



3rd SUNRISE Meeting

NEW ADVANCED IN CANCER STEM CELLS



Abstract submission form

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TITLE

μ Pulse Electric Fields exposure targeting medulloblastoma cancer stem cells

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Type of presentation:

- Poster presentation

Authors asked to submit abstracts under one of the following categories:

- CSC targeting

ABSTRACT

Medulloblastoma (MB) is the most common pediatric malignant brain tumor in which cancer stem cells (CSCs) seem to be candidates in the onset of the disease, constitute an endless reserve for the maintenance and progression of the tumor and, furthermore, they could be the reason of conventional therapy failure. Therefore, new therapeutic strategies are necessary to targeting specifically CSCs. The goal of this study is to selectively target quiescent malignant CSCs and subsequently induce a differentiation process to sensitize them to radiotherapy treatment using appropriately modulated pulse electric fields (PEFs).

To this aim, different μ PEFs are been selected to exposure D283Med cells, resulted to be a perfect model of MB CSCs, and normal human astrocytes. In particular, the μ PEF-3 (40 μ s 0.35 MV/m 5 pulses) exposure induced a different response in term of cell death and cell cycle perturbation. To provide deep insight into the mechanism that differentiate the response, we focus our attention on the cell cycle network, using the RT² Profiler PCR Arrays. Results showed that μ PEF-3 induced the G2/M arrest via the up-regulation of GADD45a that could be crucial for the choice of the cell fate activating apoptosis, senescence or differentiation mediated by stress-activated p38 MAPK process.

Our results suggest that this new therapeutic approach could be used to neutralize CSCs or as pre-treatment to promote radiosensitization.

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