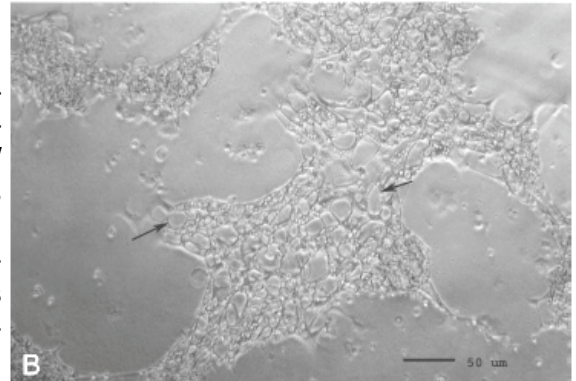
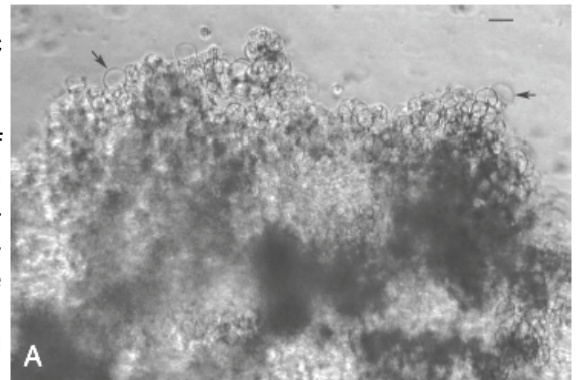


## Notochordal Cells for Treatment of Degenerative Disk Diseases

### Overview of Technology:

Degenerative disc disease (DDD) is an extremely common and expensive healthcare ailment which, unlike advances in biologic therapies for fracture management and disease modifying drugs for various arthropathies, has no curative strategy which attenuates or reverses the degenerative cascade. A feature of DDD is the progressive loss of proteoglycan-rich matrix from the spine. This loss results in the loss of hydro-static and visco-elastic properties of the spine disc nucleus. An ideal intervention would be to interrupt the progressive degeneration of the disc by stimulating the local chondrocyte population to maintain production of the extra-cellular proteoglycans. This in turn will protect the matrix from the action of enzymes and kinetic-associated pressure.

The researchers have previously shown that non-chondrodystrophic canine intervertebral discs-derived notochordal cells secrete Connective Tissue Growth Factor (CTGF/CCN-2) and that conditioned medium obtained from these cells upregulates important matrix gene expression, cell proliferation and proteoglycan production in nucleus pulposus cells. The researchers demonstrated for the first time that notochordal cells derived from non-chondrodystrophic dogs thrive and form complex 3D tissue constructs. Notochordal cells can be cultured and expanded for use in treatment of degenerative disk diseases.



*Notochordal cells form complex 3D tissue constructs (A=1 day in culture with DDEM, B=2 days in culture with DDEM)*

### Related Publication:

Erwin, W.M. and Inman, R.D. Notochord cells regulate intervertebral disc chondrocyte proteoglycan production and cell proliferation. *Spine*. **31(10)**, 1094-9 (2006)

Erwin, W.M., et al. Nucleus pulposus notochord cells secrete connective tissue growth factor and up-regulate proteoglycan expression by intervertebral disc chondrocytes. *Arthritis and Rheumatism*. **54(12)**, 3859-67 (2006)

### Patent:

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