

The *RAD51* gene family in bread wheat is highly conserved across eukaryotes, with *RAD51A* upregulated during early meiosis

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Accessory publication

Table S1. Comprehensive list of primers used in this study

Primers were used for amplification and sequencing of the *TaRAD51* gene family members and *TaDMC1*. Complete ORF probes were used for Southern nullisomic-tetrasomic experiments, in addition to protein production. Q-PCR primers were used to determine expression profiles in mitotic and meiotic tissues

Primer name	Primer sequence (5' → 3')	T _m (°C)
<i>RAD51</i> gene isolation primers		
TaRAD51A1_F1	ATGTCGTCGTCGGCGGCGCA	54
TaRAD51A1_R1	TCAATCCTTAACATCTGTGACGCCTTC	
TaRAD51A2_F1	ATGTCGTCGGCGGCGGCGCACCCAG	60
TaRAD51A2_R1	CTCTCAATCCTTAACATCTGTGACGCCT	
TaRAD51C_F1	GTGCTCCGCGAATGCGACAT	57
TaRAD51C_R1	CGCAACGCTTCTAGTCTCAATAGTTG	
TaRAD51D_F1	CATGGTCGGATGGGATGCAG	57
TaRAD51D_R1	AGTCTGAATCTTGACGCCAGTGAA	
<i>RAD51</i> gene expression primers (to amplify ORFs for protein production)		
TaRAD51A1_ExF1	ATGTCGTCGTCGGCGGCGCA	60
TaRAD51A1_ExR1	ATCCTTAACATCTGTGACGCCTTCAGG	
TaRAD51C_ExF1	ATGCTGTCTGAGGAGCAATCACAGA	62
TaRAD51C_ExR1	CATTACCCTAACTCGCTTGCAGCTT	
TaRAD51D_ExF1	ATGCTTTTTTATAATGCCAACTTTG	53
TaRAD51D_ExR1	AATTCAGCTAGGTAGGAACTGAAATT	
pGEM[®]-T Easy and pDEST17 plasmid vector sequencing primers		
T7	TAATACGACTCACTATAGGG	50
SP6	GATTTAGGTGACACTATAG	
pCR[®]8/GW/TOPO[®] plasmid vector sequencing primers		
GW1	GTTGCAACAAATTGATGAGCAATGC	50
GW2	GTTGCAACAAATTGATGAGCAATTA	
Quantitative real-time PCR (Q-PCR) primers		

TaRAD51A1_QF1	TTCGGGGTGGCAGTGGTAAT	55
TaRAD51A1_QR1 *	CTCCTCCGCCCTTCCCTAC	
TaRAD51C_QF1	TGGTCCCCTCGTGCATAAA	55
TaRAD51C_QR1	CCCTAACTCGCTTGCAGCTTGA	
TaRAD51D_QF1	CAAGGGCGGTTCGATGATGATA	55
TaRAD51D_QR1	CGTCGTTGCGGTGCAGATATT	
TaDMC1_QF1**	GCTGAGGAAAGGCAAAGGCG	55
TaDMC1_QR1**	CGGTGCAGTAGCCTTTGTCGATTT	

* Primer designed to specifically amplify the 3' sequence present only in *TaRAD51A1*.

** *TaDMC1* primers as per Crismani *et al.* 2006.

Table S2. Annotated nucleotide sequences used for phylogenetic analysis

Coding sequences were translated and aligned in the program MEGA 4.0

Name	Common name	Accession
RAD51/RAD51A		
<i>TaRAD51A1</i>	Wheat <i>RAD51A1</i>	EU915557
<i>TaRAD51A2</i>	Wheat <i>RAD51A2</i>	EU915558
<i>PnRAD51</i>	Poplar <i>RAD51</i>	AB269815
<i>OsRAD51</i>	Rice <i>RAD51</i>	AB080264
<i>LeRAD51</i>	Tomato <i>RAD51</i>	LEU22441
<i>ZmRAD51A/ZmRAD51A1</i>	Maize <i>RAD51A1</i>	AF079428
<i>ZmRAD51A2</i>	Maize <i>RAD51A2</i>	AF079429
<i>AtRAD51</i>	Arabidopsis <i>RAD51</i>	ATU43528
<i>HsRAD51</i>	Human <i>RAD51</i>	NM_002875
<i>BtRAD51</i>	Bull <i>RAD51</i>	NM_001046179
<i>MmRAD51</i>	Mouse <i>RAD51</i>	D13803
<i>GgRAD51</i>	Chicken <i>RAD51</i>	L09655
<i>OnRAD51</i>	Nile tilapia <i>RAD51</i>	AB182647
<i>DrRAD51</i>	Zebrafish <i>RAD51</i>	NM_213206
<i>OcRAD51</i>	Rabbit <i>RAD51</i>	NM_001082024
<i>XlRAD51</i>	African clawed frog <i>RAD51</i>	BC108486
<i>XtRAD51</i>	Pipid frog <i>RAD51</i>	CR761167
<i>ScRAD51</i>	Yeast <i>RAD51</i>	YER095W
RAD51B		
<i>AtRAD51B</i>	Arabidopsis <i>RAD51B</i>	NM_001036361
<i>MmRAD51B</i>	Mouse <i>RAD51B</i>	NM_009014
<i>HsRAD51B</i>	Human <i>RAD51B</i>	D13804
<i>ZmRAD51B</i>	Maize <i>RAD51B</i>	DT947589
RAD51C		
<i>TaRAD51C</i>	Wheat <i>RAD51C</i>	EU915559
<i>OsRAD51C</i>	Rice <i>RAD51C</i>	NM_001049929
<i>ZmRAD51C</i>	Maize <i>RAD51C</i>	BT017904
<i>AtRAD51C</i>	Arabidopsis <i>RAD51C</i>	NM_130091
<i>HsRAD51C</i>	Human <i>RAD51C</i>	BC107753
<i>CgRAD51C</i>	Chinese hamster <i>RAD51C</i>	AJ428572

<i>MmRAD51C</i>	Mouse <i>RAD51C</i>	NM_053269
<i>XtRAD51C</i>	Western clawed frog <i>RAD51C</i>	NM_001016923
<i>TnRAD51C</i>	Pufferfish <i>RAD51C</i>	CR665808
<i>OsRAD51C</i>	Rice <i>RAD51C</i>	NM_001069094
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<i>RAD51D</i>		
<i>TaRAD51D</i>	Wheat <i>RAD51D</i>	EU915560
<i>AtRAD51D</i>	Arabidopsis <i>RAD51D</i>	NM_100649
<i>HsRAD51D</i>	Human <i>RAD51D</i>	AF034956
<i>MmRAD51D</i>	Mouse <i>RAD51D</i>	AF034955
<i>SsRAD51D</i>	Pig <i>RAD51D</i>	AK236042
<i>BtRAD51D</i>	Bull <i>RAD51D</i>	NM_001046304
<i>DrRAD51D</i>	Zebrafish <i>RAD51D</i>	NM_207076
<i>GgRAD51D</i>	Chicken <i>RAD51D</i>	BX933488
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<i>DMC1</i>		
<i>TaDMC1</i>	Wheat <i>DMC1</i>	EU915561
<i>AtDMC1</i>	Arabidopsis <i>DMC1</i>	NM_113188
<i>CaDMC1</i>	Goldfish <i>DMC1</i>	EF606728
<i>DrDMC1</i>	Zebrafish <i>DMC1</i>	AB182999
<i>HsDMC1</i>	Human <i>DMC1</i>	NM_00706
<i>MmDMC1</i>	Mouse <i>DMC1</i>	NM_010059
<i>OsDMC1</i>	Rice <i>DMC1</i>	AB079874
<i>ScDMC1</i>	Yeast <i>DMC1</i>	NP_011106
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<i>RecA</i>		
<i>EcRecA</i>	Bacterial <i>RecA</i>	P0A7G6
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