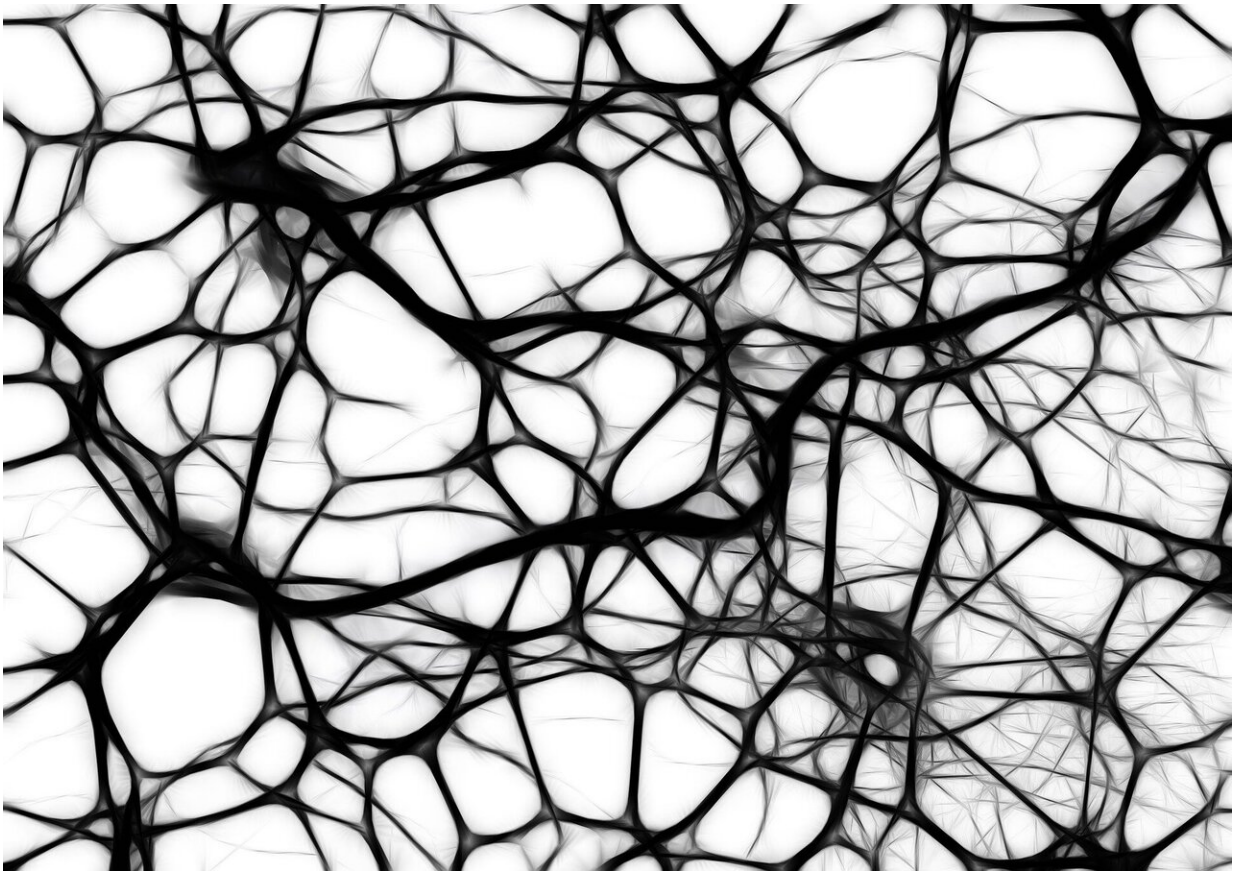


Can magnetic stem cells improve cartilage repair?

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Cells equipped with superparamagnetic iron oxide nanoparticles (SPIOs) can be directed to a specific location by an external magnetic field,

which is beneficial for tissue repair. Researchers have now taken the important step of evaluating the safety and efficacy of magnetically labeled mesenchymal stem cells (MSCs) for use in repairing cartilage defects. The study is published in *Tissue Engineering*, a peer-reviewed journal from Mary Ann Liebert, Inc., publishers.

Naosuke Kamei, MD, Ph.D., Hiroshima University, Hiroshima, Japan, and colleagues present their work in an article titled "In Vitro Safety and Quality of Magnetically Labeled Human Mesenchymal Stem Cells Preparation for Cartilage Repair". The authors demonstrated the safety of magnetically labeled MSCs based on karyotyping, colony formation assays, and total proliferation, finding only negligible differences after labeling. Chondrocyte differentiation and reactivity to magnetic forces were monitored to evaluate cell quality, and these results indicated that the appropriate titration of SPIO density is advisable to optimize differentiation capacity while maintaining magnetic attraction.

"The dedicated delivery of MSC's to the defect site is a major step forward in the clinical use of MSC's for tissue regeneration," says *Tissue Engineering* Methods Co-Editor-In-Chief John A. Jansen, DDS, Ph.D., Professor and Head, Department of Biomaterials, Radboud University Medical Center.

More information: Hiroshi Negi et al, In Vitro Safety and Quality of Magnetically Labeled Human Mesenchymal Stem Cells Preparation for Cartilage Repair, *Tissue Engineering Part C: Methods* (2019). [DOI: 10.1089/ten.tec.2019.0001](https://doi.org/10.1089/ten.tec.2019.0001)

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