**Introduction**
Degeneration of the intervertebral disc (IVD) is considered an important source of back pain and affects 80% of the ageing population. The mechanisms underlying this age-related degeneration remain to be elucidated. Our present study is designed to study age-related changes in gene expression in IVD and to find clues whether changes in gene expression can explain age-related disc degeneration.

We show that with age the end plate of murine lumbar spine undergo terminal differentiation followed by bone formation and accompanied by high mRNA expression of osteocalcin and intense BMP2 staining.

**Methods**
We isolated lumbar IVD of C57Bl/6 mice aged 4, 8, 12 and 20 months for RNA. Spines were decalcified with EDTA after which the IVD were isolated, followed by RNA isolation with trizol and RT-PCR. A Q-PCR was performed evaluating the expression of aggrecan, collagen type I, collagen type II, collagen type X and osteocalcin and Id1. Values were corrected for GAPDH and calculated as a fold increase compared to 4 months of age.

In addition, we isolated spines of mice aged 2, 6, 8, 12 and 20 months for histology. Parafin sections were stained with Safranin O and Fast Green. Immunohistochemistry was performed for BMP2. This study was approved by the local ethics committee.

**Conclusions**
Our data show that with age, the end plate chondrocytes undergo terminal differentiation and are eventually replaced by bone. This is accompanied by an intense BMP2 staining in the hypertrophic cells and a sustained increase in osteocalcin levels and increased Id1 expression in the IVD with age.

Our data strongly suggesting a role for BMP2 in bone formation in the IVD end plate. This phenomenon might contribute to age-related degeneration of the IVD.

**Expression of cartilage- and bone markers in murine IVD with age**

**Histology of het murine spine revealed bone formation in the cartilage end plate**

**BMP2 immunohistochemistry of the murine IVD revealed intense staining in end plate cells undergoing hypertrophy**

**BMP2 downstream marker Id1 is elevated in murine IVD with age**

As BMP2 is a major inducer of bone we investigated whether this factor was present in the disc and found that BMP2 staining is increased with age and that staining is especially intense in the terminally differentiating end plate chondrocytes that are eventually replaced by bone.