

IN COLLABORATION WITH:



Pre-Enrichment of Breast Cancer Disseminated Tumor Cells in Bone Marrow

INTRODUCTION

While improvements have been made in the treatment of primary Breast Cancers (BC), over 20% of BC survivors will suffer from tumor recurrence. Most cancer recurrences result from the renewed growth of DTCs (Disseminated Tumor Cells), which survive the initial treatment. DTCs can be detected in Bone Marrow, and their presence is correlated with increased relapse risk. Having the ability to efficiently detect and eliminate DTCs can have a significant impact on clinical outcomes, but current standard methods for DTC detection are complex, expensive, and/or lack sensitivity.

RESULTS

Optimization of MARS workflow for Tumor cells detection in PC3 spiked Whole Blood (Fig. 2) provides:

- ✓ over **90% recovery** of Tumor Cells
- ✓ **no more Ficol** gradient
- ✓ **high sensitivity**
- ✓ **high purity**
- ✓ fast and **easy workflow** for assay optimization

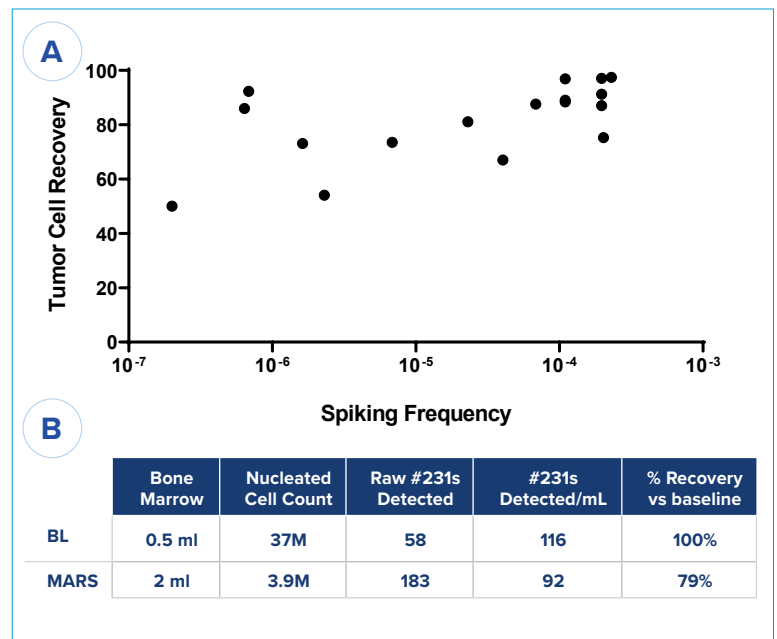


Figure 1. MARS provides high DTC recovery from Bone Marrow. (A) Tumor cell recovery using MARS across a range of Spiking Frequencies, (B) PBM spiked at 1:10K with MDA-MB-231 Cells shows higher raw # of tumor cells detected with MARS and efficient depletion of CD66b+ BMCs (Nucleated Cell count).

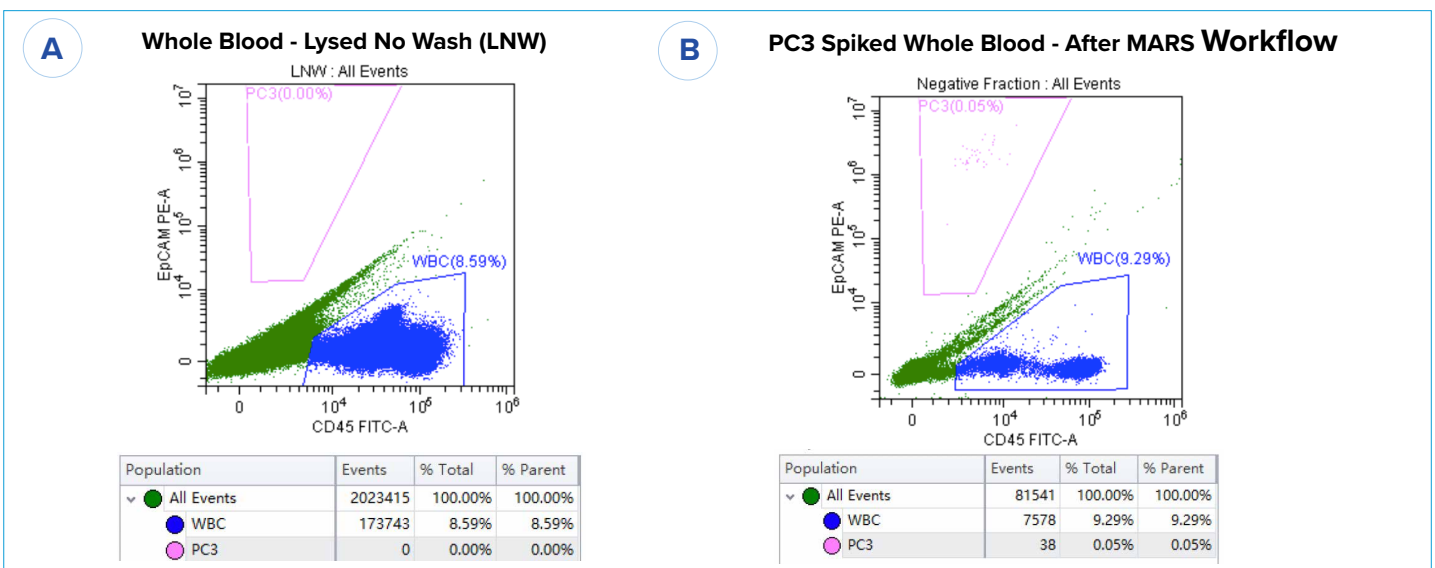


Figure 2. Tumor Cell enrichment from 30 μ L Whole Blood (A) and 1 ml PC3 Spiked Whole Blood (B) using MARS shows high recovery and purity with > 90% recovery of Spiked PC3 cells and > 90% WBC depletion.

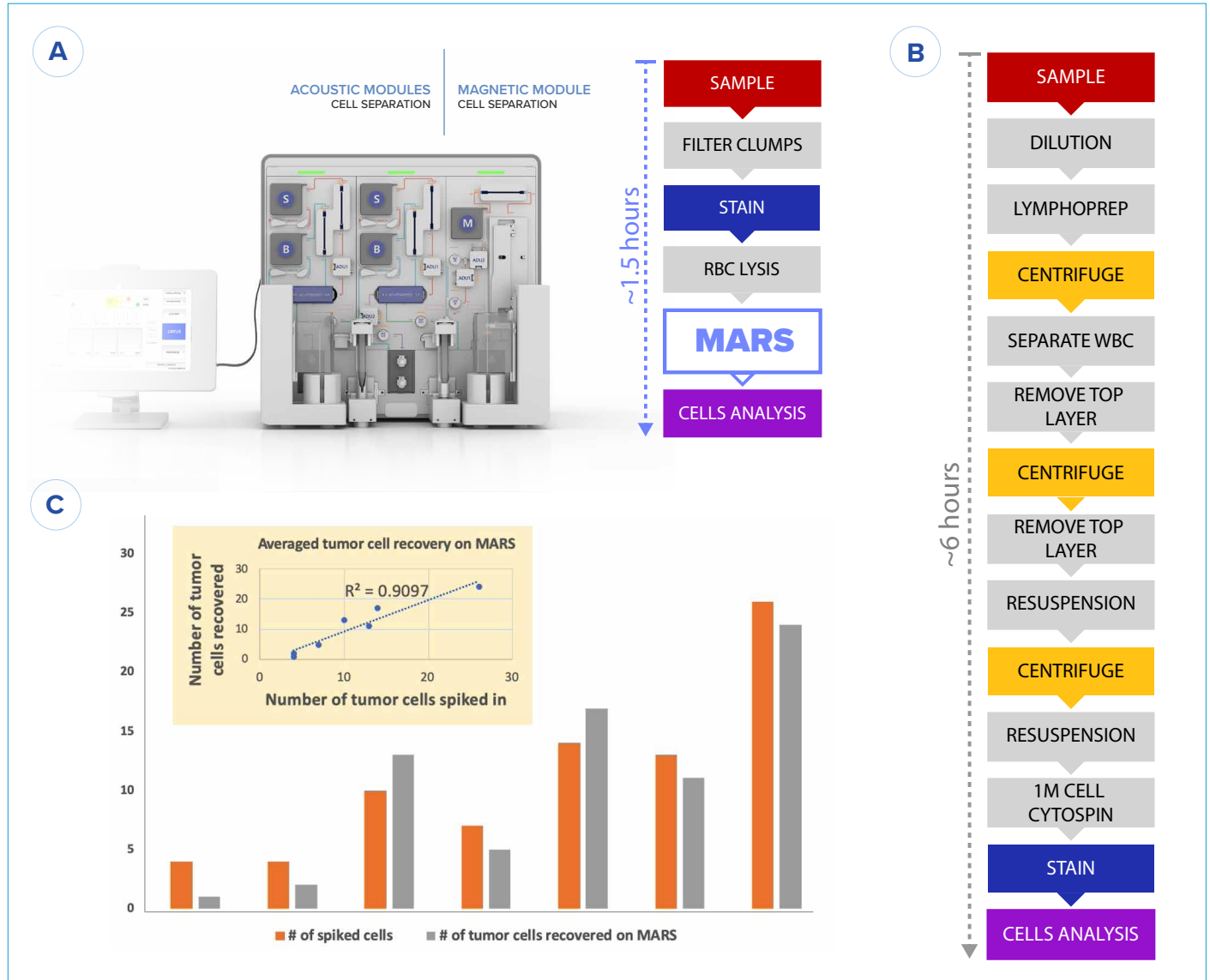


Figure 3. MARS procedure (A) replaces multiple sample processing steps in a standard IHC-based DTC detection workflow (B), which substantially reduces both sample processing time and the amount of hands-on sample manipulation steps. (C) MARS performance evaluation: each group of bars represents a different spiked BM sample showing high recovery, (inset) reproducibility at lower number of Spiked Tumor Cells shows assay linearity.

RESULTS

Using the MARS® CS system ensures:

- ☑ **High sensitivity** to detect low numbers of DTCs (Fig. 1)
- ☑ High recovery, **minimizing cell loss** (Fig. 2)
- ☑ **Rapid processing** of large Bone Marrow volumes
- ☑ Detection of **1 tumor cell in 5M** spiked Bone Marrow cells
- ☑ **Minimal hands-on** sample manipulation (Fig. 2)
- ☑ Simple workflow with **no washing or centrifugation** steps

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