

# Supplementary 5. MS-associated SNPs

diseaseid	score	variant_dsi	isease_typ	year_final	disease_class	disease_name
C0026769	0.9	0.662	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.9	0.683	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.89	0.807	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.88	0.776	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.85	0.882	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.85	1	disease	2016	C20;C10	Multiple Sclerosis
C0026769	0.84	0.851	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.83	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.83	0.925	disease	2017	C20;C10	Multiple Sclerosis
C0026769	0.82	1	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.82	1	disease	2017	C20;C10	Multiple Sclerosis
C0026769	0.82	0.79	disease	2016	C20;C10	Multiple Sclerosis
C0026769	0.82	0.882	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.82	0.689	disease	2012	C20;C10	Multiple Sclerosis
C0026769	0.82	1	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.82	0.925	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2015	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.81	0.882	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2017	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2015	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.81	0.79	disease	2017	C20;C10	Multiple Sclerosis
C0026769	0.81	0.851	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.81	0.732	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.81	0.851	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2016	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.637	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2009	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.851	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.882	disease	2019	C20;C10	Multiple Sclerosis

C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
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### Supplementary 5. MS-associated SNPs

[illegible]

C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.8	0.882 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	0.827 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2009 C20;C10	Multiple Sclerosis
C0026769	0.8	0.851 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.8	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2009 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	0.807 disease	2010 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	0.925 disease	2012 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.8	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.8	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.77	0.689 disease	2018 C20;C10	Multiple Sclerosis
C0026769	0.74	0.925 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.73	0.672 disease	2020 C20;C10	Multiple Sclerosis
C0026769	0.73	0.667 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.72	0.732 disease	2017 C20;C10	Multiple Sclerosis
C0026769	0.71	0.851 disease	2012 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2017 C20;C10	Multiple Sclerosis
C0026769	0.71	0.925 disease	2015 C20;C10	Multiple Sclerosis
C0026769	0.71	0.925 disease	2012 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2015 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.71	0.807 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.71	0.882 disease	2014 C20;C10	Multiple Sclerosis
C0026769	0.71	0.851 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2018 C20;C10	Multiple Sclerosis
C0026769	0.71	0.925 disease	2018 C20;C10	Multiple Sclerosis
C0026769	0.71	0.752 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.71	0.683 disease	2011 C20;C10	Multiple Sclerosis

**Supplementary 5. MS-associated SNPs**

C0026769	0.71	1 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.71	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.71	0.827 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.71	0.689 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.71	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.71	0.882 disease	2018 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.742 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.752 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.752 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.763 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.851 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.851 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.776 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.763 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.752 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.79 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.851 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2019 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2009 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis

[illegible]

# Supplementary 5. MS-associated SNPs

C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	0.742 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	0.776 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.851 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.585 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.724 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2010 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.716 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.763 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2010 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.79 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.742 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.752 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.763 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis

[illegible]



### Supplementary 5. MS-associated SNPs

[illegible]

[illegible]

### Supplementary 5. MS-associated SNPs

[illegible]

[illegible]

### Supplementary 5. MS-associated SNPs

[illegible]

C0026769	0.7	0.79 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.724 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.851 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2016 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2007 C20;C10	Multiple Sclerosis
C0026769	0.7	0.827 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.807 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2015 C20;C10	Multiple Sclerosis
C0026769	0.7	0.701 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sclerosis
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sclerosis
C0026769	0.7	0.925 disease	2013 C20;C10	Multiple Sclerosis

**Supplementary 5. MS-associated SNPs**

disease_semantic_type	source	year_initial	variant_dpi
Disease or Syndrome	ALL	2007	0.44
Disease or Syndrome	ALL	2007	0.56
Disease or Syndrome	ALL	2007	0.24
Disease or Syndrome	ALL	2009	0.36
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2009	0.24
Disease or Syndrome	ALL	2008	0.08
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.4
Disease or Syndrome	ALL	2009	0.2
Disease or Syndrome	ALL	2010	0.56
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2009	0.12
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2009	0.32
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.48
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2009	0.24
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.12
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.6
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.16

Disease or Syndrome	ALL	2013	0.08
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**Supplementary 5. MS-associated SNPs**

Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.48
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2013	0.28
Disease or Syndrome	ALL	2010	0.32
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2013	0.36
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.48
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08

Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2009	0.24
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2012	0.12
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2009	0.52
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2009	0.48
Disease or Syndrome	ALL	2010	0.4
Disease or Syndrome	ALL	2011	0.44
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2009	0.12
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2015	0.08
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2017	0.08
Disease or Syndrome	ALL	2018	0.16
Disease or Syndrome	ALL	2010	0.4
Disease or Syndrome	ALL	2011	0.48

**Supplementary 5. MS-associated SNPs**

Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2010	0.2
Disease or Syndrome	ALL	2016	0.32
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2009	0.52
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2011	0.4
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2019	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.2
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2019	0.32
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08

Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2017	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2019	0.16
Disease or Syndrome	ALL	2013	0.24
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2009	0.28
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2019	0.16
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.12
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2011	0.16

**Supplementary 5. MS-associated SNPs**

Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.44
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2011	0.44
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2007	0.28
Disease or Syndrome	ALL	2011	0.72
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2007	0.32
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.64
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.44
Disease or Syndrome	ALL	2011	0.4
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.24
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2011	0.48
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2011	0.12

Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2010	0.28
Disease or Syndrome	ALL	2011	0.08
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2019	0.12
Disease or Syndrome	ALL	2013	0.28
Disease or Syndrome	ALL	2011	0.8
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.48
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2019	0.16
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.08

**Supplementary 5. MS-associated SNPs**

Disease or Syndrome	ALL	2014	0.12
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2011	0.72
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2016	0.12
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2010	0.28
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.24
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.28
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.36
Disease or Syndrome	ALL	2010	0.2
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2010	0.24

Disease or Syndrome	ALL	2010	0.36
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2010	0.36
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2011	0.28
Disease or Syndrome	ALL	2007	0.28
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2010	0.2
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2015	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2009	0.2
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.12



**Supplementary 5. MS-associated SNPs**

Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.2
Disease or Syndrome	ALL	2007	0.24
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2019	0.12
Disease or Syndrome	ALL	2013	0.12
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2017	0.08
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2009	0.12
Disease or Syndrome	ALL	2007	0.24
Disease or Syndrome	ALL	2010	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.24
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2017	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2013	0.08

Disease or Syndrome	ALL	2011	0.6
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2016	0.2
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2019	0.24
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.12
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2010	0.4
Disease or Syndrome	ALL	2007	0.28
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2011	0.44
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2013	0.32
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.2
Disease or Syndrome	ALL	2009	0.08
Disease or Syndrome	ALL	2007	0.28
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.36
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2007	0.44
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.72
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08

**Supplementary 5. MS-associated SNPs**

Disease or Syndrome	ALL	2011	0.36
Disease or Syndrome	ALL	2013	0.28
Disease or Syndrome	ALL	2011	0.4
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2011	0.32
Disease or Syndrome	ALL	2013	0.16
Disease or Syndrome	ALL	2010	0.08
Disease or Syndrome	ALL	2019	0.16
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.24
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.4
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.48
Disease or Syndrome	ALL	2010	0.32
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2010	0.24
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.24
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.36
Disease or Syndrome	ALL	2007	0.28
Disease or Syndrome	ALL	2010	0.16
Disease or Syndrome	ALL	2007	0.44
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.16

Disease or Syndrome	ALL	2007	0.32
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.36
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2007	0.2
Disease or Syndrome	ALL	2011	0.16
Disease or Syndrome	ALL	2007	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2016	0.08
Disease or Syndrome	ALL	2007	0.36
Disease or Syndrome	ALL	2007	0.16
Disease or Syndrome	ALL	2007	0.12
Disease or Syndrome	ALL	2011	0.44
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2015	0.08
Disease or Syndrome	ALL	2013	0.4
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.12
Disease or Syndrome	ALL	2013	0.08
Disease or Syndrome	ALL	2011	0.2
Disease or Syndrome	ALL	2013	0.12

## Supplementary 5. MS-associated SNPs

gene_symbol	ei	variant_consequence_type
IL2RA	0.909091	1 intron variant
IL7R		missense variant
HLA-DRA		1 downstream gene variant
TNFRSF1A		1 non coding transcript exon variant
IL2RA		1 intron variant
CD6		1 intron variant
CYP27B1;METTL1	0.8	missense variant
KIF1B		1 intron variant
CBLB;LOC107986109	0.75	intron variant
TSPAN31;AGAP2		1 intron variant
RPS6KB1		1 3 prime UTR variant
CYP24A1		1 upstream gene variant
CD58;MIR548AC		1 intron variant
STAT3		1 intron variant
CD86		1 splice region variant
GPC5;LOC105370315		1 intron variant
SP140		1 intron variant
TNFSF14		1 intron variant
		1 intergenic variant
AHI1		1 intron variant
EVI5		1 intron variant
CD58		1 intron variant
PKIA-AS1;LOC105375911		1 intron variant
		1 intergenic variant
TAGAP;LOC105378083;LOC107986664		1 5 prime UTR variant
		1 intron variant
MANBA		1 intron variant
		1 intergenic variant
TSBP1;TSBP1-AS1		1 intron variant
RAD21L1		1 upstream gene variant
CD40		1 intron variant
ZBTB46		1 intron variant
		1 TF binding site variant
CXCR5		1 upstream gene variant
ANKRD55		1 intron variant
		1 upstream gene variant
EPS15L1		1 intron variant
CLECL1		1 intron variant
		1 intron variant
MYNN		1 synonymous variant
SLC30A7;HNRNPA1P68		1 non coding transcript exon variant
CLEC16A		1 intron variant
LOC112268235		1 intron variant
		1 intergenic variant
BACH2		1 intron variant
LINC02580;LOC105374570		1 non coding transcript exon variant
ZMIZ1		1 intron variant
ZMIZ1		1 intron variant
		1 intergenic variant
LOC105371664		1 intron variant
ARHGEF10;LOC100131395		1 intron variant

ODF3B	1 intron variant
LINC01967	1 upstream gene variant
MERTK	1 intron variant
CLSTN2	1 intron variant
MPHOSPH9	1 intron variant
PVT1	1 intron variant
HLA-DQA1	1 intron variant
LINC01147	1 intron variant
MLANA;KIAA2026	1 intron variant
MAPK1	1 intron variant
STAT3	1 intron variant
TIMMDC1	1 intron variant
BATF	1 intron variant
DKKL1	1 missense variant
	1 intron variant
NCOA5	1 intron variant
LOC105378271	1 regulatory region variant
HLA-F;HLA-F-AS1	1 non coding transcript exon variant
LOC285626	1 non coding transcript exon variant
ILDR1	1 upstream gene variant
SYK	1 upstream gene variant
	1 intergenic variant
SAE1	1 intron variant
IL2RA	1 intron variant
	1 intergenic variant
HLA-DRA	1 upstream gene variant
	1 downstream gene variant
	1 regulatory region variant
ZNF767P	1 intron variant
ZNF433;ZNF433-AS1	1 splice region variant
VAV2	1 intron variant
BTNL2;TSBP1-AS1	1 intron variant
HLA-DRB4;HLA-DRB6	1 intron variant
RGS14	1 upstream gene variant
	1 regulatory region variant
SLC15A2	1 3 prime UTR variant
CD86	1 intron variant
	1 intron variant
PVT1	1 intron variant
	1 regulatory region variant
TTC34	1 intron variant
ZFP36L1	1 downstream gene variant
	1 intergenic variant
RNASEL	1 3 prime UTR variant
	1 intergenic variant
LOC105369325	1 intron variant
SNHG28	1 intron variant
LINC01967	1 intron variant
LINC02580	1 intron variant

## Supplementary 5. MS-associated SNPs

RMI2;LOC105371082

CLEC16A

MALT1

PVR;LOC107985305

HACE1

INAVA

WTAPP1

DLEU1

CDC37

MPV17L2

LOC107985947

HLA-A

PRKRA;CHROMR

SPEF2;LOC105374724

LOC101927314

DLEU1

STAT3

CD226

MADD;NR1H3

IFIH1

TYK2

LOC105375911

EVI5

TMEM39A

IGHA1

EVI5

CLEC16A

RMI2;LOC105371082

LRP2

SYT14

HSPA1L

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 upstream gene variant

1 regulatory region variant

1 regulatory region variant

1 regulatory region variant

1 intergenic variant

1 intron variant

1 intergenic variant

1 intergenic variant

1 intron variant

1 upstream gene variant

1 intron variant

1 missense variant

1 intergenic variant

1 upstream gene variant

1 intergenic variant

1 upstream gene variant

1 3 prime UTR variant

1 regulatory region variant

1 intron variant

1 intron variant

1 intergenic variant

1 intron variant

1 intron variant

1 missense variant

1 missense variant

1 missense variant

1 missense variant

0.666667 intron variant

0.5 intron variant

1 intron variant

1 intron variant

1 upstream gene variant

0.5 missense variant

1 intron variant

1 missense variant

1 intron variant

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 missense variant

1 upstream gene variant

ERG  
MAZ;LOC112268170  
MMEL1  
FCRL3  
TOP3A  
  
IQGAP1  
  
IGF2;IGF2-AS;INS-IGF2  
IL12A-AS1  
NDFIP1  
TNPO3  
  
LOC102724957  
HLA-DMA;HLA-DMB  
RNLS;LOC101929727  
BANK1  
LINC02357  
HLA-F;HLA-F-AS1  
  
LOC100996583  
  
BACH2  
CTNNA3  
  
CD69  
IL2RA  
LRRK2;LINC02471;LOC105369735;LRRK2-DT  
NKX2-3;LINC01475  
ETS1  
MIR181A1HG  
TIMMDC1  
IL23R  
HLA-DMA;HLA-DMB  
IFI30  
MROH3P  
  
DDAH1  
AFF3  
ARHGAP31  
LOC105376976  
IRGM  
BACH2  
RREB1  
CLEC16A  
ITGAM  
MXD3

1 intron variant  
0.5 intron variant  
1 missense variant  
1 intron variant  
1 3 prime UTR variant  
1 regulatory region variant  
1 intron variant  
1 downstream gene variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 upstream gene variant  
1 intron variant  
1 intergenic variant  
1 intron variant  
1 non coding transcript exon variant  
1 upstream gene variant  
1 missense variant  
1 intron variant  
1 non coding transcript exon variant  
1 upstream gene variant  
1 non coding transcript exon variant  
1 upstream gene variant  
1 intron variant  
1 intron variant  
1 intergenic variant  
1 downstream gene variant  
1 3 prime UTR variant  
1 intron variant  
1 non coding transcript exon variant  
1 upstream gene variant  
1 intron variant  
1 intron variant  
1 stop lost  
1 intron variant  
1 non coding transcript exon variant  
1 missense variant  
1 downstream gene variant  
1 regulatory region variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 upstream gene variant  
1 intron variant



## Supplementary 5. MS-associated SNPs

KIF21B

TRAF3

WWOX

IL2RA

ZMIZ1

IL2RA

RPS6KB1

CLEC16A

PUS10

LINC01934

NONOP2

CCR3

KIAA1109

NCOA2

LOC105377022

FAM107A;LOC107984079

LOC105371664

LPP

ZFP36L1

HLA-DMB

MIR3681HG

LOC105375746

IFNG-AS1;LOC107984526

HLA-F;HLA-F-AS1

HLA-F

TNPO2

PLEK;LOC101927723

LOC101928354

ZFP90

LOC101927745

HLA-F;HLA-F-AS1

ADAD1

TNXB

LOC105369325

GLMN;RPAP2

NAA25

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 splice region variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 non coding transcript exon variant

1 intron variant

1 intron variant

1 intron variant

1 regulatory region variant

1 intron variant

1 intergenic variant

1 intron variant

1 TF binding site variant

1 intron variant

1 regulatory region variant

1 intron variant

1 intron variant

1 upstream gene variant

1 non coding transcript exon variant

1 intron variant

1 intron variant

1 intron variant

1 upstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 missense variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 3 prime UTR variant

1 upstream gene variant

1 non coding transcript exon variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 regulatory region variant

1 intron variant

1 downstream gene variant

SLC9A8  
IL12A-AS1  
ZMIZ1  
HLA-DMA;BRD2  
M6PR;KLRG1  
LINC01967

EPS15L1  
CDH3  
SH3BP2  
LOC105376481  
PTPN2  
IQCB1

TSFM

FCRL1  
HLA-DQB2  
IL13;TH2LCRR  
STAT2  
CFB;CYP21A2;NELFE  
TEF  
TCF19  
BTNL2;TSBP1-AS1  
BTNL2;TSBP1-AS1

GGNBP1  
LOC105378083;LOC112267968  
LOC105378083

IRF1-AS1  
IL23R;C1orf141  
TNFSF4  
HLA-DQA2  
ZFP36L1  
CYP21A2;SLC44A4  
ILDR1  
SLC2A4RG  
ITLN1  
SIRPG  
SLC44A2  
GSDMB  
ERBB3  
C1QTNF6  
FGFR1OP  
GSDMB  
ZGPAT

1 intron variant  
1 intron variant  
1 intron variant  
1 non coding transcript exon variant  
1 upstream gene variant  
1 intron variant  
1 intergenic variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intergenic variant  
1 intron variant  
1 intergenic variant  
1 intron variant  
1 intron variant  
1 missense variant  
1 intron variant  
1 3 prime UTR variant  
1 intron variant  
1 intron variant  
1 missense variant  
1 intron variant  
1 downstream gene variant  
1 intron variant  
1 non coding transcript exon variant  
1 intron variant  
1 regulatory region variant  
1 intergenic variant  
1 upstream gene variant  
1 intergenic variant  
1 intron variant  
1 intron variant  
1 intergenic variant  
1 intron variant  
1 intron variant  
1 missense variant  
1 upstream gene variant  
1 non coding transcript exon variant  
1 non coding transcript exon variant  
1 intron variant  
1 missense variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 missense variant  
1 intron variant

## Supplementary 5. MS-associated SNPs

EOMES

HLA-DRA

HORMAD2

LOC100294145

TAP2

HLA-DRB1

PCAT1;CASC19

PTPN22;AP4B1-AS1

HLA-B;LINC02571;LOC112267902

HLA-B;LINC02571;LOC112267902

MAC1R

KCNMA1

TET2;TET2-AS1

MCCD1

PRRC2A;SNORA38

CYP24A1

VMP1

DLEU1

LOC105371664

HCP5

TSBP1;TSBP1-AS1

MICB-DT

1 intergenic variant

1 downstream gene variant

1 upstream gene variant

1 downstream gene variant

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intergenic variant

1 intron variant

1 missense variant

1 intron variant

1 upstream gene variant

1 intron variant

1 upstream gene variant

1 intron variant

1 intron variant

1 intergenic variant

1 intergenic variant

1 upstream gene variant

1 downstream gene variant

1 upstream gene variant

1 intergenic variant

1 intergenic variant

1 intergenic variant

1 intron variant

1 TF binding site variant

1 intron variant

1 regulatory region variant

1 intron variant

1 upstream gene variant

1 non coding transcript exon variant

1 upstream gene variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 intergenic variant

1 non coding transcript exon variant

1 intron variant

1 intergenic variant

1 downstream gene variant

1 downstream gene variant

1 intergenic variant

1 intergenic variant

1 intergenic variant

1 intergenic variant

1 intergenic variant

1 intron variant

1 intron variant

NPEPPS  
MROH3P

CSGALNACT2  
PLEKHG5

CTLA4

CCR6;LOC105378122  
LINC00243  
HCG27

LOC100294145

HLA-DQA1  
DDX39B;MCCD1;ATP6V1G2-DDX39B

HCG23;TSBP1-AS1

HLA-DRA  
HLA-DRA  
HLA-DRA  
TSBP1;TSBP1-AS1  
TSBP1;TSBP1-AS1  
TSBP1;TSBP1-AS1

DHX16  
BAG6;APOM  
TNXB

TSBP1-AS1  
POU5F1

PSORS1C1

PSORS1C1  
POU5F1;TCF19

C6orf15;PSORS1C1  
CDSN;PSORS1C1

PSORS1C1  
NOTCH4

HLA-B  
POU5F1  
NOTCH4

1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 upstream gene variant  
1 upstream gene variant  
1 downstream gene variant  
1 intron variant  
1 intron variant  
1 non coding transcript exon variant  
1 upstream gene variant  
1 intergenic variant  
1 intergenic variant  
1 upstream gene variant  
1 intergenic variant  
1 intron variant  
1 3 prime UTR variant  
1 intergenic variant  
1 non coding transcript exon variant  
1 intergenic variant  
1 upstream gene variant  
1 upstream gene variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 missense variant  
1 non coding transcript exon variant  
1 intron variant  
1 intron variant  
1 regulatory region variant  
1 intergenic variant  
1 intron variant  
1 intron variant  
1 intergenic variant  
1 intergenic variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intergenic variant  
1 upstream gene variant  
1 missense variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 intron variant  
1 downstream gene variant  
1 intron variant  
1 intron variant  
1 intron variant

## Supplementary 5. MS-associated SNPs

PPT2;PPT2-EGFL8

RNF5;AGPAT1;MIR6833

TNXB

HLA-DRA

HLA-DRA

APEH;MST1

LINC01967

SLAMF7

MMEL1

TRAF1

BTNL2;TSBP1-AS1

LACC1

BTNL2;TSBP1-AS1

ETS1

CTSH

ATG16L1

CYP21A2;STK19

LINC00336;GGNBP1

EVI5

TNFRSF1A

PRKD2

TNFSF15

CYP21A2;SKIV2L

NOTCH4

OTUD3

CENPO;PTRHD1;LOC105369164

ICOS;LOC101927840

LOC105377022

HCG22

LINC02649;LINC02656

CD69

LOC107984558

IL27

STAT3

SBN02

1 non coding transcript exon variant

1 intergenic variant

1 intron variant

1 intron variant

1 intergenic variant

1 intergenic variant

1 regulatory region variant

1 intron variant

1 3 prime UTR variant

1 missense variant

1 intergenic variant

1 intron variant

1 intergenic variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 non coding transcript exon variant

1 missense variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 non coding transcript exon variant

1 intron variant

1 upstream gene variant

1 upstream gene variant

1 intergenic variant

1 downstream gene variant

1 3 prime UTR variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 missense variant

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 regulatory region variant

1 upstream gene variant

1 non coding transcript exon variant

1 intron variant

1 upstream gene variant

1 upstream gene variant

1 downstream gene variant

1 upstream gene variant

1 intron variant

1 intron variant

ICOSLG  
CYP21A2;EHMT2

RASGRP1

SPATA2  
MGAT5

TSBP1;TSBP1-AS1  
PHRF1  
RGS14

TNFAIP3  
LINC01100;IL12A-AS1

CXCR5  
PSORS1C1

LOC105369519  
CYP21A2;EHMT2  
TSBP1;TSBP1-AS1  
TSBP1;TSBP1-AS1  
ATG5  
INAVA  
TSBP1;TSBP1-AS1  
HORMAD2;LOC105372988

IL17REL

LINC01620  
ELMO1  
LPIN3  
PRXL2B  
TNFAIP3

HLA-DRB1  
CYP21A2;NELFE

C2;CYP21A2  
P XK  
CYP21A2;SLC44A4

CLEC16A  
CLEC16A  
RMI2;LOC105371082;LOC105371083

- 1 3 prime UTR variant
- 1 intron variant
- 1 intergenic variant
- 1 TF binding site variant
- 1 intron variant
- 1 intron variant
- 1 synonymous variant
- 1 intron variant
- 1 intergenic variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 upstream gene variant
- 1 non coding transcript exon variant
- 1 non coding transcript exon variant
- 1 intron variant
- 1 intron variant
- 1 intergenic variant
- 1 intron variant
- 1 intron variant
- 1 intergenic variant
- 1 upstream gene variant
- 1 splice region variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intergenic variant
- 1 missense variant
- 1 regulatory region variant
- 1 non coding transcript exon variant
- 1 intron variant
- 1 upstream gene variant
- 1 upstream gene variant
- 1 intron variant
- 1 upstream gene variant
- 1 intergenic variant
- 1 intron variant
- 1 regulatory region variant
- 1 intron variant
- 1 intron variant
- 1 missense variant
- 1 intergenic variant
- 1 intergenic variant
- 1 intergenic variant
- 1 intron variant
- 1 intron variant
- 1 non coding transcript exon variant

## Supplementary 5. MS-associated SNPs

ATXN2

ATG5

C2;CYP21A2;EHMT2

CYP21A2;SLC44A4

PHGDH

LPP

CD58

PHTF1

GFI1

LRRC34

IL7R

HLA-DQB2

HLA-DQB2

HLA-DRB9

HLA-B;USP8P1

CDKAL1

LOC102723878

GLIS3

SKAP2

IL2RA

AGBL2

PITPNM2

ANKRD55

CLEC16A;LOC105371081

HLA-DRA

BACH2

HLA-B

IL2RB

HLA-DQB2

GALC

AK5

RGS1;LOC105371664

STAT4

PVT1

BAG6

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 upstream gene variant

1 intron variant

1 intergenic variant

1 missense variant

1 intergenic variant

1 3 prime UTR variant

1 upstream gene variant

1 upstream gene variant

1 intron variant

1 non coding transcript exon variant

1 intron variant

1 intron variant

1 intergenic variant

1 upstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intergenic variant

1 intron variant

1 intron variant

1 3 prime UTR variant

1 upstream gene variant

1 intergenic variant

1 intergenic variant

1 intergenic variant

1 intron variant

1 intron variant

1 intergenic variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 non coding transcript exon variant

1 intergenic variant

1 intron variant

1 upstream gene variant

1 intron variant

1 intron variant

GATD3A

MANBA

TNIP1

HLA-DQB2

SKAP2

KPNA7

LOC105376481

SUMF1

LOC107984652

ATXN2L

DLEU1

VMP1

DKKL1

LINC01185

JAZF1

TSBP1;TSBP1-AS1

TSBP1;TSBP1-AS1

JAZF1

TSBP1;TSBP1-AS1

HCG22

HCG22

HCG22

POU5F1

TSBP1;TSBP1-AS1

CYP21A2;SLC44A4;EHMT2-AS1

TSBP1;TSBP1-AS1

TSBP1;TSBP1-AS1

TSBP1-AS1

TSBP1-AS1

BTNL2;TSBP1-AS1

HLA-DRA

HLA-DRB9

HLA-DRB9

HLA-DRB9

HLA-DRB9

HLA-DRB9

HLA-DRB1

1 intron variant

1 downstream gene variant

1 intron variant

1 regulatory region variant

1 intergenic variant

1 intron variant

1 regulatory region variant

1 intron variant

1 regulatory region variant

1 upstream gene variant

1 intron variant

1 intron variant

1 intergenic variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intergenic variant

1 intron variant

1 intron variant

1 downstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 downstream gene variant

1 intron variant

1 upstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 intergenic variant

1 regulatory region variant

1 intergenic variant

1 upstream gene variant

1 intron variant

1 intron variant

1 intron variant

1 intron variant

1 synonymous variant

1 intergenic variant

1 intergenic variant

1 intron variant

1 non coding transcript exon variant

1 non coding transcript exon variant

1 intron variant

1 intron variant

1 intron variant

1 intergenic variant



Supplementary 5. MS-associated SNPs

HLA-DQA1

HLA-DQA2  
HLA-DQA2  
HLA-DQA2  
HLA-DQA2

SPRED2  
LOC112267968  
TSBP1;TSBP1-AS1  
CENPW  
TSBP1;TSBP1-AS1  
PXT1  
ITPR3

LINC02649;LINC02656

IFNGR2  
FOXP1  
ZBTB38

STAT4  
UBASH3A  
SP140

- 1 intron variant
- 1 downstream gene variant
- 1 upstream gene variant
- 1 upstream gene variant
- 1 downstream gene variant
- 1 downstream gene variant
- 1 downstream gene variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 3 prime UTR variant
- 1 intron variant
- 1 downstream gene variant
- 1 upstream gene variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 intron variant
- 1 downstream gene variant
- 1 TF binding site variant
- 1 downstream gene variant
- 1 intron variant
- 1 intron variant
- 1 intergenic variant
- 1 intergenic variant
- 1 intron variant
- 1 missense variant
- 1 intron variant
- 1 intron variant
- 1 intergenic variant
- 1 intron variant
- 1 intron variant
- 1 intron variant

<b>disease_class_name</b>	<b>variantid</b>	
Immune System Diseases;	Nervous System Diseases	rs2104286
Immune System Diseases;	Nervous System Diseases	rs6897932
Immune System Diseases;	Nervous System Diseases	rs3135388
Immune System Diseases;	Nervous System Diseases	rs1800693
Immune System Diseases;	Nervous System Diseases	rs12722489
Immune System Diseases;	Nervous System Diseases	rs17824933
Immune System Diseases;	Nervous System Diseases	rs703842
Immune System Diseases;	Nervous System Diseases	rs10492972
Immune System Diseases;	Nervous System Diseases	rs9657904
Immune System Diseases;	Nervous System Diseases	rs12368653
Immune System Diseases;	Nervous System Diseases	rs180515
Immune System Diseases;	Nervous System Diseases	rs2248359
Immune System Diseases;	Nervous System Diseases	rs2300747
Immune System Diseases;	Nervous System Diseases	rs744166
Immune System Diseases;	Nervous System Diseases	rs9282641
Immune System Diseases;	Nervous System Diseases	rs9523762
Immune System Diseases;	Nervous System Diseases	rs10201872
Immune System Diseases;	Nervous System Diseases	rs1077667
Immune System Diseases;	Nervous System Diseases	rs11129295
Immune System Diseases;	Nervous System Diseases	rs11154801
Immune System Diseases;	Nervous System Diseases	rs11810217
Immune System Diseases;	Nervous System Diseases	rs1335532
Immune System Diseases;	Nervous System Diseases	rs1520333
Immune System Diseases;	Nervous System Diseases	rs17066096
Immune System Diseases;	Nervous System Diseases	rs1738074
Immune System Diseases;	Nervous System Diseases	rs17445836
Immune System Diseases;	Nervous System Diseases	rs228614
Immune System Diseases;	Nervous System Diseases	rs2744148
Immune System Diseases;	Nervous System Diseases	rs3129934
Immune System Diseases;	Nervous System Diseases	rs397020
Immune System Diseases;	Nervous System Diseases	rs4810485
Immune System Diseases;	Nervous System Diseases	rs6062314
Immune System Diseases;	Nervous System Diseases	rs6074022
Immune System Diseases;	Nervous System Diseases	rs630923
Immune System Diseases;	Nervous System Diseases	rs6859219
Immune System Diseases;	Nervous System Diseases	rs9271640
Immune System Diseases;	Nervous System Diseases	rs10411936
Immune System Diseases;	Nervous System Diseases	rs10466829
Immune System Diseases;	Nervous System Diseases	rs10866713
Immune System Diseases;	Nervous System Diseases	rs10936599
Immune System Diseases;	Nervous System Diseases	rs11581062
Immune System Diseases;	Nervous System Diseases	rs11865121
Immune System Diseases;	Nervous System Diseases	rs12025416
Immune System Diseases;	Nervous System Diseases	rs12048904
Immune System Diseases;	Nervous System Diseases	rs12212193
Immune System Diseases;	Nervous System Diseases	rs12466022
Immune System Diseases;	Nervous System Diseases	rs1250542
Immune System Diseases;	Nervous System Diseases	rs1250550
Immune System Diseases;	Nervous System Diseases	rs13192841
Immune System Diseases;	Nervous System Diseases	rs1323292
Immune System Diseases;	Nervous System Diseases	rs13279485
		LPP
		PXT1
		MALT1
		ERG
		TOP3A
		HLA-DRB4
		EHMT2-AS1
		PTPN22
		NR1H3
		GPC5
		HSPA1L
		ZBTB38
		CYP21A2
		DDAH1
		MGAT5
		TNXB
		TNFSF15
		HLA-DRA
		TRAF3
		STAT4
		CD40
		LRRK2
		FCRL3
		EHMT2
		HACE1
		MERTK
		MYNN
		CCR3
		CENPO
		AHI1
		RGS14
		GFI1
		IL23R
		SKAP2
		CDSN
		PCAT1
		VMP1
		CASC19
		HLA-DMB
		ATG5
		HLA-A
		SIRPG
		TNFRSF1A
		CD226
		STAT3
		PHGDH
		HLA-DRB9
		TCF19
		ATXN2
		ICOSLG
		EOMES

## Supplementary 5. MS-associated SNPs

Immune System Diseases;	Nervous System Diseases	rs13333054	SPATA2
Immune System Diseases;	Nervous System Diseases	rs140522	MST1
Immune System Diseases;	Nervous System Diseases	rs170934	JAZF1
Immune System Diseases;	Nervous System Diseases	rs17174870	WWOX
Immune System Diseases;	Nervous System Diseases	rs17411949	MACIR
Immune System Diseases;	Nervous System Diseases	rs1790100	RNF5
Immune System Diseases;	Nervous System Diseases	rs2019960	MMEL1
Immune System Diseases;	Nervous System Diseases	rs2040406	CTNNA3
Immune System Diseases;	Nervous System Diseases	rs2119704	IL13
Immune System Diseases;	Nervous System Diseases	rs2150702	CD86
Immune System Diseases;	Nervous System Diseases	rs2283792	SKIV2L
Immune System Diseases;	Nervous System Diseases	rs2293152	KIF1B
Immune System Diseases;	Nervous System Diseases	rs2293370	TSPAN31
Immune System Diseases;	Nervous System Diseases	rs2300603	TNFAIP3
Immune System Diseases;	Nervous System Diseases	rs2303759	AGAP2
Immune System Diseases;	Nervous System Diseases	rs233100	MAZ
Immune System Diseases;	Nervous System Diseases	rs2425752	IL27
Immune System Diseases;	Nervous System Diseases	rs2503875	HLA-DQA1
Immune System Diseases;	Nervous System Diseases	rs2523393	TEF
Immune System Diseases;	Nervous System Diseases	rs2546890	RGS1
Immune System Diseases;	Nervous System Diseases	rs2681424	TSBP1
Immune System Diseases;	Nervous System Diseases	rs290986	CXCR5
Immune System Diseases;	Nervous System Diseases	rs2920001	CDH3
Immune System Diseases;	Nervous System Diseases	rs307896	HORMAD2
Immune System Diseases;	Nervous System Diseases	rs3118470	ITGAM
Immune System Diseases;	Nervous System Diseases	rs3129720	NCOA5
Immune System Diseases;	Nervous System Diseases	rs3129871	HLA-F
Immune System Diseases;	Nervous System Diseases	rs3129889	CCR6
Immune System Diseases;	Nervous System Diseases	rs3135338	IL2RA
Immune System Diseases;	Nervous System Diseases	rs354033	HCG22
Immune System Diseases;	Nervous System Diseases	rs3745672	SH3BP2
Immune System Diseases;	Nervous System Diseases	rs3780792	MAPK1
Immune System Diseases;	Nervous System Diseases	rs3817963	NPEPPS
Immune System Diseases;	Nervous System Diseases	rs3828840	RASGRP1
Immune System Diseases;	Nervous System Diseases	rs4075958	CYP27B1
Immune System Diseases;	Nervous System Diseases	rs4271113	PSORS1C1
Immune System Diseases;	Nervous System Diseases	rs4285028	RREB1
Immune System Diseases;	Nervous System Diseases	rs4308217	PRKD2
Immune System Diseases;	Nervous System Diseases	rs4409785	ZFP36L1
Immune System Diseases;	Nervous System Diseases	rs4410871	IRGM
Immune System Diseases;	Nervous System Diseases	rs4613763	CTLA4
Immune System Diseases;	Nervous System Diseases	rs4648356	ERBB3
Immune System Diseases;	Nervous System Diseases	rs4902647	IQGAP1
Immune System Diseases;	Nervous System Diseases	rs4939490	TET2
Immune System Diseases;	Nervous System Diseases	rs533259	TTC34
Immune System Diseases;	Nervous System Diseases	rs6457617	GLIS3
Immune System Diseases;	Nervous System Diseases	rs650258	SP140
Immune System Diseases;	Nervous System Diseases	rs6659742	HLA-DQA2
Immune System Diseases;	Nervous System Diseases	rs669607	RNASEL
Immune System Diseases;	Nervous System Diseases	rs6718520	IGHA1

Immune System Diseases;	Nervous System Diseases	rs6896969	ZNF433
Immune System Diseases;	Nervous System Diseases	rs7090512	ELMO1
Immune System Diseases;	Nervous System Diseases	rs7191700	LRP2
Immune System Diseases;	Nervous System Diseases	rs7200786	ETS1
Immune System Diseases;	Nervous System Diseases	rs7238078	C2
Immune System Diseases;	Nervous System Diseases	rs7255066	TRAF1
Immune System Diseases;	Nervous System Diseases	rs733724	TNIP1
Immune System Diseases;	Nervous System Diseases	rs7522462	CDC37
Immune System Diseases;	Nervous System Diseases	rs756699	PRRC2A
Immune System Diseases;	Nervous System Diseases	rs7592330	NOTCH4
Immune System Diseases;	Nervous System Diseases	rs7595037	IL7R
Immune System Diseases;	Nervous System Diseases	rs771767	STK19
Immune System Diseases;	Nervous System Diseases	rs7923837	BTNL2
Immune System Diseases;	Nervous System Diseases	rs7924357	HLA-DMA
Immune System Diseases;	Nervous System Diseases	rs802734	HLA-DRB1
Immune System Diseases;	Nervous System Diseases	rs8049603	BRD2
Immune System Diseases;	Nervous System Diseases	rs806321	SLC2A4RG
Immune System Diseases;	Nervous System Diseases	rs8070463	MLANA
Immune System Diseases;	Nervous System Diseases	rs8112449	HLA-B
Immune System Diseases;	Nervous System Diseases	rs874628	IL12A-AS1
Immune System Diseases;	Nervous System Diseases	rs882300	NCOA2
Immune System Diseases;	Nervous System Diseases	rs9260489	ZMIZ1
Immune System Diseases;	Nervous System Diseases	rs9271366	CFB
Immune System Diseases;	Nervous System Diseases	rs9275563	FOXP1
Immune System Diseases;	Nervous System Diseases	rs9283487	FAM107A
Immune System Diseases;	Nervous System Diseases	rs9292777	IFIH1
Immune System Diseases;	Nervous System Diseases	rs931555	SLC9A8
Immune System Diseases;	Nervous System Diseases	rs9320598	POU5F1
Immune System Diseases;	Nervous System Diseases	rs9568281	HLA-DQB2
Immune System Diseases;	Nervous System Diseases	rs9596270	DDX39B
Immune System Diseases;	Nervous System Diseases	rs9891119	CTSH
Immune System Diseases;	Nervous System Diseases	rs763361	AGBL2
Immune System Diseases;	Nervous System Diseases	rs61731956	DKKL1
Immune System Diseases;	Nervous System Diseases	rs1990760	SPRED2
Immune System Diseases;	Nervous System Diseases	rs34536443	CD69
Immune System Diseases;	Nervous System Diseases	rs6887695	PVT1
Immune System Diseases;	Nervous System Diseases	rs10045431	ATG16L1
Immune System Diseases;	Nervous System Diseases	rs1021156	BACH2
Immune System Diseases;	Nervous System Diseases	rs10735781	TNFSF14
Immune System Diseases;	Nervous System Diseases	rs10876994	TSBP1-AS1
Immune System Diseases;	Nervous System Diseases	rs1132200	ZGPAT
Immune System Diseases;	Nervous System Diseases	rs11621145	DLEU1
Immune System Diseases;	Nervous System Diseases	rs11808092	PXK
Immune System Diseases;	Nervous System Diseases	rs12708716	ZBTB46
Immune System Diseases;	Nervous System Diseases	rs12928822	IL2RB
Immune System Diseases;	Nervous System Diseases	rs12946510	CDKAL1
Immune System Diseases;	Nervous System Diseases	rs12988804	CYP24A1
Immune System Diseases;	Nervous System Diseases	rs2205986	PVR
Immune System Diseases;	Nervous System Diseases	rs2227956	ITPR3
Immune System Diseases;	Nervous System Diseases	rs2736340	RPS6KB1

**Supplementary 5. MS-associated SNPs**

Immune System Diseases;	Nervous System Diseases	rs2836425	SPEF2
Immune System Diseases;	Nervous System Diseases	rs34286592	SLC44A4
Immune System Diseases;	Nervous System Diseases	rs3748816	
Immune System Diseases;	Nervous System Diseases	rs3761959	
Immune System Diseases;	Nervous System Diseases	rs4925166	
Immune System Diseases;	Nervous System Diseases	rs6822844	
Immune System Diseases;	Nervous System Diseases	rs8042861	
Immune System Diseases;	Nervous System Diseases	rs9267649	
Immune System Diseases;	Nervous System Diseases	rs1004446	
Immune System Diseases;	Nervous System Diseases	rs1014486	
Immune System Diseases;	Nervous System Diseases	rs1036207	
Immune System Diseases;	Nervous System Diseases	rs10488631	
Immune System Diseases;	Nervous System Diseases	rs10499194	
Immune System Diseases;	Nervous System Diseases	rs10500264	
Immune System Diseases;	Nervous System Diseases	rs10500817	
Immune System Diseases;	Nervous System Diseases	rs1050391	
Immune System Diseases;	Nervous System Diseases	rs10509540	
Immune System Diseases;	Nervous System Diseases	rs10516487	
Immune System Diseases;	Nervous System Diseases	rs10517086	
Immune System Diseases;	Nervous System Diseases	rs1059174	
Immune System Diseases;	Nervous System Diseases	rs10758669	
Immune System Diseases;	Nervous System Diseases	rs10797431	
Immune System Diseases;	Nervous System Diseases	rs10800309	
Immune System Diseases;	Nervous System Diseases	rs10806425	
Immune System Diseases;	Nervous System Diseases	rs10823051	
Immune System Diseases;	Nervous System Diseases	rs10903122	
Immune System Diseases;	Nervous System Diseases	rs10995271	
Immune System Diseases;	Nervous System Diseases	rs11052877	
Immune System Diseases;	Nervous System Diseases	rs1107345	
Immune System Diseases;	Nervous System Diseases	rs11175593	
Immune System Diseases;	Nervous System Diseases	rs11190140	
Immune System Diseases;	Nervous System Diseases	rs11221332	
Immune System Diseases;	Nervous System Diseases	rs113116201	
Immune System Diseases;	Nervous System Diseases	rs1131265	
Immune System Diseases;	Nervous System Diseases	rs11465804	
Immune System Diseases;	Nervous System Diseases	rs11539216	
Immune System Diseases;	Nervous System Diseases	rs11554159	
Immune System Diseases;	Nervous System Diseases	rs11584383	
Immune System Diseases;	Nervous System Diseases	rs11586238	
Immune System Diseases;	Nervous System Diseases	rs11587876	
Immune System Diseases;	Nervous System Diseases	rs11676922	
Immune System Diseases;	Nervous System Diseases	rs11712165	
Immune System Diseases;	Nervous System Diseases	rs11719975	
Immune System Diseases;	Nervous System Diseases	rs11747270	
Immune System Diseases;	Nervous System Diseases	rs11755527	
Immune System Diseases;	Nervous System Diseases	rs11755724	
Immune System Diseases;	Nervous System Diseases	rs11860603	
Immune System Diseases;	Nervous System Diseases	rs11860650	
Immune System Diseases;	Nervous System Diseases	rs11949767	
Immune System Diseases;	Nervous System Diseases	rs12087340	

Immune System Diseases;	Nervous System Diseases	rs12122721
Immune System Diseases;	Nervous System Diseases	rs12148050
Immune System Diseases;	Nervous System Diseases	rs12149527
Immune System Diseases;	Nervous System Diseases	rs12253981
Immune System Diseases;	Nervous System Diseases	rs12296430
Immune System Diseases;	Nervous System Diseases	rs1250552
Immune System Diseases;	Nervous System Diseases	rs12722561
Immune System Diseases;	Nervous System Diseases	rs1292034
Immune System Diseases;	Nervous System Diseases	rs12927355
Immune System Diseases;	Nervous System Diseases	rs13003464
Immune System Diseases;	Nervous System Diseases	rs13010713
Immune System Diseases;	Nervous System Diseases	rs13017599
Immune System Diseases;	Nervous System Diseases	rs13098911
Immune System Diseases;	Nervous System Diseases	rs13151961
Immune System Diseases;	Nervous System Diseases	rs13260060
Immune System Diseases;	Nervous System Diseases	rs13314993
Immune System Diseases;	Nervous System Diseases	rs13315591
Immune System Diseases;	Nervous System Diseases	rs1356122
Immune System Diseases;	Nervous System Diseases	rs1359062
Immune System Diseases;	Nervous System Diseases	rs1398607
Immune System Diseases;	Nervous System Diseases	rs1401884
Immune System Diseases;	Nervous System Diseases	rs1438131
Immune System Diseases;	Nervous System Diseases	rs1456893
Immune System Diseases;	Nervous System Diseases	rs1464510
Immune System Diseases;	Nervous System Diseases	rs1465788
Immune System Diseases;	Nervous System Diseases	rs151719
Immune System Diseases;	Nervous System Diseases	rs1534422
Immune System Diseases;	Nervous System Diseases	rs1551398
Immune System Diseases;	Nervous System Diseases	rs1558744
Immune System Diseases;	Nervous System Diseases	rs1569723
Immune System Diseases;	Nervous System Diseases	rs1610603
Immune System Diseases;	Nervous System Diseases	rs1610630
Immune System Diseases;	Nervous System Diseases	rs1632953
Immune System Diseases;	Nervous System Diseases	rs1633069
Immune System Diseases;	Nervous System Diseases	rs1633070
Immune System Diseases;	Nervous System Diseases	rs16978630
Immune System Diseases;	Nervous System Diseases	rs17035378
Immune System Diseases;	Nervous System Diseases	rs17119
Immune System Diseases;	Nervous System Diseases	rs1728785
Immune System Diseases;	Nervous System Diseases	rs1736135
Immune System Diseases;	Nervous System Diseases	rs1736921
Immune System Diseases;	Nervous System Diseases	rs1737060
Immune System Diseases;	Nervous System Diseases	rs1737068
Immune System Diseases;	Nervous System Diseases	rs17388568
Immune System Diseases;	Nervous System Diseases	rs17421624
Immune System Diseases;	Nervous System Diseases	rs175126
Immune System Diseases;	Nervous System Diseases	rs17519972
Immune System Diseases;	Nervous System Diseases	rs17582416
Immune System Diseases;	Nervous System Diseases	rs17696736
Immune System Diseases;	Nervous System Diseases	rs17728338

## Supplementary 5. MS-associated SNPs

Immune System Diseases;	Nervous System Diseases	rs17785991
Immune System Diseases;	Nervous System Diseases	rs17810546
Immune System Diseases;	Nervous System Diseases	rs1782645
Immune System Diseases;	Nervous System Diseases	rs17840186
Immune System Diseases;	Nervous System Diseases	rs1805755
Immune System Diseases;	Nervous System Diseases	rs1813375
Immune System Diseases;	Nervous System Diseases	rs1843938
Immune System Diseases;	Nervous System Diseases	rs1870071
Immune System Diseases;	Nervous System Diseases	rs1886700
Immune System Diseases;	Nervous System Diseases	rs189139
Immune System Diseases;	Nervous System Diseases	rs1891621
Immune System Diseases;	Nervous System Diseases	rs1893217
Immune System Diseases;	Nervous System Diseases	rs1920296
Immune System Diseases;	Nervous System Diseases	rs1980422
Immune System Diseases;	Nervous System Diseases	rs201202118
Immune System Diseases;	Nervous System Diseases	rs201847125
Immune System Diseases;	Nervous System Diseases	rs2050568
Immune System Diseases;	Nervous System Diseases	rs2051549
Immune System Diseases;	Nervous System Diseases	rs20541
Immune System Diseases;	Nervous System Diseases	rs2066808
Immune System Diseases;	Nervous System Diseases	rs2072633
Immune System Diseases;	Nervous System Diseases	rs2073167
Immune System Diseases;	Nervous System Diseases	rs2073723
Immune System Diseases;	Nervous System Diseases	rs2076530
Immune System Diseases;	Nervous System Diseases	rs2076533
Immune System Diseases;	Nervous System Diseases	rs2082412
Immune System Diseases;	Nervous System Diseases	rs210131
Immune System Diseases;	Nervous System Diseases	rs212389
Immune System Diseases;	Nervous System Diseases	rs212405
Immune System Diseases;	Nervous System Diseases	rs2157051
Immune System Diseases;	Nervous System Diseases	rs2157082
Immune System Diseases;	Nervous System Diseases	rs2163226
Immune System Diseases;	Nervous System Diseases	rs2182410
Immune System Diseases;	Nervous System Diseases	rs2188962
Immune System Diseases;	Nervous System Diseases	rs2201841
Immune System Diseases;	Nervous System Diseases	rs2205960
Immune System Diseases;	Nervous System Diseases	rs2227127
Immune System Diseases;	Nervous System Diseases	rs2236262
Immune System Diseases;	Nervous System Diseases	rs2242665
Immune System Diseases;	Nervous System Diseases	rs2255214
Immune System Diseases;	Nervous System Diseases	rs2256814
Immune System Diseases;	Nervous System Diseases	rs2274910
Immune System Diseases;	Nervous System Diseases	rs2281808
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Immune System Diseases;	Nervous System Diseases	rs2292239
Immune System Diseases;	Nervous System Diseases	rs229541
Immune System Diseases;	Nervous System Diseases	rs2301436
Immune System Diseases;	Nervous System Diseases	rs2305480
Immune System Diseases;	Nervous System Diseases	rs2315008

Immune System Diseases;	Nervous System Diseases	rs2327832
Immune System Diseases;	Nervous System Diseases	rs2371108
Immune System Diseases;	Nervous System Diseases	rs2395173
Immune System Diseases;	Nervous System Diseases	rs2395182
Immune System Diseases;	Nervous System Diseases	rs2412973
Immune System Diseases;	Nervous System Diseases	rs241403
Immune System Diseases;	Nervous System Diseases	rs241427
Immune System Diseases;	Nervous System Diseases	rs2431697
Immune System Diseases;	Nervous System Diseases	rs2454138
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Immune System Diseases;	Nervous System Diseases	rs2516460
Immune System Diseases;	Nervous System Diseases	rs2523485
Immune System Diseases;	Nervous System Diseases	rs2523535
Immune System Diseases;	Nervous System Diseases	rs2523638
Immune System Diseases;	Nervous System Diseases	rs2524089
Immune System Diseases;	Nervous System Diseases	rs2524095
Immune System Diseases;	Nervous System Diseases	rs2530709
Immune System Diseases;	Nervous System Diseases	rs2530710
Immune System Diseases;	Nervous System Diseases	rs2542151
Immune System Diseases;	Nervous System Diseases	rs2596517
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Immune System Diseases;	Nervous System Diseases	rs2621382
Immune System Diseases;	Nervous System Diseases	rs2621383
Immune System Diseases;	Nervous System Diseases	rs2621384
Immune System Diseases;	Nervous System Diseases	rs26232
Immune System Diseases;	Nervous System Diseases	rs2647046
Immune System Diseases;	Nervous System Diseases	rs2670117
Immune System Diseases;	Nervous System Diseases	rs2688608
Immune System Diseases;	Nervous System Diseases	rs2726518
Immune System Diseases;	Nervous System Diseases	rs2734573
Immune System Diseases;	Nervous System Diseases	rs2736172
Immune System Diseases;	Nervous System Diseases	rs2736177
Immune System Diseases;	Nervous System Diseases	rs2762932
Immune System Diseases;	Nervous System Diseases	rs2777899
Immune System Diseases;	Nervous System Diseases	rs2812197
Immune System Diseases;	Nervous System Diseases	rs2816316
Immune System Diseases;	Nervous System Diseases	rs2836878
Immune System Diseases;	Nervous System Diseases	rs2844507
Immune System Diseases;	Nervous System Diseases	rs2844558
Immune System Diseases;	Nervous System Diseases	rs2849015
Immune System Diseases;	Nervous System Diseases	rs2857129
Immune System Diseases;	Nervous System Diseases	rs2857136
Immune System Diseases;	Nervous System Diseases	rs2857154
Immune System Diseases;	Nervous System Diseases	rs2857161
Immune System Diseases;	Nervous System Diseases	rs2857210
Immune System Diseases;	Nervous System Diseases	rs2857212
Immune System Diseases;	Nervous System Diseases	rs2872507
Immune System Diseases;	Nervous System Diseases	rs2894249
Immune System Diseases;	Nervous System Diseases	rs2905747



## Supplementary 5. MS-associated SNPs

Immune System Diseases;	Nervous System Diseases	rs2935183
Immune System Diseases;	Nervous System Diseases	rs296547
Immune System Diseases;	Nervous System Diseases	rs3004212
Immune System Diseases;	Nervous System Diseases	rs3007421
Immune System Diseases;	Nervous System Diseases	rs3016013
Immune System Diseases;	Nervous System Diseases	rs3024505
Immune System Diseases;	Nervous System Diseases	rs3087243
Immune System Diseases;	Nervous System Diseases	rs3093023
Immune System Diseases;	Nervous System Diseases	rs3094123
Immune System Diseases;	Nervous System Diseases	rs3094609
Immune System Diseases;	Nervous System Diseases	rs3095238
Immune System Diseases;	Nervous System Diseases	rs3095250
Immune System Diseases;	Nervous System Diseases	rs3095345
Immune System Diseases;	Nervous System Diseases	rs3099848
Immune System Diseases;	Nervous System Diseases	rs3101942
Immune System Diseases;	Nervous System Diseases	rs3104373
Immune System Diseases;	Nervous System Diseases	rs3115537
Immune System Diseases;	Nervous System Diseases	rs3115576
Immune System Diseases;	Nervous System Diseases	rs3117098
Immune System Diseases;	Nervous System Diseases	rs3129305
Immune System Diseases;	Nervous System Diseases	rs3129768
Immune System Diseases;	Nervous System Diseases	rs3129872
Immune System Diseases;	Nervous System Diseases	rs3129877
Immune System Diseases;	Nervous System Diseases	rs3129882
Immune System Diseases;	Nervous System Diseases	rs3129900
Immune System Diseases;	Nervous System Diseases	rs3129932
Immune System Diseases;	Nervous System Diseases	rs3129941
Immune System Diseases;	Nervous System Diseases	rs3130000
Immune System Diseases;	Nervous System Diseases	rs3130050
Immune System Diseases;	Nervous System Diseases	rs3130287
Immune System Diseases;	Nervous System Diseases	rs3130299
Immune System Diseases;	Nervous System Diseases	rs3130311
Immune System Diseases;	Nervous System Diseases	rs3130320
Immune System Diseases;	Nervous System Diseases	rs3130501
Immune System Diseases;	Nervous System Diseases	rs3130532
Immune System Diseases;	Nervous System Diseases	rs3130534
Immune System Diseases;	Nervous System Diseases	rs3130558
Immune System Diseases;	Nervous System Diseases	rs3130564
Immune System Diseases;	Nervous System Diseases	rs3130933
Immune System Diseases;	Nervous System Diseases	rs3130952
Immune System Diseases;	Nervous System Diseases	rs3130975
Immune System Diseases;	Nervous System Diseases	rs3130981
Immune System Diseases;	Nervous System Diseases	rs3131009
Immune System Diseases;	Nervous System Diseases	rs3131294
Immune System Diseases;	Nervous System Diseases	rs3131621
Immune System Diseases;	Nervous System Diseases	rs3131622
Immune System Diseases;	Nervous System Diseases	rs3131631
Immune System Diseases;	Nervous System Diseases	rs3132486
Immune System Diseases;	Nervous System Diseases	rs3132524
Immune System Diseases;	Nervous System Diseases	rs3132946

Immune System Diseases;	Nervous System Diseases	rs3134603
Immune System Diseases;	Nervous System Diseases	rs3134926
Immune System Diseases;	Nervous System Diseases	rs3134943
Immune System Diseases;	Nervous System Diseases	rs3134954
Immune System Diseases;	Nervous System Diseases	rs3135342
Immune System Diseases;	Nervous System Diseases	rs3135363
Immune System Diseases;	Nervous System Diseases	rs3135377
Immune System Diseases;	Nervous System Diseases	rs3135392
Immune System Diseases;	Nervous System Diseases	rs3177928
Immune System Diseases;	Nervous System Diseases	rs3197999
Immune System Diseases;	Nervous System Diseases	rs32477
Immune System Diseases;	Nervous System Diseases	rs338610
Immune System Diseases;	Nervous System Diseases	rs34383631
Immune System Diseases;	Nervous System Diseases	rs35929052
Immune System Diseases;	Nervous System Diseases	rs35967351
Immune System Diseases;	Nervous System Diseases	rs3748817
Immune System Diseases;	Nervous System Diseases	rs3761847
Immune System Diseases;	Nervous System Diseases	rs3763307
Immune System Diseases;	Nervous System Diseases	rs3764147
Immune System Diseases;	Nervous System Diseases	rs3806156
Immune System Diseases;	Nervous System Diseases	rs3809006
Immune System Diseases;	Nervous System Diseases	rs3825932
Immune System Diseases;	Nervous System Diseases	rs3828309
Immune System Diseases;	Nervous System Diseases	rs389883
Immune System Diseases;	Nervous System Diseases	rs394199
Immune System Diseases;	Nervous System Diseases	rs3957148
Immune System Diseases;	Nervous System Diseases	rs3997982
Immune System Diseases;	Nervous System Diseases	rs404890
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Immune System Diseases;	Nervous System Diseases	rs4149576
Immune System Diseases;	Nervous System Diseases	rs41519045
Immune System Diseases;	Nervous System Diseases	rs425105
Immune System Diseases;	Nervous System Diseases	rs4263839
Immune System Diseases;	Nervous System Diseases	rs437179
Immune System Diseases;	Nervous System Diseases	rs438475
Immune System Diseases;	Nervous System Diseases	rs4516988
Immune System Diseases;	Nervous System Diseases	rs4654925
Immune System Diseases;	Nervous System Diseases	rs4665719
Immune System Diseases;	Nervous System Diseases	rs4675374
Immune System Diseases;	Nervous System Diseases	rs4679081
Immune System Diseases;	Nervous System Diseases	rs4713429
Immune System Diseases;	Nervous System Diseases	rs4750316
Immune System Diseases;	Nervous System Diseases	rs4763879
Immune System Diseases;	Nervous System Diseases	rs4772201
Immune System Diseases;	Nervous System Diseases	rs4780346
Immune System Diseases;	Nervous System Diseases	rs4788084
Immune System Diseases;	Nervous System Diseases	rs4794058
Immune System Diseases;	Nervous System Diseases	rs4796791
Immune System Diseases;	Nervous System Diseases	rs4807569

## Supplementary 5. MS-associated SNPs

Immune System Diseases;	Nervous System Diseases	rs4819388
Immune System Diseases;	Nervous System Diseases	rs486416
Immune System Diseases;	Nervous System Diseases	rs4900384
Immune System Diseases;	Nervous System Diseases	rs4903324
Immune System Diseases;	Nervous System Diseases	rs4924273
Immune System Diseases;	Nervous System Diseases	rs4948088
Immune System Diseases;	Nervous System Diseases	rs495337
Immune System Diseases;	Nervous System Diseases	rs4953911
Immune System Diseases;	Nervous System Diseases	rs4957048
Immune System Diseases;	Nervous System Diseases	rs4959093
Immune System Diseases;	Nervous System Diseases	rs4963128
Immune System Diseases;	Nervous System Diseases	rs4976646
Immune System Diseases;	Nervous System Diseases	rs5000563
Immune System Diseases;	Nervous System Diseases	rs5022119
Immune System Diseases;	Nervous System Diseases	rs5025315
Immune System Diseases;	Nervous System Diseases	rs5029937
Immune System Diseases;	Nervous System Diseases	rs522127
Immune System Diseases;	Nervous System Diseases	rs522308
Immune System Diseases;	Nervous System Diseases	rs523604
Immune System Diseases;	Nervous System Diseases	rs528878831
Immune System Diseases;	Nervous System Diseases	rs532834
Immune System Diseases;	Nervous System Diseases	rs533646
Immune System Diseases;	Nervous System Diseases	rs535586
Immune System Diseases;	Nervous System Diseases	rs539703
Immune System Diseases;	Nervous System Diseases	rs544358
Immune System Diseases;	Nervous System Diseases	rs548234
Immune System Diseases;	Nervous System Diseases	rs55838263
Immune System Diseases;	Nervous System Diseases	rs574710
Immune System Diseases;	Nervous System Diseases	rs5753037
Immune System Diseases;	Nervous System Diseases	rs5756391
Immune System Diseases;	Nervous System Diseases	rs5771069
Immune System Diseases;	Nervous System Diseases	rs59772922
Immune System Diseases;	Nervous System Diseases	rs6017342
Immune System Diseases;	Nervous System Diseases	rs60600003
Immune System Diseases;	Nervous System Diseases	rs6072343
Immune System Diseases;	Nervous System Diseases	rs60733400
Immune System Diseases;	Nervous System Diseases	rs610604
Immune System Diseases;	Nervous System Diseases	rs6131010
Immune System Diseases;	Nervous System Diseases	rs615672
Immune System Diseases;	Nervous System Diseases	rs630379
Immune System Diseases;	Nervous System Diseases	rs6435203
Immune System Diseases;	Nervous System Diseases	rs644045
Immune System Diseases;	Nervous System Diseases	rs6445975
Immune System Diseases;	Nervous System Diseases	rs644827
Immune System Diseases;	Nervous System Diseases	rs6448715
Immune System Diseases;	Nervous System Diseases	rs6457620
Immune System Diseases;	Nervous System Diseases	rs6467970
Immune System Diseases;	Nervous System Diseases	rs6498160
Immune System Diseases;	Nervous System Diseases	rs6498168
Immune System Diseases;	Nervous System Diseases	rs6498184

Immune System Diseases;	Nervous System Diseases	rs653178
Immune System Diseases;	Nervous System Diseases	rs6568431
Immune System Diseases;	Nervous System Diseases	rs659445
Immune System Diseases;	Nervous System Diseases	rs660550
Immune System Diseases;	Nervous System Diseases	rs6662618
Immune System Diseases;	Nervous System Diseases	rs666930
Immune System Diseases;	Nervous System Diseases	rs66756607
Immune System Diseases;	Nervous System Diseases	rs6677309
Immune System Diseases;	Nervous System Diseases	rs6679677
Immune System Diseases;	Nervous System Diseases	rs6689470
Immune System Diseases;	Nervous System Diseases	rs67297943
Immune System Diseases;	Nervous System Diseases	rs6793295
Immune System Diseases;	Nervous System Diseases	rs6880778
Immune System Diseases;	Nervous System Diseases	rs6881706
Immune System Diseases;	Nervous System Diseases	rs6902723
Immune System Diseases;	Nervous System Diseases	rs6903130
Immune System Diseases;	Nervous System Diseases	rs6903608
Immune System Diseases;	Nervous System Diseases	rs6906846
Immune System Diseases;	Nervous System Diseases	rs6908425
Immune System Diseases;	Nervous System Diseases	rs6920220
Immune System Diseases;	Nervous System Diseases	rs6936204
Immune System Diseases;	Nervous System Diseases	rs694739
Immune System Diseases;	Nervous System Diseases	rs7020673
Immune System Diseases;	Nervous System Diseases	rs706015
Immune System Diseases;	Nervous System Diseases	rs706778
Immune System Diseases;	Nervous System Diseases	rs7089861
Immune System Diseases;	Nervous System Diseases	rs7120737
Immune System Diseases;	Nervous System Diseases	rs7132277
Immune System Diseases;	Nervous System Diseases	rs7137596
Immune System Diseases;	Nervous System Diseases	rs71624119
Immune System Diseases;	Nervous System Diseases	rs7184083
Immune System Diseases;	Nervous System Diseases	rs7194
Immune System Diseases;	Nervous System Diseases	rs7196953
Immune System Diseases;	Nervous System Diseases	rs7202877
Immune System Diseases;	Nervous System Diseases	rs7204270
Immune System Diseases;	Nervous System Diseases	rs7221109
Immune System Diseases;	Nervous System Diseases	rs727098
Immune System Diseases;	Nervous System Diseases	rs72928038
Immune System Diseases;	Nervous System Diseases	rs731089
Immune System Diseases;	Nervous System Diseases	rs7382297
Immune System Diseases;	Nervous System Diseases	rs743777
Immune System Diseases;	Nervous System Diseases	rs7453920
Immune System Diseases;	Nervous System Diseases	rs74796499
Immune System Diseases;	Nervous System Diseases	rs7517698
Immune System Diseases;	Nervous System Diseases	rs7535818
Immune System Diseases;	Nervous System Diseases	rs7552544
Immune System Diseases;	Nervous System Diseases	rs7574865
Immune System Diseases;	Nervous System Diseases	rs7595717
Immune System Diseases;	Nervous System Diseases	rs759648
Immune System Diseases;	Nervous System Diseases	rs760293

## Supplementary 5. MS-associated SNPs

Immune System Diseases;	Nervous System Diseases	rs762421
Immune System Diseases;	Nervous System Diseases	rs7665090
Immune System Diseases;	Nervous System Diseases	rs7708392
Immune System Diseases;	Nervous System Diseases	rs7746082
Immune System Diseases;	Nervous System Diseases	rs7756262
Immune System Diseases;	Nervous System Diseases	rs7768538
Immune System Diseases;	Nervous System Diseases	rs7769192
Immune System Diseases;	Nervous System Diseases	rs7804356
Immune System Diseases;	Nervous System Diseases	rs7809799
Immune System Diseases;	Nervous System Diseases	rs7927894
Immune System Diseases;	Nervous System Diseases	rs793108
Immune System Diseases;	Nervous System Diseases	rs794185
Immune System Diseases;	Nervous System Diseases	rs8021741
Immune System Diseases;	Nervous System Diseases	rs8049439
Immune System Diseases;	Nervous System Diseases	rs806349
Immune System Diseases;	Nervous System Diseases	rs8070345
Immune System Diseases;	Nervous System Diseases	rs8107548
Immune System Diseases;	Nervous System Diseases	rs841503
Immune System Diseases;	Nervous System Diseases	rs842639
Immune System Diseases;	Nervous System Diseases	rs849142
Immune System Diseases;	Nervous System Diseases	rs874040
Immune System Diseases;	Nervous System Diseases	rs910049
Immune System Diseases;	Nervous System Diseases	rs910050
Immune System Diseases;	Nervous System Diseases	rs917116
Immune System Diseases;	Nervous System Diseases	rs917997
Immune System Diseases;	Nervous System Diseases	rs926070
Immune System Diseases;	Nervous System Diseases	rs9262615
Immune System Diseases;	Nervous System Diseases	rs9262635
Immune System Diseases;	Nervous System Diseases	rs9262636
Immune System Diseases;	Nervous System Diseases	rs9263804
Immune System Diseases;	Nervous System Diseases	rs926591
Immune System Diseases;	Nervous System Diseases	rs9267658
Immune System Diseases;	Nervous System Diseases	rs9267873
Immune System Diseases;	Nervous System Diseases	rs9267954
Immune System Diseases;	Nervous System Diseases	rs9267971
Immune System Diseases;	Nervous System Diseases	rs9267992
Immune System Diseases;	Nervous System Diseases	rs9268402
Immune System Diseases;	Nervous System Diseases	rs9268403
Immune System Diseases;	Nervous System Diseases	rs9268418
Immune System Diseases;	Nervous System Diseases	rs9268429
Immune System Diseases;	Nervous System Diseases	rs9268480
Immune System Diseases;	Nervous System Diseases	rs9268557
Immune System Diseases;	Nervous System Diseases	rs9268560
Immune System Diseases;	Nervous System Diseases	rs9268645
Immune System Diseases;	Nervous System Diseases	rs9268831
Immune System Diseases;	Nervous System Diseases	rs9268832
Immune System Diseases;	Nervous System Diseases	rs9268853
Immune System Diseases;	Nervous System Diseases	rs9268858
Immune System Diseases;	Nervous System Diseases	rs9268877
Immune System Diseases;	Nervous System Diseases	rs9270986

Immune System Diseases;	Nervous System Diseases	rs9272346
Immune System Diseases;	Nervous System Diseases	rs9275418
Immune System Diseases;	Nervous System Diseases	rs9275523
Immune System Diseases;	Nervous System Diseases	rs9275572
Immune System Diseases;	Nervous System Diseases	rs9275765
Immune System Diseases;	Nervous System Diseases	rs9275772
Immune System Diseases;	Nervous System Diseases	rs9275793
Immune System Diseases;	Nervous System Diseases	rs9276429
Immune System Diseases;	Nervous System Diseases	rs9276431
Immune System Diseases;	Nervous System Diseases	rs9276432
Immune System Diseases;	Nervous System Diseases	rs9276440
Immune System Diseases;	Nervous System Diseases	rs9286879
Immune System Diseases;	Nervous System Diseases	rs9296009
Immune System Diseases;	Nervous System Diseases	rs9296044
Immune System Diseases;	Nervous System Diseases	rs934734
Immune System Diseases;	Nervous System Diseases	rs9355260
Immune System Diseases;	Nervous System Diseases	rs9368716
Immune System Diseases;	Nervous System Diseases	rs9388489
Immune System Diseases;	Nervous System Diseases	rs9391858
Immune System Diseases;	Nervous System Diseases	rs941816
Immune System Diseases;	Nervous System Diseases	rs942637
Immune System Diseases;	Nervous System Diseases	rs9461799
Immune System Diseases;	Nervous System Diseases	rs9469220
Immune System Diseases;	Nervous System Diseases	rs9469240
Immune System Diseases;	Nervous System Diseases	rs947474
Immune System Diseases;	Nervous System Diseases	rs951005
Immune System Diseases;	Nervous System Diseases	rs9736016
Immune System Diseases;	Nervous System Diseases	rs9792269
Immune System Diseases;	Nervous System Diseases	rs9807334
Immune System Diseases;	Nervous System Diseases	rs9808753
Immune System Diseases;	Nervous System Diseases	rs9828629
Immune System Diseases;	Nervous System Diseases	rs9846396
Immune System Diseases;	Nervous System Diseases	rs9901869
Immune System Diseases;	Nervous System Diseases	rs9967792
Immune System Diseases;	Nervous System Diseases	rs9976767
Immune System Diseases;	Nervous System Diseases	rs9989735

**Supplementary 5. MS-associated SNPs**

diseaseid	score	variant_dsi	disease_type	year_final	disease_class	disease_name
C0026769	0.81	1	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.81	0.851	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.81	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	0.851	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.81	0.925	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.8	0.851	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.882	disease	2010	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.8	0.752	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.851	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.763	disease	2015	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2016	C20;C10	Multiple Sclerosis
C0026769	0.8	0.882	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.8	0.827	disease	2019	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2009	C20;C10	Multiple Sclerosis
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.8	0.807	disease	2010	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.8	0.925	disease	2012	C20;C10	Multiple Sclerosis
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.72	0.732	disease	2017	C20;C10	Multiple Sclerosis
C0026769	0.71	0.851	disease	2012	C20;C10	Multiple Sclerosis
C0026769	0.71	0.925	disease	2015	C20;C10	Multiple Sclerosis
C0026769	0.71	0.851	disease	2016	C20;C10	Multiple Sclerosis
C0026769	0.71	0.683	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.71	0.689	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.71	0.882	disease	2018	C20;C10	Multiple Sclerosis
C0026769	0.7	0.752	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	1	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	0.763	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	0.882	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	0.776	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	0.925	disease	2011	C20;C10	Multiple Sclerosis
C0026769	0.7	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.7	1	disease	2013	C20;C10	Multiple Sclerosis
C0026769	0.7	1	disease	2007	C20;C10	Multiple Sclerosis

[illegible]



### Supplementary 5. MS-associated SNPs

[illegible]

[illegible]

**Supplementary 5. MS-associated SNPs**

disease_semantic_type	source	year_initial	variant_dpi	gene_symbol	ei
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2009	0.32		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2009	0.24		1
Disease or Syndrome	ALL	2013	0.12		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.12		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.28		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2010	0.24		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.24		1
Disease or Syndrome	ALL	2011	0.24		1
Disease or Syndrome	ALL	2011	0.12		1
Disease or Syndrome	ALL	2007	0.48		1
Disease or Syndrome	ALL	2009	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2011	0.28		1
Disease or Syndrome	ALL	2009	0.08		1
Disease or Syndrome	ALL	2011	0.12		1
Disease or Syndrome	ALL	2009	0.24		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2012	0.12		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.44		0.666667
Disease or Syndrome	ALL	2011	0.24		0.5
Disease or Syndrome	ALL	2009	0.12		1
Disease or Syndrome	ALL	2013	0.16		1
Disease or Syndrome	ALL	2011	0.48		1
Disease or Syndrome	ALL	2009	0.52		1
Disease or Syndrome	ALL	2010	0.24		1
Disease or Syndrome	ALL	2011	0.4		1
Disease or Syndrome	ALL	2011	0.08		1
Disease or Syndrome	ALL	2011	0.28		1
Disease or Syndrome	ALL	2011	0.12		1
Disease or Syndrome	ALL	2011	0.2		1
Disease or Syndrome	ALL	2011	0.28		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2007	0.08		1

Disease or Syndrome	ALL	2016	0.08		1
Disease or Syndrome	ALL	2009	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2009	0.28		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.32		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.12		1
Disease or Syndrome	ALL	2010	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2016	0.08		1
Disease or Syndrome	ALL	2011	0.32		1
Disease or Syndrome	ALL	2010	0.24		1
Disease or Syndrome	ALL	2011	0.24		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.48		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.2		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2010	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.12		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.36		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.32		1

# Supplementary 5. MS-associated SNPs

Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.24		1
Disease or Syndrome	ALL	2010	0.24		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2010	0.36		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.16		1
Disease or Syndrome	ALL	2015	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2010	0.16		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2011	0.12		1
Disease or Syndrome	ALL	2007	0.24		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2019	0.12		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2009	0.12		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2016	0.2		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.44		1

Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2009	0.08		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.32		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2011	0.16		1
Disease or Syndrome	ALL	2011	0.48		1
Disease or Syndrome	ALL	2010	0.16		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2010	0.24		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.2		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.36		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2011	0.2		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.08		1
Disease or Syndrome	ALL	2007	0.36		1
Disease or Syndrome	ALL	2007	0.16		1
Disease or Syndrome	ALL	2007	0.12		1
Disease or Syndrome	ALL	2011	0.2		1
Disease or Syndrome	ALL	2013	0.08		1
Disease or Syndrome	ALL	2011	0.2		1
Disease or Syndrome	ALL	2015	0.08		1
Disease or Syndrome	ALL	2011	0.12		1



**Supplementary 5. MS-associated SNPs**

variant_consequence_type	disease_class_name	variantid
intergenic variant	Immune System Disea	rs11129295
intergenic variant	Immune System Disea	rs17066096
intron variant	Immune System Disea	rs17445836
intergenic variant	Immune System Disea	rs2744148
TF binding site variant	Immune System Disea	rs6074022
upstream gene variant	Immune System Disea	rs9271640
intron variant	Immune System Disea	rs10866713
intergenic variant	Immune System Disea	rs12048904
intergenic variant	Immune System Disea	rs13192841
intron variant	Immune System Disea	rs13333054
intron variant	Immune System Disea	rs233100
intergenic variant	Immune System Disea	rs2920001
intergenic variant	Immune System Disea	rs3129720
downstream gene variant	Immune System Disea	rs3129889
regulatory region variant	Immune System Disea	rs3135338
regulatory region variant	Immune System Disea	rs4271113
intron variant	Immune System Disea	rs4409785
regulatory region variant	Immune System Disea	rs4613763
intergenic variant	Immune System Disea	rs4939490
intergenic variant	Immune System Disea	rs6457617
intron variant	Immune System Disea	rs6896969
downstream gene variant	Immune System Disea	rs7090512
upstream gene variant	Immune System Disea	rs756699
regulatory region variant	Immune System Disea	rs7592330
regulatory region variant	Immune System Disea	rs7595037
regulatory region variant	Immune System Disea	rs771767
intergenic variant	Immune System Disea	rs7923837
intergenic variant	Immune System Disea	rs802734
intergenic variant	Immune System Disea	rs8049603
upstream gene variant	Immune System Disea	rs8070463
intergenic variant	Immune System Disea	rs9271366
upstream gene variant	Immune System Disea	rs9275563
regulatory region variant	Immune System Disea	rs9292777
intergenic variant	Immune System Disea	rs9568281
intron variant	Immune System Disea	rs6887695
intron variant	Immune System Disea	rs10045431
upstream gene variant	Immune System Disea	rs10876994
downstream gene variant	Immune System Disea	rs12946510
upstream gene variant	Immune System Disea	rs2736340
regulatory region variant	Immune System Disea	rs6822844
downstream gene variant	Immune System Disea	rs9267649
intron variant	Immune System Disea	rs10499194
intergenic variant	Immune System Disea	rs10500264
upstream gene variant	Immune System Disea	rs10758669
upstream gene variant	Immune System Disea	rs10800309
intergenic variant	Immune System Disea	rs10903122
downstream gene variant	Immune System Disea	rs10995271
regulatory region variant	Immune System Disea	rs11586238
intron variant	Immune System Disea	rs12087340
splice region variant	Immune System Disea	rs12296430
intergenic variant	Immune System Disea	rs1356122

TF binding site variant	Immune System Disea	rs1398607
intron variant	Immune System Disea	rs1401884
regulatory region variant	Immune System Disea	rs1438131
intron variant	Immune System Disea	rs1456893
upstream gene variant	Immune System Disea	rs1569723
intron variant	Immune System Disea	rs1610630
intron variant	Immune System Disea	rs1633069
intron variant	Immune System Disea	rs1633070
upstream gene variant	Immune System Disea	rs1737060
non coding transcript exon varia	Immune System Disea	rs1737068
regulatory region variant	Immune System Disea	rs17582416
downstream gene variant	Immune System Disea	rs17728338
intergenic variant	Immune System Disea	rs1843938
intergenic variant	Immune System Disea	rs1980422
intergenic variant	Immune System Disea	rs20184712 5
downstream gene variant	Immune System Disea	rs2082412
regulatory region variant	Immune System Disea	rs2157051
intergenic variant	Immune System Disea	rs2157082
upstream gene variant	Immune System Disea	rs2163226
intergenic variant	Immune System Disea	rs2182410
intergenic variant	Immune System Disea	rs2327832
upstream gene variant	Immune System Disea	rs2395173
intron variant	Immune System Disea	rs2431697
intron variant	Immune System Disea	rs2516460
upstream gene variant	Immune System Disea	rs2523485
intron variant	Immune System Disea	rs2523535
upstream gene variant	Immune System Disea	rs2523638
intergenic variant	Immune System Disea	rs2530709
intergenic variant	Immune System Disea	rs2530710
upstream gene variant	Immune System Disea	rs2542151
downstream gene variant	Immune System Disea	rs2596517
upstream gene variant	Immune System Disea	rs2596571
intergenic variant	Immune System Disea	rs2621382
intergenic variant	Immune System Disea	rs2621383
intergenic variant	Immune System Disea	rs2621384
TF binding site variant	Immune System Disea	rs2647046
regulatory region variant	Immune System Disea	rs2688608
upstream gene variant	Immune System Disea	rs2736177
intergenic variant	Immune System Disea	rs2836878
intron variant	Immune System Disea	rs2844558
intergenic variant	Immune System Disea	rs2849015
downstream gene variant	Immune System Disea	rs2857129
downstream gene variant	Immune System Disea	rs2857136
intergenic variant	Immune System Disea	rs2857154
intergenic variant	Immune System Disea	rs2857161
intergenic variant	Immune System Disea	rs2857210
intergenic variant	Immune System Disea	rs2857212
intergenic variant	Immune System Disea	rs2872507
upstream gene variant	Immune System Disea	rs3016013
upstream gene variant	Immune System Disea	rs3024505



**Supplementary 5. MS-associated SNPs**

upstream gene variant	Immune System Disea	rs3095238
intergenic variant	Immune System Disea	rs3095250
intergenic variant	Immune System Disea	rs3095345
upstream gene variant	Immune System Disea	rs3099848
intergenic variant	Immune System Disea	rs3115576
intergenic variant	Immune System Disea	rs3129305
upstream gene variant	Immune System Disea	rs3129768
regulatory region variant	Immune System Disea	rs3130299
intergenic variant	Immune System Disea	rs3130311
intergenic variant	Immune System Disea	rs3130532
intergenic variant	Immune System Disea	rs3130534
intergenic variant	Immune System Disea	rs3130952
intron variant	Immune System Disea	rs3131621
intron variant	Immune System Disea	rs3131622
downstream gene variant	Immune System Disea	rs3131631
intergenic variant	Immune System Disea	rs3134926
intergenic variant	Immune System Disea	rs3135342
intergenic variant	Immune System Disea	rs3135363
regulatory region variant	Immune System Disea	rs3135377
intergenic variant	Immune System Disea	rs32477
intergenic variant	Immune System Disea	rs34383631
downstream gene variant	Immune System Disea	rs35929052
upstream gene variant	Immune System Disea	rs3957148
upstream gene variant	Immune System Disea	rs3997982
intergenic variant	Immune System Disea	rs404890
downstream gene variant	Immune System Disea	rs4085613
intron variant	Immune System Disea	rs41519045
downstream gene variant	Immune System Disea	rs4516988
upstream gene variant	Immune System Disea	rs4780346
upstream gene variant	Immune System Disea	rs4794058
intergenic variant	Immune System Disea	rs4900384
TF binding site variant	Immune System Disea	rs4903324
intron variant	Immune System Disea	rs4948088
intergenic variant	Immune System Disea	rs4957048
upstream gene variant	Immune System Disea	rs5000563
non coding transcript exon varia	Immune System Disea	rs5022119
non coding transcript exon varia	Immune System Disea	rs5025315
intergenic variant	Immune System Disea	rs522308
intergenic variant	Immune System Disea	rs532834
intergenic variant	Immune System Disea	rs5756391
regulatory region variant	Immune System Disea	rs59772922
upstream gene variant	Immune System Disea	rs6131010
regulatory region variant	Immune System Disea	rs6435203
intergenic variant	Immune System Disea	rs6448715
intergenic variant	Immune System Disea	rs6457620
intergenic variant	Immune System Disea	rs6467970
downstream gene variant	Immune System Disea	rs6662618
intergenic variant	Immune System Disea	rs67297943
intergenic variant	Immune System Disea	rs6880778
intron variant	Immune System Disea	rs6920220

intergenic variant	Immune System Disea	rs6936204
downstream gene variant	Immune System Disea	rs7089861
intergenic variant	Immune System Disea	rs7137596
upstream gene variant	Immune System Disea	rs7196953
intergenic variant	Immune System Disea	rs7202877
intergenic variant	Immune System Disea	rs7204270
intergenic variant	Immune System Disea	rs7221109
intron variant	Immune System Disea	rs727098
intergenic variant	Immune System Disea	rs731089
intergenic variant	Immune System Disea	rs7552544
upstream gene variant	Immune System Disea	rs7595717
regulatory region variant	Immune System Disea	rs7746082
intergenic variant	Immune System Disea	rs7756262
regulatory region variant	Immune System Disea	rs7769192
upstream gene variant	Immune System Disea	rs7927894
intergenic variant	Immune System Disea	rs841503
downstream gene variant	Immune System Disea	rs874040
downstream gene variant	Immune System Disea	rs917997
intergenic variant	Immune System Disea	rs9267873
regulatory region variant	Immune System Disea	rs9267954
intergenic variant	Immune System Disea	rs9267971
upstream gene variant	Immune System Disea	rs9267992
intergenic variant	Immune System Disea	rs9268557
intergenic variant	Immune System Disea	rs9268560
downstream gene variant	Immune System Disea	rs9275418
upstream gene variant	Immune System Disea	rs9275523
upstream gene variant	Immune System Disea	rs9275572
downstream gene variant	Immune System Disea	rs9275765
downstream gene variant	Immune System Disea	rs9275772
downstream gene variant	Immune System Disea	rs9275793
intron variant	Immune System Disea	rs9286879
downstream gene variant	Immune System Disea	rs9296009
upstream gene variant	Immune System Disea	rs9296044
downstream gene variant	Immune System Disea	rs9461799
TF binding site variant	Immune System Disea	rs9469220
downstream gene variant	Immune System Disea	rs9469240
intron variant	Immune System Disea	rs951005
intergenic variant	Immune System Disea	rs9736016
intergenic variant	Immune System Disea	rs9792269
intron variant	Immune System Disea	rs9807334
intergenic variant	Immune System Disea	rs9901869

# Supplementary 5. MS-associated SNPs

diseaseid	score	variant_dsi	isease_typ	year_final	isease_clas	isease_name_semani	source
C0026769	0.9	0.662	disease	2019	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.9	0.683	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.89	0.807	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.88	0.776	disease	2019	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.85	1	disease	2016	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.84	0.851	disease	2019	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.83	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.83	0.925	disease	2017	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	1	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	1	disease	2017	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	0.79	disease	2016	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	0.882	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	0.689	disease	2012	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	1	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.82	0.925	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	1	disease	2015	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.925	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.882	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	1	disease	2017	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	1	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.925	disease	2015	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.79	disease	2017	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.925	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.925	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.732	disease	2018	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.925	disease	2019	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	1	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.81	0.925	disease	2016	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.637	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2009	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.882	disease	2019	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.851	disease	2019	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2009	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.925	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.882	disease	2010	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2011	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	1	disease	2013	C20;C10	Multiple Sc Disease or	ALL
C0026769	0.8	0.882	disease	2011	C20;C10	Multiple Sc Disease or	ALL

[illegible]

### Supplementary 5. MS-associated SNPs

[illegible]

[illegible]

### Supplementary 5. MS-associated SNPs

[illegible]

[illegible]



**Supplementary 5.** MS-associated SNPs

C0026769	0.7	1 disease	2013 C20;C10	Multiple Sc Disease or	ALL
C0026769	0.7	1 disease	2013 C20;C10	Multiple Sc Disease or	ALL
C0026769	0.7	0.882 disease	2011 C20;C10	Multiple Sc Disease or	ALL

year_initial	variant_dp	ene_symbol	ei	consequence	class_n	variantid
2007	0.44	IL2RA	1	intron vari	Immune	rs2104286
2007	0.56	IL7R	0.909091	missense v	Immune	rs6897932
2007	0.24	HLA-DRA	1	downstrea	Immune	rs3135388
2009	0.36	TNFRSF1A	1	non coding	Immune	rs1800693
2009	0.08	CD6	1	intron vari	Immune	rs17824933
2009	0.24	CYP27B1;M	0.8	missense v	Immune	rs703842
2008	0.08	KIF1B	1	intron vari	Immune	rs10492972
2010	0.16	CBLB;LOC1	0.75	intron vari	Immune	rs9657904
2009	0.08	TSPAN31;A	1	intron vari	Immune	rs12368653
2011	0.08	RPS6KB1	1	3 prime UT	Immune	rs180515
2011	0.4	CYP24A1	1	upstream g	Immune	rs2248359
2009	0.2	CD58;MIR5	1	intron vari	Immune	rs2300747
2010	0.56	STAT3	1	intron vari	Immune	rs744166
2011	0.08	CD86	1	splice regio	Immune	rs9282641
2009	0.12	GPC5;LOC1	1	intron vari	Immune	rs9523762
2011	0.08	SP140	1	intron vari	Immune	rs10201872
2011	0.12	TNFSF14	1	intron vari	Immune	rs1077667
2011	0.16	AHI1	1	intron vari	Immune	rs11154801
2011	0.08	EVI5	1	intron vari	Immune	rs11810217
2009	0.08	CD58	1	intron vari	Immune	rs1335532
2011	0.12	PKIA-AS1;L	1	intron vari	Immune	rs1520333
2011	0.32	TAGAP;LOC	1	5 prime UT	Immune	rs1738074
2011	0.12	MANBA	1	intron vari	Immune	rs228614
2007	0.16	TSBP1;TSB	1	intron vari	Immune	rs3129934
2009	0.08	RAD21L1	1	upstream g	Immune	rs397020
2011	0.48	CD40	1	intron vari	Immune	rs4810485
2011	0.16	ZBTB46	1	intron vari	Immune	rs6062314
2011	0.08	CXCR5	1	upstream g	Immune	rs630923
2011	0.16	ANKRD55	1	intron vari	Immune	rs6859219
2011	0.08	EPS15L1	1	intron vari	Immune	rs10411936
2011	0.08	CLECL1	1	intron vari	Immune	rs10466829
2011	0.6	MYNN	1	synonymo	Immune	rs10936599
2011	0.08	SLC30A7;H	1	non coding	Immune	rs11581062
2009	0.08	CLEC16A	1	intron vari	Immune	rs11865121
2009	0.08	LOC112268	1	intron vari	Immune	rs12025416
2011	0.28	BACH2	1	intron vari	Immune	rs12212193
2011	0.08	LINC02580	1	non coding	Immune	rs12466022
2011	0.08	ZMIZ1	1	intron vari	Immune	rs1250542
2011	0.16	LOC105371	1	intron vari	Immune	rs1323292
2013	0.08	ARHGEF10	1	intron vari	Immune	rs13279485
2011	0.16	ODF3B	1	upstream g	Immune	rs140522
2011	0.08	LINC01967	1	intron vari	Immune	rs170934
2011	0.08	MERTK	1	intron vari	Immune	rs17174870
2013	0.08	CLSTN2	1	intron vari	Immune	rs17411949
2009	0.08	MPHOSPH	1	intron vari	Immune	rs1790100
2011	0.16	PVT1	1	intron vari	Immune	rs2019960
2010	0.24	HLA-DQA1	1	intron vari	Immune	rs2040406
2011	0.08	LINC01147	1	intron vari	Immune	rs2119704
2011	0.08	MLANA;KIA	1	intron vari	Immune	rs2150702
2011	0.08	MAPK1	1	intron vari	Immune	rs2283792
2011	0.16	TIMMDC1	1	intron vari	Immune	rs2293370

# Supplementary 5. MS-associated SNPs

2011	0.08 BATF	1 intron vari	Immune	rs2300603
2011	0.08 DKKL1	1 missense v	Immune	rs2303759
2011	0.16 NCOA5	1 intron vari	Immune	rs2425752
2010	0.08 LOC105378	1 regulatory	Immune	rs2503875
2009	0.08 HLA-F;HLA-	1 non coding	Immune	rs2523393
2011	0.2 LOC285626	1 non coding	Immune	rs2546890
2011	0.08 ILDR1	1 upstream g	Immune	rs2681424
2011	0.08 SYK	1 upstream g	Immune	rs290986
2011	0.08 SAE1	1 intron vari	Immune	rs307896
2011	0.08 ZNF767P	1 intron vari	Immune	rs354033
2010	0.08 ZNF433;ZN	1 splice regio	Immune	rs3745672
2010	0.08 VAV2	1 intron vari	Immune	rs3780792
2013	0.36 BTNL2;TSB	1 intron vari	Immune	rs3817963
2013	0.08 HLA-DRB4;	1 intron vari	Immune	rs3828840
2011	0.08 RGS14	1 upstream g	Immune	rs4075958
2011	0.08 SLC15A2	1 3 prime UT	Immune	rs4285028
2011	0.08 TTC34	1 intron vari	Immune	rs4648356
2011	0.08 ZFP36L1	1 downstrea	Immune	rs4902647
2013	0.08 RNASEL	1 3 prime UT	Immune	rs533259
2011	0.08 LOC105369	1 intron vari	Immune	rs650258
2013	0.08 SNHG28	1 intron vari	Immune	rs6659742
2011	0.08 LINC02580	1 intron vari	Immune	rs6718520
2011	0.08 RMI2;LOC1	1 intron vari	Immune	rs7191700
2011	0.08 MALT1	1 intron vari	Immune	rs7238078
2011	0.08 PVR;LOC10	1 intron vari	Immune	rs7255066
2013	0.08 HACE1	1 intron vari	Immune	rs733724
2011	0.08 INAVA	1 intron vari	Immune	rs7522462
2013	0.08 WTAPP1	1 intron vari	Immune	rs7924357
2011	0.16 DLEU1	1 intron vari	Immune	rs806321
2011	0.16 CDC37	1 intron vari	Immune	rs8112449
2011	0.08 MPV17L2	1 missense v	Immune	rs874628
2009	0.08 LOC107985	1 intergenic	Immune	rs882300
2011	0.08 HLA-A	1 upstream g	Immune	rs9260489
2013	0.08 PRKRA;CHR	1 3 prime UT	Immune	rs9283487
2011	0.08 SPEF2;LOC	1 intron vari	Immune	rs931555
2013	0.08 LOC101927	1 intron vari	Immune	rs9320598
2009	0.52 CD226	1 missense v	Immune	rs763361
2016	0.08 MADD;NR1	1 missense v	Immune	rs61731956
2009	0.48 IFIH1	1 missense v	Immune	rs1990760
2010	0.4 TYK2	1 missense v	Immune	rs34536443
2013	0.08 LOC105375	1 intron vari	Immune	rs1021156
2011	0.16 TMEM39A	0.5 missense v	Immune	rs1132200
2015	0.08 IGHA1	1 intron vari	Immune	rs11621145
2017	0.08 LRP2	1 intron vari	Immune	rs12988804
2018	0.16 SYT14	1 intron vari	Immune	rs2205986
2010	0.4 HSPA1L	1 missense v	Immune	rs2227956
2016	0.08 ERG	1 intron vari	Immune	rs2836425
2016	0.08 MAZ;LOC1	0.5 intron vari	Immune	rs34286592
2010	0.2 MMEL1	1 missense v	Immune	rs3748816
2016	0.32 FCRL3	1 intron vari	Immune	rs3761959

2016	0.08 TOP3A	1 3 prime UT	Immune	rs4925166
2013	0.08 IQGAP1	1 intron vari	Immune	rs8042861
2011	0.24 IGF2;IGF2-	1 intron vari	Immune	rs1004446
2013	0.08 IL12A-AS1	1 intron vari	Immune	rs1014486
2013	0.08 NDFIP1	1 intron vari	Immune	rs1036207
2011	0.28 TNPO3	1 upstream g	Immune	rs10488631
2007	0.08 LOC102724	1 intron vari	Immune	rs10500817
2007	0.08 HLA-DMA;	1 non coding	Immune	rs1050391
2011	0.16 RNLS;LOC1	1 upstream g	Immune	rs10509540
2011	0.36 BANK1	1 missense v	Immune	rs10516487
2011	0.16 LINC02357	1 intron vari	Immune	rs10517086
2016	0.08 LOC100996	1 non coding	Immune	rs10797431
2007	0.08 CTNNA3	1 intron vari	Immune	rs10823051
2013	0.08 CD69	1 3 prime UT	Immune	rs11052877
2011	0.16 LRRK2;LINC	1 non coding	Immune	rs11175593
2011	0.16 NKX2-3;LIN	1 upstream g	Immune	rs11190140
2011	0.28 ETS1	1 intron vari	Immune	rs11221332
2013	0.08 MIR181A1	1 intron vari	Immune	rs113116201
2011	0.32 IL23R	1 intron vari	Immune	rs11465804
2013	0.16 IFI30	1 missense v	Immune	rs11554159
2011	0.2 MROH3P	1 downstrea	Immune	rs11584383
2013	0.08 DDAH1	1 intron vari	Immune	rs11587876
2011	0.16 AFF3	1 intron vari	Immune	rs11676922
2011	0.2 ARHGAP31	1 intron vari	Immune	rs11712165
2013	0.08 LOC105376	1 intron vari	Immune	rs11719975
2011	0.24 IRGM	1 intron vari	Immune	rs11747270
2019	0.32 RREB1	1 intron vari	Immune	rs11755724
2011	0.12 ITGAM	1 intron vari	Immune	rs11860650
2007	0.08 MXD3	1 upstream g	Immune	rs11949767
2011	0.08 KIF21B	1 intron vari	Immune	rs12122721
2013	0.08 TRAF3	1 intron vari	Immune	rs12148050
2013	0.08 WWOX	1 intron vari	Immune	rs12149527
2011	0.2 PUS10	1 intron vari	Immune	rs13003464
2011	0.2 LINC01934	1 intron vari	Immune	rs13010713
2011	0.16 NONOP2	1 non coding	Immune	rs13017599
2011	0.2 CCR3	1 intron vari	Immune	rs13098911
2011	0.2 KIAA1109	1 intron vari	Immune	rs13151961
2013	0.08 NCOA2	1 intron vari	Immune	rs13260060
2011	0.2 LOC105377	1 regulatory	Immune	rs13314993
2011	0.16 FAM107A;	1 intron vari	Immune	rs13315591
2011	0.28 LPP	1 intron vari	Immune	rs1464510
2007	0.16 HLA-DMB	1 non coding	Immune	rs151719
2013	0.16 MIR3681H	1 intron vari	Immune	rs1534422
2011	0.16 LOC105375	1 intron vari	Immune	rs1551398
2011	0.12 IFNG-AS1;L	1 intron vari	Immune	rs1558744
2007	0.08 HLA-F	1 intron vari	Immune	rs1632953
2019	0.16 TNPO2	1 missense v	Immune	rs16978630
2011	0.2 PLEK;LOC1	1 intron vari	Immune	rs17035378
2013	0.12 LOC101928	1 intron vari	Immune	rs17119
2011	0.12 ZFP90	1 intron vari	Immune	rs1728785

# Supplementary 5. MS-associated SNPs

2011	0.16	LOC101927	1 intron vari	Immune	rs1736135
2011	0.28	ADAD1	1 intron vari	Immune	rs17388568
2007	0.16	TNXB	1 intron vari	Immune	rs17421624
2016	0.08	GLMN;RPA	1 intron vari	Immune	rs17519972
2011	0.24	NAA25	1 intron vari	Immune	rs17696736
2013	0.08	SLC9A8	1 intron vari	Immune	rs17785991
2007	0.08	HLA-DMA;	1 non coding	Immune	rs17840186
2007	0.08	M6PR;KLR	1 upstream g	Immune	rs1805755
2013	0.08	CDH3	1 intron vari	Immune	rs1886700
2013	0.16	SH3BP2	1 intron vari	Immune	rs189139
2016	0.08	LOC105376	1 intron vari	Immune	rs1891621
2011	0.44	PTPN2	1 intron vari	Immune	rs1893217
2013	0.08	IQCB1	1 intron vari	Immune	rs1920296
2013	0.08	TSFM	1 intron vari	Immune	rs201202118
2013	0.16	FCRL1	1 intron vari	Immune	rs2050568
2007	0.28	HLA-DQB2	1 intron vari	Immune	rs2051549
2011	0.72	IL13;TH2LC	1 missense v	Immune	rs20541
2011	0.28	STAT2	1 intron vari	Immune	rs2066808
2007	0.32	CFB;CYP21	1 3 prime UT	Immune	rs2072633
2013	0.08	TEF	1 intron vari	Immune	rs2073167
2007	0.16	TCF19	1 intron vari	Immune	rs2073723
2016	0.08	GGNBP1	1 intron vari	Immune	rs210131
2011	0.16	LOC105378	1 non coding	Immune	rs212389
2013	0.08	LOC105378	1 intron vari	Immune	rs212405
2011	0.16	IRF1-AS1	1 intron vari	Immune	rs2188962
2011	0.44	IL23R;C1or	1 intron vari	Immune	rs2201841
2011	0.4	TNFSF4	1 intergenic	Immune	rs2205960
2007	0.12	HLA-DQA2	1 intron vari	Immune	rs2227127
2010	0.16	CYP21A2;S	1 missense v	Immune	rs2242665
2013	0.08	SLC2A4RG	1 non coding	Immune	rs2256814
2011	0.2	ITLN1	1 non coding	Immune	rs2274910
2011	0.16	SIRPG	1 intron vari	Immune	rs2281808
2013	0.24	SLC44A2	1 missense v	Immune	rs2288904
2011	0.36	GSDMB	1 intron vari	Immune	rs2290400
2011	0.48	ERBB3	1 intron vari	Immune	rs2292239
2011	0.2	C1QTNF6	1 intron vari	Immune	rs229541
2011	0.32	FGFR1OP	1 intron vari	Immune	rs2301436
2011	0.12	ZGPAT	1 intron vari	Immune	rs2315008
2013	0.08	EOMES	1 downstrea	Immune	rs2371108
2011	0.08	HORMAD2	1 intron vari	Immune	rs2412973
2007	0.12	LOC100294	1 downstrea	Immune	rs241403
2007	0.16	TAP2	1 intron vari	Immune	rs241427
2019	0.12	HLA-DRB1	1 intergenic	Immune	rs2454138
2013	0.28	PCAT1;CAS	1 intron vari	Immune	rs2456449
2011	0.8	PTPN22;AP	1 missense v	Immune	rs2476601
2007	0.16	HLA-B;LINC	1 intron vari	Immune	rs2524089
2011	0.16	MACIR	1 intron vari	Immune	rs26232
2007	0.08	KCNMA1	1 intron vari	Immune	rs2670117
2013	0.08	TET2;TET2-	1 intron vari	Immune	rs2726518
2007	0.08	MCCD1	1 upstream g	Immune	rs2734573

2007	0.16 PRRC2A;SN	1 non coding	Immune	rs2736172
2019	0.16 VMP1	1 intron vari	Immune	rs2777899
2007	0.08 HCP5	1 non coding	Immune	rs2844507
2007	0.08 MICB-DT	1 intron vari	Immune	rs2905747
2014	0.12 NPEPPS	1 intron vari	Immune	rs2935183
2013	0.08 CSGALNAC	1 intron vari	Immune	rs3004212
2013	0.08 PLEKHG5	1 intron vari	Immune	rs3007421
2011	0.72 CTLA4	1 downstrea	Immune	rs3087243
2011	0.16 CCR6;LOC1	1 intron vari	Immune	rs3093023
2007	0.08 LINC00243	1 intron vari	Immune	rs3094123
2010	0.08 HCG27	1 non coding	Immune	rs3094609
2007	0.08 DDX39B;M	1 3 prime UT	Immune	rs3115537
2010	0.28 HCG23;TSB	1 non coding	Immune	rs3117098
2007	0.08 DHX16	1 non coding	Immune	rs3130000
2010	0.24 BAG6;APO	1 intron vari	Immune	rs3130050
2010	0.16 TSBP1-AS1	1 intron vari	Immune	rs3130320
2007	0.28 POU5F1	1 intron vari	Immune	rs3130501
2007	0.08 PSORS1C1	1 intron vari	Immune	rs3130558
2010	0.2 POU5F1;TC	1 intron vari	Immune	rs3130933
2007	0.08 C6orf15;PS	1 upstream g	Immune	rs3130975
2007	0.08 CDSN;PSOR	1 missense v	Immune	rs3130981
2007	0.08 NOTCH4	1 intron vari	Immune	rs3131294
2007	0.16 HLA-B	1 intron vari	Immune	rs3132486
2010	0.36 PPT2;PPT2	1 non coding	Immune	rs3134603
2010	0.24 RNF5;AGPA	1 intron vari	Immune	rs3134943
2011	0.28 APEH;MST	1 missense v	Immune	rs3197999
2013	0.08 SLAMF7	1 intron vari	Immune	rs35967351
2011	0.2 TRAF1	1 intron vari	Immune	rs3761847
2011	0.28 LACC1	1 missense v	Immune	rs3764147
2011	0.36 CTSH	1 intron vari	Immune	rs3825932
2011	0.16 ATG16L1	1 intron vari	Immune	rs3828309
2010	0.2 CYP21A2;S	1 non coding	Immune	rs389883
2016	0.08 LINC00336	1 intron vari	Immune	rs394199
2011	0.16 PRKD2	1 intron vari	Immune	rs425105
2011	0.16 TNFSF15	1 intron vari	Immune	rs4263839
2010	0.16 CYP21A2;S	1 missense v	Immune	rs437179
2011	0.12 OTUD3	1 intron vari	Immune	rs4654925
2013	0.08 CENPO;PTR	1 intron vari	Immune	rs4665719
2011	0.2 ICOS;LOC1	1 intron vari	Immune	rs4675374
2007	0.08 HCG22	1 upstream g	Immune	rs4713429
2011	0.16 LINC02649	1 non coding	Immune	rs4750316
2013	0.08 LOC107984	1 upstream g	Immune	rs4772201
2011	0.2 IL27	1 downstrea	Immune	rs4788084
2011	0.12 SBNO2	1 intron vari	Immune	rs4807569
2011	0.24 ICOSLG	1 3 prime UT	Immune	rs4819388
2007	0.16 CYP21A2;E	1 intron vari	Immune	rs486416
2013	0.08 RASGRP1	1 intron vari	Immune	rs4924273
2011	0.12 SPATA2	1 synonymo	Immune	rs495337
2010	0.08 MGAT5	1 intron vari	Immune	rs4953911
2011	0.12 PHRF1	1 intron vari	Immune	rs4963128

# Supplementary 5. MS-associated SNPs

2011	0.16 TNFAIP3	1 intron vari	Immune	rs5029937
2013	0.08 LINC01100	1 intron vari	Immune	rs522127
2013	0.08 LOC105369	1 upstream g	Immune	rs533646
2011	0.36 ATG5	1 intron vari	Immune	rs548234
2011	0.16 HORMAD2	1 intron vari	Immune	rs5753037
2011	0.12 IL17REL	1 missense v	Immune	rs5771069
2011	0.12 LINC01620	1 non coding	Immune	rs6017342
2013	0.12 ELMO1	1 intron vari	Immune	rs60600003
2013	0.08 LPIN3	1 upstream g	Immune	rs6072343
2017	0.08 PRXL2B	1 upstream g	Immune	rs60733400
2010	0.2 CYP21A2;N	1 intron vari	Immune	rs630379
2007	0.24 C2;CYP21A	1 intron vari	Immune	rs644045
2011	0.16 PXK	1 intron vari	Immune	rs6445975
2013	0.08 RMI2;LOC1	1 non coding	Immune	rs6498184
2011	0.6 ATXN2	1 intron vari	Immune	rs653178
2010	0.16 C2;CYP21A	1 intron vari	Immune	rs659445
2013	0.16 PHGDH	1 intron vari	Immune	rs666930
2011	0.32 PHTF1	1 upstream g	Immune	rs6679677
2016	0.08 GFI1	1 intron vari	Immune	rs6689470
2019	0.24 LRRC34	1 missense v	Immune	rs6793295
2010	0.4 HLA-DRB9	1 intron vari	Immune	rs6903608
2007	0.28 HLA-B;USP	1 non coding	Immune	rs6906846
2011	0.32 CDKAL1	1 intron vari	Immune	rs6908425
2013	0.32 LOC102723	1 upstream g	Immune	rs694739
2011	0.2 GLIS3	1 intron vari	Immune	rs7020673
2013	0.08 SKAP2	1 intron vari	Immune	rs706015
2013	0.08 AGBL2	1 intron vari	Immune	rs7120737
2013	0.08 PITPNM2	1 intron vari	Immune	rs7132277
2009	0.08 CLEC16A;L	1 intron vari	Immune	rs7184083
2011	0.2 IL2RB	1 intron vari	Immune	rs743777
2013	0.08 GALC	1 intron vari	Immune	rs74796499
2007	0.08 AK5	1 intron vari	Immune	rs7517698
2016	0.08 RGS1;LOC1	1 non coding	Immune	rs7535818
2011	0.72 STAT4	1 intron vari	Immune	rs7574865
2007	0.08 BAG6	1 intron vari	Immune	rs760293
2011	0.36 GATD3A	1 intron vari	Immune	rs762421
2011	0.4 TNIP1	1 intron vari	Immune	rs7708392
2011	0.12 KPNA7	1 regulatory	Immune	rs7809799
2010	0.08 SUMF1	1 intron vari	Immune	rs794185
2019	0.16 LOC107984	1 intergenic	Immune	rs8021741
2011	0.12 ATXN2L	1 intron vari	Immune	rs8049439
2013	0.08 LINC01185	1 intron vari	Immune	rs842639
2011	0.24 JAZF1	1 intron vari	Immune	rs849142
2010	0.24 CYP21A2;S	1 intron vari	Immune	rs9267658
2011	0.16 SPRED2	1 intron vari	Immune	rs934734
2013	0.08 LOC112267	1 intron vari	Immune	rs9355260
2011	0.16 CENPW	1 intron vari	Immune	rs9388489
2013	0.08 PXT1	1 intron vari	Immune	rs941816
2016	0.08 ITPR3	1 intron vari	Immune	rs942637
2013	0.4 IFNGR2	1 missense v	Immune	rs9808753

2013	0.08 FOXP1	1 intron vari	Immune	rs9828629
2013	0.08 ZBTB38	1 intron vari	Immune	rs9846396
2011	0.2 UBASH3A	1 intron vari	Immune	rs9976767



## Supplementary 5. MS-associated SNPs

Common Genes that

Names	total	elements
1362-common Genes.txt MS. Gene - Variants.txt	154	KCNMA1
		LPP
		PXT1
		MALT1
		ERG
		TOP3A
		HLA-DRB4
		EHMT2-AS1
		PTPN22
		NR1H3
		GPC5
		HSPA1L
		ZBTB38
		CYP21A2
		DDAH1
		MGAT5
		TNXB
		TNFSF15
		HLA-DRA
		TRAF3
		STAT4
		CD40
		LRRK2
		FCRL3
		EHMT2
		HACE1
		MERTK
		MYNN
		CCR3
		CENPO
		AHI1
		RGS14
		GFI1
		IL23R
		SKAP2
		CDSN
		PCAT1
		VMP1
		CASC19
		HLA-DMB
		ATG5
		HLA-A
		SIRPG
		TNFRSF1A
		CD226
		STAT3
		PHGDH
		HLA-DRB9
		TCF19
		ATXN2

ICOSLG
EOMES
SPATA2
MST1
JAZF1
WVOX
MACIR
RNF5
MMEL1
CTNNA3
IL13
CD86
SKIV2L
KIF1B
TSPAN31
TNFAIP3
AGAP2
MAZ
IL27
HLA-DQA1
TEF
RGS1
TSBP1
CXCR5
CDH3
HORMAD2
ITGAM
NCOA5
HLA-F
CCR6
IL2RA
HCG22
SH3BP2
MAPK1
NPEPPS
RASGRP1
CYP27B1
PSORS1C1
RREB1
PRKD2
ZFP36L1
IRGM
CTLA4
ERBB3
IQGAP1
TET2
TTC34
GLIS3
SP140
HLA-DQA2

**Supplementary 5. MS-associated SNPs**

	RNASEL
	IGHA1
	ZNF433
	ELMO1
	LRP2
	ETS1
	C2
	TRAF1
	TNIP1
	CDC37
	PRRC2A
	NOTCH4
	IL7R
	STK19
	BTNL2
	HLA-DMA
	HLA-DRB1
	BRD2
	SLC2A4RG
	MLANA
	HLA-B
	IL12A-AS1
	NCOA2
	ZMIZ1
	CFB
	FOXP1
	FAM107A
	IFIH1
	SLC9A8
	POU5F1
	HLA-DQB2
	DDX39B
	CTSH
	AGBL2
	DKKL1
	SPRED2
	CD69
	PVT1
	ATG16L1
	BACH2
	TNFSF14
	TSBP1-AS1
	ZGPAT
	DLEU1
	PXK
	ZBTB46
	IL2RB
	CDKAL1
	CYP24A1
	PVR

	ITPR3
	RPS6KB1
	SPEF2
	SLC44A4
1362-common Genes.txt	1208 CD44
	MMP2
	VAMP2
	PRCP
	DNASE1
	ERCC5
	GRAP2
	PTN
	MEFV
	EIF4EBP2
	EDN1
	DHCR24
	HSPB1
	DDT
	MIR31
	PANX1
	BID
	CXCR4
	DECR1
	SALL1
	COX5A
	IRAK1
	RGMB
	IGF1
	MIR146A
	SLC52A1
	TGFB2
	MIR20A
	GAS5
	HSPB8
	CYTB
	MIR328
	ARSF
	ANXA1
	GDF15
	KLK6
	TPX2
	MYO9B
	TLN1
	RAP1A
	MMP7
	NOS2
	MSC
	BTLA
	TFDP3
	LGR6

**Supplementary 5. MS-associated SNPs**

ZEB1
SLC6A4
NLRC4
SOD2
MIR15A
AMBRA1
RO60
KCNK3
POLG2
FGFR1
TUG1
MTNR1B
IRF1
COPD
HLA-DRB5
CD1D
PCSK1
MBL2
PLAAT4
NGF
RAB40B
MSN
NR4A2
CXCL13
B3GAT1
ALOX5
SORL1
NLRP3
SYN3
LEP
GJA1
DHRS11
CCL22
TRPM8
RAB3GAP1
BRCA1
CYP2D6
S1PR2
CRYGC
TGM2
HNMT
MECP2
PRKCB
MAP3K5
ALKBH1
PDLIM7
MIR30A
CYP2C19
NOS1
CLDN11

A2M
MIR132
PRL
TIMP3
RMDN2
TLR1
MIR18A
AADAC
SARS2
CCR9
RAC2
MTHFR
C1QTNF3
NECTIN2
IBD5
PTPN11
ATF3
CARD11
FOXP3
MS
CCL19
CLEC4E
BTG1
MTRR
DPP4
CD38
IKZF1
TNFRSF9
LAIR1
IFNA2
PLA2G2A
IL17RC
RBPJ
DMTN
BTF3P11
LGALS1
EZH2
APOE
PIAS3
AIRE
MYO1C
C3
FAS
MIR127
GJB1
PON1
HSPD1
F2RL1
BDNF
INSRR

**Supplementary 5. MS-associated SNPs**

POU2AF1
SEMA3A
FOXC1
LOC102724971
MZB1
HSPB3
NM
ABCA1
MIR223
P2RX3
MGAT1
TNFSF10
SORT1
RLFP1
CRYAB
YME1L1
BCHE
SERPING1
MUC1
NFKB2
BCL2
PART1
TNFRSF10A
PSMB6
ATP6
KL
PTHLH
SLC40A1
C3AR1
MIR27A
TNFRSF11B
ALCAM
BDKRB1
P2RX5-TAX1BP3
PIK3CB
LBP
MRGPRX4
MBTPS1
COX8A
AICDA
MIR320A
GPI
ASF1B
TERC
SLC9A9
NLRP5
EDNRA
CDKN2B-AS1
ABO
POLG

CXCR2
SND1
F9
IRS1
MFN2
GNA11
FSIP1
IGFALS
DUOX2
ARHGEF2
LIF
CASP8
CFH
TAP1
MIR23A
ACOT7
IKZF3
TRNL1
KDM6A
QKI
WNT3
NCAM1
LAG3
IL5
AGT
MOG
GPR151
PTGES
CDX2
FGF1
IL6R
PLD1
CST3
PPARG
AQP4
DSG2
CHI3L1
JAG1
CNN3
CHGA
IRF6
ALOX15
HSPA4
CIITA
DHX40
CRP
EPHA4
FANCC
GLA
CCL7



**Supplementary 5. MS-associated SNPs**

TP73
IMMT
CXCL11
TMPRSS6
SERPINA1
ANTXR2
NPHS1
RPSA
MAPT
GSTP1
MIR340
DOCK11
HLA-DQB1
FXN
STAT5A
CXCL8
EGR1
ADRA1A
CCL17
PAEP
SPG11
OGG1
ZNF410
COP1
IL5RA
IFNL3
AFP
IL18BP
CDR2
SELE
TNFSF12
IL17C
FN1
MTR
CNR1
ABCB1
AHR
VSIR
TRAT1
ACO2
NFE2L2
PIK3R3
NR3C1
KLF4
YWHAZ
ARMH1
CCL27
HP
HDAC3
GPR166P

BTK
IL17A
TRAF2
YY1
IL22RA2
IFI16
LEPR
MTOR
ASAP2
MIR29B1
MTCO2P12
VPS51
TBX21
PPARGC1A
OPN1MW
SSRP1
FBXW4
ETFA
WT1
LCN1
AHRR
CHAF1A
TXNRD2
SERPINB2
MAPK14
TNFRSF4
PLA2G6
CETN1
GC
VN1R17P
MBL3P
P2RY1
IL17D
SNAP25
SMPD1
MIR448
OAS1
TH
NDRG2
DCTN1
TNF
SIRT2
P2RX6
RAF1
HSP90B2P
MIR29B2
GANAB
TIGIT
KLRK1
IL23A

**Supplementary 5. MS-associated SNPs**

PCBP1
GSN
GPRC6A
P2RX5
HLA-DPA1
EGF
ATP2B2
IL1A
CDR3
CCR2
FYN
FST
AGO2
PLA2G4A
ITGB1
LDLR
DRD2
SMAD7
UNC13D
PARK7
ELAVL2
SGK1
MPO
SELP
NAIP
TLR8
HLA-DOA
SOX10
CSF3
PRKAR1A
HSPA2
SHH
MIR99B
MIR210
EDNRB
LDHA
CD27
FAM167A
ASIC1
TNFRSF17
CD177
JAK2
TAC3
CASP1
CD8A
HTC2
CD2AP
CCL20
SPHK1
XAF1

ATN1
GLI1
SPP1
IL22
LINC02605
MIP
CYP7B1
XIAP
COX1
IFNAR1
PTGS2
BMP7
TALDO1
ARG1
KIF5A
OSM
B2M
MIRLET7E
OLR1
NCF1
NEFL
IL31
AGER
CTNNB1
CBS
RMDN3
HPGDS
P2RY2
STING1
MICA
IL21R
TGFBR1
P2RY12
RGCC
FCGR3A
CYP2C9
LINC01194
NOX4
POTEKP
GAS8
GRK2
NT5E
CD200
LRPPRC
NPY
IL18
GAD2
BAG3
CCND1
FLNB

**Supplementary 5. MS-associated SNPs**

	NOTCH2
	SIGLEC1
	CCL4
	TRPM2
	USP18
	CRTC2
	PSMD12
	WAS
	S100B
	SEMA7A
	IL15
	BMP2
	ATM
	ESR1
	TAC1
	GTF2H4
	SUGP1
	HSPA1A
	LIG4
	PRF1
	BMP4
	GPX4
	ACE2
	AGTR1
	MCAM
	MC1R
	CMKLR1
	ABCG4
	KAT8
	GRM1
	ERVK-20
	SNCA
	PRDX5
	KIR3DL1
	CD46
	PTX3
	GNG2
	TNFRSF10C
	HOTAIRM1
	HSD17B7
	ITGB2
	ADRB2
	CPB1
	PRSS3
	KAT5
	SMAD4
	DHCR7
	CSMD1
	NXF1
	PSMB8

SLC19A1
XRCC1
VEGFA
MAS1
STAT6
OPN1MW3
ENPP2
PIK3CD
PER3
SLC7A11
IL3
FHL5
TGFB1
TWNK
TP53BP1
APEX1
AMACR
ACKR2
S100A1
PTPA
MYC
SGSM3
BIRC2
SOCS3
IL10RB
TIMP1
TYRO3
HAVCR1
S100A8
ADRM1
TNFRSF13C
MAVS
AIF1
SOAT1
AIMP2
ATG16L2
CALM2
SLC11A1
MIR21
ACHE
TNFRSF12A
MBD2
ATF4
IL12A
ARNTL
CLIC1
BLK
CCL2
MIR125A
AGA

**Supplementary 5. MS-associated SNPs**

PRNP
TXNIP
PDIK1L
SHMT1
MMP1
ADA
STAT1
EIF2AK3
GABPA
POU5F1P3
TLR3
IL6
ERVW-1
ANXA5
MMP12
LPAR2
TNFRSF25
TNFSF13
STMN1
DLL4
ATF7IP
PPT2-EGFL8
DPP6
MIR326
VIPR2
PTGER4
CCR7
CD68
MIR15B
MRGPRX1
SPAST
ADGRA2
ARHGEF5
SLCO6A1
TRPM4
BSG
MIR384
TOR1A
TNFSF12-TNFSF13
TRPV1
ISYNA1
UCP2
HSP90AA1
CASP3
ANGPT2
DUOX1
HSD17B13
TBATA
ADGRG6
PARP1

CCR4
PTPRC
ADGRG1
CD14
ITGA4
PKN2
VDR
CLOCK
ACE
HMGCR
ANXA2
PRKCE
OPN1SW
FH
CD34
DSPP
NR3C2
TPSAB1
DGCR8
GSR
MST1R
RTN4
PPT2
FASLG
CHGB
MIR126
CTR9
CD163
EIF2AK2
KDR
CCL11
DBP
WNT1
IDO1
SYT1
CAMKMT
HMOX1
FCGR2A
GLO1
PRDX3
TRPM7
INS
EDIL3
TYROBP
RARA
MIR148B
HOTAIR
PECAM1
MS4A1
EBI3



**Supplementary 5. MS-associated SNPs**

MYD88
PML
FCGRT
CCR8
BGLAP
MMP3
CRHR1
WDR11
MIR590
LPAR3
TRAF6
SACS
CCL18
MIR145
AXL
LMNB1
PPARA
COL11A2
CNR2
PLXNA2
CBLIF
KRIT1
CD276
GATA3
PMEL
RORA
BRCA2
CD24
FMR1
MIR301A
ANGPTL4
CXCR1
CCR1
CRYGD
DDIT4
C9orf72
CLDN5
MPZ
BST2
MMP8
STX1A
CSTF2
MIR34A
FOXC2
RPS6
TGFB3
INPP4B
ERVK-6
BMPR2
AHSA1

ADCYAP1
GSTM1
IFNA17
IL10
GPR183
MYRF
LILRB1
CD80
SNPH
MIR214
LRP1
ADAMTS1
PLA2G1B
FTO
ADRA2B
OCLN
PSG2
RBM45
KIR2DL3
GZMA
PADI4
PIK3CG
PLAT
SDF4
LPA
TNFSF11
IL37
GPR42
CXCL2
CLDN3
EGFR
MB
SLC25A4
CRYGEP
CDK2AP1
NQO1
C20orf181
SP1
GBE1
SOD1
MIR23B
GSTK1
MIR200A
CIC
S1PR1
BCR
FSCN1
CXCR3
PIK3CA
MAG

**Supplementary 5. MS-associated SNPs**

GPBAR1
TSPO
MIR648
NR4A1
IL2
CREB1
SDC1
RMDN1
TLR7
IGFBP1
SLC1A1
DDIT3
SLC1A4
CEACAM5
LGALS3
POLDIP2
CDH1
MOK
IFNG
FOS
HSPA14
HSPA5
RETN
IL17F
TNFSF13B
HPT
CFL1
CYP27A1
IL4
CD28
SELPLG
CNTN1
H6PD
MIR30D
MIR142
KRT20
HRES1
HTATIP2
CEMIP
HLA-DPB1
AMH
STAT5B
CLU
IRF5
CXCL12
CTSE
NTN1
SRSF1
NOX3
QTRT1

CD74
MDK
APOD
NCR1
CX3CL1
NOX5
SIL1
MAPK8
IGF1R
RIPK1
PVALB
KLRC4-KLRK1
F10
IFNA13
ATXN8OS
ICAM1
CXCL9
F2R
MIR191
THBS1
CAV1
BCL2L1
MIRLET7I
CD19
HPRT1
H2AX
TNFRSF1B
LGALS9
ABL1
TXNRD1
GZMB
SLC16A4
FCGR3B
SLC16A3
BMP1
VIP
AKR1B1
DAXX
SPARCL1
HLA-G
CA2
IL6ST
CYBB
MYDGF
CRYZ
SLC25A20
SYNE1
ISG20
MYCN
MRGPRX3

**Supplementary 5. MS-associated SNPs**

NTF3
APLN
PSMD10
CXCL1
IL25
HRH1
SH2B3
TNFRSF10B
PLA2G7
CCL1
MIR106A
RASD1
HIF1A
RELA
GRN
SLC2A4
SOCS1
MIR155
IL17RA
MCC
P2RX2
TGFA
PTH
TNFRSF11A
NOS3
ANPEP
OXER1
TNFRSF14
PRLR
IGHG3
CEACAM7
PTPN6
MIR96
GGCT
PADI2
P2RX1
PSMD4
DST
METAP2
CD48
MIR25
KMT2A
H3P28
REG1A
HBB
KNG1
XBP1
ITGAX
NR0B2
BUB1B

	TIMELESS
	SEC14L2
	IL1RN
	PRDX2
	SARS1
	PHEX
	RABEPK
	TFPI
	CDKN1C
	POTEM
	SYBU
	SIRT3
	AFA1
	GFAP
	CYP17A1
	CALM3
	ACTB
	MIR22
	TLR4
	GJC2
	ENO1
	CXCL10
	CCL21
	ADAMTS13
	SP3
	IL16
	GPR17
	PLG
	VCL
	TYR
	ATP6AP2
	IL10RA
	HFE
	SERPINE1
	GRM7
	ARG2
	POU5F1P4
	OPN1MW2
	TSLP
	NHS
	MIR17
	VCAM1
	IL4R
	CCL5
	MIR19B1
	TP53
	PTAFR
	ACTG2
	ICA1
	IFNGR1

**Supplementary 5. MS-associated SNPs**

	COX2
	LINC-ROR
	ENTPD1
	OTUB1
	HNRNPA1P10
	MIR140
	STK11
	MX1
	INTS4
	IL33
	TLR9
	MIR455
	MIR409
	NLRP1
	RELB
	LINC01193
	IFNA1
	CASP9
	PDCD1
	MAP3K7
	GTF2I
	DLD
	KLK10
	IL32
	LPL
	NOG
	CAT
	CRK
	CPOX
	LAMC2
	JAK3
	HSPA1B
	JAK1
	ADAM17
	GCG
	LY6E
	CXCL5
	ITCH
	S1PR5
	GSTO1
	FLOT1
	MBP
	FABP4
	P2RX4
	CANX
	DESI2
	DDX58
	AKT1
	EBNA1BP2
	MIR181C

SART3
ADM
CCR5
MIR150
FCGR1A
CD47
RGMA
LILRA3
CYP2B6
CDCP1
TBC1D2
XRCC5
DLG5
AHSG
CUX1
PON2
HDAC1
NNT
PSMD7
GRM4
ATG12
MIR342
MALAT1
PLB1
L3MBTL3
USO1
MASP1
MIF
ELP1
GH1
IRF8
AIM2
NFKB1
SIRT1
TNFRSF6B
BCL3
CCN3
TIMP2
MIR27B
IL1B
REN
MFAP1
MIR422A
SYVN1
CXCR6
CD200R1
P4HB
HPSE
ADNP
BRS3



**Supplementary 5. MS-associated SNPs**

LINC01672
PDCD1LG2
MIR196A2
CERS2
IL12B
MIR572
POMC
IL9
IL11
MMRN1
LCN2
NCAN
DNM1L
RNF19A
TXN
NFKBIA
IGFBP3
ALB
ARHGAP24
LGALS8
C1QA
CPT1A
DDR1
IFN1@
CEACAM1
HAMP
DCN
DNTT
TNFSF9
DLK1
ACTBL2
CFP
NOD2
NINJ1
CTSZ
IL21
NR1I2
EPAS1
S100A12
LMNA
APOA1
PHB
HLA-C
IFNAR2
SCN10A
CX3CR1
FOXO3
LTA
NCOA7
IFNB1

GAPDH
PLP1
PSEN1
PMP22
APC
TLR2
UHRF1
MIR499A
FZD4
P2RX7
WNK1
CDKN2A
MARCHF1
FAM20C
ABCC8
IL18R1
BCL10
GEM
CCL3
SERPINA3
GAS6
HLA-DRB3
TAM
ERN1
CSF1R
HCRT
NAT1
NOTCH3
CXCL16
MT2A
NRG1
CAST
PRRT2
HAP1
EPHB2
ACTG1
AR
CALM1
DGCR2
ANP32B
HAVCR2
GAD1
BMP5
ESR2
CISH
TRBV20OR9-2
PRCC
FKBP6
FLNA
EPO

**Supplementary 5. MS-associated SNPs**

MIR20B
APRT
NOTCH1
CD274
BAX
CP
HNRNPA1
LOC102723407
RALBP1
GORASP1
HSD17B6
TNFRSF10D
SSTR4
PRKCA
GSTT1
SLC16A1
TRIB2
CD40LG
HGF
MIR376C
GHSR
ICAM5
CYP3A4
PGPEP1
APOC1
ITGAL
IL7
RNF6
SOX2
TP63
GRIA2
APP
CYP1B1
COMT
MIR26A1
SPHK2
ROS1
LANCL1
VEGFB
FGF23
SLC6A3
ACKR3
CEACAM3
KLRB1
MIR375
UBC
FANCG
PSMB9
CYP2R1
S1PR3

	GNB3
	FANCD2
	HMGB1
	CSF2
	S100A9
	ARNT2
	BIRC3
	MMP9
	LBR
	CCL13
	DARS2
	ADIPOQ
MS. Gene - Variants.txt	187 PPT2;PPT2-EGFL8
	LOC100294145
	KPNA7
	PRKRA
	HCP5
	PTRHD1
	SLC15A2
	MIR181A1HG
	ITLN1
	AGPAT1
	LINC01147
	BANK1
	TMEM39A
	PLEK
	LOC105377022
	SLC44A2
	LOC107985305
	LINC01620
	CSGALNACT2
	LINC01934
	APEH
	LOC105371664
	AP4B1-AS1
	C6orf15
	PKIA-AS1
	NELFE
	OTUD3
	SBN02
	CD6
	LOC101929727
	LOC112267968
	IFNG-AS1
	LOC285626
	CLSTN2
	DHX16
	LRRK2-DT
	LINC01967
	EVI5

**Supplementary 5. MS-associated SNPs**

C1orf141
PTPN2
LINC02571
CD58
MIR3681HG
LPIN3
TAGAP
LOC105369519
MROH3P
LOC112268170
LOC102723878
INS-IGF2
CBLB
LOC107986109
MPV17L2
LOC101927314
MICB-DT
IFNGR2
MCCD1
SUMF1
CHROMR
GALC
LOC102724957
LRRC34
LOC105374724
KLRG1
ZFP90
SLC30A7
MADD
LOC107985947
LINC01185
KIAA2026
LOC101927840
LOC105375911
HCG27
LOC107984526
SNORA38
SNHG28
PITPNM2
VAV2
LOC107986664
LOC101927723
NONOP2
MIR6833
LOC105369735
GATD3A
LOC105371083
IQCB1
PUS10
APOM

M6PR
HLA-F-AS1
LINC02357
BATF
LINC02656
ADAD1
UBASH3A
RAD21L1
HLA-DRB6
KIAA1109
BAG6
TH2LCRR
LINC01100
WTAPP1
PHRF1
INAVA
ARHGAP31
ZNF767P
HCG23
TET2-AS1
LOC105374570
HNRNPA1P68
LINC02471
LOC105376481
TNFSF4
IGF2
NKX2-3
GGNBP1
IGF2-AS
TAP2
IL17REL
TYK2
CLECL1
TNPO3
GLMN
LOC100996583
SYK
LOC105372988
CENPW
C1QTNF6
LOC112268235
IFI30
PLEKHG5
LOC105378122
LACC1
TIMMDC1
LINC00243
LOC105369164
GSDMB
MXD3

**Supplementary 5. MS-associated SNPs**

IRF1-AS1
FGFR1OP
LINC01475
LOC101927745
ILDR1
SLAMF7
ATP6V1G2-DDX39B
LINC00336
LOC107984558
PHTF1
LINC02580
LINC02649
STAT2
LOC105371082
LOC105376976
CLEC16A
MPHOSPH9
AK5
USP8P1
LOC101928354
SYT14
LOC105378271
ICOS
MANBA
SAE1
LOC105371081
NAA25
PRXL2B
ZNF433-AS1
KIF21B
ODF3B
EPS15L1
TSFM
ANKRD55
TNPO2
LOC100131395
LOC105369325
ATXN2L
ARHGEF10
LOC105375746
NDFIP1
FCRL1
LOC107984652
MIR548AC
RMI2
LOC105378083
LOC112267902
RNLS
AFF3