

Supplementary Materials:

Figure S1. Predictions of the fiber-reinforced Fung model for the Cauchy stress in porcine vocal folds under uniaxial tensile tests using the regression data in Table 1, and hypothetical simulations of scarred tissue. The hypothetical simulations (black-solid and green-dotted curves) were generated by imposing the results of a recent work (**Heris HK, Miri AK, , Ghattamaneni NR, Li NYK, Thibeault SL, Wiseman PW, Mongeau L (2013) Biomechanics of collagen remodeling during vocal fold wound healing. Medical Engineering & Physics, under review**) into the present fiber-reinforced model. It was shown that collagen density (from second harmonic generation microscopy) in scarred rat vocal folds increased by 23.3% and 24.9% after one- and two-month scarring, respectively, and the indentation modulus (from atomic force microscopy) decreased by -31.8% after one month while increasing by 55.6% after two-month scarring. The former denotes to the fiber volume fraction and the latter represents the shear modulus of the matrix (because collagen has negligible resistance under indentation tests).

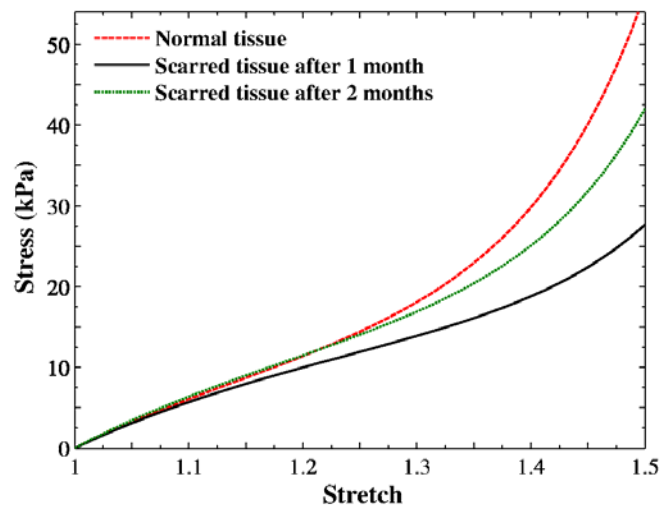


Figure S2. Cauchy stress versus stretch for rabbit vocal fold samples under uniaxial tensile testing for: a) control solution, b) elastase solution, and c) chondroitinase solution.

