

Inline manipulation of cells and cell clusters

Current methods for isolation CTCs reduces detection rates

The problem with current ex vivo methods for isolating circulating tumor cell (CTC) clusters is their limitation to small blood volumes, which reduces detection rates and prevents comprehensive longitudinal analysis. These limitations hinder the effective study of tumor heterogeneity and metastasis.

This new extracorporeal circulation system overcomes these challenges by enriching CTC clusters from large blood volumes outside the body. This technology enables continuous, detailed screening and analysis of CTC clusters, facilitating in vitro culturing, drug testing, and integration with drug delivery systems for targeted treatment. It significantly improves early cancer detection and treatment by removing metastatic precursors from circulation.

Methods for combating metastasis are improved using large blood volumes

This technology introduces an extracorporeal circulation system that enriches CTC clusters from large blood volumes, overcoming the limitations of current ex vivo methods. By processing blood outside the body and isolating CTC clusters, this system facilitates longitudinal screening and detailed analysis of these clusters, which are critical in understanding and combating metastasis.

Summary Bullets

- This extracorporeal circulation system enriches CTC clusters from large blood volumes, enabling detailed longitudinal screening and analysis of metastasis.
- The prototype improves detection rates and facilitates continuous monitoring and in vitro analysis of CTC clusters, aiding early cancer detection and treatment.
- It supports in-line dialysis systems for pathogenic cells, enhances cancer diagnosis, and provides research tools for studying tumor biology and developing treatments.

Solution Advantages

- Improving detection rates.
- Offers potential for retarding or preventing metastasis through continuous operation.

- Supports continuous and longitudinal screening.
- Provides capabilities for mechanical, thermal, and UV-based manipulation of isolated cells for research and therapeutic purposes.
- Facilitates downstream functional analysis of CTC clusters.

Potential Commercial Applications

- In-line dialysis or treatment systems for pathogenic cells in diseases like cancer
- Enhanced detection of circulating tumor cells for early diagnosis and monitoring of cancer.
- Research tools for studying tumor biology, heterogeneity, and developing new cancer treatments.

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IP Status

<p>The patent has issued</p>: WO2024124055A1

Publications

[A microfluidic device for label-free, physical capture of circulating tumor cell clusters](#), Nature Methods - 2015

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