

Table S12B Transposed R-genes in Rice

LOCI_1			LOCI_2	
Cluster	Gene_name	Annotation	Cluster	Gene_name
cluster111	LOC_Os02g49600	LRR	cluster263	LOC_Os06g16330
cluster116	LOC_Os02g56460	RG	cluster20	LOC_Os01g18120
cluster117	LOC_Os02g56560	Pkinase	cluster194	LOC_Os04g43490

cluster123	LOC_Os03g03660	Pkinase	cluster200	LOC_Os04g49510
cluster123	LOC_Os03g03700	RG	cluster266	LOC_Os06g29110
cluster123	LOC_Os03g03660	Pkinase	noncluster	LOC_Os02g46090
cluster124	LOC_Os03g03890	Pkinase	cluster199	LOC_Os04g47620
cluster138	LOC_Os03g21540	Pkinase	noncluster	LOC_Os01g56330
cluster144	LOC_Os03g38689	LRR_Pkinase	cluster352	LOC_Os09g14560
cluster147	LOC_Os03g44020	Pkinase	cluster485	LOC_Os12g42020
cluster150	LOC_Os03g48270	Pkinase	cluster236	LOC_Os05g39090
cluster152	LOC_Os03g49620	Pkinase	cluster89	LOC_Os02g18320
cluster155	LOC_Os03g51060	Pkinase	cluster438	LOC_Os11g40550
cluster155	LOC_Os03g51060	Pkinase	noncluster	LOC_Os05g38010
cluster16	LOC_Os01g14860	Pkinase	noncluster	LOC_Os06g35530
cluster160	LOC_Os03g57510	Pkinase	cluster408	LOC_Os11g07040
cluster160	LOC_Os03g57510	Pkinase	cluster471	LOC_Os12g30150
cluster160	LOC_Os03g57450	Pkinase	noncluster	LOC_Os02g46090
cluster160	LOC_Os03g57510	Pkinase	noncluster	LOC_Os12g07230
cluster164	LOC_Os03g62500	Pkinase	noncluster	LOC_Os06g35530
cluster180	LOC_Os04g24290	Pkinase	cluster382	LOC_Os10g10130
cluster19	LOC_Os01g17130	LRR	cluster299	LOC_Os07g17230
cluster200	LOC_Os04g49510	Pkinase	noncluster	LOC_Os02g58520
cluster21	LOC_Os01g18800	Pkinase-Ser/Tl	cluster217	LOC_Os05g04550
cluster217	LOC_Os05g04340	Pkinase	cluster22	LOC_Os01g19150
cluster22	LOC_Os01g19150	Pkinase	cluster164	LOC_Os03g62500
cluster221	LOC_Os05g11730	Pkinase	cluster16	LOC_Os01g14860
cluster222	LOC_Os05g12680	Pkinase	noncluster	LOC_Os03g56470
cluster223	LOC_Os05g15150	LRR	noncluster	LOC_Os09g21110
cluster223	LOC_Os05g15150	LRR	noncluster	LOC_Os09g32650
cluster224	LOC_Os05g16200	NBS	noncluster	LOC_Os11g47780
cluster225	LOC_Os05g16824	LRR-Pkinase	cluster325	LOC_Os08g10300
cluster225	LOC_Os05g16824	LRR-Pkinase	cluster325	LOC_Os08g10330
cluster226	LOC_Os05g17604	LRR-Pkinase	cluster325	LOC_Os08g10290
cluster226	LOC_Os05g17604	LRR-Pkinase	cluster325	LOC_Os08g10310
cluster228	LOC_Os05g25540	Pkinase	cluster74	LOC_Os02g08530
cluster233	LOC_Os05g33160	LRR	cluster189	LOC_Os04g41030
cluster239	LOC_Os05g41270	Pkinase	noncluster	LOC_Os11g04170
cluster249	LOC_Os05g50120	Pkinase	cluster422	LOC_Os11g17080
cluster26	LOC_Os01g26300	Pkinase	cluster164	LOC_Os03g62430
cluster287	LOC_Os06g50724	LRR	cluster10	LOC_Os01g10320
cluster293	LOC_Os07g06740	Pkinase	noncluster	LOC_Os02g46090
cluster326	LOC_Os08g12750	Pkinase-Ser/Tl	noncluster	LOC_Os04g51950
cluster35	LOC_Os01g41730	Pkinase-Ser/Tl	noncluster	LOC_Os10g35450
cluster352	LOC_Os09g14580	Pkinase	noncluster	LOC_Os03g16260
cluster372	LOC_Os09g39930	Pkinase-Ser/Tl	cluster63	LOC_Os01g71000
cluster385	LOC_Os10g20120	Pkinase-Ser/Tl	cluster183	LOC_Os04g34370
cluster385	LOC_Os10g20160	Pkinase-Ser/Tl	cluster183	LOC_Os04g34360
cluster385	LOC_Os10g20160	Pkinase-Ser/Tl	cluster183	LOC_Os04g34410
cluster385	LOC_Os10g20160	Pkinase-Ser/Tl	cluster183	LOC_Os04g34420
cluster389	LOC_Os10g25550	Pkinase-Ser/Tl	noncluster	LOC_Os07g42200
cluster422	LOC_Os11g17080	Pkinase	cluster39	LOC_Os01g45620
cluster422	LOC_Os11g17080	Pkinase	cluster70	LOC_Os02g04230
cluster422	LOC_Os11g17080	Pkinase	noncluster	LOC_Os01g43910
cluster447	LOC_Os11g45840	NBS	cluster238	LOC_Os05g40150
cluster447	LOC_Os11g45924	WRKY	cluster238	LOC_Os05g40150
cluster447	LOC_Os11g45980	LRR-NBS	cluster238	LOC_Os05g40160
cluster447	LOC_Os11g45540	Pkinase	cluster29	LOC_Os01g36500

cluster448	LOC_Os11g47170 Pkinase	noncluster	LOC_Os04g13640
cluster448	LOC_Os11g47170 Pkinase	noncluster	LOC_Os06g16070
cluster448	LOC_Os11g47170 Pkinase	noncluster	LOC_Os10g13970
cluster449	LOC_Os11g47490 Pkinase	noncluster	LOC_Os08g40650
cluster461	LOC_Os12g14330 NBS	cluster170	LOC_Os04g02860
cluster483	LOC_Os12g41180 Pkinase	cluster146	LOC_Os03g43590
cluster58	LOC_Os01g61590 Pkinase	cluster150	LOC_Os03g48270
cluster60	LOC_Os01g64970 Pkinase-Ser/Tl	noncluster	LOC_Os03g41460
cluster63	LOC_Os01g70970 Pkinase	cluster230	LOC_Os05g30820
cluster63	LOC_Os01g71000 Pkinase	cluster318	LOC_Os07g47270
cluster66	LOC_Os01g72790 Pkinase-Ser/Tl	noncluster	LOC_Os05g32360
cluster69	LOC_Os02g02600 Pkinase-Ser/Tl	cluster199	LOC_Os04g47620
cluster83	LOC_Os02g14130 Pkinase	cluster16	LOC_Os01g14860
cluster86	LOC_Os02g16790 Pkinase	noncluster	LOC_Os01g51400
cluster88	LOC_Os02g17910 Pkinase	cluster194	LOC_Os04g43490
cluster96	LOC_Os02g34430 Pkinase-Ser/Tl	cluster184	LOC_Os04g35080
cluster96	LOC_Os02g34600 Pkinase-Ser/Tl	cluster185	LOC_Os04g35240
cluster96	LOC_Os02g34600 Pkinase-Ser/Tl	cluster60	LOC_Os01g64970
cluster96	LOC_Os02g34600 Pkinase-Ser/Tl	noncluster	LOC_Os10g41490
noncluster	LOC_Os12g16520 Pkinase	cluster116	LOC_Os02g56370
noncluster	LOC_Os06g35530 Pkinase	cluster12	LOC_Os01g10840
noncluster	LOC_Os02g03060 Pkinase	cluster121	LOC_Os03g01850
noncluster	LOC_Os07g02350 Pkinase	cluster129	LOC_Os03g10940
noncluster	LOC_Os12g41860 LRR	cluster147	LOC_Os03g43930
noncluster	LOC_Os12g06110 LRR	cluster156	LOC_Os03g53090
noncluster	LOC_Os07g02350 Pkinase	cluster158	LOC_Os03g55490
noncluster	LOC_Os07g42940 Pkinase-Ser/Tl	cluster158	LOC_Os03g55600
noncluster	LOC_Os06g51170 Pkinase-Ser/Tl	cluster199	LOC_Os04g47620
noncluster	LOC_Os04g22470 LRR-Pkinase	cluster226	LOC_Os05g17604
noncluster	LOC_Os04g22470 LRR-Pkinase	cluster226	LOC_Os05g17810
noncluster	LOC_Os07g49470 Pkinase	cluster230	LOC_Os05g30870
noncluster	LOC_Os12g03970 Pkinase	cluster239	LOC_Os05g41270
noncluster	LOC_Os08g37800 Pkinase	cluster243	LOC_Os05g45420
noncluster	LOC_Os07g33110 Pkinase	cluster250	LOC_Os05g50810
noncluster	LOC_Os04g51950 Pkinase-Ser/Tl	cluster276	LOC_Os06g45300
noncluster	LOC_Os05g05160 Pkinase	cluster283	LOC_Os06g49430
noncluster	LOC_Os06g13320 Pkinase	cluster292	LOC_Os07g04820
noncluster	LOC_Os04g38480 LRR-Pkinase	cluster324	LOC_Os08g07890
noncluster	LOC_Os02g49310 Pkinase	cluster363	LOC_Os09g30150
noncluster	LOC_Os03g62700 Pkinase	cluster367	LOC_Os09g33860
noncluster	LOC_Os07g33110 Pkinase	cluster37	LOC_Os01g43410
noncluster	LOC_Os12g16520 Pkinase	cluster370	LOC_Os09g38830
noncluster	LOC_Os12g16520 Pkinase	cluster370	LOC_Os09g38834
noncluster	LOC_Os12g16520 Pkinase	cluster370	LOC_Os09g38840
noncluster	LOC_Os07g14490 Pkinase	cluster373	LOC_Os10g02250
noncluster	LOC_Os07g14490 Pkinase	cluster373	LOC_Os10g02284
noncluster	LOC_Os07g14490 Pkinase	cluster379	LOC_Os10g06030
noncluster	LOC_Os07g14490 Pkinase	cluster379	LOC_Os10g06090
noncluster	LOC_Os07g14490 Pkinase	cluster379	LOC_Os10g06140
noncluster	LOC_Os03g08170 Pkinase	cluster389	LOC_Os10g25550
noncluster	LOC_Os06g14260 Pkinase	cluster391	LOC_Os10g30530
noncluster	LOC_Os05g05160 Pkinase	cluster422	LOC_Os11g17080
noncluster	LOC_Os10g21400 NBS	cluster433	LOC_Os11g35580
noncluster	LOC_Os10g21400 NBS	cluster446	LOC_Os11g45330
noncluster	LOC_Os06g16070 LRR-Pkinase	cluster448	LOC_Os11g47180

noncluster	LOC_Os10g13970	LRR-Pkinase	cluster448	LOC_Os11g46970
noncluster	LOC_Os10g13970	LRR-Pkinase	cluster448	LOC_Os11g46980
noncluster	LOC_Os03g41460	Pkinase-Ser/Thr	cluster481	LOC_Os12g39630
noncluster	LOC_Os11g33380	LRR_Pkinase	cluster486	LOC_Os12g43640
noncluster	LOC_Os03g27280	Pkinase-Ser/Thr	cluster60	LOC_Os01g64970
noncluster	LOC_Os07g49470	Pkinase	cluster63	LOC_Os01g71000
noncluster	LOC_Os04g51950	Pkinase-Ser/Thr	cluster73	LOC_Os02g07790
noncluster	LOC_Os06g35530	Pkinase	cluster83	LOC_Os02g14130
noncluster	LOC_Os03g25070	Pkinase	noncluster	LOC_Os07g42770
noncluster	LOC_Os03g55389	Pkinase	noncluster	LOC_Os07g02350
noncluster	LOC_Os03g57940	Pkinase	noncluster	LOC_Os01g10150
noncluster	LOC_Os06g18830	Pkinase	noncluster	LOC_Os08g38320
noncluster	LOC_Os10g01390	Pkinase	noncluster	LOC_Os07g14490
noncluster	LOC_Os10g10870	Pkinase	noncluster	LOC_Os03g14710
noncluster	LOC_Os03g17980	Pkinase	noncluster	LOC_Os08g37800
noncluster	LOC_Os03g30050	Pkinase	noncluster	LOC_Os05g03620
noncluster	LOC_Os03g41460	Pkinase-Ser/Thr	noncluster	LOC_Os04g59450
noncluster	LOC_Os03g41460	Pkinase-Ser/Thr	noncluster	LOC_Os07g42940
noncluster	LOC_Os03g57940	Pkinase	noncluster	LOC_Os01g56580
noncluster	LOC_Os03g62700	Pkinase	noncluster	LOC_Os01g67340
noncluster	LOC_Os05g05160	Pkinase	noncluster	LOC_Os06g26340
noncluster	LOC_Os05g11140	Pkinase	noncluster	LOC_Os01g54100
noncluster	LOC_Os05g11140	Pkinase	noncluster	LOC_Os01g56580
noncluster	LOC_Os05g11140	Pkinase	noncluster	LOC_Os07g07560
noncluster	LOC_Os06g18830	Pkinase	noncluster	LOC_Os04g46180
noncluster	LOC_Os07g07560	Pkinase	noncluster	LOC_Os01g56580
noncluster	LOC_Os09g08420	Pkinase	noncluster	LOC_Os08g38320
noncluster	LOC_Os10g29274	LRR	noncluster	LOC_Os08g15590
noncluster	LOC_Os10g34220	Pkinase	noncluster	LOC_Os11g28104
noncluster	LOC_Os10g37740	Pkinase	noncluster	LOC_Os06g35530
noncluster	LOC_Os11g06540	LRR_Pkinase	noncluster	LOC_Os08g33090
noncluster	LOC_Os12g27520	Pkinase-Ser/Thr	noncluster	LOC_Os01g62080
noncluster	LOC_Os12g33600	Pkinase	noncluster	LOC_Os01g04230

Annotation	Type_transposition
LRR-Pkinase	segmental
(OTHERS)	nonsegmental
Pkinase	segmental

Pkinase	nonsegmental
RG	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase-Ser/Thr K	nonsegmental
LRR_Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
LRR-NBS	nonsegmental
Pkinase	segmental
Pkinase-Ser/Thr K	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	nonsegmental
LRR	nonsegmental
NBS	segmental
LRR-Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
LRR	nonsegmental
Pkinase	segmental
Pkinase-Ser/Thr K	segmental
Pkinase-Ser/Thr K	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
NBS	nonsegmental
NBS	nonsegmental
NBS	nonsegmental
Pkinase	segmental

Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase	segmental
NBS	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase-Ser/Thr K	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase-Ser/Thr K	segmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
LRR	segmental
LRR	segmental
Pkinase	segmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	segmental
LRR-Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase-Ser/Thr K	segmental
Pkinase	segmental
Pkinase	nonsegmental
NBS-Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
NBS	nonsegmental
NBS	segmental
LRR-Pkinase	nonsegmental

LRR-Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase-Ser/Thr K	segmental
LRR-Pkinase	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	nonsegmental
Pkinase-Ser/Thr K	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR-Pkinase	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	nonsegmental

Table S12C Transposed R-genes in Brachypodium

LOCI_1			LOCI_2		
Cluster	Gene_name	Annotation	Cluster	Gene_name	Annotation
cluster1	Bradi1g00260	Pkinase	cluster280	Bradi4g09480	Pkinase
cluster10	Bradi1g07620	Pkinase	cluster268	Bradi4g03220	Pkinase
cluster103	Bradi1g76760	Pkinase	cluster308	Bradi4g26410	Pkinase
cluster11	Bradi1g07750	Pkinase	cluster85	Bradi1g59010	Pkinase
cluster11	Bradi1g07810	Pkinase	cluster85	Bradi1g59010	Pkinase
cluster128	Bradi2g17450	NBS	cluster160	Bradi2g42900	NBS
cluster128	Bradi2g17450	NBS	noncluster	Bradi1g47420	NBS
cluster128	Bradi2g17450	NBS	noncluster	Bradi2g07200	NBS
cluster136	Bradi2g22350	Pkinase	cluster196	Bradi3g04630	Pkinase
cluster145	Bradi2g32620	Pkinase	noncluster	Bradi2g11370	Pkinase
cluster153	Bradi2g38590	Pkinase	noncluster	Bradi2g11370	Pkinase
cluster154	Bradi2g38970	Pkinase	noncluster	Bradi2g62290	Pkinase

cluster168	Bradi2g47060	Pkinase	cluster265	Bradi4g02170	Pkinase
cluster170	Bradi2g47850	Pkinase	noncluster	Bradi2g14310	Pkinase
cluster198	Bradi3g05520	Pkinase	cluster217	Bradi3g18150	Pkinase
cluster207	Bradi3g09070	Pkinase	noncluster	Bradi2g11370	Pkinase
cluster208	Bradi3g10320	Pkinase	noncluster	Bradi2g14310	Pkinase
cluster227	Bradi3g28720	Pkinase	noncluster	Bradi2g14310	Pkinase
cluster235	Bradi3g37210	LRR-Pkinase	cluster232	Bradi3g34470	LRR-Pkinase
cluster237	Bradi3g39070	Pkinase	noncluster	Bradi1g43350	Pkinase
cluster242	Bradi3g45460	Pkinase	cluster268	Bradi4g03220	Pkinase
cluster248	Bradi3g49100	Pkinase	noncluster	Bradi2g14310	Pkinase
cluster251	Bradi3g51160	Pkinase	cluster43	Bradi1g29780	Pkinase
cluster256	Bradi3g55570	Pkinase	cluster43	Bradi1g29200	Pkinase
cluster260	Bradi3g61040	LRR-NBS	cluster282	Bradi4g09960	LRR
cluster260	Bradi4g00280	Pkinase	noncluster	Bradi2g51370	Pkinase
cluster285	Bradi4g10990	Pkinase	cluster3	Bradi1g01440	Pkinase
cluster29	Bradi1g21310	Pkinase	cluster268	Bradi4g03220	Pkinase
cluster3	Bradi1g01440	Pkinase	cluster285	Bradi4g11000	Pkinase
cluster308	Bradi4g26410	Pkinase	cluster24	Bradi1g17250	Pkinase
cluster314	Bradi4g33110	Pkinase	noncluster	Bradi1g43350	Pkinase
cluster314	Bradi4g33230	Pkinase	noncluster	Bradi2g34210	Pkinase
cluster315	Bradi4g35050	Pkinase	cluster120	Bradi2g11230	Pkinase
cluster334	Bradi5g01170	NBS	noncluster	Bradi1g00230	NBS
cluster342	Bradi5g10300	Pkinase	cluster268	Bradi4g03220	Pkinase
cluster354	Bradi5g19430	Pkinase	cluster304	Bradi4g24390	Pkinase
cluster359	Bradi5g22620	LRR-Pkinase	cluster285	Bradi4g11000	Pkinase
cluster4	Bradi1g02340	WRKY	cluster332	Bradi4g45290	WRKY
cluster4	Bradi1g02340	WRKY	cluster67	Bradi1g47690	WRKY
cluster4	Bradi1g02160	Pkinase	noncluster	Bradi2g11370	Pkinase
cluster50	Bradi1g34030	Pkinase	cluster305	Bradi4g24910	Pkinase
cluster50	Bradi1g34050	RG	cluster305	Bradi4g24930	LRR-NBS
cluster58	Bradi1g41860	Pkinase	cluster320	Bradi4g39490	Pkinase
cluster59	Bradi1g42290	Pkinase	noncluster	Bradi2g40080	Pkinase
cluster7	Bradi1g05950	Pkinase	noncluster	Bradi2g49590	Pkinase
cluster7	Bradi1g05930	Pkinase	noncluster	Bradi2g51370	Pkinase
cluster8	Bradi1g06270	Pkinase	cluster304	Bradi4g24390	Pkinase
cluster8	Bradi1g06280	Pkinase	cluster49	Bradi1g33620	Pkinase
cluster8	Bradi1g06270	Pkinase	noncluster	Bradi4g40300	Pkinase
cluster8	Bradi1g06300	Pkinase	noncluster	Bradi4g40300	Pkinase
cluster80	Bradi1g57750	Pkinase	cluster15	Bradi1g08990	Pkinase
cluster86	Bradi1g59210	Pkinase	cluster190	Bradi2g62060	Pkinase
cluster90	Bradi1g65340	Pkinase	noncluster	Bradi1g16670	Pkinase
cluster91	Bradi1g66660	Pkinase	noncluster	Bradi2g62290	Pkinase
cluster97	Bradi1g70690	Pkinase	cluster85	Bradi1g59010	Pkinase
noncluster	Bradi2g36980	Pkinase	cluster120	Bradi2g11230	Pkinase
noncluster	Bradi2g53670	Pkinase	cluster196	Bradi3g04630	Pkinase
noncluster	Bradi2g42320	Pkinase	cluster250	Bradi3g50310	Pkinase
noncluster	Bradi1g14720	Pkinase	cluster268	Bradi4g03220	Pkinase
noncluster	Bradi1g60720	Pkinase	cluster268	Bradi4g03220	Pkinase
noncluster	Bradi3g33690	Pkinase	cluster268	Bradi4g03220	Pkinase
noncluster	Bradi4g30830	Pkinase	cluster285	Bradi4g11000	Pkinase
noncluster	Bradi3g51970	Pkinase	cluster304	Bradi4g24390	Pkinase
noncluster	Bradi4g07280	Pkinase	cluster304	Bradi4g24390	Pkinase
noncluster	Bradi3g03780	Pkinase	cluster305	Bradi4g24910	Pkinase
noncluster	Bradi1g64010	Pkinase	cluster308	Bradi4g26410	Pkinase
noncluster	Bradi3g01690	Pkinase	cluster43	Bradi1g29780	Pkinase

noncluster	Bradi3g41060	Pkinase	cluster7	Bradi1g05890	Pkinase
noncluster	Bradi1g47420	NBS	cluster88	Bradi1g61660	NBS
noncluster	Bradi4g11540	RG	cluster91	Bradi1g66700	RG
noncluster	Bradi4g38310	Pkinase	noncluster	Bradi2g11640	Pkinase
noncluster	Bradi1g03650	Pkinase	noncluster	Bradi2g62290	Pkinase
noncluster	Bradi1g56970	Pkinase	noncluster	Bradi4g40300	Pkinase
noncluster	Bradi2g31990	Pkinase	noncluster	Bradi1g07010	Pkinase
noncluster	Bradi3g02270	Pkinase	noncluster	Bradi1g77330	Pkinase
noncluster	Bradi3g02600	Pkinase	noncluster	Bradi1g52570	Pkinase
noncluster	Bradi3g41060	Pkinase	noncluster	Bradi1g75950	Pkinase
noncluster	Bradi3g47730	Pkinase	noncluster	Bradi2g11640	Pkinase
noncluster	Bradi5g27710	Pkinase	noncluster	Bradi4g26810	Pkinase
noncluster	Bradi3g31480	Pkinase	noncluster	Bradi2g11370	Pkinase
noncluster	Bradi2g33040	Pkinase	noncluster	Bradi2g49590	Pkinase
noncluster	Bradi1g56100	Pkinase	noncluster	Bradi2g51370	Pkinase
noncluster	Bradi3g01690	Pkinase	noncluster	Bradi5g18420	Pkinase
noncluster	Bradi3g54860	Pkinase	noncluster	Bradi2g14310	Pkinase

Type_transposit
ion

segmental

segmental

nonsegmental

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Table S12D Transposed R-genes in Sorghum

LOCI_1			LOCI_2	
Cluster_name	Gene_name	Annotation	Cluster_name	Gene_name
cluster1	Sb2853s002010	Pkinase	cluster143	Sb03g006715
cluster1	Sb2853s002010	Pkinase	cluster143	Sb03g006736
cluster1	Sb2853s002010	Pkinase	cluster143	Sb03g006765
cluster1	Sb0019s004410	Pkinase	noncluster	Sb03g001410
cluster1	Sb2853s002010	Pkinase	noncluster	Sb06g002970
cluster128	Sb02g042320	Pkinase	cluster264	Sb06g014310
cluster131	Sb02g043520	Pkinase	cluster38	Sb01g037000
cluster135	Sb03g003320	Pkinase	cluster337	Sb08g020960
cluster137	Sb03g004885	Pkinase	cluster298	Sb07g014870
cluster137	Sb03g004885	Pkinase	noncluster	Sb05g005770
cluster148	Sb03g011880	Pkinase	cluster350	Sb09g002900
cluster149	Sb03g012070	Pkinase	noncluster	Sb01g031220
cluster158	Sb03g027450	Pkinase	noncluster	Sb05g003690
cluster167	Sb03g032560	Pkinase	noncluster	Sb09g030690
cluster179	Sb03g037570	Pkinase	cluster314	Sb08g001380
cluster183	Sb03g038870	Pkinase	cluster121	Sb02g036730
cluster19	Sb01g013890	Pkinase	cluster336	Sb08g020820
cluster190	Sb04g002830	Pkinase	cluster237	Sb05g010000
cluster197	Sb04g007520	Pkinase	cluster103	Sb02g021800
cluster197	Sb04g007520	Pkinase	cluster112	Sb02g032060
cluster197	Sb04g007520	Pkinase	cluster112	Sb02g032110
cluster199	Sb04g007765	Pkinase	cluster254	Sb05g026530
cluster199	Sb04g007765	Pkinase	cluster48	Sb01g046460
cluster201	Sb04g008580	Pkinase	cluster149	Sb03g012070
cluster205	Sb04g011060	Pkinase	cluster14	Sb01g010820
cluster206	Sb04g024680	Pkinase	noncluster	Sb06g031750
cluster209	Sb04g026150	Pkinase	noncluster	Sb03g003130
cluster231	Sb05g006844	Pkinase	cluster361	Sb09g020410
cluster237	Sb05g010000	Pkinase	cluster370	Sb09g028690
cluster237	Sb05g010000	Pkinase	cluster372	Sb09g029370
cluster237	Sb05g010000	Pkinase	noncluster	Sb03g029340
cluster237	Sb05g010000	Pkinase	noncluster	Sb09g029720
cluster237	Sb05g010000	Pkinase	noncluster	Sb10g029400
cluster255	Sb05g027140	LRR-Pkinase	noncluster	Sb08g005450
cluster268	Sb06g016960	Pkinase	noncluster	Sb02g039640
cluster268	Sb06g016960	Pkinase	noncluster	Sb03g041110
cluster268	Sb06g016960	Pkinase	noncluster	Sb04g022410
cluster273	Sb06g022560	Pkinase	cluster167	Sb03g032560
cluster278	Sb06g026530	Pkinase	cluster320	Sb08g004510
cluster296	Sb07g006320	Pkinase	cluster193	Sb04g004950
cluster296	Sb07g006310	Pkinase	noncluster	Sb06g027970
cluster296	Sb07g006320	Pkinase	noncluster	Sb06g027970
cluster314	Sb08g001430	Pkinase	cluster131	Sb02g043520
cluster336	Sb08g020750	Pkinase	cluster19	Sb01g013950
cluster337	Sb08g020960	Pkinase	cluster21	Sb01g019410
cluster338	Sb08g021153	Pkinase	noncluster	Sb06g033075
cluster344	Sb08g023280	Pkinase	noncluster	Sb09g006270
cluster354	Sb09g005720	Pkinase	cluster337	Sb08g020960
cluster357	Sb09g008030	Pkinase	noncluster	Sb03g000680
cluster359	Sb09g018470	Pkinase	noncluster	Sb03g045200
cluster359	Sb09g018500	Pkinase	noncluster	Sb04g020990
cluster359	Sb09g018490	Pkinase	noncluster	Sb02g044090

cluster359	Sb09g018500	Pkinase	noncluster	Sb02g044090
cluster365	Sb09g024100	Pkinase	cluster179	Sb03g037570
cluster365	Sb09g024100	Pkinase	noncluster	Sb02g034640
cluster374	Sb09g030440	Pkinase	cluster97	Sb02g006870
cluster5	Sb01g005750	Pkinase	cluster320	Sb08g004510
cluster5	Sb01g005780	Pkinase	cluster320	Sb08g004510
cluster57	Sb10g004793	Pkinase	cluster374	Sb09g030520
cluster59	Sb10g006080	Pkinase	cluster234	Sb05g008160
cluster64	Sb10g011150	Pkinase	cluster371	Sb09g028870
cluster64	Sb10g011160	Pkinase	cluster371	Sb09g028880
noncluster	Sb01g035420	Pkinase	cluster124	Sb02g038280
noncluster	Sb01g035420	Pkinase	cluster128	Sb02g042260
noncluster	Sb06g023790	Pkinase	cluster13	Sb01g010400
noncluster	Sb05g002000	Pkinase	cluster131	Sb02g043520
noncluster	Sb01g035420	Pkinase	cluster134	Sb03g002610
noncluster	Sb10g029400	Pkinase	cluster160	Sb03g028740
noncluster	Sb01g038560	Pkinase	cluster169	Sb03g033530
noncluster	Sb05g002110	Pkinase	cluster179	Sb03g037570
noncluster	Sb09g003280	Pkinase	cluster237	Sb05g010000
noncluster	Sb10g002600	Pkinase	cluster26	Sb01g027360
noncluster	Sb10g002600	Pkinase	cluster26	Sb01g027370
noncluster	Sb02g044090	Pkinase	cluster264	Sb06g014310
noncluster	Sb01g033570	Pkinase	cluster268	Sb06g016960
noncluster	Sb02g003500	Pkinase	cluster278	Sb06g026530
noncluster	Sb10g002600	Pkinase	cluster303	Sb07g022380
noncluster	Sb10g026160	Pkinase	cluster306	Sb07g027490
noncluster	Sb01g035420	Pkinase	cluster323	Sb08g006390
noncluster	Sb01g033570	Pkinase	cluster332	Sb08g019700
noncluster	Sb01g045360	Pkinase	cluster337	Sb08g020850
noncluster	Sb09g025200	Pkinase	cluster337	Sb08g020960
noncluster	Sb02g004030	Pkinase	cluster344	Sb08g023280
noncluster	Sb01g038560	Pkinase	cluster367	Sb09g026450
noncluster	Sb02g022880	Pkinase	cluster374	Sb09g030520
noncluster	Sb04g030210	Pkinase	cluster65	Sb10g013720
noncluster	Sb09g002100	Pkinase	cluster7	Sb01g007100
noncluster	Sb04g003480	Pkinase	cluster82	Sb10g028780
cluster7	Sb01g007120	Pkinase	noncluster	Sb09g021410
cluster71	Sb10g022290	Pkinase	noncluster	Sb01g045360
noncluster	Sb01g033570	Pkinase	noncluster	Sb01g028760
noncluster	Sb02g027630	Pkinase	noncluster	Sb07g028750
noncluster	Sb04g022410	Pkinase	noncluster	Sb09g021410
noncluster	Sb04g023810	LRR-Pkinase	noncluster	Sb06g018760
noncluster	Sb04g024880	Pkinase	noncluster	Sb01g003990
noncluster	Sb05g007097	Pkinase	noncluster	Sb07g001220
noncluster	Sb07g004750	LRR-Pkinase	noncluster	Sb04g023810
noncluster	Sb07g028750	Pkinase	noncluster	Sb04g029460
noncluster	Sb08g019600	Pkinase	noncluster	Sb03g002790
noncluster	Sb09g021410	Pkinase	noncluster	Sb06g033990
noncluster	Sb01g023180	Pkinase	noncluster	Sb05g001450
noncluster	Sb01g035420	Pkinase	noncluster	Sb04g022960
noncluster	Sb01g035420	Pkinase	noncluster	Sb07g001220
noncluster	Sb03g034440	Pkinase	noncluster	Sb07g020260
noncluster	Sb03g036000	Pkinase	noncluster	Sb02g004030
noncluster	Sb03g039230	Pkinase	noncluster	Sb02g011360
noncluster	Sb04g022410	Pkinase	noncluster	Sb01g033570

noncluster	Sb04g024880	Pkinase	noncluster	Sb03g026540
noncluster	Sb04g024880	Pkinase	noncluster	Sb03g039230
noncluster	Sb08g019600	Pkinase	noncluster	Sb03g034340
noncluster	Sb09g006270	Pkinase	noncluster	Sb03g034340
noncluster	Sb09g021410	Pkinase	noncluster	Sb01g014720

Annotation	Type_transposition
Pkinase	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase-Ser/Thr K	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
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LRR-Pkinase	nonsegmental
Pkinase	segmental
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Pkinase	nonsegmental
Pkinase	nonsegmental
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Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental

[illegible]

Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental

Table S12E Transposed R-genes in Maize

LOCI_1			LOCI_2	
Cluster_name	Gene_name	Annotation	Cluster_name	gene_name
cluster101	GRMZM2G145045	Pkinase	cluster103	GRMZM2G049608
cluster102	GRMZM2G032694	Pkinase	cluster41	GRMZM2G054152
cluster103	GRMZM2G347348	Pkinase	cluster101	GRMZM2G145051
cluster103	GRMZM2G037482	LRR	noncluster	AC203900.3_FGP006
cluster104	GRMZM2G045820	LRR	noncluster	AC226227.2_FGP006
cluster116	GRMZM2G001668	Pkinase	cluster313	GRMZM2G029530
cluster116	GRMZM2G001668	Pkinase	cluster72	GRMZM2G061447
cluster116	GRMZM2G001668	Pkinase	noncluster	GRMZM2G071877
cluster116	GRMZM2G001668	Pkinase	noncluster	GRMZM2G085038
cluster116	GRMZM2G001668	Pkinase	noncluster	GRMZM2G346132
cluster12	GRMZM2G493879	Pkinase	noncluster	GRMZM2G439819
cluster120	GRMZM2G052434	Pkinase	cluster315	GRMZM2G162086
cluster125	GRMZM2G387310	LRR	noncluster	GRMZM2G019106
cluster125	GRMZM2G387310	LRR	noncluster	GRMZM2G153144
cluster130	GRMZM2G159756	Pkinase	cluster213	GRMZM2G340416
cluster130	GRMZM2G074496	NBS	noncluster	AC195587.4_FGP004
cluster134	GRMZM2G082964	LRR	noncluster	GRMZM2G152290
cluster134	GRMZM2G083000	LRR	noncluster	GRMZM2G152290
cluster136	GRMZM2G143602	Pkinase	noncluster	AC205122.4_FGP004
cluster139	GRMZM2G045330	Pkinase	cluster215	GRMZM2G121790
cluster139	GRMZM2G045330	Pkinase	noncluster	GRMZM2G043350
cluster140	GRMZM2G055089	Pkinase	cluster124	GRMZM2G113512
cluster140	GRMZM2G055089	Pkinase	cluster326	GRMZM2G432796
cluster140	GRMZM2G055089	Pkinase	cluster337	GRMZM2G097805
cluster140	GRMZM2G055089	Pkinase	noncluster	GRMZM2G084347
cluster140	GRMZM2G055089	Pkinase	noncluster	GRMZM2G173962
cluster145	GRMZM2G412760	Pkinase	cluster334	GRMZM2G172396
cluster150	GRMZM2G378547	Pkinase	cluster116	GRMZM2G001668
cluster150	GRMZM2G378547	Pkinase	noncluster	GRMZM2G085038
cluster151	GRMZM2G353957	Pkinase	cluster224	GRMZM2G027351
cluster151	GRMZM2G353957	Pkinase	cluster54	GRMZM2G121228
cluster152	GRMZM2G097533	Pkinase	noncluster	AC233871.1_FGP003
cluster154	GRMZM2G044724	NBS	noncluster	GRMZM2G443525
cluster16	GRMZM2G138814	kinase	cluster331	GRMZM2G130950
cluster166	GRMZM2G346342	Pkinase	cluster176	GRMZM2G338293
cluster166	GRMZM2G049691	Pkinase	noncluster	AC214743.3_FGP001
cluster166	GRMZM2G346342	Pkinase	noncluster	AC214743.3_FGP001
cluster167	GRMZM2G354711	LRR	cluster218	GRMZM2G450937
cluster169	GRMZM2G382350	WRKY	cluster369	GRMZM2G029292
cluster169	GRMZM2G465771	LRR-Pkinase	noncluster	AC218972.3_FGP004
cluster169	GRMZM2G069201	LRR-Pkinase	noncluster	GRMZM2G038165
cluster170	GRMZM2G050375	LRR	noncluster	GRMZM2G121820
cluster170	GRMZM2G167276	Pkinase	noncluster	GRMZM2G472311
cluster172	GRMZM2G091338	Pkinase	noncluster	GRMZM2G139223
cluster173	GRMZM2G072586	LRR	cluster68	GRMZM2G067320
cluster174	GRMZM2G004617	lysM	cluster262	GRMZM2G154301
cluster179	GRMZM2G080499	Pkinase	noncluster	GRMZM2G007854
cluster181	GRMZM2G088299	Pkinase	cluster29	GRMZM2G019434
cluster182	GRMZM2G105140	WRKY	cluster357	GRMZM2G149683
cluster184	GRMZM2G181081	Pkinase	cluster330	GRMZM2G166658
cluster184	GRMZM2G075884	Pkinase	cluster58	GRMZM2G104655
cluster184	GRMZM2G181081	Pkinase	noncluster	GRMZM2G075002

cluster184	GRMZM2G181081	Pkinase	noncluster	GRMZM2G114575
cluster19	GRMZM2G062391	LRR	cluster398	GRMZM2G151295
cluster193	GRMZM2G003662	Pkinase	cluster92	GRMZM2G165060
cluster196	GRMZM2G130018	Pkinase	noncluster	GRMZM2G000278
cluster196	GRMZM2G130018	Pkinase	noncluster	GRMZM2G110922
cluster197	GRMZM2G105933	Pkinase	noncluster	GRMZM2G127984
cluster2	GRMZM2G371137	LRR-Pkinase	cluster404	GRMZM2G172014
cluster20	GRMZM2G046297	Pkinase	cluster397	GRMZM2G147373
cluster202	GRMZM2G138683	WRKY	noncluster	GRMZM2G024505
cluster203	GRMZM2G020938	Pkinase	noncluster	AC217842.3_FGP001
cluster208	GRMZM2G113967	Pkinase	cluster61	GRMZM2G125001
cluster213	GRMZM2G002555	Pkinase	cluster212	GRMZM2G435592
cluster214	GRMZM2G002531	Pkinase	cluster163	GRMZM2G152889
cluster216	GRMZM2G052948	Pkinase	cluster69	GRMZM2G140612
cluster219	GRMZM2G361611	LRR	cluster246	GRMZM2G444748
cluster219	GRMZM2G374088	Pkinase	cluster358	GRMZM2G131334
cluster220	GRMZM2G025127	Pkinase	cluster201	GRMZM2G073359
cluster220	GRMZM2G025127	Pkinase	cluster245	GRMZM2G156824
cluster224	GRMZM2G320506	Pkinase	cluster63	GRMZM2G347226
cluster224	GRMZM2G320506	Pkinase	noncluster	GRMZM2G081310
cluster225	GRMZM2G141903	Pkinase	noncluster	AC205122.4_FGP004
cluster225	GRMZM2G171435	Pkinase	noncluster	GRMZM2G110922
cluster228	GRMZM2G350844	Pkinase	cluster346	GRMZM2G141738
cluster228	GRMZM2G350844	Pkinase	cluster378	GRMZM2G443962
cluster23	GRMZM2G022822	Pkinase	cluster395	GRMZM2G041125
cluster230	GRMZM2G017137	Pkinase	cluster47	GRMZM2G136025
cluster231	GRMZM2G023563	WRKY	cluster46	GRMZM2G070211
cluster232	GRMZM2G166719	Pkinase	cluster39	GRMZM2G181231
cluster234	GRMZM2G112309	LRR-Pkinase	cluster42	GRMZM2G001812
cluster235	GRMZM2G456853	Pkinase	noncluster	GRMZM2G423486
cluster241	GRMZM2G115518	Pkinase	cluster232	GRMZM2G138245
cluster25	GRMZM2G450308	Pkinase	cluster235	GRMZM2G456853
cluster25	GRMZM2G171110	LRR	cluster49	GRMZM2G023110
cluster256	GRMZM2G114127	LRR	cluster198	GRMZM2G042181
cluster258	GRMZM2G169558	Pkinase	cluster199	GRMZM2G180775
cluster259	GRMZM2G315726	RG	cluster117	GRMZM2G163426
cluster259	GRMZM2G020799	LRR	cluster204	GRMZM2G122846
cluster266	GRMZM2G125081	LRR-Pkinase	noncluster	GRMZM2G045981
cluster267	GRMZM2G160853	Pkinase	cluster90	GRMZM2G422340
cluster269	GRMZM2G160391	Pkinase	noncluster	GRMZM2G154014
cluster279	GRMZM2G137569	Pkinase	cluster299	GRMZM2G013236
cluster279	GRMZM2G137569	Pkinase	cluster387	GRMZM2G171507
cluster279	GRMZM2G137569	Pkinase	noncluster	GRMZM2G146553
cluster28	GRMZM2G418223	Pkinase	noncluster	GRMZM2G018372
cluster282	GRMZM2G147869	NBS-LRR	cluster73	GRMZM2G397785
cluster282	GRMZM2G517884	Pkinase	noncluster	GRMZM2G031893
cluster282	GRMZM2G517884	Pkinase	noncluster	GRMZM2G539377
cluster29	GRMZM2G049088	Pkinase	cluster141	GRMZM2G008513
cluster29	GRMZM2G052650	Pkinase	cluster155	GRMZM2G390345
cluster29	GRMZM2G052650	Pkinase	cluster231	GRMZM2G051673
cluster29	GRMZM2G052650	Pkinase	cluster300	GRMZM2G456059
cluster29	GRMZM2G019434	Pkinase	cluster359	GRMZM2G063684
cluster291	GRMZM2G390732	Pkinase	noncluster	GRMZM2G165597
cluster293	GRMZM2G077278	Pkinase	noncluster	GRMZM2G180704
cluster297	GRMZM2G010953	Pkinase	cluster150	GRMZM2G034855

cluster297	GRMZM2G010953	Pkinase	cluster180	GRMZM2G031400
cluster297	GRMZM2G010953	Pkinase	noncluster	GRMZM2G026301
cluster298	GRMZM2G101527	NBS	cluster136	GRMZM2G070503
cluster298	GRMZM2G026189	NBS	cluster303	GRMZM2G060714
cluster3	GRMZM2G014366	Pkinase	cluster344	GRMZM2G147051
cluster3	GRMZM2G014366	Pkinase	noncluster	GRMZM2G040964
cluster300	GRMZM2G153741	LRR	cluster135	GRMZM2G176394
cluster303	GRMZM2G060714	NBS	cluster136	GRMZM2G070503
cluster311	GRMZM2G125653	WRKY	cluster118	GRMZM2G057011
cluster311	GRMZM2G129018	Pkinase	cluster118	GRMZM2G330049
cluster312	GRMZM2G464985	Pkinase	noncluster	AC217842.3_FGP001
cluster315	GRMZM2G160922	Pkinase	noncluster	GRMZM2G451132
cluster317	GRMZM2G413030	Pkinase	noncluster	GRMZM2G301124
cluster32	GRMZM2G419436	Pkinase	cluster31	GRMZM2G137861
cluster32	GRMZM2G129058	Pkinase	cluster31	GRMZM2G426147
cluster32	GRMZM2G391288	Pkinase	cluster31	GRMZM2G426147
cluster32	GRMZM2G362303	Pkinase	noncluster	AC210596.3_FGP004
cluster32	GRMZM2G362303	Pkinase	noncluster	GRMZM2G433076
cluster320	GRMZM2G174684	Pkinase	cluster122	GRMZM2G087625
cluster323	GRMZM2G028086	Pkinase	cluster152	GRMZM2G097533
cluster328	GRMZM2G056732	Pkinase	noncluster	GRMZM2G035809
cluster328	GRMZM2G109843	Pkinase	noncluster	GRMZM2G056612
cluster330	GRMZM2G149040	LRR	noncluster	AC206586.2_FGP007
cluster331	GRMZM2G130950	kinase	cluster161	GRMZM2G027632
cluster332	GRMZM2G024151	Pkinase	noncluster	EF517601.1_FGP021
cluster332	GRMZM2G024151	Pkinase	noncluster	GRMZM2G109624
cluster333	GRMZM2G077900	Pkinase	cluster146	GRMZM2G426917
cluster333	GRMZM2G502350	Pkinase	cluster73	GRMZM2G330708
cluster333	GRMZM2G077900	Pkinase	cluster73	GRMZM2G436448
cluster333	GRMZM2G502350	Pkinase	noncluster	AC187090.3_FGP008
cluster338	GRMZM2G472625	Pkinase	cluster215	GRMZM2G121790
cluster339	GRMZM2G127687	LRR-Pkinase	cluster138	GRMZM2G012861
cluster34	GRMZM2G357919	Pkinase	cluster221	GRMZM2G010091
cluster341	GRMZM2G063144	Pkinase	noncluster	GRMZM2G163861
cluster341	GRMZM2G058305	Pkinase	noncluster	GRMZM2G472311
cluster343	GRMZM2G057116	WRKY	noncluster	GRMZM2G163054
cluster349	GRMZM2G170552	Pkinase	cluster61	GRMZM2G356128
cluster352	GRMZM2G340224	Pkinase	noncluster	GRMZM2G472311
cluster353	GRMZM2G343024	Pkinase	cluster116	GRMZM2G001668
cluster353	GRMZM2G084369	Pkinase	cluster34	GRMZM2G462808
cluster353	GRMZM2G084369	Pkinase	cluster396	GRMZM2G047546
cluster353	GRMZM2G343024	Pkinase	noncluster	GRMZM2G085038
cluster354	GRMZM2G120839	Pkinase	cluster268	GRMZM2G076868
cluster356	GRMZM2G050548	LRR-Pkinase	cluster183	GRMZM2G339540
cluster357	GRMZM2G145554	WRKY	noncluster	AC198725.4_FGP009
cluster357	GRMZM2G025387	Pkinase	noncluster	GRMZM2G472311
cluster358	GRMZM2G131334	Pkinase	cluster180	GRMZM2G122335
cluster358	GRMZM2G131334	Pkinase	cluster360	GRMZM2G007848
cluster358	GRMZM2G131334	Pkinase	noncluster	GRMZM2G135904
cluster358	GRMZM2G131334	Pkinase	noncluster	GRMZM2G306028
cluster359	GRMZM2G375975	Pkinase	cluster358	GRMZM2G131334
cluster36	GRMZM2G153945	Pkinase	noncluster	GRMZM2G085038
cluster360	GRMZM2G301774	Pkinase	cluster297	GRMZM2G010953
cluster361	GRMZM2G163141	Pkinase	cluster179	GRMZM2G080499
cluster362	GRMZM2G451147	Pkinase	cluster178	GRMZM2G448672

cluster363	GRMZM2G047479	Pkinase	cluster152	GRMZM2G097533
cluster363	GRMZM2G305066	Pkinase	cluster177	GRMZM2G041719
cluster366	GRMZM2G134162	Pkinase	noncluster	AC203535.4_FGP007
cluster375	GRMZM2G007801	Pkinase	noncluster	GRMZM2G028037
cluster375	GRMZM2G007801	Pkinase	noncluster	GRMZM2G132184
cluster375	GRMZM2G007801	Pkinase	noncluster	GRMZM2G150806
cluster387	GRMZM2G171616	LRR	cluster279	GRMZM2G137582
cluster387	GRMZM2G171507	Pkinase	noncluster	GRMZM2G021517
cluster388	GRMZM2G431524	Pkinase	noncluster	GRMZM2G171210
cluster39	GRMZM2G073399	Pkinase	noncluster	GRMZM2G351074
cluster397	GRMZM2G117796	Pkinase	cluster125	GRMZM2G422576
cluster397	GRMZM2G117796	Pkinase	cluster20	GRMZM2G040954
cluster397	GRMZM2G147373	Pkinase	noncluster	AC234171.1_FGP001
cluster397	GRMZM2G117796	Pkinase	noncluster	GRMZM2G015703
cluster397	GRMZM2G117796	Pkinase	noncluster	GRMZM2G056612
cluster398	GRMZM2G005869	Pkinase	cluster330	GRMZM2G080001
cluster4	GRMZM2G409976	Pkinase	cluster201	GRMZM2G073359
cluster4	GRMZM2G109566	Pkinase	cluster403	GRMZM2G009869
cluster401	GRMZM2G330907	LRR-Pkinase	noncluster	GRMZM2G153393
cluster402	GRMZM2G178741	LRR	noncluster	GRMZM2G139963
cluster404	GRMZM2G317938	Pkinase	cluster3	GRMZM2G014366
cluster41	GRMZM2G054152	Pkinase	cluster264	GRMZM2G150932
cluster41	GRMZM2G088245	Pkinase	cluster29	GRMZM2G049088
cluster44	GRMZM2G111269	Pkinase	cluster29	GRMZM2G019434
cluster45	GRMZM2G423337	LRR	cluster156	GRMZM2G178102
cluster45	GRMZM2G423337	LRR	cluster29	GRMZM2G003509
cluster45	GRMZM2G044236	Pkinase	cluster29	GRMZM2G332821
cluster45	GRMZM2G044236	Pkinase	cluster379	GRMZM2G377199
cluster49	GRMZM2G025048	Pkinase	cluster133	GRMZM2G149841
cluster49	GRMZM2G127570	Pkinase	noncluster	AC215181.3_FGP004
cluster52	GRMZM2G047855	Pkinase	noncluster	AC205122.4_FGP004
cluster52	GRMZM2G138819	Pkinase	noncluster	GRMZM2G066867
cluster52	GRMZM2G300990	Pkinase	noncluster	GRMZM2G179308
cluster52	GRMZM2G300990	Pkinase	noncluster	GRMZM2G366935
cluster54	GRMZM2G028926	Pkinase	cluster224	GRMZM2G320506
cluster55	GRMZM2G355368	Pkinase	cluster296	GRMZM2G139199
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cluster56	GRMZM2G123762	LRR	noncluster	AC211892.4_FGP002
cluster59	GRMZM2G004412	NBS	cluster58	GRMZM2G180244
cluster60	GRMZM2G083258	NBS	noncluster	AC152495.1_FGP002
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cluster60	GRMZM2G069382	NBS	noncluster	AC152495.1_FGP010
cluster60	GRMZM2G083246	NBS-LRR	noncluster	AC152495.1_FGP017
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cluster60	GRMZM2G349565	NBS-LRR	noncluster	AC152495.1_FGP017
cluster61	GRMZM2G356128	Pkinase	cluster65	GRMZM2G137407
cluster63	GRMZM2G475170	RG	noncluster	AC205250.3_FGP006
cluster72	GRMZM2G099002	Pkinase	noncluster	GRMZM2G075002
cluster75	GRMZM2G418875	Pkinase	noncluster	GRMZM2G471787
cluster77	GRMZM2G043670	LRR-Pkinase	noncluster	GRMZM2G150024
cluster79	GRMZM2G061537	Pkinase	cluster104	GRMZM2G055957
cluster79	GRMZM2G330526	LRR	noncluster	AC226227.2_FGP006
cluster82	GRMZM2G091331	WRKY	cluster94	GRMZM2G071907
cluster83	GRMZM2G126858	Pkinase	cluster93	GRMZM2G031536
cluster85	GRMZM2G007477	Pkinase	cluster89	GRMZM2G076212

cluster9	GRMZM2G480698	LRR	cluster135	GRMZM2G176394
cluster90	GRMZM2G419318	Pkinase	cluster84	GRMZM2G000620
cluster92	GRMZM2G165060	Pkinase	noncluster	GRMZM2G029242
cluster96	GRMZM2G314396	Pkinase	noncluster	GRMZM2G035843
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cluster98	GRMZM2G044752	LRR	cluster23	GRMZM2G148074
cluster98	GRMZM2G328781	Pkinase	noncluster	GRMZM2G303768
cluster99	GRMZM2G123387	WRKY	noncluster	GRMZM2G151444
noncluster	GRMZM2G478876	Pkinase	cluster10	GRMZM2G043470
noncluster	GRMZM2G055678	Pkinase	cluster10	GRMZM2G072292
noncluster	GRMZM2G072107	Pkinase	cluster102	GRMZM2G032694
noncluster	AC226227.2_FGP003	LRR	cluster104	GRMZM2G342509
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noncluster	GRMZM2G180555	Pkinase	cluster12	GRMZM2G377357
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noncluster	AC206223.3_FGP006	Pkinase	cluster15	GRMZM2G006370
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noncluster	GRMZM2G465833	Pkinase	cluster163	GRMZM2G152889
noncluster	AC214743.3_FGP001	Pkinase	cluster166	GRMZM2G006821
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noncluster	GRMZM2G004207	Pkinase	cluster263	GRMZM2G166027
noncluster	GRMZM2G335052	Pkinase	cluster272	GRMZM2G426732

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noncluster	GRMZM2G039431	LRR-Pkinase	cluster312	GRMZM2G149051
noncluster	GRMZM2G085038	Pkinase	cluster313	GRMZM2G029530
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noncluster	GRMZM2G085246	LRR-Pkinase	cluster322	GRMZM2G434277
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noncluster GRMZM2G145360 Pkinase

noncluster GRMZM2G481005

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Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
lysM	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
LRR-Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental

Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	segmental
WRKY	nonsegmental
Pkinase	segmental
LRR-Pkinase	segmental
LRR-Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR-Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
kinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
LRR-Pkinase	segmental
RG	nonsegmental
RG	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
NBS	nonsegmental
NBS	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
RG	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
WRKY	segmental
NBS	segmental

Pkinase	nonsegmental
WRKY	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	nonsegmental
LRR-Pkinase	segmental
Pkinase	segmental
WRKY	segmental
Pkinase	segmental
Pkinase	nonsegmental
LRR	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
LRR-Pkinase	nonsegmental
Pkinase	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
LRR-Pkinase	segmental
WRKY	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
Pkinase	nonsegmental
WRKY	nonsegmental
Pkinase	nonsegmental
Pkinase	nonsegmental
Pkinase	segmental
LRR-Pkinase	segmental
Pkinase	nonsegmental
Pkinase	nonsegmental
LRR	segmental
Pkinase	segmental
Pkinase	segmental
Pkinase	nonsegmental
Pkinase	segmental
LRR-Pkinase	segmental
Pkinase	segmental
WRKY	segmental
Pkinase	nonsegmental
RG	segmental
Pkinase	nonsegmental
Pkinase	segmental

Pkinase segmental
