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Editorial

"DAMAGENOME" A NEW DIAGNOSTIC TOOL

The particular abnormal condition that is associated with specific signs and symptoms can be recognized as disease; however, it can also happen that many diseases show the same signs and symptoms and vice versa can also be true. Therefore, specific Medical Diagnosis is needed. However, no diagnostic technique is foolproof. In search of foolproof diagnosis researchers started using DNA sequence single-cell DNA amplification and sequencing strategy. A team of biochemists from Baylor College of Medicine, USA has identified "damagenome," parts of the genome that appear prone to spontaneous DNA damage in human brain cells that may contribute to disease. By adopting this technique recently a revolutionary almost foolproof technique for diseases like, Alzheimer's disease (AD) and autism spectrum disorder (ASD) were developed.

Recent studies have also suggested that spontaneous DNA damage could alter the epigenetic landscape and gene expression. The levels of DNA damage on the genome are likely not uniform. As a result, different genes bear varying burdens of DNA damage. Hence, different genes come to have different degrees of vulnerability toward mutations and epigenetic instability, which could lead to the large scale perturbations to gene functions and trigger the development of diseases. Thus, one can accurately profile the distribution of DNA damage in the human genome and identify different genes in different types of cells.

Source

Qiangyuan Zhu et al.: Single-cell damagenome profiling unveils vulnerable genes and functional pathways in human genome toward DNA damage. Science Advances 02 Jul 2021: Vol. 7(27), eabf 3329 DOI: 10.1126/sciadv.abf 3329

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