MISSING LINK

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Single cell analysis is an extraordinary opportunity to learn about the biology of selected cells or cell types in vitro as well as in vivo, but also to challenge the current scientific standards and classic cannons for their sustainability in response to new technologies.

Working for many years with single cells separated in vitro from blood, bone marrow, epithelial, and tumor tissues, we have learned that the nomenclature used for identification of those single cells was only the conventional name given by classification authors to identify classes or genera of cells or tissues which undergo live cycles, maturation and differentiation processes, or are damaged (e.g., malignant alteration) and show apoptotic changes. The standard names are only modal synthesis of visual signals conveniently given appropriate names. Otherwise, they present a wide array of cells which differ metabolically, genetically and biochemically, if not so much morphologically – a full range of differences that may complicate any single cell analysis. This is particularly true for tumor cells which, after every division, recover into two different – similar, but not identical – cells with their own pattern of further growth.

The understanding of this spatiotemporal moment is a ***missing link*** that must be considered in any single cell analysis. But, is there something what can be used as a continuum, a chain that preserves its characteristics and can be used as an additional parameter if morphology and pathology are giving only modal value of visual signals?

We believe that intracellular molecular kinetics is one of such links. Defined as spatiotemporal measurements of the kinetics of accumulation of nano-particles as a result of bioactive protein catalysis of artificial substrates, could be a new method for testing small molecules for their effect on tumor cell metabolism and for possible metabolic management of antitumor medications.

We will present a concept and model for spatiotemporal measurements in a single, morphologically classified cell.