BIOTECHNOLOGY AND BIOSCIENCES SEMINARS

Dipartimento di Biotecnologie e Bioscienze – UNIMIB

giovedì 30 giugno, 2022, ore 16:30, aula U3-04 / Webex

Direct metabolic regulation of TORC1

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Abstract: In all eukaryotic organisms, the kinase target of rapamycin complex 1 (TORC1/mTORC1) regulates anabolic processes in response to nutritional and hormonal stimuli. In the budding yeast S. cerevisiae, TORC1 resides mainly on the surfaces of vacuoles, while in mammals mTORC1 is recruited on the surface of lysosomes, in both cases transducing the signals of nutrient sufficiency to downstream effectors, promoting growth primarily through activation of protein synthesis.

While several features of the upstream regulation of the TORC1/mTORC1 signaling pathway have been extensively studied, virtually nothing is known about how metabolism impinges directly on the catalytic activity of the kinase. Recently, chemical-genetic screenings and proteomics pinpointed small molecules and metabolic pathways that could regulate TORC1/mTORC1.

In particular, I will discuss how metabolites structurally similar to ATP may constrain TORC1/mTORC1 activity to ultimately tune down protein synthesis in accordance to changed nutritional status and chemical insults.

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