Molecular mechanisms of cellular stress responses in cancer and their therapeutic implications /

Speidel, Daniel,
editor
Chircop, Megan,
editor

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Monografía

In response to stress, cells can activate a myriad of signalling pathways to bring about a specific cellular outcome, including cell cycle arrest, DNA repair, senescence and apoptosis. This response is pivotal for tumour suppression as all of these outcomes result in restriction of the growth and/or elimination of damaged and pre-malignant cells. Thus, a large number of anti-cancer agents target specific components of stress response signalling pathways with the aim of causing tumour regression by stimulating cell death. However, the efficacy of these agents is often impaired due to mutations in genes that are involved in these stress-responsive signalling pathways and instead the oncogenic potential of a cell is increased leading to the initiation and/or progression of tumourigenesis. Moreover, these genetic defects can increase or contribute to resistance to chemotherapeutic agents and/or radiotherapy. Modulating the outcome of cellular stress responses towards cell death in tumour cells without affecting surrounding normal cells is thus one of the ultimate aims in the development of new cancer therapeutics. To achieve this aim, a detailed understanding of cellular stress response pathways and their aberrations in cancer is required. This Research topic aims to reflect the broadness and complexity of this important area of cancer research. We encourage original studies, perspectives and review articles that relate to any aspect of cellular stress responses, from both a molecular and clinical perspective. Topics may include signal transduction pathways and genes/proteins regulating them; different stress stimuli (DNA damage, viruses, metabolic stress, hormones and others); cell cycle checkpoints, DNA repair, autophagy, apoptosis and other forms of cell death; mechanisms of resistance against cytotoxic drugs; novel strategies and drugs that interfere with cellular stress responses; and methods to study cellular stress responses. Articles that focus on a specific type of cancer with known characteristics related to cellular stress responses, for example melanoma or therapy-related cancers are also welcome

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