The prevalence of diabetes has been rising rapidly throughout the world. Global age-standardized diabetes prevalence increased from an estimated 4.3% in 1980 to 9.0% in 2014 in men, and from 5.0% to 7.9% in women. Responsibility for approximately 1.6 million deaths would make diabetes the third leading cause of death in the United States in 2016. Wounds or ulcers in patients with diabetes can cause amputations if they are not detected in time, hence an effective and rapid cure in these cases is relevant, in such a way that helps to implement an efficient and profitable treatment in the future to accelerate the healing in ulcers and wounds. The objective of this research is to determine the rates of production of type I collagen by mechanical stimuli at the cellular level. One specific aim is to attach fluorescent proteins to intracellular collagen produced at the endoplasmic reticulum (ER) and track its pathway through the cell until it is deposited in the extracellular matrix. A second aim is to study the effect of applied mechanical stimuli on the rate of production of collagen as well as its directionality during intracellular transport. It is thus possible to characterize the rates of effective production of type I collagen when mechanical stimuli are used on fibroblasts by studying intracellular collagen transport. The increased production of collagen can help accelerate the healing of wounds and complications in patients with degenerative diseases, such as diabetes.