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Circulating tumor DNA: Where are we now? A mini review of the literature

Gliceida Maria Galarza Fortuna, Kathrin Dvir

Abstract

For many years tissue biopsy has been the primary procedure to establish cancer diagnosis and determine further treatment and prognosis. However, this method has multiple drawbacks, including, to mention some, being an invasive procedure carrying significant risk for fragile patients and allowing only for a "snapshot" of the tumor biology in time. The process of liquid biopsy allows for a minimally invasive procedure that provides molecular information about underlying cancer by analyzing circulating

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Circulating Tumor DNA - an overview | ScienceDirect Topics

https://www.sciencedirect.com/topics/medicine-and-dentistry/circulating-tumor-dna

Circulating-tumor DNA (ctDNA) refers to fragments of DNA **derived from tumor cells and circulating in the blood together with cell-free DNA from other sources**. Although the mechanism leading to ctDNA release have not been fully characterized so far, it is believed that most ctDNA fragments originate from tumor cells necrosis or apoptosis.

[PDF] Early detection of pancreatic cancer: Where are we now ...

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tures, have already been identified. In addition, **circulating tumor** cells (CTCs), cell-free **circulating tumor DNA** (ctDNA) and exosomes were discovered in body fluids using liquid biopsy and could be potentially used as early diagnos-tic tools for PC. Genetic Signature It is well-known that PC is the result of accumulation of

Cited by: 75 **Author:** Bin Zhou, Jian-Wei Xu, Yu-Gang Cheng, …
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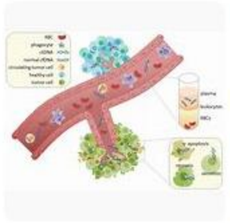
Circulating tumor DNA



Circulating tumor DNA is tumor-derived fragmented DNA in the bloodstream that is not associated with cells. ctDNA should not be confused with cell-free DNA, a broader term which describes DNA that is freely circulating in the bloodstream, but is not necessarily of tumor origin. Because ctDNA may reflect the entire tumor genome, it has gained traction for its potential clinical utility; “liquid biopsies” in the form of blood draws may be taken at various time points to monitor tumor progression throughout the treatment regimen.

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Circulating free DNA was first verified by French biochemists in 1948. 64 In **healthy people**, most **cfDNA is derived from bone marrow and other organs**, such as **liver, 65 and is cleared by the liver and kidneys with a short half-life ranging from 15 min to a few hours**. 66 Tumor cells also release fragments of DNA called ctDNA. ctDNA represents a variable fraction of cfDNA, accounting for 0.01% to >50% of the ...

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Recent advances in the understanding of **tumor** genetics have resulted in the discovery of **circulating tumor DNA** (ctDNA). A growing body of evidence supports the use of these sensitive biomarkers in detecting residual disease and diagnosing recurrence as well as enabling targeted and **tumor**-specific adjuvant therapies.

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May 27, 2015 · The release of **DNA**, RNA, and noncoding RNAs in **cancer** patients into circulation is attributed to a combination of **tumor** cell necrosis, apoptosis, and possibly secretion. Changes in the concentration and detection of **tumor**-specific alterations in **DNA** and/or dysregulated RNA expression profiles have been proposed as CRC-specific biomarkers.

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