

## Supplementary data:

# Gene structure, phylogeny and expression profile of the sucrose synthase gene family in cacao (*Theobroma cacao* L.)

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**Table 1.** *Cis*-regulatory elements identified in the *TcSus* promoters.

Name used in PLACE	Sequence	Gene	Annotation	References
ABRELATERD1	ACGTG	<i>TcSUS6</i>	ABRE, etiolation, erd	Simpson <i>et al.</i> (2003), Nakashima <i>et al.</i> (2006)
ABREOSRAB21	ACGTSSSC	<i>TcSUS6</i>	ABA, ABRE, Em, rab, Em1a, Em1b, seed	Marcotte <i>et al.</i> (1989), Busk and Pages (1998), Skriver and Mundy (1990)
ACGTATERD1	ACGT	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS6</i>	Etiolation, erd	Simpson <i>et al.</i> (2003)
ANAERO1CONSENSUS	AAACAAA	<i>TcSUS1, TcSUS2, TcSUS4, TcSUS5, TcSUS6</i>	Anaerobic	Mohanty <i>et al.</i> (2005)
AMYBOX1	TAACARA	<i>TcSUS3</i>	Amylase, seed	Huang <i>et al.</i> (1990)
ARR1AT	NGATT	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Response regulator	Sakai <i>et al.</i> (2000), Ross <i>et al.</i> (2004)
BIHD1OS	TGTCA	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Homeodomain	Luo <i>et al.</i> (2005)
CAATBOX1	CAAT	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	LegA, seed	Shirsat <i>et al.</i> (1989)
CACTFTPPCA1	YACT	<i>TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Mesohpyll	Gowik <i>et al.</i> (2004)
CAREOSREP1	CAANNNNATC	<i>TcSUS1, TcSUS3</i>	Aleurone, GARE, gibberellin, seed	Sutoh and Yamauchi (2003)
CPBCSPOR	TATTAG	<i>TcSUS2, TcSUS3, TcSUS4</i>	Cytokinin, chlorophyll, chloroplast	Fusada <i>et al.</i> (2005)
CIACADIANLELHC	CAACTC	<i>TcSUS1, TcSUS5</i>	Circadian, light, Lhc, leaf, shoot	Piechulla <i>et al.</i> (1998)
DOFCOREZM	AAAG	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Dof, C4PEPC, CyPPDK, PEPC, C4, leaf, shoot	Yanagisawa and Schmidt (1999), Yanagisawa (2000)
EBOXBNNAPA	CANNTG	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	NapA, storage protein, ABRE, E-box, seed	Stalberg <i>et al.</i> (1996), Hartmann <i>et al.</i> (2005)
GARE1OSREP1	TAACAGA	<i>TcSUS1, TcSUS3</i>	Aleurone, GARE, gibberellin, seed	Sutoh and Yamauchi (2003)
GATABOX	GATA	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	ASF-2, GATA box, Cab, chlorophyll a/b binding protein, leaf, shoot	Gidoni <i>et al.</i> (1989), Lam and Chua (1989); Benfey and Chua (1990), Gilmartin <i>et al.</i> (1990); Teakle <i>et al.</i> (2002); Reyes <i>et al.</i> (2004)

**Table 1** (contd)

Name used in PLACE	Sequence	Gene	Annotation	Reference
GT1CONSENSUS	GRWAAW	<i>TcSUS1, TcSUS2, TcSUS4, TcSUS5, TcSUS6</i>	GT-1, light, TATA, TFIIA, TBP, HR, SAR, TMV, leaf, shoot	Terzaghi and Cashmore (1995), Villain <i>et al.</i> (1996), Buchel <i>et al.</i> (1999), Le Gourrierec <i>et al.</i> (1999), Zhou (1999)
GT1CORE	GGTTAA	<i>TcSUS1, TcSUS4</i>	RbcS, box II, GT-1, rbcS-3, leaf, shoot	Green <i>et al.</i> (1988), Gilmartin <i>et al.</i> (1990), Terzaghi and Cashmore (1995), Villain <i>et al.</i> (1996)
GTGANTG10	GTGA	<i>TcSUS1, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Pollen, pectate lyase	Rogers <i>et al.</i> (2001)
IBOXCORE	GATAA	<i>TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	I-box, rbcS, light regulation, light, leaf, shoot	Terzaghi and Cashmore (1995)
LTRECOREATCOR15	CCGAC	<i>TcSUS6</i>	Low temperature, cold, LTRE, drought, ABA, cor15a, BN115, leaf, shoot, phytochrome	Baker <i>et al.</i> (1994), Jiang <i>et al.</i> (1996), Busk and Pages (1998), Kim <i>et al.</i> (2002)
MYB1AT	WAACCA	<i>TcSUS1, TcSUS3, TcSUS4, TcSUS5</i>	MYB, rd22BP1, ABA, leaf, seed, stress	Abe <i>et al.</i> (2003)
MYB2AT	TAACTG	<i>TcSUS5</i>	MYB, SV40, enhancer, bronze, bronze-1, leaf, shoot	Urao <i>et al.</i> (1993)
MYBCORE	CNGTTR	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4</i>	MYB, dehydration, water, stress, flavonoid biosynthesis, leaf, shoot	Luscher and Eiseman (1990), Urao <i>et al.</i> (1993), Solano <i>et al.</i> (1995)
MYBPZM	CCWACC	<i>TcSUS5</i>	P-gene, MYB, seed	Grotewold <i>et al.</i> (1994)
MYB2CONSENSUSAT	YAACKG	<i>TcSUS6</i>	MYB, rd22BP1, ABA, leaf, seed, stress	Abe <i>et al.</i> (2003)
MYCCONSUSAT	CANNTG	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	MYC, rd22BP1, ABA, leaf, seed, stress, CBF3, cold, CBF/DREB1, ICE1, RRE	Abe <i>et al.</i> (2003), Chinnusamy <i>et al.</i> (2003, 2004), Hartmann <i>et al.</i> (2005), Lee <i>et al.</i> (2005), Oh <i>et al.</i> (2005), Agarwal <i>et al.</i> (2006)
NTBBF1ARROLB	ACTTTA	<i>TcSUS5, TcSUS6</i>	RollB, Dof, auxin, domain B, root, shoot, meristem, vascular	Baumann <i>et al.</i> (1999)
OSE2ROOTNODULE	CTCTT	<i>TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Leghemoglobin, Lb29, root, nodule, arbuscule	Vieweg <i>et al.</i> (2004), Fehlberg <i>et al.</i> (2005)
POLLENILELAT52	AGAAA	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Pollen, lat52; endo-beta-mannanase, MAN	Bate and Twell (1998), Filichkin <i>et al.</i> (2004)
PYRIMIDINEBOXO SRAMY1A	CCTTTT	<i>TcSUS5</i>	Alpha-amylase, sugar repression, GARE, pyrimidine box, feed-back metabolic repression, embryo, seed	Morita <i>et al.</i> (1998), Mena <i>et al.</i> (2002)
RAV1AAT	CAACA	<i>TcSUS1, TcSUS4, TcSUS5, TcSUS6</i>	RAV1, AP2, VP1, B3, root, leaf, shoot	Kagaya <i>et al.</i> (1999)
RBCSCONSUSUS	AATCCAA	<i>TcSUS5, TcSUS6</i>	RbcS, G box, I box, leaf, shoot	Manzara and Grissem (1988), Donald and Cashmore (1990)
ROOTMOTIFTAPOX1	ATATT	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Root, rolD	Elmayan and Tepfer (1995)
SEF1MOTIF	ATATTTAWW	<i>TcSUS1, TcSUS2, TcSUS3</i>	storage protein, 7S, globulin, beta-conglycinin, seed	Allen <i>et al.</i> (1989), Lessard <i>et al.</i> (1991)
SEF4MOTIFGM7S	RTTTTTR	<i>TcSUS1, TcSUS4, TcSUS5, TcSUS6</i>	Seed, storage protein, 7S, globulin, beta-conglycinin, SEF	Tjaden <i>et al.</i> (1995), Shirsat <i>et al.</i> (1989), Grace <i>et al.</i> (2004)
TATABOX	TTATTT	<i>TcSUS1, TcSUS2, TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	TATA, glutamine, synthetase	Shirsat <i>et al.</i> (1989), Tjaden <i>et al.</i> (1995), Grace <i>et al.</i> (2004)
WBOXHVISO1	TGACT	<i>TcSUS3, TcSUS4, TcSUS5, TcSUS6</i>	Sugar, SURE, patatin, WRKY, isoamylase, SUSIBA2	Sun <i>et al.</i> (2003)

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