Supplemental Figure 9: Predicted amino acid consequences of the CRISPR Cas9 mutations in the *TaCalS5-A* homoeologue of all of the sterile plants produced.

CalS Wt.		20		40		eo 1		80 I		100		120		140		160		180		200
CalS CalS 9 allele		NEW PSSESS NEW PSSESS	APIERVAAE APIERVAAE		CREYAE KA CREYAE KA CREYAE KA	HREDONSUGR	GVROFKTSLL GVROFKTSLL GVROFKTSLL	ORLEKONSPS ORLEKONSPS ORLEKONSPS	EAKREKKTDA EAKREKKTDA EAKREKKTDA	RETESTYCEY RETESTYCEY		GEOADRICEG GEOADRICEG GEOADRICEG	KAYOTAGYLE Kayotagyle	E VECAVNKNE VECAVNKNE		RWH TENOEKK RWH TENOEKK RWH TENOEKK	DIYAPENIEP DIYAPENIEP DIYAPENIEP	DAASASOS DAASASOS DAASASOS		
CalS 9 allele CalS 9 allele CalS 10 allele CalS 10 allele	2 MAAFSMEVED 1 MAAFSMEVED 2 MAAFSMEVED	NEWWPSSESS NEWWPSSESS				HREDON SUGR	GVROFKTSLL GVROFKTSLL	GREEKON SPS			YENYYR TEDK YENYYR TEDK	GEGADR TOLG		YECAYNKN YECAYNKN YECAYNKN			DIYAPINI P DIYAPINI P	DAASASOS DAASASOS D		A R T RG T 200
CalS 12 allele CalS 12 allele CalS 16 allele	1 MAAESMEVED	NEWWPSSESS NEWWPSSESS			CRYAKA CRYAKA CRYAKA CRYAKA KA CRYAKA		GUROFKTSLL GUROFKTSLL	CREEKONSPS CREEKONSPS CREEKONSPS CREEKONSPS				G CADRICIG G CADRICIG G CADRICIG		U CAUNKN U CAUNKN U CAUNKN U CAUNKN				DAASASOS DAASASOS DAASASOS DAASASOS DAASASOS		A A E RY T RG T 200 A A E RY T RG T 200
CalS 16 allele CalS 17 allele	1 MAAESMEVED	NEWWPSSESS			CREYAE KA	HRLDONSVGR	GVROFKTSLL GVROFKTSLL	ORLEKONSPS	AKR KKTDA		YENYYR TEOK	GE GAD R TOLG GE GAD R TOLG GE GAD R TOLG GE GAD R TOLG GE GAD R TOLG		VECAVNKNE VECAVNKNE		RWH TE VOEKK RWH TE VOEKK	I YAPENILP I YAPENILP	DAASASOSI DAASASOSI DAASASOSI DAASASOSI	MOLEEEKAAV MOLEEEKAAV	AA RYTRG T 200 AA RYTRG T 200
CalS 20 allele CalS 20 allele	2 MAAESMEVED	NEW PSSESS		PERPRYAY	CRYAEKA CRYAEKA CRYAEKA	HREDONSUGR	GVROFKTSLL	GREEKON SPS			Y NYYR TEOK	GEOADRIGEG				RWHTENCERK		LDAASASQSI		AAERYTRGET 200
Consensu	S MAAFSMEVFD	NEVVPSSLSS	IAPILRVAAE	IEPERPRVAY	LCRFYAFEKA	HRLDQNSVGR	GVRQFKTSLL	GRLEKDNSPS	LAKRLKKTDA	REIESFYQEY	YENYVRTLDK	GEQADRTQLG	KAYQTAGVLF	EVICAVNKNE	KVEQVNPEIM	RWHTEVQEKK	DIYAPFNILP	LDAASASQSI	MQLEEIKAAV	AALRYTRGLT
Calls Wt.	A WPSAEEPERO			SURNOR HE		EPKPEPESKE			KEESRKHSER						GLAGNUSIN				AGKSOHGKT	400 400 400
CalS value CalS 9 allele CalS 9 allele CalS 10 allele CalS 10 allele CalS 12 allele CalS 12 allele	1 WPSAF PERO			SVRNOR HUI		EPKPEPLSK EPKPEPLSK	D R A V V MN D R A V V MN D R V V V NN D R V V NN D R V V NN D R V V NN D R V V NN D R V V NN D R V V NN D R V V NN D R V V NN D	KEENNYKKWC KEENNYKKWC KEENNYKKWC	KEESRKHSER KEESRKHSER	NPPGAQLOEV NPPGAQLOEV		Y LLIWG SAN Y LLIWG SAN			GLLAGNVSIV GLLAGNVSIV	G N R PSYG G N R PSYG		VTPIYRVIRK VTPIYRVIRK	AGKSCHGKT AGKSCHGKT AGKSCHGKT	A H S AWC N Y DD 400 A H S AWC N Y DD 400
CalS 10 allele CalS 10 allele	1 WPSAF PERG 2 WPSAF PERG 2 WPSAF PERG 2 WPSAF PERG			SVRNOR HEI		PKPEPLSKL			KEESRKHSER KEESRKHSER			Y E E TWG E SAN Y E E TWG E SAN			GELAGNVSIV GELAGNVSIV	TGENEPSYG		VTPIYRVIRK VTPIYRVIRK	AGKSOHGKT AGKSOHGKT	AHSAWCNYDD 400 AHSAWCNYDD 400
CalS 12 allele CalS 16 allele	2 WPSAE PERO			S V R NOR HEI S V R NOR HEI					KEESRKHSER KEESRKHSER	NPPGAOLO V NPPGAOLO V NPPGAOLO V NPPGAOLO V NPPGAOLO V		Y L MG SAN Y L MG SAN Y L MG SAN Y L MG SAN Y L MG SAN			GLLAGNYSIY GLLAGNYSIY	TGENERPSYG	GDEEAEEKKM	TPITRUIRK	AGKSCHGKT	
CalS 16 allele CalS 16 allele CalS 17 allele CalS 17 allele				SVRNOREHEI		EPKPEPLSKL EPKPEPLSKL			KELSRKHSLR KELSRKHSLR			YLLIWGESAN		E HNMAYELH	GLLAGN VSIV GLLAGN VSIV	TGENERSYG TGENERSYG TGENERSYG			AGKSOHGKT AGKSOHGKT	A H S AWC N Y D 400 A H S AWC N Y D 400
CalS 20 allele CalS 20 allele Consensu	1 WPSAEPERQ 2 WPSAEPERQ 15 WPSAFEPERQ		LRAMEGEORD LRAMEGEORD	SVRNOR HUI SVRNOR HUI	LLANVHIR	EPKPEPLSKL Epkpeplskl	DDRAYDYYMN		KELSRKHSLR KELSRKHSLR	NPPGAGLOEV NPPGAGLOEV	QORRILY LGL	YLLIWGESAN YLLIWGESAN	IREMPECTCY	I FHNMAYELH	GLLAGNVSIV GLLAGNVSIV	TGENERPSYG TGENERPSYG	GDEEAFLKKY GDEEAFLKKY	VTPIYRVIRK VTPIYRVIRK	AGKSCHGKT AGKSCHGKT EAGKSCHGKT	AHSAWCNYDD 400 AHSAWCNYDD 400 AHSAWCNYDD
Conservatio																				
CalS Wt. CalS			G DEEKSVHDS	RPWAWAGSSS	PKGSSKGTGK	TNEWETRSEW	HEERSEORMAN		E E AWSEYS		SESSIEVTAA			CKEEDVIRNE	EKEVVSAAWA			E CRWEGYEKG		AN
CalS 9 allele		S GWPM																		418 419
CalS 10 allele CalS 10 allele CalS 12 allele	1 LNEMEWTPOC		G DEEKSVHDS	RPWAWAGSSS	PKG <mark>SSK</mark> GTGK	TNEWETRSEW			AWS S S		SESSEEVTAA		EIINE EGH IR		IKIYYS AAWA			DRWE G YVK G	Megeyee awa	418 AND PNM SA 589 418
CalS 12 allele CalS 16 allele CalS 16 allele		S GWPM	GDEEKSNHDS	RPMAMAGSSS	PKGSSKGTGK						SESSEETAA				EKENNSAAWA			E B RWE G Y Y K G		417 A MERPINMESA 434 527
CalS 17 allele CalS 17 allele CalS 20 allele	1 ENERGY PRO	S GWPMRW S GWPM																		420 417 413 419
	2 LNEYFWTPDC	FSLOWPMR																		419
Conservatio	on		,	640		800		000		700		720	888666888888	740		760		780		800
CalS Wt		WIESSOWHIN	REEEWASOKR	Mar g R G MHE S		WEEECAKES	ESYEVOIO PE		HNERYEWHEE	EPNASYNEAA	ILSEWAPMEL		ASTISGGM	SGA GREG	RTEGMERSRE	HSEPGAENTY	EMPSOKGRNR	RESEAKREA	MSPNKRTEAA	KEAQEWN 800 419
CalS 9 allele CalS 9 allele CalS 10 allele	1																			
CalS 10 allele CalS 12 allele CalS 12 allele CalS 16 allele		WIESSOWHIN	REEEWWSOKR	MM G R GMH E S		WHERE CAKES	ESYEVOIO PU	RPTKOMMSV	HNERYEWHEE	EPNASYNEAA	I I S IWAPNEI		ASTSGGM	SGA GREG	RTEGMERSRE	HSEPGAENTY	BMPSDK G RNR	RESEAKREAE	SPNKRTE AA	KEAQEWN 201 789 418 417
		WIESSOWHIN	REEEWWSOKR	TYNGROMHES	QAALEKYTEE	WEECAKES	ESYEVOIOPU	RPTKOMSV	BNIRYEWHEE	EPNASYNIAA	I I S IWAPVII		ASTSGGM	SGALGREG	RTEGMERSRE	HSEPGAENTY	PSOKGRNR	RESEAKREAE	SPNKRTE AA	KEAQEWNERE 634 527
CalS 17 allele CalS 17 allele CalS 20 allele	1																			420 417 413 419
CalS 20 allele Consensu																				419
Conservatio	ON THE REPORT OF	620	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	640 1		eeo i	8800000000	seo	88888888888	100 B	000000000	800 I	000000000	940	000000000	900 P	000000000	980		1,000
CalS Wt CalS CalS 9 allele CalS 9 allele	A CSERDEDELS		MSS DPS LKUM	CWPEEEEASK	P A CMAAQ	ERPROSDEWK	RECADENMEC	AMMECMESEK	INCNEWN G <mark>E</mark>		KEEEANEAKN	TEEANERMSA		UVSTUKERD A	SKEDNYYELE		MMUNEIKELA	EEGHGNKDLV	PRROLEAGTG	TKPA TPPP 1000 419 418
CalS 9 allele CalS 10 allele CalS 10 allele			MSSOPSOKOM																	419 418
CalS 10 allele CalS 10 allele CalS 12 allele CalS 12 allele CalS 16 allele	1																			418 417 TKPA VEPPP 834
CalS 16 allele CalS 17 allele	1				PEREMAAC															527
CalS 17 allele CalS 20 allele CalS 20 allele	1																			417 413 419
Consensu Tonservatio	10%																			
Cals W																				
CalS CalS 9 allele CalS 9 allele	5																			419 418 419
CalS 10 allele CalS 10 allele CalS 12 allele			SAMDUPINE	ARRESEETN	SEEMEMPRAP		MTPMMSET	<u>YSRNDEDEEN</u>	ED G WSMEY	OKEPDEWON				GOTECRIVEG		AREMASES	GYKANA		RSESSOREAL	418
CalS 12 allele CalS 12 allele CalS 16 allele CalS 16 allele	2	REMERETER		ARRESEETN			MTPMSET	ESENDEDEEN						GOTECRIMEG		QAEEOMASES				417 ADMKETMMAT 1034
CalS 16 altere CalS 17 altere CalS 17 altere CalS 20 altere																				627
CalS 20 allele CalS 20 allele	2																			420
	2																			420 417 413 413 419
Consensu Conservatio	16																			417 413 419
Consensu Conservatio	2 15 0 0 0					1.00 			NONHATTE	GEALOTIONN		1.22 MRNE E E E N	NEGERPETE	9.340 1 0 2 8 6 8 8 7 0 6			RVEANPEKKR		8188178008	420 417 413 419 100 100 100 1400 419
Consensu Conservatio CalS Wt CalS CalS 9	A COTTONES					1.000 2000 A 200 N H 0				1.30 C & A & O T & MAN		1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-					RUEANPERUR			1,400
Conservatio Conservatio CatS W1 / CatS 9 atlete CatS 9 atlete CatS 10 atlete CatS 10 atlete CatS 10 atlete CatS 10 atlete						1,300 1,200		1.20 PAKEO GRP					NHORPPTE				RY LAN PEKYR		REFETRO	1,400 5 K A S C G N S 1400 419
Conservatio CalS W1 CalS CalS CalS 0 allele CalS 10 allele CalS 10 allele CalS 12 allele CalS 12 allele CalS 12 allele CalS 16 allele CalS 16 allele	A COTYONOKOS 5 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	GORMATOTIN GORMATOTIN GORMATOTIN				U E V K A E O NH C		I JOHN STATE					NHOERPRIE NHOERPRIE NHOERPRIE				RUEAN PEKUR RUEAN PEKUR RUEAN PEKUR			1,400 5 K A S C G N S 1400 419
Consensus Consensus Cats VI, Cats Cats 9 altete Cats 10 altete Cats 10 altete Cats 10 altete Cats 10 altete Cats 12 altete Cats 20 altete													NHO RPPTER NHO RPPTER				RY BANPEKER RY BANPEKER			
Consensus Consensus CatS WI, CatS CatS CatS CatS 9 altete CatS 10 altete CatS 11 altete CatS 11 altete CatS 11 altete CatS 11 altete CatS 12 altete CatS 20 altete CatS 20 altete CatS 20 altete CatS 20 altete CatS 20 altete		G BRHATDIEN							NONHA III TR											
Conservatio Conservatio Calls VI Calls Calls Calls Calls Calls 0 altele Calls 10 altele Calls 10 altele Calls 10 altele Calls 11 altele Calls 11 altele Calls 11 altele Calls 11 altele Calls 11 altele Calls 12 altele Calls 20 altele Calls 20 altele Conservatio		GERHATE IN															RUEANPEKUR		R	1400 1400
Conservation Calls W1, Calls Calls Calls Calls Calls Galls Calls Galls Calls 10 altele Calls 10 altele Calls 10 altele Calls 10 altele Calls 17 altele Calls 17 altele Calls 17 altele Calls 17 altele Calls 17 altele Calls 17 altele Calls 20 altele Calls 20 altele Calls 20 altele Calls 20 altele Calls 20 altele Calls 20 altele		GERHATE IN															RUEANPEKUR		R	
Conservatio Conservatio Castal VAI, Castal So Justele Castal So Justele Casta So Justele																	RUBANPEKUR RUBANPEKUR RUBANPEKUR			
Conserva; Conservation Calls Writ, Calls Writ, Calls Work, Calls To Mathe Calls Writ, Calls Writ, Calls Writ, Calls Writ, Calls To Mathe Calls To Mathe Call To Mathe Calls																	R Y LAN PER YR RY LAN PER YR RY LAN PER YR RY LAN PER YR RY LAN YR TH		REFERENCE	
Conserva; Call S Wr, Call S Wr, Call S Wr, Call S Walks Call S O allele Call S Wr, Call S Wr, Call S Wr, Call S Wr, Call S Wr, Call S O allele Call S O allele																	R Y LAN PER YR RY LAN PER YR RY LAN PER YR RY LAN PER YR RY LAN YR TH		REFERENCE	
Conserva; Conservation Calls Writ, Calls Writ, Calls Work, Calls To Mathe Calls Writ, Calls Writ, Calls Writ, Calls Writ, Calls To Mathe Calls To Mathe Call To Mathe Calls	A CONTRACTOR CONTRACTO																R Y LAN PER YR RY LAN PER YR RY LAN PER YR RY LAN PER YR RY LAN YR TH		REFERENCE	
Conservation Carlls Writ, San S & Carlls Writ, San S & Carlls & San S & Carlls Writ, San S & Carlls & San S																				Important Difference 1,400 Important Difference 410 Important Differe 410
Conservation Call Style Call Styl																				
Conservation Call Style Call Styl																				
Conservation Calls Writ, South States Calls Writ, South States Calls Writ, South States Calls Writ, Calls Writ, Ca																				
Conservation Carlls WM, Santo S Carlls S Carlls S Carlls S Carlls																				
Conservation Carlls WM, Carlls WM, Carlls 9 Jacks Carlls 9 Jacks Carlls 9 Jacks Carlls 9 Jacks Carlls 9 Jacks Carlls 10 Jacks																				1400 1400 419 419 419 419 419 419 419 419
Conservation Calls Writ, Calls Writ, Call																				Image: second
Conservation Cast Swy, Cast Swy, Cas																				1400 1400
Conservation Cast Swy, Cast Swy, Cas																				1400 1400
Conservation Cast Styring Cast																				1400 1400
Conservation Call Styri, Call																				1400 1400
Conservation Cast Switz, Cast																				1400 1400

418