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代表性论文：

1. Li Z.#, Gong Y.W., Sun S.J., Du Y., **Lü D.Y.**, Liu X.F., and Long M*. 2013. Differential Regulation of Stiffness, Topography, and Dimension of Substrate on Rat Mesenchymal Stem Cells. ***Biomaterials*, 34:** 7616-7625.
2. **Lü D.Y.#**, Liu X.F., Gao Y.X., Huo B., Kang Y.Y., Chen J., Sun S.J., Luo X.D., and Long M*. 2013. Asymmetric migration of human keratinocytes under mechanical stretch and cocultured fibroblasts in a wound repairing model. ***PLoS One*, 8(9):** e74563.
3. **Lü D.Y. #**, Luo C.H., Zhang C., Li Z., and Long M*. 2014. Differential regulation of substrate stiffness and topography on morphology and stemness of mouse embryonic stem cells. ***Biomaterials*, 35:** 3945-3955.
4. Wang J.W.#, **Lü D.Y.**, Mao D.B., and Long M*. 2014. Mechanomics: An emerging field between biology and biomechanics. ***Protein & Cell*, 5(7)**: 518-531.
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Regulation of morphology and differentiation of embryonic stem cells by substrate stiffness and topography

报告摘要：

Results and Discussion: Hepatic differentiation of hESCs on topographical PA hydrogel with two typical stiffnesses was systematically tested using a four-stage induction protocol, we proposed a working model to illustrate how the two mechanical factors cooperatively manipulate the hepatic differentiation of hESCs. Substrate stiffness and topography are critical in regulating cell functions, coupled impacts of topography and stiffness were found differentially at distinct differentiation stages. Substrate stiffness is dominant in stemness maintenance and defined endoderm differentiation. Substrate topography plays a decisive role in manipulating clone or cell morphology and spreading and favors the differentiation to hepatocyte-like cells formation and maturation. Both substrate stiffness and topography cooperatively support clone formation or cell shape maintenance, and the differentiated cells present liver-specific functions, such as albumin excretion, glycogen synthesis, and ICG engulfment.

Conclusions: These results indicate that stem cell morphology and differentiation are affected by substrate stiffness and topography that mimics physiological conditions, combined with those biochemical factors. Biomechanical cues are critical for enhancing the efficiency and maturity of hepatic differentiation of ESCs.