



> **OC048. Oral Communication**

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X-RAY INDUCED PDT WITH SCINTILLATING NANOPARTICLES

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Photodynamic therapy (PDT) is a cancer therapy modality. After excitation of a photoactivable molecule (called photosensitizer) and its energy transfer to oxygen, reactive oxygen species are produced leading to photooxidation reactions. New improvements in the field of PDT concern the development of nanoparticles as delivery carriers for anticancer agents [1, 2].

One of the limit of PDT is the low penetration of light into the tissue. Multiple nanotechnology-based drug delivery systems have been developed to overcome this issue. Our aim is to overcome the constraints imposed by photodynamic therapy (PDT) to treat deep tumor. Recent publications and our results lead us to suggest the development of nanoparticles excited by radiotherapy (standard X-ray from an external corporal energy source) for the treatment of malignant cerebral gliomas [3, 4, 5].

Novel hybrid system of scintillating nanoparticles (nanoscintillators) and PDT photosensitizers enabling excitation of the constructed nanodevices using X-rays, which can penetrate deeply into tissues. Upon exposure to ionizing X-ray radiation, nanoscintillators transfer its energy to the photosensitizers that will activate them. With this novel therapeutic approach, limited light penetration problem could be overcome and activation of the photosensitizer within tumors could be performed using ionizing X-ray radiation. This new modality could allow treatment of deep tumors using lower X-ray radiation dose than conventional radiotherapy [6].

