NOTEWORTHY

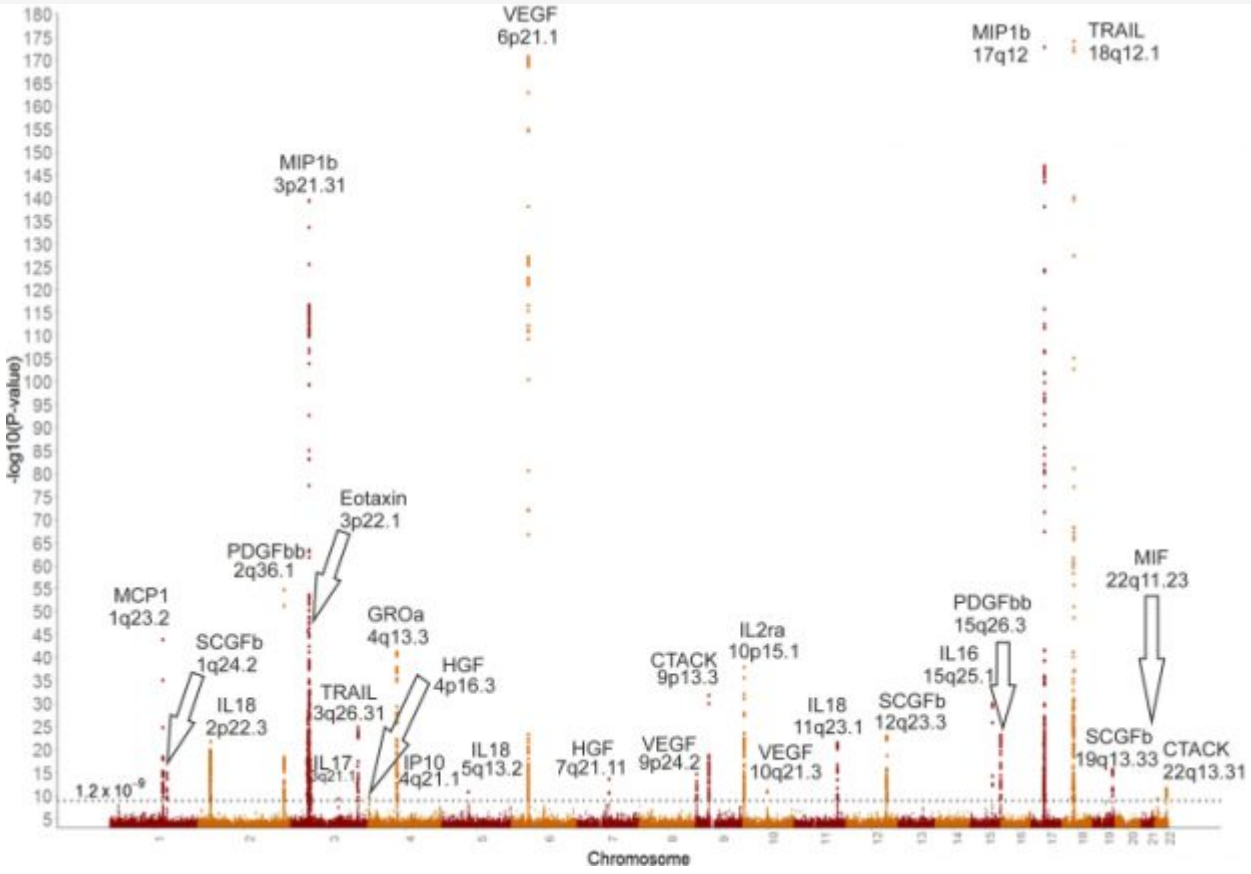
COVID-19 GENETICS – ANY ROLE OF MIP1B?

23.10.2020

The first GWAS of severe COVID-19 infection was published in the NEJM with the main hit at rs11385942 at locus 3p21.31, a region linked by the authors to LZTFL1. The GWAS catalogue points to MIP1B (Macrophage Inflammatory Protein 1 beta, MIP-1b, CCL4) level that has been mapped there as well.

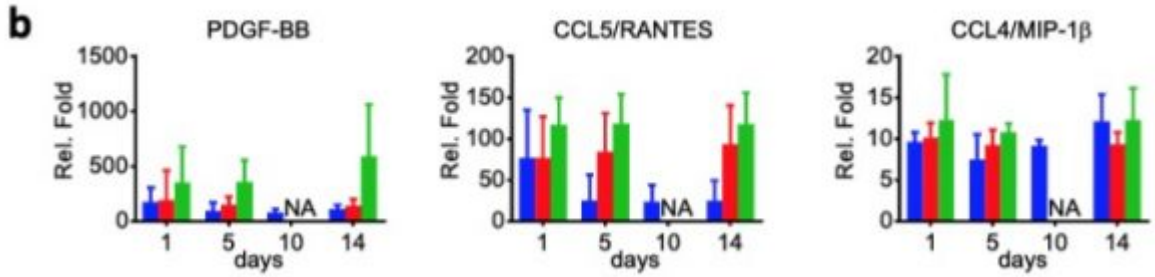
Variant and risk allele	P-value	P-value annotation	RAF	OR	Beta	CI	Mapped gene	Reported trait	Trait(s)	Study accession	Location
rs1129153-T	4 x 10^{-7}		NR	1.0765421	-	NR	LZTFL1	Multiple sclerosis	multiple sclerosis	GCST009597	3:45826480
rs4683149-T	8 x 10^{-11}		0.41596600000000003	1.0313327	-	[1.02-1.04]	LZTFL1	Mouth ulcers	Oral ulcer	GCST007839	3:45814568
rs11385942-GA	1 x 10^{-30}		0.09	1.77	-	[1.49-2.11]	LZTFL1	Severe COVID-19 infection with respiratory failure (analysis I)	COVID-19	GCST90000255	3:45834968
rs11385942-GA	9 x 10^{-12}		0.09	2.11	-	[1.70-2.61]	LZTFL1	Severe COVID-19 infection with respiratory failure (analysis II)	COVID-19	GCST90000256	3:45834968
rs17764831-T	2 x 10^{-13}		NR	-	-	-	LZTFL1	Eosinophil counts	eosinophil count	GCST007065	3:45876723
rs4983142-G	3 x 10^{-6}	(EA)	0.15877178241480037	-	0.2773 unit decrease	[0.16-0.38]	SLC6A20, LZTFL1	Methadone dose in opioid dependence	opioid dependence, methadone dose measurement	GCST004135	3:45810884
rs17712835-C	1 x 10^{-10}		0.963447	1.0780355	-	[1.05-1.1]	SLC6A20, LZTFL1	Mouth ulcers	Oral ulcer	GCST007839	3:45804430
rs80138777-T	3 x 10^{-11}	(CCL4)	NR	-	0.474808 unit increase	[0.35-0.6]	LZTFL1, CCR9	Blood protein levels	CCL4 measurement	GCST009696	3:45888513
rs7613548-T x rs598042-T	5 x 10^{-10}		NR	-	-	-	LZTFL1 x BLVRA - MRPS24	Neurofibrillary tangles (SNP x SNP interaction)	neurofibrillary tangles measurement	GCST010343	3:45885577[7:43834141
rs17768286-G	6 x 10^{-64}		NR	-	0.4577 SD units increase	[0.41-0.5]	CCR9, LZTFL1	Macrophage inflammatory protein 1b levels	macrophage inflammatory protein 1b measurement	GCST004433	3:45902103

https://www.ebi.ac.uk/gwas/genes/LZTFL1



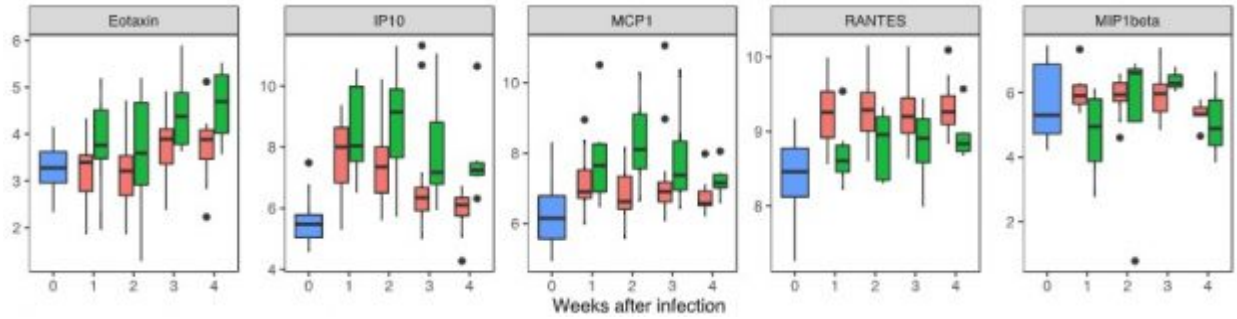
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5223028/

MIP-1B seems to be increased in patients with COVID-19 as a study showed that levels of various CCGFs, including PDGF-BB, CCL5/RANTES, CCL4/MIP-1β, IL-9, and TNF-β were up-regulated in COVID-19 patients but negatively correlated to disease severity.



Supplement https://www.nature.com/articles/s41392-020-0211-1

Another study measured also MIP-1B but no major effect



Supplement https://insight.jci.org/articles/view/139834/sd/1

A recent Frontiers review discusses the relationship to the cytokine storm in fatal COVID-19 infection but again no isolated effect. Nevertheless I have a gut feeling from a 1995 Science paper that it could be relevant as it was identified as the major HIV-SF produced by CD8+ T cells (which are so important also in COVID-19 recovery).