



RESEARCH TOOL & DIAGNOSTIC

Barcoding for the Tracking and Quantification of DNA

Brief Description of Technology

System and methods for digital quantification and tracking of cells and DNA including, disseminated tumor cells [DTC], circulating tumor cells [CTC], and circulating tumor DNA [ctDNA].

BUSINESS OPPORTUNITY

Exclusive license
Sponsored research

TECHNOLOGY TYPE

Diagnostic
Nucleic acid
Research tool

STAGE OF DEVELOPMENT

Preclinical *in vitro*

PATENT INFORMATION

US 20150133312
US 20150126376
WO 2016161177
Additional provisional patent pending

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Technology Overview

Dr. Bielas and colleagues have been working on developing methods to quantify DNA and reduce background noise to better track, sequence, and quantify DNA. Genetic constructs are created using repeats of unique genetic sequences separated by restriction enzymes. These constructs act as barcodes to tag and track cells and DNA including mitochondrial DNA [mtDNA], DTCs, CTCs, ctDNA, and implanted cells of a species within the same species. Detection and analyses can be performed through ddPCR, dPCR, qPCR, NGS, other sequencing platforms. This tool can be applied pre clinically or applied as a clinical tool to aid in diagnosis and/or treatment of a subject.

Applications

- Companion diagnostics
- Sequencing platforms for liquid biopsy
- CAR-T cell development and tracking

Advantages

- Enhanced sensitivity through reduction of signal to noise ratios
- Track disseminated cells within the same species
- Tag is not xenobiotic like current fluorescent markers

Market Overview

This technology can be applied to liquid biopsy and companion diagnostics, with a focus on immunotherapies. Companion diagnostics are expected to reach \$5.6 billion by 2019 with CAGR of 18.1% between 2013 and 2019. The lipid biopsy market is growing with at a five year annual growth rate of 22.3% and is expected to reach \$4.5 billion by 2020. The submarket for the cancer liquid biopsy market is the fastest growing segment and should grow from \$414.5 million to \$1.9 billion by 2020.