

Trefoil factor family protein 3 in cartilage undergoing endochondral ossification in the developing mouse fetus

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INTRODUCTION

Trefoil factor 3 (TFF3) is a member of Trefoil factor family of peptides, which are known to have protective effect in various epithelial tissues by promoting restitution of epithelia. They act through various signaling cascades and influence apoptosis. Novel data show that TFF peptides also participate in immune response [1-4].

High expression of TFF3 was found in cartilage of patients with osteoarthritis, and also in mouse models of osteoarthritis and septic arthritis, while no TFF3 expression was observed in healthy human cartilage. TFF3 has also been shown to act as a proapoptotic effector and to promote cartilage degradation *in vitro* [2].

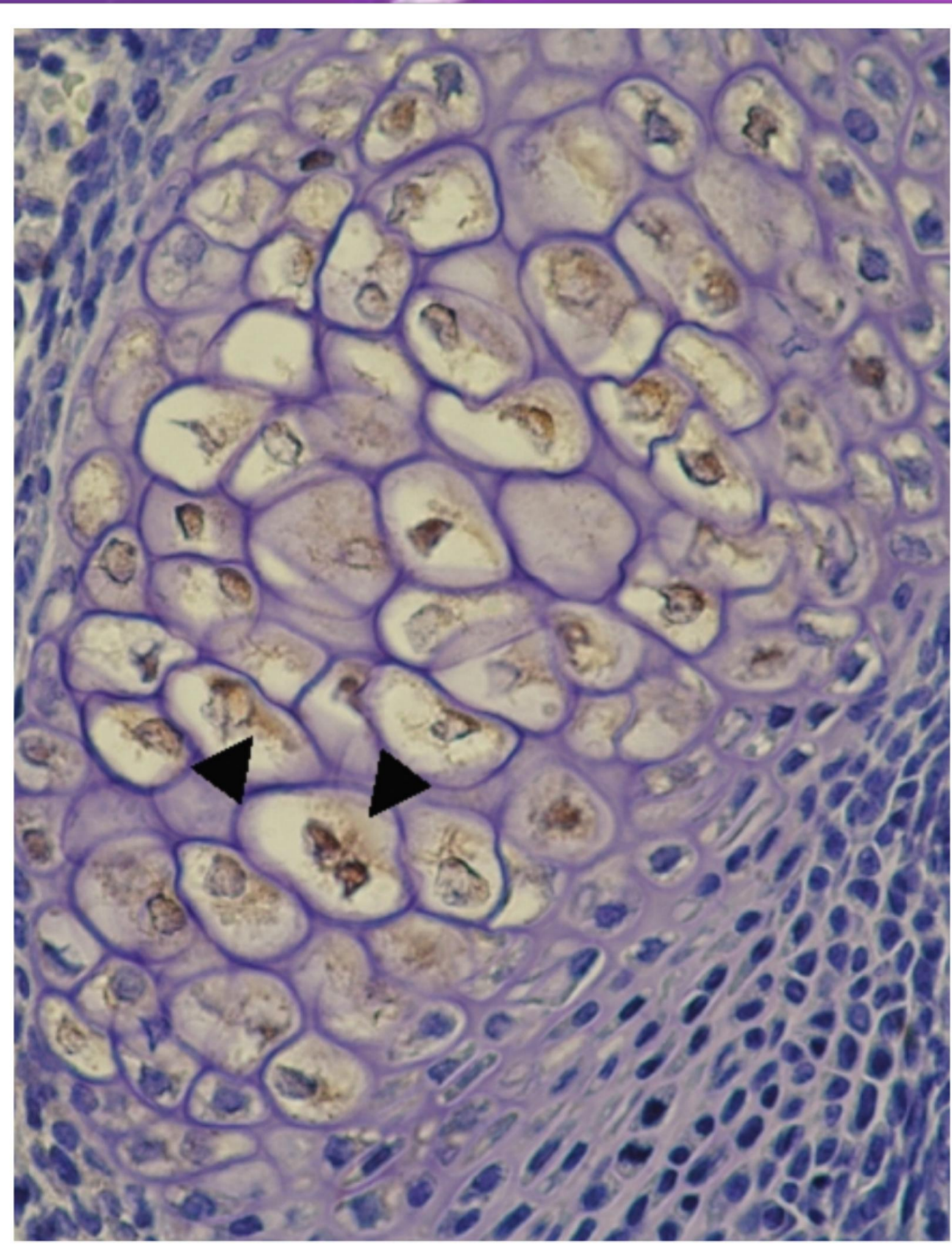
Throughout endochondral ossification, cartilaginous models of bones are being replaced by bone tissue. During this process, chondrocytes are undergoing proliferation, hypertrophy, and finally death. There is no data about the role of TFF3 in this process. The aim of this study was to investigate if TFF3 is expressed in cartilage undergoing endochondral ossification.

MATERIALS AND METHODS

Mouse fetuses, day 15, 16, 17 were isolated, fixed, paraffin embedded, cut (5µm), and processed for immunohistochemical staining. Primary polyclonal rabbit anti-TFF3 antibody was used, and detected with biotinylated goat anti-rabbit and Streptavidin-HRP using DAB as chromogen. Tissues were counterstained with hematoxylin.

RESULTS

Cytoplasmic expression of TFF3 was found in chondrocytes of cartilage undergoing endochondral ossification. The signal was detected in zone of proliferation, zone of hypertrophy and calcification and zone of cartilage degeneration in all monitoring time points (Fig.1). No signal was observed in the zone of resting cartilage (Fig.2). Negative controls showed no signal.



◀ **Fig 1.** Chondrocytes in cartilage undergoing endochondral ossification showing cytoplasmic expression of TFF3 (arrow heads) – zone of hypertrophy

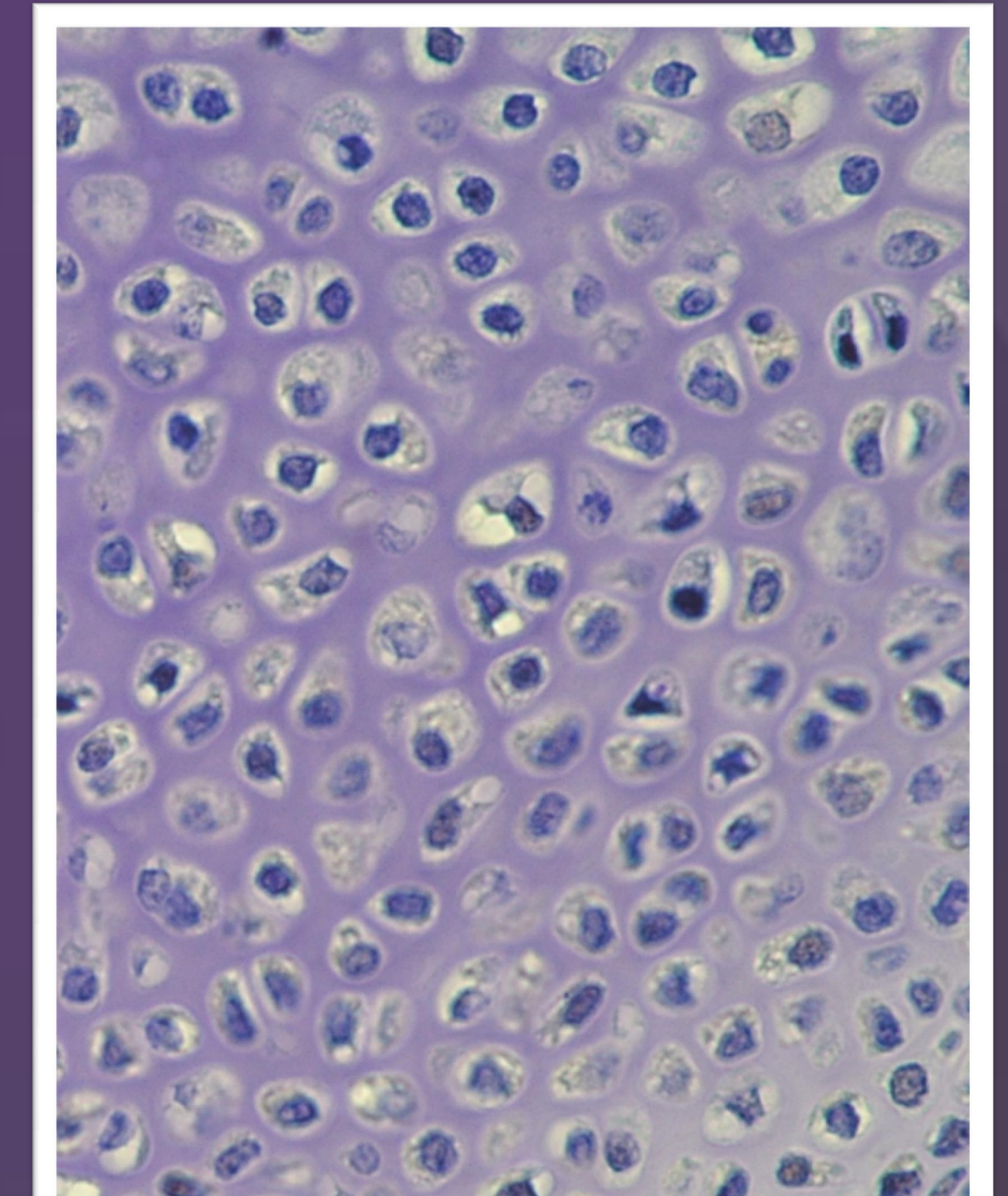


Fig 2. No TFF3 expression in chondrocytes in the zone of resting cartilage ▶

CONCLUSION

Expression pattern of TFF3 during endochondral ossification in mouse fetuses shows analogy to that reported in cartilage affected by inflammation in osteoarthritis and septic arthritis. This preliminary data show that similar mechanisms might be involved in the physiological process of endochondral ossification and in pathologically affected cartilage, and that TFF3 plays an important role in it.

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