Enrichment of multiple myeloma plasma cells for disease monitoring at MGUS and MRD stages

Bone marrow plasma cells characterization is key for diagnosing and monitoring hematologic malignancies, including multiple myeloma (MM). In MM patients, plasma cell numbers can vary, from less than 0.01% to as much as 100% of the total cell population, depending on the stage of the disease. Accurate detection and analysis of plasma cells are especially important in the stages of Monoclonal Gammopathy of Undetermined Significance (MGUS) and Minimal Residual Disease (MRD), as it is essential for understanding disease progression, developing best treatment strategies, and predicting patient outcomes.

Circulating plasma cells (CPCs) identified in peripheral blood can also be used as a prognostic marker in MM patients. Although the CPC burden in peripheral blood has been reported to be more than 100-fold lower than in bone marrow, the blood sample collection is less invasive than bone marrow aspiration, making CPC detection a valuable tool. Efficient enrichment will enhance the detection of the rare plasma cells and improves the disease analysis. MARS® BAR platform uses its unique column-free magnetic cell separation technology to demonstrate plasma cell enrichment from both bone marrow and peripheral blood collected from patients.

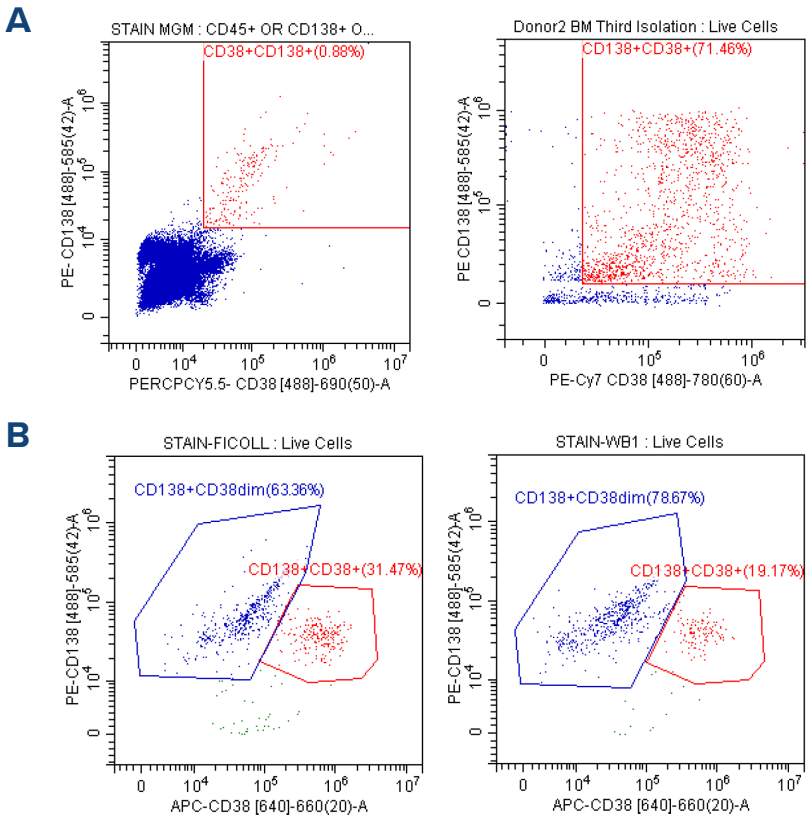

Figure 1. Selection of CD138+ Cells from MM patients' samples. A. Patient #1 Bone Marrow. Left, before enrichment, CD38+CD138+ plasma cells were 0.88% of all live nucleated cells. Right, after MARS enrichment, CD38+CD138+ cells were 71.46% of all live nucleated cells. B. Patient #2 peripheral blood after enrichment (sample was not analyzed before enrichment). Left, PBMC were separated from blood by Ficoll preparation before CD138 positive selection. Right, CD138 positive selection directly from peripheral blood. Both selection enriched plasma cells (CD138+CD38dim & CD38+CD138+) to >90% purity.

AUTOMATED PRECISION

MARS® brings the next level of automation. **Automatic enrichment** promises unrivaled consistency and a seamless user experience, setting us apart from the laborious manual methods.

UNRIVALED RECOVERY AND PURITY

Break away from traditional limitations. Our technology guarantees **high cell purity and recovery** that outcompete conventional methods.

EFFICIENT, ECONOMICAL AND REUSABLE

With **reusable and cleanable fluidics**, MARS® reduces the per sample running cost. Preset cleaning protocols offer unprecedented efficiency, enabling multiple sample runs without the need for fluidics replacement.

Download white paper

Enhancing Diagnostic Precision in Multiple Myeloma

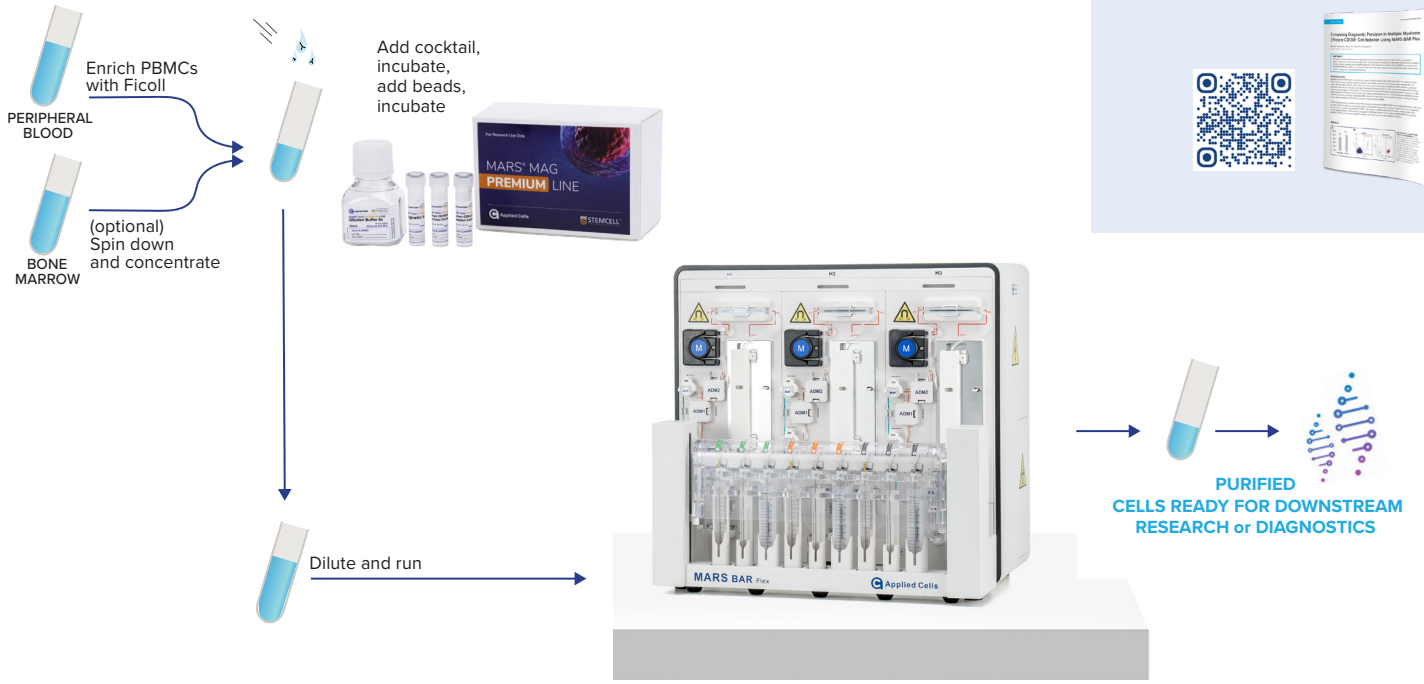

Figure 2. MARS® BAR platform with its reagent and software has demonstrated efficient plasma cell enrichment capability from both bone marrow and peripheral blood samples. Able to enrich plasma cells from less than 1% to over 90%, it allows the more sensitive detection of the disease at early stage to provide patients with the opportunity for early intervention

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Applied Cells

3350 Scott Blvd Bldg 6
Santa Clara, CA 95054

+1 800-960-3004

www.appliedcells.com
info@appliedcells.com