Zulfiya Orynbayeva, J Cancer Sci Ther 2017, 9:7 (Suppl)
DOI: 10.4172/1948-5956-C1-108

Prostate and Colon Cancer metabolisms. What they thought us about processes behind the Warburg Effect?

Zulfiya Orynbayeva
Drexel University College of Medicine, USA

Cancer is a metabolic disease. Dysregulation of energy generating processes is essential in cancer development and progression. Elevated glycolysis under the condition of malfunctioning mitochondria is known as the Warburg Effect, which was proposed in 1924. 93 years later what lies behind the increased consumption of glucose by malignant cells is poorly understood. In addition, as research is progressing, it has become evident that cancer mitochondria performance is not weak, but rather oxidative phosphorylation is more intense in cancer than in healthy cells. Our group has demonstrated that prostate and colon cancers acquire highly oxidative mitochondria. The higher membrane potential, increased calcium retention capacity, higher activities of respiratory enzymes are among mitochondria features that enable cancer cells to escape apoptosis. We study mitochondria changes induced by cancer to understand whether glycolysis and oxidative phosphorylation are functionally disconnected or support each other. We hypothesize that these two major energy generating pathways have a special cooperative relationship in supporting highly proliferative cancer cells. The mitochondria malate-aspartate and lactate shuttles are the focus of our research as a bridging mechanism between cytosolic glycolysis and mitochondria oxidative phosphorylation.

Biography

Zulfiya Orynbayeva earned her PhD in Biophysics/Bioenergetics from Tashkent University in Uzbekistan. She completed postdoctoral training at Ben-Gurion University of the Negev in Israel and Martin-Luther University Halle-Wittenberg in Germany. She leads the Mitochondria Pathophysiology Laboratory at the Department of Surgery, Drexel University College of Medicine. She published more than 28 articles in high impact journals.

zo25@drexel.edu

Notes: