

# The Market for Circulating Tumor Cells (CTCs) and Cancer Stem Cells (CSCs)

<https://marketpublishers.com/r/MA63B9E047BEN.html>

Date: August 2013

Pages: 164

Price: US\$ 3,995.00 (Single User License)

ID: MA63B9E047BEN

## Abstracts

Circulating tumor cells (CTCs) are believed to detach from primary or secondary tumors and enter the bloodstream, traveling to distant organs and forming new tumors. These cells that leave the primary tumor are able to colonize distant organs in the body and initiate the process of metastasis; however, their biology is still not entirely elucidated.

Circulating tumor cells have tremendous utility in cancer research, aiding scientists in deciphering the complex biology of cancer metastasis. Besides the applications in cancer research, the detection and analysis of circulating tumor cells has enormous potential in the diagnosis and management of cancer, as current tools, such as tumor tissue biopsy or imaging technologies, have numerous limitations. This report is Kalorama's detailed analysis of the potential opportunities for manufacturers of CTCs-based technologies. Analyst Adriana Rusu informs readers of the scientific basis of CTCs in an understandable fashion, and constructs models of revenue opportunity based on several dimensions - application area, cancer type and region - that can assist with business planning efforts.

Despite their potential, the detection and analysis of circulating tumor cells has been a challenging endeavor, and their significance in cancer not completely understood. Progress in the field of CTC-based cancer diagnostics and therapeutics has been thus far hampered by the rarity of these cells and the difficulty to isolate them from the patient's blood. Nonetheless, in the past decade, numerous technological advances have contributed to a renewed interest in this field. The report considers these challenges and trends in the markets and provides data on the following:

Introduction and Overview of Biology Behind CTCs

## Market and Forecast to 2017 For CTCs-based Technologies

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Collaboration and Partnerships

The global market for CTC detection, isolation and analysis devices is a heterogeneous and competitive market, constantly driven by technological innovation and demand for improved technologies. The market includes numerous competitors with different capabilities. These numerous specialized or research-based companies also develop and commercialize products for the detection, isolation and analysis of CTCs, and contribute considerably to the technological advancements in this field. As part of its extensive coverage, the report profiles several competitors in the market. Companies profiles include:

AdnaGen AG

Advanced Cell Diagnostics, Inc.

ApoCell, Inc.

Aviva Biosciences Corporation

Biocept, Inc.

BioView Ltd.

Celula, Inc.

Clearbridge Biomedics

Creatv MicroTech, Inc.

Cynvenio Biosystems

CytoTrack ApS

Epic Sciences

Fluidigm Corporation

Fluxion Biosciences, Inc.

Ikonisys, Inc.

Miltenyi Biotec GmbH

Parsortix/ANGLE

RareCells Diagnostics

ScreenCell

Silicon Biosystems

TeloVISION LLC

Veridex, LLC

Vitatex Inc.

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AdnaGen AG

Advanced Cell Diagnostics, Inc.

ApoCell, Inc.

Aviva Biosciences Corporation

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## About

The idea of a “liquid biopsy” that captures and analyzes CTCs appears to have great advantages for oncology diagnostics and therapeutics. If developed to full potential, CTCs detection and analysis technologies could provide powerful tools to diagnose cancer without the need to collect a tissue specimen from the patient. Despite this, only a limited number of CTCs–based technologies are currently available for oncology practice, due to the lack of robust and highthroughput CTCs detection and isolation technologies.

Presently, the majority of the commercially available technologies for cancer diagnosis and monitoring are able to capture CTCs and count them, thus giving physicians an indication of the disease stage. Current CTC-based diagnostic technologies, such as Veridex’s CellSearch, enable physicians to predict more accurately and earlier than other diagnostic methods the disease progression and survival in cancer patients. Consequently, these technologies permit physicians to select a more appropriate cancer therapy, monitor therapy effectiveness during its administration, and switch patients from ineffective therapies sooner.

However, to enhance their utility in cancer diagnosis and management, CTC-based technologies must also be able to provide information about the origin and genetic characteristics of the captured cells. As tumors are not homogeneous, and their genetic make-up changes during the disease progression and therapy, tissue biopsies may not be able to capture this heterogeneity. The analysis of CTCs has the potential to overcome these limitations; nonetheless, at this time there are many unknowns regarding the exact composition, characteristics, and biological significance of CTCs, fact that underscores the stringent need for functional analysis and molecular characterization of these cells.

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