

LINE-1, is a main source of variation in the human genome. Its activity assessment is confounded by its highly repetitive nature and pervasive transcription. We developed and validated a method to gauge LINE-1 activity accurately. Our method allowed us to perform comprehensive, uniform, and unbiased measurements of LINE-1 activity across healthy and tumor cells. Previously, LINE-1 had been shown to be active in human germline and tumors, but not in healthy somatic tissue, with the exception of some activity in the human brain. In contrast, we found that LINE-1 activity was limited in the central nervous system, but present in some normal somatic and tumor cells. Interestingly, the amount of LINE-1 activity was associated with the amount of cell turnover and, in tumor cells, with the amount of genomic instability. Our results suggest that LINE-1 activity gives rise to insertions and deletions, potentially contributing to the mutagenic landscape in tumors.

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