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“The microbiome: can it influence fracture healing?”

Normal fracture union occurs after several weeks of prolonged immobilization, surgery or both. Even then, healing is not guaranteed and delayed or impaired bone healing can occur in up to 10% of fractures. As the progression of effective and reliable treatment options to improve fracture healing continues to remain relatively static, our study focuses on the growing field of gut microbiota research and how it exerts a systemic influence on the diverse aspects of host physiology specific to fracture healing. We aim to evaluate the potential benefits of oral probiotic administration on bone healing using a preclinical fracture model. Outcome measures will include assessment of biomechanical strength of healing fractures in addition to molecular/cellular and μ CT imaging/histomorphometry analyses of the fracture callus. Oral probiotic use after a fracture may represent an easily translatable, low cost and low risk strategy that, if found to be efficacious, could have significant clinical impact.