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Modeling Articular Cartilage Regeneration: A Phenomenological Approach. Preliminary report.

Each year, millions of Americans suffer from joint pain due to cartilage damage caused by trauma, injury, or diseases such as osteoarthritis. Articular cartilage, which lines the surface of bones in joints such as the hips and knees, is regulated by cells called chondrocytes and has a limited ability to repair itself. One possible solution for cartilage repair that has been studied in recent years is the use of nutrient-rich scaffolds seeded with these chondrocytes. In this study, dynamic phenomenological models for cartilage regeneration will be examined. These models capture the “linking” of the major components of the extracellular matrix, collagen and glycosaminoglycan, during regeneration and the effects different scaffolds have on this process. (Received September 22, 2011)