

Supporting Information for

**A Three-dimensional Polymer Scaffolding Material Exhibiting a
Zero Poisson's Ratio**

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Stress-strain finite element simulations: AutoCAD LT was used to design the 2D scaffold layers with the semi re-entrant unit-cell structure. The 2D models were imported into Solidworks (Solidworks 2009, SolidWorks Corp., Concord, MA, USA) and extruded to form 3D models of the single-layer constructs. The 3D models were utilized to simulate the elastic stress-strain (deformation) behavior of the constructs using finite element analysis (Movies 2, 3 and Figure 1B).

Supplementary Movie Captions:

Movies 1. Deformation of the single-layer ZPR scaffold in response to an axial strain.

Movie 2, 3. Finite element simulations of a single-layer ZPR PEG scaffold showing the deformations and stresses of the ribs as a result of in-plane loading.