University of Fribourg / Faculty of Science and Medicine / Department of Chemistry

Identification of new TORC1 regulators: from genetic to high-throughput strategies

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The Target Of Rapamycin (TOR) signaling pathway balances protein anabolism and catabolism in response to nutrient availability. Deregulation of the mammalian TOR kinase (mTOR) is associated with the development of several diseases such as cancer, diabetes, and neurological disorders. Hence, deciphering the intricacies of regulation of mTOR in mammals is crucial for our understanding and ultimately treatment of diseases that are causally related to defective mTOR control. Since the TOR signaling pathway is conserved among eukaryotes, studies in yeast can also contribute to such understanding. In this context, I studied here the *Saccharomyces cerevisiae* TOR protein specifically as a subunit of the TOR Complex 1 (TORC1), which is a key regulator of growth in eukaryotes. In the first chapter, I performed (i) a classical genetic screen and (ii) a transposon-based genetic screen aiming to find new TORC1 regulators. In the second chapter, I studied the GAAC-mediated (General Amino Acid Control) inhibition of TORC1 following amino acid starvation. Finally, in the third chapter, I unveiled a potential upstream branch of TORC1 inhibition involving the Rps26a ribosomal protein and the small GTPase Arf1.

Jury:

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