

***BnMs3* is required for tapetal differentiation and degradation,
microspore separation, and pollen wall biosynthesis in *Brassica
napus***

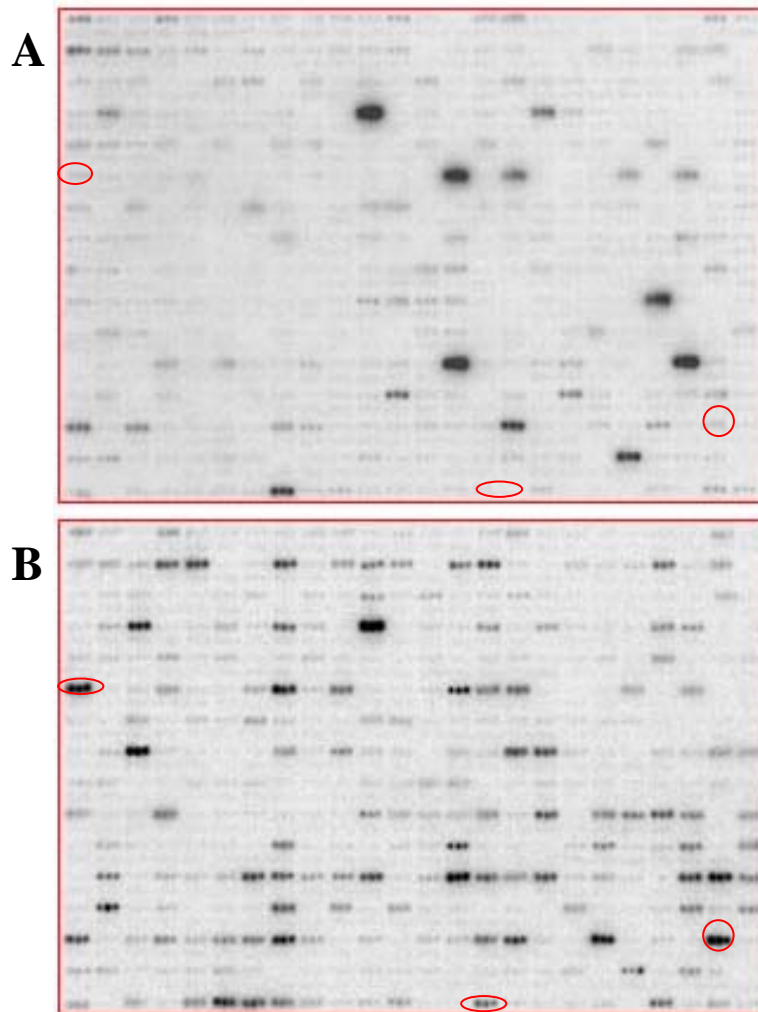
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Supplementary Material

Supplemental Figure S1.

Differential screening of the subtracted libraries using macroarray analysis.

The PCR products of cDNA clones were blotted onto two nylon membranes at the same locations, and the membranes were then hybridized with cDNA probes from anthers of 7365A (A) and 7365B (B). Circles indicate representatives of the down-regulated clones in 7365A anthers.



Supplementary Table S1.

Homology analysis of differentially expressed sequences from the subtracted library.

Unigene no.	Length	Homology AGI ID	Annotation	E-value
Metabolism (20)				
BnMSR43	469	AT1G20130	Anther-specific proline-rich protein APG precursor	5e-38
BnMSR54	262	AT1G33430	Galactosyltransferase family protein	8e-35
BnMSR72	457	AT1G67990	Caffeoyl-CoA 3-o-methyltransferase	1e-128
BnMSR20	231	AT1G71160	Fatty acid elongase 3-ketoacyl-CoA synthase 7	3e-77
BnMSR33	372	AT1G74310	Encodes ClpB1	5e-32
BnMSR58	343	AT1G75910	Family ii extracellular lipase 4	3e-44
BnMSR45	130	AT1G75940	Beta-glucosidase protein	6e-40
BnMSR69	438	AT1G76470	Cinnamoyl-coa reductase family	1e-28
BnMSR28	372	AT1G78570	Encodes a UDP-L-Rhamnose synthase	2e-48
BnMSR16	330	AT1G79530	Glyceraldehyde-3-phosphate dehydrogenase	1e-28
BnMSR57	299	AT2G23800	Geranylgeranyl pyrophosphate synthase 2	1e-131
BnMSR66	232	AT3G23770	Glycosyl hydrolase family 17 protein	2e-31
BnMSR73	226	AT3G52160	Beta-ketoacyl-CoA synthase family protein	7e-44
BnMSR74	395	AT3G55440	Encodes triosephosphate isomerase	2e-82
BnMSR23	329	AT3G26125	Cytochrome P450 monooxygenase 86c2	1e-40
BnMSR36	379	AT4G03210	Encodes a member of xyloglucan endotransglucosylase/hydrolases	2e-97

BnMSR52	636	AT4G31500	Cytochrome P450 monooxygenase 83b1	0
BnMSR21	297	AT5G04590	Encoding sulfite reductase	1e-83
BnMSR60	394	AT5G07600	Oleosin / glycine-rich protein	5e-06
BnMSR71	487	AT5G38410	Ribulose biphosphate carboxylase small chain 3B	1e-167
Transcription (3)				
BnMSR32	506	AT2G27040	Argonaute4	1e-115
BnMSR37	378	AT5G62320	MYB99	1e-40
BnMSR13	260	AT1G61110	NAC domain containing protein 25	6e-88
Protein synthesis (6)				
BnMSR62	431	AT1G33140	Encodes ribosomal protein L9	6e-14
BnMSR30	429	AT1G56070	Translation elongation factor 2-like protein	7e-30
BnMSR26	396	AT1G70600	60S ribosomal protein L27A	2e-56
BnMSR51	371	AT1G74050	60S ribosomal protein L6	9e-29
BnMSR56	271	AT3G25520	Encodes ribosomal protein L5	4e-33
BnMSR41	137	AT5G16130	40S ribosomal protein S7	4e-16
Protein fate (4)				
BnMSR68	501	AT2G26990	COP12	1e-143
BnMSR12	438	AT3G10410	Serine carboxypeptidase-like 49 precursor	3e-63
BnMSR09	282	AT1G06260	Cysteine proteinase	8e-41
BnMSR35	476	AT3G17830	DNAJ heat shock family protein	2e-61
Protein with binding function (5)				
BnMSR47	205	AT1G56340	Encodes calreticulin CRT1	2e-77

BnMSR18	566	AT5G17400	Encode an ER-localised adenine nucleotide transporter	1e-142
BnMSR40	225	AT5G20720	Encodes a chloroplast co-chaperonin	2e-38
BnMSR15	721	AT1G14180	Protein binding / zinc ion binding	2e-96
BnMSR67	236	AT5G59970	Histone H4	3e-37
Lipid/fatty acid transport (9)				
BnMSR02	323	AT3G13220	ABC transporter family protein	2e-67
BnMSR55	458	AT3G63095	Lipid transfer protein family protein	9e-45
BnMSR46	532	AT3G08770	Lipid transfer protein 6	1e-19
BnMSR24	463	AT4G33355	Lipid transfer protein 3	7e-67
BnMSR04	415	AT3G51590	Lipid transfer protein 12	2e-85
BnMSR07	484	AT5G07230	Lipid transfer protein family protein	8e-46
BnMSR10	223	AT1G73890	Lipid transfer protein family protein	2e-23
BnMSR38	374	AT4G28395	Lipid transfer protein	2e-17
BnMSR61	309	AT2G38540	Lipid transfer protein	5e-24
Cell rescue, defence and virulence (3)				
BnMSR44	455	AT2G18150	Peroxidase	1e-149
BnMSR50	296	AT5G15960	Cold and ABA inducible protein kin1	3e-07
BnMSR53	304	AT5G13380	Auxin-responsive GH3 family protein	1e-52
Unclassified proteins (18)				
BnMSR75	365	AT1G30020	Expressed protein	2e-54
BnMSR65	235	AT5G48210	Expressed protein	2e-13

BnMSR63	365	AT1G68875	Expressed protein	1e-15
BnMSR59	333	AT1G54540	Expressed protein	5e-58
BnMSR48	368	AT4G37900	Glycine-rich protein	2e-46
BnMSR70	166	AT2G18115	Glycine-rich protein	5e-13
BnMSR39	223	AT2G03740	Late embryogenesis abundant domain-containing protein	5e-11
BnMSR34	460	AT5G09530	Hydroxyproline-rich glycoprotein family protein	2e-33
BnMSR17	432	AT1G06060	RanBPM-related protein	1e-68
BnMSR25	403	AT4G22090	Pectate lyase family protein	1e-168
BnMSR06	289	AT5G44540	Tapetum-specific protein-related protein	7e-17
BnMSR11	352	AT4G20420	Tapetum-specific protein-related protein	3e-14
BnMSR76	394	AT2G19070	Spermidine hydroxycinnamoyl transferase	6e-92
BnMSR19	187	AT1G04590	Similar to pentatricopeptide (PPR) repeat-containing protein	1e-35
BnMSR42	410	AT5G65205	Short-chain dehydrogenase/reductase (SDR) family protein	1e-09
BnMSR14	477	AT5G61120	Zinc ion binding	3e-54
BnMSR29	443	AT3G15400	ATA20	3e-23
BnMSR64	1131	AT3G03440	Armadillo/beta-catenin repeat family protein	0
No significant homology in <i>Arabidopsis</i> (8)				
BnMSR01	452	EX047123.1	Floral buds cDNA of <i>Brassica rapa</i>	0
BnMSR03	450	EV149585.1	Early anther cDNA of <i>Brassica napus</i>	0

BnMSR05	168	EX050192.1	Floral buds cDNA of <i>Brassica rapa</i>	0
BnMSR08	373	EX051636.1	Floral buds cDNA of <i>Brassica rapa</i>	0
BnMSR27	205	EV148747.1	Early anther cDNA of <i>Brassica napus</i>	0
BnMSR31	244	EX016113.1	Early anther cDNA of <i>Brassica rapa</i>	0
BnMSR49	351	CD845467.1	Early anther cDNA of <i>Brassica napus</i>	0
BnMSR22	396	CD841875.1	Early anther cDNA of <i>Brassica napus</i>	0

Supplementary Table S2.

Gene-specific primer pairs used in this study

Gene name	Primers (5'-3')	Used for
BnCYP703A2	ACGAATGGGCTATGGCTGAAG	Real-time PCR
	TCATTGACCATCCGGTTTGATC	
BnACOS5	GTGGCTTGTGTTGTGATGAATCC	Real-time PCR
	CACAAAATGGACGGCTCTGATC	
BnCYP704B1	TCAGAGCTACAAGAACTCGAAAGAGAA	Real-time PCR
	TTACCCTCTCGTTGAAGGACTTGA	
BnMS2	AGCTTGAGTTTGGGTTTGATGTTG	Real-time PCR
	AAGCCCTCCTTTCAAAACATGTC	
BnNEF1	GAGGCCGTGAATGGTTCCTTG	Real-time PCR
	GTGCTGTAACCTCCACACGTACCTGTT	
BnFLP	AAGACTTGGATCGTTGGGAAATG	Real-time PCR
	ATTTGAGGATTGGTGGCACTACAA	
BnMSR20	GGCAGATTGGGTTTGGAAAGTG	Real-time PCR
	GTGTATTCGATCAGACCATGCATTC	
BnMSR73	TTACAACGCTTCGTCTTGAG	Real-time PCR
	CTTCCGTCAGTTTGAGATCCTTCTG	
BnMSR23	TTGAGCCTCGAGTTACAACCACTT	Real-time PCR
	CCCGTTTATAGCTTGTTTCGATCTTCT	
BnACTIN7	CGCGCCTAGCAGCATGAA	Real-time PCR
	GTTGGAAAGTGCTGAGAGATGCA	
BnQRT1	GGGAATGATCGACCATGCAA	Real-time PCR
	AACCATTGTGAAGGGTGGGTACTTT	
BnQRT2	CCGGCAATGCTTGTTTCTGAA	Real-time PCR
	AGAAACCGGATATGGCAGAGTTG	
BnQRT3	AAGCGTGCCATACTACCATCCA	Real-time PCR
	GAGCTTCGGTCATGGTCCCTTTAT	

BnCHS1	GTGAAGACACGCTACACCGTCAT TTGCGATCTCAAGCCTCTGTTTG	Real-time PCR
BnCHS2	CAGGTGGACCAGCCATCTTG GCGTTGCCGTAGTCCATGAG	Real-time PCR
BnCP1	ACAAAGGCTGTAGTGGTGGATTAATG CGGTACCATCTGTGGCTGTGTATG	Real-time PCR
BnCP2	CGGAGCTCTTGAAGGTGCTAACT AACCTGCTTCTTCCGGATCACA	Real-time PCR
BnCP3	ATGAAGACCAAATCGCTGCAAATC GGCACGAGACTCCTCCTATGT	Real-time PCR
BnCP4	CTGTCCGCCGCATCACTAAG CGGCTCCTTTCTGTCTCCAATC	Real-time PCR
BnCP5	ATCAAGCCACCGACCAAGTGT ATCCCAACCGAAGCAGTACTTAC	Real-time PCR
BnMSR55	TTGCTAGCGAAACCAGCTCATG GGAGGATTGATCAGCGAATGAGT	Real-time PCR
BnMSR02	TGGTTTGATGTTCTATATCTGCATC TGAAGTAGACAATGATCATGAAGAA	Real-time PCR
BnMSR29	AAGCGTGCCATACTACCATCCA GAGCTTCGGTCATGGTCCCTTTAT	Real-time PCR
BnA6	TAACCCTCTGCCTAAACC GCTCGTAACATTCTCTGC	Real-time PCR
BnMSR66	GAAGATGACTGCTAACCCGC CCAAGCCGTTGAAGTAGCAC	Real-time PCR
BnMSR46	AGTATCAGCCCTTCCACCAACTG CCAAGCCATGTCTAACTTCTCGTA	Real-time PCR
BnMSR61	CCGCTAACGCCTTCCCTACTC GCAGTTGGTGGTTTTGCTGATC	Real-time PCR
Atmsr02_LP	TTTTCCAGAATTGGCTTTGTG	SALK Genotyping
Atmsr02_RP	GACTTCCACCAGAGAAGACCC	
Salk_LB2	ATTTTgCCgATTTCggAAC	

Atmsr53-SALK_121737-LP	GTTAGCCCTTCGATGTGTCTG	
Atmsr53-SALK_121737-RP	ATCTGTGAGATTTGAGGGCAG	SALK
Atmsr42-SALK_144641-LP	CCCAGATGTGAATTGGCTTTC	Genotyping
Atmsr42-SALK_144641-RP	TTAAGCCATTTGGGATTGATG	
