AGT User Meeting
Agilent Presentation

Abstracts

Clinical Utility & Synergy of Molecular Genetic Technologies

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Genomic alterations are implicated in cancer and congenital disorders. The study of these aberrations has largely been achieved by classic analysis of chromosomes. In recent years, clinical laboratories have been shifting toward molecular analysis and the use of comparative genomic hybridization (aCGH) and next generation sequencing (NGS). The presenters will show how these techniques help the clinical laboratory map these genomic aberrations.

4-hour FISH Workflow for FFPE, Blood, and Bone Marrow Specimens

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Fluorescence in situ hybridization (FISH) typically requires a variety of conditions in pretreatment, hybridization and post-washing steps due to different manufacturer protocols, specimen type (e.g., fresh tissue, cytogenetic preparation and FFPE tissue) and specimen processing conditions. Because of differences in protocols, a variety of solutions had to be maintained and pretreament steps for different tissue types and vendors had to be optimized. To meet this need, the Dako HER2 IQFISH pharmDx and Histology FISH kits were validated and shown to be consistent across all tissue types tissue processing conditions. 8 months of data, 1798 specimens, using the various vendors' FISH processes was compared to 8 months of data, 2089 specimens, using DAKO reagents with various vendor's probes (e.g. Abbott Molecular, Cytocell and Empire Genomics) as well as Agilent probes. We demonstrate that formalin-fixed paraffin-embedded tissues and cytogenetic preparations of tumor, blood and bone marrow specimens can be processed in the same batch with the same set of reagents, hybridization conditions and wash solutions. Our results also demonstrate that the number of repeats has decrease form 4.39% to 0.47%, turnaround time has decreased by 1 day and there is a significant improvement in the signal to background fluorescence. Using the Dako workflow with Agilent FISH probes (HER2, PML-RARα, TFE3, ALK, ROS1 and RET) has allowed us to significantly shorten the hybridization step to 1-2 hours instead of overnight, with no compromise on signal strength. It has also allowed for FFPE to be completed in less than one day, from cutting slides to reporting results, and for STAT hematology FISH testing to be completed in less than 3 hours, including the direct harvest. Therefore, the Dako FISH kits have allowed for a single process to be used for all specimen types, increased efficiency and combined with the Agilent probes decreased turnaround times.