

Adaptable nutritional utilization in cancer cells under environmental stress

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Due to the nature of tumorigenesis, cancer cells constantly encounter environments in which nutrient and oxygen availability is severely compromised. In order to survive these harsh conditions, cancer cell transformation is often coupled with large changes in metabolism to satisfy the exigencies for energy and biomass imposed by continued cellular proliferation. This metabolic adaptation often involves increases in the consumption and metabolism of extracellular resources, such as glucose, amino acids and lipids. However, during instances of nutrient stress cancer cells can further modify or shift their metabolism to confront these new challenges.

We employed high throughput metabolic profiling (metabolomics) and siRNA screens of metabolic genes in cancer cells maintained either at 10% or 1% serum and in both normoxic and hypoxic conditions to mimic the tumour microenvironment. We revealed a previously unappreciated role for acetate as a nutritional source for the growth and survival of cancer cells under metabolically stressful conditions. Furthermore, we discovered that the proliferative block caused by glutamine deprivation is dictated not by TCA cycle requirements but by the drive for *de novo* purine biosynthesis.

Date: Wednesday, November 13th

Time: 16:00

Place: Holzblatt Hall, Shenkar Building

Host: Eytan Ruppin ruppin@post.tau.ac.il