Simposio Internacional: La Levadura: un organismo modelo para la investigación biomédica
***International Symposium**: Yeast: A model organism for biomedical research*

Oviedo, 23 y 24 de mayo de 2012
Oviedo, May 23-24, 2012

Programmed cell death in *Saccharomyces cerevisiae*: pathways and subroutines

Didac Carmona-Gutiérrez

The controlled demise of a cell is determinant during human development, homeostasis and removal of damaged or dangerous cells. According to the central role of this process, it underlies a sophisticated regulatory network whose deregulation contributes to the pathogenesis of multiple diseases. The finding, 15 years ago, that budding yeast (*Saccharomyces cerevisiae*) can undergo apoptosis uncovered the possibility to study this particular mode of programmed cell death (PCD) in a model organism that combines both technical advantages and a eukaryotic 'cell room.' Ever since, numerous exogenous and endogenous triggers have been found to induce yeast apoptosis and multiple yeast orthologs of crucial metazoan apoptotic regulators have been identified and characterized. At the same time, a teleological explanation for this at first sight counterintuitive phenomenon, in which a unicellular organism succumbs to cellular suicide, has also been provided by demonstrating its role in several physiological scenarios. Intriguingly, mounting evidence suggests that also other PCD subroutines like programmed necrosis, where necrosis largely occurs in a coordinated manner and is not an uncontrolled process as known from 'classical necrosis', might be conserved in yeast. Altogether, yeast with its methodological and logistic simplicity constitutes an ideal model organism to efficiently help deciphering the cell death regulatory network of higher organisms, including the switches between different PCD pathways and subroutines of cellular catabolism.