Docket #: S16-409

Methods to promote bone healing in patients with diabetes

Researchers at Stanford have developed methods to enhance bone healing in diabetic patients, who often suffer from impaired fracture healing due to a deficiency in hedgehog signaling in their skeletal stem cells. By administering a hedgehog agent at the injury site, they can reverse these deficiencies and promote bone regeneration, addressing a significant medical issue for diabetic patients worldwide.

Stage of research
Using diabetic mouse models, the inventors have shown that administering a hedgehog agent to the fracture rescued bone healing.

Applications

- Potential therapeutic to promote bone healing in diabetic patients for:
    - Skeletal fracture repair
    - Securing bone implants
    - Securing teeth implants

Advantages

- Solves an unmet need: provides a potential therapeutic to promote bone healing/regeneration in diabetic patients
- Deficiency is specific to diabetic skeletal fractures

Publications

- Tevlin R, Seo EY, Marecic O, McArdle A, Tong X, Zimdahl B, Malkovskiy A, Sinha R, Gulati G, Li X, Wearda T, Morganti R, Lopez M, Ransom RC, Duldulao CR, Rodrigues M, Nguyen A, Januszyk M, Maan Z, Paik K, Yapa KS, Rajadas J, Wan DC, Gurtner GC, Snyder M, Beachy PA, Yang F, Goodman SB, Weissman IL, Chan CK, and MT Longaker. Pharmacological rescue of diabetic skeletal stem cell niches. *Science Translational Medicine*, 11 Jan 2017. Vol. 9, Issue 372. DOI: 10.1126/scitranslmed.aag2809.
- Conger, K. Diabetes impairs activity of bone stem cells in mice, inhibits fracture repair. Stanford News. 11 Jan 2017.

Patents

- Published Application: WO2018129470
- Published Application: 20190336575
- Issued: 11,529,391 (USA)

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