CSIRO markers for rust resistance genes

Australian crops have been protected for the past 60 years by the breeding of rust-resistant crop varieties that inhibit the development of rust diseases.

Through our rust research we've provided the wheat industry with genetic markers that simplify the conventional breeding of rust resistant wheat. These markers help breeders to identify wheat varieties containing resistance genes which prevent rust infecting the plant or enable plants to successfully battle a rust attack.

To date we have provided wheat breeders with more than 20 PCR markers, helping the industry keep one step ahead of this costly disease.

Marker information and reference/contact

Lr37/Sr38/Yr17	NBS-LRR derived, dominant marker from alien segment. Cosegregates with triple rust resistance gene.	Seah et al 2001, Theoretical and Applied Genetics 102:600-605
Lr34/Yr18/Pm38/Sr57	Gene specific (perfect marker) for adult plant resistance gene to leaf rust, stem rust and stripe rust.	Lagudah et al 2009, Theoretical and Applied Genetics 119:889-898
Lr46/Yr29/Sr58/Pm39	Marker tightly linked to gene for adult plant resistance to leaf rust, stem rust and stripe rust.	Dr Evans Lagudah
Sr46	Perfect marker for resistance to stem rust.	Dr Evans Lagudah
Sr2	EST derived, very tightly linked, dominant marker for resistance to stem rust.	Dr Rohit Mago and Mr Wolfgang Spielmeyer
Sr50 (SrR)	AFLP derived, tightly linked, dominant marker. Amplifies from shortened 1RS chromosome (not sticky) for resistance to stem rust.	Mago et al 2002, Theoretical and Applied Genetics 104:1317-1324
Sr31	RFLP derived, tightly linked, co-dominant marker. Amplifies from shortened 1RS chromosome (not sticky) for resistance to stem rust.	Mago et al 2002, Theoretical and Applied Genetics 104:1317-1324
Sr24/Lr24	AFLP derived, tightly linked, dominant marker for resistance to stem rust.	Mago et al 2005, Theoretical and Applied Genetics 111:496-504
Sr26	AFLP derived, tightly linked, dominant marker for resistance to stem rust.	Mago et al 2005, Theoretical and Applied Genetics 111:496-504
Sr39	AFLP derived, tightly linked markers. Separate markers for R and S. Can be combined for co-dominant marker for resistance to stem rust.	Mago et al 2009, Theoretical and Applied Genetics 119 (8): 1441-1450

Sr22	Perfect marker for resistance to stem rust.	Periyannan et al 2011 Theoretical and Applied Genetics, 122:1-7; Dr Sam Periyannan, Dr Evans Lagudah
Sr32	AFLP derived, tightly linked marker for resistance to stem rust.	Mago et al 2013, Theoretical and Applied Genetics 10.1007/s00122-013-2184-8
SrAes1t	AFLP derived, tightly linked marker for resistance to stem rust.	Mago et al 2013, Theoretical and Applied Genetics 10.1007/s00122-013-2184-8
SrB	Tightly linked marker for resistance to stem rust.	Rohit Mago, Unpublished
Sr33	Perfect marker for resistance to stem rust.	Periyannan et al 2013, Science 341:786-788
Sr45	Perfect marker for resistance to stem rust.	Periyannan et al 2014 Theoretical and Applied Genetics 127:947-955; Dr Sam Periyannan, Dr Evans Lagudah
Lr67/Yr46/Sr55/Pm 46	Perfect marker for adult plant resistance gene to leaf rust, stem rust and stripe rust.	Moore et al 2015, Nature Genetics DOI 10.1038/ng.3439