CD326+CD29+ expression in liquid and tissue biopsy to redefine personalized treatment of NSCLC

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The clinical development of locally and advanced non-small cell lung cancer (NSCLC), suffers from lack of biomarkers able to guide selection of optimal prognostic prediction. Circulating Tumour Cells (CTCs) have been found to correlate with prognosis and show the translation of efficacy monitoring in patients. However, their enumeration alone might be inadequate; it might also be critical to understand the viability, apoptotic state and kinetics of these cells. Here, we report what we believe to be a new and selective approach to visually detect tumour specific CTCs. First, using labeled human lung cancer cells, we have detected specific density interval where NSCL-CTCs are concentrated. Second, to better characterize CTCs in respect to their heterogeneous composition and tumour reference, we performed blood and tumour biopsy in the same patient. Our approach consist to compare phenotype profile of CTCs, and their progenitor, Tumour Stem Cells, TSCs. Moreover, NSCL-CTCs were expanded in short-time human cultures to provide response in drug sensitivity. Our bimodal approach allowed us to reveal, first, that a part of tumour, proximal to bronchial structure, displaying a predominance of CD133+. Second, specific NSCL-CTCs CD326+CD29+ as negative prognostic factor as well the high expression of CTCs CD326+. These data were confirmed by drug-sensitivity test, in vitro, and the survival curves, in vivo.