Improved, Fast, and Affordable Detection of Multiple Myeloma Cells

**Background:** Multiple Myeloma (MM) is the second most prevalent hematological malignancy with a median survival of three to five years. The vast majority of patients will relapse within a few years and often do not respond to follow-up therapy. The commonly exploited biomarker for detection of MM cells is CD138. This biomarker, however, is downregulated under common hypoxic tumor conditions and therefore not present on all circulating MM cells, limiting its diagnostic value. To improve patient survival and better early diagnosis, accurate treatment monitoring is needed. To address this unmet need, scientists from Washington University in St. Louis developed an improved, fast, and affordable flow cytometry method.

**Technology Description:** Instead of relying on a single biomarker, the new method relies on a set of biomarkers including CD38. The latter is expressed by MM cells, but also by T cells, B cells, monocytes, granulocytes, and dendritic cells. To distinguish MM cells from the other cell-types, MM cells are defined as CD38-positive, but negative for CD3, CD19, CD14, CD16, and CD123.

The newly developed 2-color flow cytometry method makes use of commercially available APC-labeled CD38 antibody and FITC-labeled CD3, CD19, CD14, CD16, and CD123 antibodies. This enables accurate rapid detection of multiple myeloma cells in circulation and bone marrow regardless of the CD138 expression status.

**Key Advantages:**
- Improved accurate detection of multiple myeloma cells
- Ability to detect MM cells regardless of the hypoxic state of the cell
- Allows for rapid, low cost analysis
- Uses commercially available antibodies
- Uses instrumentation available in clinical diagnostic labs
- Validated in vitro and in vivo data
- Potential for kit development


**Patents:** Application US20160299148

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**Application Space**
Oncology, Multiple Myeloma, Diagnostics, Antibodies, Minimal Residue Disease, Circulating Tumor Cells, Flow Cytometry

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