Received: 17 April 2020 | Accepted: 29 May 2020

DOI: 10.1111/jcmm.15526

ORIGINAL ARTICLE

WILEY

Transforming growth factor β-mediated micromechanics modulates disease progression in primary myelofibrosis

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Funding Information
Patric Teodorescu was financed from an internal grant of the School of Doctoral Studies—Iuliu Hatieganu University (PCD 2018-2021). Ciprian Tomuleasa was also supported by two national research grants of the Romanian Government: the first one awarded for Frontiers Research Projects

Abstract

Primary myelofibrosis (PMF) is a Ph-negative myeloproliferative neoplasm (MPN), characterized by advanced bone marrow fibrosis and extramedullary haematopoiesis. The bone marrow fibrosis results from excessive proliferation of fibroblasts that are influenced by several cytokines in the microenvironment, of which transforming growth factor-β (TGF-β) is the most important. Micromechanics related to the niche has not yet been elucidated. In this study, we hypothesized that mechanical stress modulates TGF-β signalling leading to further activation and subsequent proliferation and invasion of bone marrow fibroblasts, thus showing the important role of micromechanics in the development and progression of PMF, both in the bone marrow and

Teodorescu, Pasca and Jurj contributed equally to the current manuscript.