

AGING-RELATED CHANGES IN *S. CEREVISIAE* WILD-TYPE AND *RAS2^{val19}* MUTANT CELLS

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The actual shape of *S. cerevisiae* yeast cells exhibit marked changes during cell aging. Amongst them, the most remarkable one is the enlargement of mother cells that is accompanied by the wrinkling of cell surface. The buds of old mother cells become extremely elongated, while giving raise normal progeny in the next generations. We have studied the changes of cell shape and of cell surface in the wild type *S. cerevisiae* cells and *RAS2^{val19}* mutant using scanning electron microscopy and fluorescence microscopy (both wide-field and confocal). In the fluorescence microscopy assays, the yeast cells have been stained with calcofluor, which is known as an efficient fluorescent stain for the rapid detection of yeasts, fungi and parasitic organisms [1-3]. The spectral analysis of calcofluor fluorescence in a wide range of solvents (including media containing chitin) has indicated that the staining of yeast cell walls results mainly from the binding of this dye to glucan and chitin via hydrogen bonds, with an eventual contribution of calcofluor accumulation in the negatively charged mannoprotein layer [4]. Stained yeast cell walls fluoresce blue-white or apple-green, depending on the filter combination used. The spectral properties of calcofluor fluorescence will be therefore briefly introduced with regard to fluorescence microscopy protocols. The binding of calcofluor to the cell wall polysaccharides makes it possible to visualize variations in cell wall quality and texture, including aging-related changes. We will show and discuss in this presentation a difference between the respective appearances of aged *S. cerevisiae* wild-type and *RAS2^{val19}* mutant cells, with particular emphasis on the complementarity of information provided by the above microscopy techniques.

References:

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