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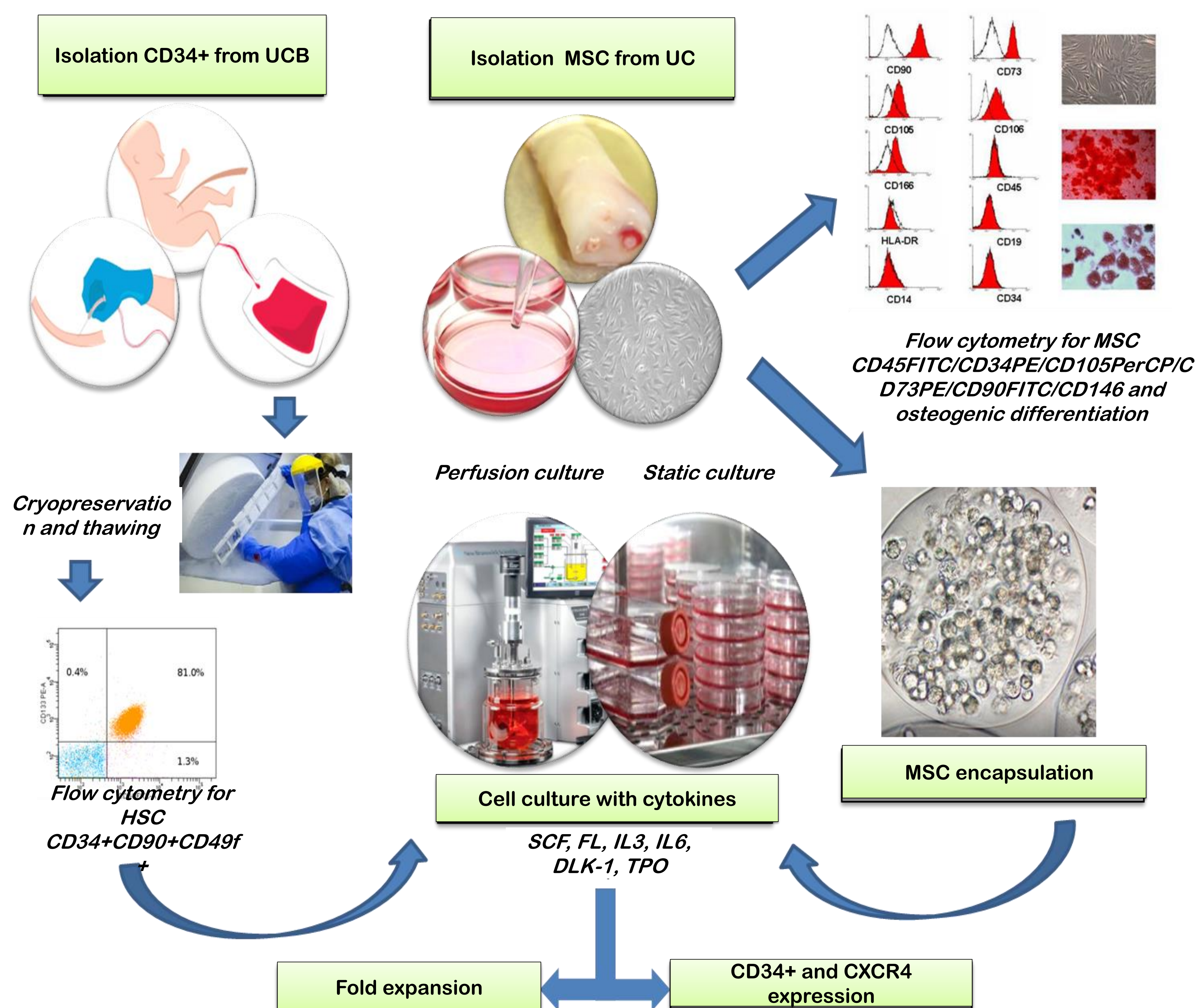
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INTRODUCTION

Umbilical Cord Blood (UCB) has hematopoietic Stem cells (HSCs) CD34+, these have the capacity for long term bone marrow repopulation, being easily obtained and criopreserved for their posterior use, which makes them a feasible alternative for transplant. The limited volume of obtained UCB, makes the count of HSCs to be low, having a repercussion on the probability of doing a graft on short term..

Our research is a comparison of two expansion methods of CD34 +, CD49f +, CD90 + (static culture and bioreactor) using human recombinant cytokines (HRC), Stem cell factor (SCF), Interleukin 3 (IL-3), thrombopoietin (TPO) And ligand FT3 (FT3L) DLK-1 Interleukin 6 (IL6), umbilical cord Wharton CD146 + mesenchymal cells encapsulated in calcium alginate as mesenchymal stem cell feeder which compared to previously established models.

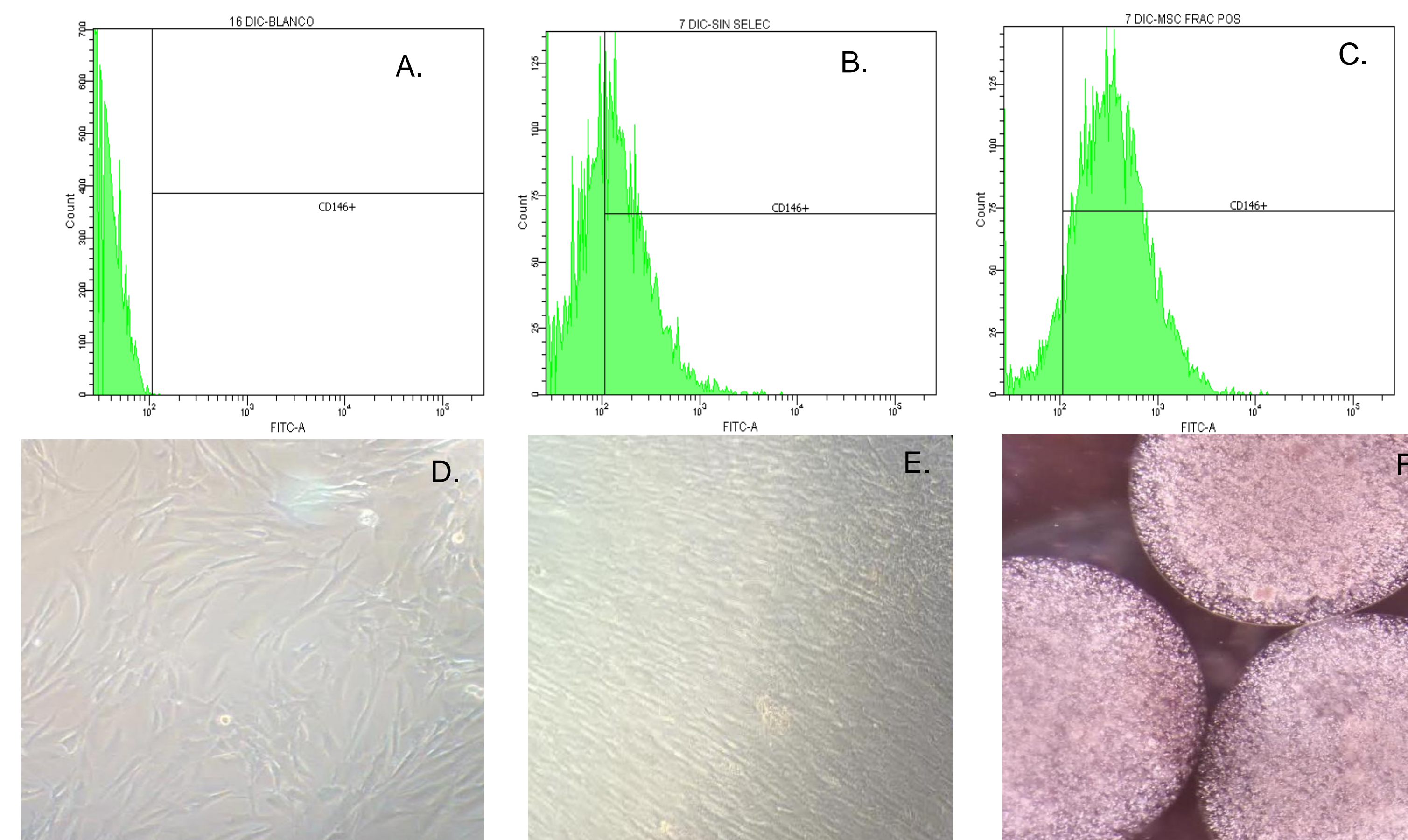
MATERIALS AND METHODS



6 samples of UCB were taken prior to the signing of the informed consent of the parents. Red cell reduction was carried out on the nuclear cell concentrate and then cryopreserved for 1 year until thawed, CD34 + was selection by Kit Miltenyi.

11 umbilical cord samples were obtained to which nucleated cells were obtained by means of vein separation and digestion Wharton Jelly with type II collagenase. The mesenchymal cells were cultured and expanded, which were characterized by immunophenotype CD73 +, CD90 +, CD105 +, CD45 + and CD34 +. The potential for differentiation to osteogenesis was realized with the kit stem cells, the selection of the mesenchymal ones with the CD146 KIT was made and these were expanded.

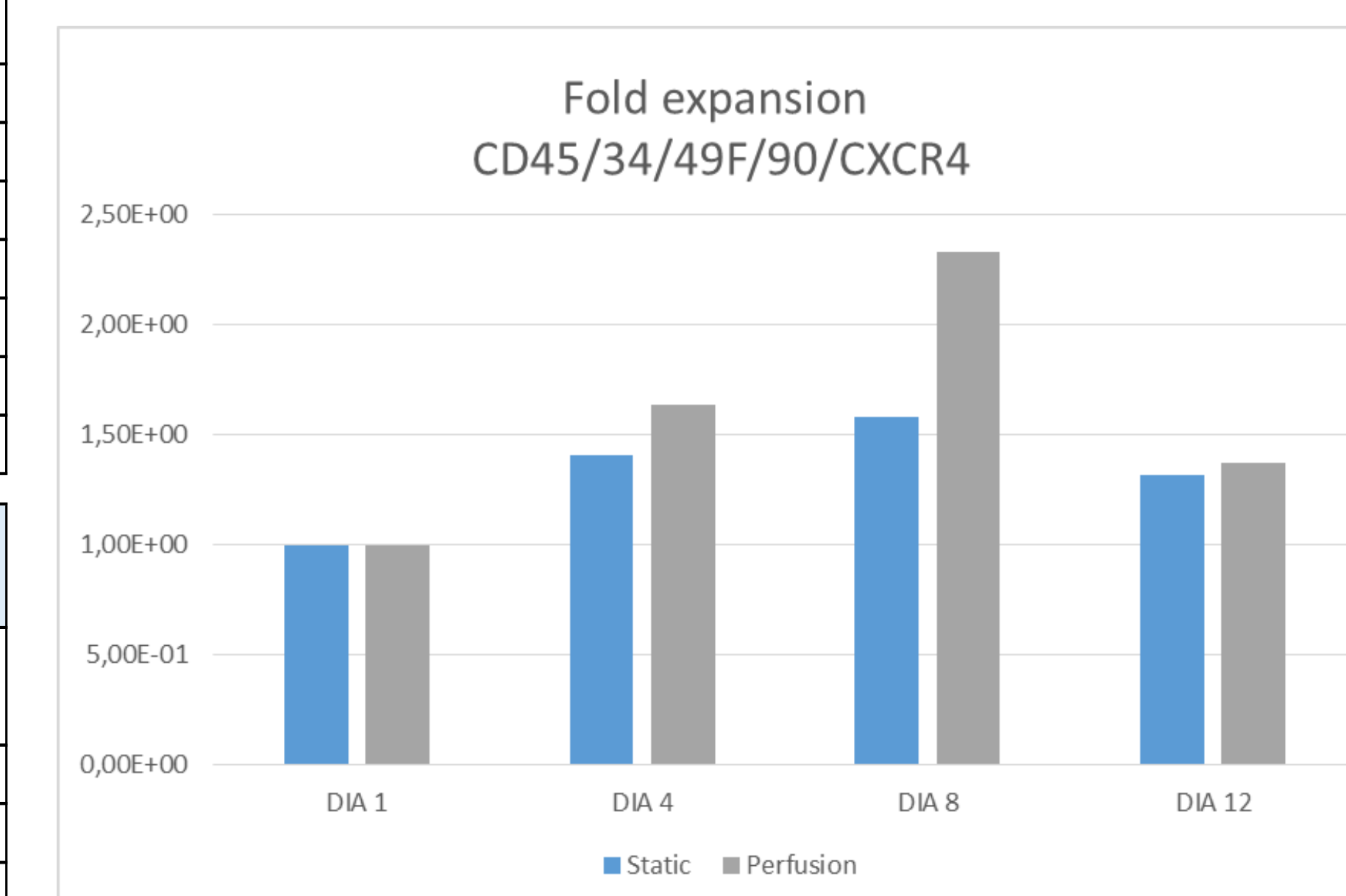
RESULTS



Mesenchymal Stem cells from Wharton Jelly. A) White for CD46 +. flow cytometry. B) MSCs WJ pre selection CD146 + 56% C) MSCs WJ post selection CD146 + 90.2%. D and E). MSC confluence 30% and 70% post selection CD146+. F) MSC encapsulated in alginate.

STATICS CULTURE		
NUMBER	CD45/CD34+	CD45/34/49F/90/CXCR4
ASSAY 1	6,23E+00	1,56E+00
ASSAY 2	6,68E+00	1,73E+00
ASSAY 3	6,22E+00	2,39E+00
ASSAY 4	7,50E+00	2,98E+00
ASSAY 5	7,95E+00	2,38E+00
ASSAY 6	6,15E+00	3,17E+00
Average	6,79E+00	2,37E+00

PERFUSIÓN CULTURE		
NUMBER	CD45/CD34+	CD45/34/49F/90/CXCR4
ASSAY 1	1,18E+01	6,61E+00
ASSAY 2	8,54E+00	3,10E+00
ASSAY 3	6,02E+00	2,63E+00
ASSAY 4	1,08E+01	8,69E+00
ASSAY 5	1,08E+01	5,62E+00
ASSAY 6	4,88E+00	4,52E+00
Average	8,80E+00	5,20E+00



DISCUSSION AND CONCLUSIONS

The limitations umbilical cord blood (UCB) transplantation, is the low dosage of haematopoietic stem cell (HSC) and delayed reconstitution, UCB expansion under conventional culture causes rapid cell differentiation of (HSC) responsible for engraftment. In this study, we compared expansion factor of CD34/CD45^{dim} and CD34+/CD90+/CD49F, CXCR4 utilizing culture static Vs Bioreactor, and We employed MSC CD/146+ from Wharton's Jelly Umbilical Cord encapsulate in alginate calcium beads.

•The model proposed Of perfusion(encapsulated mesenchymal stem cells from Wharton jelly and recombinant human cytokines), is possible increase ex vivo the number of CD34+, CD90+, CD49f cells after 12 days of culture.

•This study evidenced a efficient model of HSC expansion in vivo, however this must be confirming for cultures to long term for confirm the trend shown, also assays in vivo with animal models.