

**Table 1.** Diseases linked to HLA alleles and to microbiota variation. Over-represented species/genera/families are depicted in red while decreased ones are depicted in green colours (see text)'.

Disease	Linked HLA/MHC haplotype	Associated microbial component
Celiac disease	DR7-DQ2.2 (risk)	<i>Barnesiella</i> <i>Monoglobus</i>
	HLA-DQ2 (risk)	<i>Corynebacterium</i> <i>Gemella</i> <i>Clostridium</i> <i>Raoultella</i> Clostridiaceae family Enterobacteriaceae family Bifidobacteriaceae family
Ankylosing spondilitis Spondyloarthritis	B27 (risk)	Nisseriaceae family <i>Roseburia</i> <i>Prevotella</i> <i>Dialister</i> <i>Akkermansia</i> <i>Salmonella</i> <i>Bacterioides ovatus</i> <i>Balutia obeum</i> <i>Dorea formicigenerans</i> <i>Bacterioides</i>
Rehumatoid arthritis	DRB1*04:01 (risk)	Clostridiaceae-type bacteria
	DRB1*04:02 (protective)	<i>Parphyromonadaceae</i> <i>Bifidobacteria</i>
	DRB1 (AS risk alleles)	Lachnospiraceae family Clostridiaceae family <i>Bifidobacterium longum</i> <i>Ruminococcus gnavus</i>

Multiple sclerosis	DR3 (risk) DR3-DQ8 (risk)	<i>Desulfovibrio</i> <i>Rikenella</i> <i>Enterorhabdus</i> <i>Intestinimonas</i> <i>Alistipes</i> <b>Prevotellaceae family</b> <i>Helicobacter</i> <i>Mucispirillum</i> <i>Alloprevotella</i> <i>Romboutsia</i> <i>Odoribacter</i> <i>Turicibacter</i>
Primary biliary cholangitis	DRB1*03:01 (risk) DRB1*07:01 (risk) DRB1*08:03 (risk) DRB1*14:05 (risk) DRB1*14:54 (risk)	<i>Desulfovibrio</i> <i>Barnesiella</i> <i>Lachnospira</i> <i>Campylobacter</i> <i>Klebsiella</i> <i>Lachnospiraceae_incertae_sedis</i> <i>Anaerostipes</i>
	DQB1*03:01 (protective)	<i>Lactobacillus</i> <i>Romboutsia</i> <i>Turicibacter</i> <i>Acidaminococcus</i> <i>Clostridium_XIVb</i> <i>Ruminococcus</i> <i>Faecalibacterium</i> <i>Fusicatenibacter</i>
Various (celiac disease, type 1 diabetes, primary sclerosing cholangitis and systemic lupus erythematosus)	AH8.1 (HLA-B*08:01-DRB1*03:01)	<i>Coprococcus</i> <i>Enterorhabdus</i>