Supplementary Materials

Companion to: A genus-wide pan-NLR atlas of Citrullus

Cheng Yu & Lv Litang (BMC Plant Biology, 2026)

FIGURE S1

FigureS1_Per_accession_NLR_bar

Figure S1. Per-accession NLR total count and subclass bar plot (n = 18 accessions, 796 NLRs).

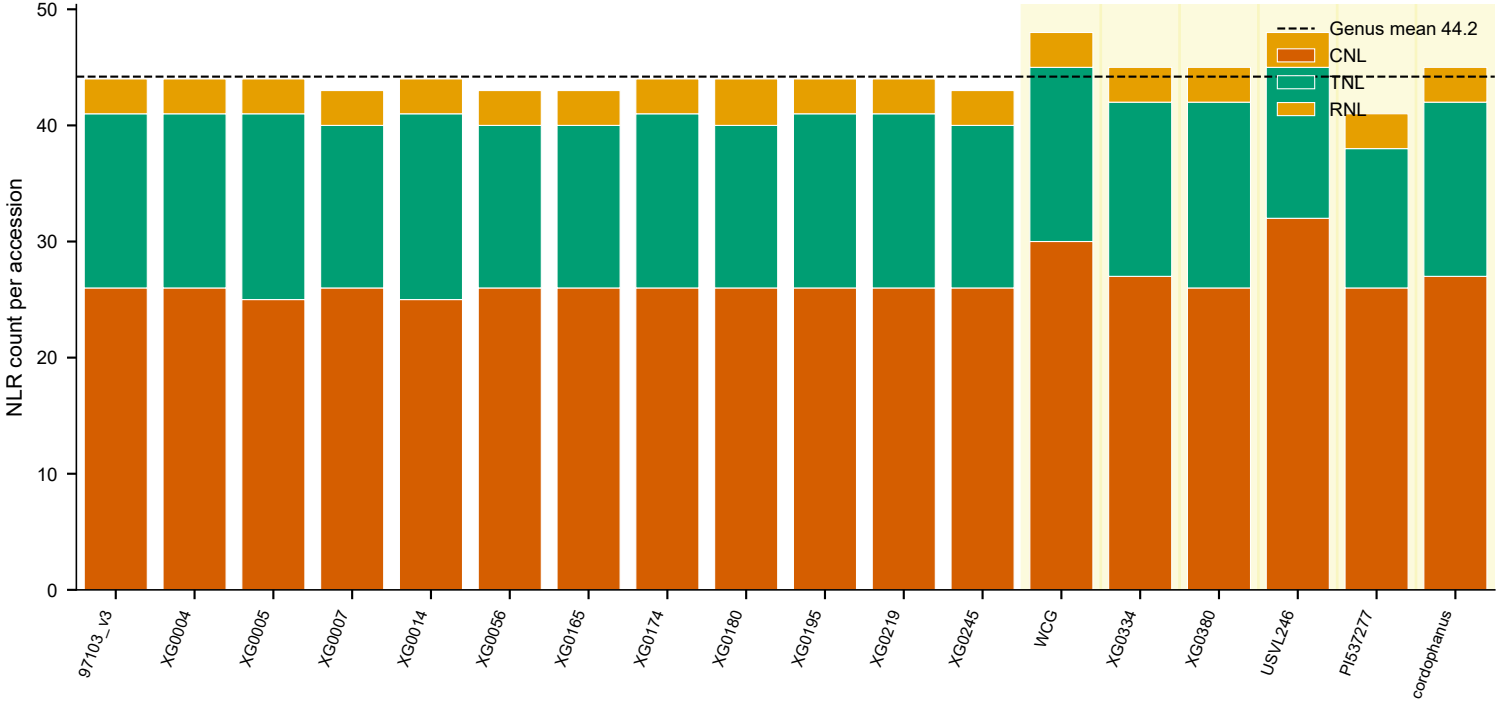


FIGURE S2

FigureS2_Phylogeny_rooted_Arabidopsis

Figure S2. Maximum-likelihood phylogeny of 796 watermelon NLRs (FastTree LG+Γ, 18 accessions).


FIGURE S3

FigureS3_CNL_tree

Figure S3. CNL-only maximum-likelihood phylogeny (478 CNLs, FastTree LG+Γ).

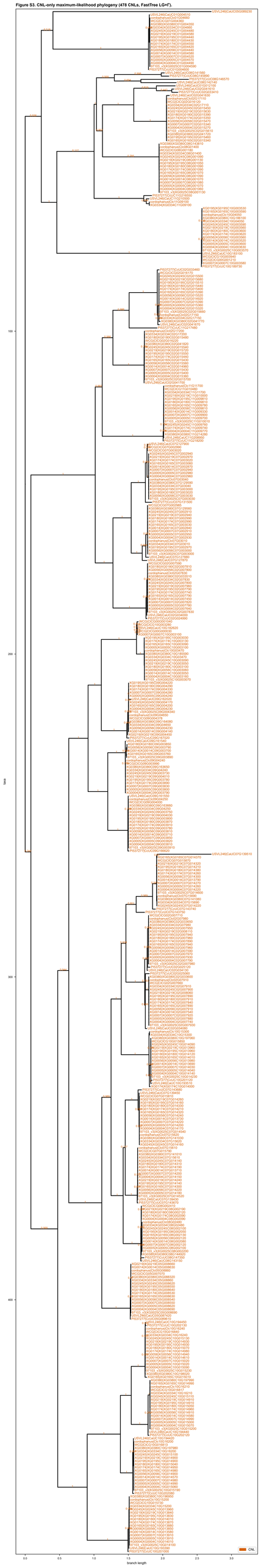


FIGURE S4

FigureS4_IQ_TREE_validation

Figure S4. IQ-TREE 2 NL tree (310 tips, 1 000 ultrafast bootstrap, ModelFinder BIC = LG+G4).

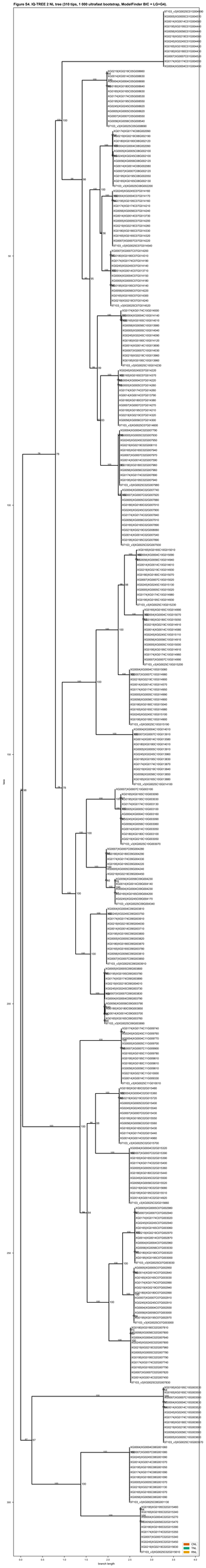


FIGURE S5

FigureS5_Per_accession_TE_near

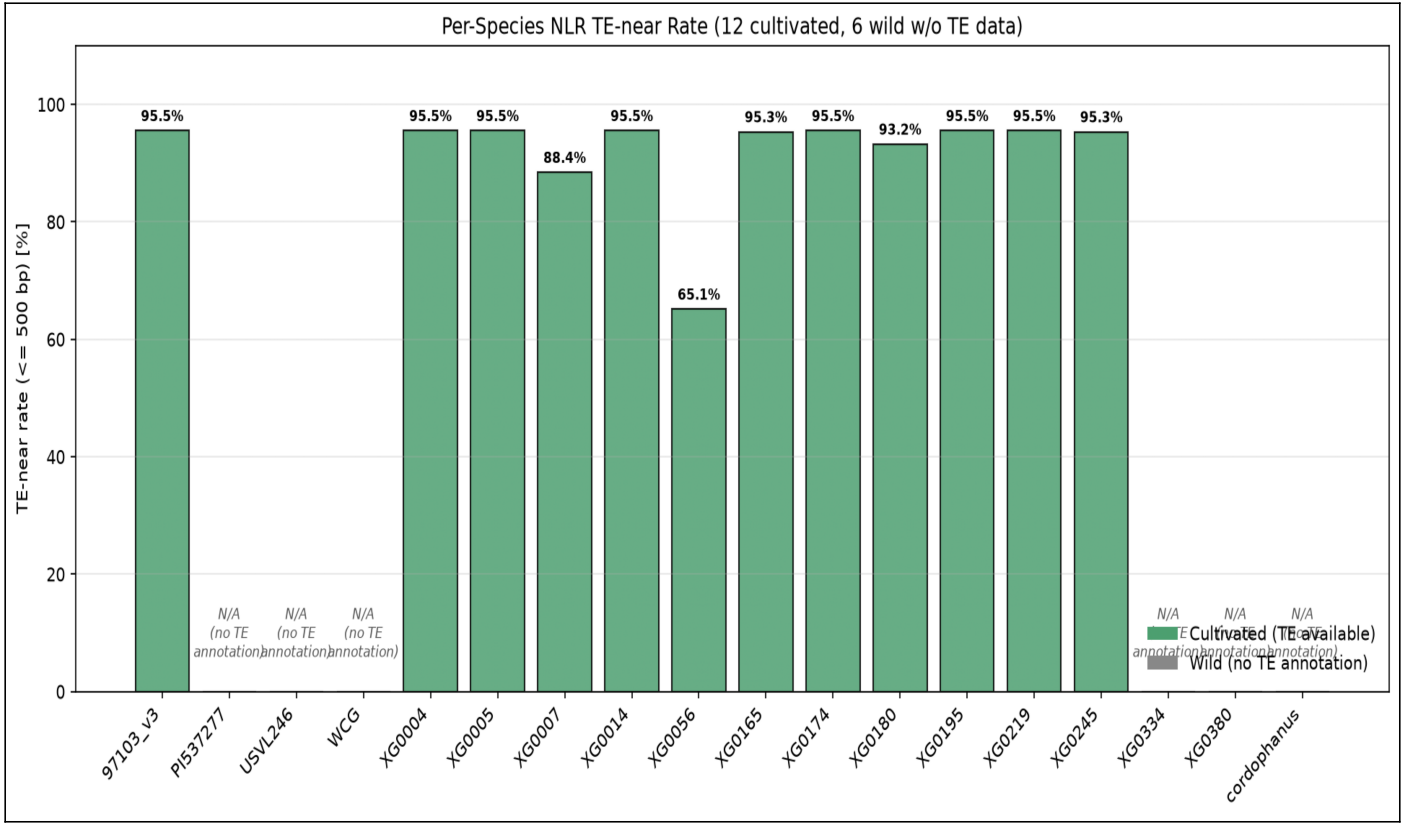

Per-Species NLR TE-near Rate (12 cultivated, 6 wild w/o TE data)
TE-near rate (<= 500 bp) [%]
0
20
40
60
80
100
95.5%
N/A (no TE annotation)
N/A (no TE annotation)
N/A (no TE annotation)
95.5%
95.5%
88.4%
95.5%
65.1%
95.3%
95.5%
93.2%
95.5%
95.5%
95.3%
N/A (no TE annotation)
N/A (no TE annotation)
N/A (no TE annotation)
Cultivated (TE available)
Wild (no TE annotation)
97103_v3
PI537277
USVL246
WCG
XG0004
XG0005
XG0007
XG0014
XG0056
XG0165
XG0174
XG0180
XG0195
XG0219
XG0245
XG0334
XG0380
cordophanus

FIGURE S6

FigureS6_ID_NLR_heatmap

Figure S6. Per-accession integrated-domain profile (58 ID-NLRs × 18 accessions heat-map).

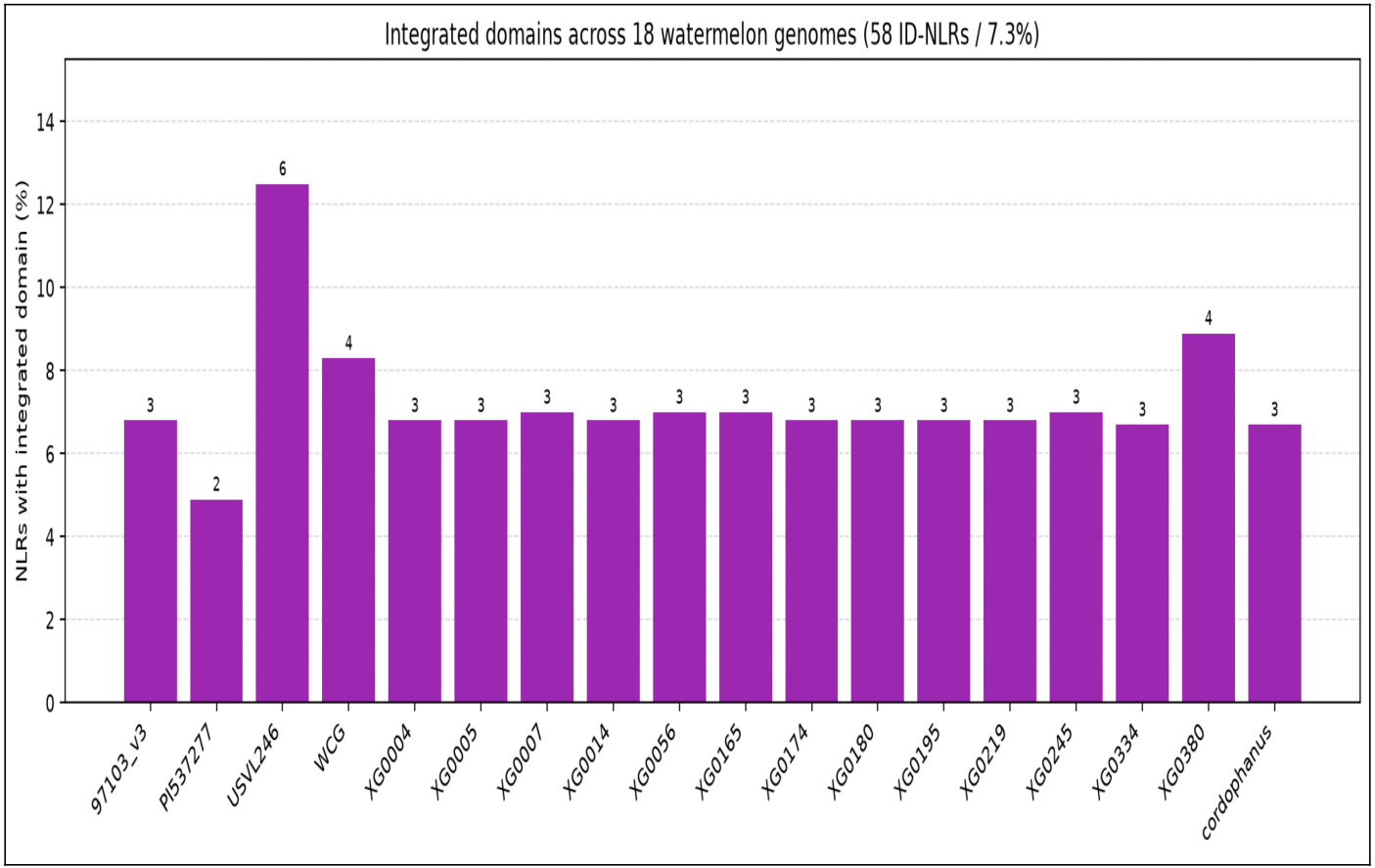


FIGURE S7

FigureS7_OGG_size_dist

Figure S7. OGG size distribution histogram (n = 718 OGGs across 18 accessions).

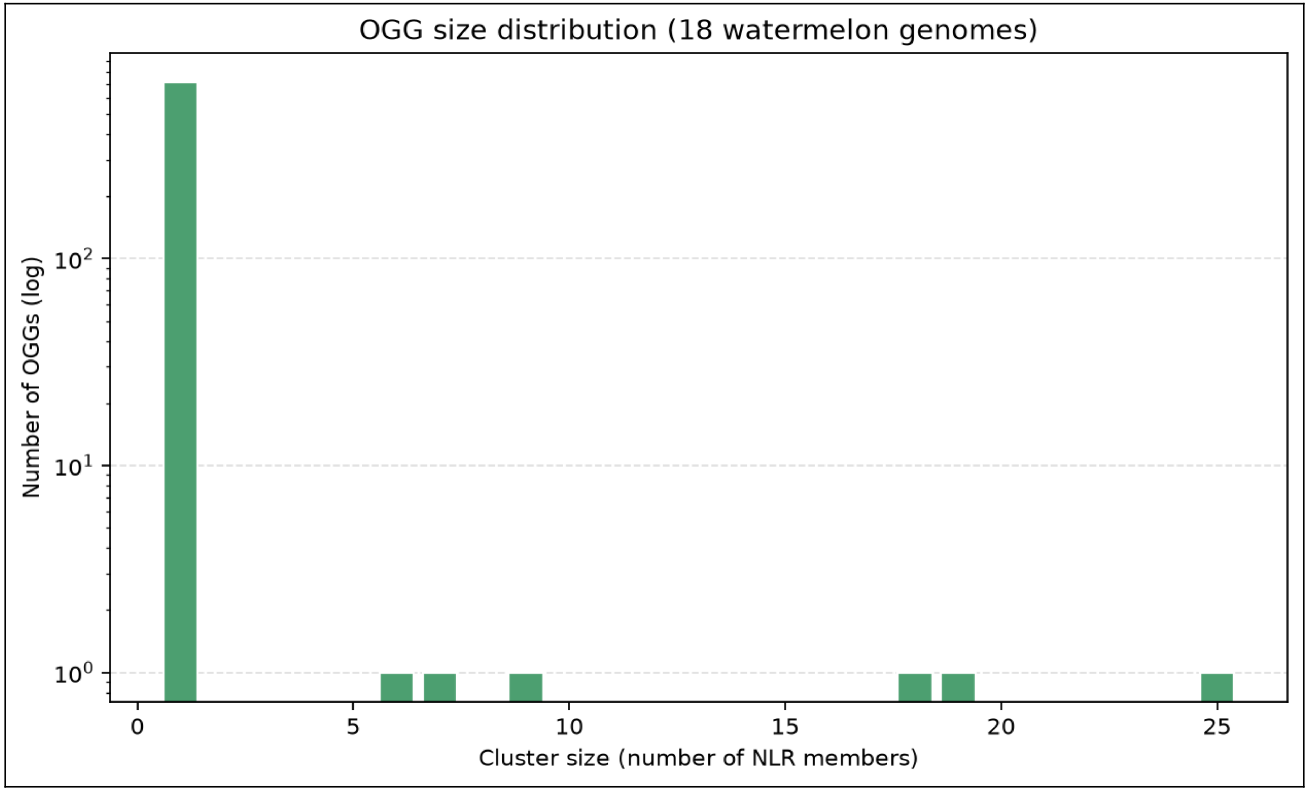


FIGURE S8

FigureS8_Per_chromosome_class

Figure S8. Per-chromosome NLR subclass distribution for the 18 accessions (stacked bar).

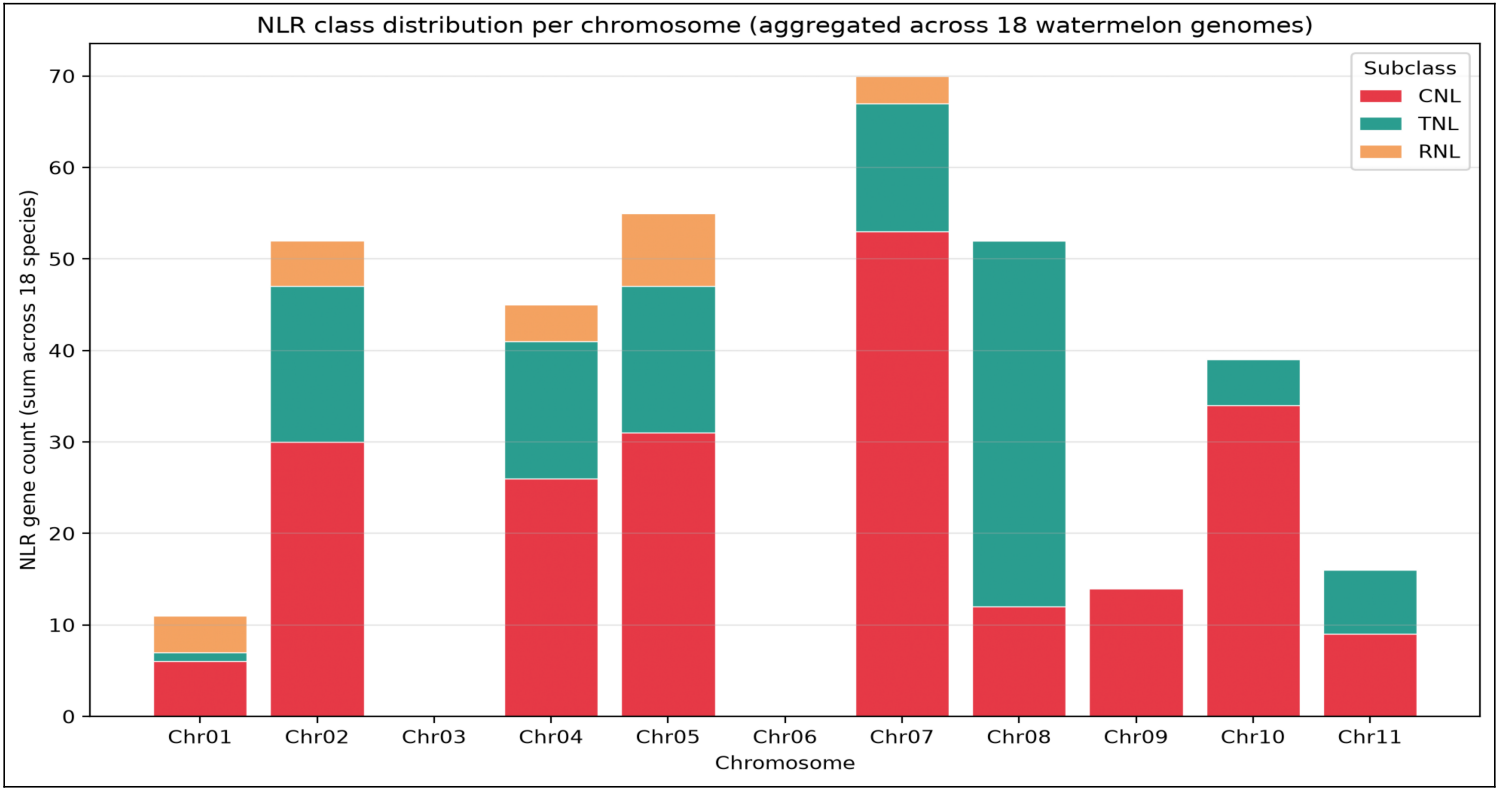


FIGURE S9

FigureS9_NLR_density

Figure S9. NLR density (NLRs/Mb) per chromosome for the 12 cultivated accessions.

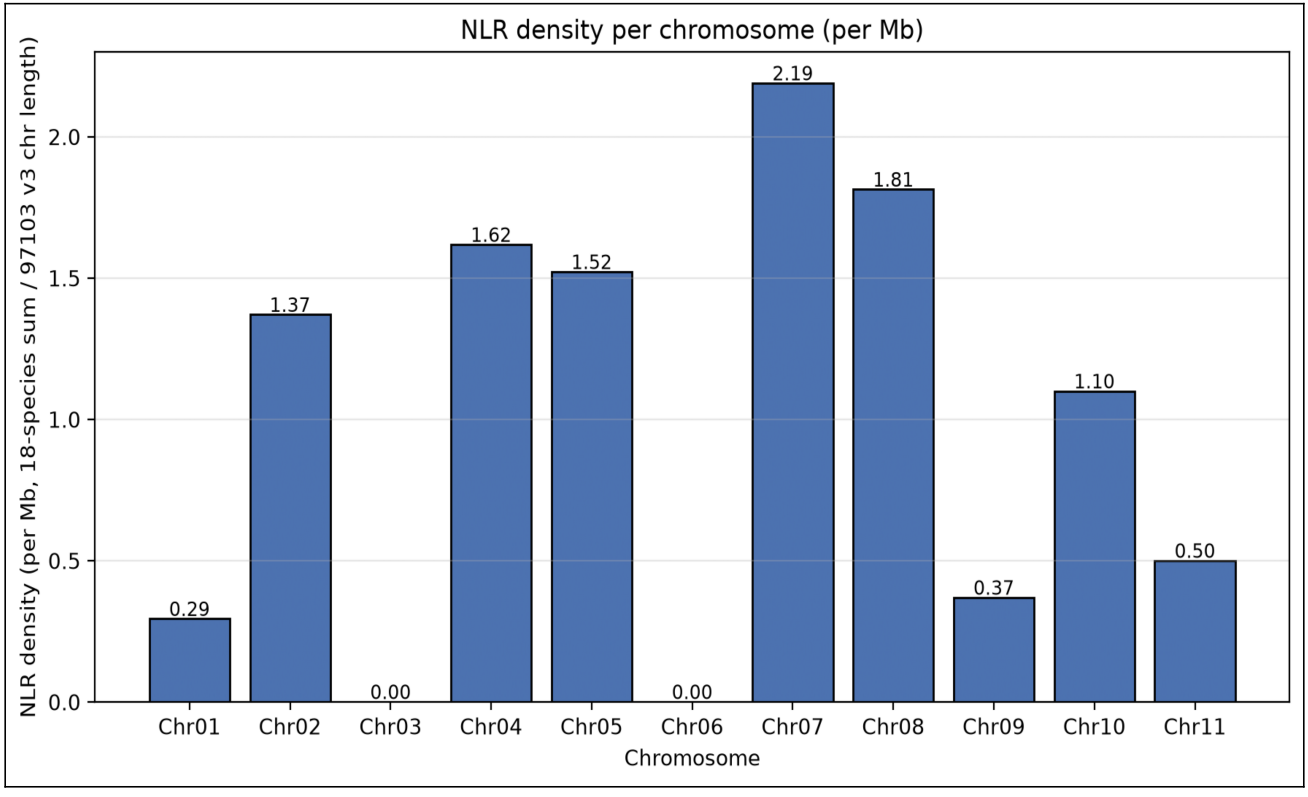


FIGURE S10

FigureS10_dN_vs_dS_linear

Figure S10. dN-vs-dS scatter (linear scale) for paralogous vs orthologous NLR pairs.

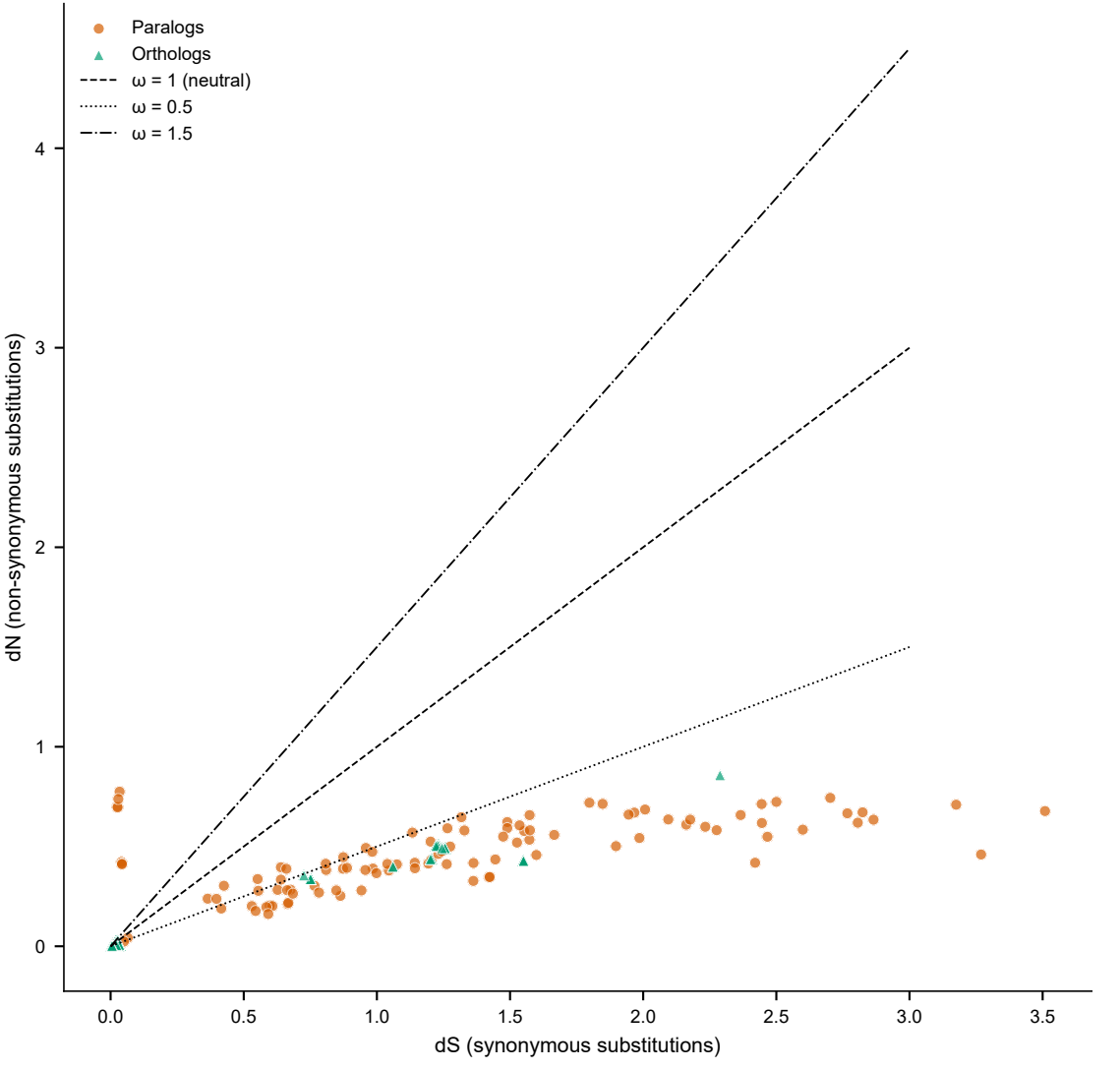


FIGURE S11

FigureS11_omega_boxplot

Figure S11. Per-subclass ω distribution (box-plot, paralog + ortholog layers).

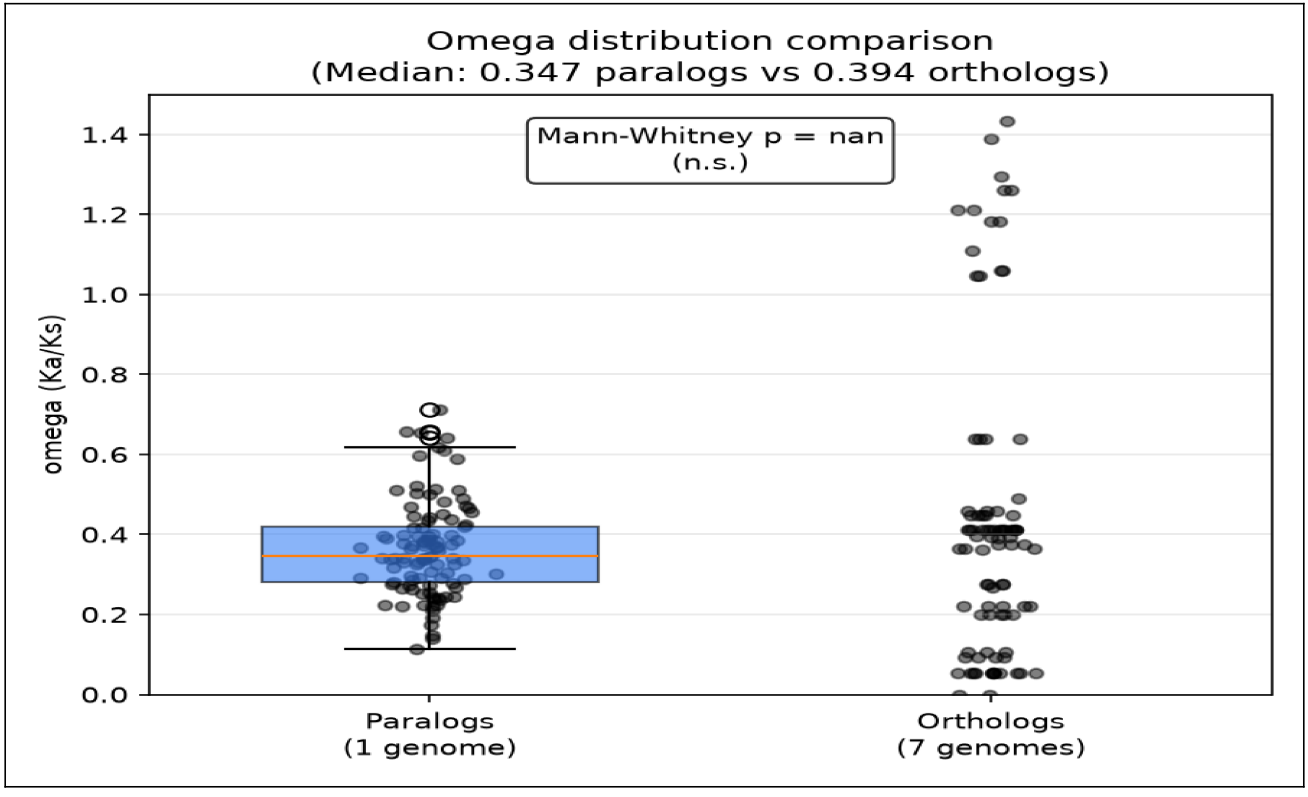


FIGURE S12

FigureS12_Circos_overlay

Figure S12. Circos plot overlay of the 18 accessions on the 97103 v3 reference coordinate system, highlighting genus-conserved NLR hotspots.

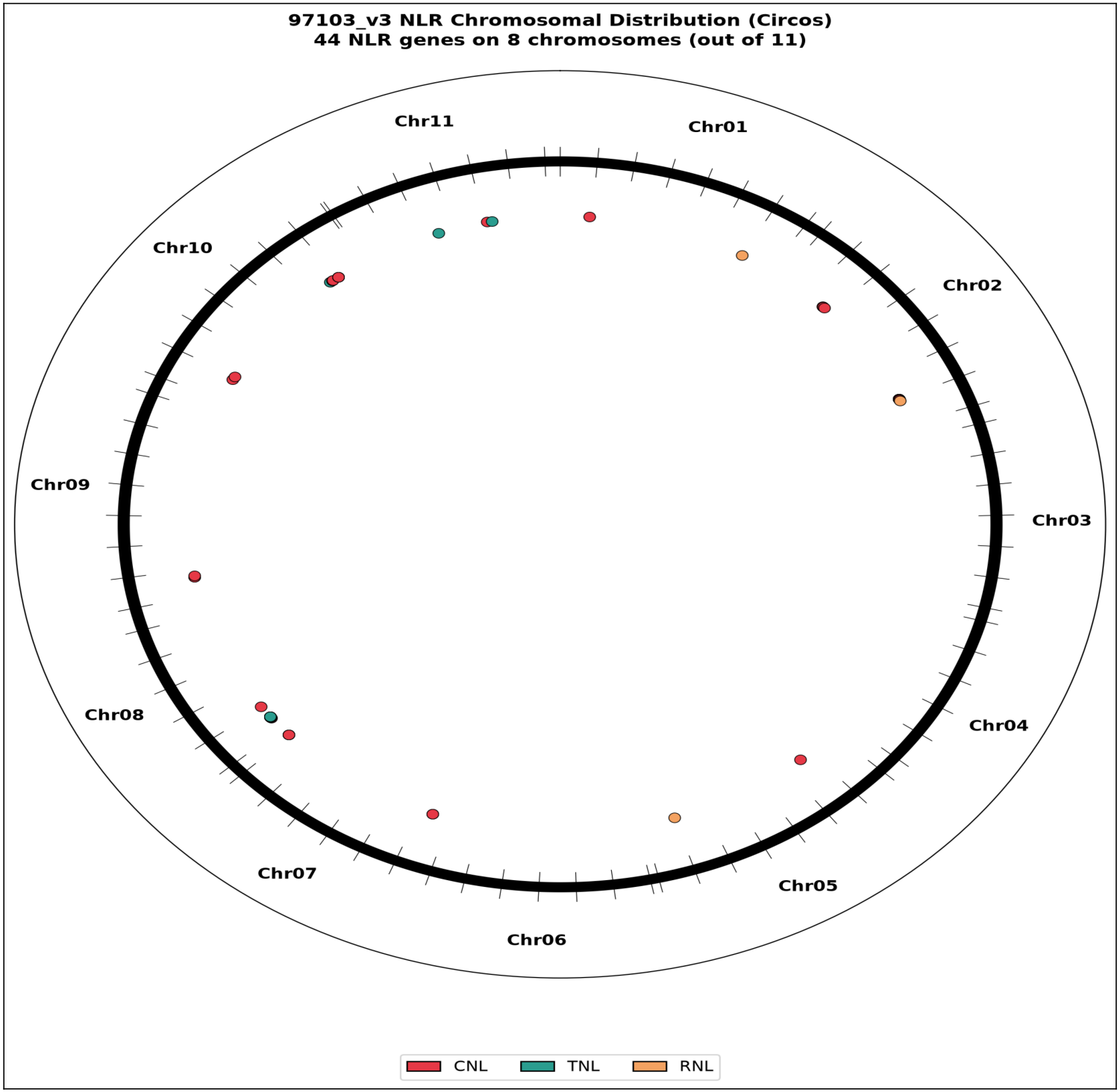


TABLE S1

TableS1_Accession_passport

Table S1. Passport information for the 18 *Citrullus* accessions.

Genome source, geographic origin, assembly status, and RepeatMasker-track availability for the 18 accessions used in this study. Source: `results_preview/metadata/accession_passport.tsv`.

accession	species subspecies	origin	note	accession id	category	assembly level	assembly year	source
97103_v3	C. lanatus subsp. vulgaris	China	Reference genome (Guo et al. 2013)	97103	Cultivar	Chromosome-level	1998	Public
XG0004	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0005	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0007	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0014	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0056	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0165	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0174	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0180	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0195	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0219	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
XG0245	C. lanatus subsp. vulgaris	China	Resequenced cultivar (CuGenDB v2)	—	Cultivar	Chromosome-level	2019	Public (CuGenDB v2)
PI537277	C. mucosospermus (egusi)	West Africa	FON-resistant, egusi-type (Williams 2016)	PI 537277	Wild	Chromosome-level	2016	Public (CuGenDB v2)
USVL246	C. mucosospermus	Americas (Florida)	Anthracnose-resistant, ARS-USDA core collection	USVL 246	Wild	Chromosome-level	2019	Public (CuGenDB v2)
WCG	C. lanatus subsp. cordophanus	Sudan (wild progenitor)	Wild progenitor of watermelon (Paris 2015)	PI 482252	Wild progenitor	Chromosome-level	2019	Public (CuGenDB v2)
XG0334	C. lanatus (African cultivar)	Africa	FON-resistant African cultivar (CuGenDB v2)	—	Wild (African landrace)	Chromosome-level	2019	Public (CuGenDB v2)
XG0380	C. lanatus (African cultivar)	Africa	African cultivar (CuGenDB v2)	—	Wild (African landrace)	Chromosome-level	2019	Public (CuGenDB v2)
cordophanus	C. lanatus subsp. cordophanus	Sudan (wild)	Wild-type (CuGenDB v2)	PI 482252 (scaffold-level)	Wild	Scaffold-level (31 scaffolds: 11 pseudo-chromosomes + 20 contigs)	2019	Public (CuGenDB v2)

TABLE S2

TableS2_NLR_catalog_per_accession

Table S2. Per-accession NLR catalog (796 rows).

Gene ID, subclass, NB-ARC motif hits (TIR, RPW8, LRR) for all 796 NLRs identified in the 18 Citrullus accessions. Source: `results_preview/all_classification_18species.tsv`.

species	gene id	subclass	has tir	has rpw8	has lrr
97103_v3	XG0025C01G004590.1	CNL	False	False	False
97103_v3	XG0025C01G016260.1	RNL	False	True	False
97103_v3	XG0025C02G007830.1	CNL	False	False	False
97103_v3	XG0025C02G007930.1	CNL	False	False	False
97103_v3	XG0025C02G007980.1	CNL	False	False	False
97103_v3	XG0025C02G015480.1	TNL	True	False	True
97103_v3	XG0025C02G015570.1	TNL	True	False	True
97103_v3	XG0025C02G015580.1	TNL	True	False	True
97103_v3	XG0025C02G015590.1	TNL	True	False	False
97103_v3	XG0025C02G015610.1	CNL	False	False	True
97103_v3	XG0025C02G015660.1	CNL	False	False	True
97103_v3	XG0025C02G015700.1	CNL	False	False	False
97103_v3	XG0025C02G015820.1	RNL	False	True	False
97103_v3	XG0025C05G008690.1	CNL	False	False	True
97103_v3	XG0025C05G020770.1	RNL	False	True	False
97103_v3	XG0025C07G003000.1	CNL	False	False	False
97103_v3	XG0025C07G003030.1	CNL	False	False	False
97103_v3	XG0025C07G014520.1	CNL	False	False	False
97103_v3	XG0025C07G014540.1	CNL	False	False	False
97103_v3	XG0025C07G014600.1	CNL	False	False	False
97103_v3	XG0025C08G001130.1	CNL	False	False	True
97103_v3	XG0025C08G001220.1	TNL	True	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
97103_v3	XG0025C08G001240.1	TNL	True	False	True
97103_v3	XG0025C08G001270.1	TNL	True	False	True
97103_v3	XG0025C08G001280.1	TNL	True	False	True
97103_v3	XG0025C08G001290.1	TNL	True	False	True
97103_v3	XG0025C08G001300.1	TNL	True	False	True
97103_v3	XG0025C08G001310.1	TNL	True	False	False
97103_v3	XG0025C08G001320.1	TNL	True	False	False
97103_v3	XG0025C08G002200.1	CNL	False	False	False
97103_v3	XG0025C09G003890.1	CNL	False	False	True
97103_v3	XG0025C09G003910.1	CNL	False	False	True
97103_v3	XG0025C09G004340.1	CNL	False	False	False
97103_v3	XG0025C10G003070.1	CNL	False	False	False
97103_v3	XG0025C10G003570.1	CNL	False	False	False
97103_v3	XG0025C10G013650.1	TNL	True	False	True
97103_v3	XG0025C10G014100.1	CNL	False	False	True
97103_v3	XG0025C10G014230.1	CNL	False	False	False
97103_v3	XG0025C10G015190.1	CNL	False	False	True
97103_v3	XG0025C10G015200.1	CNL	False	False	False
97103_v3	XG0025C10G015230.1	CNL	False	False	True
97103_v3	XG0025C11G008480.1	TNL	True	False	True
97103_v3	XG0025C11G010010.1	CNL	False	False	True
97103_v3	XG0025C11G010170.1	TNL	True	False	True
XG0004	XG0004C01G004490.1	CNL	False	False	False
XG0004	XG0004C01G015770.1	RNL	False	True	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0004	XG0004C02G007640.1	CNL	False	False	False
XG0004	XG0004C02G007740.1	CNL	False	False	False
XG0004	XG0004C02G007790.1	CNL	False	False	False
XG0004	XG0004C02G015150.1	TNL	True	False	True
XG0004	XG0004C02G015240.1	TNL	True	False	True
XG0004	XG0004C02G015250.1	TNL	True	False	True
XG0004	XG0004C02G015260.1	TNL	True	False	True
XG0004	XG0004C02G015270.1	CNL	False	False	True
XG0004	XG0004C02G015320.1	CNL	False	False	True
XG0004	XG0004C02G015360.1	CNL	False	False	False
XG0004	XG0004C02G015480.1	RNL	False	True	False
XG0004	XG0004C05G008690.1	CNL	False	False	True
XG0004	XG0004C05G020550.1	RNL	False	True	False
XG0004	XG0004C07G002930.1	CNL	False	False	False
XG0004	XG0004C07G002960.1	CNL	False	False	False
XG0004	XG0004C07G014150.1	CNL	False	False	False
XG0004	XG0004C07G014170.1	CNL	False	False	False
XG0004	XG0004C07G014220.1	CNL	False	False	False
XG0004	XG0004C08G001060.1	CNL	False	False	True
XG0004	XG0004C08G001140.1	TNL	True	False	True
XG0004	XG0004C08G001160.1	TNL	True	False	True
XG0004	XG0004C08G001180.1	TNL	True	False	True
XG0004	XG0004C08G001190.1	TNL	True	False	True
XG0004	XG0004C08G001200.1	TNL	True	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0004	XG0004C08G001210.1	TNL	True	False	True
XG0004	XG0004C08G001220.1	TNL	True	False	False
XG0004	XG0004C08G001230.1	TNL	True	False	False
XG0004	XG0004C08G002090.1	CNL	False	False	False
XG0004	XG0004C09G003790.1	CNL	False	False	True
XG0004	XG0004C09G003810.1	CNL	False	False	True
XG0004	XG0004C09G004230.1	CNL	False	False	False
XG0004	XG0004C10G003160.1	CNL	False	False	False
XG0004	XG0004C10G003630.1	CNL	False	False	False
XG0004	XG0004C10G013560.1	TNL	True	False	True
XG0004	XG0004C10G014010.1	CNL	False	False	True
XG0004	XG0004C10G014140.1	CNL	False	False	False
XG0004	XG0004C10G015060.1	CNL	False	False	True
XG0004	XG0004C10G015070.1	CNL	False	False	False
XG0004	XG0004C10G015090.1	CNL	False	False	True
XG0004	XG0004C11G008240.1	TNL	True	False	True
XG0004	XG0004C11G009770.1	CNL	False	False	True
XG0004	XG0004C11G009950.1	TNL	True	False	True
XG0005	XG0005C01G004570.1	CNL	False	False	False
XG0005	XG0005C01G015420.1	RNL	False	True	False
XG0005	XG0005C02G007780.1	CNL	False	False	False
XG0005	XG0005C02G007880.1	CNL	False	False	False
XG0005	XG0005C02G007930.1	CNL	False	False	False
XG0005	XG0005C02G015190.1	TNL	True	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0005	XG0005C02G015280.1	TNL	True	False	True
XG0005	XG0005C02G015300.1	TNL	True	False	True
XG0005	XG0005C02G015310.1	TNL	True	False	True
XG0005	XG0005C02G015320.1	TNL	True	False	True
XG0005	XG0005C02G015360.1	CNL	False	False	True
XG0005	XG0005C02G015400.1	CNL	False	False	False
XG0005	XG0005C02G015510.1	RNL	False	True	False
XG0005	XG0005C05G008620.1	CNL	False	False	True
XG0005	XG0005C05G020340.1	RNL	False	True	False
XG0005	XG0005C07G002950.1	CNL	False	False	False
XG0005	XG0005C07G002980.1	CNL	False	False	False
XG0005	XG0005C07G014180.1	CNL	False	False	False
XG0005	XG0005C07G014200.1	CNL	False	False	False
XG0005	XG0005C07G014260.1	CNL	False	False	False
XG0005	XG0005C08G001070.1	CNL	False	False	True
XG0005	XG0005C08G001140.1	TNL	True	False	True
XG0005	XG0005C08G001160.1	TNL	True	False	True
XG0005	XG0005C08G001190.1	TNL	True	False	True
XG0005	XG0005C08G001200.1	TNL	True	False	True
XG0005	XG0005C08G001210.1	TNL	True	False	True
XG0005	XG0005C08G001220.1	TNL	True	False	True
XG0005	XG0005C08G001230.1	TNL	True	False	False
XG0005	XG0005C08G001240.1	TNL	True	False	False
XG0005	XG0005C08G002100.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0005	XG0005C09G003800.1	CNL	False	False	True
XG0005	XG0005C09G003820.1	CNL	False	False	True
XG0005	XG0005C09G004240.1	CNL	False	False	False
XG0005	XG0005C10G003100.1	CNL	False	False	False
XG0005	XG0005C10G003600.1	CNL	False	False	False
XG0005	XG0005C10G013470.1	TNL	True	False	True
XG0005	XG0005C10G013910.1	CNL	False	False	True
XG0005	XG0005C10G014040.1	CNL	False	False	False
XG0005	XG0005C10G014990.1	CNL	False	False	True
XG0005	XG0005C10G015000.1	CNL	False	False	False
XG0005	XG0005C10G015020.1	CNL	False	False	True
XG0005	XG0005C11G008230.1	TNL	True	False	True
XG0005	XG0005C11G009700.1	CNL	False	False	True
XG0005	XG0005C11G009870.1	TNL	True	False	True
XG0007	XG0007C01G004520.1	CNL	False	False	False
XG0007	XG0007C01G015840.1	RNL	False	True	False
XG0007	XG0007C02G007820.1	CNL	False	False	False
XG0007	XG0007C02G007920.1	CNL	False	False	False
XG0007	XG0007C02G007970.1	CNL	False	False	False
XG0007	XG0007C02G015300.1	TNL	True	False	True
XG0007	XG0007C02G015310.1	TNL	True	False	True
XG0007	XG0007C02G015320.1	TNL	True	False	False
XG0007	XG0007C02G015340.1	CNL	False	False	True
XG0007	XG0007C02G015390.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0007	XG0007C02G015430.1	CNL	False	False	False
XG0007	XG0007C02G015550.1	RNL	False	True	False
XG0007	XG0007C05G008550.1	CNL	False	False	True
XG0007	XG0007C05G020370.1	RNL	False	True	False
XG0007	XG0007C07G002910.1	CNL	False	False	False
XG0007	XG0007C07G002940.1	CNL	False	False	False
XG0007	XG0007C07G014200.1	CNL	False	False	False
XG0007	XG0007C07G014220.1	CNL	False	False	False
XG0007	XG0007C07G014270.1	CNL	False	False	False
XG0007	XG0007C08G001080.1	CNL	False	False	True
XG0007	XG0007C08G001150.1	TNL	True	False	True
XG0007	XG0007C08G001170.1	TNL	True	False	True
XG0007	XG0007C08G001190.1	TNL	True	False	True
XG0007	XG0007C08G001200.1	TNL	True	False	True
XG0007	XG0007C08G001210.1	TNL	True	False	True
XG0007	XG0007C08G001220.1	TNL	True	False	True
XG0007	XG0007C08G001230.1	TNL	True	False	False
XG0007	XG0007C08G001240.1	TNL	True	False	False
XG0007	XG0007C08G002120.1	CNL	False	False	False
XG0007	XG0007C09G003830.1	CNL	False	False	True
XG0007	XG0007C09G003850.1	CNL	False	False	True
XG0007	XG0007C09G004280.1	CNL	False	False	False
XG0007	XG0007C10G003100.1	CNL	False	False	True
XG0007	XG0007C10G003580.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0007	XG0007C10G013470.1	TNL	True	False	True
XG0007	XG0007C10G013910.1	CNL	False	False	True
XG0007	XG0007C10G014030.1	CNL	False	False	False
XG0007	XG0007C10G014980.1	CNL	False	False	True
XG0007	XG0007C10G014990.1	CNL	False	False	False
XG0007	XG0007C10G015020.1	CNL	False	False	True
XG0007	XG0007C11G008430.1	TNL	True	False	True
XG0007	XG0007C11G009900.1	CNL	False	False	True
XG0007	XG0007C11G010060.1	TNL	True	False	True
XG0014	XG0014C01G004580.1	CNL	False	False	False
XG0014	XG0014C01G015900.1	RNL	False	True	False
XG0014	XG0014C02G007450.1	CNL	False	False	False
XG0014	XG0014C02G007540.1	CNL	False	False	False
XG0014	XG0014C02G007590.1	CNL	False	False	False
XG0014	XG0014C02G014760.1	TNL	True	False	True
XG0014	XG0014C02G014840.1	TNL	True	False	True
XG0014	XG0014C02G014860.1	TNL	True	False	True
XG0014	XG0014C02G014870.1	TNL	True	False	True
XG0014	XG0014C02G014880.1	TNL	True	False	True
XG0014	XG0014C02G014920.1	CNL	False	False	True
XG0014	XG0014C02G014960.1	CNL	False	False	False
XG0014	XG0014C02G015070.1	RNL	False	True	False
XG0014	XG0014C05G008630.1	CNL	False	False	True
XG0014	XG0014C05G020200.1	RNL	False	True	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0014	XG0014C07G002840.1	CNL	False	False	False
XG0014	XG0014C07G002870.1	CNL	False	False	False
XG0014	XG0014C07G013710.1	CNL	False	False	False
XG0014	XG0014C07G013730.1	CNL	False	False	False
XG0014	XG0014C07G013790.1	CNL	False	False	False
XG0014	XG0014C08G001070.1	CNL	False	False	True
XG0014	XG0014C08G001140.1	TNL	True	False	True
XG0014	XG0014C08G001160.1	TNL	True	False	True
XG0014	XG0014C08G001170.1	TNL	True	False	True
XG0014	XG0014C08G001180.1	TNL	True	False	True
XG0014	XG0014C08G001190.1	TNL	True	False	True
XG0014	XG0014C08G001200.1	TNL	True	False	True
XG0014	XG0014C08G001210.1	TNL	True	False	False
XG0014	XG0014C08G001220.1	TNL	True	False	False
XG0014	XG0014C08G002080.1	CNL	False	False	False
XG0014	XG0014C09G003700.1	CNL	False	False	True
XG0014	XG0014C09G003710.1	CNL	False	False	True
XG0014	XG0014C09G004140.1	CNL	False	False	False
XG0014	XG0014C10G003050.1	CNL	False	False	False
XG0014	XG0014C10G003520.1	CNL	False	False	False
XG0014	XG0014C10G013140.1	TNL	True	False	True
XG0014	XG0014C10G013580.1	CNL	False	False	True
XG0014	XG0014C10G013690.1	CNL	False	False	False
XG0014	XG0014C10G014570.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0014	XG0014C10G014580.1	CNL	False	False	False
XG0014	XG0014C10G014610.1	CNL	False	False	True
XG0014	XG0014C11G007960.1	TNL	True	False	True
XG0014	XG0014C11G009330.1	CNL	False	False	True
XG0014	XG0014C11G009500.1	TNL	True	False	True
XG0056	XG0056C01G004440.1	CNL	False	False	False
XG0056	XG0056C01G015770.1	RNL	False	True	False
XG0056	XG0056C02G007800.1	CNL	False	False	False
XG0056	XG0056C02G007910.1	CNL	False	False	False
XG0056	XG0056C02G007960.1	CNL	False	False	False
XG0056	XG0056C02G015430.1	TNL	True	False	True
XG0056	XG0056C02G015440.1	TNL	True	False	True
XG0056	XG0056C02G015450.1	TNL	True	False	False
XG0056	XG0056C02G015470.1	CNL	False	False	True
XG0056	XG0056C02G015520.1	CNL	False	False	True
XG0056	XG0056C02G015560.1	CNL	False	False	False
XG0056	XG0056C02G015670.1	RNL	False	True	False
XG0056	XG0056C05G008540.1	CNL	False	False	True
XG0056	XG0056C05G020470.1	RNL	False	True	False
XG0056	XG0056C07G003000.1	CNL	False	False	False
XG0056	XG0056C07G003030.1	CNL	False	False	False
XG0056	XG0056C07G014220.1	CNL	False	False	False
XG0056	XG0056C07G014240.1	CNL	False	False	False
XG0056	XG0056C07G014300.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0056	XG0056C08G001090.1	CNL	False	False	True
XG0056	XG0056C08G001170.1	TNL	True	False	True
XG0056	XG0056C08G001190.1	TNL	True	False	True
XG0056	XG0056C08G001220.1	TNL	True	False	True
XG0056	XG0056C08G001230.1	TNL	True	False	True
XG0056	XG0056C08G001240.1	TNL	True	False	True
XG0056	XG0056C08G001250.1	TNL	True	False	True
XG0056	XG0056C08G001260.1	TNL	True	False	False
XG0056	XG0056C08G001270.1	TNL	True	False	False
XG0056	XG0056C08G002120.1	CNL	False	False	False
XG0056	XG0056C09G003790.1	CNL	False	False	True
XG0056	XG0056C09G003810.1	CNL	False	False	True
XG0056	XG0056C09G004230.1	CNL	False	False	False
XG0056	XG0056C10G003060.1	CNL	False	False	False
XG0056	XG0056C10G003560.1	CNL	False	False	False
XG0056	XG0056C10G013410.1	TNL	True	False	True
XG0056	XG0056C10G013850.1	CNL	False	False	True
XG0056	XG0056C10G013980.1	CNL	False	False	False
XG0056	XG0056C10G014900.1	CNL	False	False	True
XG0056	XG0056C10G014910.1	CNL	False	False	False
XG0056	XG0056C10G014940.1	CNL	False	False	True
XG0056	XG0056C11G008300.1	TNL	True	False	True
XG0056	XG0056C11G009810.1	CNL	False	False	True
XG0056	XG0056C11G009970.1	TNL	True	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0165	XG0165C01G004420.1	CNL	False	False	False
XG0165	XG0165C01G015610.1	RNL	False	True	False
XG0165	XG0165C02G007790.1	CNL	False	False	False
XG0165	XG0165C02G007890.1	CNL	False	False	False
XG0165	XG0165C02G007940.1	CNL	False	False	False
XG0165	XG0165C02G015310.1	TNL	True	False	True
XG0165	XG0165C02G015320.1	TNL	True	False	True
XG0165	XG0165C02G015330.1	TNL	True	False	True
XG0165	XG0165C02G015340.1	CNL	False	False	True
XG0165	XG0165C02G015390.1	CNL	False	False	True
XG0165	XG0165C02G015430.1	CNL	False	False	False
XG0165	XG0165C02G015540.1	RNL	False	True	False
XG0165	XG0165C05G008630.1	CNL	False	False	True
XG0165	XG0165C05G020550.1	RNL	False	True	False
XG0165	XG0165C07G003030.1	CNL	False	False	False
XG0165	XG0165C07G003060.1	CNL	False	False	False
XG0165	XG0165C07G014300.1	CNL	False	False	False
XG0165	XG0165C07G014320.1	CNL	False	False	False
XG0165	XG0165C07G014370.1	CNL	False	False	False
XG0165	XG0165C08G001070.1	CNL	False	False	True
XG0165	XG0165C08G001150.1	TNL	True	False	True
XG0165	XG0165C08G001170.1	TNL	True	False	True
XG0165	XG0165C08G001200.1	TNL	True	False	True
XG0165	XG0165C08G001210.1	TNL	True	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0165	XG0165C08G001220.1	TNL	True	False	True
XG0165	XG0165C08G001230.1	TNL	True	False	True
XG0165	XG0165C08G001240.1	TNL	True	False	False
XG0165	XG0165C08G001250.1	TNL	True	False	False
XG0165	XG0165C08G002130.1	CNL	False	False	False
XG0165	XG0165C09G003760.1	CNL	False	False	True
XG0165	XG0165C09G003780.1	CNL	False	False	True
XG0165	XG0165C09G004200.1	CNL	False	False	False
XG0165	XG0165C10G003090.1	CNL	False	False	False
XG0165	XG0165C10G003590.1	CNL	False	False	False
XG0165	XG0165C10G013440.1	TNL	True	False	True
XG0165	XG0165C10G013880.1	CNL	False	False	True
XG0165	XG0165C10G014010.1	CNL	False	False	False
XG0165	XG0165C10G014980.1	CNL	False	False	True
XG0165	XG0165C10G014990.1	CNL	False	False	False
XG0165	XG0165C10G015010.1	CNL	False	False	True
XG0165	XG0165C11G008280.1	TNL	True	False	True
XG0165	XG0165C11G009780.1	CNL	False	False	True
XG0165	XG0165C11G009950.1	TNL	True	False	True
XG0174	XG0174C01G004550.1	CNL	False	False	False
XG0174	XG0174C01G015880.1	RNL	False	True	False
XG0174	XG0174C02G007740.1	CNL	False	False	False
XG0174	XG0174C02G007840.1	CNL	False	False	False
XG0174	XG0174C02G007890.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0174	XG0174C02G015220.1	TNL	True	False	True
XG0174	XG0174C02G015310.1	TNL	True	False	True
XG0174	XG0174C02G015320.1	TNL	True	False	True
XG0174	XG0174C02G015330.1	TNL	True	False	False
XG0174	XG0174C02G015350.1	CNL	False	False	True
XG0174	XG0174C02G015400.1	CNL	False	False	True
XG0174	XG0174C02G015440.1	CNL	False	False	False
XG0174	XG0174C02G015560.1	RNL	False	True	False
XG0174	XG0174C05G008530.1	CNL	False	False	True
XG0174	XG0174C05G020360.1	RNL	False	True	False
XG0174	XG0174C07G002990.1	CNL	False	False	False
XG0174	XG0174C07G003020.1	CNL	False	False	False
XG0174	XG0174C07G014190.1	CNL	False	False	False
XG0174	XG0174C07G014210.1	CNL	False	False	False
XG0174	XG0174C07G014260.1	CNL	False	False	False
XG0174	XG0174C08G001090.1	CNL	False	False	True
XG0174	XG0174C08G001160.1	TNL	True	False	True
XG0174	XG0174C08G001180.1	TNL	True	False	True
XG0174	XG0174C08G001190.1	TNL	True	False	True
XG0174	XG0174C08G001200.1	TNL	True	False	True
XG0174	XG0174C08G001210.1	TNL	True	False	True
XG0174	XG0174C08G001220.1	TNL	True	False	True
XG0174	XG0174C08G001230.1	TNL	True	False	False
XG0174	XG0174C08G001240.1	TNL	True	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0174	XG0174C08G002090.1	CNL	False	False	False
XG0174	XG0174C09G003890.1	CNL	False	False	True
XG0174	XG0174C09G003910.1	CNL	False	False	True
XG0174	XG0174C09G004330.1	CNL	False	False	False
XG0174	XG0174C10G003130.1	CNL	False	False	False
XG0174	XG0174C10G003620.1	CNL	False	False	False
XG0174	XG0174C10G013430.1	TNL	True	False	True
XG0174	XG0174C10G013870.1	CNL	False	False	True
XG0174	XG0174C10G014000.1	CNL	False	False	False
XG0174	XG0174C10G014950.1	CNL	False	False	True
XG0174	XG0174C10G014960.1	CNL	False	False	False
XG0174	XG0174C10G014980.1	CNL	False	False	True
XG0174	XG0174C11G008270.1	TNL	True	False	False
XG0174	XG0174C11G009740.1	CNL	False	False	True
XG0174	XG0174C11G009920.1	TNL	True	False	True
XG0180	XG0180C01G004430.1	CNL	False	False	False
XG0180	XG0180C01G015710.1	RNL	False	True	False
XG0180	XG0180C02G007810.1	CNL	False	False	False
XG0180	XG0180C02G007910.1	CNL	False	False	False
XG0180	XG0180C02G007960.1	CNL	False	False	False
XG0180	XG0180C02G015360.1	TNL	True	False	True
XG0180	XG0180C02G015370.1	TNL	True	False	True
XG0180	XG0180C02G015380.1	TNL	True	False	True
XG0180	XG0180C02G015390.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0180	XG0180C02G015440.1	CNL	False	False	True
XG0180	XG0180C02G015480.1	CNL	False	False	False
XG0180	XG0180C02G015590.1	RNL	False	True	False
XG0180	XG0180C02G015820.1	RNL	False	True	False
XG0180	XG0180C05G008640.1	CNL	False	False	True
XG0180	XG0180C05G020420.1	RNL	False	True	False
XG0180	XG0180C07G002990.1	CNL	False	False	False
XG0180	XG0180C07G003020.1	CNL	False	False	False
XG0180	XG0180C07G014310.1	CNL	False	False	False
XG0180	XG0180C07G014330.1	CNL	False	False	False
XG0180	XG0180C07G014380.1	CNL	False	False	False
XG0180	XG0180C08G001090.1	CNL	False	False	True
XG0180	XG0180C08G001160.1	TNL	True	False	True
XG0180	XG0180C08G001180.1	TNL	True	False	True
XG0180	XG0180C08G001210.1	TNL	True	False	True
XG0180	XG0180C08G001220.1	TNL	True	False	True
XG0180	XG0180C08G001230.1	TNL	True	False	True
XG0180	XG0180C08G001240.1	TNL	True	False	True
XG0180	XG0180C08G001250.1	TNL	True	False	False
XG0180	XG0180C08G001260.1	TNL	True	False	False
XG0180	XG0180C08G002120.1	CNL	False	False	False
XG0180	XG0180C09G003850.1	CNL	False	False	True
XG0180	XG0180C09G003870.1	CNL	False	False	True
XG0180	XG0180C09G004290.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0180	XG0180C10G003100.1	CNL	False	False	False
XG0180	XG0180C10G003600.1	CNL	False	False	False
XG0180	XG0180C10G013570.1	TNL	True	False	True
XG0180	XG0180C10G014010.1	CNL	False	False	True
XG0180	XG0180C10G014120.1	CNL	False	False	False
XG0180	XG0180C10G015040.1	CNL	False	False	True
XG0180	XG0180C10G015050.1	CNL	False	False	False
XG0180	XG0180C10G015070.1	CNL	False	False	True
XG0180	XG0180C11G008360.1	TNL	True	False	True
XG0180	XG0180C11G009810.1	CNL	False	False	True
XG0180	XG0180C11G009970.1	TNL	True	False	True
XG0195	XG0195C01G004440.1	CNL	False	False	False
XG0195	XG0195C01G015770.1	RNL	False	True	False
XG0195	XG0195C02G007790.1	CNL	False	False	False
XG0195	XG0195C02G007890.1	CNL	False	False	False
XG0195	XG0195C02G007940.1	CNL	False	False	False
XG0195	XG0195C02G015340.1	TNL	True	False	False
XG0195	XG0195C02G015430.1	TNL	True	False	True
XG0195	XG0195C02G015440.1	TNL	True	False	True
XG0195	XG0195C02G015450.1	TNL	True	False	True
XG0195	XG0195C02G015460.1	CNL	False	False	True
XG0195	XG0195C02G015510.1	CNL	False	False	True
XG0195	XG0195C02G015550.1	CNL	False	False	False
XG0195	XG0195C02G015660.1	RNL	False	True	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0195	XG0195C05G008550.1	CNL	False	False	True
XG0195	XG0195C05G020430.1	RNL	False	True	False
XG0195	XG0195C07G002970.1	CNL	False	False	False
XG0195	XG0195C07G003000.1	CNL	False	False	False
XG0195	XG0195C07G014140.1	CNL	False	False	False
XG0195	XG0195C07G014160.1	CNL	False	False	False
XG0195	XG0195C07G014210.1	CNL	False	False	False
XG0195	XG0195C08G001050.1	CNL	False	False	True
XG0195	XG0195C08G001120.1	TNL	True	False	True
XG0195	XG0195C08G001140.1	TNL	True	False	True
XG0195	XG0195C08G001160.1	TNL	True	False	True
XG0195	XG0195C08G001170.1	TNL	True	False	True
XG0195	XG0195C08G001180.1	TNL	True	False	True
XG0195	XG0195C08G001190.1	TNL	True	False	True
XG0195	XG0195C08G001200.1	TNL	True	False	False
XG0195	XG0195C08G001210.1	TNL	True	False	False
XG0195	XG0195C08G002050.1	CNL	False	False	False
XG0195	XG0195C09G003780.1	CNL	False	False	True
XG0195	XG0195C09G003800.1	CNL	False	False	True
XG0195	XG0195C09G004220.1	CNL	False	False	False
XG0195	XG0195C10G003030.1	CNL	False	False	False
XG0195	XG0195C10G003530.1	CNL	False	False	False
XG0195	XG0195C10G013390.1	TNL	True	False	True
XG0195	XG0195C10G013830.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0195	XG0195C10G013960.1	CNL	False	False	False
XG0195	XG0195C10G014900.1	CNL	False	False	True
XG0195	XG0195C10G014910.1	CNL	False	False	False
XG0195	XG0195C10G014930.1	CNL	False	False	True
XG0195	XG0195C11G008310.1	TNL	True	False	False
XG0195	XG0195C11G009810.1	CNL	False	False	True
XG0195	XG0195C11G009970.1	TNL	True	False	True
XG0219	XG0219C01G004580.1	CNL	False	False	False
XG0219	XG0219C01G016230.1	RNL	False	True	False
XG0219	XG0219C02G007960.1	CNL	False	False	False
XG0219	XG0219C02G008060.1	CNL	False	False	False
XG0219	XG0219C02G008110.1	CNL	False	False	False
XG0219	XG0219C02G015510.1	TNL	True	False	True
XG0219	XG0219C02G015600.1	TNL	True	False	True
XG0219	XG0219C02G015610.1	TNL	True	False	True
XG0219	XG0219C02G015620.1	TNL	True	False	True
XG0219	XG0219C02G015630.1	CNL	False	False	True
XG0219	XG0219C02G015680.1	CNL	False	False	True
XG0219	XG0219C02G015720.1	CNL	False	False	False
XG0219	XG0219C02G015840.1	RNL	False	True	False
XG0219	XG0219C05G008660.1	CNL	False	False	True
XG0219	XG0219C05G020560.1	RNL	False	True	False
XG0219	XG0219C07G002940.1	CNL	False	False	False
XG0219	XG0219C07G002970.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0219	XG0219C07G014240.1	CNL	False	False	False
XG0219	XG0219C07G014260.1	CNL	False	False	False
XG0219	XG0219C07G014320.1	CNL	False	False	False
XG0219	XG0219C08G001130.1	CNL	False	False	True
XG0219	XG0219C08G001220.1	TNL	True	False	True
XG0219	XG0219C08G001240.1	TNL	True	False	True
XG0219	XG0219C08G001270.1	TNL	True	False	True
XG0219	XG0219C08G001280.1	TNL	True	False	True
XG0219	XG0219C08G001290.1	TNL	True	False	True
XG0219	XG0219C08G001300.1	TNL	True	False	True
XG0219	XG0219C08G001310.1	TNL	True	False	False
XG0219	XG0219C08G001320.1	TNL	True	False	False
XG0219	XG0219C08G002190.1	CNL	False	False	False
XG0219	XG0219C09G004010.1	CNL	False	False	True
XG0219	XG0219C09G004030.1	CNL	False	False	True
XG0219	XG0219C09G004450.1	CNL	False	False	False
XG0219	XG0219C10G003050.1	CNL	False	False	False
XG0219	XG0219C10G003560.1	CNL	False	False	False
XG0219	XG0219C10G013390.1	TNL	True	False	True
XG0219	XG0219C10G013840.1	CNL	False	False	True
XG0219	XG0219C10G013960.1	CNL	False	False	False
XG0219	XG0219C10G014900.1	CNL	False	False	True
XG0219	XG0219C10G014910.1	CNL	False	False	False
XG0219	XG0219C10G014930.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0219	XG0219C11G008460.1	TNL	True	False	True
XG0219	XG0219C11G010000.1	CNL	False	False	True
XG0219	XG0219C11G010160.1	TNL	True	False	True
XG0245	XG0245C01G004480.1	CNL	False	False	False
XG0245	XG0245C01G015720.1	RNL	False	True	False
XG0245	XG0245C02G007800.1	CNL	False	False	False
XG0245	XG0245C02G007900.1	CNL	False	False	False
XG0245	XG0245C02G007950.1	CNL	False	False	False
XG0245	XG0245C02G015420.1	TNL	True	False	True
XG0245	XG0245C02G015430.1	TNL	True	False	True
XG0245	XG0245C02G015440.1	TNL	True	False	True
XG0245	XG0245C02G015450.1	CNL	False	False	True
XG0245	XG0245C02G015500.1	CNL	False	False	True
XG0245	XG0245C02G015540.1	CNL	False	False	False
XG0245	XG0245C02G015670.1	RNL	False	True	False
XG0245	XG0245C05G008620.1	CNL	False	False	True
XG0245	XG0245C05G020360.1	RNL	False	True	False
XG0245	XG0245C07G002910.1	CNL	False	False	False
XG0245	XG0245C07G002940.1	CNL	False	False	False
XG0245	XG0245C07G014140.1	CNL	False	False	False
XG0245	XG0245C07G014160.1	CNL	False	False	False
XG0245	XG0245C07G014220.1	CNL	False	False	False
XG0245	XG0245C08G001090.1	CNL	False	False	True
XG0245	XG0245C08G001160.1	TNL	True	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0245	XG0245C08G001170.1	TNL	True	False	True
XG0245	XG0245C08G001200.1	TNL	True	False	True
XG0245	XG0245C08G001210.1	TNL	True	False	True
XG0245	XG0245C08G001220.1	TNL	True	False	True
XG0245	XG0245C08G001230.1	TNL	True	False	True
XG0245	XG0245C08G001240.1	TNL	True	False	False
XG0245	XG0245C08G001250.1	TNL	True	False	False
XG0245	XG0245C08G002100.1	CNL	False	False	False
XG0245	XG0245C09G003730.1	CNL	False	False	True
XG0245	XG0245C09G003750.1	CNL	False	False	True
XG0245	XG0245C09G004170.1	CNL	False	False	False
XG0245	XG0245C10G003090.1	CNL	False	False	False
XG0245	XG0245C10G003590.1	CNL	False	False	False
XG0245	XG0245C10G013510.1	TNL	True	False	True
XG0245	XG0245C10G013960.1	CNL	False	False	True
XG0245	XG0245C10G014090.1	CNL	False	False	False
XG0245	XG0245C10G015100.1	CNL	False	False	True
XG0245	XG0245C10G015110.1	CNL	False	False	False
XG0245	XG0245C10G015130.1	CNL	False	False	True
XG0245	XG0245C11G008300.1	TNL	True	False	True
XG0245	XG0245C11G009760.1	CNL	False	False	True
XG0245	XG0245C11G009920.1	TNL	True	False	True
XG0334	XG0334C01G04660.1	CNL	False	False	False
XG0334	XG0334C01G16500.2	RNL	False	True	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0334	XG0334C02G07830.1	CNL	False	False	False
XG0334	XG0334C02G07910.2	CNL	False	False	False
XG0334	XG0334C02G07980.1	CNL	False	False	False
XG0334	XG0334C02G16980.2	TNL	True	False	True
XG0334	XG0334C02G17080.2	TNL	True	False	True
XG0334	XG0334C02G17090.2	TNL	True	False	True
XG0334	XG0334C02G17100.1	TNL	True	False	True
XG0334	XG0334C02G17110.2	CNL	False	False	True
XG0334	XG0334C02G17150.2	CNL	False	False	True
XG0334	XG0334C02G17200.2	CNL	False	False	False
XG0334	XG0334C02G17340.2	RNL	False	True	False
XG0334	XG0334C05G08860.1	CNL	False	False	True
XG0334	XG0334C05G21760.2	RNL	False	True	False
XG0334	XG0334C07G03010.2	CNL	False	False	False
XG0334	XG0334C07G03040.1	CNL	False	False	False
XG0334	XG0334C07G15610.2	CNL	False	False	False
XG0334	XG0334C07G15620.2	CNL	False	False	False
XG0334	XG0334C07G15690.2	CNL	False	False	False
XG0334	XG0334C08G01400.2	CNL	False	False	True
XG0334	XG0334C08G01450.1	TNL	True	False	True
XG0334	XG0334C08G01470.1	TNL	True	False	True
XG0334	XG0334C08G01480.2	TNL	True	False	True
XG0334	XG0334C08G01485.1	TNL	True	False	True
XG0334	XG0334C08G01490.2	TNL	True	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
XG0334	XG0334C08G01500.1	TNL	True	False	True
XG0334	XG0334C08G01520.1	TNL	True	False	False
XG0334	XG0334C08G01530.2	TNL	True	False	False
XG0334	XG0334C08G02480.1	CNL	False	False	False
XG0334	XG0334C09G04240.1	CNL	False	False	True
XG0334	XG0334C09G04250.1	CNL	False	False	True
XG0334	XG0334C09G04650.2	CNL	False	False	False
XG0334	XG0334C10G03470.1	CNL	False	False	False
XG0334	XG0334C10G04050.1	CNL	False	False	False
XG0334	XG0334C10G14610.2	TNL	True	False	True
XG0334	XG0334C10G14750.1	TNL	True	False	True
XG0334	XG0334C10G15200.1	CNL	False	False	True
XG0334	XG0334C10G15300.1	CNL	False	False	False
XG0334	XG0334C10G16200.1	CNL	False	False	True
XG0334	XG0334C10G16210.1	CNL	False	False	False
XG0334	XG0334C10G16240.2	CNL	False	False	True
XG0334	XG0334C11G09100.1	CNL	False	False	False
XG0334	XG0334C11G11700.1	CNL	False	False	True
XG0334	XG0334C11G11910.2	TNL	True	False	True
XG0380	XG0380C01G004350.1	CNL	False	False	False
XG0380	XG0380C01G015870.1	RNL	False	True	False
XG0380	XG0380C02G033510.1	CNL	False	False	False
XG0380	XG0380C02G033600.1	CNL	False	False	False
XG0380	XG0380C02G033650.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0380	XG0380C02G041570.1	TNL	True	False	True
XG0380	XG0380C02G041600.1	TNL	True	False	False
XG0380	XG0380C02G041700.1	TNL	True	False	True
XG0380	XG0380C02G041710.1	TNL	True	False	True
XG0380	XG0380C02G041720.1	CNL	False	False	True
XG0380	XG0380C02G041770.1	CNL	False	False	False
XG0380	XG0380C02G041820.1	CNL	False	False	False
XG0380	XG0380C02G041930.1	RNL	False	True	False
XG0380	XG0380C05G088320.1	CNL	False	False	True
XG0380	XG0380C05G100730.1	RNL	False	True	False
XG0380	XG0380C07G129560.1	CNL	False	False	False
XG0380	XG0380C07G129590.1	CNL	False	False	False
XG0380	XG0380C07G141010.1	CNL	False	False	False
XG0380	XG0380C07G141030.1	CNL	False	False	False
XG0380	XG0380C07G141080.1	CNL	False	False	False
XG0380	XG0380C08G143810.1	CNL	False	False	True
XG0380	XG0380C08G143890.1	TNL	True	False	True
XG0380	XG0380C08G143920.1	TNL	True	False	True
XG0380	XG0380C08G143930.1	TNL	True	False	True
XG0380	XG0380C08G143940.1	TNL	True	False	True
XG0380	XG0380C08G143950.1	TNL	True	False	True
XG0380	XG0380C08G143960.1	TNL	True	False	True
XG0380	XG0380C08G143970.1	TNL	True	False	True
XG0380	XG0380C08G143980.1	TNL	True	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
XG0380	XG0380C08G143990.1	TNL	True	False	False
XG0380	XG0380C08G144920.1	CNL	False	False	False
XG0380	XG0380C09G163650.1	CNL	False	False	True
XG0380	XG0380C09G163660.1	CNL	False	False	True
XG0380	XG0380C09G164080.1	CNL	False	False	False
XG0380	XG0380C10G185590.1	CNL	False	False	False
XG0380	XG0380C10G186100.1	CNL	False	False	False
XG0380	XG0380C10G196520.1	TNL	True	False	True
XG0380	XG0380C10G196950.1	CNL	False	False	True
XG0380	XG0380C10G197060.1	CNL	False	False	False
XG0380	XG0380C10G197980.1	CNL	False	False	True
XG0380	XG0380C10G197990.1	CNL	False	False	False
XG0380	XG0380C10G198020.1	CNL	False	False	True
XG0380	XG0380C11G212380.1	TNL	True	False	True
XG0380	XG0380C11G214280.1	CNL	False	False	True
XG0380	XG0380C11G214460.1	TNL	True	False	True
WCG	ClCG00G000030.1	CNL	False	False	True
WCG	ClCG00G001040.1	CNL	False	False	True
WCG	ClCG00G001210.1	CNL	False	False	False
WCG	ClCG01G004360.1	CNL	False	False	False
WCG	ClCG01G016630.1	RNL	False	True	False
WCG	ClCG02G007590.2	CNL	False	False	False
WCG	ClCG02G007660.1	CNL	False	False	False
WCG	ClCG02G007710.1	CNL	False	False	False
WCG	ClCG02G016090.1	TNL	True	False	True
WCG	ClCG02G016100.1	TNL	True	False	True
WCG	ClCG02G016110.2	TNL	True	False	True
WCG	ClCG02G016120.1	CNL	False	False	True
WCG	ClCG02G016170.1	CNL	False	False	True
WCG	ClCG02G016220.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
WCG	ClCG02G016345.1	RNL	False	True	False
WCG	ClCG05G007070.2	CNL	False	False	True
WCG	ClCG05G019540.2	RNL	False	True	False
WCG	ClCG07G002985.1	CNL	False	False	False
WCG	ClCG07G002990.1	CNL	False	False	False
WCG	ClCG07G003020.1	CNL	False	False	False
WCG	ClCG07G015790.2	CNL	False	False	False
WCG	ClCG07G015810.2	CNL	False	False	False
WCG	ClCG07G015870.2	CNL	False	False	False
WCG	ClCG08G001180.2	CNL	False	False	True
WCG	ClCG08G001260.2	TNL	True	False	True
WCG	ClCG08G001340.1	TNL	True	False	True
WCG	ClCG08G001350.2	TNL	True	False	True
WCG	ClCG08G001370.1	TNL	True	False	True
WCG	ClCG08G001380.1	TNL	True	False	True
WCG	ClCG08G001390.2	TNL	True	False	True
WCG	ClCG08G001400.2	TNL	True	False	True
WCG	ClCG08G001410.1	TNL	True	False	False
WCG	ClCG08G001415.1	TNL	True	False	False
WCG	ClCG08G002410.1	CNL	False	False	False
WCG	ClCG09G003990.2	CNL	False	False	True
WCG	ClCG09G004000.1	CNL	False	False	True
WCG	ClCG09G004378.1	CNL	False	False	False
WCG	ClCG10G003280.1	CNL	False	False	True
WCG	ClCG10G003940.1	CNL	False	False	False
WCG	ClCG10G015280.2	TNL	True	False	True
WCG	ClCG10G015730.1	CNL	False	False	True
WCG	ClCG10G015850.2	CNL	False	False	False
WCG	ClCG10G016813.1	CNL	False	False	True
WCG	ClCG10G016817.1	CNL	False	False	False
WCG	ClCG10G016840.1	CNL	False	False	True
WCG	ClCG11G008400.2	TNL	True	False	True
WCG	ClCG11G010480.1	CNL	False	False	True
WCG	ClCG11G010730.2	TNL	True	False	True
PI537277	CcUC01G004600.1	CNL	False	False	False
PI537277	CcUC01G012410.1	TNL	True	False	True
PI537277	CcUC02G024990.1	CNL	False	False	False
PI537277	CcUC02G025060.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
PI537277	CcUC02G025120.1	CNL	False	False	False
PI537277	CcUC02G033280.1	TNL	True	False	True
PI537277	CcUC02G033380.1	TNL	True	False	False
PI537277	CcUC02G033410.1	CNL	False	False	False
PI537277	CcUC02G033420.1	TNL	True	False	False
PI537277	CcUC02G033460.1	CNL	False	False	True
PI537277	CcUC02G033630.1	RNL	False	True	False
PI537277	CcUC04G070470.1	RNL	False	True	False
PI537277	CcUC05G089610.1	CNL	False	False	True
PI537277	CcUC05G101650.1	RNL	False	True	False
PI537277	CcUC07G131500.1	CNL	False	False	False
PI537277	CcUC07G143670.1	CNL	False	False	False
PI537277	CcUC07G143680.1	CNL	False	False	True
PI537277	CcUC07G143740.1	CNL	False	False	False
PI537277	CcUC07G143750.1	CNL	False	False	False
PI537277	CcUC08G145890.1	CNL	False	False	False
PI537277	CcUC08G146400.1	TNL	True	False	False
PI537277	CcUC08G146480.1	TNL	True	False	True
PI537277	CcUC08G146510.1	TNL	True	False	True
PI537277	CcUC08G146520.1	TNL	True	False	True
PI537277	CcUC08G146540.1	TNL	True	False	True
PI537277	CcUC08G146550.1	TNL	True	False	True
PI537277	CcUC08G146560.1	TNL	True	False	True
PI537277	CcUC08G146570.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
PI537277	CcUC08G147350.1	CNL	False	False	False
PI537277	CcUC09G166620.1	CNL	False	False	True
PI537277	CcUC09G167020.1	CNL	False	False	False
PI537277	CcUC10G189730.1	CNL	False	False	False
PI537277	CcUC10G201000.1	CNL	False	False	True
PI537277	CcUC10G201120.1	CNL	False	False	False
PI537277	CcUC10G202080.1	CNL	False	False	True
PI537277	CcUC10G202120.1	CNL	False	False	True
PI537277	CcUC10G202130.1	CNL	False	False	True
PI537277	CcUC11G216550.1	CNL	False	False	True
PI537277	CcUC11G217480.1	CNL	False	False	False
PI537277	CcUC11G218200.1	CNL	False	False	True
PI537277	CcUC11G218400.1	TNL	True	False	True
USVL246	CaUC01G004510.1	CNL	False	False	False
USVL246	CaUC01G012100.1	CNL	False	False	False
USVL246	CaUC01G015900.1	RNL	False	True	False
USVL246	CaUC02G034000.1	CNL	False	False	False
USVL246	CaUC02G034080.1	CNL	False	False	False
USVL246	CaUC02G034130.1	CNL	False	False	False
USVL246	CaUC02G041500.1	TNL	True	False	True
USVL246	CaUC02G041580.1	TNL	True	False	True
USVL246	CaUC02G041610.1	CNL	False	False	True
USVL246	CaUC02G041620.1	TNL	True	False	True
USVL246	CaUC02G041630.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
USVL246	CaUC02G041670.1	CNL	False	False	True
USVL246	CaUC02G041700.1	CNL	False	False	False
USVL246	CaUC02G041830.1	RNL	False	True	False
USVL246	CaUC05G087420.1	CNL	False	False	True
USVL246	CaUC05G089230.1	CNL	False	False	False
USVL246	CaUC05G099170.1	RNL	False	True	False
USVL246	CaUC07G127870.1	CNL	False	False	False
USVL246	CaUC07G127880.1	CNL	False	False	False
USVL246	CaUC07G127900.1	CNL	False	False	False
USVL246	CaUC07G139430.1	CNL	False	False	False
USVL246	CaUC07G139450.1	CNL	False	False	False
USVL246	CaUC07G139510.1	CNL	False	False	False
USVL246	CaUC08G141560.1	CNL	False	False	False
USVL246	CaUC08G142040.1	TNL	True	False	True
USVL246	CaUC08G142100.1	TNL	True	False	True
USVL246	CaUC08G142120.1	TNL	True	False	True
USVL246	CaUC08G142130.1	TNL	True	False	True
USVL246	CaUC08G142140.1	CNL	False	False	False
USVL246	CaUC08G142160.1	TNL	True	False	False
USVL246	CaUC08G142170.1	TNL	True	False	True
USVL246	CaUC08G142180.1	TNL	True	False	True
USVL246	CaUC08G142190.1	TNL	True	False	True
USVL246	CaUC08G143150.1	CNL	False	False	False
USVL246	CaUC09G161540.1	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
USVL246	CaUC09G161550.1	CNL	False	False	True
USVL246	CaUC09G162020.1	CNL	False	False	False
USVL246	CaUC10G182620.1	CNL	False	False	True
USVL246	CaUC10G183100.1	CNL	False	False	False
USVL246	CaUC10G189420.1	TNL	True	False	True
USVL246	CaUC10G193390.1	CNL	False	False	True
USVL246	CaUC10G193510.1	CNL	False	False	False
USVL246	CaUC10G194420.1	CNL	False	False	True
USVL246	CaUC10G194440.1	CNL	False	False	True
USVL246	CaUC10G194450.1	CNL	False	False	True
USVL246	CaUC11G208740.1	TNL	True	False	True
USVL246	CaUC11G208950.1	CNL	False	False	True
USVL246	CaUC11G210500.1	CNL	False	False	True
cordophanus	Clc01G04660.1	CNL	False	False	False
cordophanus	Clc01G16500.2	RNL	False	True	False
cordophanus	Clc02G07830.1	CNL	False	False	False
cordophanus	Clc02G07910.2	CNL	False	False	False
cordophanus	Clc02G07980.1	CNL	False	False	False
cordophanus	Clc02G16980.2	TNL	True	False	True
cordophanus	Clc02G17080.2	TNL	True	False	True
cordophanus	Clc02G17090.2	TNL	True	False	True
cordophanus	Clc02G17100.1	TNL	True	False	True
cordophanus	Clc02G17110.2	CNL	False	False	True
cordophanus	Clc02G17150.2	CNL	False	False	True

species	gene id	subclass	has tir	has rpw8	has lrr
cordophanus	Clc02G17200.2	CNL	False	False	False
cordophanus	Clc02G17340.2	RNL	False	True	False
cordophanus	Clc05G08860.1	CNL	False	False	True
cordophanus	Clc05G21760.2	RNL	False	True	False
cordophanus	Clc07G03010.2	CNL	False	False	False
cordophanus	Clc07G03040.1	CNL	False	False	False
cordophanus	Clc07G15610.2	CNL	False	False	False
cordophanus	Clc07G15620.2	CNL	False	False	False
cordophanus	Clc07G15690.2	CNL	False	False	False
cordophanus	Clc08G01400.2	CNL	False	False	True
cordophanus	Clc08G01450.1	TNL	True	False	True
cordophanus	Clc08G01470.1	TNL	True	False	True
cordophanus	Clc08G01480.2	TNL	True	False	True
cordophanus	Clc08G01485.1	TNL	True	False	True
cordophanus	Clc08G01490.2	TNL	True	False	True
cordophanus	Clc08G01500.1	TNL	True	False	True
cordophanus	Clc08G01520.1	TNL	True	False	False
cordophanus	Clc08G01530.2	TNL	True	False	False
cordophanus	Clc08G02480.1	CNL	False	False	False
cordophanus	Clc09G04240.1	CNL	False	False	True
cordophanus	Clc09G04250.1	CNL	False	False	True
cordophanus	Clc09G04650.2	CNL	False	False	False
cordophanus	Clc10G03470.1	CNL	False	False	False
cordophanus	Clc10G04050.1	CNL	False	False	False

species	gene id	subclass	has tir	has rpw8	has lrr
cordophanus	Clc10G14610.2	TNL	True	False	True
cordophanus	Clc10G14750.1	TNL	True	False	True
cordophanus	Clc10G15200.1	CNL	False	False	True
cordophanus	Clc10G15300.1	CNL	False	False	False
cordophanus	Clc10G16200.1	CNL	False	False	True
cordophanus	Clc10G16210.1	CNL	False	False	False
cordophanus	Clc10G16240.2	CNL	False	False	True
cordophanus	Clc11G09100.1	CNL	False	False	False
cordophanus	Clc11G11700.1	CNL	False	False	True
cordophanus	Clc11G11910.2	TNL	True	False	True

TABLE S3

TableS3_OGG_membership

Table S3. OGG membership table (gene-to-OGG mapping, 796 rows).

Each of the 796 NLRs is assigned to one of 718 orthogroups (OGGs); category indicates core (all 18 accessions), softcore (9-17), dispensable (2-8), or private (1). Source: `results_preview/wild_specific/01_OGG_classification.tsv`.

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TABLE S4

TableS4_NLR_tandem_pairs

Table S4. NLR tandem pair table (full version of Table 2) across 18 *Citrullus* accessions.

95 head-to-head NLR tandem pairs (intergenic distance < 15 kb) across 18 Citrullus accessions. Row bands: red = TNL–TNL, green = CNL–CNL, blue = CNL–TNL. Convergent orientation (+/- or -/+) is highlighted in dark green; divergent / same-strand pairs are grey. Gene IDs are stripped of Ensembl-style ".N" transcript-variant suffixes and truncated to 12 characters for display. Underlying data: `results_preview/nlr_pairs_fixed/nlr_pairs_fixed.tsv`.

Pair ID	Accession	Chr	NLR-1 locus	NLR-2 locus	Intergenic distance (bp)	Pair subclass	NLR-1 class	NLR-2 class	NLR-1 strand	NLR-2 strand
P001	97103_v3	Chr02	XG0025C02G01…	XG0025C02G01…	5229	CNL-TNL	TNL	CNL	+	-
P002	97103_v3	Chr07	XG0025C07G01…	XG0025C07G01…	1605	CNL-CNL	CNL	CNL	+	-
P003	97103_v3	Chr08	XG0025C08G00…	XG0025C08G00…	8226	TNL-TNL	TNL	TNL	-	+
P004	97103_v3	Chr08	XG0025C08G00…	XG0025C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P005	97103_v3	Chr08	XG0025C08G00…	XG0025C08G00…	8330	TNL-TNL	TNL	TNL	-	+
P006	97103_v3	Chr09	XG0025C09G00…	XG0025C09G00…	1428	CNL-CNL	CNL	CNL	-	+
P007	PI537277	Chr07	CcUC07G14367…	CcUC07G14368…	22	CNL-CNL	CNL	CNL	+	-
P008	PI537277	Chr08	CcUC08G14651…	CcUC08G14652…	12053	TNL-TNL	TNL	TNL	-	+
P009	PI537277	Chr08	CcUC08G14654…	CcUC08G14655…	3176	TNL-TNL	TNL	TNL	+	-
P010	PI537277	Chr08	CcUC08G14655…	CcUC08G14656…	8704	TNL-TNL	TNL	TNL	-	+
P011	USVL246	Chr02	CaUC02G04162…	CaUC02G04163…	3349	CNL-TNL	TNL	CNL	+	-
P012	USVL246	Chr07	CaUC07G13943…	CaUC07G13945…	2414	CNL-CNL	CNL	CNL	+	-
P013	USVL246	Chr08	CaUC08G14212…	CaUC08G14213…	11173	TNL-TNL	TNL	TNL	-	+
P014	USVL246	Chr08	CaUC08G14217…	CaUC08G14218…	3324	TNL-TNL	TNL	TNL	+	-
P015	USVL246	Chr08	CaUC08G14218…	CaUC08G14219…	10186	TNL-TNL	TNL	TNL	-	+
P016	WCG	Chr02	ClCG02G01611…	ClCG02G01612…	3189	CNL-TNL	TNL	CNL	+	-
P017	WCG	Chr07	ClCG07G01579…	ClCG07G01581…	1606	CNL-CNL	CNL	CNL	+	-
P018	WCG	Chr08	ClCG08G00134…	ClCG08G00135…	8228	TNL-TNL	TNL	TNL	-	+
P019	WCG	Chr08	ClCG08G00138…	ClCG08G00139…	3400	TNL-TNL	TNL	TNL	+	-
P020	WCG	Chr08	ClCG08G00139…	ClCG08G00140…	9163	TNL-TNL	TNL	TNL	-	+
P021	XG0004	Chr02	XG0004C02G01…	XG0004C02G01…	3944	CNL-TNL	TNL	CNL	+	-
P022	XG0004	Chr07	XG0004C07G01…	XG0004C07G01…	1606	CNL-CNL	CNL	CNL	+	-
P023	XG0004	Chr08	XG0004C08G00…	XG0004C08G00…	8228	TNL-TNL	TNL	TNL	-	+
P024	XG0004	Chr08	XG0004C08G00…	XG0004C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P025	XG0004	Chr08	XG0004C08G00…	XG0004C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P026	XG0005	Chr02	XG0005C02G01…	XG0005C02G01…	3951	TNL-TNL	TNL	TNL	+	-
P027	XG0005	Chr07	XG0005C07G01…	XG0005C07G01…	1605	CNL-CNL	CNL	CNL	+	-
P028	XG0005	Chr08	XG0005C08G00…	XG0005C08G00…	8226	TNL-TNL	TNL	TNL	-	+
P029	XG0005	Chr08	XG0005C08G00…	XG0005C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P030	XG0005	Chr08	XG0005C08G00…	XG0005C08G00…	8330	TNL-TNL	TNL	TNL	-	+
P031	XG0007	Chr02	XG0007C02G01…	XG0007C02G01…	5229	CNL-TNL	TNL	CNL	+	-
P032	XG0007	Chr07	XG0007C07G01…	XG0007C07G01…	1606	CNL-CNL	CNL	CNL	+	-
P033	XG0007	Chr08	XG0007C08G00…	XG0007C08G00…	8234	TNL-TNL	TNL	TNL	-	+
P034	XG0007	Chr08	XG0007C08G00…	XG0007C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P035	XG0007	Chr08	XG0007C08G00…	XG0007C08G00…	8331	TNL-TNL	TNL	TNL	-	+

Pair ID	Accession	Chr	NLR-1 locus	NLR-2 locus	Intergenic distance (bp)	Pair subclass	NLR-1 class	NLR-2 class	NLR-1 strand	NLR-2 strand
P036	XG0014	Chr02	XG0014C02G01…	XG0014C02G01…	3321	TNL-TNL	TNL	TNL	+	-
P037	XG0014	Chr07	XG0014C07G01…	XG0014C07G01…	1606	CNL-CNL	CNL	CNL	+	-
P038	XG0014	Chr08	XG0014C08G00…	XG0014C08G00…	8230	TNL-TNL	TNL	TNL	-	+
P039	XG0014	Chr08	XG0014C08G00…	XG0014C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P040	XG0014	Chr08	XG0014C08G00…	XG0014C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P041	XG0014	Chr09	XG0014C09G00…	XG0014C09G00…	1428	CNL-CNL	CNL	CNL	-	+
P042	XG0056	Chr02	XG0056C02G01…	XG0056C02G01…	5229	CNL-TNL	TNL	CNL	+	-
P043	XG0056	Chr07	XG0056C07G01…	XG0056C07G01…	1605	CNL-CNL	CNL	CNL	+	-
P044	XG0056	Chr08	XG0056C08G00…	XG0056C08G00…	8228	TNL-TNL	TNL	TNL	-	+
P045	XG0056	Chr08	XG0056C08G00…	XG0056C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P046	XG0056	Chr08	XG0056C08G00…	XG0056C08G00…	8332	TNL-TNL	TNL	TNL	-	+
P047	XG0056	Chr09	XG0056C09G00…	XG0056C09G00…	1428	CNL-CNL	CNL	CNL	-	+
P048	XG0165	Chr02	XG0165C02G01…	XG0165C02G01…	3328	CNL-TNL	TNL	CNL	+	-
P049	XG0165	Chr07	XG0165C07G01…	XG0165C07G01…	1605	CNL-CNL	CNL	CNL	+	-
P050	XG0165	Chr08	XG0165C08G00…	XG0165C08G00…	8226	TNL-TNL	TNL	TNL	-	+
P051	XG0165	Chr08	XG0165C08G00…	XG0165C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P052	XG0165	Chr08	XG0165C08G00…	XG0165C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P053	XG0165	Chr09	XG0165C09G00…	XG0165C09G00…	1428	CNL-CNL	CNL	CNL	-	+
P054	XG0174	Chr02	XG0174C02G01…	XG0174C02G01…	5229	CNL-TNL	TNL	CNL	+	-
P055	XG0174	Chr07	XG0174C07G01…	XG0174C07G01…	1606	CNL-CNL	CNL	CNL	+	-
P056	XG0174	Chr08	XG0174C08G00…	XG0174C08G00…	8228	TNL-TNL	TNL	TNL	-	+
P057	XG0174	Chr08	XG0174C08G00…	XG0174C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P058	XG0174	Chr08	XG0174C08G00…	XG0174C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P059	XG0180	Chr02	XG0180C02G01…	XG0180C02G01…	3944	CNL-TNL	TNL	CNL	+	-
P060	XG0180	Chr07	XG0180C07G01…	XG0180C07G01…	1606	CNL-CNL	CNL	CNL	+	-
P061	XG0180	Chr08	XG0180C08G00…	XG0180C08G00…	8228	TNL-TNL	TNL	TNL	-	+
P062	XG0180	Chr08	XG0180C08G00…	XG0180C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P063	XG0180	Chr08	XG0180C08G00…	XG0180C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P064	XG0180	Chr09	XG0180C09G00…	XG0180C09G00…	1428	CNL-CNL	CNL	CNL	-	+
P065	XG0195	Chr02	XG0195C02G01…	XG0195C02G01…	3328	CNL-TNL	TNL	CNL	+	-
P066	XG0195	Chr07	XG0195C07G01…	XG0195C07G01…	1605	CNL-CNL	CNL	CNL	+	-
P067	XG0195	Chr08	XG0195C08G00…	XG0195C08G00…	8228	TNL-TNL	TNL	TNL	-	+
P068	XG0195	Chr08	XG0195C08G00…	XG0195C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P069	XG0195	Chr08	XG0195C08G00…	XG0195C08G00…	8330	TNL-TNL	TNL	TNL	-	+
P070	XG0219	Chr02	XG0219C02G01…	XG0219C02G01…	3321	CNL-TNL	TNL	CNL	+	-
P071	XG0219	Chr07	XG0219C07G01…	XG0219C07G01…	1605	CNL-CNL	CNL	CNL	+	-
P072	XG0219	Chr08	XG0219C08G00…	XG0219C08G00…	8228	TNL-TNL	TNL	TNL	-	+
P073	XG0219	Chr08	XG0219C08G00…	XG0219C08G00…	3400	TNL-TNL	TNL	TNL	+	-
P074	XG0219	Chr08	XG0219C08G00…	XG0219C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P075	XG0245	Chr02	XG0245C02G01…	XG0245C02G01…	3944	CNL-TNL	TNL	CNL	+	-
P076	XG0245	Chr07	XG0245C07G01…	XG0245C07G01…	1606	CNL-CNL	CNL	CNL	+	-

Pair ID	Accession	Chr	NLR-1 locus	NLR-2 locus	Intergenic distance (bp)	Pair subclass	NLR-1 class	NLR-2 class	NLR-1 strand	NLR-2 strand
P077	XG0245	Chr08	XG0245C08G00…	XG0245C08G00…	8238	TNL-TNL	TNL	TNL	-	+
P078	XG0245	Chr08	XG0245C08G00…	XG0245C08G00…	3398	TNL-TNL	TNL	TNL	+	-
P079	XG0245	Chr08	XG0245C08G00…	XG0245C08G00…	8331	TNL-TNL	TNL	TNL	-	+
P080	XG0334	Chr02	XG0334C02G17…	XG0334C02G17…	3189	CNL-TNL	TNL	CNL	+	-
P081	XG0334	Chr07	XG0334C07G15…	XG0334C07G15…	1606	CNL-CNL	CNL	CNL	+	-
P082	XG0334	Chr08	XG0334C08G01…	XG0334C08G01…	8230	TNL-TNL	TNL	TNL	-	+
P083	XG0334	Chr08	XG0334C08G01…	XG0334C08G01…	3425	TNL-TNL	TNL	TNL	+	-
P084	XG0334	Chr08	XG0334C08G01…	XG0334C08G01…	8205	TNL-TNL	TNL	TNL	-	+
P085	XG0380	Chr02	XG0380C02G04…	XG0380C02G04…	2967	CNL-TNL	TNL	CNL	+	-
P086	XG0380	Chr07	XG0380C07G14…	XG0380C07G14…	1608	CNL-CNL	CNL	CNL	+	-
P087	XG0380	Chr08	XG0380C08G14…	XG0380C08G14…	3106	TNL-TNL	TNL	TNL	+	-
P088	XG0380	Chr08	XG0380C08G14…	XG0380C08G14…	8247	TNL-TNL	TNL	TNL	-	+
P089	XG0380	Chr08	XG0380C08G14…	XG0380C08G14…	2912	TNL-TNL	TNL	TNL	+	-
P090	XG0380	Chr08	XG0380C08G14…	XG0380C08G14…	5286	TNL-TNL	TNL	TNL	-	+
P091	cordoph.	Chr02	Clc02G17100	Clc02G17110	3189	CNL-TNL	TNL	CNL	+	-
P092	cordoph.	Chr07	Clc07G15610	Clc07G15620	1606	CNL-CNL	CNL	CNL	+	-
P093	cordoph.	Chr08	Clc08G01470	Clc08G01480	8230	TNL-TNL	TNL	TNL	-	+
P094	cordoph.	Chr08	Clc08G01485	Clc08G01490	3425	TNL-TNL	TNL	TNL	+	-
P095	cordoph.	Chr08	Clc08G01490	Clc08G01500	8205	TNL-TNL	TNL	TNL	-	+

TABLE S5

TableS5_ID_NLR_catalog

Table S5. Integrated-domain (ID) catalog (58 ID-NLRs).

Non-canonical integrated domains identified by HMMER scan against Pfam-A 35.0 (E ≤ 1 × 10■■, domain E ≤ 1 × 10■³). Source: `NLR_results/nlr_18sp_bundle/08_integrated_domains_18sp/nlr_ids.tsv`.

species	gene id	domain
PI537277	PI537277|CcUC01G004600.1	AAA_14
USVL246	USVL246|CaUC01G004510.1	AAA_14
WCG	WCG|ClCG01G004360.1	AAA_14
cordophanus	cordophanus|Clc01G04660.1	AAA_14
97103_v3	97103_v3|XG0025C01G004590.1	AAA_14
XG0004	XG0004|XG0004C01G004490.1	AAA_14
XG0005	XG0005|XG0005C01G004570.1	AAA_14
XG0007	XG0007|XG0007C01G004520.1	AAA_14
XG0014	XG0014|XG0014C01G004580.1	AAA_14
XG0056	XG0056|XG0056C01G004440.1	AAA_14
XG0165	XG0165|XG0165C01G004420.1	AAA_14
XG0174	XG0174|XG0174C01G004550.1	AAA_14
XG0180	XG0180|XG0180C01G004430.1	AAA_14
XG0195	XG0195|XG0195C01G004440.1	AAA_14
XG0219	XG0219|XG0219C01G004580.1	AAA_14
XG0245	XG0245|XG0245C01G004480.1	AAA_14
XG0334	XG0334|XG0334C01G04660.1	AAA_14
XG0380	XG0380|XG0380C01G004350.1	AAA_14
USVL246	USVL246|CaUC05G089230.1	ABC_membrane
USVL246	USVL246|CaUC05G089230.1	ABC_membrane
USVL246	USVL246|CaUC05G089230.1	ABC_tran
USVL246	USVL246|CaUC05G089230.1	ABC_tran
USVL246	USVL246|CaUC08G142190.1	AhpC-TSA

species	gene id	domain
XG0380	XG0380|XG0380C01G015870.1	GRAM
USVL246	USVL246|CaUC01G015900.1	GRAM
WCG	WCG|ClCG01G016630.1	GRAM
cordophanus	cordophanus|Clc01G16500.2	GRAM
97103_v3	97103_v3|XG0025C01G016260.1	GRAM
XG0004	XG0004|XG0004C01G015770.1	GRAM
XG0005	XG0005|XG0005C01G015420.1	GRAM
XG0007	XG0007|XG0007C01G015840.1	GRAM
XG0014	XG0014|XG0014C01G015900.1	GRAM
XG0056	XG0056|XG0056C01G015770.1	GRAM
XG0165	XG0165|XG0165C01G015610.1	GRAM
XG0174	XG0174|XG0174C01G015880.1	GRAM
XG0180	XG0180|XG0180C01G015710.1	GRAM
XG0195	XG0195|XG0195C01G015770.1	GRAM
XG0219	XG0219|XG0219C01G016230.1	GRAM
XG0334	XG0334|XG0334C01G16500.2	GRAM
XG0245	XG0245|XG0245C01G015720.1	GRAM
XG0380	XG0380|XG0380C02G041770.1	PIF1
WCG	WCG|ClCG07G002990.1	Rce1-like
USVL246	USVL246|CaUC08G142190.1	Redoxin
PI537277	PI537277|CcUC09G167020.1	SMC_N
USVL246	USVL246|CaUC08G142190.1	Thioredoxin_8
USVL246	USVL246|CaUC08G142190.1	Thioredoxin_8
USVL246	USVL246|CaUC07G139510.1	Transferase
USVL246	USVL246|CaUC07G139510.1	Transferase
USVL246	USVL246|CaUC10G189420.1	V-SNARE

species	gene id	domain
WCG	WCG|ClCG10G015280.2	V-SNARE
97103_v3	97103_v3|XG0025C10G013650.1	V-SNARE
XG0004	XG0004|XG0004C10G013560.1	V-SNARE
XG0005	XG0005|XG0005C10G013470.1	V-SNARE
XG0007	XG0007|XG0007C10G013470.1	V-SNARE
XG0014	XG0014|XG0014C10G013140.1	V-SNARE
XG0056	XG0056|XG0056C10G013410.1	V-SNARE
XG0165	XG0165|XG0165C10G013440.1	V-SNARE
XG0174	XG0174|XG0174C10G013430.1	V-SNARE
XG0180	XG0180|XG0180C10G013570.1	V-SNARE
XG0195	XG0195|XG0195C10G013390.1	V-SNARE
XG0219	XG0219|XG0219C10G013390.1	V-SNARE
XG0245	XG0245|XG0245C10G013510.1	V-SNARE
XG0380	XG0380|XG0380C10G196520.1	V-SNARE
cordophanus	cordophanus|Clc10G14610.2	V-SNARE
XG0334	XG0334|XG0334C10G14610.2	V-SNARE

TABLE S6

TableS6_Duplication_pairs

Table S6. NLR duplication mode classification (283 events).

Tandem (TD) / Segmental (SD) / Transposed (TRD) / Recent (RD) duplication events classified by priority RD > TD > SD > TRD. Source: `NLR_results/nlr_18sp_bundle/10_duplication_18sp/duplication_pairs.tsv`.

species	geneA	geneB	pid
97103_v3	XG0025C01G004590.1	XG0025C05G008690.1	35.7
97103_v3	XG0025C01G016260.1	XG0025C02G015820.1	59.1
97103_v3	XG0025C02G007830.1	XG0025C07G003000.1	41.8
97103_v3	XG0025C02G007930.1	XG0025C02G007980.1	68.7
97103_v3	XG0025C02G015480.1	XG0025C02G015580.1	52.8
97103_v3	XG0025C02G015570.1	XG0025C02G015580.1	43.4
97103_v3	XG0025C02G015590.1	XG0025C02G015580.1	65.4
97103_v3	XG0025C02G015660.1	XG0025C02G015700.1	37.5
97103_v3	XG0025C05G020770.1	XG0025C02G015820.1	37.0
97103_v3	XG0025C07G003030.1	XG0025C07G003000.1	63.3
97103_v3	XG0025C07G014520.1	XG0025C07G014540.1	69.0
97103_v3	XG0025C07G014600.1	XG0025C10G014230.1	44.6
97103_v3	XG0025C08G001130.1	XG0025C08G001220.1	62.3
97103_v3	XG0025C08G001240.1	XG0025C08G001280.1	95.0
97103_v3	XG0025C08G001270.1	XG0025C08G001240.1	67.8
97103_v3	XG0025C08G001290.1	XG0025C08G001310.1	99.3
97103_v3	XG0025C08G001300.1	XG0025C08G001270.1	51.4
97103_v3	XG0025C08G001320.1	XG0025C08G001290.1	40.8
97103_v3	XG0025C09G003890.1	XG0025C09G003910.1	60.0
97103_v3	XG0025C09G004340.1	XG0025C09G003910.1	45.8
97103_v3	XG0025C10G013650.1	XG0025C11G010170.1	52.6
97103_v3	XG0025C10G014100.1	XG0025C10G015190.1	36.3
97103_v3	XG0025C10G015190.1	XG0025C10G015230.1	59.1
97103_v3	XG0025C10G015200.1	XG0025C10G015190.1	45.1
97103_v3	XG0025C11G010010.1	XG0025C02G015700.1	32.8
XG0004	XG0004C01G004490.1	XG0004C05G008690.1	35.7
XG0004	XG0004C01G015770.1	XG0004C02G015480.1	59.1
XG0004	XG0004C02G007640.1	XG0004C07G002930.1	41.7
XG0004	XG0004C02G007740.1	XG0004C02G007790.1	68.7
XG0004	XG0004C02G015150.1	XG0004C02G015250.1	52.8
XG0004	XG0004C02G015260.1	XG0004C02G015250.1	61.3
XG0004	XG0004C02G015270.1	XG0004C02G015240.1	52.0
XG0004	XG0004C02G015320.1	XG0004C02G015360.1	37.5
XG0004	XG0004C05G008690.1	XG0004C07G014150.1	48.9
XG0004	XG0004C05G020550.1	XG0004C02G015480.1	34.7
XG0004	XG0004C07G002930.1	XG0004C07G002960.1	63.3
XG0004	XG0004C07G014150.1	XG0004C07G014170.1	69.0
XG0004	XG0004C07G014220.1	XG0004C10G014140.1	44.6

species	geneA	geneB	pid
XG0004	XG0004C08G001060.1	XG0004C08G001140.1	62.3
XG0004	XG0004C08G001160.1	XG0004C08G001190.1	95.0
XG0004	XG0004C08G001180.1	XG0004C08G001160.1	67.8
XG0004	XG0004C08G001200.1	XG0004C08G001220.1	99.3
XG0004	XG0004C08G001210.1	XG0004C08G001180.1	51.4
XG0004	XG0004C08G001230.1	XG0004C08G001200.1	45.7
XG0004	XG0004C08G002090.1	XG0004C07G014150.1	62.9
XG0004	XG0004C09G003790.1	XG0004C09G003810.1	60.0
XG0004	XG0004C09G004230.1	XG0004C09G003810.1	45.8
XG0004	XG0004C10G013560.1	XG0004C11G009950.1	52.6
XG0004	XG0004C10G014010.1	XG0004C10G015060.1	36.3
XG0004	XG0004C10G014140.1	XG0004C07G014150.1	44.9
XG0004	XG0004C10G015060.1	XG0004C10G015090.1	59.1
XG0004	XG0004C10G015070.1	XG0004C10G015060.1	45.1
XG0004	XG0004C11G009770.1	XG0004C02G015360.1	32.8
XG0005	XG0005C01G004570.1	XG0005C05G008620.1	35.7
XG0005	XG0005C01G015420.1	XG0005C02G015510.1	59.1
XG0005	XG0005C02G007880.1	XG0005C02G007930.1	68.7
XG0005	XG0005C02G015280.1	XG0005C02G015320.1	53.4
XG0005	XG0005C02G015300.1	XG0005C02G015310.1	61.3
XG0005	XG0005C02G015360.1	XG0005C02G015400.1	37.5
XG0005	XG0005C05G020340.1	XG0005C02G015510.1	34.7
XG0005	XG0005C07G002950.1	XG0005C07G002980.1	63.3
XG0005	XG0005C07G014180.1	XG0005C07G014200.1	69.0
XG0005	XG0005C07G014260.1	XG0005C10G014040.1	44.6
XG0005	XG0005C08G001070.1	XG0005C08G001140.1	62.3
XG0005	XG0005C08G001160.1	XG0005C08G001200.1	95.0
XG0005	XG0005C08G001190.1	XG0005C08G001160.1	67.8
XG0005	XG0005C08G001210.1	XG0005C08G001230.1	99.3
XG0005	XG0005C08G001220.1	XG0005C08G001190.1	51.4
XG0005	XG0005C08G001240.1	XG0005C08G001210.1	45.6
XG0005	XG0005C09G003800.1	XG0005C09G003820.1	60.0
XG0005	XG0005C10G003100.1	XG0005C09G004240.1	42.2
XG0005	XG0005C10G013470.1	XG0005C11G009870.1	52.6
XG0005	XG0005C10G013910.1	XG0005C10G014990.1	36.3
XG0005	XG0005C10G014990.1	XG0005C10G015020.1	59.1
XG0005	XG0005C10G015000.1	XG0005C10G014990.1	45.1
XG0005	XG0005C11G009700.1	XG0005C02G015400.1	32.8
XG0007	XG0007C01G004520.1	XG0007C05G008550.1	35.7
XG0007	XG0007C01G015840.1	XG0007C02G015550.1	59.1
XG0007	XG0007C02G007920.1	XG0007C02G007970.1	68.7
XG0007	XG0007C02G015320.1	XG0007C02G015310.1	65.4

species	geneA	geneB	pid
XG0007	XG0007C02G015390.1	XG0007C02G015430.1	37.5
XG0007	XG0007C05G008550.1	XG0007C07G014200.1	48.9
XG0007	XG0007C05G020370.1	XG0007C02G015550.1	34.7
XG0007	XG0007C07G002910.1	XG0007C07G002940.1	63.3
XG0007	XG0007C07G014200.1	XG0007C07G014220.1	69.0
XG0007	XG0007C07G014270.1	XG0007C10G014030.1	44.6
XG0007	XG0007C08G001080.1	XG0007C08G001150.1	62.3
XG0007	XG0007C08G001170.1	XG0007C08G001200.1	95.0
XG0007	XG0007C08G001190.1	XG0007C08G001170.1	67.8
XG0007	XG0007C08G001210.1	XG0007C08G001230.1	99.3
XG0007	XG0007C08G001220.1	XG0007C08G001190.1	51.4
XG0007	XG0007C08G001240.1	XG0007C08G001210.1	45.1
XG0007	XG0007C08G002120.1	XG0007C07G014200.1	62.7
XG0007	XG0007C09G003830.1	XG0007C09G003850.1	60.0
XG0007	XG0007C10G014030.1	XG0007C07G014200.1	44.9
XG0007	XG0007C11G009900.1	XG0007C02G015430.1	32.8
XG0014	XG0014C01G015900.1	XG0014C02G015070.1	59.1
XG0014	XG0014C02G007540.1	XG0014C02G007590.1	68.7
XG0014	XG0014C02G014760.1	XG0014C02G014860.1	47.7
XG0014	XG0014C02G014760.1	XG0014C02G014880.1	44.8
XG0014	XG0014C02G014840.1	XG0014C02G014880.1	53.4
XG0014	XG0014C02G014860.1	XG0014C02G014870.1	62.6
XG0014	XG0014C02G014920.1	XG0014C02G014960.1	37.5
XG0014	XG0014C05G008630.1	XG0014C07G013710.1	48.9
XG0014	XG0014C05G020200.1	XG0014C02G015070.1	34.7
XG0014	XG0014C07G002840.1	XG0014C07G002870.1	63.3
XG0014	XG0014C07G013710.1	XG0014C07G013730.1	69.0
XG0014	XG0014C07G013790.1	XG0014C10G013690.1	44.6
XG0014	XG0014C08G001160.1	XG0014C08G001180.1	95.0
XG0014	XG0014C08G001170.1	XG0014C08G001160.1	67.7
XG0014	XG0014C08G001190.1	XG0014C08G001210.1	99.3
XG0014	XG0014C08G001200.1	XG0014C08G001170.1	51.4
XG0014	XG0014C08G001220.1	XG0014C08G001190.1	45.1
XG0014	XG0014C08G002080.1	XG0014C07G013710.1	62.7
XG0014	XG0014C09G003700.1	XG0014C09G003710.1	60.0
XG0014	XG0014C10G013690.1	XG0014C07G013710.1	44.9
XG0014	XG0014C11G009330.1	XG0014C02G014960.1	32.8
XG0056	XG0056C01G015770.1	XG0056C02G015670.1	59.1
XG0056	XG0056C02G007800.1	XG0056C07G003000.1	41.8
XG0056	XG0056C02G007910.1	XG0056C02G007960.1	68.7
XG0056	XG0056C02G015450.1	XG0056C02G015440.1	65.4
XG0056	XG0056C02G015470.1	XG0056C02G015430.1	52.0

species	geneA	geneB	pid
XG0056	XG0056C02G015520.1	XG0056C02G015560.1	37.5
XG0056	XG0056C07G003030.1	XG0056C07G003000.1	63.3
XG0056	XG0056C07G014220.1	XG0056C07G014240.1	69.0
XG0056	XG0056C08G001190.1	XG0056C08G001230.1	95.0
XG0056	XG0056C08G001220.1	XG0056C08G001190.1	67.8
XG0056	XG0056C08G001260.1	XG0056C08G001240.1	99.3
XG0056	XG0056C08G001270.1	XG0056C08G001240.1	43.7
XG0056	XG0056C09G003790.1	XG0056C09G003810.1	60.0
XG0165	XG0165C02G007890.1	XG0165C02G007940.1	68.7
XG0165	XG0165C02G015310.1	XG0165C02G015340.1	51.9
XG0165	XG0165C02G015320.1	XG0165C02G015330.1	62.6
XG0165	XG0165C07G003030.1	XG0165C07G003060.1	63.3
XG0165	XG0165C07G014300.1	XG0165C07G014320.1	69.0
XG0165	XG0165C08G001170.1	XG0165C08G001210.1	95.0
XG0165	XG0165C08G001200.1	XG0165C08G001170.1	67.8
XG0165	XG0165C08G001240.1	XG0165C08G001220.1	99.3
XG0165	XG0165C08G001250.1	XG0165C08G001220.1	45.3
XG0165	XG0165C09G003760.1	XG0165C09G003780.1	60.0
XG0165	XG0165C10G013440.1	XG0165C11G009950.1	52.6
XG0174	XG0174C02G007840.1	XG0174C02G007890.1	68.7
XG0174	XG0174C02G015220.1	XG0174C02G015320.1	53.8
XG0174	XG0174C02G015330.1	XG0174C02G015320.1	65.4
XG0174	XG0174C05G008530.1	XG0174C07G014190.1	48.9
XG0174	XG0174C07G002990.1	XG0174C07G003020.1	63.3
XG0174	XG0174C07G014210.1	XG0174C07G014190.1	69.0
XG0174	XG0174C07G014260.1	XG0174C10G014000.1	44.6
XG0174	XG0174C08G001180.1	XG0174C08G001200.1	95.0
XG0174	XG0174C08G001230.1	XG0174C08G001210.1	99.3
XG0174	XG0174C08G001240.1	XG0174C08G001210.1	43.7
XG0174	XG0174C08G002090.1	XG0174C07G014190.1	62.9
XG0174	XG0174C09G003890.1	XG0174C09G003910.1	60.0
XG0174	XG0174C10G003130.1	XG0174C09G004330.1	42.2
XG0174	XG0174C10G014000.1	XG0174C07G014190.1	45.6
XG0174	XG0174C11G008270.1	XG0174C02G015320.1	32.4
XG0180	XG0180C02G015370.1	XG0180C02G015380.1	62.6
XG0180	XG0180C02G015590.1	XG0180C02G015820.1	100.0
XG0180	XG0180C07G014330.1	XG0180C07G014310.1	69.0
XG0180	XG0180C08G001180.1	XG0180C08G001220.1	95.0
XG0180	XG0180C08G001250.1	XG0180C08G001230.1	99.3
XG0180	XG0180C08G002120.1	XG0180C07G014310.1	62.9
XG0180	XG0180C09G003870.1	XG0180C09G003850.1	56.9
XG0180	XG0180C09G004290.1	XG0180C09G003850.1	30.8

species	geneA	geneB	pid
XG0180	XG0180C10G003100.1	XG0180C09G004290.1	41.8
XG0180	XG0180C10G014120.1	XG0180C07G014310.1	44.9
XG0195	XG0195C02G007790.1	XG0195C07G002970.1	41.8
XG0195	XG0195C02G015430.1	XG0195C02G015460.1	51.9
XG0195	XG0195C02G015440.1	XG0195C02G015450.1	62.6
XG0195	XG0195C07G003000.1	XG0195C07G002970.1	63.3
XG0195	XG0195C08G001140.1	XG0195C08G001170.1	95.0
XG0219	XG0219C08G001240.1	XG0219C08G001280.1	95.0
XG0245	XG0245C02G015430.1	XG0245C02G015440.1	62.6
XG0245	XG0245C02G015450.1	XG0245C02G015420.1	52.0
XG0245	XG0245C07G014160.1	XG0245C07G014140.1	69.0
XG0245	XG0245C08G001210.1	XG0245C08G001170.1	95.0
XG0245	XG0245C08G002100.1	XG0245C07G014140.1	62.7
XG0334	XG0334C02G07830.1	XG0334C07G03010.2	41.8
XG0334	XG0334C07G03040.1	XG0334C07G03010.2	63.3
XG0334	XG0334C07G15620.2	XG0334C07G15610.2	69.0
XG0334	XG0334C08G01400.2	XG0334C08G01450.1	62.4
XG0334	XG0334C08G02480.1	XG0334C07G15610.2	62.7
XG0334	XG0334C10G14610.2	XG0334C10G14750.1	93.8
XG0334	XG0334C11G11910.2	XG0334C10G14750.1	48.2
XG0334	XG0334C11G11910.2	XG0334C10G14610.2	52.7
XG0380	XG0380C02G033650.1	XG0380C02G033600.1	68.8
XG0380	XG0380C02G041570.1	XG0380C02G041600.1	97.1
XG0380	XG0380C02G041700.1	XG0380C02G041720.1	51.9
XG0380	XG0380C08G143810.1	XG0380C08G143890.1	62.3
XG0380	XG0380C08G143920.1	XG0380C08G143960.1	99.3
XG0380	XG0380C08G143920.1	XG0380C08G143980.1	99.1
XG0380	XG0380C08G143950.1	XG0380C08G143930.1	82.3
XG0380	XG0380C08G143960.1	XG0380C08G143980.1	96.4
XG0380	XG0380C08G144920.1	XG0380C07G141010.1	62.8
WCG	ClCG11G010480.1	ClCG02G016220.1	32.8
WCG	ClCG11G010730.2	ClCG10G015280.2	52.6
WCG	ClCG00G000030.1	ClCG10G003280.1	98.5
WCG	ClCG00G000030.1	ClCG00G001040.1	86.4
WCG	ClCG00G001040.1	ClCG10G003280.1	86.4
WCG	ClCG00G001210.1	ClCG10G003940.1	100.0
WCG	ClCG10G015730.1	ClCG10G016813.1	36.3
WCG	ClCG10G015850.2	ClCG07G015790.2	44.9
WCG	ClCG10G016813.1	ClCG10G016840.1	59.1
WCG	ClCG10G016817.1	ClCG10G016813.1	45.6
WCG	ClCG01G004360.1	ClCG05G007070.2	35.7
WCG	ClCG02G007590.2	ClCG07G002985.1	41.7

species	geneA	geneB	pid
WCG	ClCG02G007660.1	ClCG02G007710.1	68.9
WCG	ClCG02G016090.1	ClCG02G016120.1	51.8
WCG	ClCG02G016110.2	ClCG02G016100.1	61.3
WCG	ClCG02G016170.1	ClCG02G016220.1	37.5
WCG	ClCG02G016345.1	ClCG01G016630.1	56.6
WCG	ClCG05G007070.2	ClCG07G015790.2	48.9
WCG	ClCG07G002985.1	ClCG07G003020.1	63.9
WCG	ClCG07G002985.1	ClCG07G002990.1	63.7
WCG	ClCG07G002990.1	ClCG07G003020.1	100.0
WCG	ClCG07G015870.2	ClCG10G015850.2	44.6
WCG	ClCG08G001180.2	ClCG08G001260.2	62.3
WCG	ClCG08G001390.2	ClCG08G001415.1	96.6
WCG	ClCG09G004378.1	ClCG10G003280.1	42.3
WCG	ClCG09G004378.1	ClCG00G000030.1	42.3
WCG	ClCG09G004378.1	ClCG09G004000.1	39.4
PI537277	CcUC02G025120.1	CcUC02G025060.1	87.1
PI537277	CcUC02G033410.1	CcUC01G012410.1	64.8
PI537277	CcUC02G033630.1	CcUC04G070470.1	59.9
PI537277	CcUC05G101650.1	CcUC02G033630.1	31.7
PI537277	CcUC07G143750.1	CcUC02G025120.1	65.1
PI537277	CcUC07G143750.1	CcUC02G025060.1	63.6
PI537277	CcUC07G143750.1	CcUC07G143670.1	58.5
PI537277	CcUC08G145890.1	CcUC08G146510.1	68.5
PI537277	CcUC08G146400.1	CcUC08G146480.1	63.8
PI537277	CcUC08G146520.1	CcUC08G146510.1	67.2
PI537277	CcUC08G146560.1	CcUC08G146520.1	50.5
PI537277	CcUC08G146570.1	CcUC08G146550.1	43.4
PI537277	CcUC10G201000.1	CcUC10G202080.1	36.5
PI537277	CcUC10G202080.1	CcUC10G202130.1	58.0
PI537277	CcUC10G202080.1	CcUC10G202120.1	54.7
PI537277	CcUC10G202120.1	CcUC10G202130.1	63.4
PI537277	CcUC11G217480.1	CcUC02G033460.1	36.7
USVL246	CaUC01G004510.1	CaUC05G087420.1	34.3
USVL246	CaUC01G012100.1	CaUC02G041610.1	52.1
USVL246	CaUC01G015900.1	CaUC02G041830.1	59.1
USVL246	CaUC02G034080.1	CaUC02G034130.1	99.6
USVL246	CaUC02G041500.1	CaUC02G041620.1	53.0
USVL246	CaUC02G041580.1	CaUC02G041630.1	49.9
USVL246	CaUC02G041610.1	CaUC02G041620.1	46.4
USVL246	CaUC02G041670.1	CaUC02G041700.1	37.5
USVL246	CaUC05G087420.1	CaUC07G139430.1	48.1
USVL246	CaUC05G099170.1	CaUC02G041830.1	34.5

species	geneA	geneB	pid
USVL246	CaUC07G127880.1	CaUC07G127870.1	87.3
USVL246	CaUC08G141560.1	CaUC08G142170.1	89.0
USVL246	CaUC08G141560.1	CaUC08G142120.1	88.1
USVL246	CaUC08G142040.1	CaUC08G142100.1	69.2
USVL246	CaUC08G142120.1	CaUC08G142170.1	92.3
USVL246	CaUC08G142130.1	CaUC08G142120.1	66.2
USVL246	CaUC08G142140.1	CaUC08G142180.1	50.6
USVL246	CaUC08G142140.1	CaUC08G142160.1	47.3
USVL246	CaUC08G142160.1	CaUC08G142180.1	45.6
USVL246	CaUC08G142160.1	CaUC08G142190.1	39.0
USVL246	CaUC10G182620.1	CaUC09G162020.1	34.7
USVL246	CaUC10G193390.1	CaUC10G194420.1	36.3
USVL246	CaUC10G193510.1	CaUC07G139430.1	45.5
USVL246	CaUC10G194420.1	CaUC10G194450.1	61.5
USVL246	CaUC10G194420.1	CaUC10G194440.1	59.0
USVL246	CaUC10G194440.1	CaUC10G194450.1	63.7
USVL246	CaUC11G208950.1	CaUC02G041700.1	32.7
cordophanus	Clc01G04660.1	Clc05G08860.1	35.7
cordophanus	Clc02G07830.1	Clc07G03010.2	41.8
cordophanus	Clc02G17100.1	Clc02G17090.2	61.3
cordophanus	Clc02G17200.2	Clc02G17150.2	37.5
cordophanus	Clc02G17340.2	Clc01G16500.2	56.6
cordophanus	Clc05G08860.1	Clc07G15610.2	48.9
cordophanus	Clc07G03040.1	Clc07G03010.2	63.3
cordophanus	Clc08G01400.2	Clc08G01450.1	62.4
cordophanus	Clc08G01500.1	Clc08G01480.2	51.4
cordophanus	Clc09G04650.2	Clc09G04250.1	39.4
cordophanus	Clc10G14610.2	Clc10G14750.1	93.8
cordophanus	Clc10G14610.2	Clc11G11910.2	52.7
cordophanus	Clc10G14750.1	Clc11G11910.2	48.2
cordophanus	Clc10G15200.1	Clc10G16200.1	36.3
cordophanus	Clc10G15300.1	Clc07G15610.2	44.8
cordophanus	Clc10G16200.1	Clc10G16240.2	59.1
cordophanus	Clc10G16210.1	Clc10G16200.1	45.6
cordophanus	Clc11G09100.1	Clc02G17090.2	41.6

TABLE S7

TableS7_NLR_TE_near

Table S7. TE-near annotation per NLR (12 cultivated accessions, 524 rows).

Distance to nearest TE and class for each NLR in the 12 cultivated accessions. Wild accessions are excluded because RepeatMasker tracks are not available in CuGenDB v2. Source: `results_preview/metadata/nlr_te_near_full.tsv`.

species	gene id	chrom	start	end	strand	subclass	has tir
97103_v3	XG0025C01G004590	Chr01	4580709	4581575	-	CNL	False
97103_v3	XG0025C01G016260	Chr01	29929395	29935807	+	RNL	False
97103_v3	XG0025C02G007830	Chr02	8574707	8579534	+	CNL	False
97103_v3	XG0025C02G007930	Chr02	8703325	8706133	-	CNL	False
97103_v3	XG0025C02G007980	Chr02	8931156	8934383	-	CNL	False
97103_v3	XG0025C02G015480	Chr02	29891333	29896577	-	TNL	True
97103_v3	XG0025C02G015570	Chr02	29939708	29945655	+	TNL	True
97103_v3	XG0025C02G015580	Chr02	29947483	29952157	+	TNL	True
97103_v3	XG0025C02G015590	Chr02	29956810	29958738	+	TNL	True
97103_v3	XG0025C02G015610	Chr02	29963967	29966908	-	CNL	False
97103_v3	XG0025C02G015660	Chr02	30005586	30013188	+	CNL	False
97103_v3	XG0025C02G015700	Chr02	30088080	30095463	-	CNL	False
97103_v3	XG0025C02G015820	Chr02	30254737	30258063	-	RNL	False
97103_v3	XG0025C05G008690	Chr05	7117038	7121278	-	CNL	False
97103_v3	XG0025C05G020770	Chr05	29987426	29990611	-	RNL	False
97103_v3	XG0025C07G003000	Chr07	2897918	2902924	-	CNL	False
97103_v3	XG0025C07G003030	Chr07	2909566	2918268	-	CNL	False
97103_v3	XG0025C07G014520	Chr07	30369762	30373518	+	CNL	False
97103_v3	XG0025C07G014540	Chr07	30375123	30389209	-	CNL	False
97103_v3	XG0025C07G014600	Chr07	30417594	30418707	+	CNL	False
97103_v3	XG0025C08G001130	Chr08	2652934	2655536	-	CNL	False
97103_v3	XG0025C08G001220	Chr08	2742455	2749960	-	TNL	True
97103_v3	XG0025C08G001240	Chr08	2828502	2842686	-	TNL	True
97103_v3	XG0025C08G001270	Chr08	2850912	2868059	+	TNL	True
97103_v3	XG0025C08G001280	Chr08	2884155	2894604	+	TNL	True
97103_v3	XG0025C08G001290	Chr08	2898004	2905302	-	TNL	True
97103_v3	XG0025C08G001300	Chr08	2913632	2917167	+	TNL	True
97103_v3	XG0025C08G001310	Chr08	2945185	2947190	+	TNL	True
97103_v3	XG0025C08G001320	Chr08	2947652	2953778	+	TNL	True
97103_v3	XG0025C08G002200	Chr08	5280769	5284047	-	CNL	False
97103_v3	XG0025C09G003890	Chr09	3531038	3535340	-	CNL	False
97103_v3	XG0025C09G003910	Chr09	3536768	3539878	+	CNL	False
97103_v3	XG0025C09G004340	Chr09	3847259	3848987	+	CNL	False
97103_v3	XG0025C10G003070	Chr10	4236958	4241071	+	CNL	False
97103_v3	XG0025C10G003570	Chr10	4874882	4877842	+	CNL	False
97103_v3	XG0025C10G013650	Chr10	28430935	28441106	+	TNL	True
97103_v3	XG0025C10G014100	Chr10	28848530	28851742	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
97103_v3	XG0025C10G014230	Chr10	28984975	28990874	+	CNL	False
97103_v3	XG0025C10G015190	Chr10	30033654	30036245	+	CNL	False
97103_v3	XG0025C10G015200	Chr10	30042193	30043567	+	CNL	False
97103_v3	XG0025C10G015230	Chr10	30048260	30050730	+	CNL	False
97103_v3	XG0025C11G008480	Chr11	12488082	12492132	+	TNL	True
97103_v3	XG0025C11G010010	Chr11	20454917	20462108	-	CNL	False
97103_v3	XG0025C11G010170	Chr11	21185301	21200651	-	TNL	True
PI537277	CcUC01G012410	CicolChr01	23354641	23362899	+	TNL	True
PI537277	CcUC02G024990	CicolChr02	9121210	9128754	+	CNL	False
PI537277	CcUC02G025060	CicolChr02	9249752	9254311	-	CNL	False
PI537277	CcUC02G025120	CicolChr02	9539217	9541397	-	CNL	False
PI537277	CcUC02G033280	CicolChr02	28970849	28980320	-	TNL	True
PI537277	CcUC02G033380	CicolChr02	29025196	29031767	+	TNL	True
PI537277	CcUC02G033410	CicolChr02	29033300	29035742	+	CNL	False
PI537277	CcUC02G033420	CicolChr02	29040383	29043222	+	TNL	True
PI537277	CcUC02G033460	CicolChr02	29082404	29090342	+	CNL	False
PI537277	CcUC02G033630	CicolChr02	29331249	29337246	-	RNL	False
PI537277	CcUC04G070470	CicolChr04	27243418	27246986	+	RNL	False
PI537277	CcUC05G089610	CicolChr05	7116356	7124544	-	CNL	False
PI537277	CcUC07G131500	CicolChr07	3065773	3069631	-	CNL	False
PI537277	CcUC07G143680	CicolChr07	29807059	29811904	-	CNL	False
PI537277	CcUC07G143740	CicolChr07	29856318	29857016	+	CNL	False
PI537277	CcUC07G143750	CicolChr07	29857173	29857820	+	CNL	False
PI537277	CcUC08G145890	CicolChr08	1664607	1689837	-	CNL	False
PI537277	CcUC08G146400	CicolChr08	2650809	2654745	-	TNL	True
PI537277	CcUC08G146480	CicolChr08	2767646	2779614	-	TNL	True
PI537277	CcUC08G146540	CicolChr08	2943205	2954544	+	TNL	True
PI537277	CcUC08G146570	CicolChr08	3053619	3063067	-	CNL	False
PI537277	CcUC08G147350	CicolChr08	6142388	6142909	-	CNL	False
PI537277	CcUC09G166620	CicolChr09	3443638	3446748	+	CNL	False
PI537277	CcUC09G167020	CicolChr09	3760357	3789301	+	CNL	False
PI537277	CcUC10G189730	CicolChr10	4689120	4692080	+	CNL	False
PI537277	CcUC10G201000	CicolChr10	28014515	28017730	-	CNL	False
PI537277	CcUC10G201120	CicolChr10	28144785	28145651	+	CNL	False
PI537277	CcUC10G202080	CicolChr10	29240267	29242858	+	CNL	False
PI537277	CcUC10G202120	CicolChr10	29249095	29251599	+	CNL	False
PI537277	CcUC11G216550	CicolChr11	9968608	9973379	+	CNL	False
PI537277	CcUC11G217480	CicolChr11	14631463	14632064	-	CNL	False
PI537277	CcUC11G218200	CicolChr11	18834598	18842288	-	CNL	False
PI537277	CcUC01G004600	CicolChr01	4621448	4622314	-	CNL	False
PI537277	CcUC11G218400	CicolChr11	19676930	19692308	-	TNL	True
PI537277	CcUC08G146520	CicolChr08	2891218	2908416	+	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
PI537277	CcUC08G146550	CicolChr08	2957720	2964983	-	TNL	True
PI537277	CcUC08G146560	CicolChr08	2973687	2977213	+	TNL	True
PI537277	CcUC08G146510	CicolChr08	2865049	2879165	-	TNL	True
PI537277	CcUC07G143670	CicolChr07	29803286	29807037	+	CNL	False
PI537277	CcUC10G202130	CicolChr10	29254228	29256699	+	CNL	False
PI537277	CcUC05G101650	CicolChr05	29739928	29743240	-	RNL	False
USVL246	CaUC01G004510	Ciama_Chr 01	4872961	4873827	-	CNL	False
USVL246	CaUC01G012100	Ciama_Chr 01	22741588	22747717	+	CNL	False
USVL246	CaUC02G034080	Ciama_Chr 02	10766687	10768898	-	CNL	False
USVL246	CaUC02G034130	Ciama_Chr 02	11008186	11016902	-	CNL	False
USVL246	CaUC02G041610	Ciama_Chr 02	28860939	28868955	+	CNL	False
USVL246	CaUC02G041620	Ciama_Chr 02	28869780	28873756	+	TNL	True
USVL246	CaUC02G041630	Ciama_Chr 02	28877105	28884292	-	CNL	False
USVL246	CaUC02G041670	Ciama_Chr 02	28920559	28931489	+	CNL	False
USVL246	CaUC02G041830	Ciama_Chr 02	29185263	29188920	-	RNL	False
USVL246	CaUC05G099170	Ciama_Chr 05	30230408	30233720	-	RNL	False
USVL246	CaUC07G127870	Ciama_Chr 07	3194953	3200068	-	CNL	False
USVL246	CaUC07G127880	Ciama_Chr 07	3206525	3208786	-	CNL	False
USVL246	CaUC07G127900	Ciama_Chr 07	3222261	3228590	-	CNL	False
USVL246	CaUC07G139510	Ciama_Chr 07	30282014	30288731	+	CNL	False
USVL246	CaUC08G141560	Ciama_Chr 08	1260354	1261868	-	CNL	False
USVL246	CaUC08G142040	Ciama_Chr 08	2216141	2219990	-	TNL	True
USVL246	CaUC08G142140	Ciama_Chr 08	2532835	2539438	-	CNL	False
USVL246	CaUC08G142160	Ciama_Chr 08	2592510	2597093	+	TNL	True
USVL246	CaUC08G142180	Ciama_Chr 08	2688661	2705204	-	TNL	True
USVL246	CaUC08G142190	Ciama_Chr 08	2715390	2726669	+	TNL	True
USVL246	CaUC08G143150	Ciama_Chr 08	5935542	5938551	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
USVL246	CaUC09G161550	Ciama_Chr 09	3680852	3683962	+	CNL	False
USVL246	CaUC09G162020	Ciama_Chr 09	4027050	4031665	+	CNL	False
USVL246	CaUC10G183100	Ciama_Chr 10	4840264	4843224	+	CNL	False
USVL246	CaUC10G193390	Ciama_Chr 10	28131264	28134479	-	CNL	False
USVL246	CaUC10G194420	Ciama_Chr 10	29423053	29425644	+	CNL	False
USVL246	CaUC10G194440	Ciama_Chr 10	29432315	29434819	+	CNL	False
USVL246	CaUC10G194450	Ciama_Chr 10	29438364	29440835	+	CNL	False
USVL246	CaUC11G208740	Ciama_Chr 11	11598155	11613362	+	TNL	True
USVL246	CaUC11G208950	Ciama_Chr 11	12399153	12408684	+	CNL	False
USVL246	CaUC11G210500	Ciama_Chr 11	22043728	22047395	+	CNL	False
USVL246	CaUC08G142100	Ciama_Chr 08	2322355	2329729	-	TNL	True
USVL246	CaUC08G142170	Ciama_Chr 08	2674820	2685337	+	TNL	True
USVL246	CaUC05G087420	Ciama_Chr 05	7580283	7584525	-	CNL	False
USVL246	CaUC08G142120	Ciama_Chr 08	2460686	2476542	-	TNL	True
USVL246	CaUC08G142130	Ciama_Chr 08	2487715	2512617	+	TNL	True
USVL246	CaUC02G034000	Ciama_Chr 02	10617397	10625663	+	CNL	False
USVL246	CaUC09G161540	Ciama_Chr 09	3674708	3684432	-	CNL	False
USVL246	CaUC01G015900	Ciama_Chr 01	29290203	29297963	+	RNL	False
USVL246	CaUC02G041580	Ciama_Chr 02	28850852	28856833	+	TNL	True
USVL246	CaUC10G182620	Ciama_Chr 10	4174363	4178690	+	CNL	False
USVL246	CaUC05G089230	Ciama_Chr 05	9648899	9662343	-	CNL	False
USVL246	CaUC02G041700	Ciama_Chr 02	29010492	29018206	-	CNL	False
USVL246	CaUC07G139450	Ciama_Chr 07	30236843	30251146	-	CNL	False
USVL246	CaUC10G193510	Ciama_Chr 10	28271010	28276883	+	CNL	False
USVL246	CaUC10G189420	Ciama_Chr 10	23251980	23263638	-	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
USVL246	CaUC07G139430	Ciama_Chr07	30230107	30234429	+	CNL	False
USVL246	CaUC02G041500	Ciama_Chr02	28798052	28808188	-	TNL	True
WCG	ClCG00G000030	CG_Chr00	20055	32794	+	CNL	False
WCG	ClCG00G001040	CG_Chr00	3674131	3677012	+	CNL	False
WCG	ClCG00G001210	CG_Chr00	3970758	3973718	+	CNL	False
WCG	ClCG01G004360	CG_Chr01	4637755	4638621	-	CNL	False
WCG	ClCG01G016630	CG_Chr01	31072170	31078823	+	RNL	False
WCG	ClCG02G007660	CG_Chr02	9081403	9084211	-	CNL	False
WCG	ClCG02G007710	CG_Chr02	9321133	9324360	-	CNL	False
WCG	ClCG02G016090	CG_Chr02	30484291	30490255	+	TNL	True
WCG	ClCG02G016100	CG_Chr02	30492083	30496757	+	TNL	True
WCG	ClCG02G016120	CG_Chr02	30509004	30513034	-	CNL	False
WCG	ClCG02G016170	CG_Chr02	30551115	30558769	+	CNL	False
WCG	ClCG02G016220	CG_Chr02	30635369	30643058	-	CNL	False
WCG	ClCG07G002990	CG_Chr07	3062292	3080630	-	CNL	False
WCG	ClCG07G003020	CG_Chr07	3102138	3106427	-	CNL	False
WCG	ClCG08G001340	CG_Chr08	2625218	2638519	-	TNL	True
WCG	ClCG08G001370	CG_Chr08	2680622	2688694	+	TNL	True
WCG	ClCG08G001380	CG_Chr08	2690126	2700576	+	TNL	True
WCG	ClCG08G001410	CG_Chr08	2751659	2760593	+	TNL	True
WCG	ClCG08G002410	CG_Chr08	5142519	5150851	-	CNL	False
WCG	ClCG09G004000	CG_Chr09	3560793	3563903	+	CNL	False
WCG	ClCG10G003280	CG_Chr10	4047297	4051482	+	CNL	False
WCG	ClCG10G003940	CG_Chr10	4960163	4963123	+	CNL	False
WCG	ClCG10G015730	CG_Chr10	30254124	30257336	-	CNL	False
WCG	ClCG10G016840	CG_Chr10	31518211	31520681	+	CNL	False
WCG	ClCG11G010480	CG_Chr11	20134202	20141393	-	CNL	False
WCG	ClCG08G001260	CG_Chr08	2531359	2538864	-	TNL	True
WCG	ClCG08G001415	CG_Chr08	2752000	2754005	+	TNL	True
WCG	ClCG11G010730	CG_Chr11	20895378	20910728	-	TNL	True
WCG	ClCG08G001400	CG_Chr08	2720437	2723972	+	TNL	True
WCG	ClCG05G007070	CG_Chr05	7282039	7286279	-	CNL	False
WCG	ClCG08G001350	CG_Chr08	2646747	2663896	+	TNL	True
WCG	ClCG10G016813	CG_Chr10	31503253	31505844	+	CNL	False
WCG	ClCG09G003990	CG_Chr09	3554551	3564372	-	CNL	False
WCG	ClCG02G007590	CG_Chr02	8949581	8956960	+	CNL	False
WCG	ClCG10G016817	CG_Chr10	31511792	31513166	+	CNL	False
WCG	ClCG02G016110	CG_Chr02	30501033	30505815	+	TNL	True
WCG	ClCG07G015870	CG_Chr07	32330744	32331857	+	CNL	False
WCG	ClCG09G004378	CG_Chr09	3886792	3888520	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
WCG	ClCG11G008400	CG_Chr11	11878659	11884531	-	TNL	True
WCG	ClCG10G015280	CG_Chr10	29812156	29823016	+	TNL	True
WCG	ClCG08G001180	CG_Chr08	2438276	2440878	-	CNL	False
WCG	ClCG10G015850	CG_Chr10	30394899	30401000	+	CNL	False
WCG	ClCG07G015790	CG_Chr07	32277725	32281483	+	CNL	False
WCG	ClCG07G002985	CG_Chr07	3062238	3067589	-	CNL	False
WCG	ClCG02G016345	CG_Chr02	30811367	30814929	-	RNL	False
WCG	ClCG07G015810	CG_Chr07	32283089	32297311	-	CNL	False
WCG	ClCG05G019540	CG_Chr05	31779827	31783138	-	RNL	False
WCG	ClCG08G001390	CG_Chr08	2703976	2711274	-	TNL	True
XG0004	XG0004C01G004490	XG0004_Chr01	4551194	4552060	-	CNL	False
XG0004	XG0004C01G015770	XG0004_Chr01	29637585	29643997	+	RNL	False
XG0004	XG0004C02G007640	XG0004_Chr02	8586884	8591711	+	CNL	False
XG0004	XG0004C02G007740	XG0004_Chr02	8715722	8718530	-	CNL	False
XG0004	XG0004C02G007790	XG0004_Chr02	8943549	8946776	-	CNL	False
XG0004	XG0004C02G015150	XG0004_Chr02	29927783	29933027	-	TNL	True
XG0004	XG0004C02G015240	XG0004_Chr02	29976157	29982104	+	TNL	True
XG0004	XG0004C02G015250	XG0004_Chr02	29983932	29988606	+	TNL	True
XG0004	XG0004C02G015260	XG0004_Chr02	29993259	29996472	+	TNL	True
XG0004	XG0004C02G015270	XG0004_Chr02	30000416	30003357	-	CNL	False
XG0004	XG0004C02G015320	XG0004_Chr02	30042035	30049637	+	CNL	False
XG0004	XG0004C02G015360	XG0004_Chr02	30124524	30131907	-	CNL	False
XG0004	XG0004C02G015480	XG0004_Chr02	30291182	30294508	-	RNL	False
XG0004	XG0004C05G008690	XG0004_Chr05	7096378	7100618	-	CNL	False
XG0004	XG0004C05G020550	XG0004_Chr05	30220709	30223894	-	RNL	False
XG0004	XG0004C07G002930	XG0004_Chr07	2883902	2888421	-	CNL	False
XG0004	XG0004C07G002960	XG0004_Chr07	2895040	2903741	-	CNL	False
XG0004	XG0004C07G014150	XG0004_Chr07	30251487	30255245	+	CNL	False
XG0004	XG0004C07G014170	XG0004_Chr07	30256851	30270937	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0004	XG0004C07G014220	XG0004_Chr07	30299319	30300432	+	CNL	False
XG0004	XG0004C08G001060	XG0004_Chr08	2441594	2444196	-	CNL	False
XG0004	XG0004C08G001140	XG0004_Chr08	2531126	2538631	-	TNL	True
XG0004	XG0004C08G001160	XG0004_Chr08	2617176	2631345	-	TNL	True
XG0004	XG0004C08G001180	XG0004_Chr08	2639573	2656722	+	TNL	True
XG0004	XG0004C08G001190	XG0004_Chr08	2672813	2683262	+	TNL	True
XG0004	XG0004C08G001200	XG0004_Chr08	2686662	2693960	-	TNL	True
XG0004	XG0004C08G001210	XG0004_Chr08	2702291	2705826	+	TNL	True
XG0004	XG0004C08G001220	XG0004_Chr08	2733852	2735857	+	TNL	True
XG0004	XG0004C08G001230	XG0004_Chr08	2736319	2742445	+	TNL	True
XG0004	XG0004C08G002090	XG0004_Chr08	5194011	5202343	-	CNL	False
XG0004	XG0004C09G003790	XG0004_Chr09	3514642	3523480	-	CNL	False
XG0004	XG0004C09G003810	XG0004_Chr09	3520404	3523514	+	CNL	False
XG0004	XG0004C09G004230	XG0004_Chr09	3830855	3832583	+	CNL	False
XG0004	XG0004C10G003160	XG0004_Chr10	3998365	4002478	+	CNL	False
XG0004	XG0004C10G003630	XG0004_Chr10	4623904	4626864	+	CNL	False
XG0004	XG0004C10G013560	XG0004_Chr10	28436333	28446504	+	TNL	True
XG0004	XG0004C10G014010	XG0004_Chr10	28853932	28857144	-	CNL	False
XG0004	XG0004C10G014140	XG0004_Chr10	28990373	28996273	+	CNL	False
XG0004	XG0004C10G015060	XG0004_Chr10	30032277	30034868	+	CNL	False
XG0004	XG0004C10G015070	XG0004_Chr10	30040816	30042190	+	CNL	False
XG0004	XG0004C10G015090	XG0004_Chr10	30046883	30049353	+	CNL	False
XG0004	XG0004C11G008240	XG0004_Chr11	12328830	12332880	+	TNL	True
XG0004	XG0004C11G009770	XG0004_Chr11	20275982	20283170	-	CNL	False
XG0004	XG0004C11G009950	XG0004_Chr11	21007091	21022441	-	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0005	XG0005C01G004570	XG0005_Chr01	4519354	4520220	-	CNL	False
XG0005	XG0005C01G015420	XG0005_Chr01	29622730	29629142	+	RNL	False
XG0005	XG0005C02G007780	XG0005_Chr02	8578758	8583585	+	CNL	False
XG0005	XG0005C02G007880	XG0005_Chr02	8707602	8710410	-	CNL	False
XG0005	XG0005C02G007930	XG0005_Chr02	8935425	8938652	-	CNL	False
XG0005	XG0005C02G015190	XG0005_Chr02	29796731	29798255	-	TNL	True
XG0005	XG0005C02G015280	XG0005_Chr02	29841213	29847160	+	TNL	True
XG0005	XG0005C02G015300	XG0005_Chr02	29848986	29857478	+	TNL	True
XG0005	XG0005C02G015310	XG0005_Chr02	29858299	29861519	+	TNL	True
XG0005	XG0005C02G015320	XG0005_Chr02	29865470	29869092	-	TNL	True
XG0005	XG0005C02G015360	XG0005_Chr02	29907067	29914669	+	CNL	False
XG0005	XG0005C02G015400	XG0005_Chr02	29989547	29996930	-	CNL	False
XG0005	XG0005C02G015510	XG0005_Chr02	30156259	30159585	-	RNL	False
XG0005	XG0005C05G008620	XG0005_Chr05	7109409	7113649	-	CNL	False
XG0005	XG0005C05G020340	XG0005_Chr05	30202662	30205847	-	RNL	False
XG0005	XG0005C07G002950	XG0005_Chr07	3220979	3225498	-	CNL	False
XG0005	XG0005C07G002980	XG0005_Chr07	3232117	3240818	-	CNL	False
XG0005	XG0005C07G014180	XG0005_Chr07	30787585	30791341	+	CNL	False
XG0005	XG0005C07G014200	XG0005_Chr07	30792946	30807032	-	CNL	False
XG0005	XG0005C07G014260	XG0005_Chr07	30835419	30836532	+	CNL	False
XG0005	XG0005C08G001070	XG0005_Chr08	2488779	2491381	-	CNL	False
XG0005	XG0005C08G001140	XG0005_Chr08	2578303	2585808	-	TNL	True
XG0005	XG0005C08G001160	XG0005_Chr08	2664353	2678537	-	TNL	True
XG0005	XG0005C08G001190	XG0005_Chr08	2686763	2703912	+	TNL	True
XG0005	XG0005C08G001200	XG0005_Chr08	2720008	2730458	+	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0005	XG0005C08G001210	XG0005_Chr08	2733858	2741156	-	TNL	True
XG0005	XG0005C08G001220	XG0005_Chr08	2749486	2753021	+	TNL	True
XG0005	XG0005C08G001230	XG0005_Chr08	2781047	2783052	+	TNL	True
XG0005	XG0005C08G001240	XG0005_Chr08	2783514	2789640	+	TNL	True
XG0005	XG0005C08G002100	XG0005_Chr08	5221585	5224863	-	CNL	False
XG0005	XG0005C09G003800	XG0005_Chr09	3519901	3528741	-	CNL	False
XG0005	XG0005C09G003820	XG0005_Chr09	3525665	3528775	+	CNL	False
XG0005	XG0005C09G004240	XG0005_Chr09	3836175	3840545	+	CNL	False
XG0005	XG0005C10G003100	XG0005_Chr10	4215801	4219933	+	CNL	False
XG0005	XG0005C10G003600	XG0005_Chr10	4853497	4856457	+	CNL	False
XG0005	XG0005C10G013470	XG0005_Chr10	28565551	28575722	+	TNL	True
XG0005	XG0005C10G013910	XG0005_Chr10	28983157	28986369	-	CNL	False
XG0005	XG0005C10G014040	XG0005_Chr10	29119601	29125500	+	CNL	False
XG0005	XG0005C10G014990	XG0005_Chr10	30158723	30161314	+	CNL	False
XG0005	XG0005C10G015000	XG0005_Chr10	30167262	30168636	+	CNL	False
XG0005	XG0005C10G015020	XG0005_Chr10	30173330	30175800	+	CNL	False
XG0005	XG0005C11G008230	XG0005_Chr11	12266188	12270238	+	TNL	True
XG0005	XG0005C11G009700	XG0005_Chr11	20235825	20243016	-	CNL	False
XG0005	XG0005C11G009870	XG0005_Chr11	20968012	20983361	-	TNL	True
XG0007	XG0007C01G004520	XG0007_Chr01	4476459	4477325	-	CNL	False
XG0007	XG0007C01G015840	XG0007_Chr01	29621426	29627838	+	RNL	False
XG0007	XG0007C02G007820	XG0007_Chr02	8584735	8589562	+	CNL	False
XG0007	XG0007C02G007920	XG0007_Chr02	8713580	8716388	-	CNL	False
XG0007	XG0007C02G007970	XG0007_Chr02	8941403	8944630	-	CNL	False
XG0007	XG0007C02G015300	XG0007_Chr02	29828103	29834050	+	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0007	XG0007C02G015310	XG0007_Chr02	29835878	29840552	+	TNL	True
XG0007	XG0007C02G015320	XG0007_Chr02	29845203	29847131	+	TNL	True
XG0007	XG0007C02G015340	XG0007_Chr02	29852360	29855301	-	CNL	False
XG0007	XG0007C02G015390	XG0007_Chr02	29893987	29901589	+	CNL	False
XG0007	XG0007C02G015430	XG0007_Chr02	29976485	29983868	-	CNL	False
XG0007	XG0007C02G015550	XG0007_Chr02	30143069	30146395	-	RNL	False
XG0007	XG0007C05G008550	XG0007_Chr05	6975469	6979709	-	CNL	False
XG0007	XG0007C05G020370	XG0007_Chr05	30001769	30004954	-	RNL	False
XG0007	XG0007C07G002910	XG0007_Chr07	2911298	2915817	-	CNL	False
XG0007	XG0007C07G002940	XG0007_Chr07	2922440	2931180	-	CNL	False
XG0007	XG0007C07G014200	XG0007_Chr07	30311042	30314800	+	CNL	False
XG0007	XG0007C07G014220	XG0007_Chr07	30316406	30330492	-	CNL	False
XG0007	XG0007C07G014270	XG0007_Chr07	30358878	30359991	+	CNL	False
XG0007	XG0007C08G001080	XG0007_Chr08	2477821	2480423	-	CNL	False
XG0007	XG0007C08G001150	XG0007_Chr08	2567368	2574873	-	TNL	True
XG0007	XG0007C08G001170	XG0007_Chr08	2653411	2667577	-	TNL	True
XG0007	XG0007C08G001190	XG0007_Chr08	2675811	2692966	+	TNL	True
XG0007	XG0007C08G001200	XG0007_Chr08	2709062	2719508	+	TNL	True
XG0007	XG0007C08G001210	XG0007_Chr08	2722908	2730206	-	TNL	True
XG0007	XG0007C08G001220	XG0007_Chr08	2738537	2742072	+	TNL	True
XG0007	XG0007C08G001230	XG0007_Chr08	2770099	2772104	+	TNL	True
XG0007	XG0007C08G001240	XG0007_Chr08	2772566	2778694	+	TNL	True
XG0007	XG0007C08G002120	XG0007_Chr08	5163926	5167204	-	CNL	False
XG0007	XG0007C09G003830	XG0007_Chr09	3736994	3745832	-	CNL	False
XG0007	XG0007C09G003850	XG0007_Chr09	3742756	3745866	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0007	XG0007C09G004280	XG0007_Chr09	4053242	4057613	+	CNL	False
XG0007	XG0007C10G003100	XG0007_Chr10	4263382	4267182	+	CNL	False
XG0007	XG0007C10G003580	XG0007_Chr10	4877934	4880894	+	CNL	False
XG0007	XG0007C10G013470	XG0007_Chr10	28675755	28685926	+	TNL	True
XG0007	XG0007C10G013910	XG0007_Chr10	29093432	29096644	-	CNL	False
XG0007	XG0007C10G014030	XG0007_Chr10	29243312	29249200	+	CNL	False
XG0007	XG0007C10G014980	XG0007_Chr10	30284233	30286824	+	CNL	False
XG0007	XG0007C10G014990	XG0007_Chr10	30292772	30294146	+	CNL	False
XG0007	XG0007C10G015020	XG0007_Chr10	30298838	30301308	+	CNL	False
XG0007	XG0007C11G008430	XG0007_Chr11	11896863	11900913	+	TNL	True
XG0007	XG0007C11G009900	XG0007_Chr11	19862864	19870055	-	CNL	False
XG0007	XG0007C11G010060	XG0007_Chr11	20593299	20608649	-	TNL	True
XG0014	XG0014C01G004580	XG0014_Chr01	4519918	4520784	-	CNL	False
XG0014	XG0014C01G015900	XG0014_Chr01	29473502	29479914	+	RNL	False
XG0014	XG0014C02G007450	XG0014_Chr02	8565219	8570046	+	CNL	False
XG0014	XG0014C02G007540	XG0014_Chr02	8693840	8696648	-	CNL	False
XG0014	XG0014C02G007590	XG0014_Chr02	8921674	8924901	-	CNL	False
XG0014	XG0014C02G014760	XG0014_Chr02	29882021	29887265	-	TNL	True
XG0014	XG0014C02G014840	XG0014_Chr02	29930397	29936344	+	TNL	True
XG0014	XG0014C02G014860	XG0014_Chr02	29938172	29943672	+	TNL	True
XG0014	XG0014C02G014870	XG0014_Chr02	29947499	29951335	+	TNL	True
XG0014	XG0014C02G014880	XG0014_Chr02	29954656	29958278	-	TNL	True
XG0014	XG0014C02G014920	XG0014_Chr02	29996279	30003881	+	CNL	False
XG0014	XG0014C02G014960	XG0014_Chr02	30078771	30086154	-	CNL	False
XG0014	XG0014C02G015070	XG0014_Chr02	30245434	30248760	-	RNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0014	XG0014C05G008630	XG0014_Chr05	7080052	7084293	-	CNL	False
XG0014	XG0014C05G020200	XG0014_Chr05	30110186	30113371	-	RNL	False
XG0014	XG0014C07G002840	XG0014_Chr07	2884073	2888592	-	CNL	False
XG0014	XG0014C07G002870	XG0014_Chr07	2895211	2903912	-	CNL	False
XG0014	XG0014C07G013710	XG0014_Chr07	30451080	30454838	+	CNL	False
XG0014	XG0014C07G013730	XG0014_Chr07	30456444	30470530	-	CNL	False
XG0014	XG0014C07G013790	XG0014_Chr07	30498920	30500033	+	CNL	False
XG0014	XG0014C08G001070	XG0014_Chr08	2529977	2532579	-	CNL	False
XG0014	XG0014C08G001140	XG0014_Chr08	2619507	2627012	-	TNL	True
XG0014	XG0014C08G001160	XG0014_Chr08	2705540	2719712	-	TNL	True
XG0014	XG0014C08G001170	XG0014_Chr08	2727942	2745071	+	TNL	True
XG0014	XG0014C08G001180	XG0014_Chr08	2761886	2772333	+	TNL	True
XG0014	XG0014C08G001190	XG0014_Chr08	2775733	2783031	-	TNL	True
XG0014	XG0014C08G001200	XG0014_Chr08	2791362	2794897	+	TNL	True
XG0014	XG0014C08G001210	XG0014_Chr08	2822925	2824930	+	TNL	True
XG0014	XG0014C08G001220	XG0014_Chr08	2825392	2831518	+	TNL	True
XG0014	XG0014C08G002080	XG0014_Chr08	5186113	5189391	-	CNL	False
XG0014	XG0014C09G003700	XG0014_Chr09	3507466	3511847	-	CNL	False
XG0014	XG0014C09G003710	XG0014_Chr09	3513275	3516385	+	CNL	False
XG0014	XG0014C09G004140	XG0014_Chr09	3823625	3825354	+	CNL	False
XG0014	XG0014C10G003050	XG0014_Chr10	4228852	4232965	+	CNL	False
XG0014	XG0014C10G003520	XG0014_Chr10	4854401	4857361	+	CNL	False
XG0014	XG0014C10G013140	XG0014_Chr10	28563819	28573990	+	TNL	True
XG0014	XG0014C10G013580	XG0014_Chr10	28980975	28984187	-	CNL	False
XG0014	XG0014C10G013690	XG0014_Chr10	29117430	29123329	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0014	XG0014C10G014570	XG0014_Chr10	30158472	30161063	+	CNL	False
XG0014	XG0014C10G014580	XG0014_Chr10	30167011	30168385	+	CNL	False
XG0014	XG0014C10G014610	XG0014_Chr10	30173078	30175548	+	CNL	False
XG0014	XG0014C11G007960	XG0014_Chr11	12325203	12329253	+	TNL	True
XG0014	XG0014C11G009330	XG0014_Chr11	20294875	20302066	-	CNL	False
XG0014	XG0014C11G009500	XG0014_Chr11	21027060	21042409	-	TNL	True
XG0056	XG0056C01G004440	XG0056_Chr01	4468505	4469371	-	CNL	False
XG0056	XG0056C01G015770	XG0056_Chr01	29621963	29628375	+	RNL	False
XG0056	XG0056C02G007800	XG0056_Chr02	8583479	8588312	+	CNL	False
XG0056	XG0056C02G007910	XG0056_Chr02	8712088	8714896	-	CNL	False
XG0056	XG0056C02G007960	XG0056_Chr02	8939918	8943145	-	CNL	False
XG0056	XG0056C02G015430	XG0056_Chr02	29928351	29934298	+	TNL	True
XG0056	XG0056C02G015440	XG0056_Chr02	29936127	29940801	+	TNL	True
XG0056	XG0056C02G015450	XG0056_Chr02	29945455	29947384	+	TNL	True
XG0056	XG0056C02G015470	XG0056_Chr02	29952613	29955554	-	CNL	False
XG0056	XG0056C02G015520	XG0056_Chr02	29994241	30001842	+	CNL	False
XG0056	XG0056C02G015560	XG0056_Chr02	30076744	30084127	-	CNL	False
XG0056	XG0056C02G015670	XG0056_Chr02	30243391	30246717	-	RNL	False
XG0056	XG0056C05G008540	XG0056_Chr05	7106466	7110706	-	CNL	False
XG0056	XG0056C05G020470	XG0056_Chr05	29922176	29925361	-	RNL	False
XG0056	XG0056C07G003000	XG0056_Chr07	3257385	3262391	-	CNL	False
XG0056	XG0056C07G003030	XG0056_Chr07	3269033	3277737	-	CNL	False
XG0056	XG0056C07G014220	XG0056_Chr07	30642968	30646724	+	CNL	False
XG0056	XG0056C07G014240	XG0056_Chr07	30648329	30662415	-	CNL	False
XG0056	XG0056C07G014300	XG0056_Chr07	30690806	30691919	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0056	XG0056C08G001090	XG0056_Chr08	2541140	2543742	-	CNL	False
XG0056	XG0056C08G001170	XG0056_Chr08	2630669	2638174	-	TNL	True
XG0056	XG0056C08G001190	XG0056_Chr08	2716721	2730897	-	TNL	True
XG0056	XG0056C08G001220	XG0056_Chr08	2739125	2756272	+	TNL	True
XG0056	XG0056C08G001230	XG0056_Chr08	2772370	2782819	+	TNL	True
XG0056	XG0056C08G001240	XG0056_Chr08	2786219	2793517	-	TNL	True
XG0056	XG0056C08G001250	XG0056_Chr08	2801849	2805384	+	TNL	True
XG0056	XG0056C08G001260	XG0056_Chr08	2833411	2835416	+	TNL	True
XG0056	XG0056C08G001270	XG0056_Chr08	2835878	2842004	+	TNL	True
XG0056	XG0056C08G002120	XG0056_Chr08	5200054	5203332	-	CNL	False
XG0056	XG0056C09G003790	XG0056_Chr09	3485420	3489801	-	CNL	False
XG0056	XG0056C09G003810	XG0056_Chr09	3491229	3494339	+	CNL	False
XG0056	XG0056C09G004230	XG0056_Chr09	3801574	3803303	+	CNL	False
XG0056	XG0056C10G003060	XG0056_Chr10	4131027	4135140	+	CNL	False
XG0056	XG0056C10G003560	XG0056_Chr10	4768967	4771927	+	CNL	False
XG0056	XG0056C10G013410	XG0056_Chr10	28466714	28476886	+	TNL	True
XG0056	XG0056C10G013850	XG0056_Chr10	28884341	28887553	-	CNL	False
XG0056	XG0056C10G013980	XG0056_Chr10	29020794	29026693	+	CNL	False
XG0056	XG0056C10G014900	XG0056_Chr10	30069783	30072374	+	CNL	False
XG0056	XG0056C10G014910	XG0056_Chr10	30078322	30079696	+	CNL	False
XG0056	XG0056C10G014940	XG0056_Chr10	30084390	30086860	+	CNL	False
XG0056	XG0056C11G008300	XG0056_Chr11	11398266	11402316	+	TNL	True
XG0056	XG0056C11G009810	XG0056_Chr11	19368068	19375259	-	CNL	False
XG0056	XG0056C11G009970	XG0056_Chr11	20100265	20115614	-	TNL	True
XG0165	XG0165C01G004420	XG0165_Chr01	4399368	4400234	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0165	XG0165C01G015610	XG0165_Chr01	29437521	29443933	+	RNL	False
XG0165	XG0165C02G007790	XG0165_Chr02	8554484	8559311	+	CNL	False
XG0165	XG0165C02G007890	XG0165_Chr02	8683336	8686144	-	CNL	False
XG0165	XG0165C02G007940	XG0165_Chr02	8911167	8914394	-	CNL	False
XG0165	XG0165C02G015310	XG0165_Chr02	29895715	29901662	+	TNL	True
XG0165	XG0165C02G015320	XG0165_Chr02	29903488	29911981	+	TNL	True
XG0165	XG0165C02G015330	XG0165_Chr02	29912802	29916644	+	TNL	True
XG0165	XG0165C02G015340	XG0165_Chr02	29919972	29922913	-	CNL	False
XG0165	XG0165C02G015390	XG0165_Chr02	29961571	29969173	+	CNL	False
XG0165	XG0165C02G015430	XG0165_Chr02	30044054	30051437	-	CNL	False
XG0165	XG0165C02G015540	XG0165_Chr02	30210782	30214108	-	RNL	False
XG0165	XG0165C05G008630	XG0165_Chr05	7119013	7123253	-	CNL	False
XG0165	XG0165C05G020550	XG0165_Chr05	30035558	30038743	-	RNL	False
XG0165	XG0165C07G003030	XG0165_Chr07	3291857	3296376	-	CNL	False
XG0165	XG0165C07G003060	XG0165_Chr07	3302999	3311728	-	CNL	False
XG0165	XG0165C07G014300	XG0165_Chr07	30718353	30722109	+	CNL	False
XG0165	XG0165C07G014320	XG0165_Chr07	30723714	30737800	-	CNL	False
XG0165	XG0165C07G014370	XG0165_Chr07	30766191	30767304	+	CNL	False
XG0165	XG0165C08G001070	XG0165_Chr08	2407822	2410424	-	CNL	False
XG0165	XG0165C08G001150	XG0165_Chr08	2497345	2504850	-	TNL	True
XG0165	XG0165C08G001170	XG0165_Chr08	2583395	2597581	-	TNL	True
XG0165	XG0165C08G001200	XG0165_Chr08	2605807	2622954	+	TNL	True
XG0165	XG0165C08G001210	XG0165_Chr08	2639050	2649499	+	TNL	True
XG0165	XG0165C08G001220	XG0165_Chr08	2652899	2660197	-	TNL	True
XG0165	XG0165C08G001230	XG0165_Chr08	2668528	2672063	+	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0165	XG0165C08G001240	XG0165_Chr08	2700090	2702095	+	TNL	True
XG0165	XG0165C08G001250	XG0165_Chr08	2702557	2708683	+	TNL	True
XG0165	XG0165C08G002130	XG0165_Chr08	5413098	5416376	-	CNL	False
XG0165	XG0165C09G003760	XG0165_Chr09	3708681	3712983	-	CNL	False
XG0165	XG0165C09G003780	XG0165_Chr09	3714411	3717521	+	CNL	False
XG0165	XG0165C09G004200	XG0165_Chr09	4024892	4026620	+	CNL	False
XG0165	XG0165C10G003090	XG0165_Chr10	4277213	4281345	+	CNL	False
XG0165	XG0165C10G003590	XG0165_Chr10	4915156	4918116	+	CNL	False
XG0165	XG0165C10G013440	XG0165_Chr10	28819115	28829287	+	TNL	True
XG0165	XG0165C10G013880	XG0165_Chr10	29236747	29239959	-	CNL	False
XG0165	XG0165C10G014010	XG0165_Chr10	29373217	29379118	+	CNL	False
XG0165	XG0165C10G014980	XG0165_Chr10	30423545	30426136	+	CNL	False
XG0165	XG0165C10G014990	XG0165_Chr10	30432086	30433462	+	CNL	False
XG0165	XG0165C10G015010	XG0165_Chr10	30438328	30442029	+	CNL	False
XG0165	XG0165C11G008280	XG0165_Chr11	12385521	12389571	+	TNL	True
XG0165	XG0165C11G009780	XG0165_Chr11	20350211	20357402	-	CNL	False
XG0165	XG0165C11G009950	XG0165_Chr11	21081237	21096585	-	TNL	True
XG0174	XG0174C01G004550	XG0174_Chr01	4554303	4555169	-	CNL	False
XG0174	XG0174C01G015880	XG0174_Chr01	29648989	29655401	+	RNL	False
XG0174	XG0174C02G007740	XG0174_Chr02	8551920	8556747	+	CNL	False
XG0174	XG0174C02G007840	XG0174_Chr02	8680539	8683347	-	CNL	False
XG0174	XG0174C02G007890	XG0174_Chr02	8908371	8911598	-	CNL	False
XG0174	XG0174C02G015220	XG0174_Chr02	29884355	29889599	-	TNL	True
XG0174	XG0174C02G015310	XG0174_Chr02	29932729	29938676	+	TNL	True
XG0174	XG0174C02G015320	XG0174_Chr02	29940504	29945178	+	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0174	XG0174C02G015330	XG0174_Chr02	29949831	29951759	+	TNL	True
XG0174	XG0174C02G015350	XG0174_Chr02	29956988	29959929	-	CNL	False
XG0174	XG0174C02G015400	XG0174_Chr02	29998609	30006211	+	CNL	False
XG0174	XG0174C02G015440	XG0174_Chr02	30081099	30088482	-	CNL	False
XG0174	XG0174C02G015560	XG0174_Chr02	30247759	30251085	-	RNL	False
XG0174	XG0174C05G008530	XG0174_Chr05	7077369	7081609	-	CNL	False
XG0174	XG0174C05G020360	XG0174_Chr05	30193935	30197120	-	RNL	False
XG0174	XG0174C07G002990	XG0174_Chr07	2897795	2902314	-	CNL	False
XG0174	XG0174C07G003020	XG0174_Chr07	2908933	2917634	-	CNL	False
XG0174	XG0174C07G014190	XG0174_Chr07	30250918	30254676	+	CNL	False
XG0174	XG0174C07G014210	XG0174_Chr07	30256282	30270368	-	CNL	False
XG0174	XG0174C07G014260	XG0174_Chr07	30298751	30299864	+	CNL	False
XG0174	XG0174C08G001090	XG0174_Chr08	2410817	2413419	-	CNL	False
XG0174	XG0174C08G001160	XG0174_Chr08	2500349	2507854	-	TNL	True
XG0174	XG0174C08G001180	XG0174_Chr08	2586397	2600566	-	TNL	True
XG0174	XG0174C08G001190	XG0174_Chr08	2608794	2625943	+	TNL	True
XG0174	XG0174C08G001200	XG0174_Chr08	2642036	2652485	+	TNL	True
XG0174	XG0174C08G001210	XG0174_Chr08	2655885	2663183	-	TNL	True
XG0174	XG0174C08G001220	XG0174_Chr08	2671514	2675049	+	TNL	True
XG0174	XG0174C08G001230	XG0174_Chr08	2703075	2705080	+	TNL	True
XG0174	XG0174C08G001240	XG0174_Chr08	2705542	2711668	+	TNL	True
XG0174	XG0174C08G002090	XG0174_Chr08	5118891	5127223	-	CNL	False
XG0174	XG0174C09G003890	XG0174_Chr09	3511084	3519922	-	CNL	False
XG0174	XG0174C09G003910	XG0174_Chr09	3516846	3519956	+	CNL	False
XG0174	XG0174C09G004330	XG0174_Chr09	3827338	3831709	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0174	XG0174C10G003130	XG0174_Chr10	3960928	3965058	+	CNL	False
XG0174	XG0174C10G003620	XG0174_Chr10	4598823	4601783	+	CNL	False
XG0174	XG0174C10G013430	XG0174_Chr10	28285869	28296040	+	TNL	True
XG0174	XG0174C10G013870	XG0174_Chr10	28703469	28706681	-	CNL	False
XG0174	XG0174C10G014000	XG0174_Chr10	28839911	28843811	+	CNL	False
XG0174	XG0174C10G014950	XG0174_Chr10	29879785	29882376	+	CNL	False
XG0174	XG0174C10G014960	XG0174_Chr10	29888324	29889698	+	CNL	False
XG0174	XG0174C10G014980	XG0174_Chr10	29894391	29896861	+	CNL	False
XG0174	XG0174C11G008270	XG0174_Chr11	12343984	12346056	+	TNL	True
XG0174	XG0174C11G009740	XG0174_Chr11	20294977	20302165	-	CNL	False
XG0174	XG0174C11G009920	XG0174_Chr11	21026092	21041442	-	TNL	True
XG0180	XG0180C01G004430	XG0180_Chr01	4381562	4382428	-	CNL	False
XG0180	XG0180C01G015710	XG0180_Chr01	29503807	29510219	+	RNL	False
XG0180	XG0180C02G007810	XG0180_Chr02	8558498	8563331	+	CNL	False
XG0180	XG0180C02G007910	XG0180_Chr02	8687276	8690084	-	CNL	False
XG0180	XG0180C02G007960	XG0180_Chr02	8915103	8918330	-	CNL	False
XG0180	XG0180C02G015360	XG0180_Chr02	29792115	29798062	+	TNL	True
XG0180	XG0180C02G015370	XG0180_Chr02	29799890	29804564	+	TNL	True
XG0180	XG0180C02G015380	XG0180_Chr02	29809215	29812428	+	TNL	True
XG0180	XG0180C02G015390	XG0180_Chr02	29816372	29819313	-	CNL	False
XG0180	XG0180C02G015440	XG0180_Chr02	29857999	29865601	+	CNL	False
XG0180	XG0180C02G015480	XG0180_Chr02	29940427	29947832	-	CNL	False
XG0180	XG0180C02G015590	XG0180_Chr02	30106999	30110327	-	RNL	False
XG0180	XG0180C02G015820	XG0180_Chr02	30377835	30381163	-	RNL	False
XG0180	XG0180C05G008640	XG0180_Chr05	7022130	7026370	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0180	XG0180C05G020420	XG0180_Chr05	30084916	30088101	-	RNL	False
XG0180	XG0180C07G002990	XG0180_Chr07	2906389	2910908	-	CNL	False
XG0180	XG0180C07G003020	XG0180_Chr07	2917527	2926227	-	CNL	False
XG0180	XG0180C07G014310	XG0180_Chr07	30442202	30445960	+	CNL	False
XG0180	XG0180C07G014330	XG0180_Chr07	30447566	30461652	-	CNL	False
XG0180	XG0180C07G014380	XG0180_Chr07	30490038	30491151	+	CNL	False
XG0180	XG0180C08G001090	XG0180_Chr08	2451828	2454430	-	CNL	False
XG0180	XG0180C08G001160	XG0180_Chr08	2541360	2548865	-	TNL	True
XG0180	XG0180C08G001180	XG0180_Chr08	2627408	2641577	-	TNL	True
XG0180	XG0180C08G001210	XG0180_Chr08	2649805	2666954	+	TNL	True
XG0180	XG0180C08G001220	XG0180_Chr08	2683047	2693496	+	TNL	True
XG0180	XG0180C08G001230	XG0180_Chr08	2696896	2704194	-	TNL	True
XG0180	XG0180C08G001240	XG0180_Chr08	2712525	2716060	+	TNL	True
XG0180	XG0180C08G001250	XG0180_Chr08	2744086	2746091	+	TNL	True
XG0180	XG0180C08G001260	XG0180_Chr08	2746553	2752679	+	TNL	True
XG0180	XG0180C08G002120	XG0180_Chr08	5361021	5369353	-	CNL	False
XG0180	XG0180C09G003850	XG0180_Chr09	3521306	3525687	-	CNL	False
XG0180	XG0180C09G003870	XG0180_Chr09	3527115	3530225	+	CNL	False
XG0180	XG0180C09G004290	XG0180_Chr09	3837418	3841789	+	CNL	False
XG0180	XG0180C10G003100	XG0180_Chr10	4444735	4448848	+	CNL	False
XG0180	XG0180C10G003600	XG0180_Chr10	5081659	5084619	+	CNL	False
XG0180	XG0180C10G013570	XG0180_Chr10	29078260	29088431	+	TNL	True
XG0180	XG0180C10G014010	XG0180_Chr10	29495871	29499083	-	CNL	False
XG0180	XG0180C10G014120	XG0180_Chr10	29632325	29638225	+	CNL	False
XG0180	XG0180C10G015040	XG0180_Chr10	30673796	30676387	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0180	XG0180C10G015050	XG0180_Chr10	30682335	30683709	+	CNL	False
XG0180	XG0180C10G015070	XG0180_Chr10	30688401	30690871	+	CNL	False
XG0180	XG0180C11G008360	XG0180_Chr11	12338608	12342658	+	TNL	True
XG0180	XG0180C11G009810	XG0180_Chr11	20303574	20310765	-	CNL	False
XG0180	XG0180C11G009970	XG0180_Chr11	21034010	21049360	-	TNL	True
XG0195	XG0195C01G004440	XG0195_Chr01	4462252	4463118	-	CNL	False
XG0195	XG0195C01G015770	XG0195_Chr01	29541661	29548073	+	RNL	False
XG0195	XG0195C02G007790	XG0195_Chr02	8568986	8573813	+	CNL	False
XG0195	XG0195C02G007890	XG0195_Chr02	8697604	8700412	-	CNL	False
XG0195	XG0195C02G007940	XG0195_Chr02	8925436	8928663	-	CNL	False
XG0195	XG0195C02G015340	XG0195_Chr02	29778293	29779817	-	TNL	True
XG0195	XG0195C02G015430	XG0195_Chr02	29822775	29828722	+	TNL	True
XG0195	XG0195C02G015440	XG0195_Chr02	29830548	29839040	+	TNL	True
XG0195	XG0195C02G015450	XG0195_Chr02	29839861	29843702	+	TNL	True
XG0195	XG0195C02G015460	XG0195_Chr02	29847030	29849971	-	CNL	False
XG0195	XG0195C02G015510	XG0195_Chr02	29888627	29896229	+	CNL	False
XG0195	XG0195C02G015550	XG0195_Chr02	29971106	29978489	-	CNL	False
XG0195	XG0195C02G015660	XG0195_Chr02	30137823	30141149	-	RNL	False
XG0195	XG0195C05G008550	XG0195_Chr05	7103463	7107703	-	CNL	False
XG0195	XG0195C05G020430	XG0195_Chr05	30012142	30015327	-	RNL	False
XG0195	XG0195C07G002970	XG0195_Chr07	2907482	2912488	-	CNL	False
XG0195	XG0195C07G003000	XG0195_Chr07	2919130	2927831	-	CNL	False
XG0195	XG0195C07G014140	XG0195_Chr07	30333433	30337189	+	CNL	False
XG0195	XG0195C07G014160	XG0195_Chr07	30338794	30352880	-	CNL	False
XG0195	XG0195C07G014210	XG0195_Chr07	30381283	30382396	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0195	XG0195C08G001050	XG0195_Chr08	2441744	2444346	-	CNL	False
XG0195	XG0195C08G001120	XG0195_Chr08	2531265	2538770	-	TNL	True
XG0195	XG0195C08G001140	XG0195_Chr08	2617314	2631496	-	TNL	True
XG0195	XG0195C08G001160	XG0195_Chr08	2639724	2656871	+	TNL	True
XG0195	XG0195C08G001170	XG0195_Chr08	2672966	2683414	+	TNL	True
XG0195	XG0195C08G001180	XG0195_Chr08	2686814	2694112	-	TNL	True
XG0195	XG0195C08G001190	XG0195_Chr08	2702442	2705977	+	TNL	True
XG0195	XG0195C08G001200	XG0195_Chr08	2734003	2736008	+	TNL	True
XG0195	XG0195C08G001210	XG0195_Chr08	2736470	2742596	+	TNL	True
XG0195	XG0195C08G002050	XG0195_Chr08	5138645	5141923	-	CNL	False
XG0195	XG0195C09G003780	XG0195_Chr09	3708113	3716951	-	CNL	False
XG0195	XG0195C09G003800	XG0195_Chr09	3713875	3716985	+	CNL	False
XG0195	XG0195C09G004220	XG0195_Chr09	4024354	4028725	+	CNL	False
XG0195	XG0195C10G003030	XG0195_Chr10	4263968	4268100	+	CNL	False
XG0195	XG0195C10G003530	XG0195_Chr10	4901859	4904819	+	CNL	False
XG0195	XG0195C10G013390	XG0195_Chr10	28621703	28631874	+	TNL	True
XG0195	XG0195C10G013830	XG0195_Chr10	29038841	29042053	-	CNL	False
XG0195	XG0195C10G013960	XG0195_Chr10	29175288	29181186	+	CNL	False
XG0195	XG0195C10G014900	XG0195_Chr10	30216302	30218893	+	CNL	False
XG0195	XG0195C10G014910	XG0195_Chr10	30224840	30226214	+	CNL	False
XG0195	XG0195C10G014930	XG0195_Chr10	30230907	30233377	+	CNL	False
XG0195	XG0195C11G008310	XG0195_Chr11	12276869	12278941	+	TNL	True
XG0195	XG0195C11G009810	XG0195_Chr11	20290772	20297963	-	CNL	False
XG0195	XG0195C11G009970	XG0195_Chr11	21022645	21037995	-	TNL	True
XG0219	XG0219C01G004580	XG0219_Chr01	4528928	4529794	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0219	XG0219C01G016230	XG0219_Chr01	29504611	29511023	+	RNL	False
XG0219	XG0219C02G007960	XG0219_Chr02	8572737	8577564	+	CNL	False
XG0219	XG0219C02G008060	XG0219_Chr02	8701566	8704374	-	CNL	False
XG0219	XG0219C02G008110	XG0219_Chr02	8929397	8932624	-	CNL	False
XG0219	XG0219C02G015510	XG0219_Chr02	29780129	29785373	-	TNL	True
XG0219	XG0219C02G015600	XG0219_Chr02	29828504	29834451	+	TNL	True
XG0219	XG0219C02G015610	XG0219_Chr02	29836279	29840953	+	TNL	True
XG0219	XG0219C02G015620	XG0219_Chr02	29845606	29849442	+	TNL	True
XG0219	XG0219C02G015630	XG0219_Chr02	29852763	29855704	-	CNL	False
XG0219	XG0219C02G015680	XG0219_Chr02	29894386	29901988	+	CNL	False
XG0219	XG0219C02G015720	XG0219_Chr02	29976878	29984261	-	CNL	False
XG0219	XG0219C02G015840	XG0219_Chr02	30143531	30146857	-	RNL	False
XG0219	XG0219C05G008660	XG0219_Chr05	7094774	7099015	-	CNL	False
XG0219	XG0219C05G020560	XG0219_Chr05	29906433	29909618	-	RNL	False
XG0219	XG0219C07G002940	XG0219_Chr07	2893878	2898397	-	CNL	False
XG0219	XG0219C07G002970	XG0219_Chr07	2905016	2913717	-	CNL	False
XG0219	XG0219C07G014240	XG0219_Chr07	30461935	30465691	+	CNL	False
XG0219	XG0219C07G014260	XG0219_Chr07	30467296	30481382	-	CNL	False
XG0219	XG0219C07G014320	XG0219_Chr07	30509767	30510880	+	CNL	False
XG0219	XG0219C08G001130	XG0219_Chr08	2441967	2444569	-	CNL	False
XG0219	XG0219C08G001220	XG0219_Chr08	2531503	2539008	-	TNL	True
XG0219	XG0219C08G001240	XG0219_Chr08	2617551	2631720	-	TNL	True
XG0219	XG0219C08G001270	XG0219_Chr08	2639948	2657097	+	TNL	True
XG0219	XG0219C08G001280	XG0219_Chr08	2673190	2683639	+	TNL	True
XG0219	XG0219C08G001290	XG0219_Chr08	2687039	2694337	-	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0219	XG0219C08G001300	XG0219_Chr08	2702668	2706203	+	TNL	True
XG0219	XG0219C08G001310	XG0219_Chr08	2734229	2736234	+	TNL	True
XG0219	XG0219C08G001320	XG0219_Chr08	2736696	2742822	+	TNL	True
XG0219	XG0219C08G002190	XG0219_Chr08	5273433	5281765	-	CNL	False
XG0219	XG0219C09G004010	XG0219_Chr09	3518578	3527416	-	CNL	False
XG0219	XG0219C09G004030	XG0219_Chr09	3524340	3527450	+	CNL	False
XG0219	XG0219C09G004450	XG0219_Chr09	3834750	3839121	+	CNL	False
XG0219	XG0219C10G003050	XG0219_Chr10	4224847	4228960	+	CNL	False
XG0219	XG0219C10G003560	XG0219_Chr10	4850393	4853353	+	CNL	False
XG0219	XG0219C10G013390	XG0219_Chr10	28549113	28559283	+	TNL	True
XG0219	XG0219C10G013840	XG0219_Chr10	28966261	28969473	-	CNL	False
XG0219	XG0219C10G013960	XG0219_Chr10	29102709	29108608	+	CNL	False
XG0219	XG0219C10G014900	XG0219_Chr10	30143718	30146309	+	CNL	False
XG0219	XG0219C10G014910	XG0219_Chr10	30152257	30153631	+	CNL	False
XG0219	XG0219C10G014930	XG0219_Chr10	30158324	30160794	+	CNL	False
XG0219	XG0219C11G008460	XG0219_Chr11	12392558	12396608	+	TNL	True
XG0219	XG0219C11G010000	XG0219_Chr11	20362058	20369249	-	CNL	False
XG0219	XG0219C11G010160	XG0219_Chr11	21094238	21109587	-	TNL	True
XG0245	XG0245C01G004480	XG0245_Chr01	4501583	4502449	-	CNL	False
XG0245	XG0245C01G015720	XG0245_Chr01	29529894	29536316	+	RNL	False
XG0245	XG0245C02G007800	XG0245_Chr02	8474618	8479445	+	CNL	False
XG0245	XG0245C02G007900	XG0245_Chr02	8603199	8606007	-	CNL	False
XG0245	XG0245C02G007950	XG0245_Chr02	8831027	8834254	-	CNL	False
XG0245	XG0245C02G015420	XG0245_Chr02	29776840	29785566	+	TNL	True
XG0245	XG0245C02G015430	XG0245_Chr02	29787394	29792068	+	TNL	True

species	gene id	chrom	start	end	strand	subclass	has tir
XG0245	XG0245C02G015440	XG0245_Chr02	29796719	29799932	+	TNL	True
XG0245	XG0245C02G015450	XG0245_Chr02	29803876	29806817	-	CNL	False
XG0245	XG0245C02G015500	XG0245_Chr02	29845501	29853103	+	CNL	False
XG0245	XG0245C02G015540	XG0245_Chr02	29928003	29935386	-	CNL	False
XG0245	XG0245C02G015670	XG0245_Chr02	30094708	30098034	-	RNL	False
XG0245	XG0245C05G008620	XG0245_Chr05	7106455	7110695	-	CNL	False
XG0245	XG0245C05G020360	XG0245_Chr05	29962737	29965922	-	RNL	False
XG0245	XG0245C07G002910	XG0245_Chr07	2904169	2908688	-	CNL	False
XG0245	XG0245C07G002940	XG0245_Chr07	2915307	2924008	-	CNL	False
XG0245	XG0245C07G014140	XG0245_Chr07	30367346	30371104	+	CNL	False
XG0245	XG0245C07G014160	XG0245_Chr07	30372710	30386840	-	CNL	False
XG0245	XG0245C07G014220	XG0245_Chr07	30415215	30416328	+	CNL	False
XG0245	XG0245C08G001090	XG0245_Chr08	2409029	2411631	-	CNL	False
XG0245	XG0245C08G001160	XG0245_Chr08	2498564	2506069	-	TNL	True
XG0245	XG0245C08G001170	XG0245_Chr08	2585330	2599463	-	TNL	True
XG0245	XG0245C08G001200	XG0245_Chr08	2607701	2624852	+	TNL	True
XG0245	XG0245C08G001210	XG0245_Chr08	2640947	2651391	+	TNL	True
XG0245	XG0245C08G001220	XG0245_Chr08	2654789	2662087	-	TNL	True
XG0245	XG0245C08G001230	XG0245_Chr08	2670418	2673953	+	TNL	True
XG0245	XG0245C08G001240	XG0245_Chr08	2701980	2703985	+	TNL	True
XG0245	XG0245C08G001250	XG0245_Chr08	2704447	2710573	+	TNL	True
XG0245	XG0245C08G002100	XG0245_Chr08	5120395	5123673	-	CNL	False
XG0245	XG0245C09G003730	XG0245_Chr09	3477127	3485965	-	CNL	False
XG0245	XG0245C09G003750	XG0245_Chr09	3482889	3485999	+	CNL	False
XG0245	XG0245C09G004170	XG0245_Chr09	3791819	3793547	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0245	XG0245C10G003090	XG0245_Chr10	4108372	4112485	+	CNL	False
XG0245	XG0245C10G003590	XG0245_Chr10	4746103	4749063	+	CNL	False
XG0245	XG0245C10G013510	XG0245_Chr10	28521262	28531434	+	TNL	True
XG0245	XG0245C10G013960	XG0245_Chr10	28938639	28941851	-	CNL	False
XG0245	XG0245C10G014090	XG0245_Chr10	29075094	29080980	+	CNL	False
XG0245	XG0245C10G015100	XG0245_Chr10	30115009	30117600	+	CNL	False
XG0245	XG0245C10G015110	XG0245_Chr10	30123548	30124922	+	CNL	False
XG0245	XG0245C10G015130	XG0245_Chr10	30129618	30132088	+	CNL	False
XG0245	XG0245C11G008300	XG0245_Chr11	12520814	12524864	+	TNL	True
XG0245	XG0245C11G009760	XG0245_Chr11	20465666	20472854	-	CNL	False
XG0245	XG0245C11G009920	XG0245_Chr11	21195979	21211329	-	TNL	True
XG0334	XG0334C01G04660	XG0334_Chr01	4380971	4382215	-	CNL	False
XG0334	XG0334C01G16500	XG0334_Chr01	29271000	29277653	+	RNL	False
XG0334	XG0334C02G07830	XG0334_Chr02	8506272	8513636	+	CNL	False
XG0334	XG0334C02G07910	XG0334_Chr02	8635229	8638037	-	CNL	False
XG0334	XG0334C02G07980	XG0334_Chr02	8863173	8866498	-	CNL	False
XG0334	XG0334C02G16980	XG0334_Chr02	29520715	29527505	-	TNL	True
XG0334	XG0334C02G17080	XG0334_Chr02	29570338	29576299	+	TNL	True
XG0334	XG0334C02G17090	XG0334_Chr02	29578126	29582800	+	TNL	True
XG0334	XG0334C02G17100	XG0334_Chr02	29587031	29591250	+	TNL	True
XG0334	XG0334C02G17110	XG0334_Chr02	29594439	29598469	-	CNL	False
XG0334	XG0334C02G17150	XG0334_Chr02	29636195	29643849	+	CNL	False
XG0334	XG0334C02G17200	XG0334_Chr02	29718557	29726268	-	CNL	False
XG0334	XG0334C02G17340	XG0334_Chr02	29886775	29890339	-	RNL	False
XG0334	XG0334C05G08860	XG0334_Chr05	6911175	6917773	-	CNL	False

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XG0334	XG0334C05G21760	XG0334_Chr05	30167068	30170379	-	RNL	False
XG0334	XG0334C07G03010	XG0334_Chr07	2880098	2885104	-	CNL	False
XG0334	XG0334C07G03040	XG0334_Chr07	2891746	2900473	-	CNL	False
XG0334	XG0334C07G15610	XG0334_Chr07	30171065	30174823	+	CNL	False
XG0334	XG0334C07G15620	XG0334_Chr07	30176429	30190695	-	CNL	False
XG0334	XG0334C07G15690	XG0334_Chr07	30218938	30220051	+	CNL	False
XG0334	XG0334C08G01400	XG0334_Chr08	2342271	2344873	-	CNL	False
XG0334	XG0334C08G01450	XG0334_Chr08	2431518	2439562	-	TNL	True
XG0334	XG0334C08G01470	XG0334_Chr08	2517989	2532147	-	TNL	True
XG0334	XG0334C08G01480	XG0334_Chr08	2540377	2557512	+	TNL	True
XG0334	XG0334C08G01485	XG0334_Chr08	2573612	2584075	+	TNL	True
XG0334	XG0334C08G01490	XG0334_Chr08	2587500	2594798	-	TNL	True
XG0334	XG0334C08G01500	XG0334_Chr08	2603003	2618417	+	TNL	True
XG0334	XG0334C08G01520	XG0334_Chr08	2632672	2636743	+	TNL	True
XG0334	XG0334C08G01530	XG0334_Chr08	2637205	2642319	+	TNL	True
XG0334	XG0334C08G02480	XG0334_Chr08	4910039	4913746	-	CNL	False
XG0334	XG0334C09G04240	XG0334_Chr09	3371141	3380964	-	CNL	False
XG0334	XG0334C09G04250	XG0334_Chr09	3377037	3381116	+	CNL	False
XG0334	XG0334C09G04650	XG0334_Chr09	3687887	3689615	+	CNL	False
XG0334	XG0334C10G03470	XG0334_Chr10	3796547	3800661	+	CNL	False
XG0334	XG0334C10G04050	XG0334_Chr10	4433476	4437861	+	CNL	False
XG0334	XG0334C10G14610	XG0334_Chr10	28300220	28310716	+	TNL	True
XG0334	XG0334C10G14750	XG0334_Chr10	28428356	28433182	-	TNL	True
XG0334	XG0334C10G15200	XG0334_Chr10	28803909	28807121	-	CNL	False
XG0334	XG0334C10G15300	XG0334_Chr10	28940331	28943465	+	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0334	XG0334C10G16200	XG0334_Chr10	29983207	29985964	+	CNL	False
XG0334	XG0334C10G16210	XG0334_Chr10	29991772	29993146	+	CNL	False
XG0334	XG0334C10G16240	XG0334_Chr10	29997840	30000310	+	CNL	False
XG0334	XG0334C11G09100	XG0334_Chr11	11334886	11336059	+	CNL	False
XG0334	XG0334C11G11700	XG0334_Chr11	19307517	19315066	-	CNL	False
XG0334	XG0334C11G11910	XG0334_Chr11	20039665	20055015	-	TNL	True
XG0380	XG0380C01G004350	XG0380_Chr01	4369334	4370200	-	CNL	False
XG0380	XG0380C01G015870	XG0380_Chr01	29434958	29441611	+	RNL	False
XG0380	XG0380C02G033510	XG0380_Chr02	8459994	8467355	+	CNL	False
XG0380	XG0380C02G033600	XG0380_Chr02	8589005	8591813	-	CNL	False
XG0380	XG0380C02G033650	XG0380_Chr02	8817001	8820228	-	CNL	False
XG0380	XG0380C02G041570	XG0380_Chr02	29423815	29430607	-	TNL	True
XG0380	XG0380C02G041600	XG0380_Chr02	29440947	29442470	-	TNL	True
XG0380	XG0380C02G041700	XG0380_Chr02	29485529	29491493	+	TNL	True
XG0380	XG0380C02G041710	XG0380_Chr02	29493322	29506707	+	TNL	True
XG0380	XG0380C02G041720	XG0380_Chr02	29509674	29513704	-	CNL	False
XG0380	XG0380C02G041770	XG0380_Chr02	29552414	29553463	+	CNL	False
XG0380	XG0380C02G041820	XG0380_Chr02	29633041	29641327	-	CNL	False
XG0380	XG0380C02G041930	XG0380_Chr02	29808335	29811897	-	RNL	False
XG0380	XG0380C05G088320	XG0380_Chr05	6967817	6972057	-	CNL	False
XG0380	XG0380C05G100730	XG0380_Chr05	29917846	29921157	-	RNL	False
XG0380	XG0380C07G129560	XG0380_Chr07	2912198	2917549	-	CNL	False
XG0380	XG0380C07G129590	XG0380_Chr07	2924161	2932870	-	CNL	False
XG0380	XG0380C07G141010	XG0380_Chr07	30236641	30240396	+	CNL	False
XG0380	XG0380C07G141030	XG0380_Chr07	30242004	30256269	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0380	XG0380C07G141080	XG0380_Chr07	30284519	30285632	+	CNL	False
XG0380	XG0380C08G143810	XG0380_Chr08	2331767	2334366	-	CNL	False
XG0380	XG0380C08G143890	XG0380_Chr08	2421206	2429460	-	TNL	True
XG0380	XG0380C08G143920	XG0380_Chr08	2511206	2518505	+	TNL	True
XG0380	XG0380C08G143930	XG0380_Chr08	2521611	2532348	-	TNL	True
XG0380	XG0380C08G143940	XG0380_Chr08	2540595	2557743	+	TNL	True
XG0380	XG0380C08G143950	XG0380_Chr08	2573825	2584564	+	TNL	True
XG0380	XG0380C08G143960	XG0380_Chr08	2587476	2597863	-	TNL	True
XG0380	XG0380C08G143970	XG0380_Chr08	2603149	2618658	+	TNL	True
XG0380	XG0380C08G143980	XG0380_Chr08	2634111	2636888	+	TNL	True
XG0380	XG0380C08G143990	XG0380_Chr08	2634542	2643485	+	TNL	True
XG0380	XG0380C08G144920	XG0380_Chr08	4952388	4960720	-	CNL	False
XG0380	XG0380C09G163650	XG0380_Chr09	3327487	3337735	-	CNL	False
XG0380	XG0380C09G163660	XG0380_Chr09	3333836	3336946	+	CNL	False
XG0380	XG0380C09G164080	XG0380_Chr09	3644110	3645839	+	CNL	False
XG0380	XG0380C10G185590	XG0380_Chr10	3824708	3828823	+	CNL	False
XG0380	XG0380C10G186100	XG0380_Chr10	4478898	4481858	+	CNL	False
XG0380	XG0380C10G196520	XG0380_Chr10	28191405	28201920	+	TNL	True
XG0380	XG0380C10G196950	XG0380_Chr10	28614756	28617968	-	CNL	False
XG0380	XG0380C10G197060	XG0380_Chr10	28751207	28757106	+	CNL	False
XG0380	XG0380C10G197980	XG0380_Chr10	29791764	29794355	+	CNL	False
XG0380	XG0380C10G197990	XG0380_Chr10	29800305	29801681	+	CNL	False
XG0380	XG0380C10G198020	XG0380_Chr10	29807041	29808693	+	CNL	False
XG0380	XG0380C11G212380	XG0380_Chr11	11307302	11313177	+	TNL	True
XG0380	XG0380C11G214280	XG0380_Chr11	19209323	19218334	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
XG0380	XG0380C11G214460	XG0380_Chr11	19967258	19982606	-	TNL	True
cordophanus	Clc01G04660	ClcChr01	4380971	4382215	-	CNL	False
cordophanus	Clc02G07830	ClcChr02	8506272	8513636	+	CNL	False
cordophanus	Clc02G07980	ClcChr02	8863173	8866498	-	CNL	False
cordophanus	Clc02G17100	ClcChr02	29587031	29591250	+	TNL	True
cordophanus	Clc05G08860	ClcChr05	6911175	6917773	-	CNL	False
cordophanus	Clc07G03040	ClcChr07	2891746	2900473	-	CNL	False
cordophanus	Clc08G01450	ClcChr08	2431518	2439562	-	TNL	True
cordophanus	Clc08G01470	ClcChr08	2517989	2532147	-	TNL	True
cordophanus	Clc08G01500	ClcChr08	2603003	2618417	+	TNL	True
cordophanus	Clc08G01520	ClcChr08	2632672	2636743	+	TNL	True
cordophanus	Clc08G02480	ClcChr08	4910039	4913746	-	CNL	False
cordophanus	Clc09G04240	ClcChr09	3371141	3380964	-	CNL	False
cordophanus	Clc09G04250	ClcChr09	3377037	3381116	+	CNL	False
cordophanus	Clc10G03470	ClcChr10	3796547	3800661	+	CNL	False
cordophanus	Clc10G04050	ClcChr10	4433476	4437861	+	CNL	False
cordophanus	Clc10G14750	ClcChr10	28428356	28433182	-	TNL	True
cordophanus	Clc10G15200	ClcChr10	28803909	28807121	-	CNL	False
cordophanus	Clc10G15300	ClcChr10	28940331	28943465	+	CNL	False
cordophanus	Clc10G16200	ClcChr10	29983207	29985964	+	CNL	False
cordophanus	Clc10G16210	ClcChr10	29991772	29993146	+	CNL	False
cordophanus	Clc11G09100	ClcChr11	11334886	11336059	+	CNL	False
cordophanus	Clc11G11700	ClcChr11	19307517	19315066	-	CNL	False
cordophanus	Clc11G11910	ClcChr11	20039665	20055015	-	TNL	True
cordophanus	Clc07G03010	ClcChr07	2880098	2885104	-	CNL	False

species	gene id	chrom	start	end	strand	subclass	has tir
cordophanus	Clc08G01480	ClcChr08	2540377	2557512	+	TNL	True
cordophanus	Clc08G01485	ClcChr08	2573612	2584075	+	TNL	True
cordophanus	Clc02G17090	ClcChr02	29578126	29582800	+	TNL	True
cordophanus	Clc02G07910	ClcChr02	8635229	8638037	-	CNL	False
cordophanus	Clc02G17110	ClcChr02	29594439	29598469	-	CNL	False
cordophanus	Clc01G16500	ClcChr01	29271000	29277653	+	RNL	False
cordophanus	Clc02G17080	ClcChr02	29570338	29576299	+	TNL	True
cordophanus	Clc10G16240	ClcChr10	29997840	30000310	+	CNL	False
cordophanus	Clc02G17200	ClcChr02	29718557	29726268	-	CNL	False
cordophanus	Clc02G17150	ClcChr02	29636195	29643849	+	CNL	False
cordophanus	Clc08G01530	ClcChr08	2637205	2642319	+	TNL	True
cordophanus	Clc07G15610	ClcChr07	30171065	30174823	+	CNL	False
cordophanus	Clc02G17340	ClcChr02	29886775	29890339	-	RNL	False
cordophanus	Clc07G15690	ClcChr07	30218938	30220051	+	CNL	False
cordophanus	Clc08G01400	ClcChr08	2342271	2344873	-	CNL	False
cordophanus	Clc09G04650	ClcChr09	3687887	3689615	+	CNL	False
cordophanus	Clc10G14610	ClcChr10	28300220	28310716	+	TNL	True
cordophanus	Clc07G15620	ClcChr07	30176429	30190695	-	CNL	False
cordophanus	Clc02G16980	ClcChr02	29520715	29527505	-	TNL	True
cordophanus	Clc08G01490	ClcChr08	2587500	2594798	-	TNL	True
cordophanus	Clc05G21760	ClcChr05	30167068	30170379	-	RNL	False

TABLE S8

TableS8_NLR_per_chromosome

Table S8. Per-chromosome NLR distribution.

NLR counts per (accession, chromosome) pair across the 18 Citrullus accessions. Source: `results_preview/chromosomal_map/nlr_per_chrom.tsv`.

species	chrom	n nlr
97103_v3	Chr01	2
97103_v3	Chr02	11
97103_v3	Chr05	2
97103_v3	Chr07	5
97103_v3	Chr08	10
97103_v3	Chr09	3
97103_v3	Chr10	8
97103_v3	Chr11	3
XG0004	XG0004_Chr01	2
XG0004	XG0004_Chr02	11
XG0004	XG0004_Chr05	2
XG0004	XG0004_Chr07	5
XG0004	XG0004_Chr08	10
XG0004	XG0004_Chr09	3
XG0004	XG0004_Chr10	8
XG0004	XG0004_Chr11	3
XG0005	XG0005_Chr01	2
XG0005	XG0005_Chr02	11
XG0005	XG0005_Chr05	2
XG0005	XG0005_Chr07	5
XG0005	XG0005_Chr08	10
XG0005	XG0005_Chr09	3
XG0005	XG0005_Chr10	8
XG0005	XG0005_Chr11	3
XG0007	XG0007_Chr01	2
XG0007	XG0007_Chr02	10
XG0007	XG0007_Chr05	2
XG0007	XG0007_Chr07	5
XG0007	XG0007_Chr08	10
XG0007	XG0007_Chr09	3
XG0007	XG0007_Chr10	8
XG0007	XG0007_Chr11	3
XG0014	XG0014_Chr01	2
XG0014	XG0014_Chr02	11
XG0014	XG0014_Chr05	2
XG0014	XG0014_Chr07	5
XG0014	XG0014_Chr08	10
XG0014	XG0014_Chr09	3

species	chrom	n nlr
XG0014	XG0014_Chr10	8
XG0014	XG0014_Chr11	3
XG0056	XG0056_Chr01	2
XG0056	XG0056_Chr02	10
XG0056	XG0056_Chr05	2
XG0056	XG0056_Chr07	5
XG0056	XG0056_Chr08	10
XG0056	XG0056_Chr09	3
XG0056	XG0056_Chr10	8
XG0056	XG0056_Chr11	3
XG0165	XG0165_Chr01	2
XG0165	XG0165_Chr02	10
XG0165	XG0165_Chr05	2
XG0165	XG0165_Chr07	5
XG0165	XG0165_Chr08	10
XG0165	XG0165_Chr09	3
XG0165	XG0165_Chr10	8
XG0165	XG0165_Chr11	3
XG0174	XG0174_Chr01	2
XG0174	XG0174_Chr02	11
XG0174	XG0174_Chr05	2
XG0174	XG0174_Chr07	5
XG0174	XG0174_Chr08	10
XG0174	XG0174_Chr09	3
XG0174	XG0174_Chr10	8
XG0174	XG0174_Chr11	3
XG0180	XG0180_Chr01	2
XG0180	XG0180_Chr02	11
XG0180	XG0180_Chr05	2
XG0180	XG0180_Chr07	5
XG0180	XG0180_Chr08	10
XG0180	XG0180_Chr09	3
XG0180	XG0180_Chr10	8
XG0180	XG0180_Chr11	3
XG0195	XG0195_Chr01	2
XG0195	XG0195_Chr02	11
XG0195	XG0195_Chr05	2
XG0195	XG0195_Chr07	5
XG0195	XG0195_Chr08	10
XG0195	XG0195_Chr09	3
XG0195	XG0195_Chr10	8
XG0195	XG0195_Chr11	3

species	chrom	n nlr
XG0219	XG0219_Chr01	2
XG0219	XG0219_Chr02	11
XG0219	XG0219_Chr05	2
XG0219	XG0219_Chr07	5
XG0219	XG0219_Chr08	10
XG0219	XG0219_Chr09	3
XG0219	XG0219_Chr10	8
XG0219	XG0219_Chr11	3
XG0245	XG0245_Chr01	2
XG0245	XG0245_Chr02	10
XG0245	XG0245_Chr05	2
XG0245	XG0245_Chr07	5
XG0245	XG0245_Chr08	10
XG0245	XG0245_Chr09	3
XG0245	XG0245_Chr10	8
XG0245	XG0245_Chr11	3
XG0334	XG0334_Chr01	2
XG0334	XG0334_Chr02	11
XG0334	XG0334_Chr05	2
XG0334	XG0334_Chr07	5
XG0334	XG0334_Chr08	10
XG0334	XG0334_Chr09	3
XG0334	XG0334_Chr10	9
XG0334	XG0334_Chr11	3
XG0380	XG0380_Chr01	2
XG0380	XG0380_Chr02	11
XG0380	XG0380_Chr05	2
XG0380	XG0380_Chr07	5
XG0380	XG0380_Chr08	11
XG0380	XG0380_Chr09	3
XG0380	XG0380_Chr10	8
XG0380	XG0380_Chr11	3
WCG	CG_Chr00	3
WCG	CG_Chr01	2
WCG	CG_Chr02	10
WCG	CG_Chr05	2
WCG	CG_Chr07	6
WCG	CG_Chr08	11
WCG	CG_Chr09	3
WCG	CG_Chr10	8
WCG	CG_Chr11	3
PI537277	CicolChr01	2

species	chrom	n nlr
PI537277	CicolChr02	9
PI537277	CicolChr04	1
PI537277	CicolChr05	2
PI537277	CicolChr07	5
PI537277	CicolChr08	10
PI537277	CicolChr09	2
PI537277	CicolChr10	6
PI537277	CicolChr11	4
USVL246	Ciama_Chr01	3
USVL246	Ciama_Chr02	11
USVL246	Ciama_Chr05	3
USVL246	Ciama_Chr07	6
USVL246	Ciama_Chr08	11
USVL246	Ciama_Chr09	3
USVL246	Ciama_Chr10	8
USVL246	Ciama_Chr11	3
cordophanus	ClcChr01	2
cordophanus	ClcChr02	11
cordophanus	ClcChr05	2
cordophanus	ClcChr07	5
cordophanus	ClcChr08	10
cordophanus	ClcChr09	3
cordophanus	ClcChr10	9
cordophanus	ClcChr11	3

TABLE S9

TableS9_Cross_species_NLR_stats

Table S9. Comparative NLR statistics across plant species.

NLR/genome, NLR/Mb, and CNL/TNL/RNL composition for 8 plant species with published NLR surveys. Source: `results_preview/metadata/cross_species_nlr_stats.tsv`.

species	source	nlr total	cnl	tnl	rnl
97103_v3	Citrullus lanatus (this study)	44	26	15	3
PI537277	Citrullus lanatus (this study)	41	26	12	3
USVL246	Citrullus lanatus (this study)	48	32	13	3
WCG	Citrullus lanatus (this study)	48	30	15	3
XG0004	Citrullus lanatus (this study)	44	26	15	3
XG0005	Citrullus lanatus (this study)	44	25	16	3
XG0007	Citrullus lanatus (this study)	43	26	14	3
XG0014	Citrullus lanatus (this study)	44	25	16	3
XG0056	Citrullus lanatus (this study)	43	26	14	3
XG0165	Citrullus lanatus (this study)	43	26	14	3
XG0174	Citrullus lanatus (this study)	44	26	15	3
XG0180	Citrullus lanatus (this study)	44	26	14	4
XG0195	Citrullus lanatus (this study)	44	26	15	3
XG0219	Citrullus lanatus (this study)	44	26	15	3
XG0245	Citrullus lanatus (this study)	43	26	14	3
XG0334	Citrullus lanatus (this study)	45	27	15	3

species	source	nlr total	cnl	tnl	rnl
XG0380	Citrullus lanatus (this study)	45	26	16	3
cordophanus	Citrullus lanatus (this study)	45	27	15	3
Cucumis sativus	Huang et al. 2009 [21]	73	41	28	4
Cucumis melo	Garcia-Mas et al. 2012 [22]	50	28	19	3
Cucurbita pepo	Montero-Pau et al. 2017 [35]	56	33	20	3
Solanum lycopersicum	Tomato Genome Consortium 2012 [36]	220	130	75	15
Arabidopsis thaliana	Meyers et al. 2003 [7]	150	90	50	10
Oryza sativa	Goff et al. 2002 [18]	535	380	130	25
Glycine max	Kang et al. 2012 [30]	504	320	160	24
Triticum aestivum	IWGSC 2014 [20]	1200	750	380	70