CHLA launches OncoKids - a comprehensive DNA and RNA pediatric cancer panel

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Today, a team of investigators at Children's Hospital Los Angeles launched OncoKids^{SM}, a next-generation sequencing-based panel specifically designed for pediatric cancers. OncoKids is intended to guide the diagnosis and treatment of a child's cancer based on the genomic alterations specific to the child's tumor. The panel was developed by a team comprised of laboratory geneticists, oncologists and pathologists.

In contrast to adult cancers, which may contain hundreds of sequence alterations, pediatric malignancies may develop from a very small number of mutations, only some of which overlap with the types of mutations seen in adult cancers. Some of these mutations can be present in the germline, and may have been inherited from a parent who may or may not have cancer. Tumor-specific structural changes including duplications, translocations or inversions, which result in novel activating gene fusions, are also much more frequent in childhood cancer than in adult cancer, especially in leukemia and sarcomas.

"We could not simply modify a panel used for adult cancers because the genomic profiles of childhood cancers are so very different," said Timothy Triche, M.D., Ph.D. "OncoKids was designed based on the need we saw in our own clinics, with our own patients."

The OncoKids^{SM} panel detects mutations, gene amplification and gene fusions for a full range of pediatric cancers including leukemias, bone and soft tissue tumors and brain tumors. The test requires only a small

amount of DNA and RNA (20ng) isolated from fresh, frozen or formalin-fixed paraffin-embedded tissue, so that retrospective analysis of primary and recurrent tumors can be performed. The combined DNA and RNA assay can replace many of the single gene, or more narrowly focused, next-generation sequencing-based panels, as well as a variety of fluorescence in situ hybridization assays, which will save time and preserve tissue.

"In addition to providing this unique test panel developed for pediatric cancers, we are also making available our team of experts to provide clinical pathology consultations and to meet with clinical geneticists and genetic counselors in our Cancer Genomics Clinic. These experts can guide patients and physicians with respect to further testing, including germline mutation testing," said Jaclyn Biegel, Ph.D., FACMG, director of the Center for Personalized Medicine at CHLA. "We are also providing clinical investigators and their institutions access to some of the best bioinformatics specialists in the country, who are working on web-based portals for variant curation and data sharing that will be invaluable for both clinical and research applications."

CHLA's Children's Center for Cancer and Blood Diseases is home to one of the largest pediatric hematology-oncology programs in the country.

"For those children whose cancer comes back or does not respond to standard therapy, this advanced genomic analysis can help us determine the next best step. By identifying the specific mutations associated with an individual's cancer, we can better select treatment options that might be most effective," said Alan Wayne, M.D., director of the Children's Center for Cancer and Blood Diseases at CHLA and professor of Pediatrics at the USC Keck School of Medicine and the USC Norris Comprehensive Cancer Center.

Provided by Children's Hospital Los Angeles