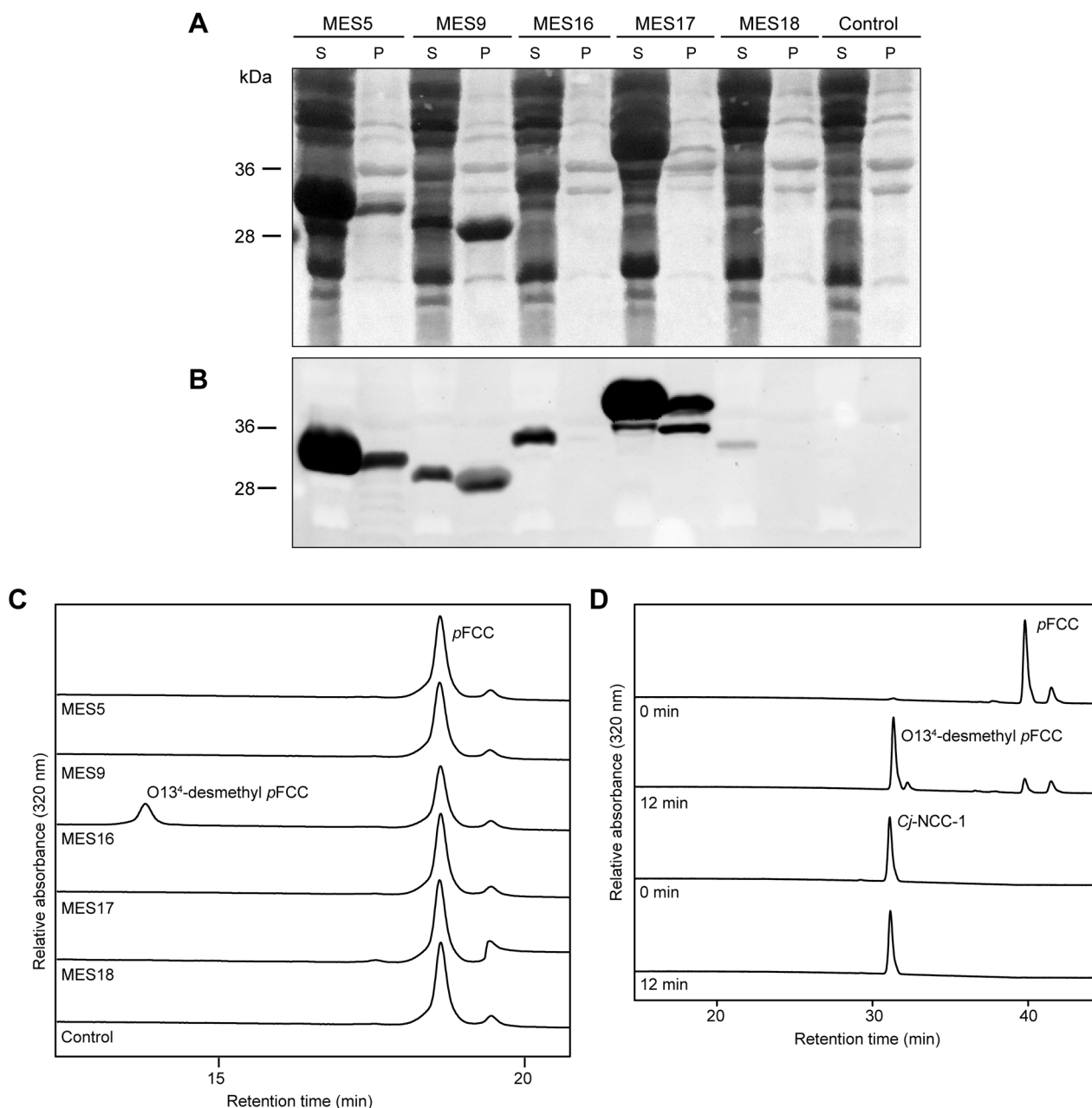
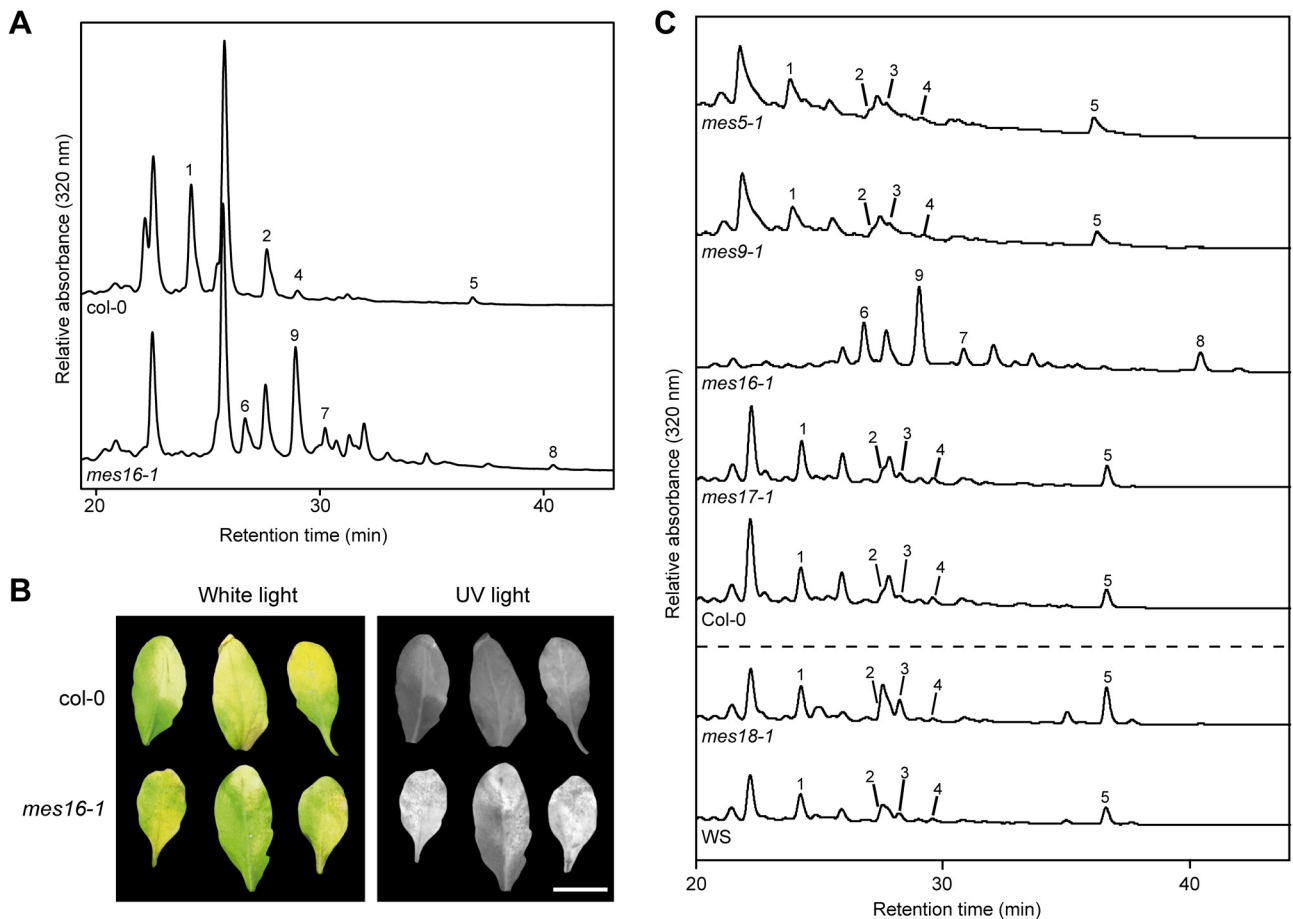


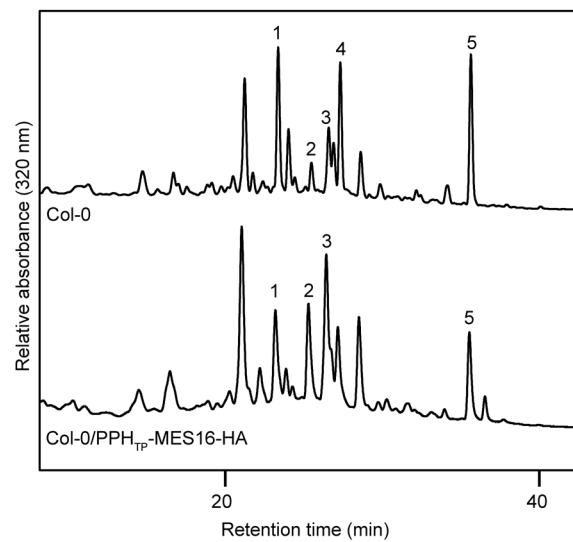
Supplemental Figure S1. Co-expression network around *PAO*, *PPH*, *SGR*, *NYC1* and *MES16*. The ATTED-II NetworkDrawer tool (Obayashi et al., 2009) was used to generate the network with *PAO* (AT3G44880), *PPH* (AT5G13800), *SGR* (AT4G22920), *NYC1* (AT4G13250) and *MES16* (AT4G16690) as inputs.



Supplemental Figure S2. Analysis of recombinant MES5, MES9, MES16, MES17 and MES18. A, Analysis of MES protein expression by SDS-PAGE followed by transfer to a nitrocellulose membrane and Ponceau S staining. Soluble (S) and insoluble (P) proteins from equal cellular fractions were loaded in the gel. B, Detection of recombinant MES proteins by anti-His immunoblotting of the membrane showed in panel A. As control, an *E. coli* strain containing the empty vector was used. C, HPLC analysis of assays employing *E. coli* lysates expressing 6xHis-MES proteins with pFCC as substrate. Equivalent amount of recombinant proteins were used in the assays. Parts of HPLC traces at A_{320} after 12 min of incubation at 25°C are shown. D, Analysis of MES16 activity on C_j-NCC-1. Parts of HPLC traces at A_{320} after 0 and 12 min of incubation at 25°C are shown. pFCC was used as control. Note that the assays shown in panel D were analyzed by HPLC using the program described for plant extracts (see Materials and Methods).



Supplemental Figure S3. Colorless catabolites occurring in *mes16-1* mutants during natural senescence and in mutants of other closely related MES family members after dark incubation. A, HPLC analysis of colorless catabolites of senescent leaves of Col-0 and *mes16-1* during natural senescence. B, Photographs of natural senescent Col-0 and *mes16-1* leaves under white light and UV light (366 nm). Bar = 1 cm. C, Colorless catabolites of *mes5-1*, *-9-1*, *-16-1*, *-17-1* and *-18-1* mutants after dark incubation (8 d for *mes5-1*, *-9-1*, *-16-1*, *-17-1*, background Col-0; 10 d for *mes18-1*, background WS). A and C, Catabolites were separated by HPLC as described in Materials and Methods. A_{320} was recorded. For clarity, only parts of the HPLC traces are shown in panels A and C. For identification and peak numbering of FCCs and NCCs see Table I.



Supplemental Figure S4. Colorless catabolites of Col-0/PPH_{TP}-MES16-HA. Colorless catabolites of dark-incubated (6 d) leaves of Col-0 and Col-0/PPH_{TP}-MES16-HA plants were separated by HPLC as described in Materials and Methods. For clarity, only a part of the HPLC traces at A_{320} is shown. For identification and peak numbering of FCCs and NCCs, see Table I.

Supplemental Table S1 : List of primers used in this study.

Gene/construct/ mutant	Primer name	Sequence (5'→3')
<i>T-DNA confirmation</i>		
<i>mes16-1</i>	MES16-1-RP	GTTGAAGAAAAGAAACCGCAC
	MES16-1-LP	CTGAGCCCGTAATTCACCTTG
<i>mes16-2</i>	MES16-2-RP	ACCTCATGTTGTCGTTCAAGG
	MES16-2-LP	CTAACATCGTCTTCGACTCCG
<i>mes5-1</i>	MES5-1-RP	TCATGAAGGCACGTCTTTACC
	MES5-1-LP	TTTTGTCTCACCTGCTTCCAC
<i>mes9-1</i>	MES9-1-RP	GTTTGACCTGTACCAGCACC
	MES9-1-LP	CTTTGGAGGATTTTCGCTAAGC
<i>mes17-1</i>	MES17-1-RP	CGAGTGCGATACAGAGATTCC
	MES17-1-LP	AAAACCAACAAAAGGCAATCC
<i>mes18-1</i>	MES18-1-RP	TTGTTGGGAGATTTTGTGGTC
	MES18-1-LP	TTTCATGAAGTTGTCAACACCTG
<i>pao1</i>	N14-RP	GGCTCACCTGACGCTTGTTA
	N14-LP	CGACGGTGACAATTCAAAGGG
SALK T-DNA	LBb1.3	ATTTTGCCGATTTTCGGAAC
SAIL T-DNA	LB2	GCTTCCTATTATATCTTCCCAAATTACCAATACA
GABI T-DNA	GABI-LB	CCCATTGGACGTGAATGTAGACAC
FLAG T-DNA	FLAG_LB_TAG5	CTACAAATTGCCTTTTCTTATCGAC
<i>RT-PCR</i>		
<i>MES16</i>	MES16_Ex1_S	TCACCGAAGCTCTTTGCAAG
	MES16_Ex3_AS	TTGAAGAAAAGAAACCGCACG
<i>ACT2</i>	ACT2-S	TGGAATCCACGAGACAACCTA
	ACT2-AS	TTCTGTGAACGATTCTGGAC
<i>SGR1</i>	AtSGR1-S	TGGAGATGGGAAGTTGTTGAA
	AtSGR1-AS	GCTAACGGTTGGAAAACAACA
<i>PAO</i>	ACD1-S	ACGGCATGGTAAGAGTCAGC
	ACD1-AS	AAACCAGCAAGAACCAGTCG
<i>Cloning MES16-GFP</i>		
<i>MES16</i>	MES16-SmaI-S	TCCCCCGGGGAATGGGAGGAGAAGGTGGTGC
	MES16-SpeI-AS	CCACTAGTTCGTTGAAGAAAAGAAACCGCAC
<i>Cloning MES18 in pProEX Hta</i>		
<i>MES18</i>	MES9-EcoRI-S	CCGAATTCATGAGTGAGCATCATTTTGTG
	MES9-EcoRI-AS	CCGAATTCTCAGGGAGAAAGAGATGAGG
<i>Cloning PPH_{TP}-MES16-HA</i>		
<i>PPH transit peptide</i>	PPH_TP-S	CGGAATTCATGGAGATAATCTCACTGAA
	PPH_TP-AS	CACCTTCTCCTCCTCACTTCGAATCACAAGTC
<i>MES16</i>	MES16-S	GATTCGAAGTGGAGGAGGAGAAGG- TGTTGCTGA
	MES16_HA-AS	GAAGCTTTTAGGCATAGTCTGGGACGTCA- TATGGATATCGTTGAAGAAAAGAAACCG