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DNA repair in head and neck cancers and their radiosensitivity

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Head and neck (H & N) tumors are aggressive neoplasms located close to vital tissues. This makes their surgical removal often very risky and mutilating. Non surgical approaches as chemotherapy and radiotherapy are therefore preferable but only about 50% of H & N tumors respond to this conservative treatment. Unfortunately, we still miss a tool allowing for pre therapeutic selection of H & N cancer patients who will benefit from conservative therapy or primary surgery. Blind application of radiotherapy is risky since the rescue surgery (if radiotherapy fails) and consecutive patients' recovery is complicated by radiation damage caused to normal tumor surrounding tissue. Clinicians thus permanently face to a serious 'First-Therapy Dilemma'. The purpose of our work is to better understand the heterogeneity of H & N tumors in terms of their response to different ionizing radiations (gamma rays, protons and accelerated ions), reveal molecular causes of their radiosensitivity/radioresistance and potentially find a biomarker predicting these characteristics. For the first time in this context, we prepared primocultures of several different cell types (normal fibroblasts, tumor associated fibroblasts and tumor cells per se) from patients' tumors, characterized their basic molecular genetics features and compared their survival and DNA double strand break (DSB) capacity after gamma ray and proton irradiation, respectively.

Biography

Martin Falk is the Head of the Department of Cell Biology and Radiobiology at the Institute of Biophysics, Czech Academy of Sciences, Brno, CR. He has completed his PhD in Molecular Biology and Genetics from Masaryk University Brno, CR, in 2004. He has published over 30 papers with about 500 citations, given 26 invited lectures at international conferences and has been serving as an Editorial Board Member of several reputed journals. In 2009, he has been awarded the Premium of Otto Wichterle devoted by the Czech Academy of Sciences to outstanding young scientists. His research interests include radiobiology and cancer biology.

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