

POST DOCTORAL

Fellowship in Clinical Cytogenomics



Get trained by Eminent Faculty and
Experts in Specialised Diagnostics



mednxt

Post-Doctoral Fellowship & Certificate Programs

MedNxt is Dr Lal PathLabs's umbrella program for Post-doctoral Fellowship & certificate courses in specialised areas in the field of pathology.

The training programmes will be run onsite at their state of the art, **85000 sq ft National Reference laboratory, Rohini.**

The National Reference Lab offers highly specialised exposure in diagnostics incorporating cutting edge technology and vast test menu in Molecular Diagnostics, Next generation sequencing, Clinical Cytogenomics, FISH, Microarray, Digital Histopathology, Oncopathology, Transplant Immunology, Autoimmunity Diagnostics, Mass Spectrometry, Biochemical Genetics, Renal pathology and Transmission electron microscopy. The facility tests over **35000 samples** a day, running close to 90000 tests daily.

The program offers a unique opportunity to learn from the highly experienced faculty and get hands on experience while working with a team of over **60 pathologists** and research scientists and nearly **300 laboratory technologists.**

The students will also get to experience and learn best in class practices in diagnostics from the lab having Accreditations from the College of American Pathologists (CAP) and the National Board for Accreditation of Laboratories NABL for the extensive test menu of **over 3000 tests.** The In-house R&D unit at the National reference Lab is recognized by DSIR, Ministry of Science & Technology, Government of India.

The National reference lab has been training primary DNB Pathology candidates with excellent results over the last five years and now opens avenue to train in advanced, specialised fields in pathology through the MedNxt program.

ABOUT DLPL

Dr Lal PathLabs is India's Leading & Trusted Diagnostics Company

Founded in **1949 • 75+** years of Diagnostic Expertise

Established in 1949 by Late Dr. Major S.K. Lal, it has over **75+ years** of experience in providing quality healthcare diagnostics. It offers ~5000 tests & employs more than **4,000** personnel.



It is India's one of the largest Diagnostics chains with **30+ NABL** accredited Labs all over India

We have won many awards over the course of its journey. Some being: -



Clinical Cytogenomics Fellowship Program

Why choose this program?

- Gain vital exposure to Industry's best practices in Pathology.
- Obtain practical/on Job training with one of the most advanced Pathology Lab setups in India.
- Learn/strengthen operational know how for Accreditations like ISO, NABL, CAP for Pathology Industry.

Minimum Eligibility

MD/DNB in Pathology (Degree must be obtained from recognized Institute).

Who is this program for ?

- Ideal for Mid-career Pathologist looking to transition to specific branches.
- For pathologists wanting to update their knowledge & technical know-how as per the latest industry Accreditations.
- Pathologist wanting to get hands on training on latest tests & best in Lab practices

Admission Procedure

Online Registration & profile submission on Registration link

<https://www.lalpathlabs.com/mednxt-fellowship-program>

Profile evaluation with statement of Purpose followed by personal interview of shortlisted candidates

COURSE DURATION
12 Months

COURSE Fees
INR 1,20,000

STIPEND Per Month
INR 50,000

Evaluation Procedure

The evaluation methodology is at the discretion of the faculty and includes exams, internal evaluations, case log book evaluation, research project completion and performance at the summative examination. A minimum of **75% attendance** is a prerequisite for the successful completion of this programme. Participants will have to secure the minimum pass marks in the respective evaluation components.

For more information connect at
<https://www.lalpathlabs.com/mednxt-fellowship-program> or 8460133122

Program Directors



Dr. Vamshi Krishna Thamtam

Technical Director – Genomics & Clinical Cytogenomics

Dr. Vamshi Krishna Thamtam, MBBS, Post-Grad(Public Health), MD(Path), Post-Doc Fellowship and DipRCPath (Molecular Genetics), is the Technical Director of Genomics & Clinical Cytogenomics. He has more than two decades of working experience in various specialties, including Renal transplantation, Cardiothoracic surgery, Psychiatry, Clinical trials and Research, Routine Pathology, Oncopathology, Hematopathology and **has nearly two decades of teaching reporting experience in Clinical Cytogenomics & Molecular Pathology**. He has acquired the necessary training and experience in the fields of Cytogenomics and Molecular Genetics. In the field of Oncogenomics, his focus has always been on comprehensive test reporting for various solid tumors and hematological malignancies. He did his Fellowship in Molecular Genetics from Tata Medical Center, Kolkata, which impressed upon the advantage of establishing a definite diagnosis, prognostication of the disease and using evidence-based-medicine in formulating individualised targeted therapy for various conditions. Working with the multi-disciplinary specialties, the importance of correlating clinical details, histomorphology, immunophenotyping (flow cytometry & immunohistochemistry), along with cytogenetics and molecular genetics, in various hematolymphoid malignancies and solid tumors has always been well appreciated by peers and mentors. His special interests are Precision Medicine, Wellness genomics, Pharmacogenomics, and Research & Development in the disciplines of Clinical Cytogenomics and Molecular Diagnostics. His publication articles, papers and posters in the field for Molecular Pathology and Genetics, and participation in various societies and conferences as a member/speaker reveal his interest and passion towards providing continuing medical education and imparting knowledge towards providing evidence-based patient care.



Dr. Leena Rawal

Program Associate

Dr. Leena Rawal is the Dy. Head & Chief Research Scientist - Department of Clinical Cytogenomics at Dr. Lal Path Labs, National Reference Laboratory, New Delhi. She completed her Ph.D. in Molecular Genetics from National Institute of Immunology, New Delhi, India. She has more than a decade's experience as a Cytogeneticist and Molecular Geneticist in the domains of Reproductive Medicine, Oncology as well as Inherited Disorders. She excels at lab management, business development, technical and experimental aspects of Clinical diagnostics. Her expertise lies in Cytogenomics (Conventional Karyotyping focusing on haematological malignancies, constitutional and numerical anomalies and prenatal diagnosis), Fluorescent in situ Hybridisation (FISH) analysis for solid tumors, haematological malignancies and Chromosomal Microarray analysis for prenatal disorders, developmental delays and intellectual disorders. She has vast knowledge and practical experience in molecular biology, as well as animal genetics, spanning the functional and comparative genomics. She is a certified NABL Assessor. She is also a certified Internal Auditor (as per ISO 15189:2022 and IS/ISO/IEC17025:2005) and Quality Manager by Bureau of Indian Standards. She has published several clinical and research articles and books in International and National peer reviewed journals.

COURSE CONTENT

Module 1: Molecular biology of the Cell and Inheritance

- Cell cycle, mitosis, meiosis and recombination
- Structure and organization of the human genome
- Mendelian inheritance
- Patterns of inheritance
- Uniparental disomy
- Genotypes and phenotypes in populations
- Hardy Weinberg equilibrium
- Genetic drift and founder effect
- Calculation of conditional probability and genetic risk
- Bayesian probabilities

Module 2: DNA structure and polymorphism

- Central Dogma (DNA replication, transcription and translation)
- DNA structure, replication, DNA damage and repair mechanism,
- Transcription, translation and post translational processing
- Structure of genes and functional DNA elements
- Types of polymorphisms in the human genome

Module 3: Genetic disorders, related mechanism and detection methodologies

- Molecular basis of genetic disease
- Molecular cytogenetics – fluorescence in situ hybridization, multiplex ligation dependent probe amplification, DNA microarrays
- 15 days training in department of Genomics

Module 4: Chromosome structure and related aberrations

- Chromosome structure, morphology and variations
- Lyon hypothesis and X inactivation
- Autosomal and sex chromosome aneuploidy syndromes
- Structural abnormalities of chromosomes
- Microdeletion syndromes
- Chromosome breakage syndromes
- Pseudo-mosaicism, mosaicism and chimerism
- Cytogenetics Methodologies: Conventional cytogenetics (karyotyping), fluorescence in situ hybridisation and Chromosomal microarray
- Cytogenetic nomenclature (ISCN)

Module 5: Constitutional Cytogenetics

- Gametogenesis and fertilization
- Indications for chromosome analysis
- Cytogenetics of spontaneous miscarriage and infertility, polysomies
- Sexual differentiation and intersex
- Prenatal diagnosis – amniocentesis, chorionic villus sampling, cordocentesis

Module 6: Cancer Cytogenetics

- The genetic and molecular basis of cancer
- Role of cytogenetics in cancer
- Chromosomal abnormalities in solid tumors
- Inherited cancer predisposition
- Chromosomal abnormalities in hematological malignancies
- 15 days training in IHC department

Techniques and Microscopy to analyze chromosomes from:

1. Blood
2. Bone marrow
3. Amniotic fluid
4. Chorionic Villus samples
5. Solid tissues including products of conception, tumors and skin 15 days rotation in Molecular Diagnostics/ Histopathology/ Hematology/Flow cytometry

Course Expectations/Recommendations for the Fellow:

1. Initiate, maintain and harvest in-vitro suspension and adherent cultures of diagnostic human specimens from a variety of tissues (as listed above)
2. Prepare metaphase spreads from human chromosomes.
3. Perform appropriate staining techniques (mainly G- {others: R-, Q-, C-, NOR, distamycin-DAPI}banding); to know the uses and limitations and be able to interpret the findings.
4. Perform Mitomycin C testing for chromosomal breakage analysis.
5. Perform fluorescence in-situ hybridization (FISH) analysis for:
 - Aneuploidy
 - Microdeletions
 - Translocations
 - Amplifications
 - Constitutional and acquired abnormalities, and interpret the result.
6. Prepare reagents required for all the tests performed in the department.
7. Use light phase-, phase contrast-, fluorescence- and inverted microscopes and be able to learn/demonstrate their maintenance techniques.
8. Interpret and communicate the findings of cytogenetic analysis.
9. Use automated karyotyping systems for karyotyping and FISH.
10. Troubleshoot for the above techniques.
11. Be willing and seek expert opinion.
12. Maintain quality control systems in the laboratory.
13. Develop a professional clinical opinion - causation, severity, and likely outcome of the abnormality.
14. Formulate a report clearly conveying diagnostic information and recommendations to the requesting physician.
15. Communicate with the clinicians to seek/provide appropriate information and inferences about the patient report/result and follow-up on patient outcome(s) by consultation with clinicians.

GENERAL GUIDELINES Summary FOR MEDNXT – Post Doctoral Fellowship & Certificate Program

- You will be bound by all rules, regulations, office orders, quality controls, information security procedures, code of conduct and circulars in existence and framed by the company from time to time, which will form a part of your terms of candidature with us.
- You shall keep the Organization informed of your latest postal address and any communication sent to you by the Organization on your last known address shall be deemed to have been duly served notwithstanding the fact that you may have changed your address.
- You will be responsible for the safe custody of all possessions (Documents, manuals and kits or any other property etc.) belonging to the company that may be entrusted to you by organization.
- You will follow the confidentiality Clause, leave policy, POSH Act., IT Acts and any other code of conducts which would be applicable to you. The detailed guidelines along with code of conduct for each applicable Act/Law would be provided to you at the time of joining.
- There would not be any refund/adjustment of or for Fees paid by you.
- The management may withdraw or terminate your candidature by giving 15 days written notice without assigning any reason. Similarly, you may withdraw your candidature by giving 15 days written notice.
- In case of exit either voluntary or involuntary from the program all the assets either hard or soft provided to you have to be returned to the organisation, unless the organisation allows.
- The Candidature shall be governed and construed in accordance with the laws of India. It is agreed that any dispute of whatsoever nature between you and Management will be subject to exclusive jurisdiction of courts in Delhi.

Note :- A detailed information of all the applicable Laws/Act/Code of conduct would be provided at the time of joining.

Email Id :- MedNxt@Lalpathlabs.com | Mobile :- 8460133122

Registration Link :- <https://www.lalpathlabs.com/mednxt-fellowship-program>