E a (ETC): Also within the mitochondria, the ETC is the nal stage of aerobic respiration. It utilizes NADH and FADH2 generated in previous pathways to produce a substantial amount of ATP via oxidative phosphorylation.

P : In plants and some microorganisms, this anabolic pathway converts solar energy into chemical energy in the form of glucose. It involves the light-dependent and light-independent reactions within chloroplasts.

M a

Metabolic pathways are tightly regulated to maintain cellular homeostasis. Feedback mechanisms, allosteric regulation, and hormonal control all contribute to this regulation. For instance, insulin stimulates glucose uptake in cells, promoting glycolysis and glycogenesis, while glucagon does the opposite, stimulating gluconeogenesis and glycogenolysis. Dysregulation of metabolic pathways can lead to