

Table 4. Genetic alterations conferring hypersensitivity to Top1 poisoning in fission yeast:

<b>Yeast <i>Saccharomyces Pombe</i></b>				<b>Humans</b>		
<b>Gene</b>	<b>Effect</b>	<b>Refs.</b>	<b>Function</b>	<b>Gene</b>	<b>Effect</b>	<b>Refs.</b>
Rhp54	HS	(129)	Homologous recombination (HR)	RAD52	?	
Rhp55	LS	(129)	Homologous recombination (HR)	XRCC2	HS	(219, 230, 234)
Rhp22A	LS	(129)	Homologous recombination (HR)	XRCC3	HS	(219)
Rhp51	S	(129)	RecA homolog; Rad52 epistasis G.	RAD51C	HS	(223)
rad22	HS	(247)	Rec A homolog; functions with Mus81			
Rad50	HS	(129)	MRX/N complex; scaffold	RAD50	?	
Mus81	S	(129)	3'-flap endonuclease with Emel1; meiotic recombination	MUS81	NS	(137)
Eme1	S	(129)	Partner for mus81 nuclease	MUS81	?	
RusA	RS [a]	(129)	HJ resolvase			
Pnk1	S [b]	(112)	Polynucleotide kinase phosphatase	PNKP	HS	(115)
Rqh1	MS	(98)	Top3-associated helicase	WRN	HS	(227-229)
				BLM	HS	(82)
Chk1	S	(155, 248)	Checkpoint effector kinase	CHK1	S	(162, 165)
Swi1	HS	(249)	Mating-type switching	TIMELESS		

Abbreviations for effect: HS, S, MS, and CS correspond to hypersensitivity, sensitivity, moderate sensitivity, and conditional sensitivity to camptothecin, respectively. NS: no hypersensitivity.

[a]: *rusA* suppresses hypersensitivity of *Mus81/Eme1*<sup>-</sup> but does not reverse sensitivity of *rqh1*<sup>-</sup>; *rusA* also suppresses the lethality of double mutants for *Mus81/Eme1* + *rqh1* (129). *RusA* expressed in budding yeast partially suppresses hypersensitivity to CPT in *Mms4*-deficient cells (126).

[b]: *Pnk1*<sup>-</sup> cells are hypersensitive to CPT in the absence of additional defects, indicating difference from budding (see [a]) and importance of this pathway in fission yeast, which like mammals possesses a gene that has both 3'-phosphatase and 5'-kinase activity (112).