

**PhD STUDENTSHIP 2010**  
**STEM CELL MEDIATED CARTILAGE REPAIR**

The Kennedy Institute of Rheumatology carries out research into the basic science and disease mechanisms of rheumatoid and osteoarthritis. The Kennedy is based in well-equipped laboratories on the Charing Cross campus of Imperial College London.

The studentship is open to UK or EU students who are eligible for home fees. Applicants should have or expect to obtain a first or upper second class (2i) BSc degree or European equivalent. They will also need to provide evidence of English language competence at the time of application. The stipend will be at least £17,000 per annum and the studentship will begin October 2010.

**Project background:**

Articular cartilage is well adapted to its load-bearing function, but the necessary lack of neural and vascular supply results in a tissue with poor repair capacity. Stem cells have been proposed as a therapeutic cell source for cartilage repair and adult mesenchymal stem cells (MSCs) and embryonic stem cells (ESCs) represent two such possibilities. However, the former display relatively poor proliferative potential, while the latter are plagued with ethical and safety concerns. An attractive alternative are stem cells isolated from the first trimester foetus, being more primitive than adult MSCs, but not having the ethical restraints of human ESCs. We have recently demonstrated that human foetal MSCs (hfMSCs) can efficiently differentiate into chondrocytes *in vitro*. Such properties potentially make hfMSCs a very appropriate cell source for cartilage repair, and the present project will test this hypothesis.

**Key research questions to be addressed:**

- (1) Can hfMSCs be induced to form a stable articular chondrocyte phenotype *in vitro*?
- (2) Do hfMSCs repair focal defects in human cartilage *ex vivo*?
- (3) Do hfMSCs repair injured cartilage *in vivo*? (animal model)

**Student development:**

The studentship will lead to the development of a skilled researcher with a wide range of techniques in cell and molecular biology, stem cell biology and experience with animal models of repair. Full training will be provided, but prior experience of stem cells, real-time PCR, lipid-based transfection and animal work would be advantageous.

**Supervisors:**

Principal supervisor Dr. Chris Murphy has expertise in cartilage and chondrocyte biology, stem cells and hypoxia. Co-supervisor Dr. Pascale Guillot has expertise in foetal stem cells, and *in vivo* models of tissue repair. The work will be based at the Kennedy Institute (Imperial College London). Direct informal enquiries to Dr. Murphy [c.murphy@imperial.ac.uk](mailto:c.murphy@imperial.ac.uk)

**Further details:**

<http://www.fom.sk.med.ic.ac.uk/resources/794279E8-F92B-4EBC-B2D7-119FB5B57AD9/>

**To Apply:**

Applications consisting of a Curriculum Vitae and the details of two referees should be sent to Christine Greig, Kennedy Institute of Rheumatology, 65 Aspenlea Road, London W6 8LH or to [c.greig@imperial.ac.uk](mailto:c.greig@imperial.ac.uk)