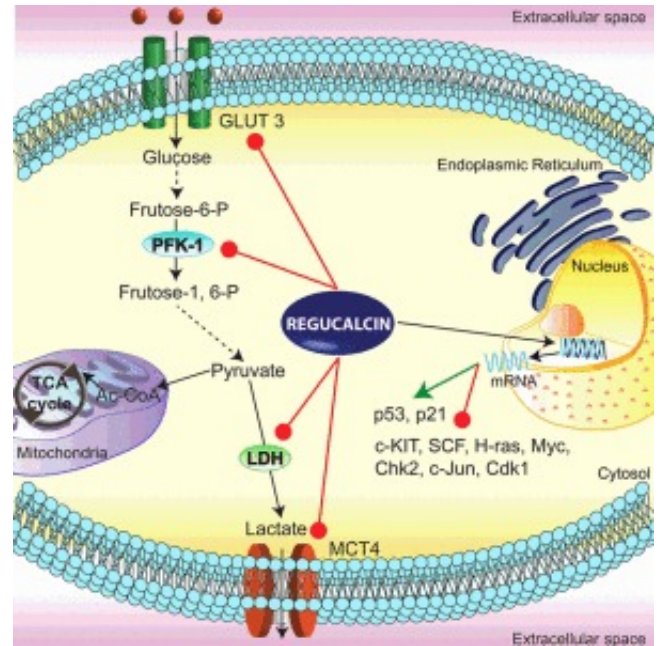


Regucalcin controls prostate cell proliferation and glycolytic metabolism



Regucalcin (RGN) is a protein with multiple functions and facets, which seems to play an important role in tissue cell homeostasis by regulating the equilibrium between cell survival/proliferation and death, and also in the control of cell metabolism. The expression of RGN in human prostate cancer (PCa) cases and cell lines is diminished comparatively with non-tumor tissues and cells, suggesting that loss of RGN may be an event favoring the development of PCa. On the other hand, it is known that tumor cells have the ability to reprogram their metabolism in order to achieve a great proliferative capacity, and we previously demonstrated that alterations in the glycolytic metabolism, including high glucose consumption and lactate production, are associated with the progression of PCa. Also, androgens directly influence the higher glycolytic activity of PCa cells, while negatively regulating RGN expression. These findings raised the curiosity about the influence of RGN on the glycolytic metabolism of prostate tissue. Therefore, making use of transgenic animals that overexpress RGN protein we evaluated the influence of RGN on the glycolytic metabolism and proliferation of rat prostate. We demonstrated that RGN overexpression inhibited the glycolytic metabolism in rat prostate, regulating the expression and activity of metabolism-related genes, which was accompanied by reduced cell proliferation. Thus, it is liable to suggest that the antiproliferative effects of RGN may be partly achieved by its action decreasing this metabolic pathway. Accordingly, the diminished expression of RGN that has been found in human PCa cases as referred above, may predispose to the emergence of a hyper-glycolytic phenotype and aberrant cell proliferation favoring neoplastic transformation.

Publication

[Suppressed glycolytic metabolism in the prostate of transgenic rats overexpressing calcium-binding protein regucalcin underpins reduced cell proliferation.](#)

Vaz CV, Marques R, Cardoso HJ, Maia CJ, Socorro S
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