Specific Antigen (PSA)
26. Serum Total Testosterone
27. Serum Progesterone
28. Serum Growth Hormone (hGH)
29. Serum Homocysteine
30. Serum Phenytoin
31. Serum Vitamin B12
32. Serum 25-OH Vitamin D
33. Serum Folic Acid
34. Serum Protein Electrophoresis
35. Serum Immunofixation/ Immunotyping
36. Haemoglobin Electrophoresis (Capillary)
37. Serum Troponin I Test (Quantitative)
38. Serum Calcitonin
39. Serum Free PSA
40. Serum C-peptide
41. Serum Insulin

Molecular Lab (Pathology)

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|---|---|
| 1. Fish IP and 19q | 5. PCR For HPV |
| 2. Real Time PCR for EGFR mutation in lung cancer | 6. Multiplex RT PCR for BCR-ABL (Qualitative) |
| 3. MGMT testing | 7. KRAS RT PCR |
| 4. BCR-ABL Real Time PCR (Quantitative) | |

FLOW CYTOMETRY

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| 1. CD45 | 19. CD20 |
| 2. CD34 | 20. FMC7 |
| 3. HLADR | 21. CD23 |
| 4. Tdt | 22. CD56 |
| 5. CD 10 | 23. CD25 |
| 6. CD 19 | 24. CD103 |
| 7. CD 22 | 25. CD38 |
| 8. CD 79a | 26. ANTI KAPPA |
| 9. CD3 | 27. ANTI LAMBDA |
| 10. CD4 | 28. ANTI BCL2 |
| 11. CD8 | 29. ANTI BCL6 |
| 12. CD7 | 30. 7AAD |
| 13. CD5 | 31. CD34/45 |
| 14. CD117 | 32. Isotype control for FITC, PE, PERCP, APC |
| 15. CD13 | 33. DNA Cell cycle Kit |
| 16. CD33 | 34. Stem cell enumeration Kit |
| 17. MPO | 35. CD58 |
| 18. CD64 | 36. CD14 |

37. CD81

39. CD138

38. CD200

40. Cytokeratin

| List of the routine antibodies used in Immunohistochemistry | |
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| A-feto protein | Estrogen Receptor |
| Anti STAT1 | Progesterone Receptor |
| Anti-Hepatocyte Antibody | Her2neu |
| ATRX | FGFR3 |
| IDH-1 | FLI-1 |
| BRAF | GATA 3 |
| Calcitonin | GCDFP-15 |
| Calretinin | GFAP |
| Carcinoma Embryonic Antigen (CEA) | HCG |
| CD 44 | HLA-ABC |
| CD-117 | HMB 45 |
| CD-34 | Inhibin- α |
| CD-99 | Ki-67 |
| CDX-2 | Mamma globin |
| Chromogranin-A | MDM-2 |
| Cytokeratin (HMW) 34 β E12 | Melan A |
| Cytokeratin (Pan) AE1/AE3 | MLH1 |
| Cytokeratin 19 | MSH2 |
| Cytokeratin-20 | PMS2 |
| Cytokeratin-5/6 | MSH6 |
| Cytokeratin-7 | MUC 2 |
| ROS-1 | MUC 5AC |

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|-----------------------------------|---------------------------------|
| D5F3 (ALK) | Myogenin |
| Desmin | Napsin |
| DOG-1 | p-16 |
| E-Cadherin | P170 AB2 E4 |
| EGFR (Polyclonal) | p40 |
| Epithelial Antigen EP-4 (Ber-ep4) | p-53 |
| Epithelial Membrane Antigen (EMA) | p-63 |
| Amyloid P | PD-L1 |
| H. pylori | PLAP |
| INSM-1 | Prostate Specific Antigen (PSA) |
| H Caldesmon | S-100 |
| CDK-4 | SALL-4 |
| CD31/PECAM | Smooth Muscle Antigen (SMA) |
| Claudin | Synaptophysin |
| SATB2 | Thyroglobulin |
| Bcl-2 | TLE-1 |
| Bcl6 | TTF-1 |
| CD-3 | Uroplakin II |
| CD-4 | VEGF |
| CD-5 | Vimentin |
| CD-8 | γ - Sarcoglycon |
| CD-10 | β - CATENIN |
| CD-15 | STAT-6 |
| CD-20 | HPV |
| CD-23 | KRAS |
| CD-30 | H3K27M |
| CD-68 | INI-1 |

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| Cyclin-D1 | Androgen receptor (AR) |
| LCA (CD-45) | PAX-2 |
| Myeloperoxidase (MPO) | PAX-8 |
| Kappa | AMACR |
| Lambda | PHH-3 |
| TDT | Retinoblastoma antibody |
| Alk-1 | IgG-4 |
| CD-138 | CK5/19+p63+P504S |
| PAX-5 | Amyloid A |
| Granzyme | Merosin |
| Glycophorin | Dys R (1) |
| CD-56 | Dys C (2) |
| CD1a | Dys N (3) |
| CD7 | Dysferlin (Hamlet) |
| MUM-1 | IgG1 |
| CD-79 | IgM |
| SOX-11 | IgA |
| cMyc | C3C |
| CD61 | WT-1 |
| Dako Real Envision Detection Kit (Secondary Antibody Kit) | C1q |
| Dako Cleaning Kit | Fibrin |
| Antibody Diluent | Hamlet-2 |
| Tissue Bond | Emerin |
| Sniper | ATRX |
| Ventana ALK Amplification kit | Laminin |
| Secondary kit (Optiview) | Dystrophin Abcam |

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| Ventana Hematoxylin | |
| Ventana Bluing reagent | |
| Secondary kit Ultra view DAB | |
| Reaction Buffer | |
| LCS | |
| Barcode labels | |
| EZ Prep | |
| CC1 | |
| SSC | |
| α - Sarcoglycan | |
| β - Sarcoglycan | |
| δ - Sarcoglycon | |

Currently available instrument:

Histopathology Lab:

| HISTOPATHOLOGY AND CYTOPATHOLOGY | | |
|---|---------------------------------------|--|
| SN | Machine Name | Make & Model |
| 1 | Tissue Processor | Company Name-Unimeditek Pvt. Ltd., Model-VTP 300 |
| 2 | Tissue Processor | Company Name-M/S Thermo Scientific Make- Thermo Shandon United U.K. S N.-Ex4985-1402 |
| 3 | Tissue Tek VIP 5 Jr. Tissue Processor | Company Name- M/S Sakura, Make- Japan, Model-VTP 5-Jr-J2, S N.-59030203 |
| 4 | Leica TP1020 (Tissue Processor) | Company Name-M/S Leica, Make- Leica, Model-TP 1020, S N.-1472/052011 |
| 5 | Quick Tissue Processing System | Make- M/S Thermo Scientific Shandan U.K., SN.-H9905133227 |

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| 6 | Bone Cutting | Company Name-M/S Paramount, Make-Bizerba , Model- A-E 182, S N.-13E2304 |
| 7 | Slee Microtome | Make-Slee, Gmbh, Model-Cut 6062, S N.-C170040 |
| 8 | Semi-microtome | Make- Thermo Scientific, Model-Hm340E, S N.-50519 |
| 9 | Leica Microtome | Make-Leica Semi- Motorized, Model-RM2245 , S N.-2339/052011 |
| 10 | Slee Microtome Rotatory Manual | Make- Slee, Gmbh, Model-Cut 4062, S N.-A120020 |
| 11 | Thermo manual Microtome | Make- Labcon, Model-HM325, S N.-50135 |
| 12 | Cryostat for Frozen | Make- M/S Microm Germany, Model-HM5500P, S N.-50722 |
| 13 | | Make- M/S Microm Germany, Model-HM5500VP S N.-60249 |
| 14 | Automated Slide Stainer | Make- Sakura Finetek Japan Co. Ltd. Model- Drs2000-J-B2 , S.N.-49300155-1011 |
| 15 | | Make- Sakura Finetek Japan Co. Ltd. Model-DRS2000-J-B2, S.N.-49300153-0711 |
| 16 | TMA Grand Master | Make- M/S 3 Dhistek, Model-FH-GTMA-000-00-1 S .N.-GTMA-005906 |
| 17 | SLEE Centrifuge | Make- Slee, Gmbh, Model- Cs Centrifuge Type I S.N.- X1170010 |

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| 18 | Cytoteke (Cyto centrifuge) | Make- Sakura (Labcon), Model- Cyto-Tek Code 4332), S.N.-43321757-1111 |
| 19 | Centrifuge | Make- Remi, Model-C 854/6 , S.N.-ADLC 378 |
| 20 | Analytical Balance | Make- AND Instrument's India, Model-D0008, S.N.-14247585 |
| 21 | | Make- AND Instrument's India, Model-P0008, S.N.-14232791 |
| 22 | | Make- AND Instrument's India Model-D0025, S.N.-5A2813112 |
| 23 | Water bath Digital | Make- Yorco , Model- YSI 413EX, S.N.-1114459 |
| 24 | | Make- Yorco, Model- YSI 413 Ex S.N.-1144439 |
| 25 | Cold Station- SLEE MPS/C (4 Nos.) | Make- Slee, Gmbh, Model- MPS/C, S.N.-1150010 |
| 26 | | Make- Slee, Gmbh, Model- MPS/C , S.N.-1150007 |
| 27 | | Make- Sakura, Model- TECCMJ-2 S.N.- 52340513-0411 |
| 28 | | Make- Sakura, Model- MPS/C , S.N.-1150009 |
| 29 | Tissue Flotation Bath (3Nos.) | Make- Yorco Scientific, Model- YSI-133D S.N.-11b1069 Ex |
| 30 | | Make- Yorco Scientific Model- YSI-133D, S.N.-11b1064 Ex |
| 31 | | Make- Yorco Scientific Model- YSI-133D, S.N.-16D1700EX |

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| 32 | | Model- Tek5emj-2 |
| 33 | Tissue Embedding System (2Nos.) | S.N.-52330523-0411 |
| 34 | | Make-Yorko Scientific, Model- 133D S.N.-1111B3 |
| 35 | Slide Warming Table (7 Nos.) | Make-Yorco Scientific, Model- 132EX S.N.-13K808 |
| 36 | | Make-Yorko, Model- 132D ,S. N.- 1A0673EX |
| 37 | | Make-Yorko, Model-132D, S.N.- 10J0667EX |
| 38 | | Make-Yorko, Model-132D S.N.- 10D853 |
| 39 | | Make-Yorko, Model-132D, S.N.- 10J0664EX |
| 40 | | Make-Yorko, Model-YSI-132 S.N.- 09H0595 |
| 41 | | Make-Yorko, Model-132D, S.N.-14A0812 |
| 42 | Incubator Bacteriological | Make-Yorko Model-YSI438EX S.N.- 1113972 |
| 43 | Slide Cabinet (4Nos.) | make- Yorko Model-16050000 S.N.- 18B789 |
| 44 | | Make- Yorco Model-YSI160A S.No.- 15D0491 |
| 45 | | Make-Yorko Model-YSI 160A S.N.- 15D0491 |
| 46 | | Make- Yorko Model-YSI-160A S.N.- 115D0492 |
| 47 | Liquid Based Cytology | Make- M/S Hologic, USA |

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| | | Model-Thin prep Image & TP 2000 processor S.N-. PRD-00788 |
| 48 | IHC autostainer(4 Nos.) | Make: Roche Bench Mark XT, S.No. 715015, 716383, 7164424 Make: Dako Denmark, Abbott Molecular, Model S380031 |
| HEMATOLOGY LAB | | |
| 1 | Stago Start Semi automated Coagulometer | Make-Stago, S.N.-BT30028620, Model- Stago Start 4 Company Name- M/s. S.S Syndicate |
| 2 | Fully Automated Coagulometer | Make- Stago, S.N.- CC3-212A195, Model-STA Compact, Company Name- M/s Zenith Biomed |
| 3 | Lab Centrifuge | Make-M/s Eppendorf, S.N.-5702BR732282 Model-Centrifuge 5702, Company name- M/S Eppendorf India Pvt. Ltd. |
| 4 | Lab Centrifuge | Make-M/s Eppendorf, S.N.-5702FQ942416 Model-Centrifuge 5702, Company name- M/S Eppendorf India Pvt. Ltd. |
| 5 | STAGO START | Make-Stago, SN-BT3204A490, Model No.-Stago Start 4, Name of the Company- M/S Zenith Biomed |
| 6 | ESR Vesmetic 20 | Make- Diesse Diagnostic , S.N.-1890 (2011/05), Model No.-Vesmetic 20, Company name- Erba (Transasia) |
| 7 | Three Part Automated Cell counter-1 | Make-Boule Medical AB, SN-15771, |

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| | | Model- Medonic m-20 ,Company Name- M/s Merck Specialities Pvt. Ltd. |
| 8 | Five Part Automated Cell Counter | Make-Sysmex, S.N.-15692, Model- XT2000 Company Name-Transasia |
| 9 | Six part Automated Cell Counter | Make- Sysmex, S.N.-18681, Model No.- XN1000i Company Name- M/s Transasia |
| 10 | Automated urine Analyzer | Make- Erba (Laura M), S.N.-07061151214 Model- Laura M, Company Name- M/s Transasia |
| 11 | Flowcytometry | Make- B.D., Model- FACSCalibur 4CS Company Name- M/s Becton Dickinson & Company |
| 12 | | Make- BD, S.N.-V657338000432 Model- BDFACS CANTO Company Name- M/s Becton Dickinson & Company |
| 13 | Incubator | S.N.-1113973, Model- YSI-438 Company Name-M/s Sciences Track India |

IMMUNOPATHOLOGY LAB

| | | |
|---|---|---|
| 1 | Capillarys Sebia (Electrophoresis) | S.N.-1860, Make- Sebia |
| 2 | Hydrasys Sebia | S.N.-12419, Make-Sebia |
| 3 | Advia Centaux XP (Immunoassay) Siemens | S.N.IRL34571240, Model-Centaux XP, Make- Siemens |
| 4 | Immulite 2000 Siemens (Immunoassay) | S.N.-H2268, Model-Immulite 2000xpi, Make-Siemens |
| 5 | BN Prospec System (Siemens) | S.N.-143519, Model-BN Prospec |

| | | |
|--------------------------------|--|---|
| | | Make- Siemens |
| 6 | Centrifuge | S.N.- 5702FM041620, Model-Centrifuge 5702 Make- Eppendorf |
| 7 | | S.N.- 5702FP342294, Model-Centrifuge 5702 Make- Eppendorf |
| 8 | | S.N.- 5702CN033850, Model-Centrifuge 5702 Make- Eppendorf |
| MOLECULAR PATHOLOGY LAB | | |
| 1 | Proflex PCR machine | Make: Thermo Scientific (Invitrogen) S.No: 297802319, Model No: Proflex [™] PCR System. |
| 2 | Thermal Cycler | Make: Bio-Rad, USA, S.N: S1002382 Model No: S1000 |
| 3 | Real Time PCR Thermal Cycler | Make- Bio-Rad, USA, Model No: CFX [™] 96 Thermal Cycler |
| 4 | 3500 Genetic Analyzer | Make: Applied Bio System, USA |
| 5 | Personal Genome Machine (PGM) | Company & Make: Thermo Scientific, Model: Ion PGM |
| 6 | Gel Documentation System | Make: Bio-Rad, USA, S.N: 721br03850, Model No: Gel Doc ^{XT} |
| 7 | Gel Electrophoresis Unit | Company Name: Bio-Rad Make: Bio-Rad, S.N: 042BR11615 |
| 8 | AriaMax Real-Times PCR System | Make: Agilent technology, S.N: 16065275 Model No: G88308 |
| 9 | Thermo Scientific Precision Water Bath | Make: Thermo Fisher Scientific |

| | | |
|----|---|--|
| | | S.N: 62903, Model No: 2836 |
| 10 | Hybridizer For Fish | Make: Abbot (V2.12) S.N: 111503448, Model No: S500-24 |
| 11 | Spectrophotometer | Make: Bio-Rad, USAS.N: 273br06453 |
| 12 | Deep Freezer (-86°C) Vertical type | Company Name: Ultra Low Temperature Freezer, S.N: 30256, Model No: DWHL-538 (-86°C) |
| 13 | Ultra Low Vertical Deep Freezer (-86°C) | Make: Haier, Model No: Dw-861490 |
| 14 | Spinix | Make: Tarsons S.No: 8662 |
| 15 | Spin win MC-01 | Make: Tarsons S.No : 1501008 |
| 16 | Table Top Refrigerated Centrifuge | Make: M/S Thermo Scientific S.No: 41843524 |
| 17 | Sonicator | Make: Hielscher, Model No: U.P.50h. |
| 18 | Laminar Flow Hood For Pathology | Make: Labconco Missouri, USA, S.No: 110744571c Model No: 4'purifier Filtered PCR Enclosures (397022) |
| 19 | Denovix DS-11 Spectrophotometer | Imperial Life Science [P] Limited, Make: Denovix Model No: Ds-11 Spectrophotometer |
| 20 | PCR Hood | Company Name: ESCO, S.No: 2016-109871 Model No: Pcr-3ai |
| 21 | COBAS 4800 | Roche Diagnostics, Germany |

MISCELLANEOUS

| | |
|----|--|
| 1 | Thin Prep Cytology System; Thin Prep 2000 CYTYC, with slide imager: Thin prep Cytology for Gynaec and non Gynaec screening |
| 2 | Zeiss Microscope Axio Imager Z2 with slide scanning facility |
| 3 | Metafer-4 and V slide software for slide scanning |
| 4 | Web based Telepathology Facility |
| 5 | Liquid Nitrogen cylinders 3 |
| 6 | High end fluorescent microscope from Zeiss with software for cytogenetic analysis |
| 7 | Deca header teaching microscope Olympus BX 53-1 |
| 8 | Penta header teaching microscope with Camera & Display Olympus BX51-1 |
| 9 | Microscope with camera and display Nikon Eclipse 80-i-1 |
| 10 | Motorized Fluorescence Microscope Axio imager Carl Zeiss-1 |
| 11 | Inverted Phase Contrast Trinocular Microscope-1 |
| 12 | Binocular Microscopes for Pathology (08) |
| 13 | Ice Line Freezer - 200C (Horizontal)-1 |
| 14 | Ice Line Freezer - 400C (Vertical)-1 |
| 15 | Fume hood for Tissue Culture-1 |
| 16 | Magnetic Stirrer |
| 17 | Millipore Water Purification System-1 |

3. TRAINING AND COURSES:

Courses Offered:

- **MBBS**
- **MD Pathology** (5 seats, Affiliation with King George's Medical University)
- **Ph.D.:-2** recognized guides in the Department:
 1. Prof. Nuzhat Husain (HOD)
 2. Dr. Pradyumn Singh

Ph.D. Degree will be awarded from KGMU, Lucknow
- **Short term training/internships programs** for Bachelors and Masters Students of Life Sciences,
Technicians Training program
- **PDCC Oncopathology Fellowship** (2 seats with Affiliation with Indian College of Pathologists)
- **Senior Residency Training Program** (7 seats, maximum duration 3 years)
- **DMLT course** 20 seats per annum (affiliation with state medical council)

4. CONFERENCES/CMES AND WORKSHOPS CONDUCTED BY THE

DEPARTMENT:

1. **“Masterclass: Flowing Forward on the Flowcytometry Route”** on 9th February 2019 at Dept. of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences and Sahara Hospital, Lucknow
2. **“Masterclass on Breast Pathology** entitled **“Evolving Concepts in Breast Malignancies”** on 21st July 2018 at Dept. of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences and Sahara Hospital, Lucknow

3. **Periodic Academic Meeting of Lucknow Pathologist** Group on 12th May 2018 organized by organized by Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow
4. Pre workshop on “**Molecular Pathology of CNS tumours**” on 16th Feb 2018 in the Dept. of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences
5. **3rd Annual Conference Neuropathology Society of India** on February 16th-18th 2018 in Dept. of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences and Sahara Hospital, Lucknow
6. “**Satellite Symposium UP CYTOCON 2017 on “Learning with slides- Cytology and Hematology Focus**” in Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences on 17th September 2017
7. “**Master Class in Haematopathology**” 6th April 2017 at Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow
8. “**Master Class in Gastro intestinal Oncopathology**” 1st Feb. 2017 at Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow
9. “**Master Class in Thyroid Pathology, New Stories in Thyroid Pathology and Slide Session**” 14th October 2016, at Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow
10. Workshop on “**Clinical Workshop on Flow Cytometry**” from 8th-9th September 2016 at Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow
11. **Periodic Academic Meeting of Lucknow Pathologist Group** on 14th Feb 2015 organized by organized by Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow
12. **UP PATHCON 2014 (Annual conference of UP Chapter of Indian Association of Pathologists & Microbiologists)** 12th-13th Oct 2014

13. Guest Lecture on “**Predisposing Genetic Risk Factors for Inhibitor Development in Indian Hemophilia Patients**” organized by Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow on 18th September 2014.
14. International Academy of Pathology Indian Division (IAP-ID) Mid-Year Teaching Program On “**Liquid Based Cytology: Gynaec & Non Gynaec Application**” at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, on 5th-7th July 2013.
15. **Update on Screening of Breast and Cervical Cancer**” at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, on 5th Feb 2013.
16. **Periodic Academic Meeting of the Lucknow Pathologists Group** organized on 5th February 2012.
17. **International Update in Pathology** held at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow India on 31st Jan 2012.
18. **International Symposium on Molecular Pathology**, Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, February 14th, 2011.

Nephropathology Meetings

Nephropathology meetings are being conducted monthly on second Saturday of every month (10 to 11 am) in Seminar room, Department of Pathology, RMLIMS.

- Pathology moderator: Dr Kiran Preet Malhotra
- Nephrology moderator: Dr Abhilash Chandra/ Dr Namrata Rao
- The meetings are attended by all Junior and Senior residents and faculty of Departments of Pathology and Nephrology and faculty from other concerned Departments.
- Interesting and diagnostically challenging cases of native and transplant kidney biopsies reported in the Department of Pathology are taken up for discussion.

Distinguished Visitors to the Department of Pathology

1. Prof. Sudhir Gupta, Prof. of Medicine, Pathology & Laboratory Medicine & Microbiology, Director of Jeffrey Modell Diagnostic Centre in Primary Immunodeficiency, University of California, Irvine, CA
2. Dr. Shrimati D Shetty, Scientist E, Department of Hemostasis and Thrombosis, National Institute of Immunohematology, Mumbai
3. Dr. Mamta Gupta, Surgical Pathologist, Beth Israel Deaconess Medical Center, Boston
4. Dr. Shamim Akhtar Mini, Senior Consultant, Dept. of Pathology, Bangladesh
5. Dr. Taslima Hossain, Junior Consultant, Dept. of Pathology, SO Bedded Hospital, Tongi, Gazipur, Bangladesh
6. Dr. Kazi Nishat Ara Begum, Assistant Professor, Dept. of Pathology, Shaheed Suhrawardy Medical College, Dhaka, Bangladesh
7. Dr. M Shahab Uddin Ahamad, Assistant Professor, Dept. of Pathology, Cox's Bazar Medical College, Bangladesh
8. Dr. Jasmin Akhtar, Head, Dept. of Pathology, City Medical College & Hospital, Gazipur, Dhaka, Bangladesh
9. Prof. ASM Mostaque Ahmad, Head & Principal, Dept. of Pathology, CMOSH Medical College, Bangladesh.
10. Prof. Amita Majumdar (Giri) , Professor, Dept. of Pathology, Calcutta National Medical College & Hospital, Calcutta
11. Prof. Dr. Md. Nowel Islam, Professor, Dept. of Neuropathology, National Institute of Neurosciences & Hospital, Daka, Bangladesh
12. Col (Dr.) Sk. Md. Jaynul Islam, Histopathologist. Armed Forces Institute of Pathology, Daka, Bangladesh
13. Dr. Rajan Dewar, Professor Pathology, University of Michigan, USA.

14. Dr. Amitabh Srivastava, Associate Professor GI Pathology at Harvard Medical School, Associate Director Surgical Pathology, and Director of the Surgical Pathology Fellowship Program, Brigham and Women's Hospital, Boston, MA
15. Shri. Parthasarathi Sen Sharma, IAS, Secretary to Chief Minister, Govt. of UP
16. Dr Ashraf Khan, an endocrine pathologist, Director of Surgical Pathology, University of Massachusetts Medical School Worcester, MA, USA
17. Prof. Manju Prasad, Director, Endocrine, Head & Neck Pathology and IHC, Yale University School of Medicine, USA
18. Dr. Sudhir Gupta, University of California, Irvine, CA
19. Dr. Sumeet Gujral, Professor, Dept. of Pathology, Tata memorial Hospital, Mumbai
20. Dr. Sharmila A. Pimple is Additional Professor & Physician 'F' in Department of Preventive Oncology , Tata Memorial Hospital, Mumbai.
21. Dr. Dinesh Chandra Jain is Deputy Director General (Non- Communicable Diseases) at the Directorate General of Health Services, Ministry of Health & Family Welfare, New Delhi.
22. Dr. Savitri Krishnamurthy, MD, Professor, Department of Pathology, Deputy Division Head of Pathology and Laboratory Medicine, MD Anderson Cancer, University of Texas, Houston, USA
23. Dr Bakul Dalal, MD, General Hospital, Director, Flow Cytometry Service, Dept of Pathology and Lab Medicine, University of British Columbia, Vancouver Canada

5. **AWARDS CONFERRED ON FACULTY/ACHIEVEMENTS: (2015-2020)**

Prof. Nuzhat Husain

- President UP chapter IAPM
- President Cytology Chapter Indian Academy of cytologists
- Secretary Indian College of Pathologists
- Executive councillor Integral University
- Chairperson Ethical Committee Cancer Institute

- Chairperson Ethical Committee Integral Institute of medical Sciences
- Member research Committee SGPGIMS
- Member PhD committee SGPGIMS
- Member Editorial Board IJPM

Dr. Pradyumn Singh

- Secretary IAPM

Dr. Anurag Gupta

- Treasurer Up Chapter IAPM
- Secretary Up Indian Academy of cytologists

Dr. Namrata P Awasthi

- The Cytometry Society Award (TCS Award) for Best Paper in Clinical Sciences in 11th Annual TCS Conference and Workshops 2018 : Flow Cytometry: Multi-dimensional and Multi-faceted, 29th-31st Oct & 1st Nov 2018, held at All India Institute of Medical Sciences, New Delhi
- Award for best participant: Coagulation Masterclass, North India Edition, Sir Ganga Ram Hospital, 8-10th Sept 2017, New Delhi
- Award for Best Poster 1st Prize: Lymphoma Update 2016, Essentials and Beyond, 14th-15th March 2016 , organized by Rajiv Gandhi Cancer Institute and Research Centre, New Delhi.
- Award for Best Poster 1st Prize: 3rd SACH conference, Dhaka, Bangladesh 2nd -4th Oct 2015
- Award for Best Poster 2nd Prize: National Conference on Advances in Cancer Diagnosis and Research, 9-11th Feb 2015. Era's Lucknow Medical College and Hospital, Lucknow.

Dr Kiran Preet Malhotra

- Organizing Secretary for 3rd Annual Conference of Neuropathology Society of India, NPSICON, held at RMLIMS, Lucknow on 17th and 18th Feb, 2018.
- Organizing Secretary for Workshop on Basics in nerve biopsy interpretation, in 3rd Annual Conference of Neuropathology Society of India) held at RMLIMS, Lucknow on 16th Feb, 2018.

Dr. Saumya Shukla

- Second prize for poster presentation at 6th Annual Conference of South Asian academy of Cytopathology and Histopathology (SACH '18), 19th – 21st January 2018, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India for poster titled “PD-L1 expression in Adenocarcinoma Lung and its association with Driver Mutations”.
- Best oral paper presentation at 4th SACH Conference, 17th and 18th September 2016, BPKIHS, Dharan, Nepal for paper titled “Fluorescence in situ hybridization for the detection of Anaplastic Lymphoma kinase gene re-arrangement in non small cell lung carcinoma: A tertiary care centre study”
- Best oral paper presentation at National conference on Advances in Cancer Diagnosis and Research, 9th-11th February 2015, Era’s Lucknow Medical College and Hospital, Lucknow for paper titled “The value of Cytology in Diagnosis of Pulmonary Adenocarcinoma”.

Dr. Nidhi Anand

- First prize for poster presentation at 6th Annual Conference of South Asian academy of Cytopathology and Histopathology (SACH '18), 19th – 21st January 2018, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India for poster titled Molecular Classification of Diffuse Gliomas in the Adult Population: A Tertiary Centre Hospital Based Study.

6. RESEARCH AND PUBLICATIONS:

a) Research Proposal Submitted / Awarded/Ongoing/Completed**Intramural Research Project:-****Completed Intramural Project-12**

| S. N. | Title of the Project | Principal Investigator |
|--------------|--|---|
| 1 | Co-inheritance of Factor V Leiden in patients of inherited Hemophilia A in India | Dr. Namrata Punit Awasthi, Asst. Prof., (Dept. of Pathology) RMLIMS, Lko |
| 2 | CD133, CD24 and Oct-4 in Oral Cancer- Effects on Chemoradiation Response | Dr. Nuzhat Husain, Professor and Head, Department of the Pathology, RMLIMS, Lko |
| 3 | Serum Anti-AQP4 antibody and Cerebral Spinal Fluid Glial Fibrillary Acidic Protein in idiopathic inflammatory demyelinating disorders of the central Nervous system- A correlative analysis | Dr. Kiran Preet Malhotra, Asst. Prof., (Dept. of Pathology) RMLIMS, Lko |
| 4 | Pre- and post- treatment analysis of cytogenetic abnormalities in chronic myeloid leukemia. | Dr. Pradyumn Singh, Assoc. Prof., (Dept. of Pathology) RMLIMS, Lko |
| 5 | Comparative analysis of Immunohistochemistry (IHC) and Fluorescent in situ hybridization (FISH) for detection of Anaplastic Lymphoma Kinase (ALK) gene rearrangement in adenocarcinoma lung- A pilot study ” | Dr. Saumya Shukla, Asst. Prof. ,Dept. of Pathology, RMLIMS, Lko |
| 6 | Fine needle aspirate of lymph nodes and use of adjunct diagnostic modalities in the diagnosis of non- Hodgkin lymphomas | Dr. Anurag Gupta, Assoc. Prof. Dept. of Pathology, RMLIMS, Lucknow |

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| 7 | Study of Gall Bladder Cancer: A Diagnostic Evaluation of Circulating Free DNA and Circulating Tumor Cells | Dr. Subrat Chandra, Assoc. Prof. Dept. of Pathology, RMLIMS, Lucknow. |
| 8 | Detection of novel and known EGFR mutations in lung adenocarcinoma by DNA sequencing | Prof. Nuzhat Husain, Prof. and Head, Dept of Pathology, RMLIMS, Lko |
| 9 | Immunophenotypic characterization of normal and abnormal plasma cells in bone marrow samples of multiple myeloma patients by 4-colour flow cytometry | Dr. Namrata P. Awasthi Assoc. Prof. Dept. of Pathology. RMLIMS, Lko |
| 10 | Assessment of Histopathological Markers of lepra Reactions in skin Biopsies | Dr. Kiran Preet Malhotra, Assoc Prof. Dept of Pathology, RMLIMS, Lko |
| 11 | Diagnostic value of BRAFV600E immunohistochemistry in thyroid aspirates in Bethesda category IV and papillary carcinoma thyroid. | Dr. Nidhi Anand, Associate. Prof. Dept. of Pathology, RMLIMS, Lko |
| 12 | Programmed cell death –ligand 1(PD-L1) expression in non small cell lung cancer (NSCLC) and its correlation with driver mutations: A Pilot Study | Dr. Saumya Shukla, Associate Prof. Dept. of Pathology, RMLIMS, Lko |

On-Going Proposals-06

| S.N. | Title of the Project | Principal Investigator |
|------|---|---|
| 1 | Heterogeneity in Diffuse Large B-Cell lymphoma-a study on the Cell-of-origin subtypes and their prognostic significance | Dr. Pradyumn Singh, Addl. Professor Dept of Pathology, RMLIMS, Lko |

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| 2 | Utility of Pattern-Based Cytomorphological Categorization And Cell Block-Immunocytochemistry In The Diagnostic Workup Of Salivary Gland Tumors | Dr. Anurag Gupta, Prof. Junior Grade Dept. of Pathology, RMLIMS, Lko |
| 3 | Investigation of cf-DNA levels and IDH-1 mutation in adult diffuse gliomas for diagnosis and prediction of therapy | Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS, Lko |
| 4 | A Study on New Molecular Targets in Non-Small Cell Lung Carcinoma-Squamous Cell Carcinoma | Dr. Saumya Shukla, Associate Professor Dept. of Pathology, RMLIMS, Lko |
| 5 | Expression of Immune Checkpoint Regulators including Cytotoxic T Lymphocyte Antigen 4(CTLA4) and Programmed Death-Ligand 1 (PD-L1) in Epithelial Thyroid Malignancies. | Dr. Nidhi Anand, Associate Professor Dept. of Pathology, RMLIMS, Lko |
| 6 | Assessment of Antigenic targets in Membranous Nephropathy | Dr. Kiran Preet Malhotra, Prof. Junior Grade Dept of Pathology, RMLIMS, Lko |

Completed Extramural Proposals: 11

| SN | Total Duration/ Date of Start at RMLIMS | Title | Funding Agency / Grant approved to |
|----|---|--|--|
| 1 | 3 years (1.5.09-30.4.12)/ 1.5.11 | Tumor Infiltrating Lymphocytes (TIL) subset analysis, serum IL-4 , IFN- γ | DST, New Delhi (WOS'A' Fellowship Awarded to Dr. Vandana Tiwari) |

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|---|--|---|---|
| | | & TNF- α analysis for immune-reactivity & Molecular /cellular analysis of y and T cells: A correlative study in oral carcinoma | Mentor: Prof. Nuzhat Husain Head, Dept of Pathology, RMLIMS |
| 2 | 3 Years 02.06.12 | Stem Cell Expression of CD24, OCT3/4 and NANOG in Glioblastoma Multiforme: Correlation with Treatment Response and Survival. | ICMR, New Delhi Senior Research Fellowship Awarded to Ms. Priyanka Soni) Guide: Prof. Nuzhat Husain Head, Dept of Pathology, RMLIMS |
| 3 | 5 Years (2008-2013) 03.05.12 | UGC-Rajiv Gandhi National Fellowship. (Awarded to Mr. Praveen Kumar) | UGC-RGFS, New Delhi Guide: Prof. Nuzhat Husain Head, Dept of Pathology, RMLIMS |
| 4 | 3Years 02.06.09- 01.06.12) 02.06.11 | Analysis of intron 22 inversion mutation in Indian case with hemophilia 'A' | UPCST, Lucknow P.I. Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |
| 5 | 3Years 28.05.13 | Liquid based cytology assessment of p16 and DNA ploidy in Cervical Neoplasia: Correlation with p16 promoter Hypermethylation | UPCST, Lucknow Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |
| 6 | 3years 25.05.14 | Effects of diagnostic low dose radiation exposure on peripheral blood lymphocytes | DST SERB, India Young Scientist Dr Shikha Tiwari Mentor: Prof. Nuzhat Husain Head, Dept of Pathology, RMLIMS |

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|----|----------------------|--|--|
| 7 | 5 years 1.02.13 | Extramural grant Fellowship | Inspire-DST awarded to Swati Kumari Guide: Prof. Nuzhat Husain, Head, Dept of Pathology, RMLIMS |
| 8 | 3 years 20.06.15 | Epidermal growth factor mutation (EGFR) and anaplastic lymphoma kinase (ALK) gene rearrangement in non-small cell carcinoma lung | UPCST Dr.Saumya Shukla Asstt. Prof. Dept. of Pathology, RMLIMS |
| 9 | 3 years 07.07.15 | Factor VIII inhibitors in Hemophilia A : Correlation with gene mutation and cytokine profile | DST SERB Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |
| 10 | 3 years 2020-2023 | Diagnostic application of genomic and epigenetic profiling of circulating free DNA in Gallbladder carcinoma | ICMR, New Delhi Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |
| 11 | 2 years 2020-2022 | Circulating miRNA role in Gallbladder cancer: s serum assay of diagnostic value | DHR, ICMR New Delhi Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |

On-going Extramural Proposals: 04

| S. | Total Duration/ | Title | Funding Agency |
|----|-----------------|-------|----------------|
|----|-----------------|-------|----------------|

| N. | Date of Start at RMLIMS | | / Grant approved to |
|----|-------------------------|---|--|
| 1 | 2018Nov. -2020Nov. | Study of cfDNA and LunX gene Transcript in Diagnosis and Prediction of Chemotherapy Response in Non-Small Cell Lung Carcinoma | Fellowship, ICMR New Delhi Mr. Anumesh Kumar Pathak Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |
| 2 | 2019 April -2022 April | CfDNA levels in Gliomas: Diagnostic and Therapeutic Application | Fellowship, ICMR New Delhi Mr. Sridhar Mishra Prof. Nuzhat Husain, Head, Dept. of Pathology, RMLIMS |
| 3 | 2019-2022 | Methylation status of genes in circulating free DNA as diagnostic and predictive biomarker in Oral Squamous Cell Carcinoma | ICMR self SRF Swati Kumari Prof. Nuzhat Husain (PI) Pathology Dept. |
| 4 | 2019-2022 | A study of immunotherapy and molecular targets in squamous cell carcinoma lung | ICMR-SRF Rahul Kumar Pandey Prof. Nuzhat Husain (PI) Pathology Dept |

List of publications of Department of Pathology: (2015-2020):

1. A.A. Sonkar, J.L. Miller, A.A. Agarwal K.R. Singh, N. Husain, J.K. Kushwaha. P277 CD24 and CD44 expression in Indian breast cancer patients and response to chemotherapy. The Breast. 2015 Mar; S122

2. Kumar P, Husain N, Soni P, Faridi NJ, Goel SK. New Protocol for Detection of Intron 22 Inversion Mutation from Cases With Hemophilia. *Clin Appl Thromb Hemost*. 2015 April; 255-9.
3. Malhotra KP, Shukla S, Singhal A, Husain N. Proliferating trichilemmal cyst with nodal enlargement mimicking metastatic squamous cell carcinoma. *Indian J Dermatol Venereol Leprol*. 2015 May 21.
4. Ram H, Agrawal SP, Husain N, Chakrabarti S. Hypoglossal schwannoma of parapharyngeal space: an unusual case report. *J Maxillofac Oral Surg*. 2015 Mar;14 (Suppl 1):73-6.
5. Kushwaha VS, Gupta S, Husain N, Khan H, Negi MP, Jamal N, Ghatak A. Gefitinib, Methotrexate and Methotrexate plus 5-Fluorouracil as palliative treatment in recurrent head and neck squamous cell carcinoma. *Cancer Biol Ther*. 2015; 16 (2):346-51.
6. Husain N, Negi M, Ghatak A, Bhatt ML. Impact of EGFR and p53 expressions on survival and quality of life in locally advanced oral squamous cell carcinoma patients treated with chemoradiation. *Cancer biology & therapy*. 2015 July.
7. Shukla S, Malhotra KP, Husain N. Epidermal Growth Factor receptor protein expression and mutation in adenocarcinoma lung: A tertiary centre study. *Indian J Pathol Microbiol*. 2015;58(1):S138.
8. Shukla S, Malhotra KP, Husain N, Gupta A, Anand N. The utility of cytology in the diagnosis of non-small-cell lung carcinoma-adenocarcinoma: A tertiary care centre study. *J Cytol*. 2015 Jul-Sep;32(3):159-64.
9. Singh V, Husain N, Akhtar N, Kumar V, Tewari S, Mishra S, Misra S, Khan MY. Do Human Papilloma viruses play any Role in Oral Squamous Cell Carcinoma in North Indian Population? *Asian Pac J Cancer Prev*. 2015;16(16):7077-84..
10. Gupta S, Khan H, Kushwaha VS, Husain N, Negi M, Ghatak A, Bhatt M. Impact of EGFR and p53 expressions on survival and quality of life in locally advanced oral

squamous cell carcinoma patients treated with chemoradiation. *Cancer Biol Ther.* 2015;16(9):1269-80.

11. Singh AK, Singh SK, Singh A, Gupta KK, Khatoon J, Prasad A, Rai RP, Gupta RK, Tripathi M, Husain N, Prasad KN. Immune response to *Taenia solium* cysticerci after anti-parasitic therapy. *Int J Parasitol.* 2015 Oct;45(12):749-59.
12. Malhotra KP, Shukla S, Husain N, Bhatt ML. Combined Squamomelanocytic Tumor of the Plantar Surface of the Foot: Histogenetic Insights. *Am J Dermatopathol.* 2016 May;38(5):396-7.
13. Singh SK, Singh AK, Prasad KN, Singh A, Singh A, Rai RP, Tripathi M, Gupta RK, Husain N. Expression of adhesion molecules, chemokines and matrix metalloproteinases (MMPs) in viable and degenerating stage of *Taenia solium* metacestode in swine neurocysticercosis. *Vet Parasitol.* 2015 Nov 30;214(1-2):59-66.
14. Arundhati, Malhotra KP, Husain N. Primary breast lymphoma with progression to the scalp. *J Cancer Res Ther.* 2015 Jul-Sep;11(3):666.
15. Shukla S, Awasthi NP, Singh P, Husain N. CD20 negative primary diffuse large B cell lymphoma of breast: Role of Pax-5. *J Cancer Res Ther.* 2015 Jul-Sep;11(3):658.
16. Tewari S, Khan K, Husain N, Rastogi M, Mishra SP, Srivastava AK. Peripheral Blood Lymphocytes as In Vitro Model to Evaluate Genomic Instability Caused by Low Dose Radiation. *Asian Pac J Cancer Prev.* 2016;17(4):1773-7.
17. Kumari S, Tewari S, Husain N, Agarwal A, Pandey A, Singhal A, Lohani M. Quantification of Circulating Free DNA as a Diagnostic Marker in Gall Bladder Cancer. *Pathol Oncol Res.* 2017 Jan;23(1):91-97.
18. Soni P, Husain N, Chandra A, Ojha BK, Bhatt ML, Gupta RK. Do phosphatase of regenerating liver-3, matrix metalloproteinases-2, matrix metalloproteinases-9, and epidermal growth factor receptor-1 predict response to therapy and survival in glioblastoma multiforme? *Indian J Pathol Microbiol.* 2016 Jul-Sep;59(3):287-93.

19. Gupta S , Husain N, Kumari V, Barik S. Soft tissue neuroendocrine carcinoma of thigh: A case report with literature review. *Case Reports in Clinical Medicine*. 2012; 1(2), 9-12.
20. Kulshreshtha D, Malhotra KP, Maurya PK, Singh AK, Thacker AK, Husain N. Nerve biopsy in Indian patients with mononeuropathy multiplex of undetermined etiology. *Muscle Nerve*. 2017 Jan;55(1):23-27.
21. Husain I, Shukla S, Soni P, Husain N. Role of androgen receptor in prostatic neoplasia versus hyperplasia. *J Cancer Res Ther*. 2016 Jan-Mar;12(1):112-6.
22. Hadi R, Pant MC, Husain N, Singhal A, Khurana R, Agarwal GR, Masood S, Awasthi NP. EGFR and HER-2/neu Expression in Gallbladder Carcinoma: An Institutional Experience. *Gulf J Oncolog*. 2016 Jan;1(20):12-9.
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