SUPPORTING INFORMATION

Supporting Table 1. Primers used for isoprenoid gene isolation

#	Gene	Primer use	Sequence (5'3')
1	*1-deoxy-D-xylulose-5-phosphate synthase* (*DXS*)	degenerate primer PCR	AYACNCCNGAYGAYAARATHATHTGG
2	*DXS*	degenerate primer PCR	CARCTYTCNGGYAARTTRTTRTG
3	*DXS*	degenerate primer PCR	ACHATCATYTTNGGNAGYCANGCC
4	*DXS*	PCR	TCGCAACAGCAACAGCAATC
5	*DXS*	PCR	GATGTGGGGCTCATAAGAAGG
6	*DXS*	PCR	CAGCAGCCTCTCTAAACAATC
7	*DXS*	PCR	CGTTCCCGTCCAAAGTCGTG
8	*DXS*	5′ RACE	CTGTCACAATGTGGATGAGGAC
9	*DXS*	5 ′RACE	TCCATTGGCACTTATCAGTCCTC
10	*DXS*	5′ RACE	GATACCCCTTGCCTTTCTCTGT
11	*DXS*	5′ RACE	AAGTTGTGCCCGTCTACCG
12	*DXS*	3′ RACE	TCTGTGCCATCTACTCATCCTTC
13	*DXS*	3′ RACE	AAGCCGAGCTGATGCACATG
14	*DXS*	3′ RACE	CTGTCACAATGTGGATGAGGAC
15	*DXS*	3′ RACE	TCCATTGGCACTTATCAGTCCTC
16	*DXS*	PCR	GCCTACCCACATAAGATC
17	*DXS*	PCR	CACAGCAATGCAAGCAGACA
18	*DXS*	PCR	GTATCCTGAGTTGTTCATGGCT
19	*DXS*	PCR	GAAACCTGCGAGCCCTGAG
20	*DXS*	PCR	AGTGTAGGATTCGAGGAACTGC
21	*Geranyl geranyl diphosphate synthase* (*GGPS*)	degenerate primer PCR	GYGCNGTNGARATGATHCAYACNATG
22	*GGPS*	degenerate primer PCR	CTTYTCNCGYTANGCHATYTAYTTNGC
23	*GGPS*	PCR	GGGTTGTCCGTGCTGTTG
24	*GGPS*	PCR	AGACGGCTGTTCTTTTGGAG
25	*GGPS*	PCR	CTGACTCTGGAAATAGCACACAC
26	*GGPS*	PCR	AAGGTGCCGTCTTTATTGGA
27	*GGPS*	PCR	CTCTGAAGATTTAGTCACACCAAG
28	*Lycopene β-cyclase (LYCB)*	degenerate primer PCR	GCCNAAYAAYTAYGGNGTNTG

29	*LYCB*	degenerate primer PCR	ANCCNGTNGANGGYTGNACC
30	*LYCB*	5′ RACE	CGATTCACCCGACCATAAGGC
31	*LYCB*	5′ RACE	CGATTCACCCGACCATAAGGC
32	*LYCB*	3′ RACE	ATGGATTGGAGAGATTCACAC
33	*LYCB*	3′ RACE	CATACAGGAGAGGATGGTGGC
34	*LYCB*	PCR	TCTCCCGTTCTTGAGGCTTATC
35	*LYCB*	PCR	AGATAGCCCAAAAGTCACAAGC
36	*LYCB*	PCR	TAGGAGAGACTACCAGAGACGGC
37	*LYCB*	PCR	GCCTTATGGTCGGGTGAATCG
39	*Carotenoid cleavage dioxygenase 4* (*CCD4*)	degenerate primer PCR	ACGAGGATTTATGACACCAAAGTCGA
40	*CCD4*	degenerate primer PCR	TCACGAGTACGAGCAGCACCCT
41	*CCD4*	5′ RACE	GAGCGAAGTTGTTGGACAGG
42	*CCD4*	5′ RACE	GGAGAAGGAGCGAGTGGAGC
43	*CCD4*	3′ RACE	AGAGCCGTTCTTCGTTGCCAG
44	*CCD4*	3′ RACE	TGGAGATGGTGCGGATTGAC
45	*CCD4*	PCR	TAGGTTGGTCGGAGAGGAGAGG
46	*CCD4*	PCR	GTTTCCAGACTGTGTTTCGTGTTG
47	*CCD4*	PCR	CCGTCCGCTTAGGTCGAATAC

Supporting Table 2: GenBank accession numbers for isolated isoprenoid genes

	Gene	Source	Accession No.
1	*1-deoxy-D-xylulose-5-phosphate synthase* (*DXS*)	Asupina	KP266866
2	*Geranylgeranyl diphosphate synthase (GGPS)*	Cavendish	KP406752
3	*GGPS*	Asupina	KP406753
4	*lycopene β-cyclase (LCYB)*	Cavendish	KP406755
5	*LCYB*	Asupina	KP406754
6	*Carotenoid cleavage dioxygenase 4 (CCD4)*	Cavendish	KP406757
7	*CCD4*	Asupina	KX001810 & KP406756

Supporting Table 3. Primers used for RT-qPCR

#	Gene (use)	Acronym	Forward Primer (5'3')	Reverse Primer (3'5')
1	*Ubiquitin 2*	*UBQ2*	GAGGCAGTAAGAAACCCTGAAC	AAGTCTCCTCCCATAGTTGCTG
2	*Cyclophilin*	*CYP*	TGTCTTAGGAGGATGTAGAGGAGC	GGCTCCTGCTGACGATAATGAC
3	*1-deoxy-D-xylulose-5-phosphate synthase*	*DXS*	CTGTGCCATCTACTCATCCTTC	CGGACAGGTATCTTCTGGAGGT
4	*Geranylgeranyl diphosphate synthase*	*GGPS*	AGGATTAGAGAAGTCAAGGGAG	GTGATCTACTTCTGGCGGTAGG
5	*Phytoene synthase*	*PSY1*	GGTAGGATTTATCTGCCACAGG	AGCTCCTCCATTTCTCAGTCAC
6	*Phytoene synthase 2a*	*PSY2a*	AGTGTGCCGGTGATGGGAATTG	CCCTGAGTATGTTGGTGAGTTG
7	*lycopene β-cyclase*	*LCYB*	ATGCAACTGGCTTCTCAAGGTG	GAGGTGTGAATCTCTCCAATCC
8	*Carotenoid cleavage dioxygenase 4*	*CCD4*	TGGAGATGGTGCGGATTGAC	ACGAGGATTTATGACACCAAAGTCGA

Supporting Table 4. Carotenoid content of developing 'Asupina' and 'Cavendish' fruits

Table 3 A. Carotenoid content of developing 'Asupina' fruits (µg g^{-1} DW)

Stage	Lutein	α-carotene	β-carotene	Total carotenoids
S9	12.40 ± 0.69 (63)	0.40 ± 0.06 (2)	6.90 ± 0.33 (35)	19.70 ± 1.08 (100)
S12	12.00 ± 0.52 (62)	0.60 ± 0.03 (3)	6.80 ± 0.25 (35)	19.40 ± 0.80 (100)
S15	13.80 ± 0.91 (64)	0.80 ± 0.06 (4)	7.00 ± 0.36 (32)	21.60 ± 1.33 (100)
S18	15.60 ± 1.23 (62)	1.40 ± 0.10 (6)	7.90 ± 0.33 (32)	24.90 ± 1.66 (100)
S21	16.80 ± 0.48 (63)	1.80 ± 0.21 (2)	7.00 ± 0.92 (35)	25.60 ± 1.61 (100)
S24	12.50 ± 1.32 (28)	7.80 ± 1.16 (18)	24.00 ± 3.87 (54)	44.30 ± 6.37 (100)
FG	7.68 ± 0.65 (5)	34.7 ± 6.60 (23)	111.29 ± 2.48 (72)	153.67 ± 9.73 (100)
FR	6.90 ± 1.04 (3)	61.0 ± 7.96 (24)	188.90 ± 12.54 (73)	256.8 ± 21.54 (100)

Table 3 B. Carotenoid content of developing 'Cavendish' fruits (µg g^{-1} DW)

Stage	Lutein	α-carotene	β-carotene	Total carotenoids
S3	2.80 ± 0.14 (55)	0.90 ± 0.03 (18)	1.40 ± 0.13 (27)	5.10 ± 0.30 (100)
S6	4.30 ± 0.16 (70)	1.10 ± 0.03 (18)	0.70 ± 0.05 (12)	6.10 ± 0.24 (100)
S9	5.70 ± 0.10 (58)	2.60 ± 0.09 (27)	1.50 ± 0.04 (15)	9.80 ± 0.23 (100)
FG	6.40 ± 0.33 (47)	5.20 ± 0.08 (39)	1.90 ± 0.11 (14)	13.50 ± 0.52 (100)
FR	6.80 ± 0.27 (49)	4.60 ± 0.08 (33)	2.40 ± 0.10 (18)	13.80 ± 0.45 (100)

Total carotenoid contents were calculated as the sum of each carotenoid, as determined by HPLC-PDA analysis. Values are the average of nine measurements comprised of three biological replicates analysed in triplicate ± SEM. Values in parenthesis are % compositions of accumulative carotenoid quantities.

Supporting Figure Legends

Supporting Figure 1: Dry matter content of mature stage banana pulp tissue

C, 'Cavendish'; A, 'Asupina'; FG, full green fruit; FR, full ripe fruit. Values are the average of three biological replicates ± SEM.

Supporting Figure 1