

TCS/18/01 - Development Of A Viable Ex-Vivo Human Model For Pre-Clinical Testing Of Regenerative Therapies For Damaged Articular Cartilage

Osteoarthritis (OA) is the most common joint disease in the world characterised by damage to the articular cartilage (smooth joint lining). Millions of patients suffer from joint pain and disability due to OA. The potential to regrow this damaged articular cartilage of the joint represents a highly desirable ultimate treatment solution. Laboratory studies of several promising treatments designed to repair/regenerate damaged articular cartilage have been limited by the lack of a working human model. The primary aim of this project is to develop a bench-top human model of articular cartilage repair and regeneration as a standard for laboratory testing. The rationale is based on our 'proof of concept' research in an animal model that we have already developed at the University of Edinburgh. We believe that human articular cartilage may be kept alive for up to 6 weeks in the laboratory (using human tissue discarded during hip surgery) and repair/regenerative responses induced outwith the human body. The main advantages of such a model is the ability to test a wide range of OA treatments directly in the human tissue, paving the way for subsequent targeted clinical studies of laboratory proven strategies with the potential to regrow articular cartilage.