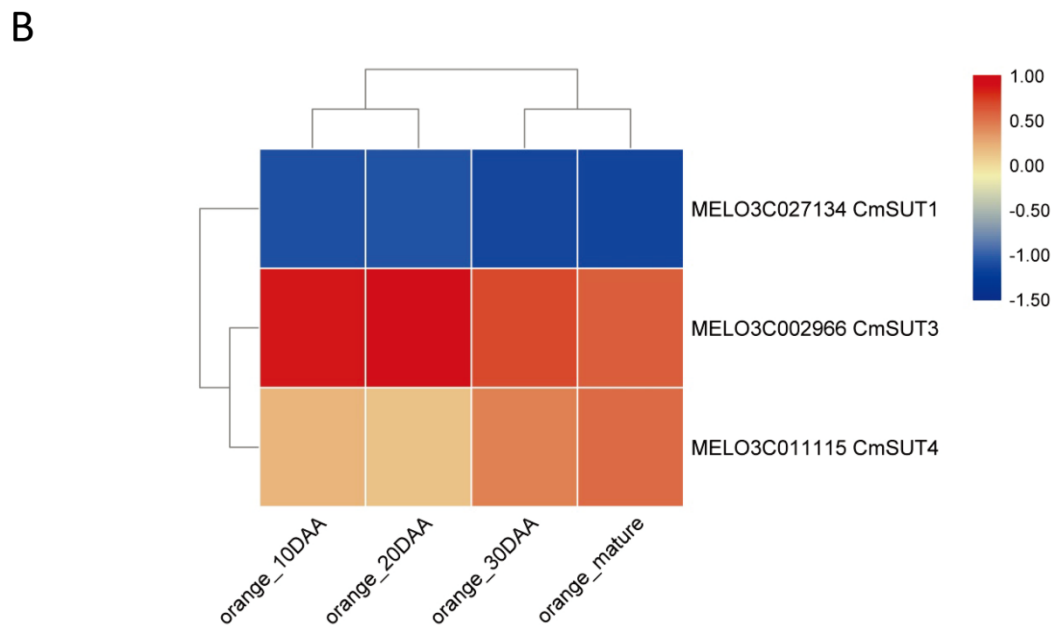
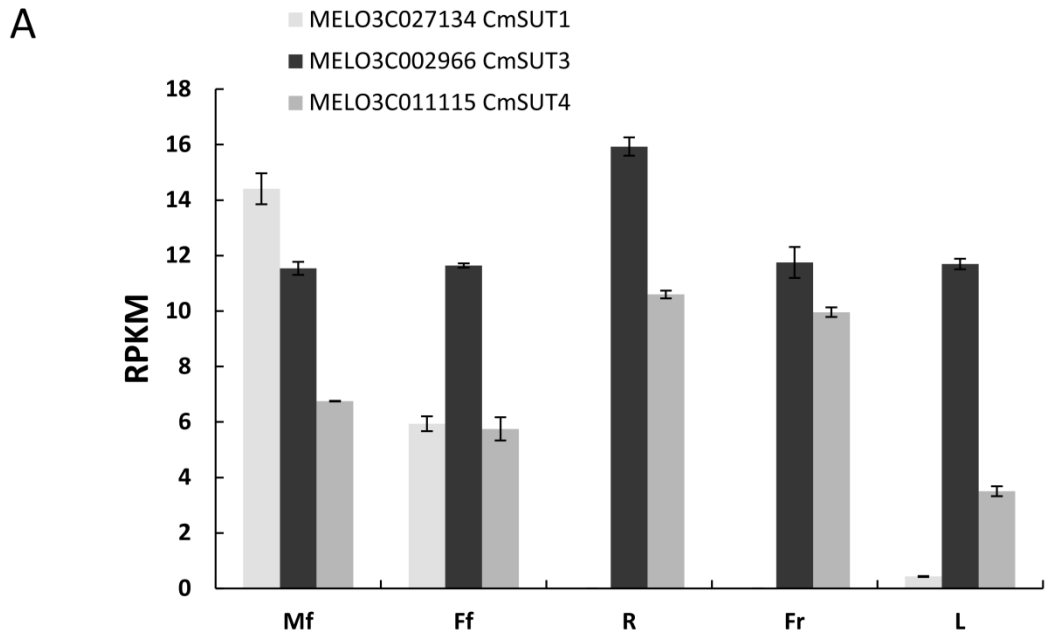
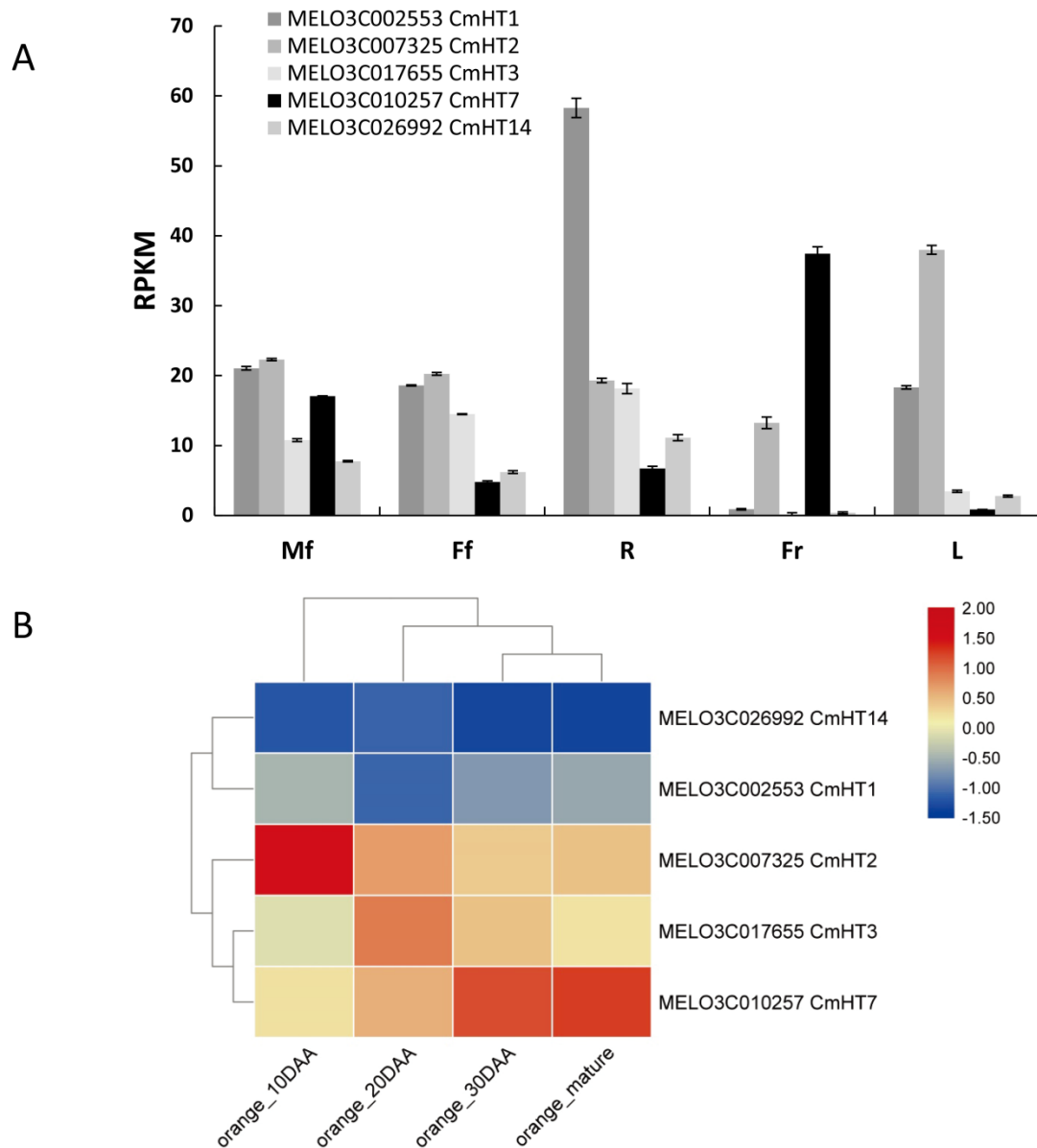


**Supplementary Figure S1.** Spatiotemporal expression patterns of *CmSWEET* genes in melon. (A) Expression patterns of *CmSWEET* genes in different tissues. Project: PRJNA383830. (B) Heatmap for *CmSWEET* gene expression in fruit. Expression was quantified on the indicated day after anthesis (DAA). Project: PRJNA286120. Data is from the database of cucurbit genomics (<http://cucurbitgenomics.org/>).



**Supplementary Figure S2.** Spatiotemporal expression patterns of *CmSUT* genes in melon. (A) Expression patterns of *CmSUT* genes in different tissues. Project: PRJNA383830. (B) Heatmap for *CmSUT* gene expression in fruit. Expression was quantified on the indicated day after anthesis (DAA). Project: PRJNA286120. Data is from the database of cucurbit genomics (<http://cucurbitgenomics.org/>).



**Supplementary Figure S3.** Spatiotemporal expression patterns of *CmHT* genes in melon. (A) Expression patterns of *CmHT* genes in different tissues. Project: PRJNA383830. (B) Heatmap for *CmHT* gene expression in fruit. Expression was quantified on the indicated day after anthesis (DAA). Project: PRJNA286120. Data is from the database of cucurbit genomics (<http://cucurbitgenomics.org/>).

**Supplementary Table S1.** GenBank accession numbers for the sequences used for the analysis in **Fig. 1**.

Gene name	species	Accession number	Gene name	species	Accession number
<i>MdSTP13a</i>	<i>Malus domestica</i>	MDP0000831221	<i>CsHT1</i>	<i>Cucumis sativus</i>	HQ202746
<i>MdSTP13b</i>	<i>Malus domestica</i>	MDP0000231284	<i>CsHT2</i>	<i>Cucumis sativus</i>	XM_004134914.2
<i>MdSTP13c</i>	<i>Malus domestica</i>	MDP0000190996	<i>CsHT3</i>	<i>Cucumis sativus</i>	XM_004146895.2
<i>MdSTP13d</i>	<i>Malus domestica</i>	MDP0000282726	<i>CsHT4</i>	<i>Cucumis sativus</i>	XM_004139303.2
<i>MdHT1.1</i>	<i>Malus domestica</i>	MDP0000261679	<i>CsHT5</i>	<i>Cucumis sativus</i>	XM_004141163.2
<i>MdHT1.2</i>	<i>Malus domestica</i>	MDP0000193050	<i>CsHT6</i>	<i>Cucumis sativus</i>	XM_004134403.2
<i>MdHT1.3</i>	<i>Malus domestica</i>	MDP0000175148	<i>CsHT7</i>	<i>Cucumis sativus</i>	XM_004134404.2
<i>MdHT1.8</i>	<i>Malus domestica</i>	MDP0000190194	<i>CsHT8</i>	<i>Cucumis sativus</i>	XM_011654456.1
<i>MdHT1.9</i>	<i>Malus domestica</i>	MDP0000204929	<i>CsHT9</i>	<i>Cucumis sativus</i>	XM_011659273.1
<i>MdHT1.10</i>	<i>Malus domestica</i>	MDP0000231285	<i>CsHT10</i>	<i>Cucumis sativus</i>	XM_004134402.2
<i>MdHT1.11</i>	<i>Malus domestica</i>	MDP0000289098	<i>CsHT11</i>	<i>Cucumis sativus</i>	XM_011656598.1
<i>MdHT2.1</i>	<i>Malus domestica</i>	MDP0000906893	<i>CsHT12</i>	<i>Cucumis sativus</i>	XM_004146532.2
<i>MdHT2.2</i>	<i>Malus domestica</i>	MDP0000154362	<i>CsHT13</i>	<i>Cucumis sativus</i>	XM_004146896.2
<i>MdHT2.3</i>	<i>Malus domestica</i>	MDP0000240921	<i>CsHT14</i>	<i>Cucumis sativus</i>	XM_004143945.2
<i>MdHT2.4</i>	<i>Malus domestica</i>	MDP0000187438	<i>CsHT15</i>	<i>Cucumis sativus</i>	XM_004146686.2
<i>MdHT2.5</i>	<i>Malus domestica</i>	MDP0000192591	<i>CsHT16</i>	<i>Cucumis sativus</i>	XM_011659890.1
<i>MdHT3.1</i>	<i>Malus domestica</i>	MDP0000216376	<i>AtSTP1</i>	<i>A. thaliana</i>	NM_100998
<i>MdHT3.2</i>	<i>Malus domestica</i>	MDP0000266249	<i>AtSTP2</i>	<i>A. thaliana</i>	NM_100608
<i>MdHT3.3</i>	<i>Malus domestica</i>	MDP0000191620	<i>AtSTP3</i>	<i>A. thaliana</i>	AJ002399
<i>MdHT3.4</i>	<i>Malus domestica</i>	MDP0000177942	<i>AtSTP4</i>	<i>A. thaliana</i>	NM_112883
<i>MdHT3.5</i>	<i>Malus domestica</i>	MDP0000721688	<i>AtSTP5</i>	<i>A. thaliana</i>	AJ344335
<i>MdHT3.6</i>	<i>Malus domestica</i>	MDP0000485591	<i>AtSTP6</i>	<i>A. thaliana</i>	AJ344337
<i>MdHT4.1</i>	<i>Malus domestica</i>	MDP0000735707	<i>AtSTP7</i>	<i>A. thaliana</i>	AJ344331
<i>MdHT4.2</i>	<i>Malus domestica</i>	MDP0000185402	<i>AtSTP8</i>	<i>A. thaliana</i>	AJ344332
<i>MdHT4.3</i>	<i>Malus domestica</i>	MDP0000201154	<i>AtSTP9</i>	<i>A. thaliana</i>	NM_103915
<i>MdHT4.4</i>	<i>Malus domestica</i>	MDP0000236607	<i>AtSTP10</i>	<i>A. thaliana</i>	NM_112884
<i>MdHT4.5</i>	<i>Malus domestica</i>	MDP0000137412	<i>AtSTP11</i>	<i>A. thaliana</i>	AJ001664
<i>MdHT4.6</i>	<i>Malus domestica</i>	MDP0000146340	<i>AtSTP12</i>	<i>A. thaliana</i>	AJ344333
<i>MdHT4.7</i>	<i>Malus domestica</i>	MDP0000193898	<i>AtSTP13</i>	<i>A. thaliana</i>	AJ344338
<i>MdHT4.8</i>	<i>Malus domestica</i>	MDP0000288533	<i>AtSTP14</i>	<i>A. thaliana</i>	AJ344334
<i>VvHT1</i>	<i>V. vinifera</i>	AJ001061	<i>SlSTP1</i>	<i>Solanum lycopersicum</i>	GQ911580
<i>VvHT2</i>	<i>V. vinifera</i>	AY663846	<i>SlSTP2</i>	<i>Solanum lycopersicum</i>	AJ132224
<i>VvHT3</i>	<i>V. vinifera</i>	HQ323262	<i>SlSTP3</i>	<i>Solanum lycopersicum</i>	GQ911581
<i>VvHT4</i>	<i>V. vinifera</i>	HQ323263	<i>VvHT6</i>	<i>V. vinifera</i>	AY861386
<i>VvHT5</i>	<i>V. vinifera</i>	HQ323264	<i>VvHT7</i>	<i>V. vinifera</i>	AY854146

**Supplementary Table S2.** GenBank accession numbers for the sequences used for the analysis in **Fig. 2.**

Gene name	species	Accession number	Gene name	species	Accession number
<i>AtSUC1</i>	<i>A. thaliana</i>	AT1G71880	<i>HvSUT1</i>	<i>Hordeum vulgare</i>	CAB75882
<i>AtSUC2</i>	<i>A. thaliana</i>	AT1G22710	<i>HvSUT2</i>	<i>Hordeum vulgare</i>	CAB75881
<i>AtSUC3</i>	<i>A. thaliana</i>	AT2G02860	<i>BoSUC1</i>	<i>Brassica oleracea</i>	AAL58071
<i>AtSUC4</i>	<i>A. thaliana</i>	AT1G09960	<i>SoSUT1</i>	<i>Spinacia oleracea</i>	CAA47604
<i>AtSUC5</i>	<i>A. thaliana</i>	AT1G71890	<i>DcSUT1a</i>	<i>Daucus carota</i>	CAA76367
<i>AtSUC6</i>	<i>A. thaliana</i>	AT5G43610	<i>DcSUT2</i>	<i>Daucus carota</i>	CAA76369
<i>AtSUC7</i>	<i>A. thaliana</i>	AT1G66570	<i>VvSUC11</i>	<i>Vitis vinifera</i>	AAF08329
<i>AtSUC8</i>	<i>A. thaliana</i>	AT2G14670	<i>VvSUC12</i>	<i>Vitis vinifera</i>	AAF08330
<i>AtSUC9</i>	<i>A. thaliana</i>	AT5G06170	<i>VvSUC27</i>	<i>Vitis vinifera</i>	AAF08331
<i>CmSUT1</i>	<i>Cucumis melon</i>	XP_008465544.1	<i>OsSUT1</i>	<i>Oryza sativa</i>	BAA24071
<i>CmSUT2</i>	<i>Cucumis melon</i>	XP_016899893.1	<i>OsSUT2</i>	<i>Oryza sativa</i>	BAC67163
<i>CmSUT3</i>	<i>Cucumis melon</i>	XP_008465743.1	<i>OsSUT3</i>	<i>Oryza sativa</i>	BAB68368
<i>CmSUT4</i>	<i>Cucumis melon</i>	ACJ04700	<i>OsSUT4</i>	<i>Oryza sativa</i>	BAC67164
<i>ZmSUT1</i>	<i>Zea mays</i>	BAA83501	<i>OsSUT5</i>	<i>Oryza sativa</i>	BAC67165
<i>ZmSUT2</i>	<i>Zea mays</i>	ACF86653	<i>BvSUT1</i>	<i>Beta vulgaris</i>	CAA58730
<i>ZmSUT4</i>	<i>Zea mays</i>	AAT35810	<i>SISUT1</i>	<i>Solanum lycopersicum</i>	CAA57726
<i>MdSUT1.1</i>	<i>Malus domestica</i>	MDP0000137383	<i>SISUT2</i>	<i>Solanum lycopersicum</i>	AAG12987
<i>MdSUT1.2</i>	<i>Malus domestica</i>	MDP0000426862	<i>SISUT3</i>	<i>Solanum lycopersicum</i>	AAG09270
<i>MdSUT1.3</i>	<i>Malus domestica</i>	MDP0000263618	<i>StSUT1</i>	<i>Solanum tuberosum</i>	CAA48915
<i>MdSUT2.1</i>	<i>Malus domestica</i>	MDP0000850943	<i>StSUT4</i>	<i>Solanum tuberosum</i>	AAG25923
<i>MdSUT2.2</i>	<i>Malus domestica</i>	MDP0000277235	<i>CsSUT1(cucumber)</i>	<i>Cucumis sativus</i>	MG324290
<i>MdSUT4.1</i>	<i>Malus domestica</i>	MDP0000275743	<i>CsSUT2(cucumber)</i>	<i>Cucumis sativus</i>	ADK46943
<i>MdSUT4.2</i>	<i>Malus domestica</i>	MDP0000206996	<i>CsSUT4(cucumber)</i>	<i>Cucumis sativus</i>	ADB04246
<i>MdSUT4.3</i>	<i>Malus domestica</i>	MDP0000242783	<i>NtSUT3</i>	<i>Nicotiana tabacum</i>	AAD34610
<i>MdSUT4.4</i>	<i>Malus domestica</i>	MDP0000275550	<i>NtSUT4</i>	<i>Nicotiana tabacum</i>	BAI60050
<i>CsSUT1(o range)</i>	<i>Citrus sinensis</i>	AAM29150	<i>AmSUT1</i>	<i>Alonsoa meridionalis</i>	AAF04295
<i>ShSUT1</i>	<i>Saccharum hybrid cultivar</i>	AAV41028			

**Supplementary Table S3.** GenBank accession numbers for the sequences used for the analysis in **Fig. 3**.

<b>Gene name</b>	<b>Species</b>	<b>Accession number</b>	<b>Gene name</b>	<b>Species</b>	<b>Accession number</b>
<i>CsSWEET1</i>	<i>Cucumis sativus</i>	XP_004150723.1	<i>SISWEET1a</i>	<i>Solanum lycopersicum</i>	XP_004237722
<i>CsSWEET2</i>	<i>Cucumis sativus</i>	XP_004146078.2	<i>SISWEET1b</i>	<i>Solanum lycopersicum</i>	XP_004237723
<i>CsSWEET3</i>	<i>Cucumis sativus</i>	XP_011654626.1	<i>SISWEET1c</i>	<i>Solanum lycopersicum</i>	XP_004237724
<i>CsSWEET5a</i>	<i>Cucumis sativus</i>	XP_004152552.1	<i>SISWEET1d</i>	<i>Solanum lycopersicum</i>	XP_010320027
<i>CsSWEET5b</i>	<i>Cucumis sativus</i>	XP_004141187.1	<i>SISWEET1e</i>	<i>Solanum lycopersicum</i>	XP_004242009
<i>CsSWEET5c</i>	<i>Cucumis sativus</i>	XP_011652274.1	<i>SISWEET1f</i>	<i>Solanum lycopersicum</i>	XP_004242288
<i>CsSWEET7a</i>	<i>Cucumis sativus</i>	XP_004148985.1	<i>SISWEET2a-1</i>	<i>Solanum lycopersicum</i>	XP_004233011
<i>CsSWEET7b</i>	<i>Cucumis sativus</i>	XP_004143859.1	<i>SISWEET2a-2</i>	<i>Solanum lycopersicum</i>	XP_004234244
<i>CsSWEET9</i>	<i>Cucumis sativus</i>	XP_004138978.2	<i>SISWEET2b</i>	<i>Solanum lycopersicum</i>	XP_010324406
<i>CsSWEET10</i>	<i>Cucumis sativus</i>	XP_004138032.1	<i>SISWEET3</i>	<i>Solanum lycopersicum</i>	XP_010317476
<i>CsSWEET12a</i>	<i>Cucumis sativus</i>	XP_004138250.1	<i>SISWEET5a</i>	<i>Solanum lycopersicum</i>	XP_019068234
<i>CsSWEET12b</i>	<i>Cucumis sativus</i>	XP_004153501.1	<i>SISWEET5b</i>	<i>Solanum lycopersicum</i>	XP_004241538
<i>CsSWEET12c</i>	<i>Cucumis sativus</i>	XP_004145146.2	<i>SISWEET6a</i>	<i>Solanum lycopersicum</i>	XP_004233701
<i>CsSWEET15</i>	<i>Cucumis sativus</i>	XP_004140547.1	<i>SISWEET7a</i>	<i>Solanum lycopersicum</i>	XP_004245483
<i>CsSWEET17a</i>	<i>Cucumis sativus</i>	XP_004135601.1	<i>SISWEET7b</i>	<i>Solanum lycopersicum</i>	XP_004252656
<i>CsSWEET17b</i>	<i>Cucumis sativus</i>	XP_011650110.1	<i>SISWEET10a</i>	<i>Solanum lycopersicum</i>	XP_019068533
<i>CsSWEET17c</i>	<i>Cucumis sativus</i>	XP_004134220.1	<i>SISWEET10b</i>	<i>Solanum lycopersicum</i>	XP_004235333
<i>OsSWEET1a</i>	<i>Oryza sativa</i>	XP_025878169.1	<i>SISWEET10c</i>	<i>Solanum lycopersicum</i>	XP_004235339
<i>OsSWEET1b</i>	<i>Oryza sativa</i>	XP_015639256.1	<i>SISWEET11a</i>	<i>Solanum lycopersicum</i>	XP_004235326
<i>OsSWEET2a</i>	<i>Oryza sativa</i>	XP_015615030.1	<i>SISWEET11b</i>	<i>Solanum lycopersicum</i>	XP_004235342

Gene name	Species	Accession number	Gene name	Species	Accession number
<i>OsSWEET2b</i>	<i>Oryza sativa</i>	XP_015619426.1	<i>SISWEET11c</i>	<i>Solanum lycopersicum</i>	XP_004241452
<i>OsSWEET3a</i>	<i>Oryza sativa</i>	XP_015638481.1	<i>SISWEET11d</i>	<i>Solanum lycopersicum</i>	XP_010322967
<i>OsSWEET4</i>	<i>Oryza sativa</i>	XP_015626955.1	<i>SISWEET12a</i>	<i>Solanum lycopersicum</i>	XP_004235334
<i>OsSWEET5</i>	<i>Oryza sativa</i>	XP_015638818.1	<i>SISWEET12b</i>	<i>Solanum lycopersicum</i>	XP_004235470
<i>OsSWEET6a</i>	<i>Oryza sativa</i>	XP_015631208.1	<i>SISWEET12c</i>	<i>Solanum lycopersicum</i>	XP_004239304
<i>OsSWEET6b</i>	<i>Oryza sativa</i>	XP_015645348.1	<i>SISWEET12d</i>	<i>Solanum lycopersicum</i>	XP_004242139
<i>OsSWEET7a</i>	<i>Oryza sativa</i>	LoC_Os09g08030	<i>SISWEET14</i>	<i>Solanum lycopersicum</i>	XP_004235340
<i>OsSWEET7b</i>	<i>Oryza sativa</i>	LoC_Os09g08440	<i>SISWEET15</i>	<i>Solanum lycopersicum</i>	XP_004247459
<i>OsSWEET7c</i>	<i>Oryza sativa</i>	XP_015619157.1	<i>SISWEET16</i>	<i>Solanum lycopersicum</i>	XP_004230255
<i>OsSWEET7e</i>	<i>Oryza sativa</i>	LoC_Os09g08270	<i>SISWEET17</i>	<i>Solanum lycopersicum</i>	XP_010315469
<i>OsSWEET11</i>	<i>Oryza sativa</i>	AK106127	<i>OsSWEET14</i>	<i>Oryza sativa</i>	AK101913
<i>OsSWEET12</i>	<i>Oryza sativa</i>	XP_015630001.1	<i>OsSWEET15</i>	<i>Oryza sativa</i>	XP_015623673.1
<i>OsSWEET13</i>	<i>Oryza sativa</i>	LoC_Os12g29220	<i>OsSWEET16</i>	<i>Oryza sativa</i>	XP_015628835.1
<i>PuSWEET15</i>	<i>Pyrus ussuriensis</i>	MK940530	<i>ClaSWEET3</i>	<i>Citrullus lanatus</i>	Cla004909
<i>AtSWEET1</i>	<i>A.thaliana</i>	AT1G21460	<i>AtSWEET12</i>	<i>A.thaliana</i>	AT5G23660
<i>AtSWEET2</i>	<i>A.thaliana</i>	AT3G14770	<i>AtSWEET13</i>	<i>A.thaliana</i>	AT5G50800
<i>AtSWEET3</i>	<i>A.thaliana</i>	AT5G53190	<i>AtSWEET14</i>	<i>A.thaliana</i>	AT4G25010
<i>AtSWEET4</i>	<i>A.thaliana</i>	AT3G28007	<i>AtSWEET15</i>	<i>A.thaliana</i>	AT5G13170
<i>AtSWEET5</i>	<i>A.thaliana</i>	AT5G62850	<i>AtSWEET16</i>	<i>A.thaliana</i>	AT3G16690
<i>AtSWEET6</i>	<i>A.thaliana</i>	AT1G66770	<i>AtSWEET17</i>	<i>A.thaliana</i>	AT4G15920
<i>AtSWEET7</i>	<i>A.thaliana</i>	AT4G10850	<i>ZmSWEET13a</i>	<i>Zea mays</i>	GRMZM2G173669
<i>AtSWEET8</i>	<i>A.thaliana</i>	AT5G40260	<i>ZmSWEET13b</i>	<i>Zea mays</i>	GRMZM2G021706
<i>AtSWEET9</i>	<i>A.thaliana</i>	AT2G39060	<i>ZmSWEET13c</i>	<i>Zea mays</i>	GRMZM2G179349
<i>AtSWEET10</i>	<i>A.thaliana</i>	AT5G50790	<i>GmSWEET39</i>	<i>Glycine max</i>	Glyma.15g049200
<i>AtSWEET11</i>	<i>A.thaliana</i>	AT3G48740			