TOUR REPORT

Report on participation of the ICMR International Fellow (ICMR-IF) in Training/Research abroad.

1.	Name and designation of ICMR- IF	: Dr Dhanlaxmi Lalit Shetty, PhD
2.	Address	: Department of Cancer Cytogenetics Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Tata Memorial Centre (TMC), Sector 22, Kharghar, Navi Mumbai -410210
3.	Frontline area of research in which training/research was carried out	: Hands on training in chromosomal microarray (CMA) for clinical diagnosis of haematological malignancies along with analysis and interpretation.
4.	Name & address of Professor and host institute	: Professor Pulivarthi Rao,PhD Texas Children's Cancer Center, Cancer Cytogenetics Core Lab, Department of Pediatrics, Section of Hematology- oncology, Baylor College of Medicine, USA
5.	Duration of fellowship with exact date	:27th March 2023-27th September 2023
6.	Highlights of work conducted	:
	i) Technique/expertise acquired	:

- The extraction and purification of nucleic acids (DNA) from Bone marrow and FFPE-Kit method.
- The Qubit fluorometer to accurately measure DNA, RNA, and protein using the highly sensitive Qubit quantitation assays

- SNP Microarray- Oncoscan (Affymetrix) – to detect copy number gains and losses, and cnLOH. Both hands-on training in wet lab procedures with analysis and interpretation.
- Software training for analysis using ChAS 4.3 (Affymetrix) and Nexus 7.5 (Bionano Genomics)

ii) Research results, including any papers, prepared/submitted for publication :

Abstract(s) Accepted:

Pettit RW, **Shetty D**, Perez C, Patel D, Curry CV, Elghetany MT, Punia JN, Marcogliese NA, Sasa G, Shen X, Lopez-Terrada DH, Fan Y, Gastier-Foster JM, Roy A, Scull J, Bertuch AA, Fisher KE. Assessment of Acquired Copy-Neutral Loss of Heterozygosity of Chromosome 6p in Pediatric Aplastic Anemia Patients Using Clinical Single Nucleotide Polymorphism Microarray Analysis. Abstract accepted as poster presentation at AMP 2023, Nov 14th -18th, Salt Lake City, UT.

Manuscripts in Preparation:

1. Deletion of Chromosome 1p36 and Isochromosome 12p are the Most Frequent Genetic Changes in Pediatric Germ Cell Tumors (Ped Blood and Cancer Journal)
2. Gain of Chromosome 1q, Loss of 1p and *TP53* are the Most Frequent Genetic Changes and Poor Prognostic Markers in Wilms Tumor (Genes Chromosomes Cancer)
3. Cytogenomic Profiling ofPediatric Hepatoblastoma.

iii) Proposed utilization of the experience in India:

SNP-A has a higher analytical resolution than conventional karyotyping, detect submicroscopic or cryptic deletions or duplications and, has an ability to recognize the loss of heterozygosity (LOH).Moreover; does not rely on cell division, has excellent resolution for unbalanced rearrangements, and overcomes some of the limitations of MC analysis.-This technique will now be incorporated as a reflex test to karyotyping and ploidy analysis where the abnormal clones do not proliferate and where no mitotic index, poor morphology and few metaphases are present.

Currently, microarray services for cancer diagnostic testing on haematological malignancies is not available at the home institute or any other laboratories in India. I

will establish microarray diagnostic services by integrating conventional chromosomal datawith CMA data and provide a comprehensive diagnostic information for improved patient care.

I will begin with standardization and validation of SNP microarray for clinical diagnosis of haematological malignancies. Complete the standard operating protocol (SOP) and start generating reports that contain results and interpretation in haematological malignancies. I will introduce Test codes for detection of copy number alterations (CNAs) and copynumber neutral loss of heterozygosity (CN-LOH) in AML, CLL and B-ALL. I will extend this service to solid neoplasms to other labs in ourInstitute.

13/10/2023

Signature of ICMR-IF

Dr Dhanlaxmi Lalit Shetty

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