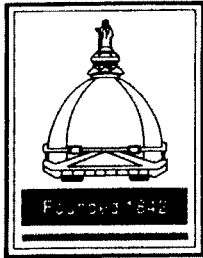


AEROSPACE & MECHANICAL ENGINEERING



2009 COLLOQUIUM 2010 SEMINARS ARE OPEN TO THE PUBLIC

INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365, ENGR. BLDG.
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

SPEAKER: **Professor Daniel Kelly**
Fulbright Visiting Research Scholar
Department of Biomedical Engineering
Columbia University
New York, New York

TOPIC: **THE ROLE OF ENVIRONMENTAL FACTORS
IN REGULATING CHONDROGENESIS OF MESENCHYMAL
STEM CELLS – IMPLICATIONS FOR CELL BASED
CARTILAGE REPAIR THERAPIES**

DATE: Thursday, April 22, 2010

TIME: 3:30 p.m.

PLACE: 118 Nieuwland Science

ABSTRACT

Articular cartilage has a limited capacity for repair. Cell based therapies such as Autologous Chondrocyte Implantation (ACI) can be used to treat cartilage defects, but there is no conclusive evidence that conventional ACI is more effective than established techniques such as microfracture. This has led to increased interest in novel tissue engineering strategies and alternatives to chondrocytes such as mesenchymal stem cells (MSCs) for cell-based cartilage repair therapies. Central to the success of any cell-based therapy is a fundamental understanding of how the local microenvironment influences cell phenotype and subsequent matrix synthesis and organisation. This seminar will first review how our lab is using *in vitro* models to systematically investigate how MSCs respond to their biophysical and biochemical environment. Key aspects of the *in vivo* joint environment, such as oxygen tension and dynamic compression, will be considered. The seminar will then outline how the information provided by such experiments can be used to develop models of cell behaviour, which can be combined with tools such as the finite element method to develop predictive tools that can potentially be used to improve outcomes in tissue engineering and regenerative medicine.

NOTE: *If you are interested in meeting individually with
Prof. Kelly, please contact Evelyn at 631-5431*