Press Release

Unraveling the drug-resistance mechanisms in tumor cells

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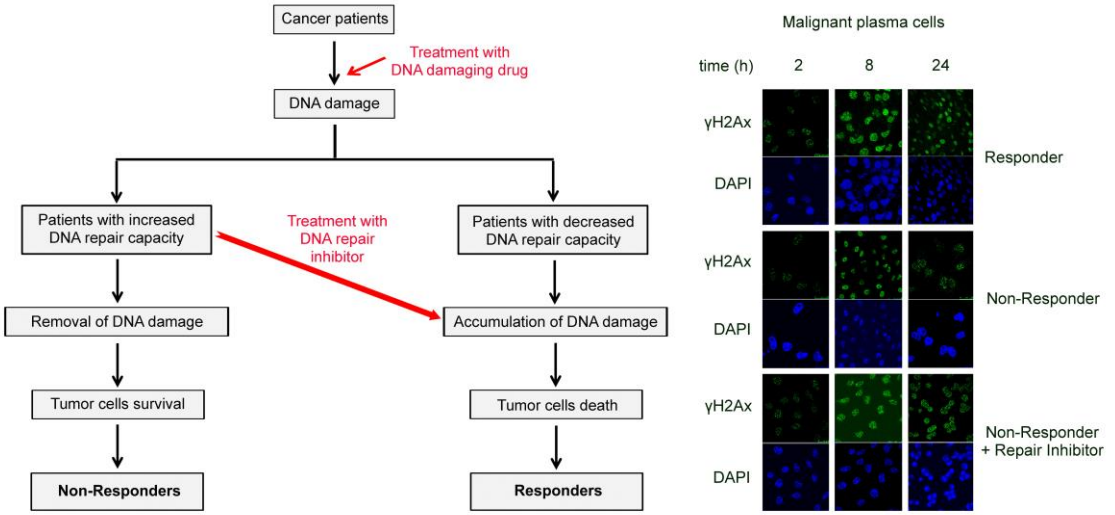

Understanding the complex pathways involved in cancer pathogenesis and progression seems to be essential for improvement in cancer therapy field. Guided by this notion, the last 15 years researchers of the Institute of Biology, Medicinal Chemistry and Biotechnology (IBMCB) at the National Hellenic Research Foundation (NHRF) in collaboration with the Department of Clinical Therapeutics, University of Athens Medical School and the Department of Medical Oncology, Dana-Farber Cancer Institute, Harvard Medical School have studied the DNA repair mechanisms of tumor cells in order (a) to produce new scientific knowledge on the molecular pathways implicated in the pathogenesis and progression of cancer, and (b) to translate this knowledge into novel, selective and effective tools for the early diagnosis and prognosis of the disease, as well as the prediction of the clinical outcome of therapy.

Recently, using as a model multiple myeloma (the second most commonly diagnosed hematologic malignancy) the partners of this consortium published data on the mechanisms underlying different responses of cancer patients to DNA damaging drugs. Two main findings were reported. First, significant differences in the DNA repair capacity of tumor cells were observed between patients who responded and those who did not respond to common anticancer drugs. Second, inhibition of the cellular DNA repair machinery using specific small molecule inhibitors offers a promising strategy toward improvement of existing anticancer regimens.

Since the analyses were conducted on tumor cells obtained from patients prior to any therapeutic treatment, **these data form the basis for personalized medicine**

strategies through selection of those patients who are more likely to benefit from the subsequent therapeutic treatment.

Importantly, **these findings can be extended broadly to different cancers** since aberrant DNA repair mechanisms characterize many types of cancer, causing disease progression and drug-resistance.

Article Reference:

"DNA repair of myeloma plasma cells correlates with clinical outcome: the effect of the nonhomologous end-joining inhibitor SCR7"
Maria Gkotzamanidou, Evangelos Terpos, Christina Bamia, Nikhil C. Munshi, Meletios A. Dimopoulos, and Vassilis L. Souliotis

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