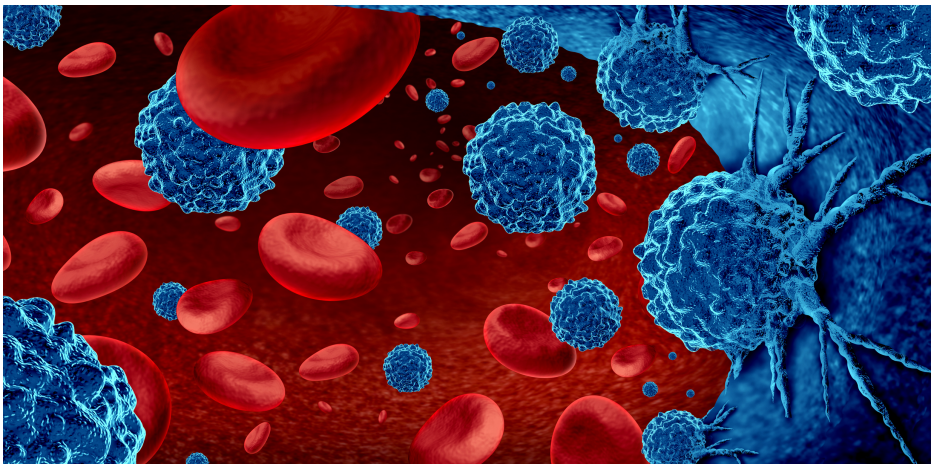
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Micro Aphaeretic System for In-Vivo Circulating Tumor Cell Isolation and Analysis

TECHNOLOGY NUMBER: 7422



OVERVIEW

Continuous wearable in vivo CTC isolation system for improved cancer diagnostics

- Screens larger blood volumes without significantly burdening the patient
- Enhanced cancer biomarker detection, early disease diagnostics, and therapeutic management

BACKGROUND

Circulating Tumor Cells (CTCs) have emerged as a significant cancer biomarker, providing pivotal information for early disease diagnostics and therapeutic management. Historically, the standard methods for CTC isolation have involved drawing small volumes of blood from patients and processing these samples for analysis. Although these approaches have yielded valuable insights, they also come with notable shortcomings, such as limited blood volumes that may not accurately capture the full heterogeneity of tumor cells. Additionally, the need for repetitive blood draws can be a burden to patients. These limitations highlight a need for improved methods that can more comprehensively collect and analyze CTCs, thereby more accurately reflecting the diverse nature of cancer cells and enhancing the potential for early detection and personalized therapeutic interventions.

INNOVATION

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Category
Medical Devices
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Researchers at the University of Michigan have developed an in vivo CTC isolation system designed to be worn by living vertebrates, enabling continuous collection of CTCs directly from the peripheral vein. This system significantly diverges from traditional blood-draw methods by allowing for the retransfusion of the remaining blood products after CTC sampling and enrichment. Consequently, this advancement allows for the screening of larger blood volumes without unduly burdening the patient. Technically, this system improves the comprehensiveness and convenience of CTC isolation, offering a more accurate reflection of tumor cell heterogeneity. Applications of this approach include enhanced early disease diagnostics, better tracking of cancer progression, and more informed therapeutic management, ultimately paving the way for more personalized and effective cancer treatment strategies.

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