Adipogenic Potential of Adipose-Derived Stromal Cell Subpopulations Enriched For Bone Morphogenetic Protein Receptor IA+

Stanford University, Division of Plastic and Reconstructive Surgery, ASPS 2013

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All authors have nothing to disclose.

Objective

- Adipose-derived Stromal Cells (ASCs) have been shown to assist fat grafts—**"Cell-Assisted Lipotransfer" (CAL)**

- Can a subpopulation of ASCs, sorted for Bone Morphogenetic Protein Receptor Type IA (BMPR-IA), demonstrate enhanced adipogenesis for potential use in CAL?
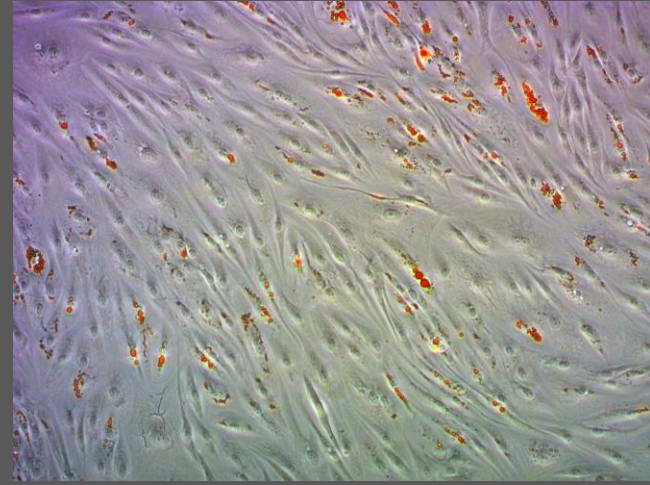
Methods

- Sort fresh ASCs for BMPR-IA using magnetic-activated cell sorting (MACS)
- Treat sorted ASCs with adipogenic differentiation medium
- Assess for lipid formation with Oil Red-O
- Assess gene expression with qRT-PCR
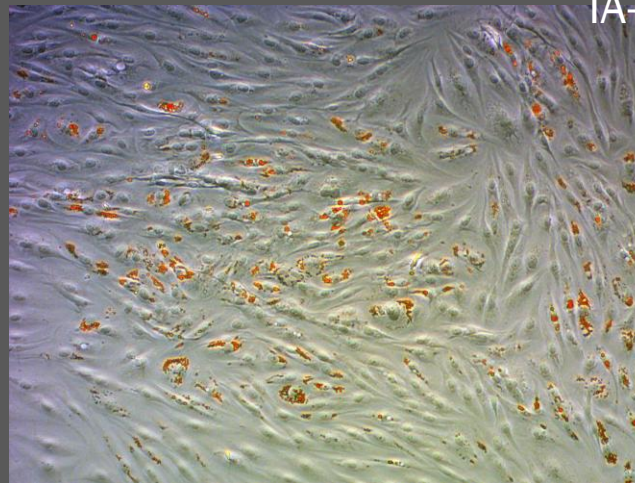- Assess cell viability when sorted ASCs are co-cultured with adipocytes
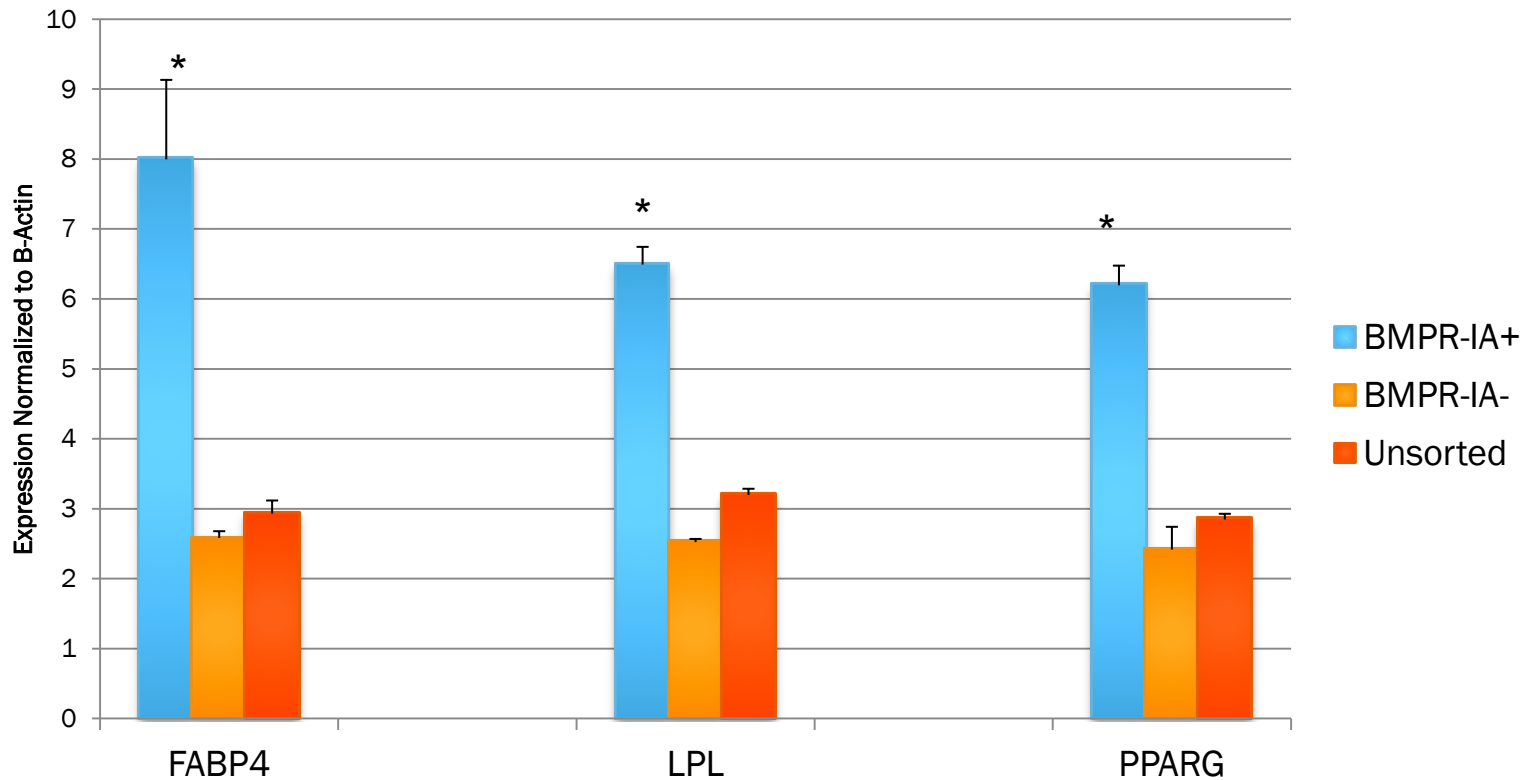
In Vitro Results, ORO Staining
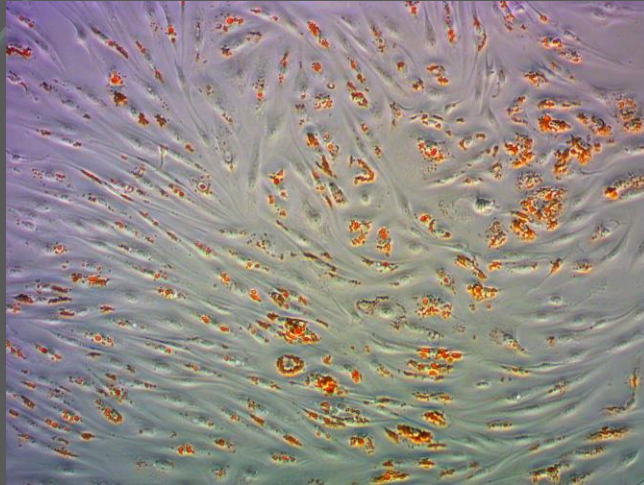
BMPR-
IA+

BMPR-
IA-

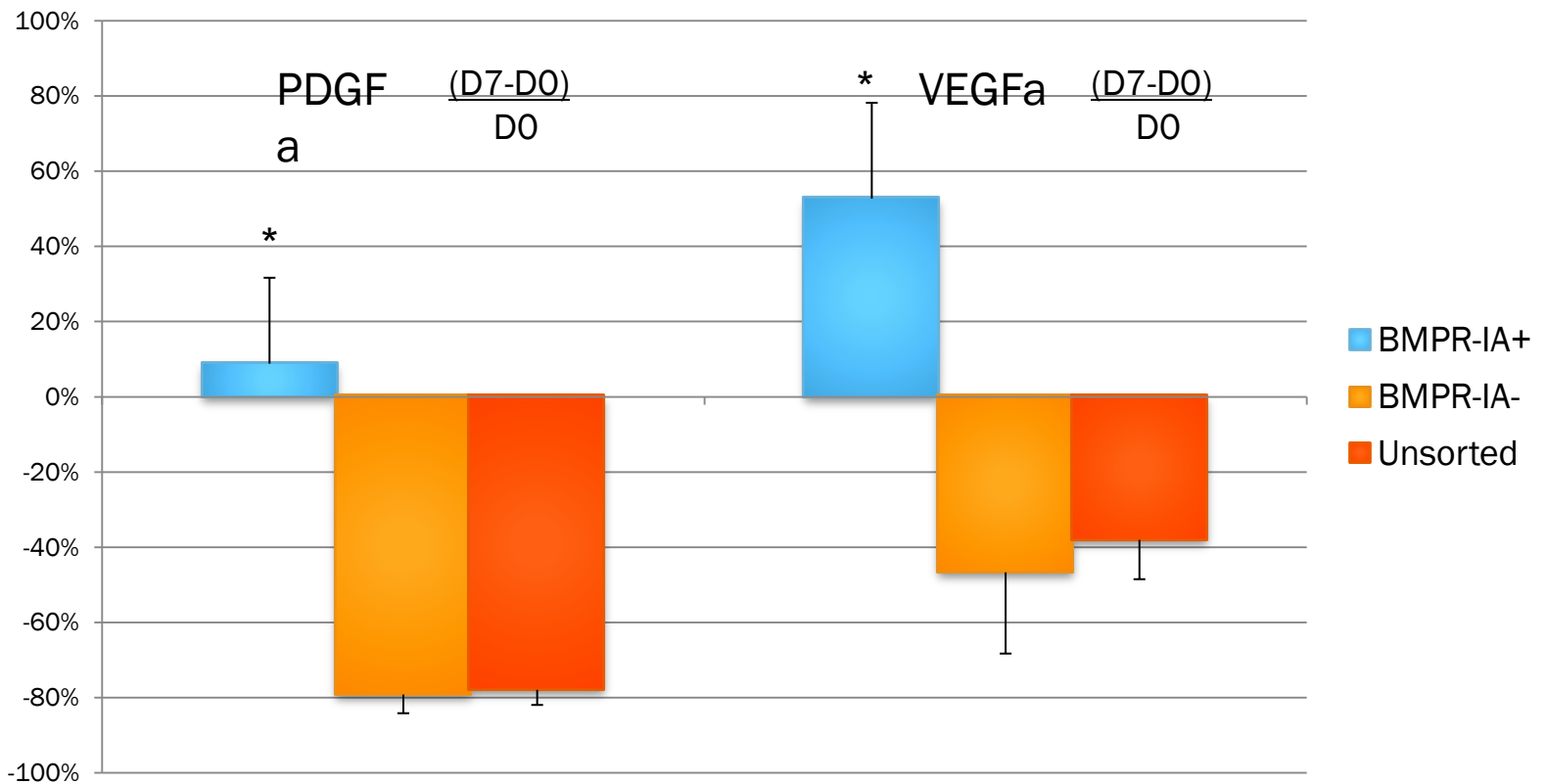Unsorted

In Vitro Results, qRT-PCR

Adipogenic Gene Expression After 7 Days of Adipogenic Differentiation

Expression Normalized to B-Actin

Legend:
- BMPR-IA+
- BMPR-IA-
- Unsorted

Categories: FABP4, LPL, PPARG

*denotes statistically significant difference (p<0.05) compared to BMPR-IA- and Unsorted ASCs
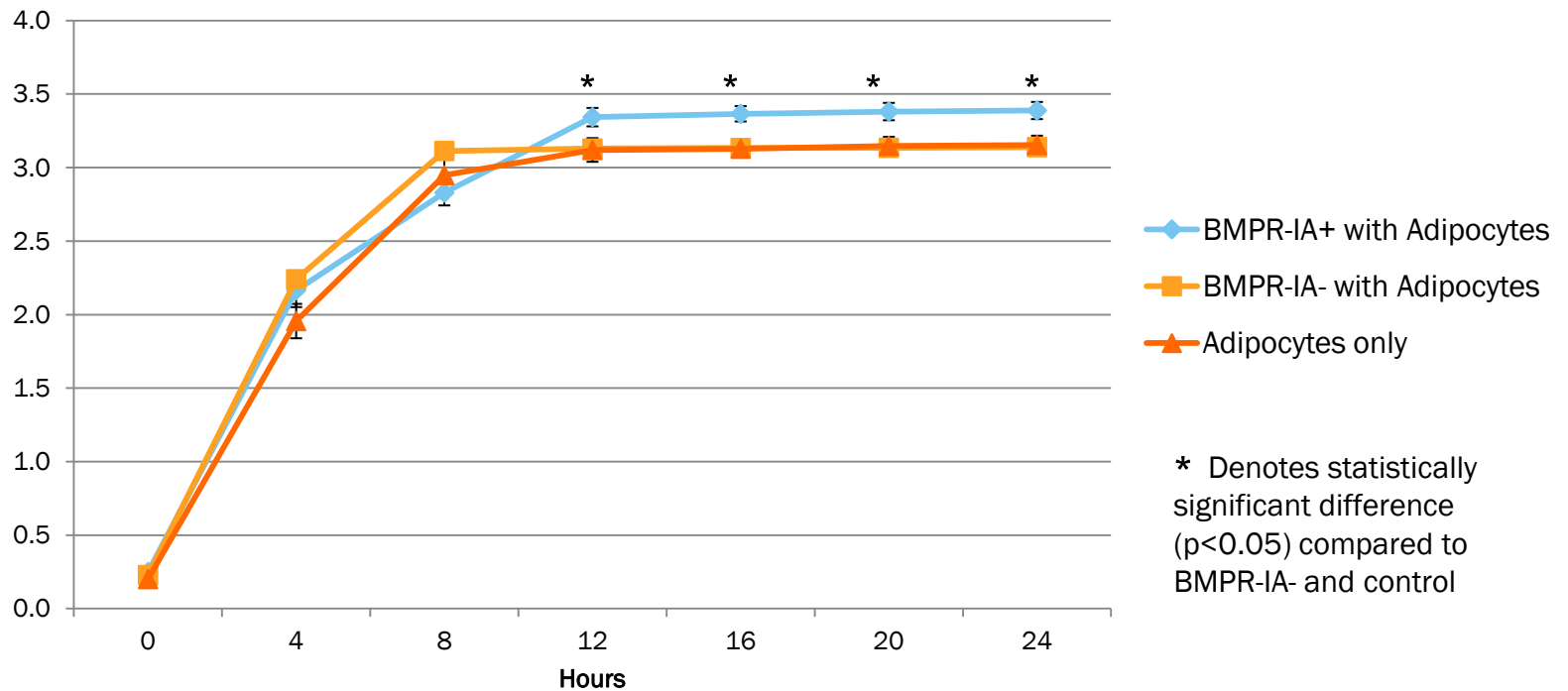
In Vitro Results, qRT-PCR

Angiogenic Growth Factor Expression,
% Change After 7 Days of Adipogenic Differentiation

*denotes statistically significant difference (p<0.05) among groups

In Vitro Results, XTT Assay

Conclusions

- Subpopulations of ASCs with enhanced adipogenesis can be identified and sorted for

- Potential clinical use: Cell-Assisted Lipotransfer performed with adipogenic and/or angiogenic ASC subpopulations