



ID de Contribution: 93

Type: Poster

Study of fibroblast contractility on 2D and 3D soft gels

Study of fibroblast contractility on 2D and 3D soft gels

Sara Faour^{1,2}, Cyrille Vezy¹, Stephanie Salesse², Stephane Dedieu² and Rodolphe Jaffiol¹

¹ L2n, EMR CNRS 7004, UTT, Troyes, France

² MEDyC, UMR CNRS 7369, URCA, Reims, France

Email: sara.faour@utt.fr

Fibroblast activation is a multi-step process defined by increased contractile properties and associated processes (increased ECM production, tissue remodelling, proliferation...). In the presence of persistent stimuli from cancer lesions, these fibroblasts become CAFs (Cancer-Associated Fibroblasts) that are pro-tumorigenic cells that can chemically and mechanically remodel the tumor micro-environment, promoting the proliferation and invasion of cancer cells [1]. A growth factor (TGF- β - a key mediator in activation) was used to activate two different subsets –normal fibroblasts (WPMY-1) and activated fibroblasts (exp-CAF1 [2]).

This activation was verified by the implementation of a functional assay using 3D gel composed of type-1 collagen. As the involvement of matrix stiffness has become more apparent in the differentiation of fibroblasts, hydrogels of different stiffness (1 kPa –100 kPa) were prepared to mimic physiological and pathological conditions [3]. The stiffness of these hydrogels, embedded with micrometric beads, was characterized through active microrheology using optical tweezers to define the frequency-dependent viscoelastic modulus $G^*(\omega)$.

[1] R. Kalluri, Nat. Rev. Cancer, 16 (2016), 582–598.

[2] Y. Kojima et al. PNAS, 107, (2010) 20009–20014.

[3] M. Carrancá et al. Journal of Biomedical Materials Research. Part A, 109 ,(2021) 926–937.

Affiliation de l'auteur principal

1. L2n, EMR CNRS 7004, UTT, Troyes, France 2. MEDyC, UMR CNRS 7369, URCA, Reims, France

Auteurs principaux: VEZY, cyrille (L2n, EMR CNRS 7004, UTT, Troyes, France); JAFFIOL, rodolphe (L2n, EMR CNRS 7004, UTT, Troyes, France); FAOUR, sara (L2n, EMR CNRS 7004, UTT, Troyes, France); DEDIEU, stephane (MEDyC, UMR CNRS 7369, URCA, Reims, France); SALESSE, stephanie (MEDyC, UMR CNRS 7369, URCA, Reims, France)

Orateur: FAOUR, sara (L2n, EMR CNRS 7004, UTT, Troyes, France)

Classification de Session: Session Poster 2: MC1, MC4, MC8, MC10, MC12, MC14, MC20, MC21, MC23, MC24, MC25, REDP

Classification de thématique: MC4 Mécanique et vivant