lineage and (b) harvesting and culturing those progenitor cells which have an expression pattern of the disclosure and thereby producing a population of the disclosure;

- a method of repairing a damaged tissue in a patient, comprising administering to the patient a population of the disclosure, wherein the population comprises a therapeutically effective number of cells, and thereby repairing the damaged tissue in the patient; and
- a population of the disclosure for use in repairing a damaged tissue in a patient.

In one aspect, there is provided a population comprising:

(a) two or more progenitor cells of mesodermal lineage of the disclosure; or

(b) at least about 5×10^5 cells of the disclosure.

In one aspect, there is provided a pharmaceutical composition comprising (a) a progenitor cell of the disclosure or a population of the disclosure and (b) a pharmaceutically acceptable carrier or diluent.

In one aspect, there is provided a method of producing a population of progenitor cells of mesodermal lineage of the disclosure, comprising (a) culturing mononuclear cells (MCs) with platelet lysate under oxygen conditions of less than 20% oxygen (O_2) and under conditions which allow the progenitor cells to adhere such that the MCs differentiate into progenitor cells of mesodermal lineage and (b) harvesting and culturing those progenitor cells which have an expression pattern as defined in the disclosure and thereby producing a population of the disclosure.

In one aspect, there is provided a population of the disclosure for use in a method of repairing a damaged tissue in a patient.

In one aspect, there is provided a population of the disclosure for use in a method of treating a cardiac injury or disease, age-related macular degeneration or a bone injury or disease in a patient in need thereof.

In one aspect, there is provided use of a population of the disclosure in the manufacture of a medicament for repairing a damaged tissue in a patient.

In one aspect, there is provided use of a population of the disclosure in the manufacture of a medicament for treating a cardiac injury or disease, age-related macular degeneration or a bone injury or disease in a patient in need thereof.

Brief Description of the Figures

Fig. 1 shows an RT-PCR gel confirming the presence of CD44 and the absence of CD34 in the PMLs of the invention.

Fig. 2 shows the results of FACS analysis on the PMLs of the invention. This confirms that the cells are positive for at least CD73 and CD90 and negative for CD14, CD34 and CD45.

Fig. 3 shows further results from FACS analysis, namely the histograms for CD90 (top) and CD73 (bottom).

Fig. 4 shows FACS histograms for lack of CD14, CD34 and CD45 in stained (Fig. 4a) and unstained (Fig. 4b) cells.

Detailed Description of the Invention

It is to be understood that different applications of the disclosed products and methods may be tailored to the specific needs in the art. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments of the invention only, and is not intended to be limiting.

In addition, as used in this specification and the appended claims, the singular forms "a", "an", and "the" include plural referents unless the content clearly dictates otherwise. Thus, for example, reference to "a cell" includes "cells", reference to "a tissue" includes two or more such tissues, reference to "a patient" includes two or more such patients, and the like.

All publications, patents and patent applications cited herein, whether supra or infra, are hereby incorporated by reference in their entirety.

7. The cells were harvested and analysed by flow cytometry and, as necessary, the cells were cryopreserved.

Homing and anti-inflammatory tests

The cells produced in accordance with the invention were tested for their ability to home to specific, damaged tissues in mice and induce anti-inflammatory effects once there. For homing, cells were labelled with fluorescent agent and their location in the mouse body determined using bioluminescence.

For anti-inflammatory effects, enzyme-linked immunosorbent assays (ELISAs) for various inflammatory markers, including interleukins (such as IL-8), selectins, adhesion molcules (such as ICAM-1) and chemoattractant proteins (such as MCP-1 and TNF-α), were performed.

Results

All cells

All progenitor cells of mesodermal lineage produced in accordance with the invention expressed CD29, CD44, CD73, CD90, CD105 and CD271, but did not express CD14, CD34 and CD45. An exemplary RT-PCR gel showing the presence of CD44 and the absence of CD34 is shown in Fig. 1.

Exemplary sets of FACS results are shown in Figs. 2 to 4. These confirms that the cells are cells are positive for at least CD73 and CD90 and negative for CD14, CD34 and CD45.

The cells are typically from 10 to 20 μm in diameter. The cells typically have a spindle-shaped morphology and are fibroblast like (i.e. they have a small cell body with a few cell processes that are long and thin).

Homing cells

Cells capable of homing to specific damaged tissues were shown to express chemokine receptor types 1 and 2 (CXCR1 and CXCR2).

Cells capable of homing to damaged heart tissue and bone tissues were shown to express CXCR4.

Cells capable of homing to damaged retinal tissue were shown to express CXCR4, vascular endothelial growth factor (VEGF), transforming growth factor beta 1 (TGF-beta 1), insulin-like growth factor-1 (IGF-1), fibroblast growth factor (FGF), tumour necrosis factor alpha (TNF-alpha), interferon gamma (IFN-gamma), interleukin-1 alpha (IL-1 alpha), CXCL12, CD109, CD119, nuclear factor kappa-light-chain-enhancer of activated B cells (NFkappa B), CD140a, CD140b, CD221, CD222, CD304, CD309 and CD325.

Cells capable of homing to damaged bone tissue and the cell expresses detectable levels of TGF-beta 3, bone morphogenetic protein-6 (BMP-6), SOX-9, Collagen-2, CD117 (c-kit), chemokine (C-C motif) ligand 12 (CCL12), CCL7, interleukin-8 (IL-8), platelet-derived growth factor-A (PDGF-A), PDGF-B, PDGF-C, PDGF-D, macrophage migration inhibitory factor (MIF), IGF-1, hepatocyte growth factor (HGF), PDGF-Rα, PDGF-Rβ, CXCR4, C-C chemokine receptor type 1 (CCR1), IGF-1 receptor (IGF-1R), hepatocyte growth factor receptor (HGFR), CXCL12 and NFkappaB.

Anti-inflammatory effects

The cells produced in accordance with the invention were shown to express the following anti-inflammatory markers: CD120a (tumour-necrosis factor (TNF)-alpha Receptor 1), CD120b (TNF-alpha Receptor 2), CD50 (Intercellular Adhesion Molecule-3, ICAM-3), CD54 (ICAM-1), CD58 (Lymphocyte function-associated antigen-1, LFA-1), CD62E (E-selectin), CD62L (L-selectin), CD62P (P-selectin), CD106 (Vascular cell adhesion protein, VCAM-1), CD102 (ICAM-2), CD166 (Activated