

# CES, a novel tumor marker in liquid biopsies

An enucleated cancer cell surrounded by WBC serves as a complementary-CTC (C-CTC) marker

## What is CES ? A C-CTCs marker

The **C**ancer **E**nuclation **S**phere (**CES**) is a cell cluster specifically detected in the blood of cancer patients. The CES consists of a core of an enucleated cancer cell surrounded by rosette-shaped white blood cells. CESs and **CTCs (Circulating Tumor Cells)** can be detected simultaneously in blood. CESs are believed to be cellular debris released when cancer cells are destroyed during treatment, serving as a new indicator complementary to CTC (C-CTC) for real-time assessment of cancer therapy.

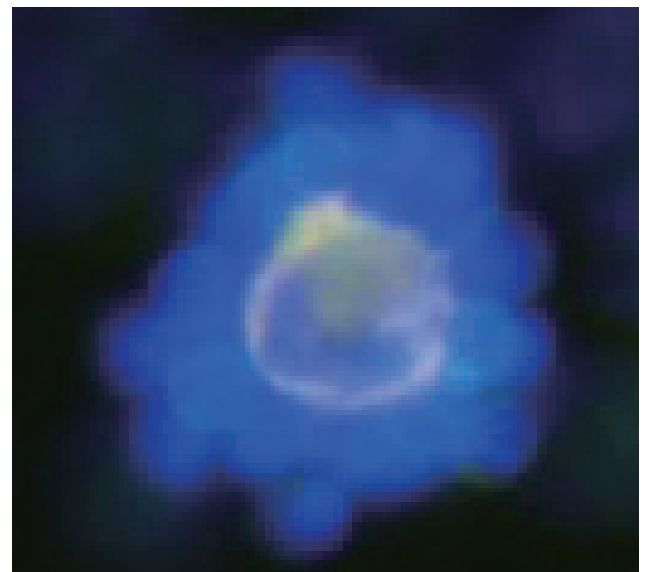


Fig. 1. The CES under fluorescence microscope showing white blood cells surround an enucleated cancer cell.

## Clinical Significance of C-CTC detection

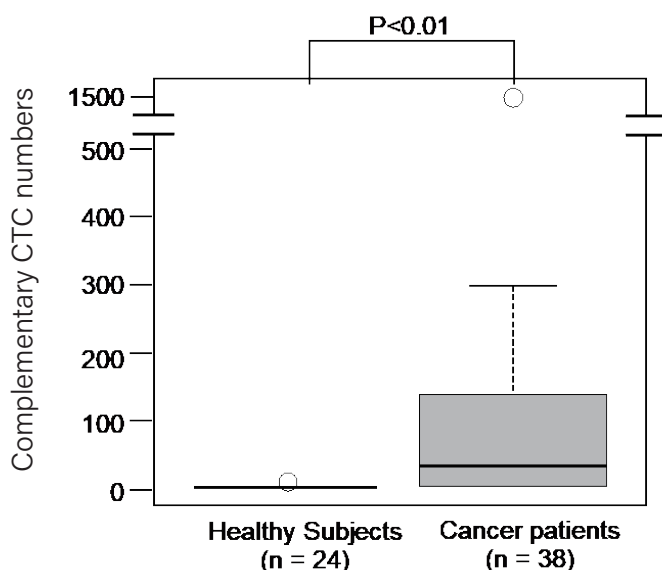


Fig. 2. A significantly higher number of CES was detected in cancer patients ( $p < 0.01$ ).

### Evaluation and monitoring of treatment response

CESs were found increased after hyperthermia and chemotherapy. When CES and CTC detection technologies are used in combination, they can work complementary for double checks, providing a new standard for more accurately assessing treatment effects.

# Neoplasia Liquid® C-CTC Assay Series

## Kit lineup for various research purposes

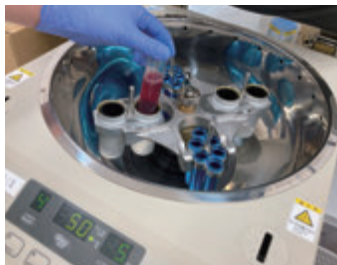
We provide kits for a variety of research purposes. Preparation kit includes reagents necessary for cell fixation and hemolysis. It can be used in combination with the detection kits to detect CES without identifying the cancer type, or with the CES cancer type-specific antibody panels to further confirm the possible cancer type.

## Abundant onco-specific antibody panels

The expression of epithelial markers such as CK and EpCAM is known to be reduced in cancer cells undergoing EMT (epithelial-mesenchymal transition). The C-CTC advanced screening kit offers antibody panels specific to various cancers (such as breast, gastric, prostate, colon, pancreatic, lung, etc.), so even if epithelial markers are lost, C-CTC can be tracked to identify the cancer type.

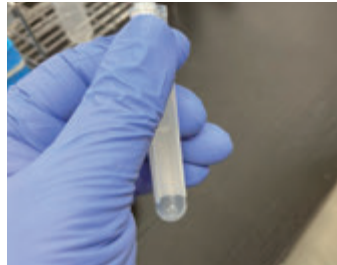
## Operation protocol

①



Fix, lyse, and wash whole blood samples according to the kit manual.

②



Add ① to the labeled antibody tube.

③



Measure using flow cytometry or a fluorescent microscope.

## Product List of Life Science Detection Kit for Flow Cytometry/Fluorescence Microscopy

Neoplasia Liquid® Product Name		Kit Contents	Product Code
Preparation Kit		Cell fixative solution, hemolysis reagent, washing solution, blocking reagent, diluent	CESB01
Detection Kit		DAPI, PC7-labeled anti-CD45 ab, FITC-labeled anti-CK ab, APC-labeled anti-EpCAM ab	CESD01
Advanced Screening Kit	Breast cancer specific antibody panel	PE-labeled anti-ER ab, FITC-labeled anti-PR ab, APC-labeled anti-HER2 ab	CESS01
	Prostate cancer specific antibody panel	PerCP-Cy5.5 labeled anti-PSA ab, PE-Cy7 labeled anti-AR ab	CESS02
	Colon cancer specific antibody panel	APC-Cy7 labeled anti-CEA ab, BV421 labeled anti-CK20 ab	CESS03
	Lung cancer specific antibody panel	PE-labeled anti-EGFR ab, BV510-labeled anti-ALK ab	CESS04
	Hepatocellular carcinoma specific antibody panel	BV605-labeled anti-AFP ab, BV711-labeled anti-GPC3 ab	CESS05
	Pancreatic cancer specific antibody panel	PE-Cy5 labeled anti-CA 19-9 ab, BV786 labeled anti-KRAS ab	CESS06
	Ovarian cancer specific antibody panel	APC-Cy7 labeled anti-CEA ab, BV421 labeled anti-CK20 ab	CESS07
	Gastric cancer specific antibody panel	APC-labeled anti-HER2 ab, PE-labeled anti-CA 72-4 ab	CESS08
	Bladder cancer specific antibody panel	APC-labeled anti-NMP22 ab, PE-labeled anti-CK20 ab	CESS09



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