

## **Fellowship in Molecular Pathology**

Conceptualized in the year 2004 as a philanthropic initiative for the Eastern and North-Eastern parts of India and the neighboring countries, the Tata Medical Center (TMC) started operations in Kolkata on May 16, 2011. The hospital is governed by a charitable trust – Tata Medical Centre Trust. It is an integrated Oncology facility with well-trained professional staff and equipped with modern facilities and the most contemporary medical equipment. The hospital was designed by Cannon Design, a renowned architectural firm from North America. It is located on 13 acres of land at New Town in Kolkata, West Bengal.

The hospital is an integrated Oncology facility with well-trained professional staff and equipped with modern facilities and contemporary medical equipment. The Hospital, with a capacity of 437 beds, serves all sections of the society, with 75% of the infrastructure earmarked for subsidized treatment for the underprivileged sections. It provides a wide spectrum of services from diagnosis and therapy to rehabilitation and palliative support. The Institution's objective is to excel in service, education and research. To fulfil the above objectives TMC invites applications for the position of Fellow in Molecular Genetics

### **About the Department:**

Molecular assays are performed in diverse fields of Medicine, including Oncology, Infectious diseases, Pharmacogenomics and others, providing personalized medical care to patients. At Tata Medical Centre, Kolkata, the diagnosis, sub-classification, management, prognostication and monitoring of treatment response of various hemato-lymphoid malignancies and solid tumors have been made possible by easy-to-understand and implement, customized panel-based molecular assays using laboratory developed tests ( LDTs ) & commercially available tests ; aiding in Precision Medicine. The molecular laboratory is a state of the art facility hosting some of the best equipments for the assays.

Separate facilities are available for Nucleic acids (DNA/RNA) extraction, Polymerase Chain Reaction (PCR), Post-PCR process, Sequencing (Sanger sequencing and Next Generation Sequencing), Droplet Digital™ PCR (ddPCR™) and Human Leukocyte Antigen (HLA) laboratory, which provide a comprehensive contamination-free environment and reliable assay results.

The nucleic acid extractions are performed manually by using the Trizol reagent as well as by the automated instruments; QiaSymphony® SP (Qiagen, Hilden, Germany) and QiaCube platforms. Our Facility has 5 thermal cyclers which are used for performing PCRs in molecular pathology as well as molecular microbiology: The thermal cyclers available are ThermoFisher® ABI ProFlex, ABI 9700, ABI Veriti, Bio-Rad® S1000 and Bio-Rad® C1000. The agarose gels run for various PCR & Reverse transcriptase PCR tests are documented using the BioRad® Gel Doc XR Plus System.

The quality and quantity of the extracted nucleic acids are checked by the NanoDrop™ 2000 Spectrophotometer, Invitrogen™ Qubit 3.0 Fluorometer and the Agilent™ Biotechnology 4200 TapeStation bioanalyzer. The downstream molecular assays are performed only after the samples pass the required quality / quantity parameters on the above instruments. The department is supplemented with 06 ThermoFisher Bio-Safety Class-II Cabinets, 10 bio-safety hoods, multiple Eppendorf refrigerated / non-refrigerated centrifuges and range of eppendorf micro-pipettes.

A variety of Real-Time PCR (RQ-PCR) and Sequencing (NGS) platforms are available in the Molecular Laboratory; the Real Time PCR instruments being ThermoFisher® ABI 7500, ThermoFisher® Quant Studio™ 3.0, Quant Studio™ 6.0 Qiagen® Rotor-Gene Q and Biorad® QX200™ Digital Droplet PCR. The 4 NGS platforms available at our Sequencing Facility are

ThermoFisher® Ion Torrent PGM, ThermoFisher® Ion GeneStudio S5, Illumina® MiSeq and Qiagen® GeneReader NGS.

Liquid Biopsy (cell-free DNA) evaluation is performed using the BioRad® QX200 Droplet Digital™ PCR. Various liquid & solid malignancies, are diagnosed, prognosticated and monitored using this platform.

Major workload of the laboratory encompasses RQ-PCR for *BCR-ABL1* gene fusion transcripts and *EGFR* gene mutation analysis. The laboratory handles nearly 4000 molecular assays of all types annually, using all the different platforms installed in the molecular laboratory including the Next Generation Sequencers (NGS) equipments.

The HLA laboratory utilizes LifeCodes / LifeScreen Deluxe bead-based Qualitative / Quantitative immunoassay for detecting IgG antibodies against HLA class I and Class II antigens. This is performed on the Luminex® 200™ Multiplexing instrument.

Molecular Pathology at Tata Medical Center, Kolkata, also facilitates outsourcing services for our various medical and surgical oncology disciplines for molecular diagnosis of constitutional syndromes, clinical exome sequencing for rare benign / malignant haematological disorders as well as germline mutation analysis / genetic counseling services relevant to the clinical profile, helping in the optimal management of patients and their families. The department has Memorandum of Understanding (MoU) with external genomics facilities which provide us with these molecular diagnostics services.

The departmental faculty participates in various extra-mural and intra-mural research projects pertaining to haematological malignancies, solid tumours, and clinical trials, which are funded by agencies like DBT-Wellcome Trust, Tata Trust, ICMR etc.

#### **Departmental Teaching / Training Programs:**

1. Post-Doctoral Fellowship programme in Molecular Pathology (2 Years Duration - 2 positions), which is extendable to a 3rd year.
2. Training the DNB (Hematology) students (2 students per academic year).
3. Yearly Annual Workshop in Molecular Pathology; includes participants from various parts of India, SAARC and other countries.
4. Regular Weekly Inter-lab Training Sessions (WITS) for continued training, education and assessment of Consultants, Fellows and Technical Staff.
5. Training / Academic sessions to DMLT students.
6. Training Visitor - Observers from various institutes in India and abroad (1-3 month's duration).

#### **Objectives of Fellowship Program:**

1. Broaden the knowledge of basic molecular biology and genetics.
2. Application of molecular techniques in the diagnosis of inherited and acquired haematological disorders / Solid tumours.
3. Ability to perform a variety of molecular diagnostic assays.
4. An understanding of the heterogeneity, variability, and natural history of haematological disorders.
5. Diagnostic and interpretative skills in a wide range of clinical molecular pathology.
6. The ability to supervise and direct the operations of a clinical molecular diagnostic laboratory

7. Technical experience and knowledge in quality control and quality assurance procedures in molecular pathology.
8. Ability to develop hypotheses and develop experiments in a research project.

**Fellowship Duration:**

The fellowship will be of 02 year duration. The fellow spends the first year predominantly in training / learning molecular techniques and a second year both in training / interpretations / research, If the Fellow opts for the 3<sup>rd</sup> year; the Fellow undertakes a research project under the supervision of a mentor faculty.

**Eligibility Criteria**

**Essential:** The fellowship is open to individuals with an M.D. or equivalent degree in Pathology.

**Desirable:** M.D (Pathology) or DNB (Pathology). Candidate should have completed the desirable qualification within the last 03 years. A candidate with an academic and research bent of mind would be preferred. Candidates having posters / publications at national / international meetings will be given preference.

**Audit and Research:** The candidate would be expected to perform laboratory and clinical audits, as well as participate in various research programs which would involve writing research grant applications, participation in laboratory work for research, presenting papers in scientific conferences and writing articles for publication in peer-reviewed indexed journals.

**Management Responsibilities:** The candidate would be expected to help other laboratory staff in writing standard operating procedures, drafting policy documents, carrying out health and safety audits, participate in equipment maintenance and quality control activities.

**Evaluation Process:**

Fellow will be evaluated during intra-departmental meetings / monthly inter-departmental conferences and Clinical Grand Rounds (CGRs). Candidate will maintain training log-book, which will be evaluated periodically (monthly). Candidate needs to undergo periodic written / oral / practical examinations for assessment of progress. A final exit (written / oral / practical) examination will be conducted prior to completion of fellowship.

**Prospective Candidates are encouraged to contact the following consultant in case of any query:**

**Dr Deepak K Mishra**, +91 9831132365 / +91 33 66057754;

Email: [deepak.mishra@tmckolkata.com](mailto:deepak.mishra@tmckolkata.com);

**\*For more details about the job positions, qualifications, eligibility and application forms, please log on to our website: [www.tmckolkata.com](http://www.tmckolkata.com).**

You may also Email or Post applications by **24<sup>th</sup> March 2023** to:

**Mr. Suvasish Mukherjee**, Head - Human Resources, Tata Medical Center, 14 MAR (EW), New Town, Kolkata – 700160. Email – [suvashish.mukherjee@tmckolka](mailto:suvashish.mukherjee@tmckolka)