INTRODUCTION
Cartilage trauma is a frequent injury in sports events. Cell based therapies have been developed to improve healing of injured cartilage. Chondrocyte implantation has been used for the more serious erosions, but requires pre-implant cartilage biopsy and autologous cell culture. To reduce donor site morbidity and increase available cell numbers, autologous mesenchymal stem cell (MSC) therapies have been proposed as a mechanism to provide cells capable of rebuilding cartilage and the subchondral bone plate. Examination of transwell inserts and pellet cultures was done at 21 days. RNA was isolated from monolayers at 12 days and from pellet and transwell cultures at 14 or 21 days. RNA was isolated from monolayers at 12 days. Synthesis of chondrocytes in primary culture is followed by a transient increase in cartilage extracellular matrix (ECM) synthesis. Based on this finding, these cells can be used to evaluate the efficacy of drugs that promote cartilage regeneration.

RESULTS
Ad-Sox and AdTGF-3 transduced 293 and MSCs at >95% efficiency (Fig 1).

DISCUSSION
Based on this study, Sox TFs induced significant collagen type II and type X formation. Addition of TGF-B3 further increased deposition of Collagen type II and ultimately may be the ideal combination for MSC chondrogenesis. However, the preponderance of collagen type II in AdTGF-3 infected cultures, with little collagen type X, also suggests Sox TFs may not be appropriate for MSC pre-implantation articular cartilage treatment, where type X is not appropriate. Studies of gene expression by microarray should characterize this better.

References

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