Title:	ROS Inhibits Cell Growth by Regulating 4EBP and S6K, Independent of TOR, during Development
Authors:	Toshniwal, A.G. (/jspui/browse?type=author&value=Toshniwal%2C+A.G.) Gupta, Sakshi (/jspui/browse?type=author&value=Gupta%2C+Sakshi) Mandal, L. (/jspui/browse?type=author&value=Mandal%2C+L.) Mandal, S. (/jspui/browse?type=author&value=Mandal%2C+S.)
Keywords:	Drosophila ROS Mitochondria 4EBP
Issue Date:	2019
Publisher:	Elsevier
Citation:	Developmental Cell, 49(3),pp. 473-489.
Abstract:	Reactive oxygen species (ROS), despite having damaging roles, serve as signaling molecules regulating diverse biological and physiological processes. Employing in vivo genetic studies in Drosophila, we show that besides causing G1-S arrest by activation of Dacapo, ROS can simultaneously inhibit cell growth by regulating the expression of 4EBP and S6K. This is achieved by triggering a signaling cascade that includes Ask1, JNK, and FOXO independent of the Tsc-TOR growth regulatory pathway. Qualitative and quantitative differences in the types of ROS molecules generated dictate whether cells undergo G1-S arrest only or experience blocks in both cell proliferation and growth. Importantly, during normal development, this signaling cascade is triggered by ecdysone in late larval fat body cells to restrict their growth prior to pupation by antagonizing insulin signaling. The present work reveals an unexpected role of ROS in systemic control of growth in response to steroid hormone signaling to establish organismal size.
URI:	https://www.sciencedirect.com/science/article/pii/S1534580719302783 (https://www.sciencedirect.com/science/article/pii/S1534580719302783) http://hdl.handle.net/123456789/2064 (http://hdl.handle.net/123456789/2064)
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