

## **Rensselaer Polytechnic Institute Subcontract**

### **Work plan**

The RPI team will contribute to all Aims of the project. We will develop single scale network models when appropriate and will further develop our multiscale model along the lines described in the proposal. Specific activities of the RPI team will include:

- (A) Development of new network models, more representative for the FCL collagen structure, based on structural information provided by our collaborators (Aim 2). We will compare the behavior of networks with multiple architectures and seek ways to quantify the network structure.
- (B) Use the multiscale model to represent collagen gels with complex cellular embeddings. The strains in these models will be compared with those measured directly using fluorescent bead tracking. The models will be used to define and solve an inverse problem for the forces applied by the gel to the cells (Aim 1).
- (C) Incorporate time-dependent constitutive behavior in the multiscale model (Aim 3). This will include accounting for damage and failure at all scales.
- (D) Develop the capability to perform parallel computing at both scales represented in the model. Improve the flexibility of the platform and the capability to easily add new model and code components.