

## **Metabolic Reprogramming in Cancer Progression**

**Patricia Altea-Manzano, PhD**

As cancer progresses, tumor cells must dynamically alter their cellular phenotype in order to adapt to changing environments and situations. This in turn requires metabolic adaptations to meet their challenging demands. Moreover, both cell-intrinsic and microenvironmental factors intensify heterogenic metabolic reprogramming in tumor cells to fuel growth, invasion, and metastasis. In this regard, my research has contributed to the emerging view of tumor metabolism as flexible and context-specific. First, I will explain how tumor cells reprogram their metabolism to sustain a high proliferative state adapting to challenging metabolic conditions. Furthermore, within a tumor, cancer cells exist in different states that are associated with distinct tumor functions. Thus secondly, I will discuss how tumor cells also harbor heterogenic metabolic states that enable cell-state transitions, dissemination, and seeding in distant organs. Finally, once disseminated tumor cells reach new organs, they encounter new environments with different nutrient availability. I will present our recent evidence that disseminated tumor cells take advantage of the local nutrient palmitate, which is highly available in the lung, to activate metabolic and signaling pathways promoting metastatic growth. I will discuss how this modulation in cancer metabolism impacts cancer progression as well as its therapeutic implications.