

Genetics and electrophoretic karyotyping of wild-type and astaxanthin mutant strains of *Phaffia rhodozyma*

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In this work we establish the chromosomal composition of a wild-type, one astaxanthin and two β -carotene overproducer strains of the red yeast *Phaffia rhodozyma*. The method used has been pulsed field gel electrophoresis, which has determined 9 DNA chromosomal bands in the yeast genome. The two largest bands are triplets and two other bands, VI and VIII, seem to be doublets. The size of the chromosomal bands varies between 0.35 and 2.5 Mb, suggesting a genome size of 25 Mb. The technique used, complemented with hybridization assays using specific DNA probes, provides direct information about the genomic organization of *P. rhodozyma*. We have also cloned and located in chromosomal bands different DNA sequences that code for the translation elongation factor 1 alpha (ef-1 α), a 7.6 kb BamHI fragment of repetitive DNA (possibly rDNA) and a randomly chosen fragment (named locus R2). Additionally, we have detected a chromosomal length polymorphism between wild-type strains and mutant strains a