

# **Investigation of osteocyte and canalicular density in vertebral trabecular bone in osteoporotic and normal sheep**

**Principal Supervisor: Dr Cindy Bottema**

Phone: 8303 7641

Email: Cynthia.Bottema@adelaide.edu.au

Co-supervisor: Dr Reza Zarrinkalam (Institute of Medical & Veterinary Sciences)

## **BACKGROUND**

Osteocytes are actively involved in the turnover of bone matrix through various mechanosensory mechanisms. Given the considerable evidence supporting osteocytes as local initiators of bone remodeling, lacunar and canalicular density may be altered in osteoporosis.

## **METHODS**

Trabecular bone biopsies from the lumbar spines of 16 osteoporotic and six normal sheep have been decalcified and embedded in paraffin to yield histomorphometric data. Tissue sections will be prepared to visualize osteocytes, canaliculi and cement lines which will be quantified. The data will be correlated with the previously acquired histomorphometric data.

## **POTENTIAL OUTCOME**

Osteoporosis is the most common musculoskeletal disorder, characterized by low bone mineral density and structural deterioration of bone, leading to fractures. Excessive bone resorption (increased osteoclast activity) relative to bone formation is the principal cause of bone loss in postmenopausal osteoporosis but recent studies suggest that apoptosis of osteoblasts and osteocytes account, at least in part, for the imbalance in bone remodeling. This study will assist in further characterisation of osteocyte function and the role of these cells in bone turnover in osteoporosis.