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Imelda Trejo* (imelda.trejo@mavs.uta.edu), **Hristo Kojouharov** and **Benito Chen-Charpentier**. *Modeling the Effects of the Macrophages on Bone Fracture Healing*.

A new mathematical model is presented to study the effects of macrophages in the bone fracture healing process. The model consists of a system of nonlinear ordinary differential equations that represents the interactions among classical and alternative macrophages, mesenchymal stem cells, and osteoblasts. A qualitative analysis of the model is performed to determine the equilibria and their corresponding stability properties. A set of numerical simulations is presented to support the theoretical results. The model is also used to numerically monitor the evolution of a broken bone for different types of fractures and to explore possible treatments to accelerate bone healing by administrating anti-inflammatory drugs. (Received September 16, 2018)