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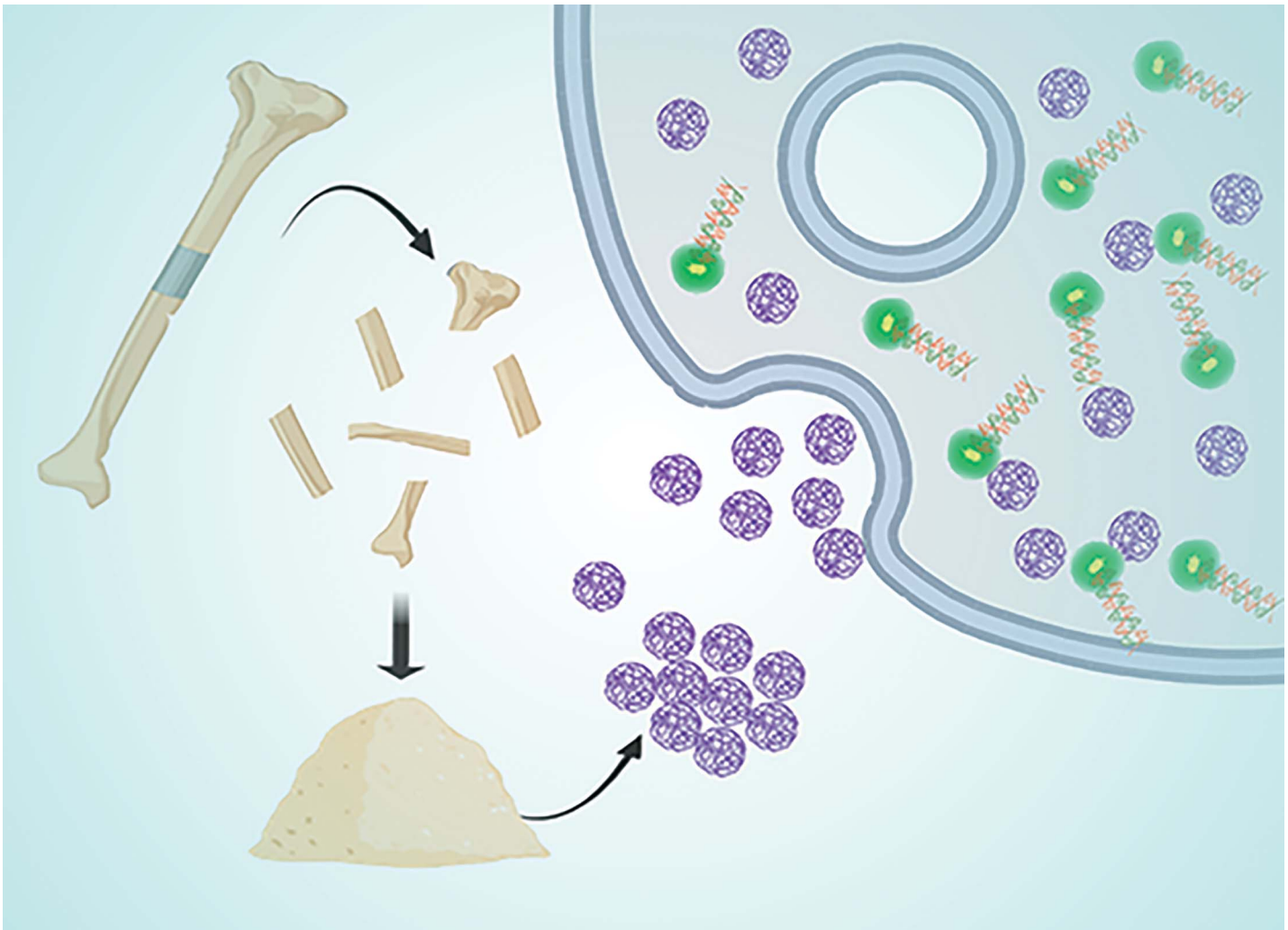

Showcasing research from Professor Shue Wang's laboratory, Department of Chemistry, Chemical and Biomedical Engineering, University of New Haven, West Haven, Connecticut, USA.

Bone-derived nanoparticles (BNPs) enhance osteogenic differentiation *via* Notch signaling

Enhancing osteogenesis is key to improving MSC-based regeneration. We engineered bone-based nanoparticles (BNPs) from decellularized porcine bones and studied their effects on MSC viability, proliferation, and osteogenic differentiation. Using an LNA/DNA nanobiosensor and live cell imaging, we monitored Notch ligand delta-like 4 (Dll4) expression during differentiation. Pharmacological inhibition of Notch signaling reduced osteogenic markers. BNP internalization increased Dll4 expression, aligning with enhanced cell proliferation and differentiation. These findings highlight BNPs' role in osteogenesis *via* modulation of Notch signaling and Dll4 expression.

As featured in:

See Bo Wang, Shue Wang *et al.*, *Nanoscale Adv.*, 2025, **7**, 735.

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