

A CLUSTERIN-LIKE GENE IS EXPRESSED IN THE GROWING TIP OF VELVET ANTLER FROM RED DEER (*CERVUS ELAPHUS*).

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Antlers are organs of bone which grow rapidly each spring and may reach a growth rate of 1.0 cm/day. Antlers grow from undifferentiated cells in the tip which initially form cartilage prior to ossifying into bone. Growing antlers are covered in a soft hairy skin referred to as velvet. The development of the antler also involves the extremely rapid growth and proliferation of blood vessels and nerves and therefore the tissue provides an excellent model for investigating the control of bone deposition and osteogenesis, blood vessel proliferation and nerve development. Rapid antler growth is believed to be under complex growth factor control, but few studies have investigated the development of this tissue in detail.

The growing tip of velvet antler consists of an epidermal layer, covered in fine hairs (velvet), a thick, highly-vascular dermis and a reserve mesenchyme layer of fibroblast-like, undifferentiated cells, which differentiate to form cartilaginous, then bone-like calcified tissue distally. We have investigated the expression of the clusterin gene as part of a wider study on growth factor and structural gene expression during antler growth.

A rat clusterin cDNA was used to probe northern blots of total cellular and polyadenylated (poly A⁺) RNA from the different layers of antler after 30 and 60 days of growth. A single mRNA transcript of around 2 kb was observed in the cartilaginous layer and in the reserve mesenchyme, in poly A⁺ RNA, but not in total RNA extracts, at both growth stages.

We conclude that a clusterin-like gene with significant homology to rat clusterin, is expressed in the growing velvet deer antler. In situ hybridisation studies are needed to identify the cells that are expressing clusterin and to clarify its role in antler growth.