

ALLERGY, GENETICS, VITAMINS

ALLERGY GWAS HITS IN VDR BINDING SITES

30.11.2022

It seems that I missed an [interesting 2017 paper](#) that looked for disease-associated SNPs in canonical DR3 motifs. Only 7 out of 211 traits showed significant hits, one of these was self-reported allergy. When annotating these SNPs, there are only two genes: LINC00299 and TLR1

hg38 position

rs10174949 2:8302018 LINC00299

rs10178845 2:8303773 LINC00299

rs5743566 4:38804221 TLR1

rs2101521 4:38809830 TLR1

rs5743565 4:38804262 TLR1

rs45588337 4:38805607 TLR1

rs55830619 4:38805643 TLR1

So are TLR1 & LINC00299 variant carriers more susceptible to vitamin D induced allergy?

LINC00299 (Long Intergenic Non-Protein Coding RNA 299) is a RNA Gene of largely unknown function, associated so far with allergy only on a genetic level in [Framingham](#), [href="https://pubmed.ncbi.nlm.nih.gov/23817569/"](https://pubmed.ncbi.nlm.nih.gov/23817569/)>23andme and [other](#) studies. [We don't know so much here](#), the function of the long non coding RNAs

depends on subcellular localization. Depending on their niche, they specifically interact with DNA, RNA, and proteins and modify chromatin function, regulate transcription at various stages, forms nuclear condensation bodies and nucleolar organization. lncRNAs may also change the stability and translation of cytoplasmic mRNAs and hamper signaling pathways. Thus, lncRNAs affect the physio-pathological states and lead to the development of various disorders, immune responses, and cancer.

The TLR1 genetic association is found by [many genetic studies](#), while the clinical associa-

tion is [probably more](#) by an infectious origin. TLR1 is a pattern recognition receptor with a specificity for gram-positive bacteria and also included in my [forthcoming exome paper](#) as a protective factor for asthma/allergy. And we are also close to [my earlier review](#) of vitamin D, the microbiome and allergy...

Does any co-infection response during first vitamin D exposure influence allergic sensitisation? There are indeed some hints of a short-lived effect of [lung group 2 innate lymphoid cells](#) (ILC2s)

Laboratory mice cohoused for 2 weeks had impaired ILC2 responses and reduced lung eosinophilia to intranasal allergens, whereas these responses were restored in mice cohoused for ≥ 2 months. ... These findings suggest that ILC2s respond dynamically to environmental cues and that microbial exposures do not control long-term desensitization of innate type 2 responses to allergens.