Childhood and Adult Cancers Are Not Equal

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Two new studies confirm that pediatric and adult cancers have different mechanisms driving the disease. These are the first large-scale genomic comparisons, combing through the genomes of more than 1,700 tumors, from over 20 different kinds of childhood cancers. **Daniela S. Gerhard, PhD (Damon Runyon Fellow ’83–’85)** of NCI, Bethesda, and **Angela J.Waanders, MD, MPH (Dale F. Frey Breakthrough Scientist ’15–’17, Damon Runyon-Sohn Pediatric Cancer Fellow ’12–’15)** of Childrenʼs Hospital of Philadelphia, Philadelphia, contributed to these studies.

Adult cancers arise from multiple genetic mutations that combine to drive cancer progression and often these same drivers are shared across diverse cancer types. A different picture emerges from these research studies for young patients: pediatric cancers have fewer mutations than adult cancers and are frequently defined by a single driver gene. Interestingly, these driver mutations tend to be specific to individual pediatric cancer types, with minimal overlap across diseases. They also found that different genes are mutated in pediatric compared to adult cancers. One study found only 30 percent of significantly mutated genes overlap with adult pan-cancer analyses. The similarities and differences between adult and pediatric cancers unearthed by the recent studies shed light on potential new drug targets and a better understanding of how cancer arises in children. It is clear that different precision medicine approaches are urgently needed for young patients. These studies were recently published in the scientific journal Nature.

Read more about the studies here.

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