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Glossary of terms

provided by **E. J. MACKIE** to accompany

Hypertrophy and physiological death of equine chondrocytes *in vitro*

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Aggrecan: A large proteoglycan, i.e. a protein with repeating carbohydrate (glycosaminoglycan) side chains. Aggrecan is found exclusively in cartilage, where it forms large extracellular aggregates with the glycosaminoglycan hyaluronan. Aggrecan/hyaluronan aggregates are interspersed amongst the fibres of collagen type II in cartilage, and confer on cartilage its characteristic resilience.

Alkaline phosphatase: An enzyme that hydrolyses organic phospho compounds. Different alkaline phosphatase isoforms are found in many tissues, but within the skeleton it is involved in the process of mineralisation, both of bone extracellular matrix and the extracellular matrix surrounding late hypertrophic chondrocytes in growth cartilage.

Apoptosis: A form of programmed cell death used in many tissues during development and pathology to remove unwanted cells. Apoptosis is characterised by nuclear and cytoplasmic condensation, followed by cellular fragmentation into membrane-bound 'apoptotic bodies' containing chromatin. Apoptotic bodies are usually removed rapidly by phagocytosis by specialised phagocytic or adjacent cells.

Monolayer culture: The most commonly used method for culturing cells isolated from animal tissues. Cells are dissociated from tissues and grown on the floor of plastic flasks or wells in plastic plates, under a covering of nutrient medium.

Polymerase chain reaction (PCR): A very sensitive technique used to detect expression of mRNA for specific genes in tissues and cells. RNA extracted from the specimen under investigation is first used to transcribe complementary DNA (cDNA). The chain reaction involves the use of this cDNA template to produce additional copies of cDNA. The reaction is initiated using short oligonucleotide primers with sequences matching those of the ends of the region of cDNA to be copied. The reaction product can be electrophoresed in a gel and visualised as a fluorescently labelled product of a known size. Alternatively, the amount of reaction product can be quantitated using a machine that measures appearance of the product over time (quantitative PCR).

Transcription factor: A protein that binds to promoter or enhancer regions of specific genes and thereby regulates the rate of transcription of the genes.