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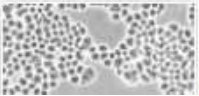
Eliisa T. Goddard<sup>1</sup>, Jacob Fischer<sup>1</sup>, Pepper Schedin<sup>1</sup><sup>1</sup>Department of Cell, Developmental and Cancer Biology, Oregon Health and Science University

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Tarama sonuç sayısı

CANCER RESEARCH

## Flow Cytometric Detection of Newly-formed Breast Cancer Stem Cell-like Cells After Apoptosis Reversal

Yiyue Xu<sup>1,2</sup>, Chun So<sup>1</sup>, Hon-Ming Lam<sup>1,2</sup>, Ming-Chiu Fung<sup>1,2</sup>, Suk-Ying Tsang<sup>1,2,3,4</sup><sup>1</sup>School of Life Sciences, The Chinese University of Hong Kong, <sup>2</sup>State Key Laboratory of Agrobiotechnology, The Chinese University of Hong Kong, <sup>3</sup>Key Laboratory for Regenerative Medicine, Ministry of Education, The Chinese University of Hong Kong, <sup>4</sup>Centre for Novel Biomaterials, The Chinese University of Hong Kong

# Video makale



ABSTRACT

INTRODUCTION

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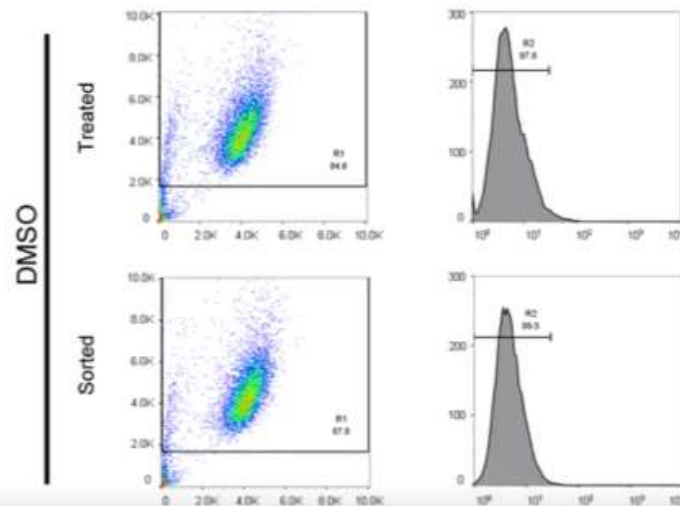
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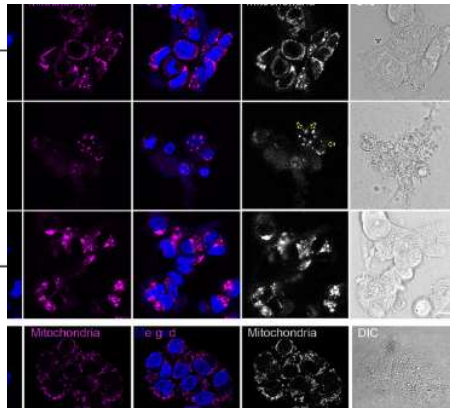
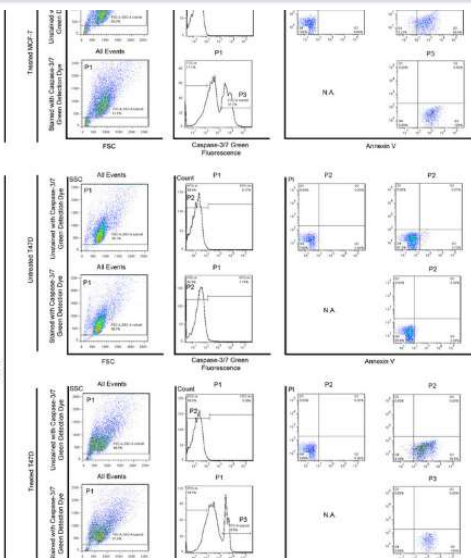
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ABSTRACT

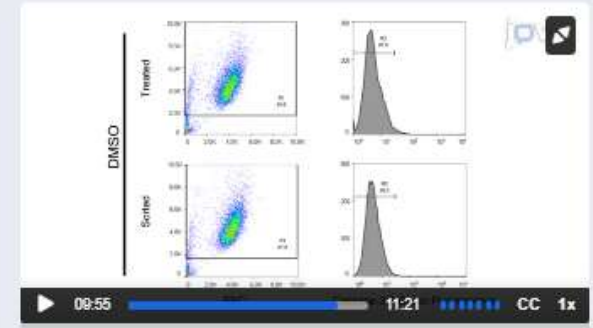
Cancer recurrence has long been studied by oncologists while the underlying mechanism of apoptosis reversal leads to increased tumorigenicity in various cell models under different stimuli. *P* vivo; however, the isolation of real reversed cells has yet to be achieved, which limits our understanding of the advantage of a Caspase-3/7 Green Detection dye to label cells with activated caspases after apoptotic fluorescence-activated cell sorting (FACS) for recovery. Morphological examination under confocal microscopy in tumorigenicity can often be attributed to the elevation in the percentage of cancer stem cell (CSC) origin of these CSC-like cells would be critical to cancer treatment. Thus, we prepare breast non-stem



Reversal. *J. Vis. Exp.*

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04	Title
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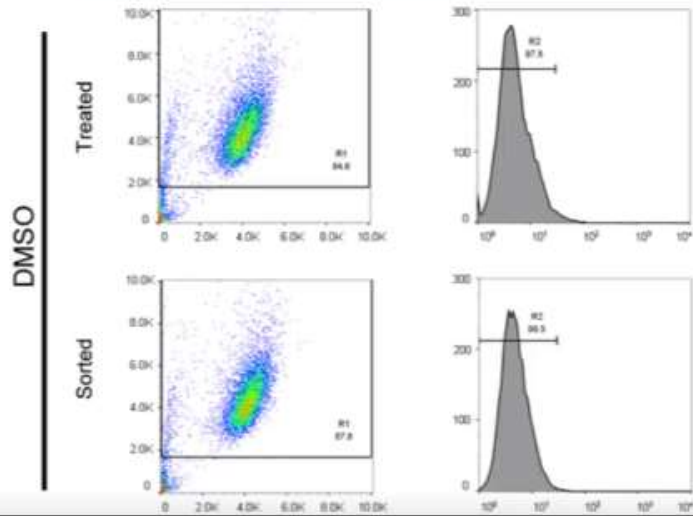
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### CHAPTERS

4	Title
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ABSTRACT INTRODUCTION PROTOCOL RESULTS



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Video Article  
**Flow Cytometric Detection of Newly-formed Breast Cancer Stem Cell-like Cells After Apoptosis Reversal**

Yiyue Xu<sup>1,2</sup>, Chun So<sup>1</sup>, Hon-Ming Lam<sup>1,2</sup>, Ming-Chiu Fung<sup>1,2</sup>, Suk-Ying Tsang<sup>1,2,3,4</sup>  
<sup>1</sup>School of Life Sciences, The Chinese University of Hong Kong  
<sup>2</sup>State Key Laboratory of Agrobiotechnology, The Chinese University of Hong Kong  
<sup>3</sup>Key Laboratory for Regenerative Medicine, Ministry of Education, The Chinese University of Hong Kong  
<sup>4</sup>Centre for Novel Biomaterials, The Chinese University of Hong Kong

Correspondence to: Hon-Ming Lam at [honming@cuhk.edu.hk](mailto:honming@cuhk.edu.hk), Ming-Chiu Fung at [fl9923mc@gmail.com](mailto:fl9923mc@gmail.com), Suk-Ying Tsang at [syetsang@cuhk.edu.hk](mailto:syetsang@cuhk.edu.hk)

URL: <https://www.jove.com/video/58642>  
DOI: [doi:10.3791/58642](https://doi.org/10.3791/58642)

Keywords: Cancer Research, Issue 143, cancer stem cells, breast cancer, apoptosis, apoptosis reversal, flow cytometry, fluorescence-activated cell sorting

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Abstract

Cancer recurrence has long been studied by oncologists while the underlying mechanisms remain unclear. Recently, we and others found that a phenomenon named apoptosis reversal leads to increased tumorigenicity in various cell models under different stimuli. Previous studies have been focused on tracking this process in vitro and in vivo; however, the isolation of real reversed cells has yet to be achieved, which limits our understanding on the consequences of apoptosis reversal. Here, we take advantage of a Caspase-3/7 Green Detection dye to label cells with activated caspases after apoptotic induction. Cells with positive signals are further sorted out by fluorescence-activated cell sorting (FACS) for recovery. Morphological examination under confocal microscopy helps confirm the apoptotic status before FACS. An increase in tumorigenicity can often be attributed to the elevation in the percentage of cancer stem cell (CSC)-like cells. Also, given the heterogeneity of breast cancer, identifying the origin of these CSC-like cells would be critical to cancer treatment. Thus, we prepare breast non-stem cancer cells before triggering apoptosis, isolating caspase-activated cells and performing the apoptosis reversal procedure. Flow cytometry analysis reveals that breast CSC-like cells re-appear in the reversed group, indicating breast CSC-like cells are transferred from breast non-stem cancer cells during apoptosis reversal. In summary, this protocol includes the isolation of apoptotic breast cancer cells and detection of changes in CSC percentage in reversed cells by flow cytometry.

Video Link

The video component of this article can be found at <https://www.jove.com/video/58642/>

Introduction

Cancer has been a leading cause of death, causing heavy burden to countries worldwide<sup>1</sup>. Breast cancer ranks high both in terms of incidence and mortality in female patients among all types of cancer<sup>1</sup>. Due to the cancer heterogeneity, a combination of drugs is usually used in

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