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Name of journal: World Journal of Biological Chemistry

ESPS Manuscript NO: 17442

Columns: Editorial

DNA damage responses in cancer stem cells: Implications for cancer therapeutic strategies

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**Abstract**

The identification of cancer stem cells (CSCs) that are responsible for tumor initiation, growth, metastasis, and therapeutic resistance might lead to a new thinking on cancer treatments. Similar to stem cells, CSCs also display high resistance to radiotherapy and chemotherapy with genotoxic agents. Thus, conventional therapy may shrink the tumor volume but cannot eliminate cancer. Eradication of CSCs represents a novel therapeutic strategy. CSCs possess a highly efficient DNA damage response (DDR) system, which is considered as a contributor to the resistance of these cells from exposures to DNA damaging agents. Targeting of enhanced DDR in CSCs is thus proposed to facilitate the eradication of CSCs by conventional therapeutics. To achieve this aim, a better understanding of the cellular responses to DNA damage in CSCs is needed. In addition to the protein kinases and enzymes that are involved in DDR, other processes that affect the DDR including chromatin remodeling should also be explored.

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## Cancer stem cells: therapeutic implications and perspectives

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