Novel RNA Cancer Drivers Revealed in Chronic Lymphocytic Leukemia

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Christine Mayr, MD, PhD, (Damon Runyon Innovator ’13–’15), Omar Abdel-Wahab, MD (Damon Runyon Clinical Investigator ’13–’16), and colleagues at Memorial Sloan Kettering Cancer Center, New York, report new results that suggest malfunctions in messenger RNA (mRNA) processing may be driving chronic lymphocytic leukemia (CLL). mRNAs carry the information encoded in DNA, which is then translated into proteins. Changes at both the DNA and mRNA level can result in malfunctioning proteins. Tumor suppressor genes are necessary to prevent the body’s cells from turning cancerous. The researchers found that even without a corresponding DNA alteration, some patients had altered proteins that either lacked their normal tumor-suppressive effect, or in other cases, even promoted cancer. The altered proteins were attributed to changes at the mRNA level. These findings may help explain the puzzling observation that CLL cells have relatively few known DNA mutations. The study also demonstrates the need to go beyond genomic DNA analyses in cancer diagnostics, as mRNA alterations are also widespread contributors to cancer pathogenesis through the inactivation of tumor suppressor genes. This work was published in Nature.

Read more about the the results of the study on GenomeWeb.

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