

Impact of Graphene Structure Property Processing Correlations on C2C12 Growth and Differentiation

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Graphene is a single atomic layer of graphite composed of pure carbon, giving it unique properties such as high tensile strength, and excellent electrical and thermal conductivity. Graphene can be used in many applications, including as a bioscaffold for cell growth and differentiation. The focus of this project is to determine if graphene synthesis methods impact gene expression in pluripotent cells. Using a murine muscle cell line (C2C12 cells) we performed cell culture and differentiation on graphene bioscaffolds obtained by chemical vapor deposition and inkjet printing. Each of these forms of graphene have unique physical features which may impact cell adhesion, proliferation, and differentiation, particularly as it relates to biomechanical coupling with the graphene substrates.

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