

PRESERVATION OF FRESH HUMAN PBMCs USING BeadReady™



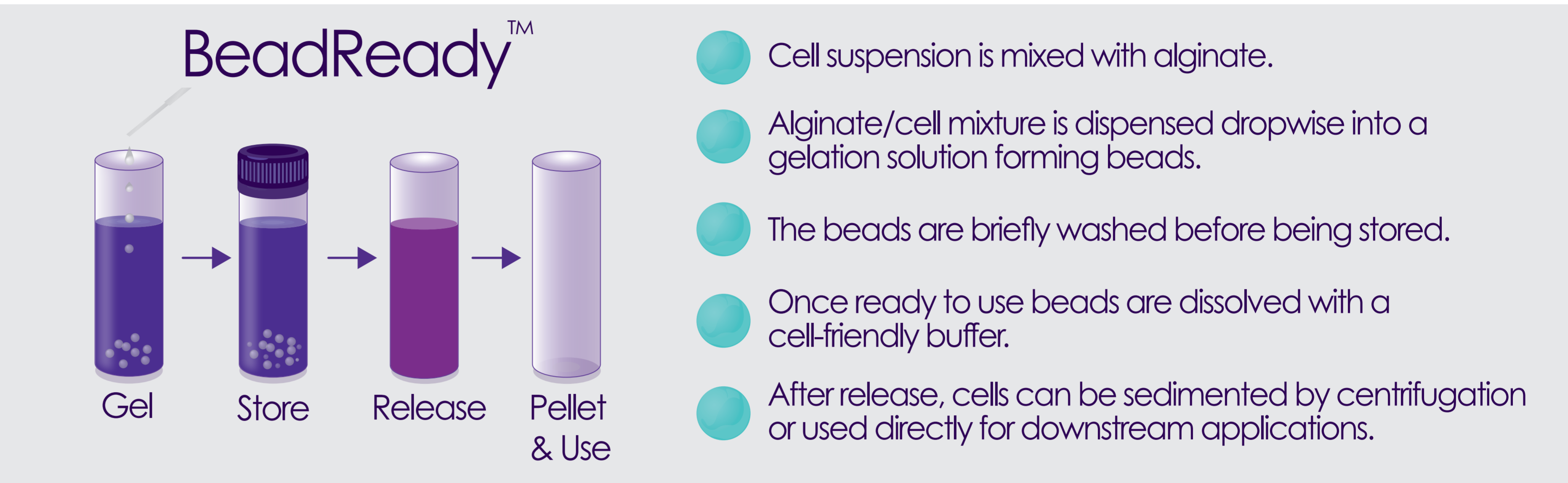
Steve Swioklo¹, Dean Hallam¹, Nanette Bartram², Che Connon¹ & Mick McLean²

Introduction

Peripheral Blood Mononuclear Cells (PBMCs) comprise leukocytes (White Blood Cells), which are a constituent of the body's immune system. PBMCs consist of a mixture of monocytes and lymphocytes (T cells, B cells, and NK cells) isolated from peripheral whole blood via density gradient centrifugation. PBMCs are frequently used in drug discovery and personalised medicine, assay development, and many other immunology applications including cell and gene therapy. Atelerix has developed a range of hydrogel products which protect cells and tissues from biochemical and physical damage. Our technology allows cells to be held in a state of hibernation for up to two weeks.

Methods

Fresh PBMCs recently isolated from 4 individual donors were encapsulated using BeadReady™ at a density of 1×10^7 cells/mL (5×10^6 cells) per sample. Cells were stored for 3 days at 2-8°C. Results were compared to both fresh PBMCs and PBMCs that had been cryopreserved.



Results

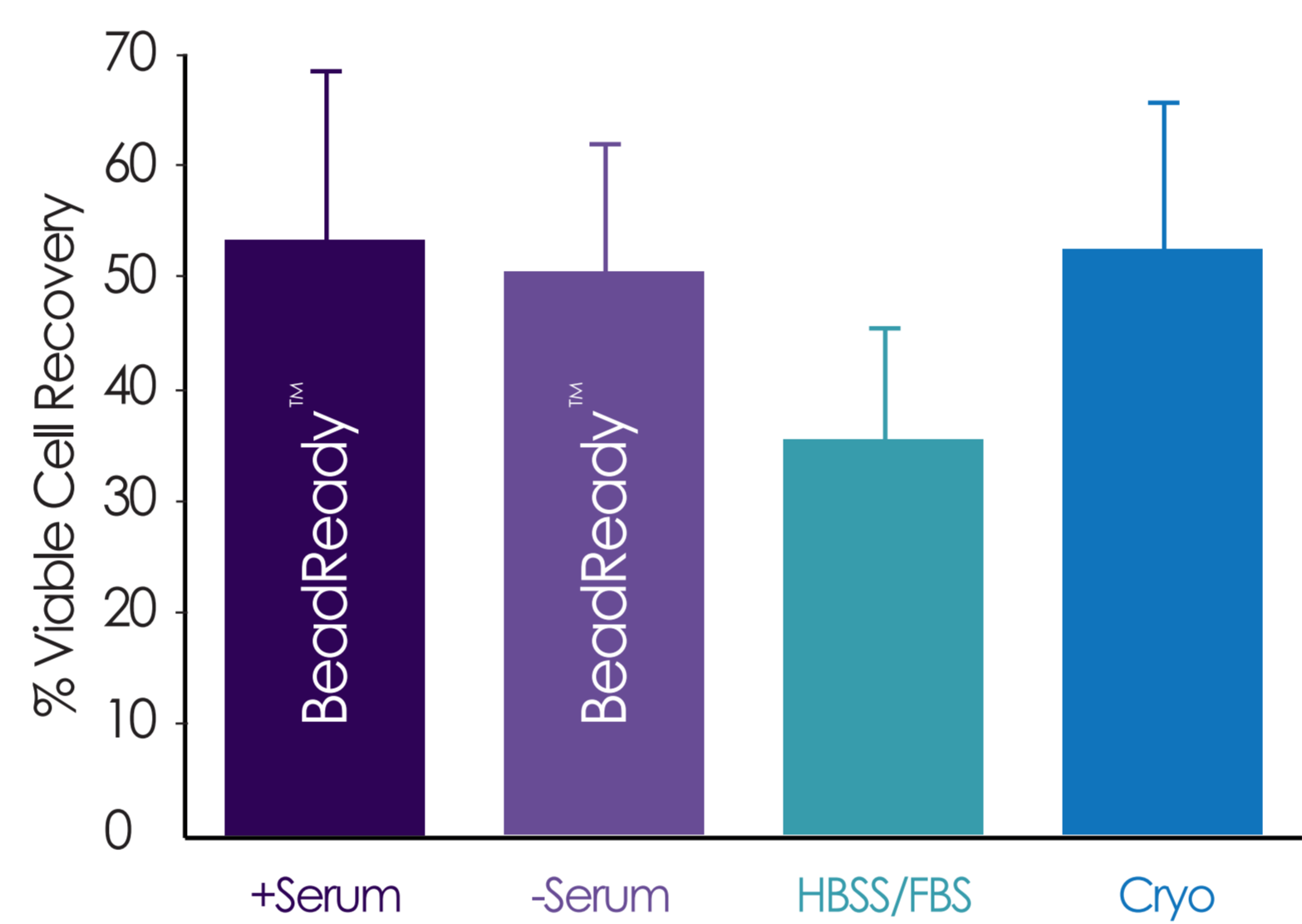
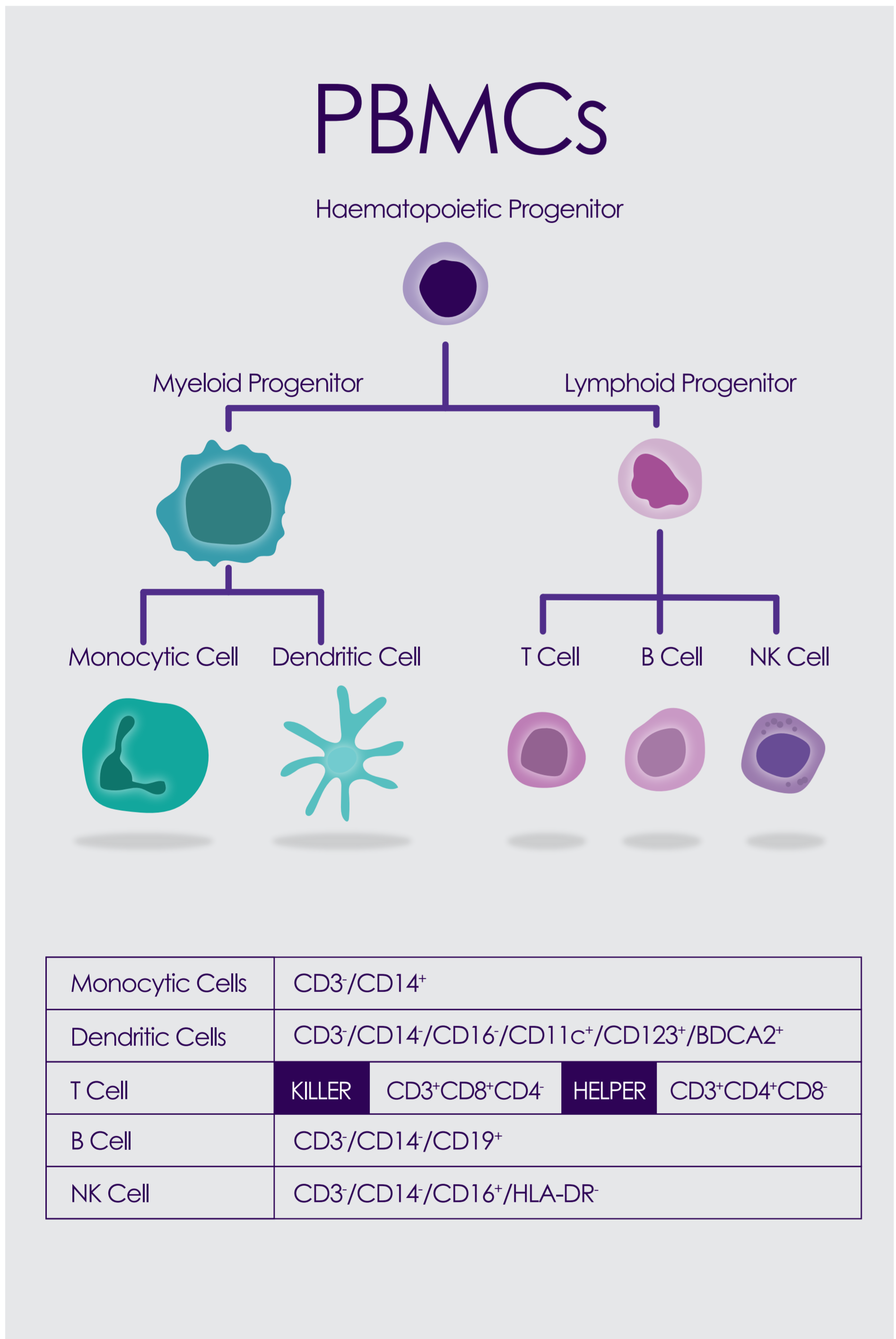


Figure 1. % Viable Recovery following storage for 3 days at 2-8°C. All percentages have been normalised to a cell load of 5×10^6 . Values represent means \pm SD (n=4).

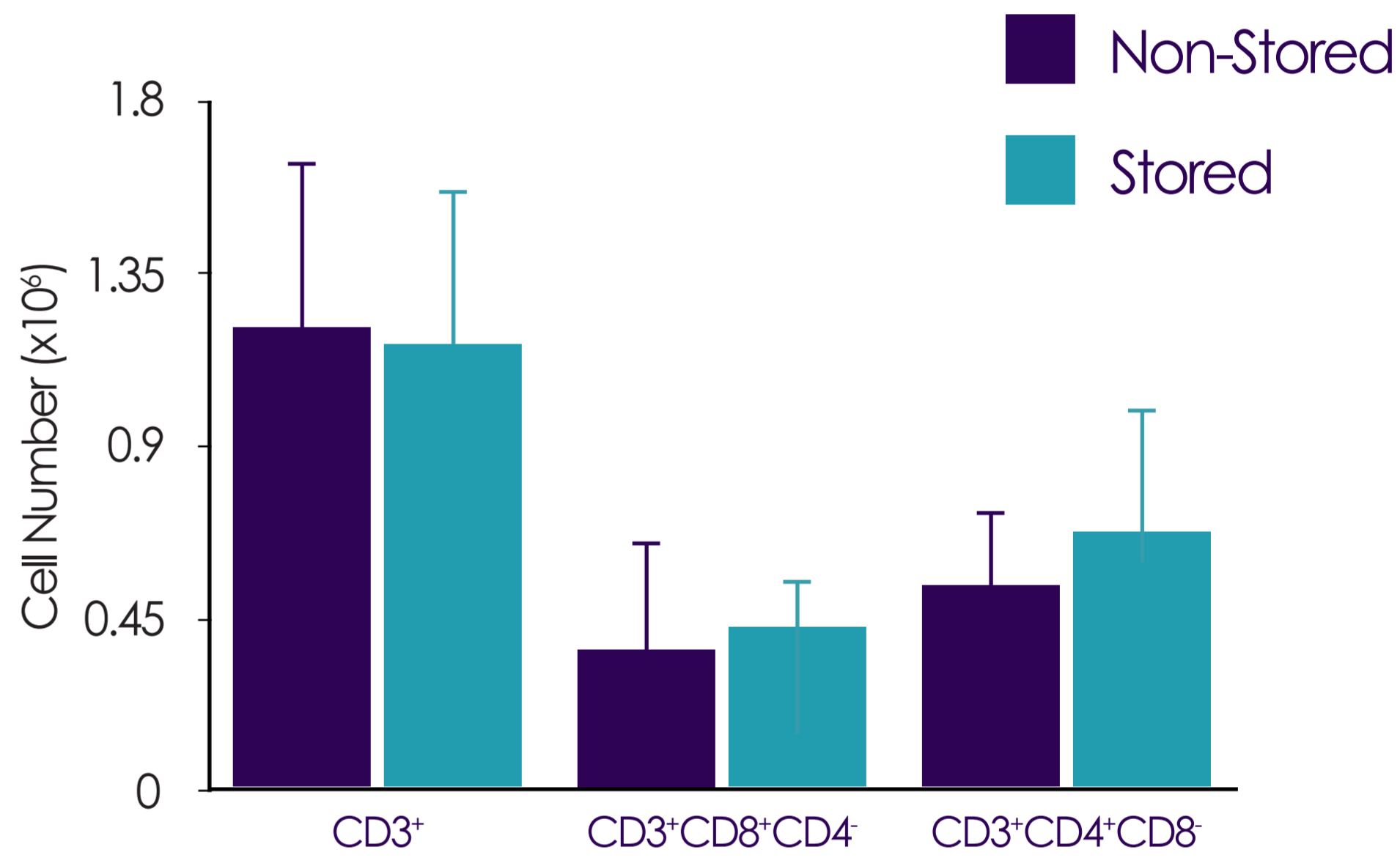


Figure 2. Recovered T Cell Number following storage for 3 days at 2-8°C. Values represent means \pm SD (n=4).

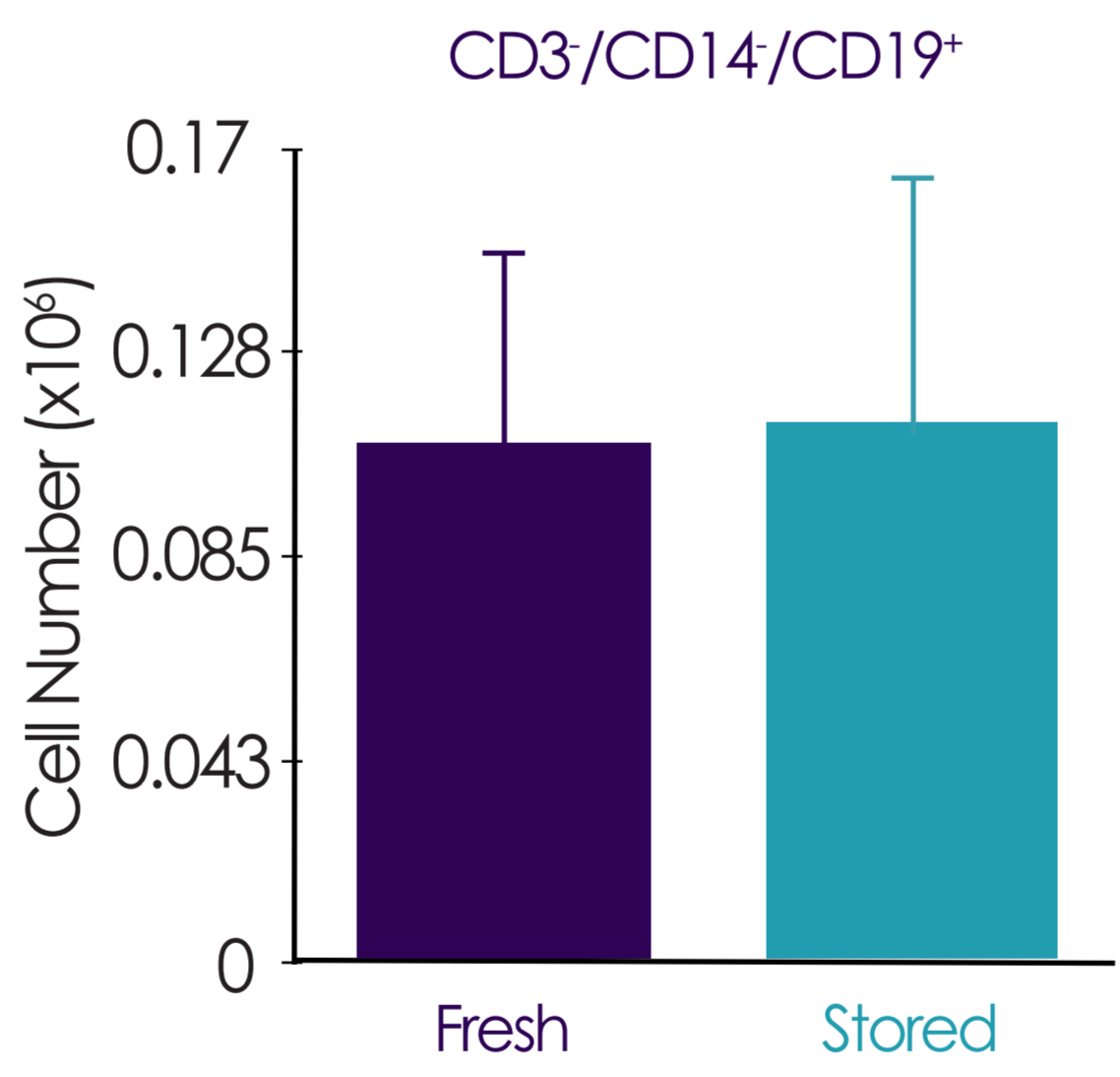


Figure 3. Recovered B Cell Number following storage for 3 days at 2-8°C and cryopreserved. Values represent means \pm SD (n=4).

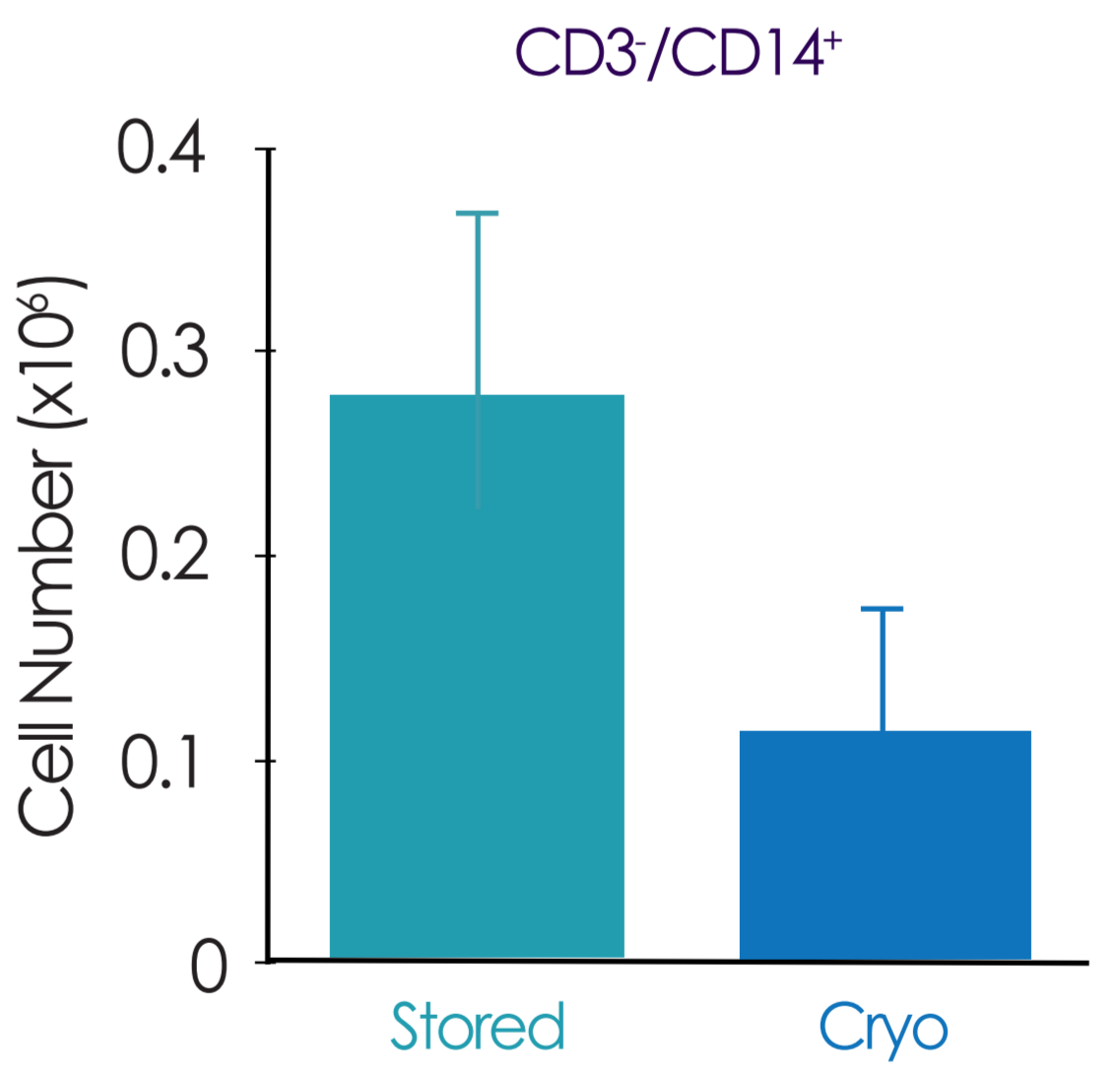


Figure 4. Recovered monocyte Cell Number following storage for 3 days at 2-8°C or cryopreserved. Values represent means \pm SD (n=4).

Conclusions

Storage of PBMCs encapsulated using BeadReady™ is a cell-friendly, simple process with high recoveries of viable cells. T-cells and B-cells are recovered with equal yields and ratios to those found in fresh cells. Monocytes can be recovered with 3x the yield compared to cryopreserved cells. Atelerix offers BeadReady™ for small to moderate volumes of cells stored in vials. Preservation at larger volumes and formats, including within blood bags, are available at request. Each format provides options for serum-free or serum-containing formulation. These results indicate that encapsulation is a better process than cryopreservation, with lower costs

1. The Biosphere,
Draymans Way,
Newcastle Upon Tyne
NE4 5BX

2. Babraham Hall
Babraham
Cambridge
CB22 3AT



- CELL-FRIENDLY
- SIMPLE
- HIGH VIABLE RECOVERY OF MNCs
- NO LOSS IN T OR B CELL YIELD
- MONOCYTE YIELD **3X** HIGHER THAN CRYO
- NO COMPLEX, COSTLY CRYOLOGISTICS