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Induction of deer antlers by transplanted periosteum. I. Graft size and shape.

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Abstract

When discs of frontal periosteum from presumptive antler sites of 6-8 month old male fawns of the fallow deer are grafted beneath the foreleg skin, they will differentiate into pedicle bones and induce small antlers in the overlying integument. These antlers shed their velvet in the fall, and in succeeding years are replaced by larger outgrowths not exceeding 7 cm in length. Periosteal transplants 1.5 cm in diameter gave rise to ectopic antlers in 100% of the grafts, while discs measuring 1.05 cm, 0.75 cm and 0.4 cm did so in only 20% of the cases. Conversely, the donor sites produced antlers in 20-23% of the cases following removal of 1.05 cm or 1.5 cm of periosteum, while 80% and 100% grew antlers after deletions of 0.75 cm and 0.4 cm discs of periosteum, respectively. Semicircular grafts of periosteum induced antler development in most cases, especially when derived from the lateral halves of the antlerogenic region on the frontal bone. These findings confirm that the histogenesis of a deer's first pedicle and antler resides in the frontal periosteum over an area about 1.5 cm wide. They also show that leg skin is capable of antlerogenic development under the inductive influence of frontal periosteum, and that integumental wounding may enhance inductive interactions.

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