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## Characterization of cancer stem-like cells by detecting chromosomal aberrations in bladder cancer

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The capability of a tumor to grow and propagate seems to depend on a small sub-population of cells, called cancer stem cells (CSCs) [1]. We isolated and characterized putative bladder CSCs populations from primary Transitional Cell Carcinomas (TCCs). These cells proliferated as urospheres and had abilities for extensive proliferation and self-renewal. Their positivity for stem cell markers and their potential to differentiate were assessed. Urospheres gradually showed loss of proliferation, adherence to the substrate, and morphological changes, which might reflect their progressive loss of self-renewal ability. Conventional cytogenetic analysis was carried out on fresh chromosome spreads immediately after the isolation and after one week of culture. The data indicated important karyotype selection and the loss of complexity present in fresh tumors. Another purpose was to evaluate the performance of a targeted test (UroVysion assay) widely used for the detection of TCCs [2], on Formalin Fixed Paraffin Embedded (FFPE) tissues and interphasic nuclei of urospheres: comparing tissue and after-culture data, we observed a great heterogeneity also among samples with the same histotype. The comparison between array-CGH and UroVysion assay evidenced the same heterogeneity on two different types of material derived from the same tumor: FFPE and Freshly Isolated interphasic Nuclei (FIN). Our results confirmed the importance of use complementary techniques such array-CGH and FISH, as the former is able to detect alterations at the genome level, but the latter is able to maintain the individual data at the level of single cells, even if it focuses on few genomic regions.

## Biography

Graduated in Biological Science in 1999, she has a Specialization in Medical Genetics in 2004 and a PhD in experimental Pathology and Neuropathology in 2007. She is scientific researcher c/o Department of Neurosciences and Biomedical Technologies; Assistant Professor of Genetic Pathology, Genetic Markers and Genetic of Riproduction c/o University of Milano Bicocca. Her main interests are pathogenetic mechanisms of genetic syndromic diseases associated with mental retardation and/or congenital heart defects. From 2005 she focused her attention on Mesenchymal Stem Cells (MSCs) and Cancer Stem Cells from Bladder Cancer and GlioblastomaMultiforme. She has published 15 papers, especially the last two concerning the isolation and characterization of the putative bladder cancer stem cell are very cited. She is also a referee for the evaluation of projects for the Italian Ministry of Research and University.