

P063 Study of human BRCA2 expression in *Saccharomyces cerevisiae*

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Mutations in the BRCA2 gene have been implicated in about 20% of familial breast and/or ovarian cancer. The BRCA2 gene product is essential during homologous recombination, by enhancing the replacement of RPA-covered single-stranded DNA by RAD51 nucleofilaments. We have developed a system to study BRCA2 in budding yeast. We successfully cloned the full-length hBRCA2 cDNA but could not detect any expression at the protein level when over expressed from a plasmid in yeast. However, we obtained the expression of the BRC3/4-DBDCT construct, made up of several hBRCA2 functional domains. When expressing this construct, strains deleted for genes involved in DNA repair showed an increased sensitivity to DNA damaging agents. We showed by coIP that BRC3/4-DBDCT interacts in yeast cells with human RAD51. We also expressed in yeast the human heterotrimeric RPA1-RPA2-RPA3 complex. It did not complement any deletion of the yeast homologs, respectively RFA1, RFA2 and RFA3, but partially complemented the *rfa1-t48* mutant. This work reports our attempt to humanize *S. cerevisiae* for key proteins of the homologous recombination pathway.