Analysis of Different Fibroblasts Source for Tendon Tissue Engineering
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Introduction
Tendons injuries are a common clinical problem caused by overuse or age-related degeneration. Damaged tendon tissue heals very slow and rarely regains the structural integrity and mechanical strength of normal tendon. The tenocytes are the native tendon cell population; they have a fibroblast phenotype and are likely the best cell source for tendon tissue engineering; for this purpose, different fibroblasts populations with a similar phenotype may serve as cell source.

Results
In this work we compared the phenotype and proliferation of swine dermal and peritenon (tendon shell) to those of tenocytes and we tested their capacity in producing tendon ECM when seeded onto collagen scaffolds. Both cells from dermis and peritenon showed higher proliferation rates compared to tenocytes: in particular, fibroblasts from peritenon were able to maintain a high proliferative capacity in spite of the increasing number of passages in culture. Dermal cells showed morphology and phenotype close to those of tenocytes, while peritenon cells showed different morphology but similar phenotype with respect of those of the tenocytes; they also showed a stable phenotype during the expansion passages in culture. All cell populations were able to adhere to the collagen scaffold and proliferate throughout the in vitro 3d culture; cells from dermis showed the best survival and resistance after 14 days of culture.

Discussion and Conclusions
These preliminary data demonstrate that fibroblasts from dermis and peritenon can be considered good candidates for tendon engineering; in particular, cells from dermis represent an interesting option that deserves further investigation in this regard, as their harvesting and isolation is less invasive and can cause less morbidity with respect to the procedure for harvesting tendon tissue.

Disclosures
Authors have nothing to disclose for the present work.