

## Study of Early Tumour Development and its Glycolytic Properties

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It is believed that the growth of tumours is mediated by an increase of acidity of the tumoral environment that is lethal to normal cells but still allows for the growth and duplication of tumoral cells<sup>2, 3</sup>. This acidity would be caused by a highly glycolytic metabolism of the tumoral cells that would be under selection during an anaerobic stage of tumour growth and cause an overproduction of lactic acid exported from the cell to the extra-cellular environment. Early studies of Pasteur and Warburg Effects<sup>4</sup> show that cells consume glucose and produce lactic acid differently depending on the oxygen availability and on the cell state (normal or tumoral).

In this work a tumour development model is created using Tsim (Tissue Simulator) in order to validate the acid-growth dependent hypothesis. Previous works have concentrated their models on the extra-cellular dynamics of diffusion of glucose, oxygen and lactic acid but in this work the glycolytic metabolism is also considered and represented by a set of differential equations obtained from literature<sup>1</sup>.

The results are also compared to in vivo experiments that propose that tumour growth can happen due to other mechanisms other than lactic acid over-production<sup>5</sup>.

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