

# CELL & STEM CELL RESEARCH

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## Radiation-induced PGE2 sustains glioma cell growth and survival through EGF signaling

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Glioblastoma multiforme is the most common brain cancer in adults. Radiotherapy is the most effective post-operative treatment for the patients even though gliomas are considered one of the most radio-resistant tumors. As a consequence there is rapid recurrence of the tumor probably due to the presence of cancer stem cells (CSC), which are radio-resistant. Indeed, the dying irradiated tumor bulk would activate caspase-dependent pathways causing the release of growth-promoting factors that would mobilize and recruit CSC. One of these pathways is the  $\text{Ca}^{2+}$ -dependent phospholipase A2, the activation of which increases the synthesis and release of arachidonic acid from apoptotic cells and the consequent release of prostaglandin E2 (PGE2). We have evaluated the role of PGE<sub>2</sub> in glioma radio-resistance. We used an *in vitro* approach using 3D primary cultures derived from representative glioma patients. We show that irradiated glioma cells produced and released PGE2 in important quantities independently of the induction of cell death. We demonstrate that the addition of PGE<sub>2</sub> enhances cell survival and proliferation through its ability to trans activate the Epithelial Growth Factor receptor (EGFR) and to activate  $\beta$ -catenin. Indeed, PGE2 can substitute for EGF to promote primary cultures survival and growth *in vitro* and the effect is likely to occur through the prostaglandin E2 receptor EP2.

### Biography

Lisa Oliver has completed her PhD at University of Paris 7. She is currently working in the group of Dr. François Vallette at the CRCINA, INSERM-University of Nantes. She has published more than 40 papers in reputed journals.

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