



Seminarios internos del IBFG

Fission yeast Whi5 regulates the G1/S transition in nitrogen-poor media

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Salón de actos del IBFG

Cell cycle progression requires the periodic activation of transcription factors. At G1/S, the Mlul cell-cycle box binding factor (MBF) regulates the expression of genes required for S-phase. Previous results have shown that low MBF-dependent gene expression generates genome instability in cells growing in a nitrogen-poor medium (minimal medium with phenylalanine, MMF) [1,2].

Here, we describe Whi5/Mug54 (*meiotically up-regulated gene 54*), a protein predicted to function as a cell cycle transcriptional repressor at the G1/S transition ([3]; Pombase). Cells deleted for *whi5*⁺ show a slightly accelerated entry into S phase in nitrogen-poor medium (MMF) and minimal media without nitrogen. We have found that *whi5*⁺ deletion suppresses the DNA damage phenotype of cells lacking the MBF activator *rep2*⁺ in a nitrogen-poor medium (MMF). By contrast, overexpression of *whi5*⁺ delays the G1/S transition and increases the cell size in MMF. Moreover, cells overexpressing *whi5*⁺ show increased DNA-damage in MMF. Together, our findings support a role for Whi5 as a cell cycle repressor in nitrogen-poor medium and underscore the importance of proper G1/S regulation to maintain genome stability. We are currently investigating how Whi5 is regulated and preliminary data will be presented.

References

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- [2] N. García-Blanco, S. Moreno, *Curr Genet.*, **2019**, *65*(3):685-690.
- [3] C. Martín-Castellanos, M. Blanco, A.E. Rozalén, L. Pérez-Hidalgo, A.I. García, F. Conde, J. Mata, C. Ellermeier, L. Davis, P. San-Segundo, G.R. Smith, S. Moreno, *Curr Biol.*, **2005**, *15*(22), 2056-2062.