

## *Image Skeletal Muscle Progenitors in Situ to Investigate How the ECM Composition Regulates Musculoskeletal Assembly*

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Regenerative medicine has difficulty with the human body's inability to functionally repair tissues lost as a result of disease or serious accident. Through tissue engineering, there has been development of various scaffolding with the purpose of enhancing skeletal muscle regrowth and functionality. The scaffolds are typically constructed from artificial polymers or decellularized extracellular matrix (ECM) that mimics adult tissue. These standardized scaffolds are hindered though by the host since tissue engineers have not taken into account of how the composition musculoskeletal ECM during tissue repair is dramatically different than that of a homeostatic adult. Now green fluorescent protein positive (GFP+) whole mouse embryos (~9.5-~12.5 days post-conception) stained through immunohistochemistry are imaged in 4D through multiphoton and confocal microscopy to show the environment of the ECM. The method to finding results was challenging due to developing an efficient process to mount whole embryos *in vivo*. Although through images of GFP+ mouse embryo 10 $\mu$ m/60 $\mu$ m sections there is some support for the hypothesis of the composition of ECM yet more data is still required. If 4D imaging of GFP+ whole embryos can be accomplish, results of composition would then depend on the particular types of antigens used during immunohistochemistry process.