

**Name of Journal:** *World Journal of Stem Cells*

**Manuscript NO:** 58085

**Manuscript Type:** ORIGINAL ARTICLE

### *Basic Study*

**Glutathione metabolism is essential for self-renewal and chemoresistance of pancreatic cancer stem cells**

Glutathione metabolism in pancreatic cancer stem cells

### **Abstract**

#### BACKGROUND

Cellular metabolism regulates stemness in health and disease. A reduced redox state is essential for self-renewal of normal and cancer stem cells (CSCs). However, while stem cells (SC) rely on glycolysis, different CSCs, including pancreatic CSCs, favor mitochondrial metabolism as their dominant energy-producing pathway. This suggests that powerful antioxidant networks must be in place to detoxify mitochondrial reactive oxygen species (ROS) and maintain stemness in oxidative CSCs. Since glutathione metabolism is critical for normal SC function and CSCs from breast, liver and gastric cancer show increased glutathione content, we hypothesized that pancreatic CSCs also rely on this pathway for ROS detoxification.

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3756414>

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**Cited by:** 214

**Author:** Angel L. Ortega, Salvador Mena, Jose M. E...

**Publish Year:** 2011

## Glutathione metabolism in cancer progression and treatment ...

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**GSH** preserves sufficient levels of cysteine and detoxifies xenobiotics while also conferring therapeutic resistance to cancer cells. However, **GSH** metabolism plays both beneficial and pathogenic roles in a variety of **malignancies**.

**Cited by:** 145

**Author:** Ankita Bansal, M. Celeste Simon

**Publish Year:** 2018

## Natural Sesquiterpene Lactones Enhance Chemosensitivity of ...

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A number of human **cancer** tissues, including breast, brain, colon, pancreas, lungs, and leukemia, produce high concentrations of **glutathione** (GSH) that contribute to **cancer** initiation, progression, and metastasis formation and to **chemoresistance** [100–103]. In accordance with the elevated level of GSH in **cancer cells**, several drugs known to ...

**Cited by:** 7

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## [Glutathione metabolism in cancer progression and treatment ...](#)

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Glutathione (GSH) is an **antioxidant** that acts as a free radical scavenger and a detoxifying agent in cells. It is useful in a multitude of processes, cellular proliferation, cell division, and differentiation, and is the most commonly elevated metabolite detected during oxidative stress.

**Cited by:** 149 **Author:** Ankita Bansal, M. Celeste Simon

**Publish Year:** 2018

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**Cited by:** 7 **Author:** Elena Butturini, Alessandra Carcereri de ...

**Publish Year:** 2019

## [Targeting Cancer Metabolism to Resensitize Chemotherapy ...](#)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7072159>

With the increasing understanding of the mechanisms by which **cancer cells** develop **chemoresistance**, it has been suggested that various mechanisms are involved in this process, such as variations in drug metabolism, mutations in drug targets, changes in DNA repair, formation of **cancer stem cells** (CSCs), immunosuppression, inactivation of