

# New molecular probes to allow non-destructive analysis of bioengineered cartilage

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A new study describes novel probes that enable non-invasive, non-destructive, direct monitoring of the differentiation of mesenchymal stem cells (MSCs) in real-time during the formation of engineered cartilage to replace damaged or diseased tissue. These molecular probes make it possible to assess the quality of the cartilaginous tissue and its suitability for implantation as it is forming, and to make modifications to enhance the multi-step process of MSC differentiation into chondrocytes "on the go," as described in a study published in *Tissue Engineering, Part A*.

Coauthors Diego Correa, MD, PhD, Case Western Reserve University (Cleveland, OH) and University of Miami, Miller School of Medicine (FL), and Rodrigo Somoza, PhD and Arnold Caplan, PhD, Case Western Reserve University report the significant advantages of these new molecular probes for improving the design and fabrication of engineered cartilage in the article entitled "Nondestructive/Noninvasive Imaging Evaluation of Cellular Differentiation Progression During In Vitro Mesenchymal Stem Cell-Derived Chondrogenesis." The researchers describe how they used promoters of well-established biomarkers of MSC differentiation to form chondrocytes (the cells that comprise cartilage) to develop the probes, and how the probes can be used to assess chondrogenesis in the laboratory as well as the differentiation of bone cells (osteogenesis) in the body.

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**More information:** Diego Correa et al, Nondestructive/Noninvasive

Imaging Evaluation of Cellular Differentiation Progression During In Vitro Mesenchymal Stem Cell-Derived Chondrogenesis, *Tissue Engineering Part A* (2017). [DOI: 10.1089/ten.tea.2017.0125](https://doi.org/10.1089/ten.tea.2017.0125)

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