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## ZJU Scientists Identify G-Exos as a Nanocarrier for miRNA Transfer to Stimulate Neural Differentiation of Stem Cells

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Differentiation of bone marrow derived mesenchymal stem cells (BMSCs) into functional neural cells is of tremendous significance to treat neural diseases. However, the limited neural differentiation of BMSCs remains a major challenge. Recent studies suggest that miRNAs may play a crucial role in regulating the neural differentiation of stem cells as effective signaling molecules. Due to their unique physiochemical attributes, miRNAs cannot be efficiently delivered in vitro and in vivo, thus inhibiting the application and translation of miRNAs.

PENG Lihua at the [Zhejiang University](#) College of Pharmaceutical Sciences led a cutting-edge research into ginseng-derived exosomes (G-Exos) as a carrier for miRNA transfer in the neural differentiation of BMSCs. Their research findings appear in a research article entitled “Plant Exosomes as Novel Nanoplatfroms for MicroRNA Transfer Stimulate Neural Differentiation of Stem Cells in Vitro and in Vivo” in the journal [Nano Letters](#).



Scheme of the G-Exos stimulation in the neural differentiation of BMSCs with sensory functions achieved

In this study, researchers isolated Exos from the juice of ginseng and loaded chemokine and G-Exos onto photo-cross-linkable hydrogel to fabricate a convenient, safe and efficient multi-purpose wound regeneration gel dressing, thereby achieving the targeted recruitment and induced neural differentiation of stem cells.

“This study demonstrated that G-Exos, which could circumvent the limitations of conventional RNA transfer strategies, may well become an effective nanoplatfrom in transferring plant-derived miRNAs to mammalian stem cells for neural differentiation both in vitro and in vivo, thus holding great promise in neural regenerative medicine,” said Prof.

Peng.

Read the [original article](#) on Zhejiang University.