

HLA and asthma in the Consortium on Asthma among African-ancestry Populations in the Americas (CAAPA)

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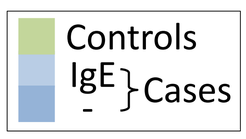
HLA and asthma in the Consortium on Asthma among African-ancestry Populations in the Americas (CAAPA)

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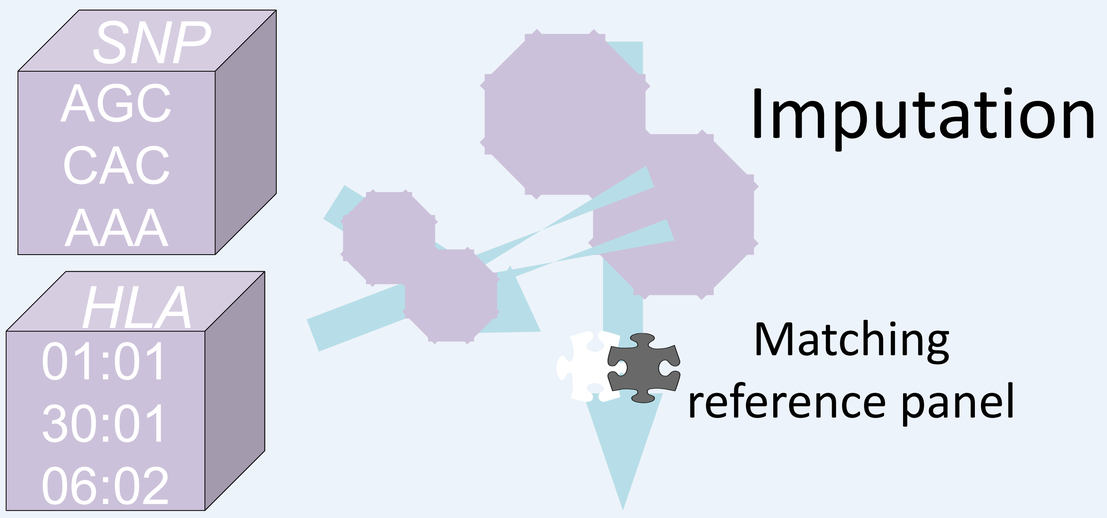
	Previously		Here
Design	Candidate genes	GWAS	CAAPA
cohort	Small	Big	Big
type	HLA alleles	SNPs	HLA alleles
Advantages	Biological meaning	Power	Both

10 African American asthma cohorts



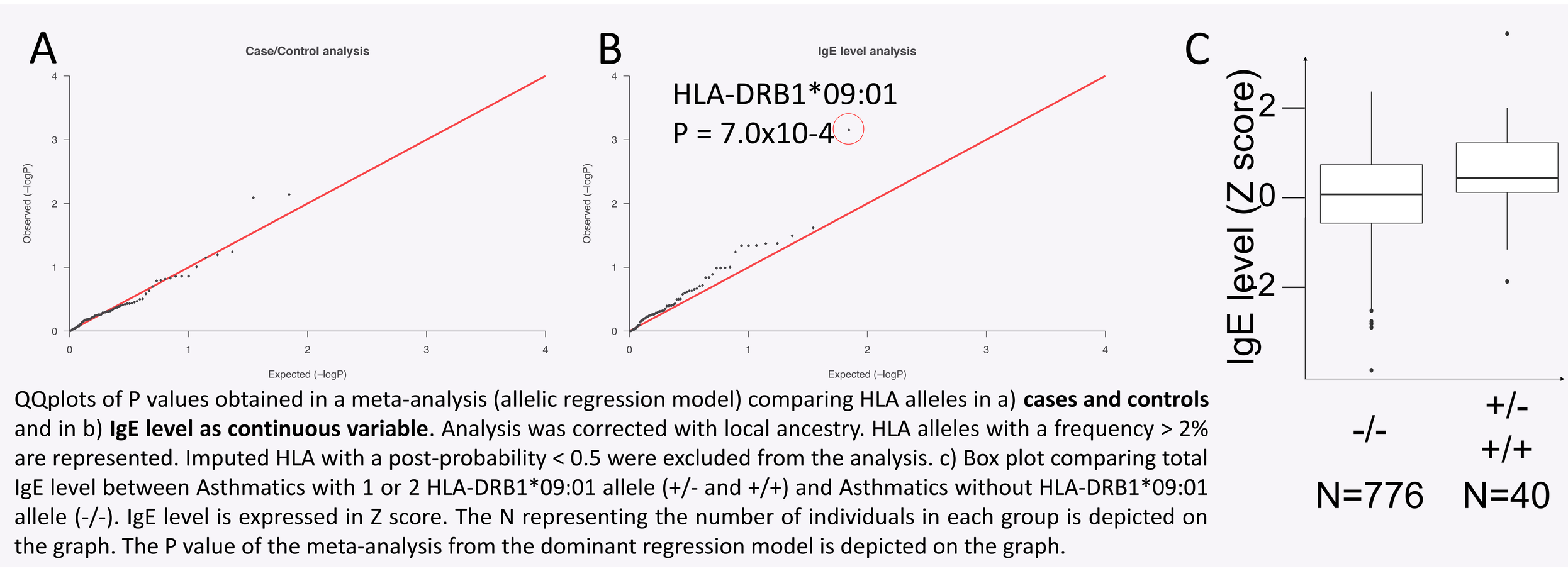
Innovative computational statistical inference

Genotypes			HLA allele
A	G	C	?
C	A	C	?
A	A	A	?



HLA alleles are inferred from the SNPs using a large HLA reference panel

HLA allele
01:01
30:01
06:02



QQplots of P values obtained in a meta-analysis (allelic regression model) comparing HLA alleles in a) **cases and controls** and in b) **IgE level as continuous variable**. Analysis was corrected with local ancestry. HLA alleles with a frequency > 2% are represented. Imputed HLA with a post-probability < 0.5 were excluded from the analysis. c) Box plot comparing total IgE level between Asthmatics with 1 or 2 HLA-DRB1*09:01 allele (+/- and +/+) and Asthmatics without HLA-DRB1*09:01 allele (-/-). IgE level is expressed in Z score. The N representing the number of individuals in each group is depicted on the graph. The P value of the meta-analysis from the dominant regression model is depicted on the graph.

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We identified for the first time an *HLA* allele associated with asthma severity amongst African Americans. Our report emphasizes that by leveraging powerful computational methods, specific/extreme phenotypes, and population diversity, we can explore *HLA* gene polymorphisms in depth and reveal the full extent of complex disease associations.