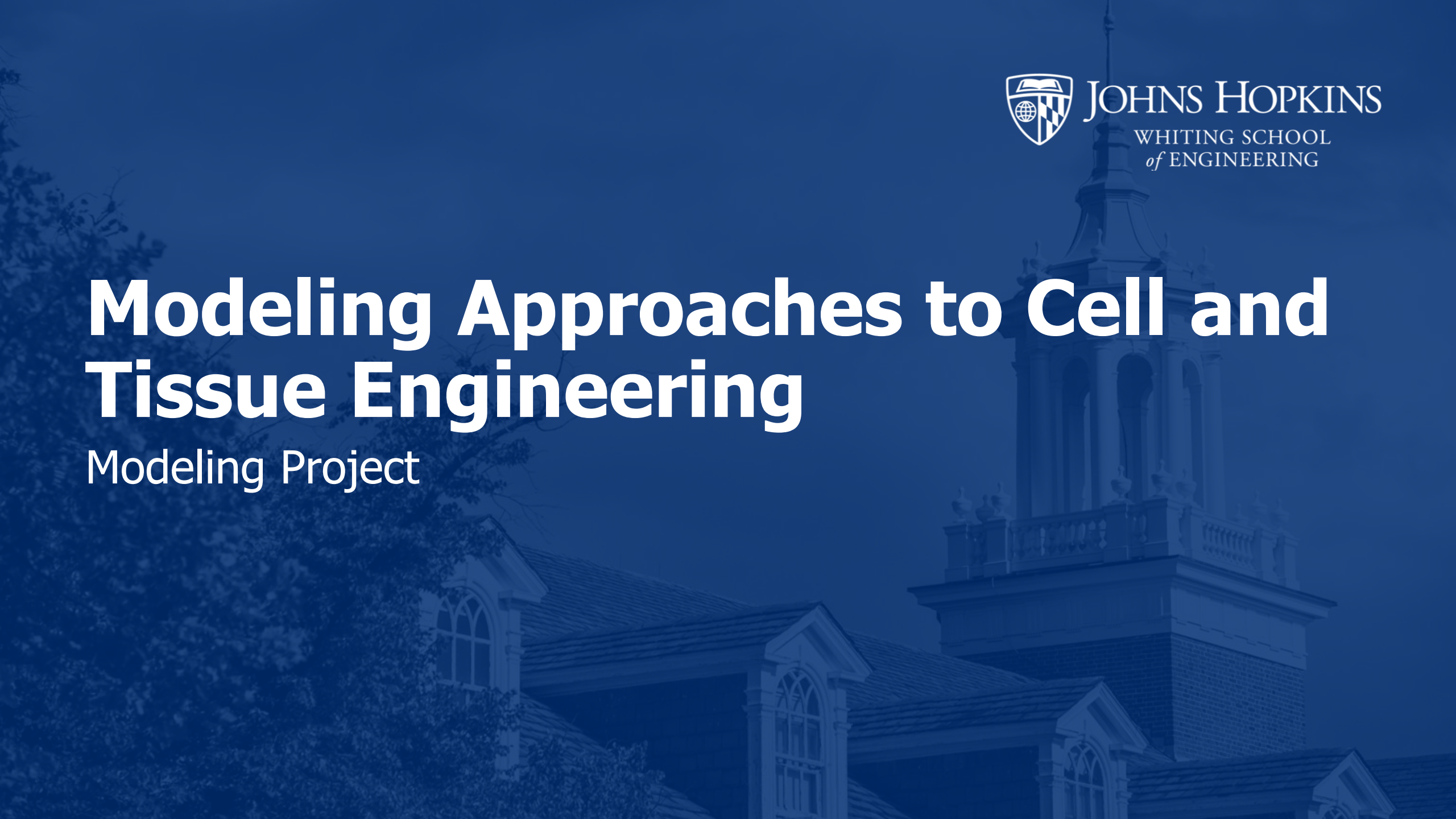


Modeling Approaches to Cell and Tissue Engineering

Modeling Project

Instructions

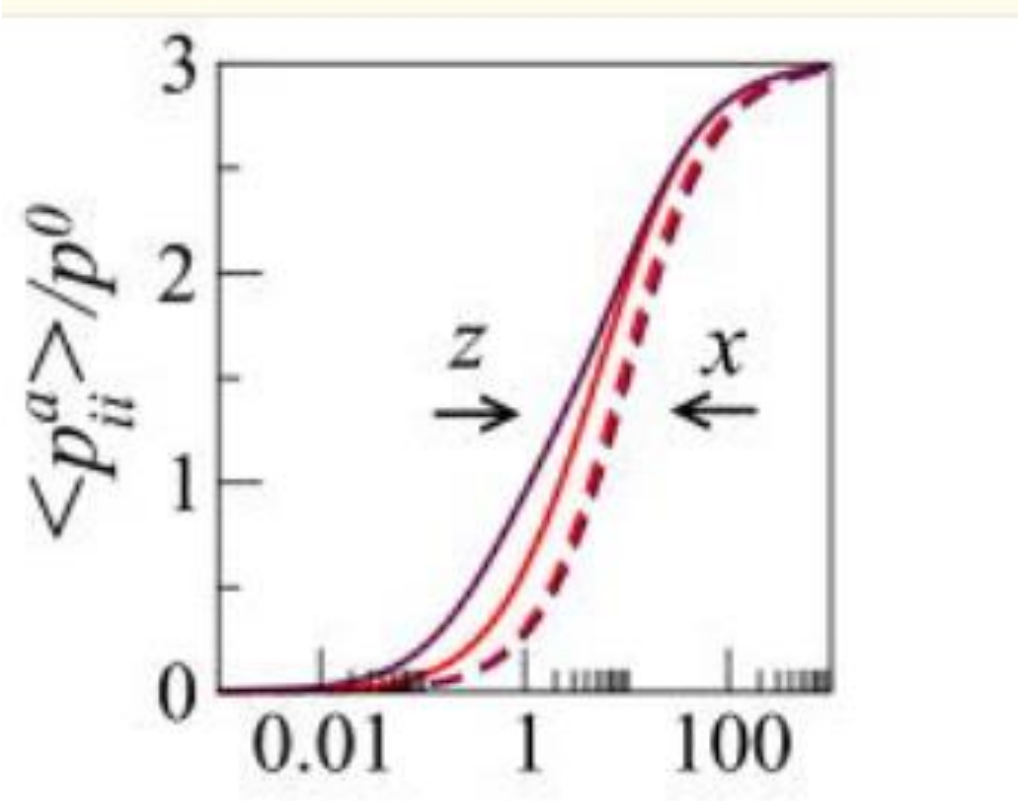
In Lecture 12, the polarization of the stem cell cytoskeleton as a function of the stiffness of ECM is considered. A number of characteristics of cell/ECM interaction, such as the modeling-predicted order parameter (Fig.1) or experiment-estimated myosin fiber intensity (Fig.2) demonstrate an increase-saturation pattern as functions of ECM stiffness.

Use the 1-D model where the cell and ECM are presented by the active and elastic springs, respectively (Fig.3) and show that the active force generated by the cell, **fa,** as a function of the ECM stiffness, has the same increase-saturation pattern of behavior.

Due by the end of Module 14.

Modeling Project Figure 1

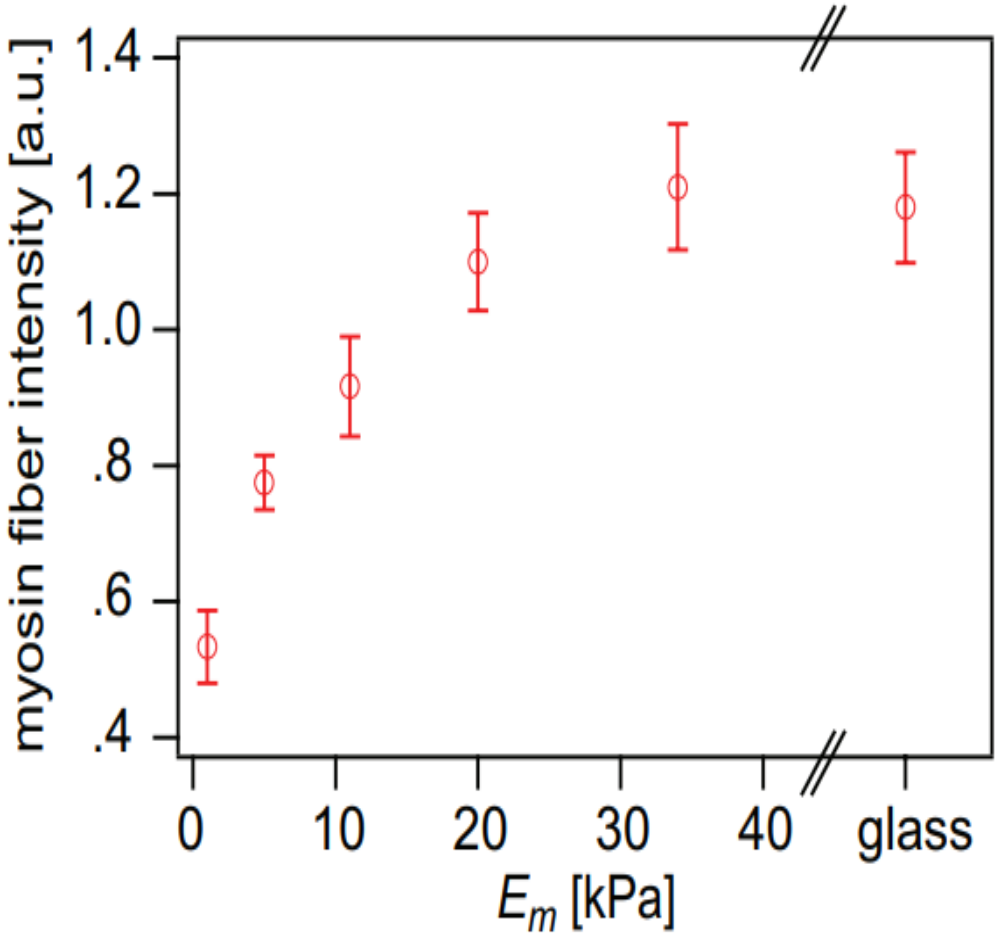
Figure 1



(Zemel et al., 2010 and Lecture 12)

Modeling Project Figure 2

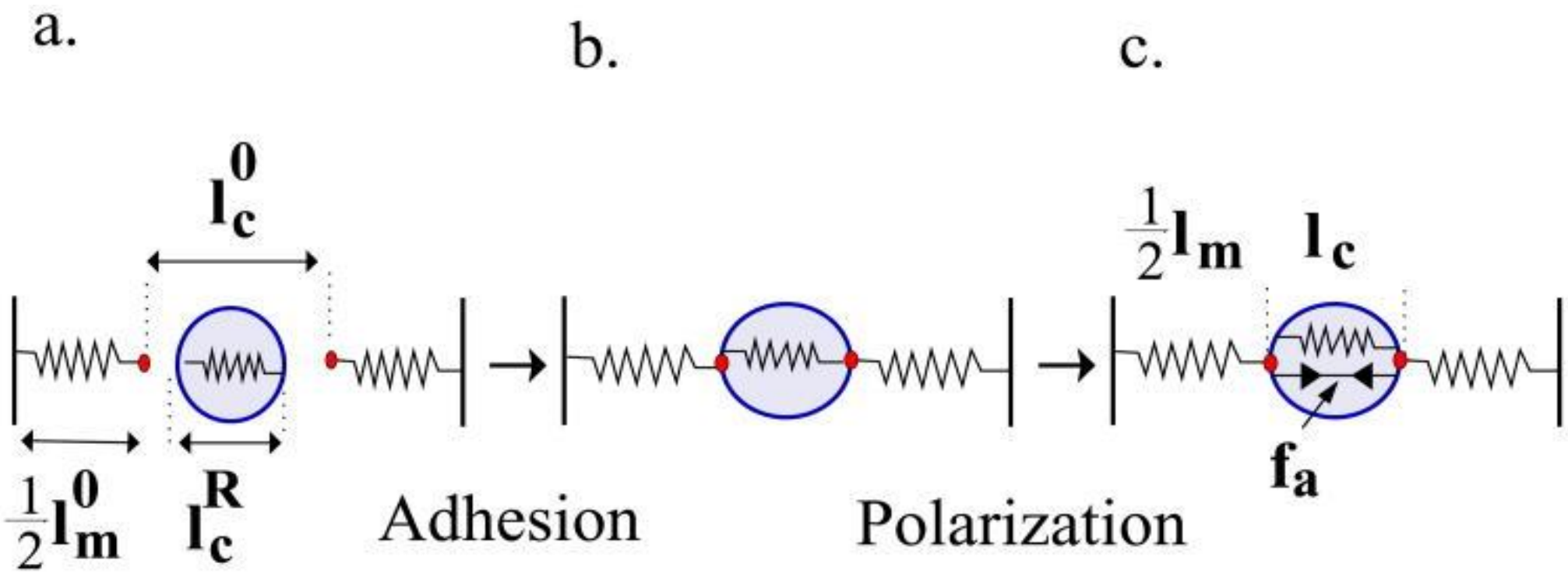
Figure 2



(Zemel et al., 2010 and Lecture 12)

Modeling Project Figure 3

Figure 3



(Zemel et al., 2010 and Lecture 12)