

# Supplementary Data 1

## Multi-peak loci overview

J. White, K. Indencleef et al.

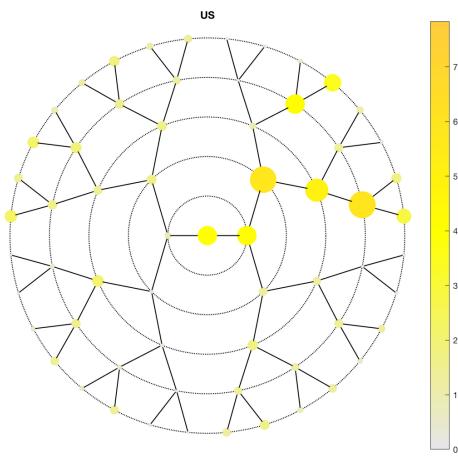
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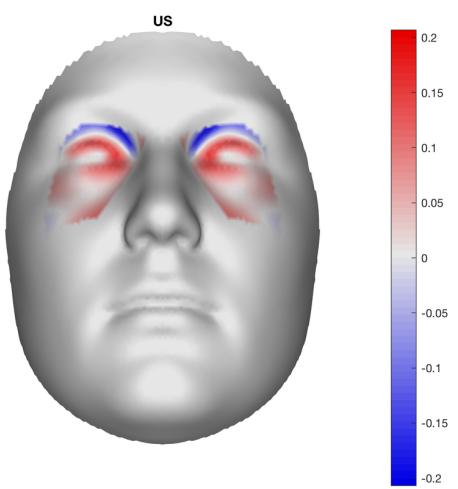
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# Multi-peak locus 1: rs76244841

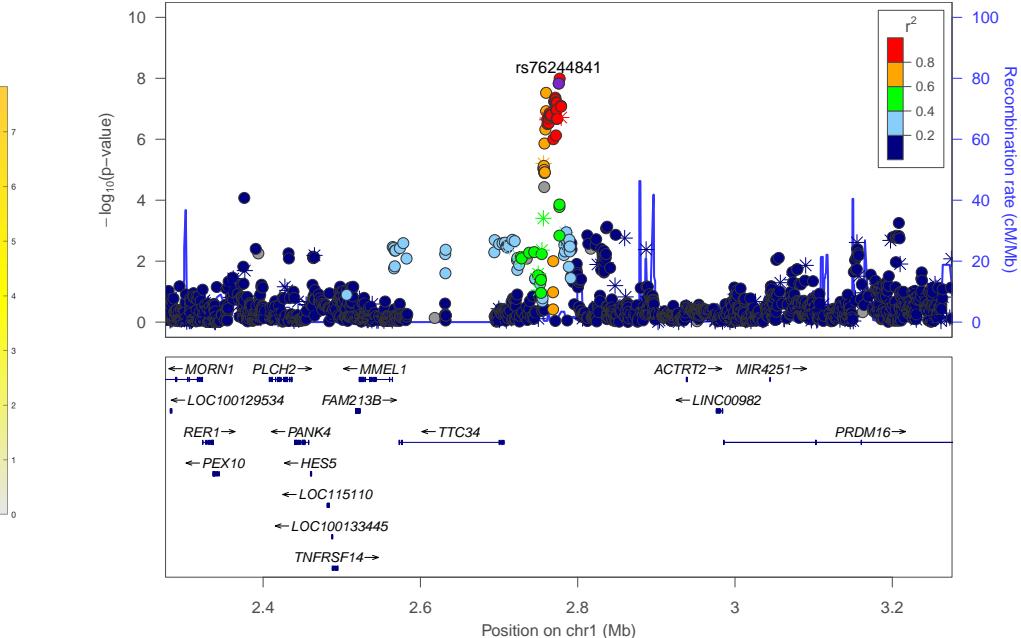
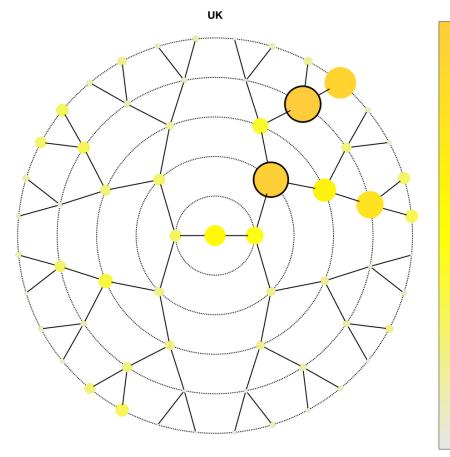
CHR1 - See final page for captions



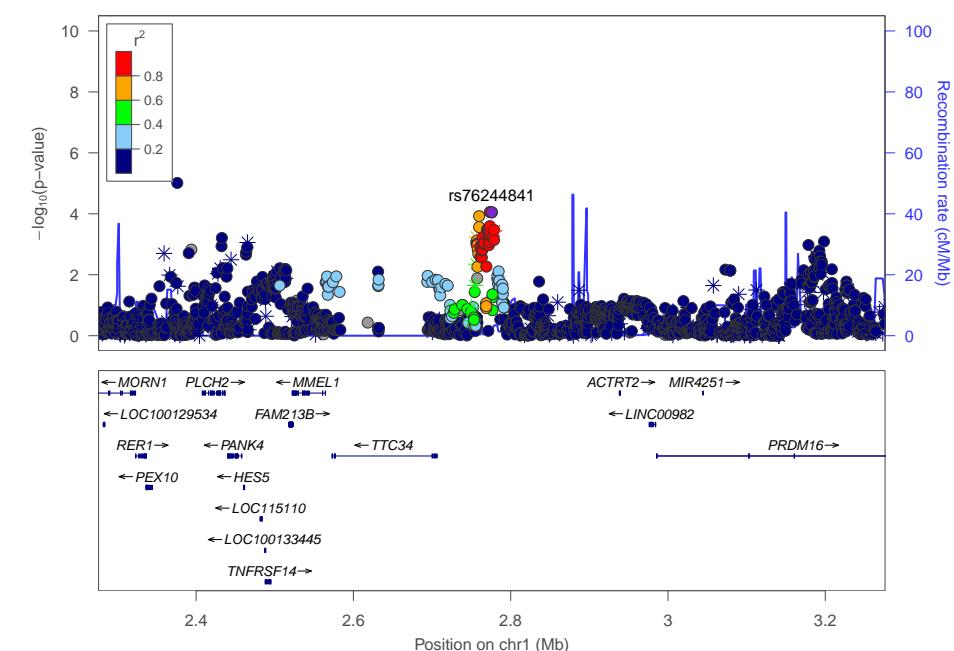
**A**



**B**

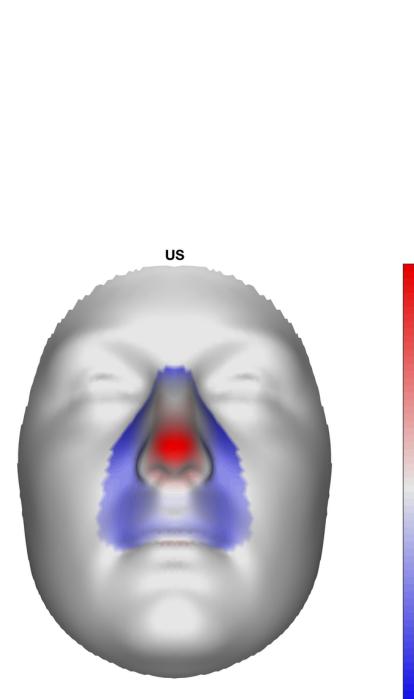
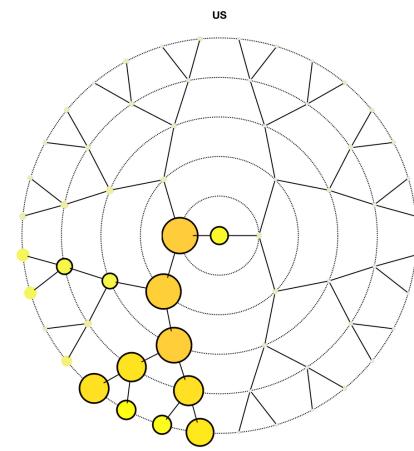


**C**



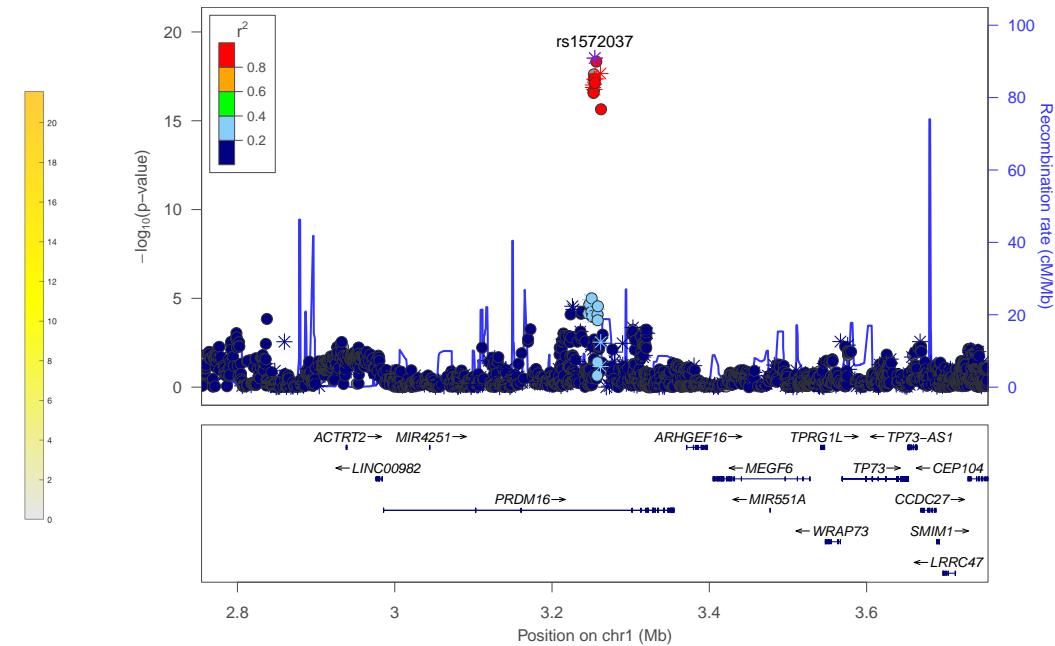
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CHR1 - See final page for captions

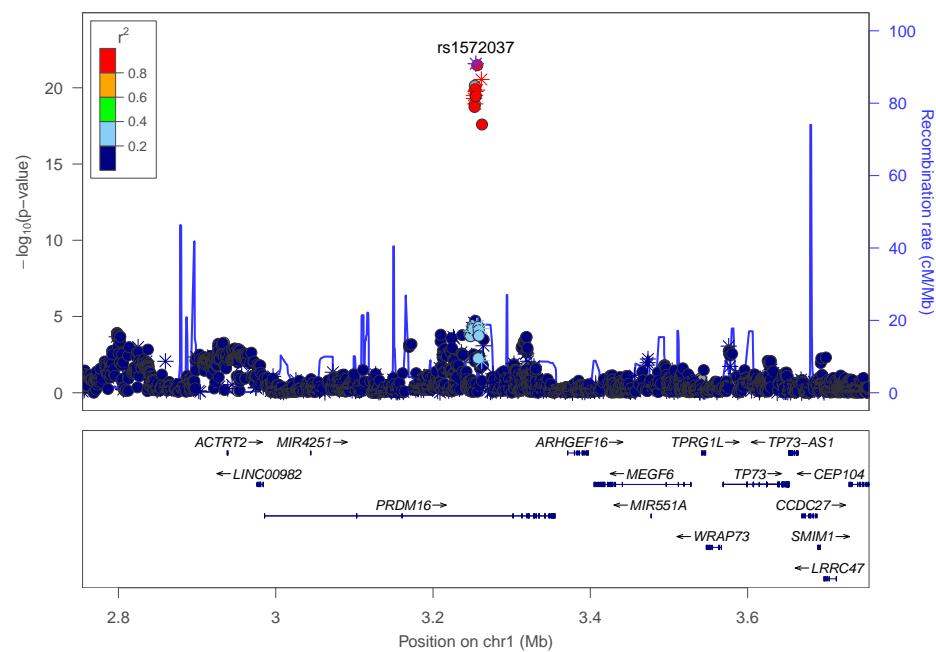


A

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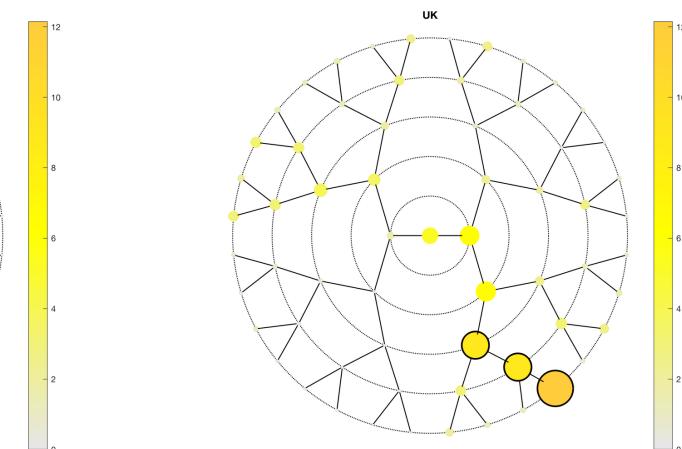
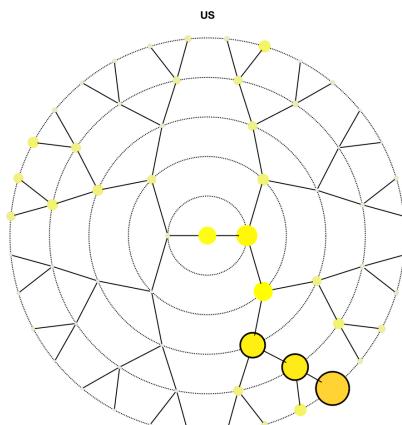


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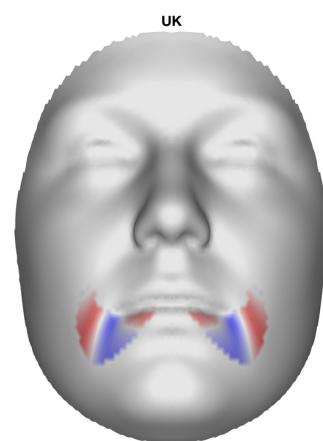
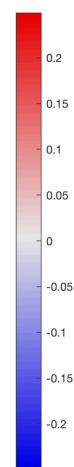
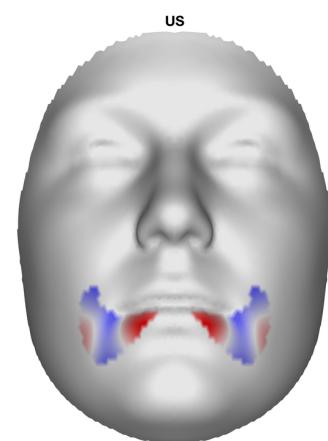


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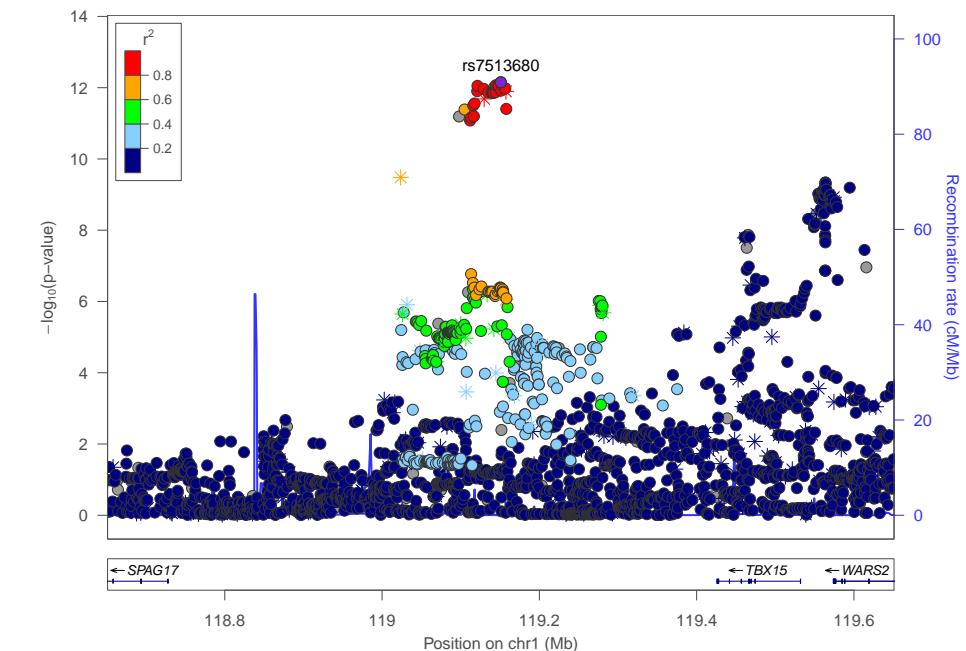
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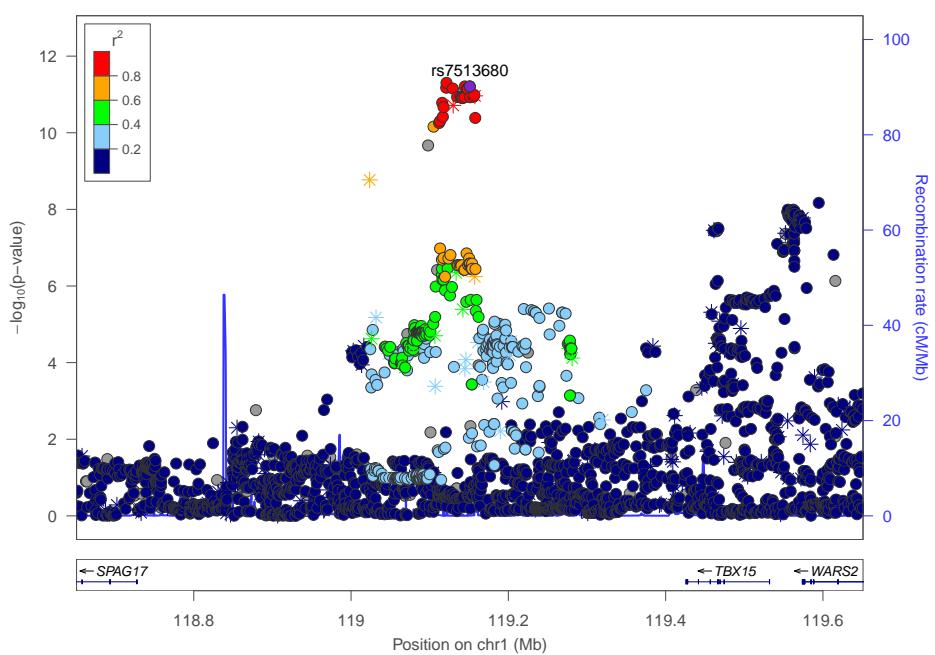
A



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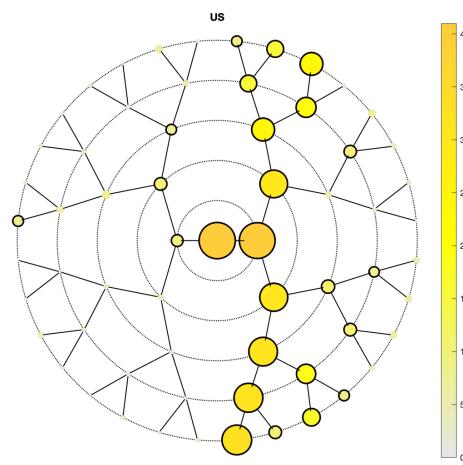


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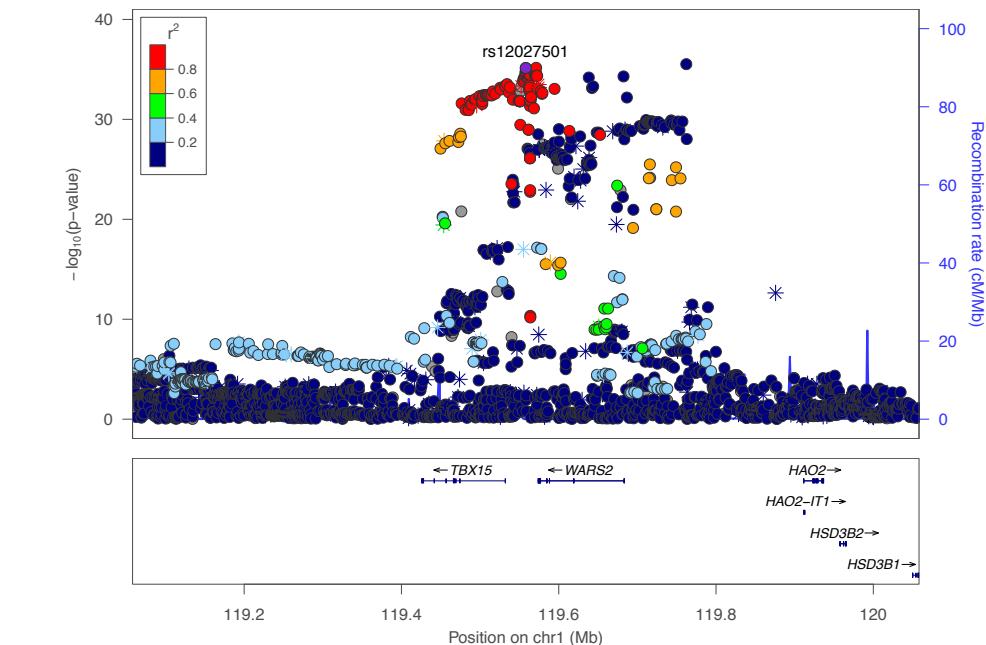
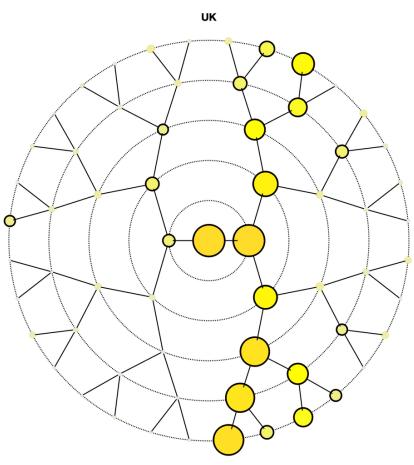


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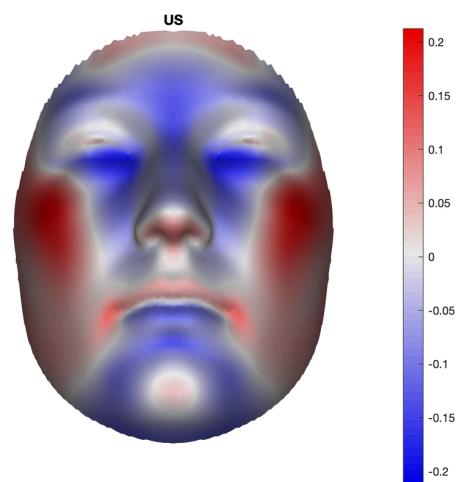
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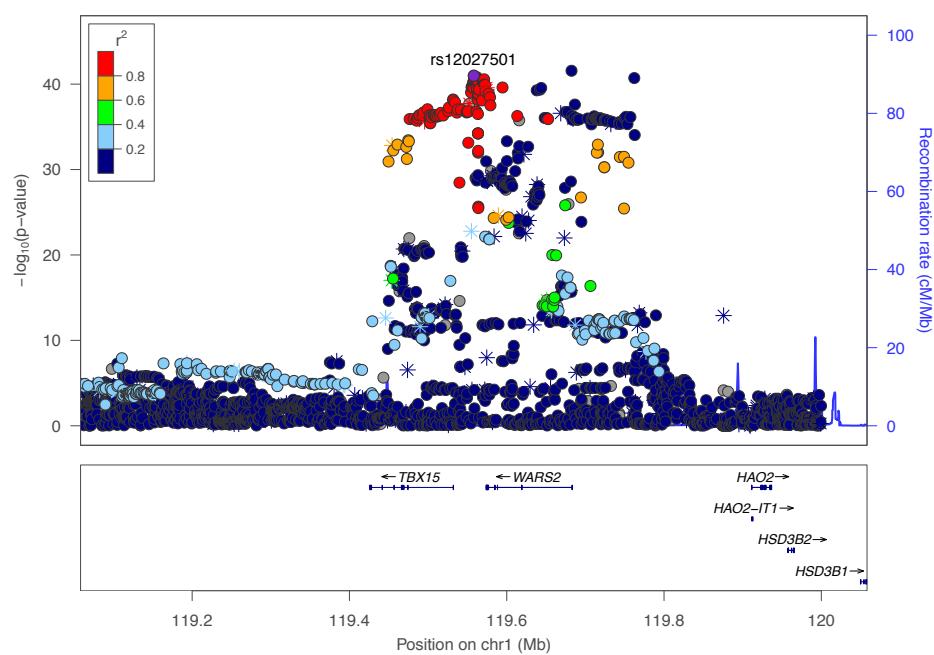
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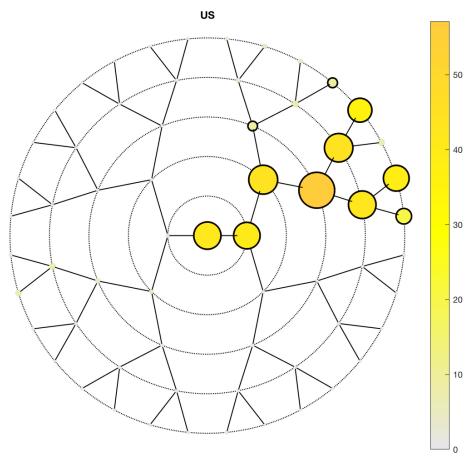


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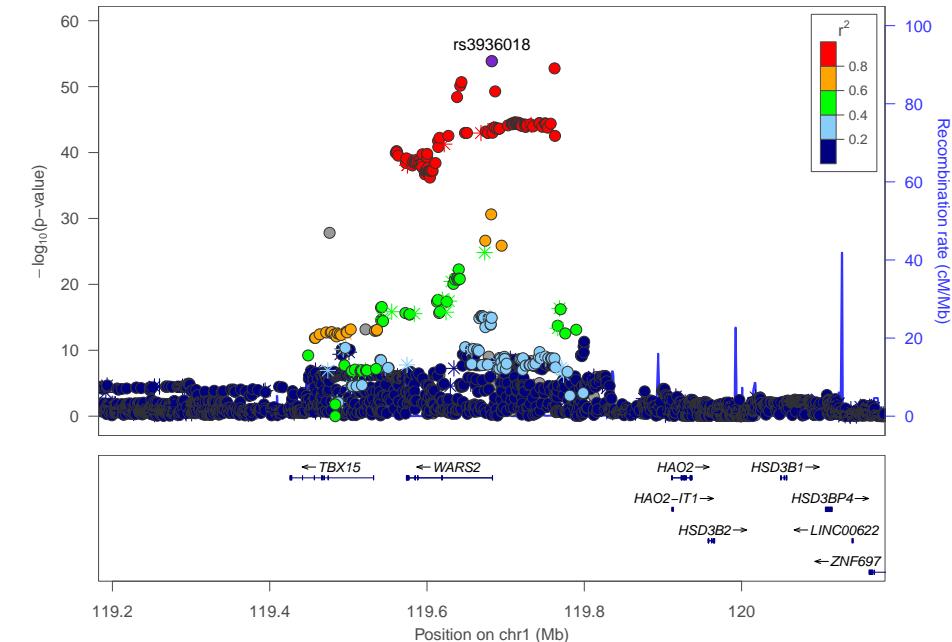
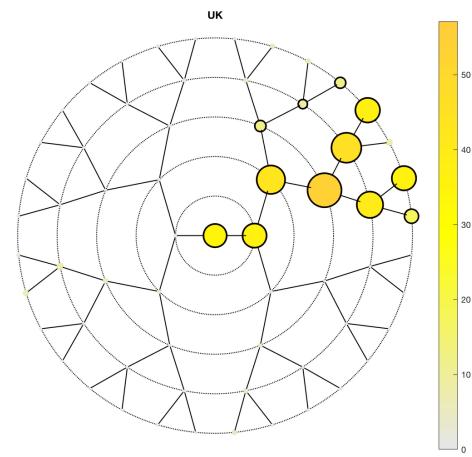


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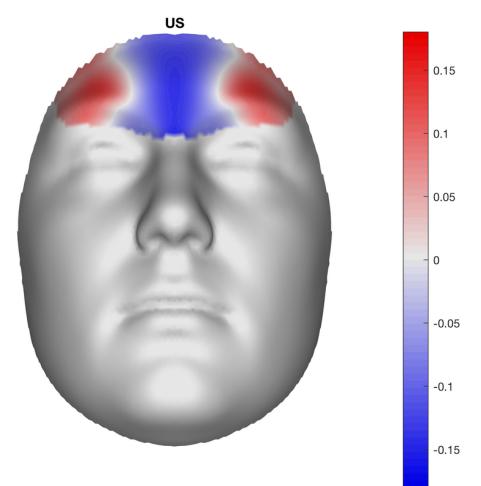
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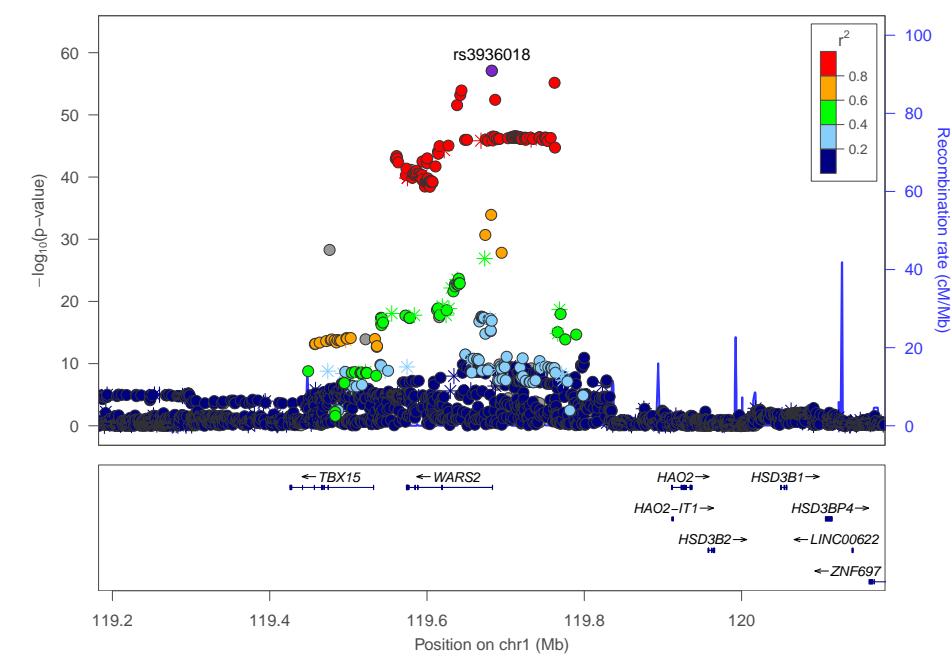
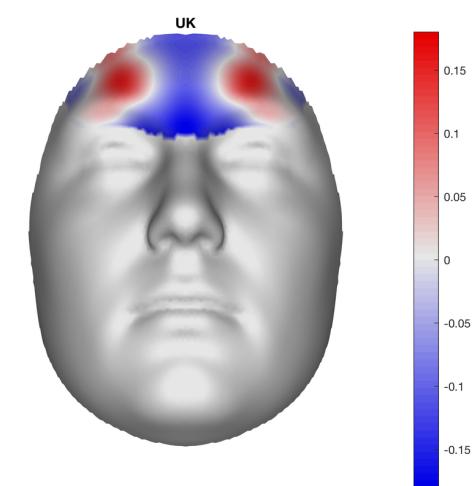
**A**



**C**

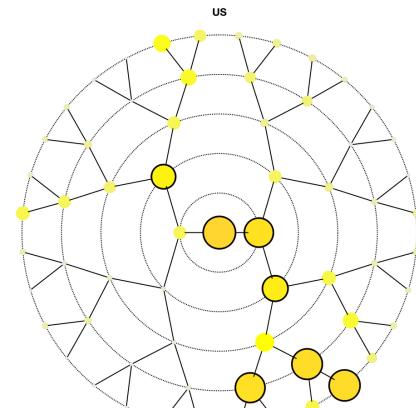


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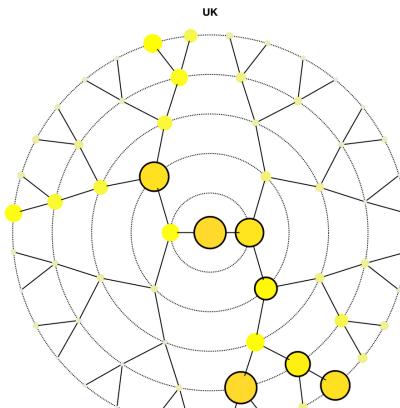


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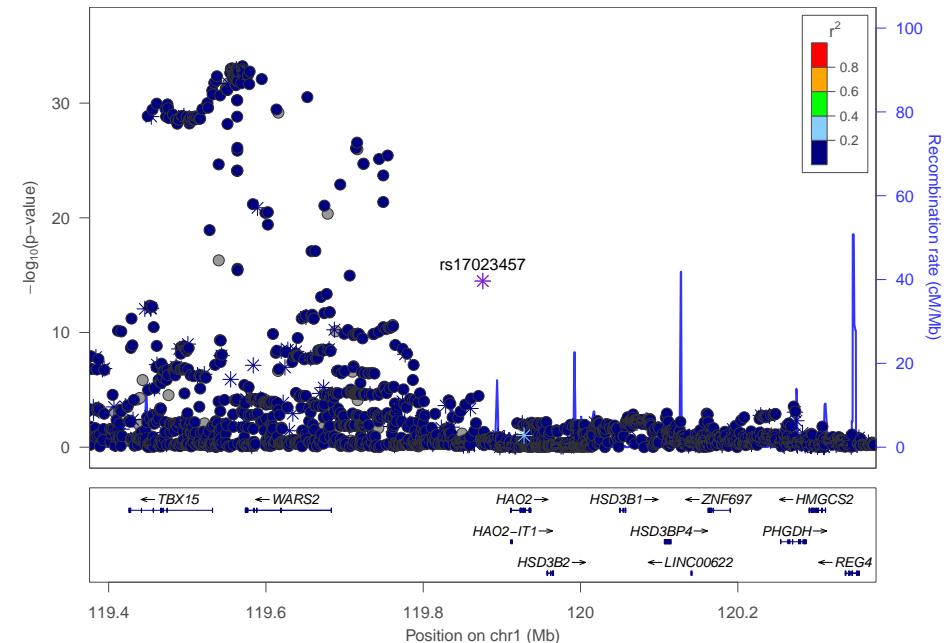
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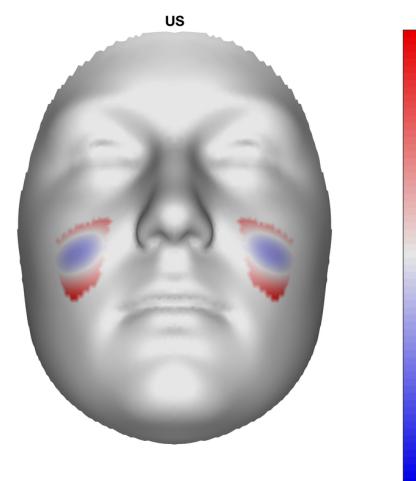
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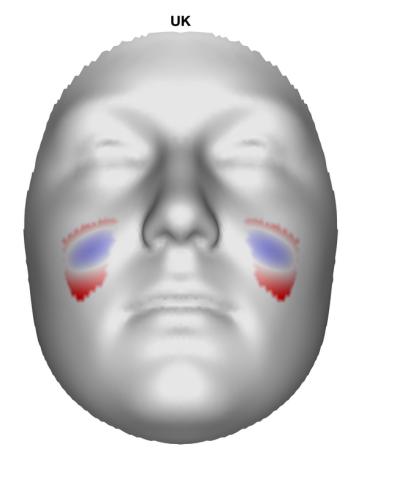
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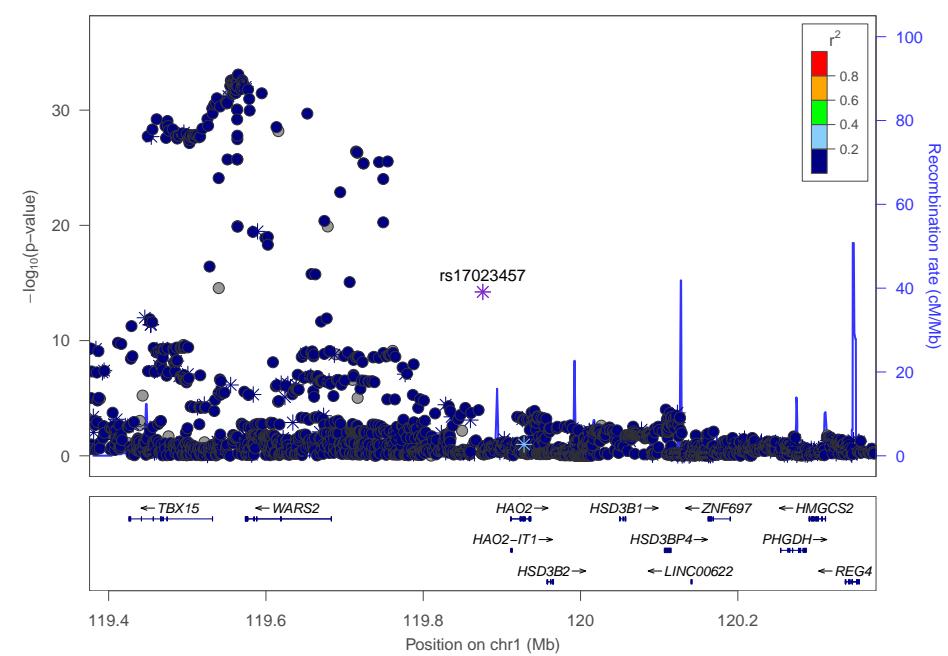
C



B

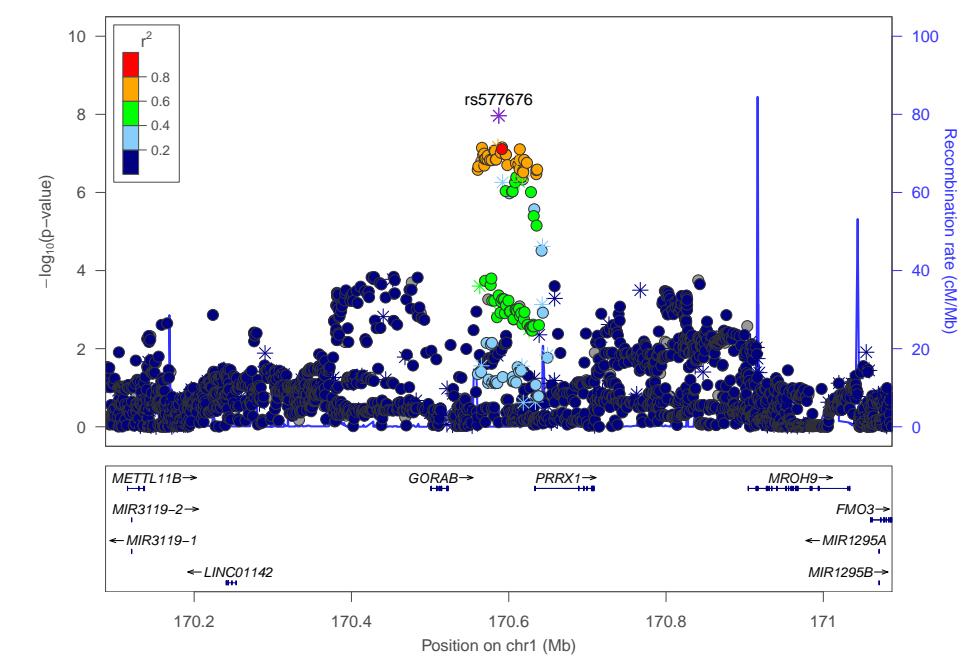
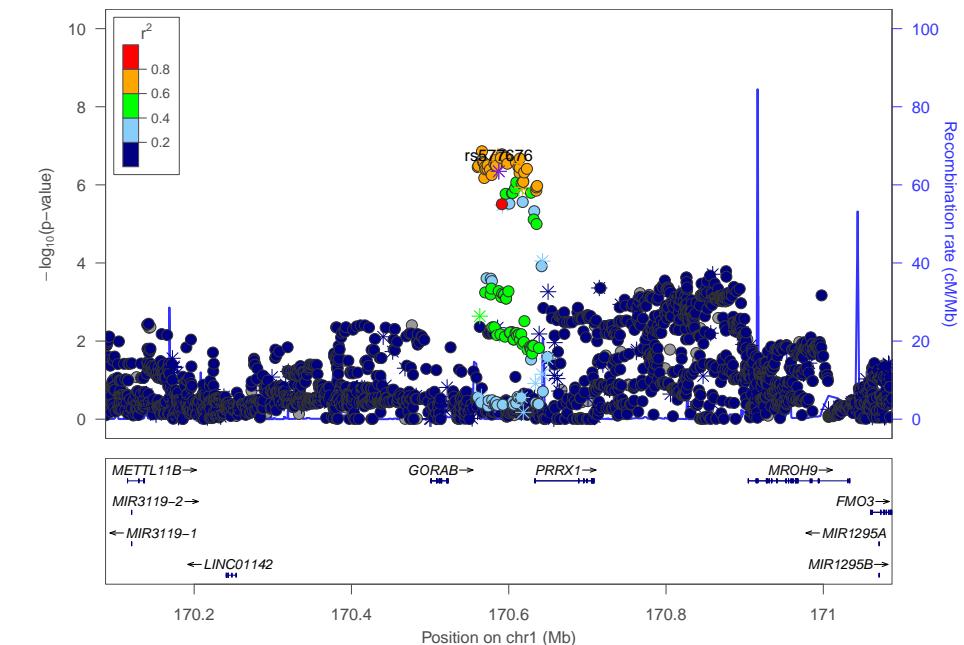
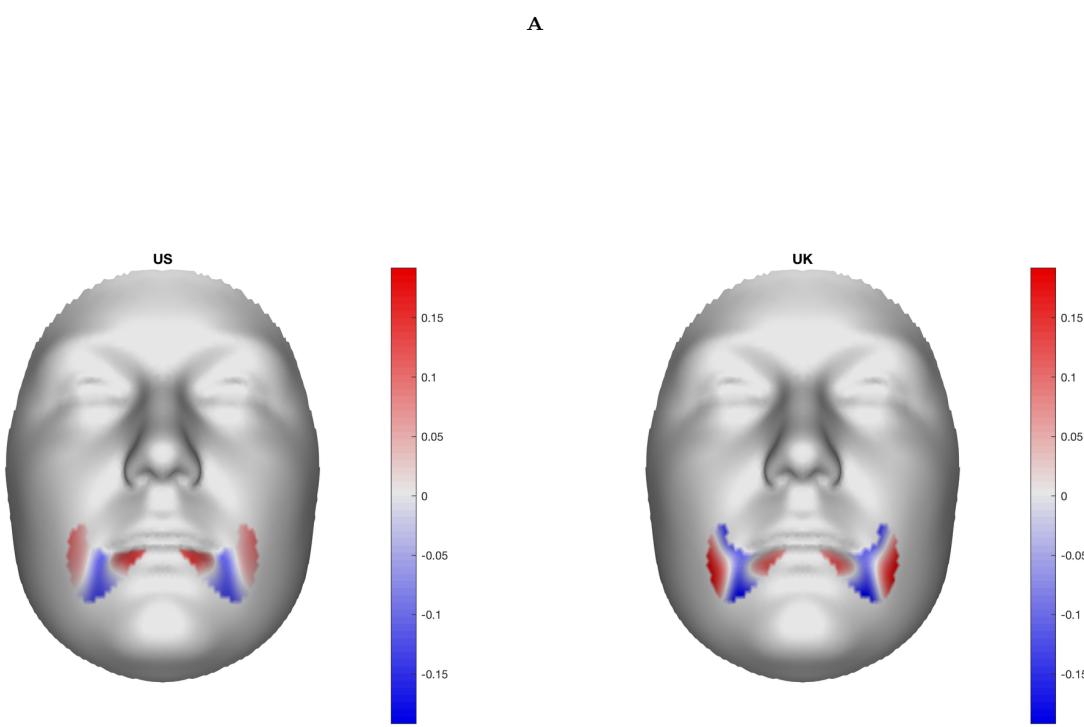
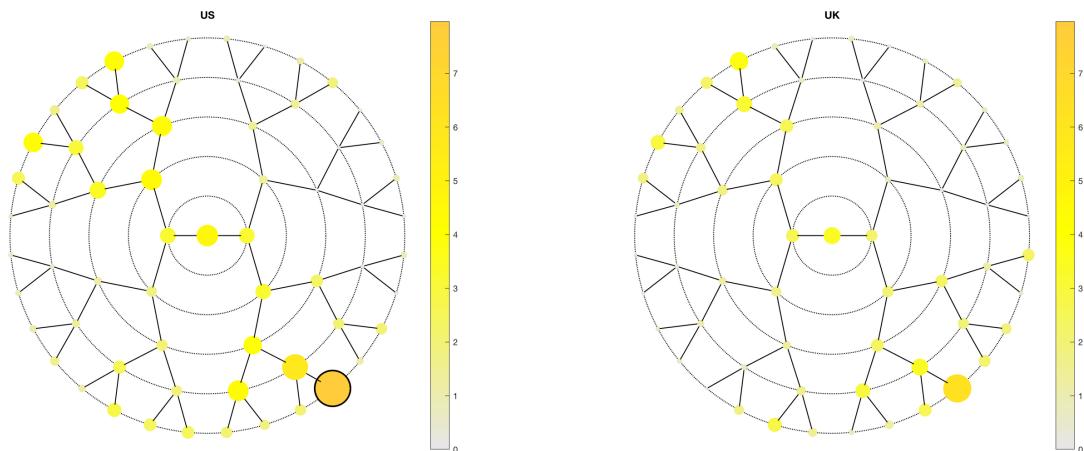


B



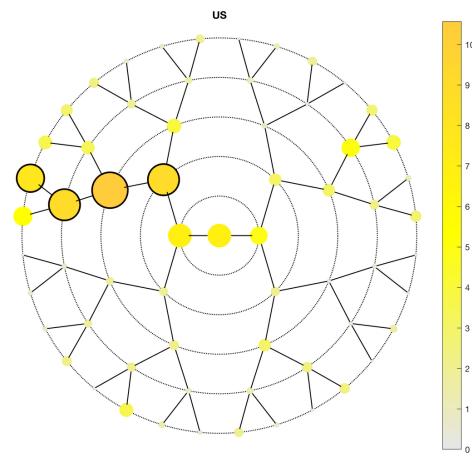
# Multi-peak locus 3: rs577676

CHR1 - See final page for captions

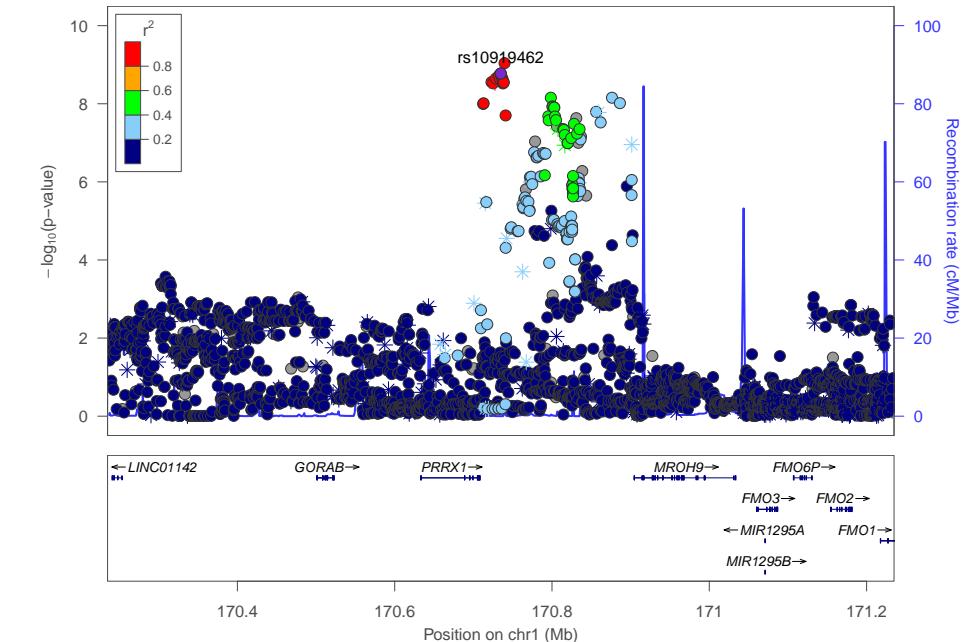
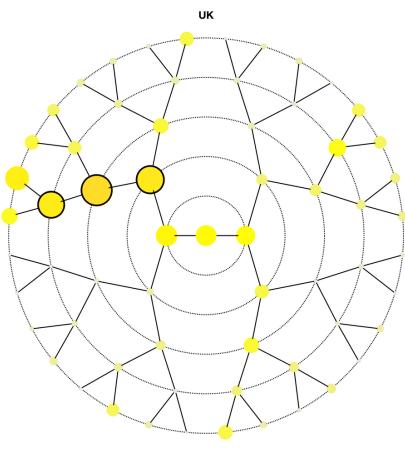


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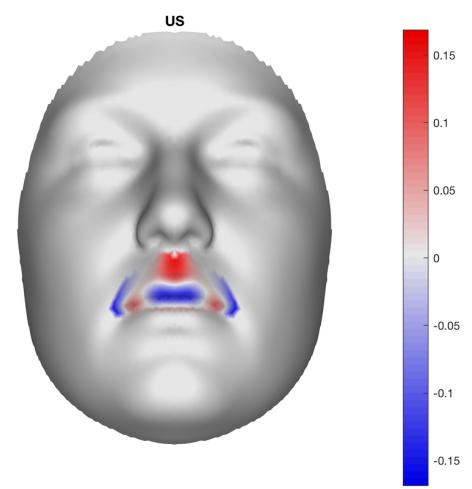
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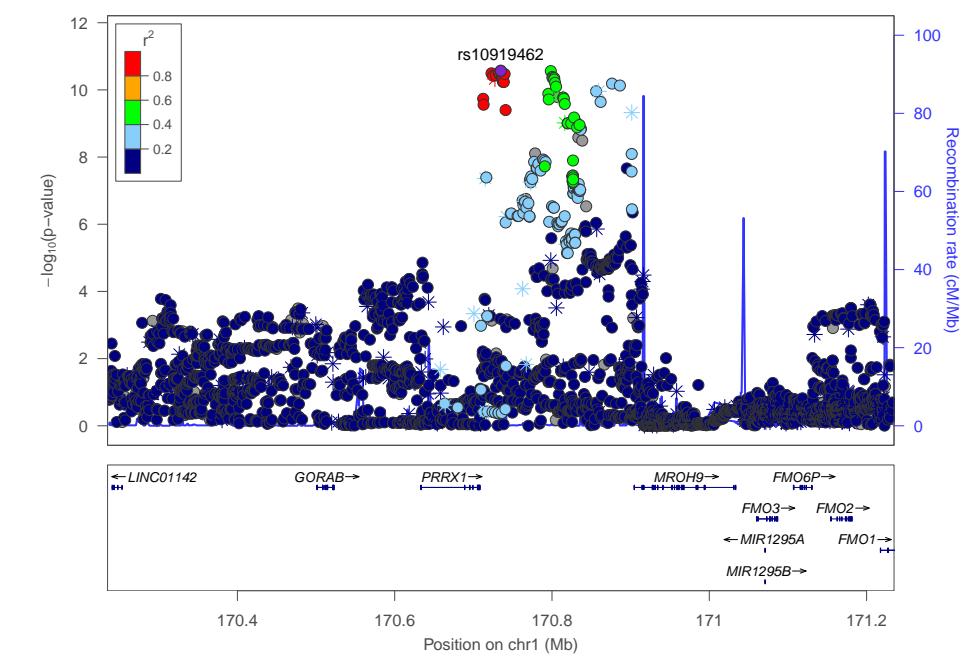
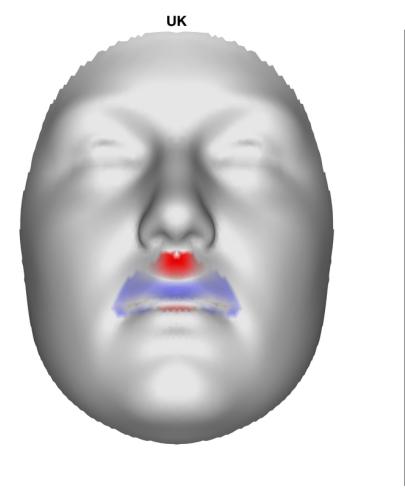
**A**



**C**

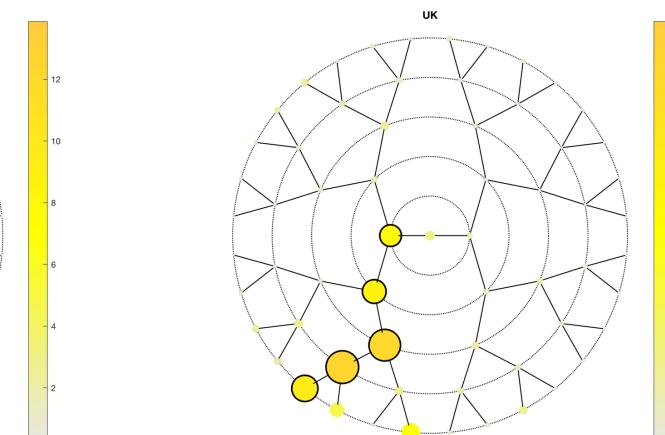
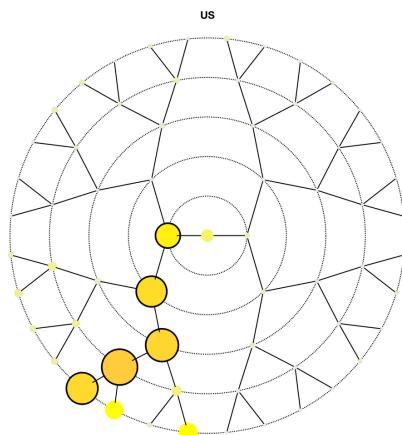


**B**

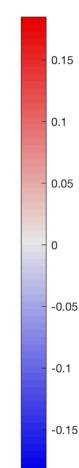
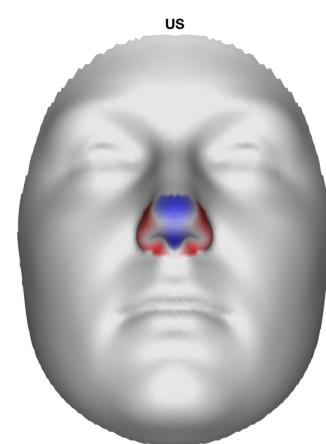


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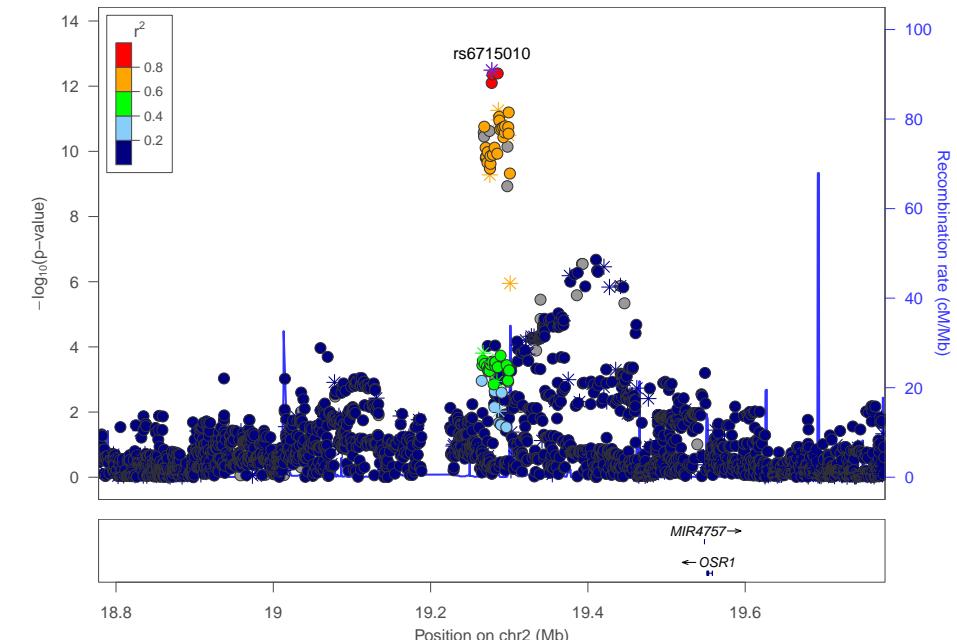
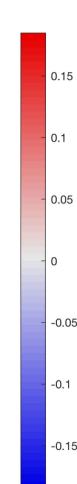
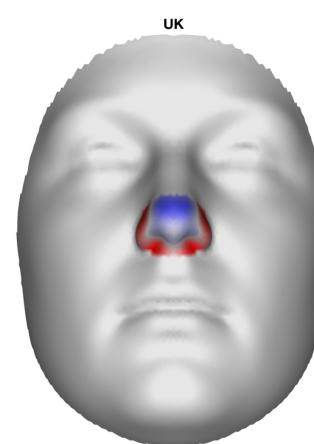
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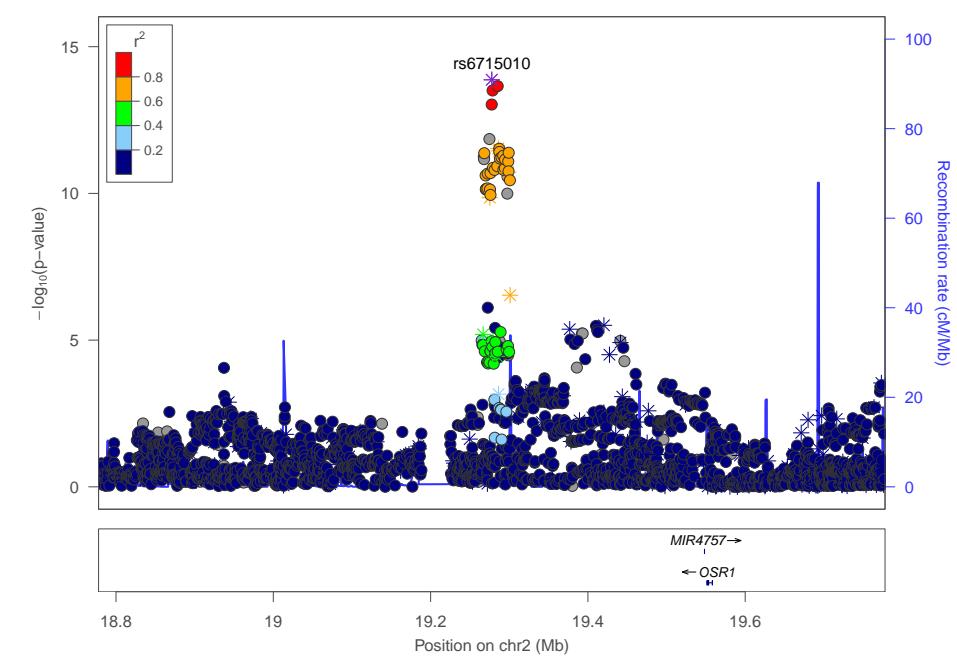
**A**

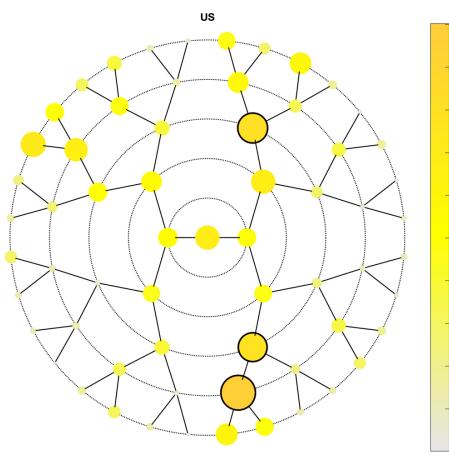
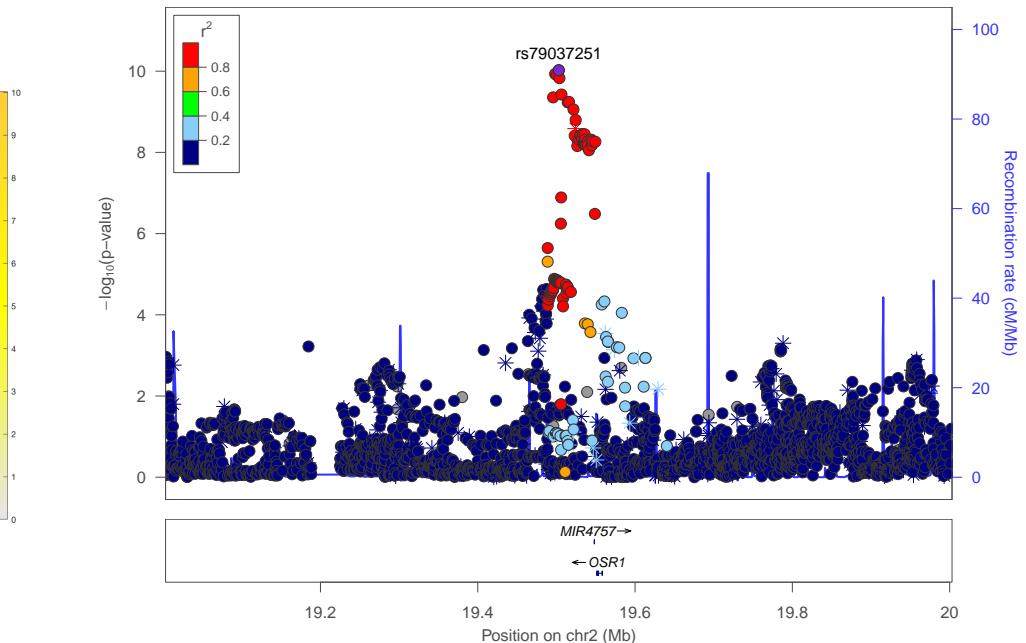
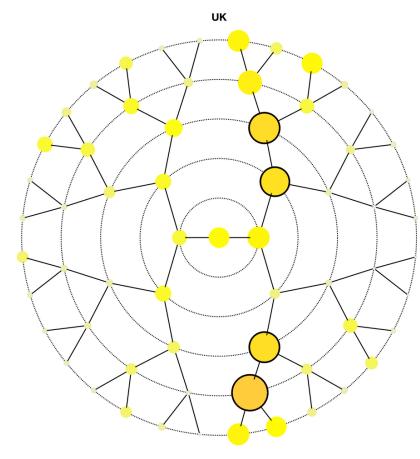
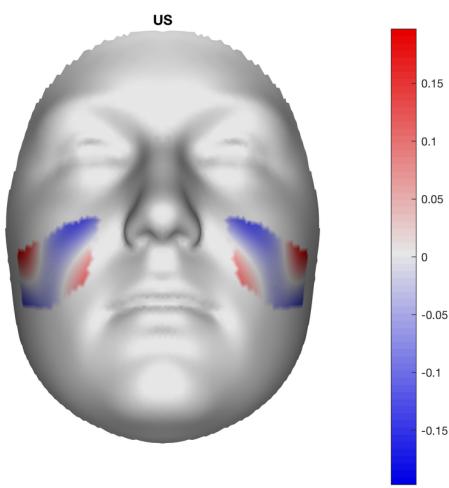
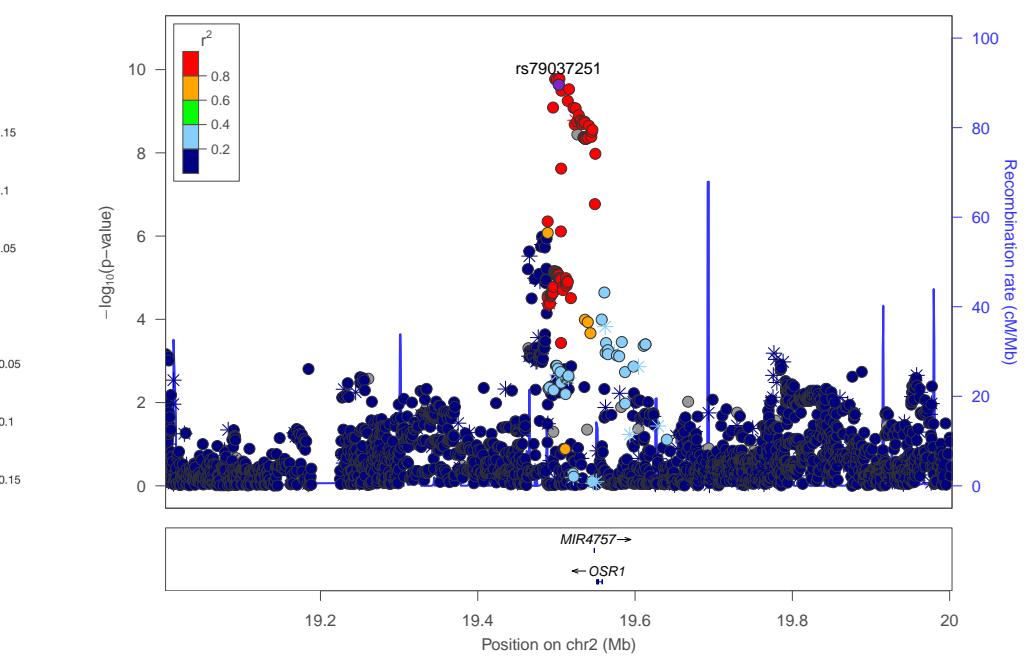
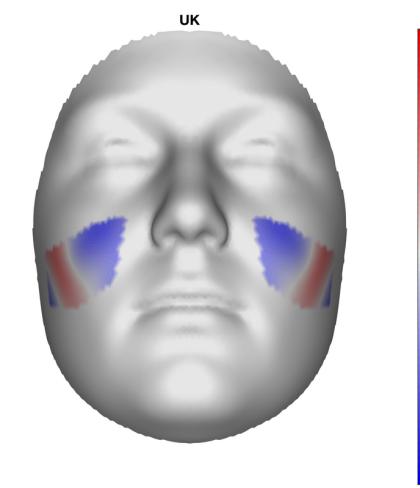


**B**



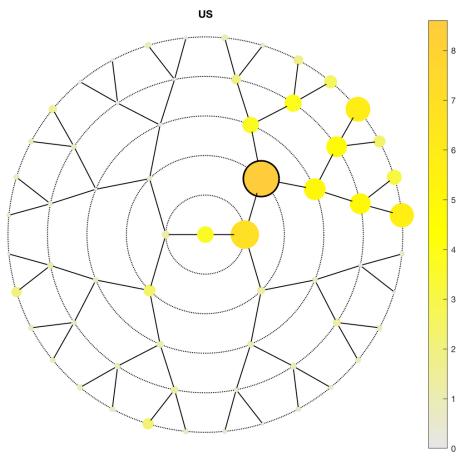
**C**



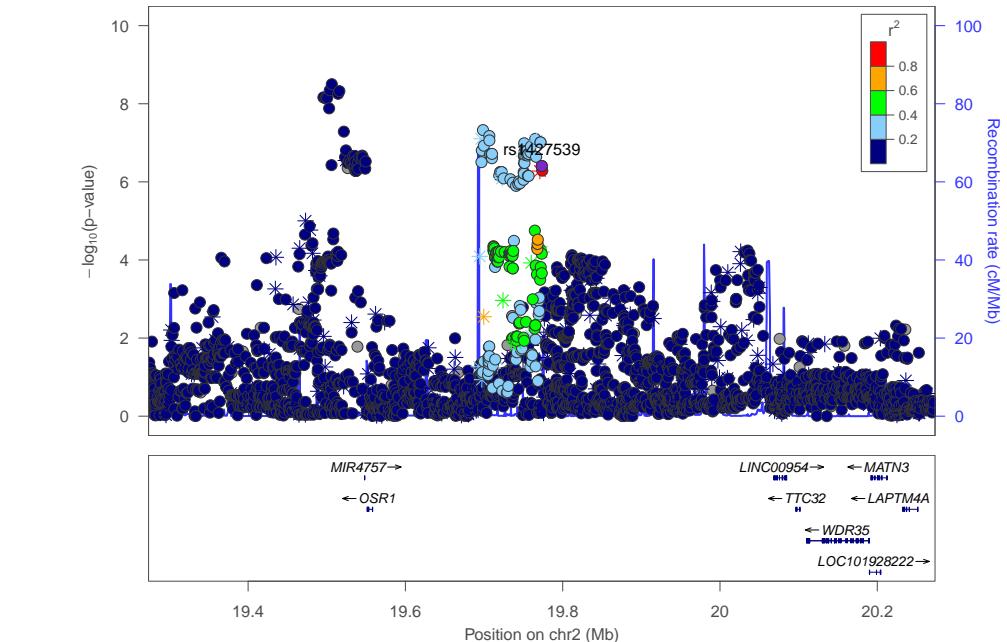
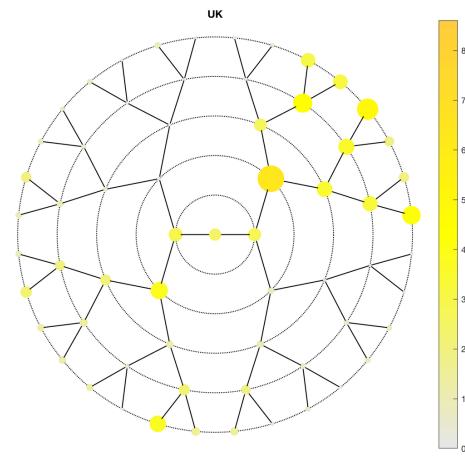
**A****C****B**

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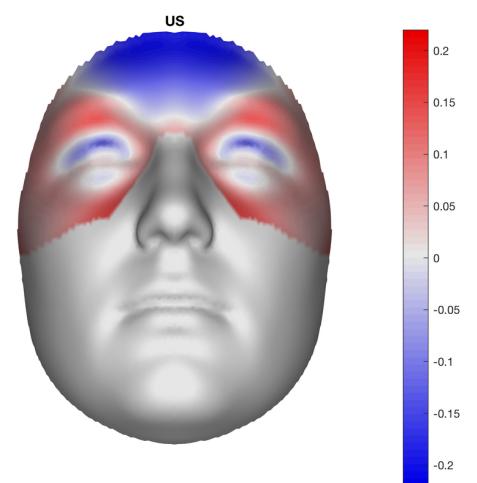
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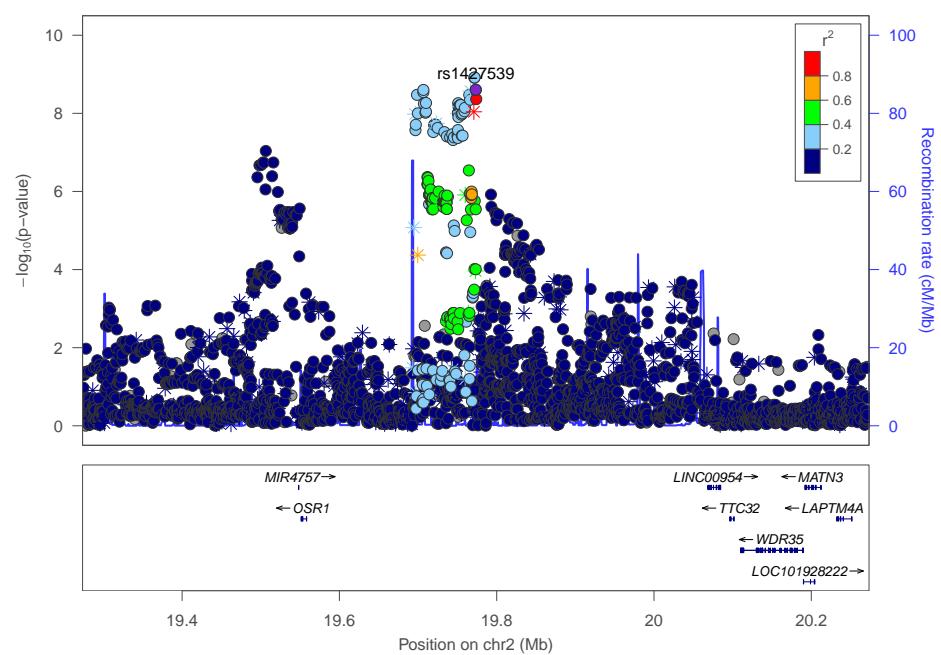
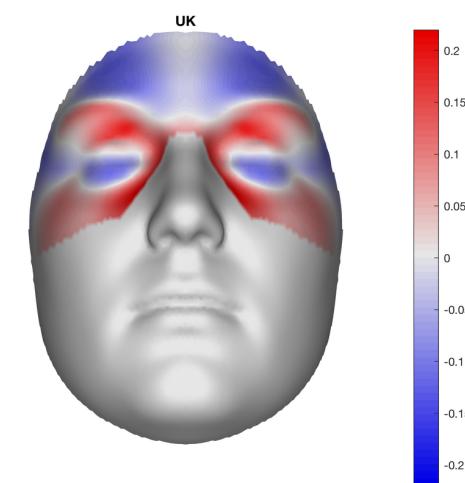
**A**



**C**

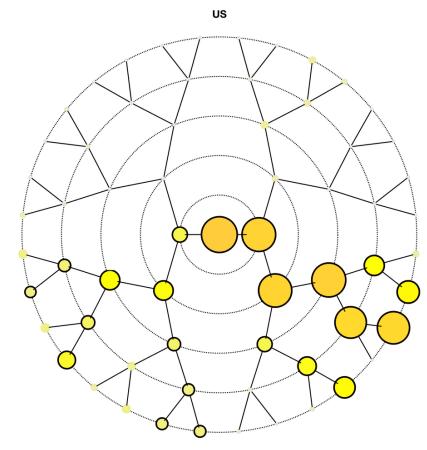


**B**

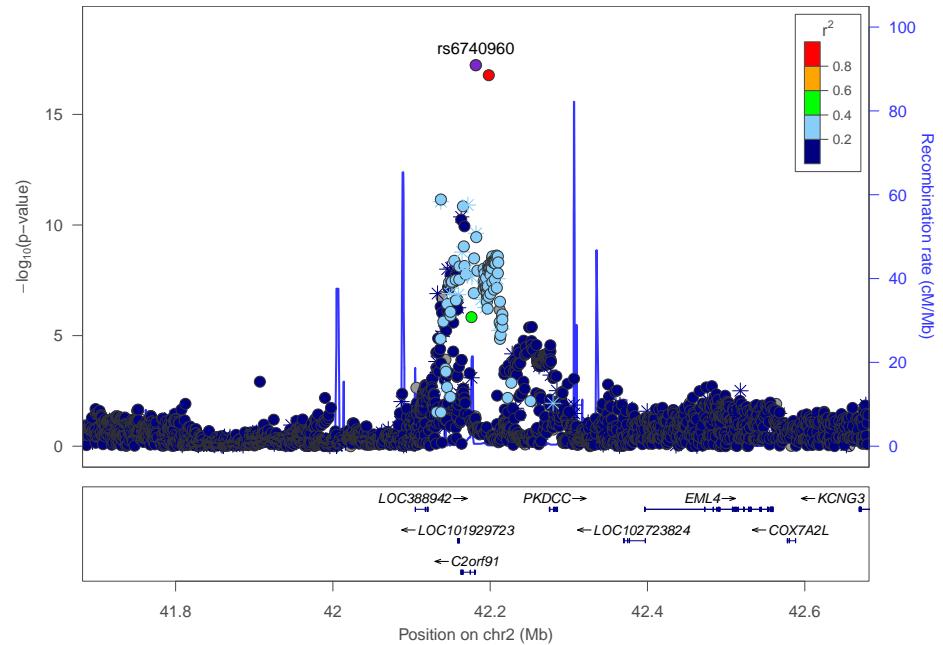
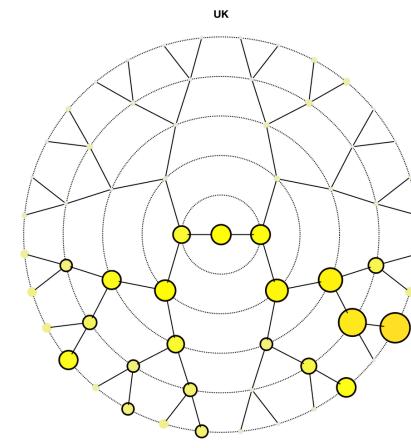


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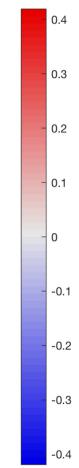
CHR2 - See final page for captions



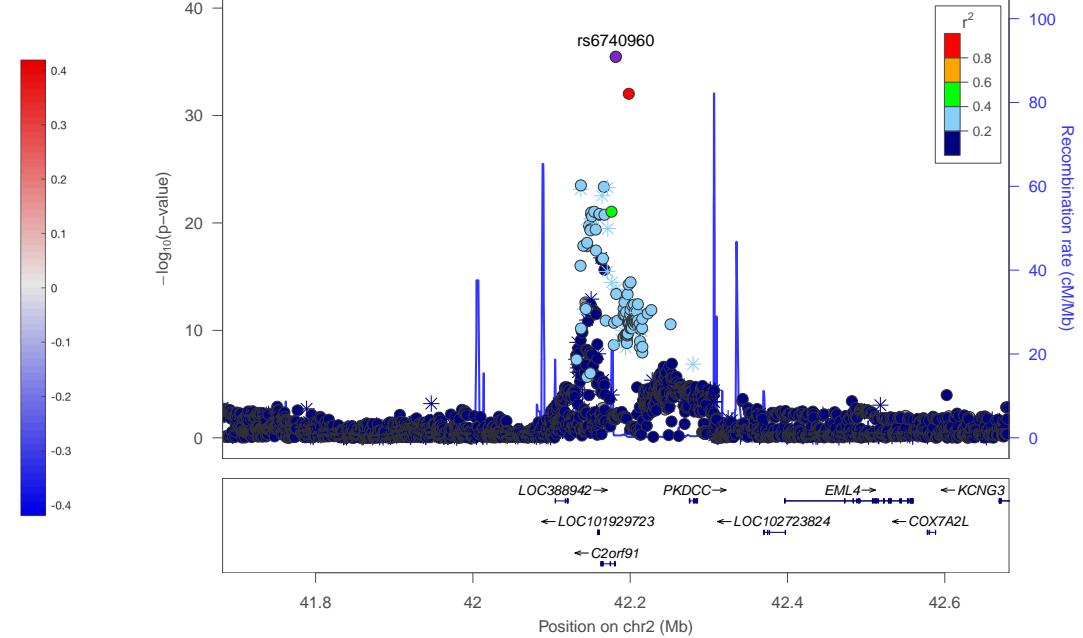
**A**

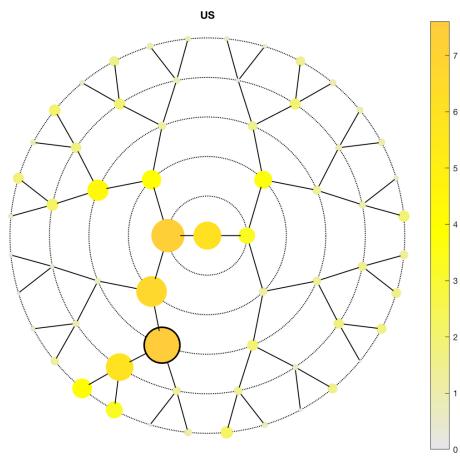
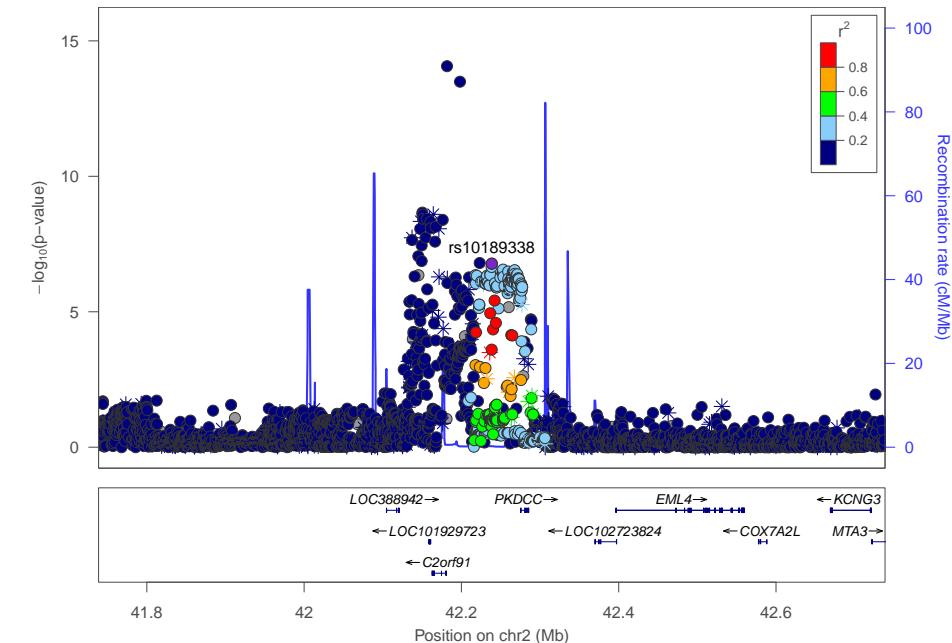
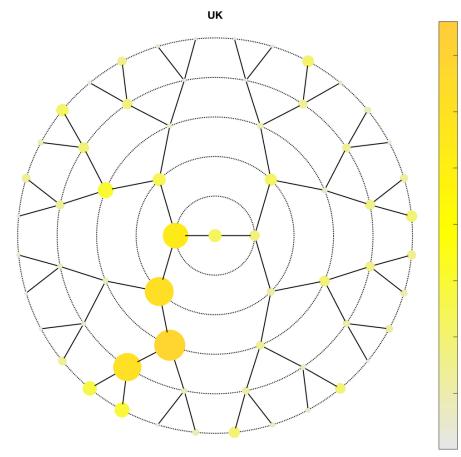
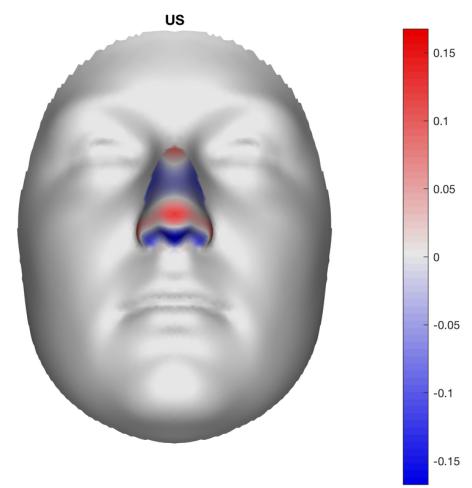
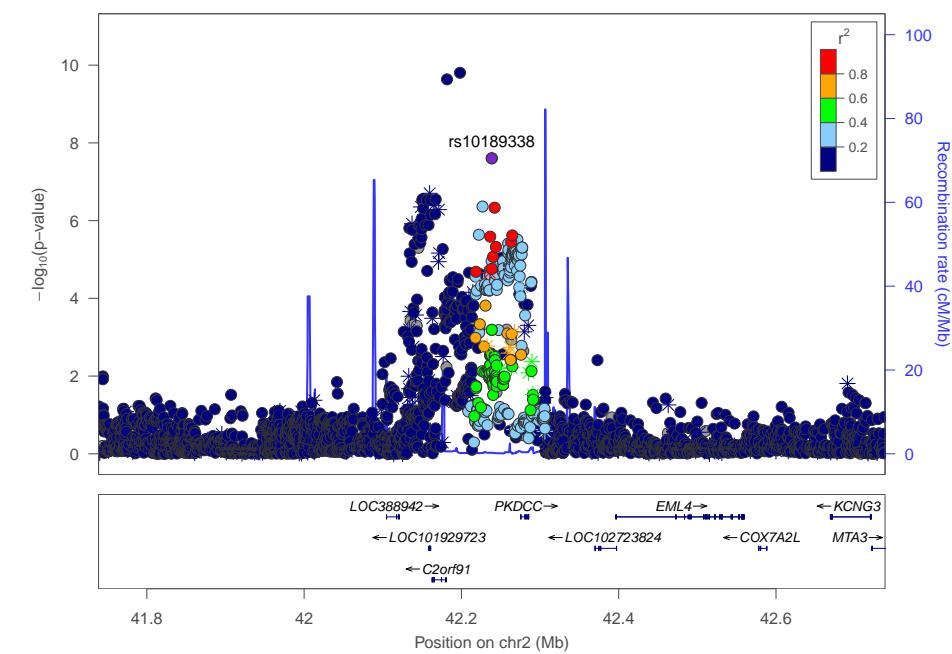
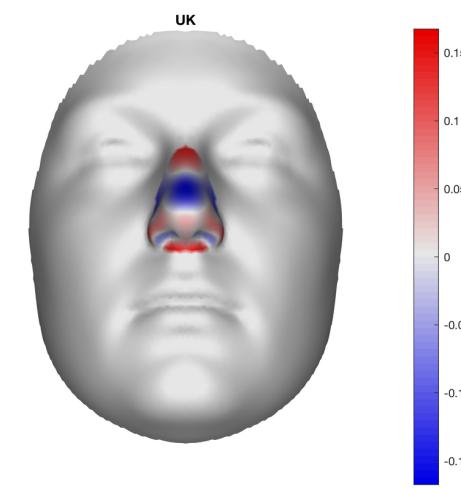


**C**



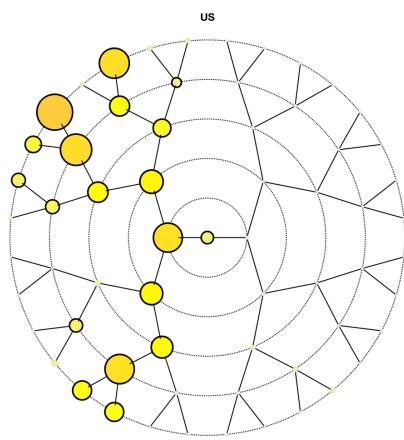
**B**



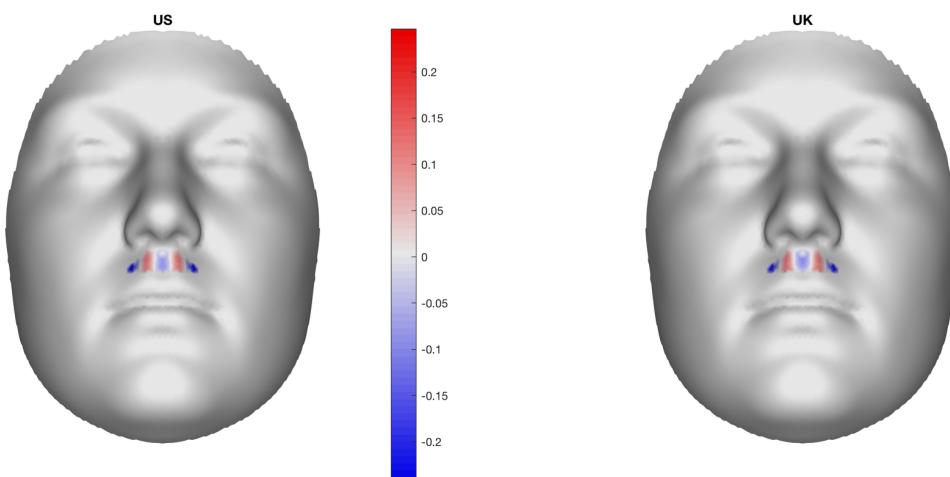
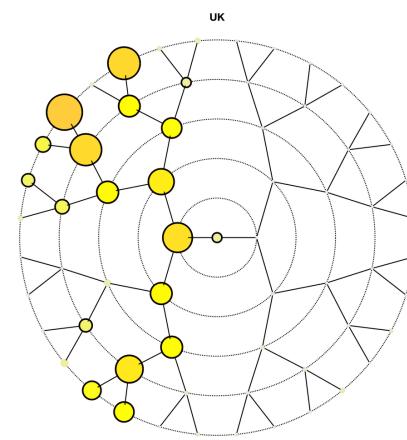
**A****C****B**

# Multi-peak locus 6: rs921119

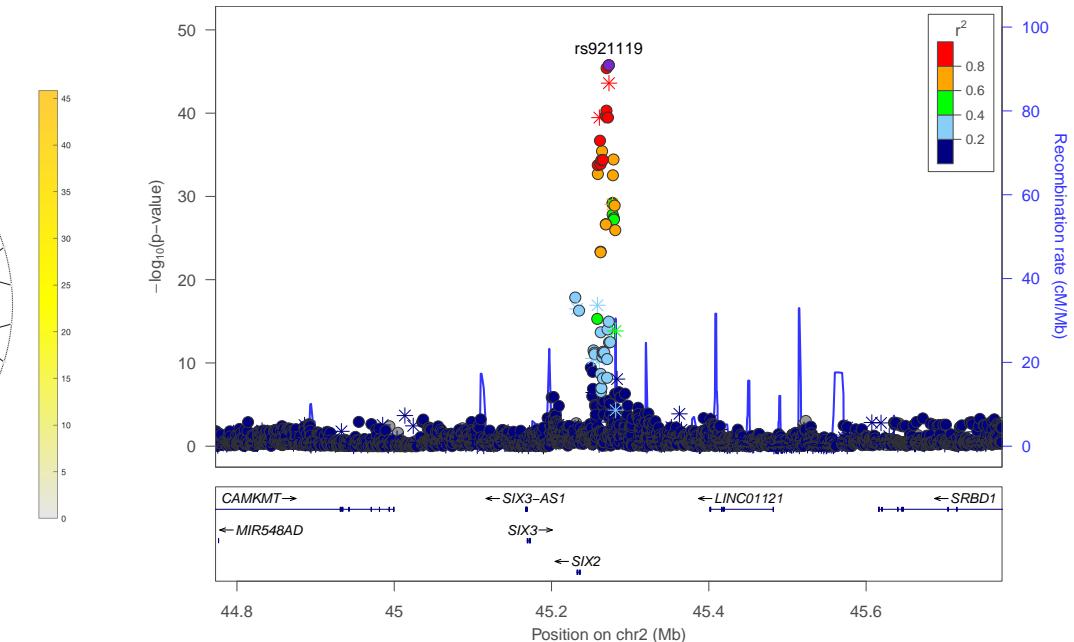
CHR2 - See final page for captions



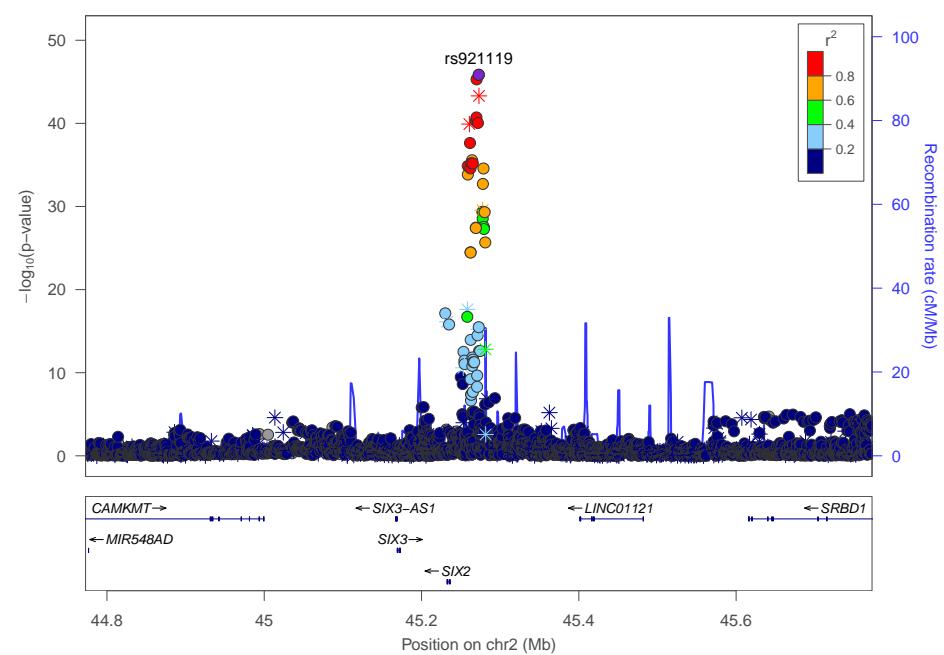
**A**



**B**

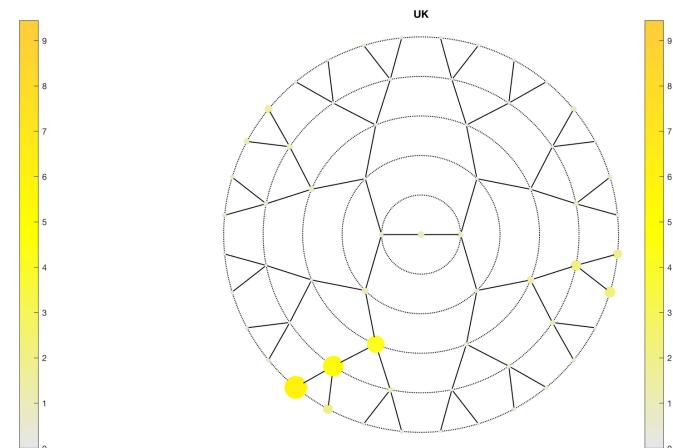
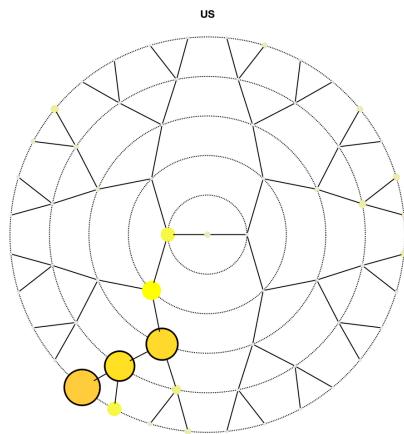


**C**

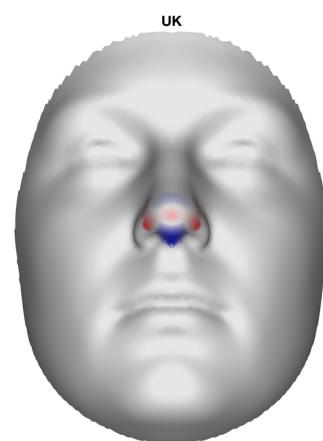
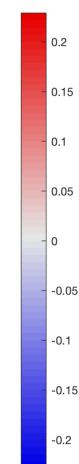
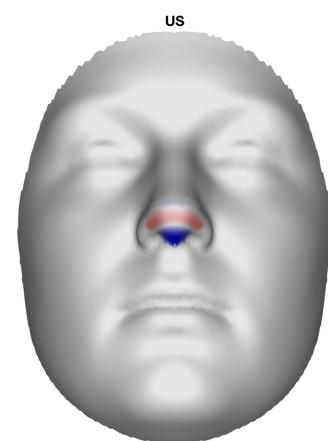


# Multi-peak locus 6: rs35395759

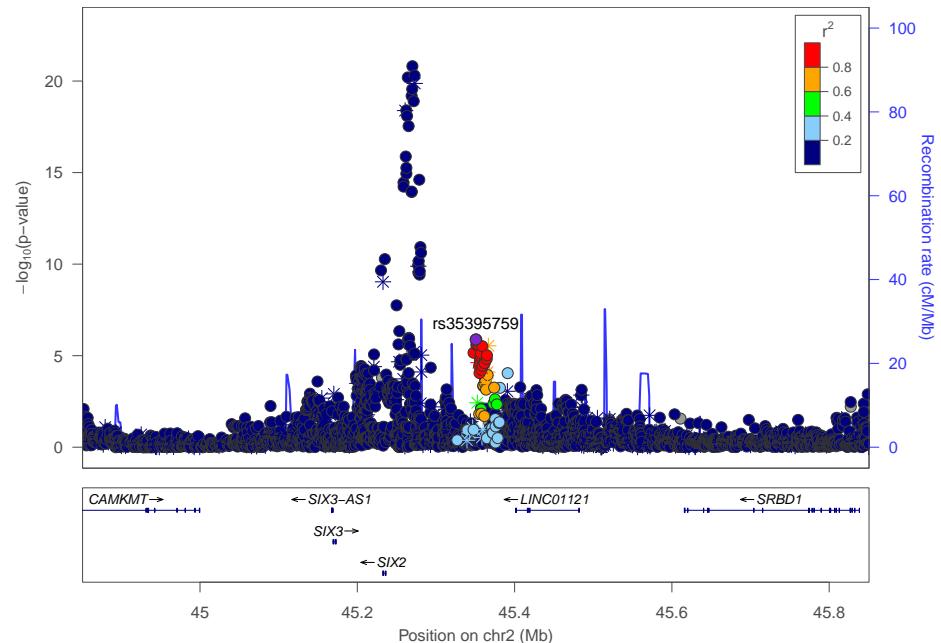
CHR2 - See final page for captions



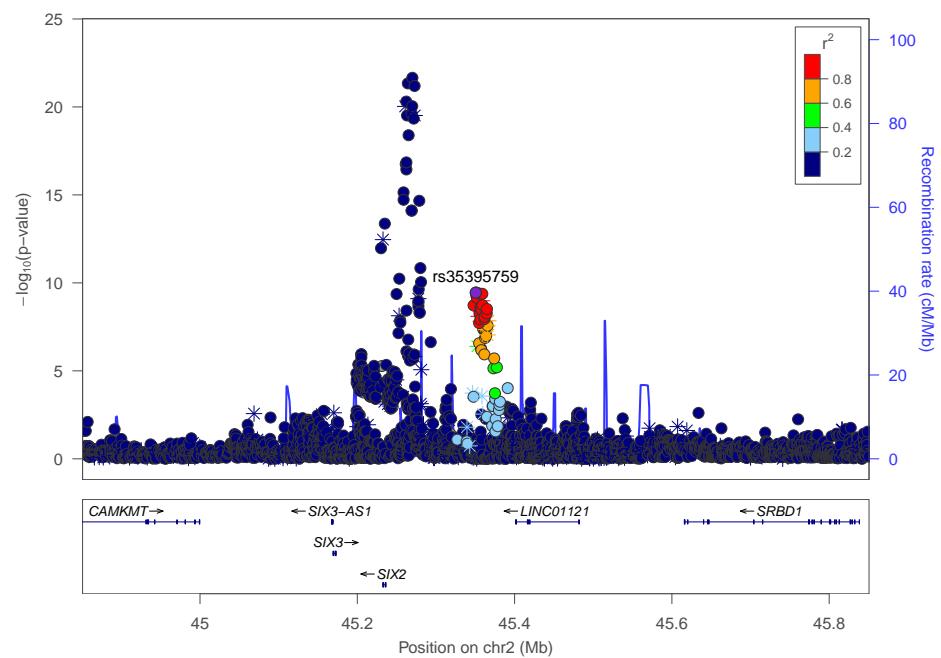
A



B

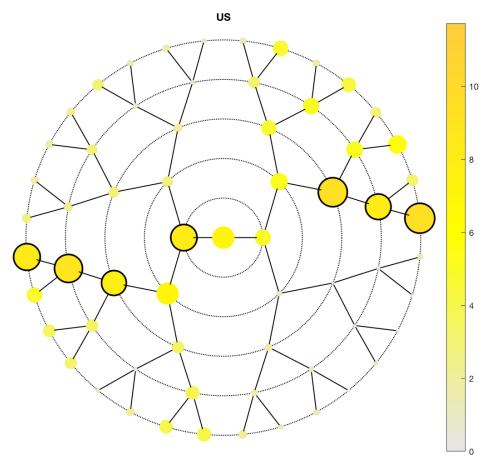


C

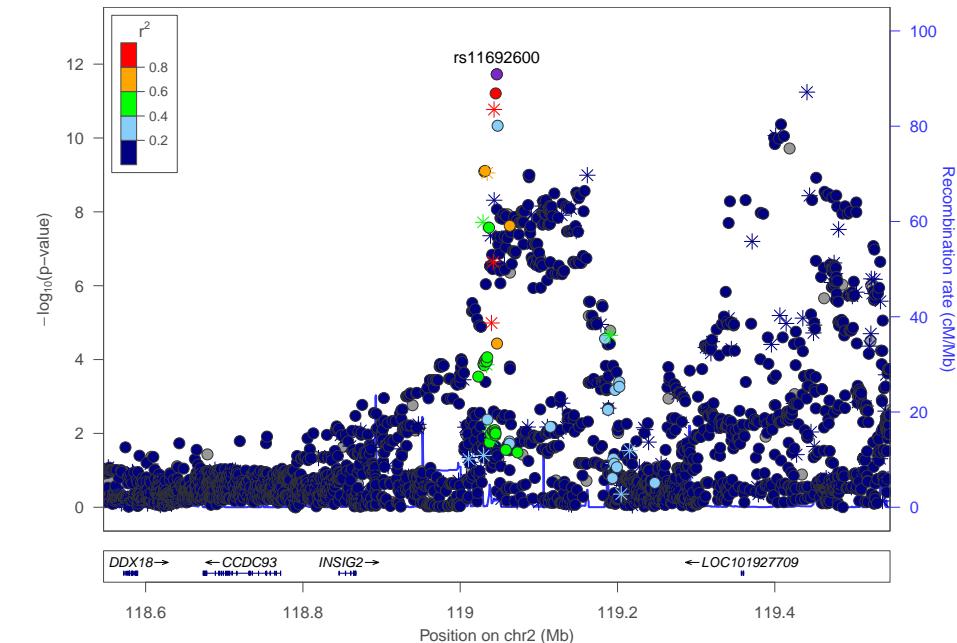
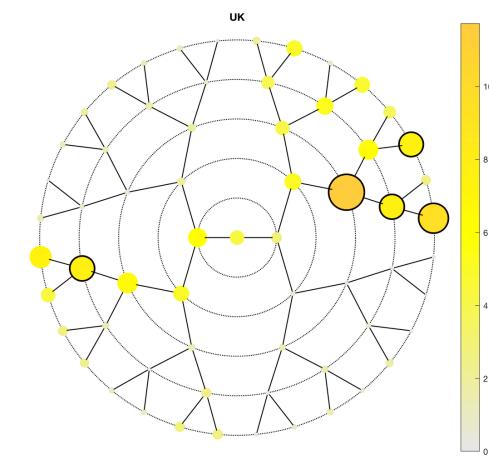


# Multi-peak locus 7: rs11692600

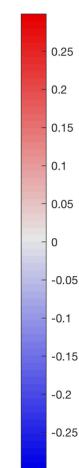
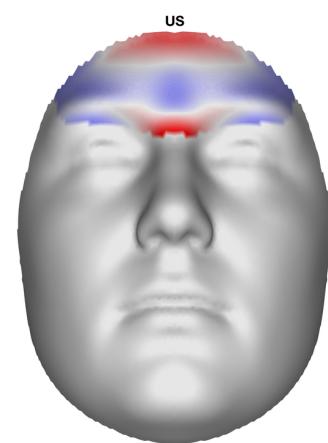
CHR2 - See final page for captions



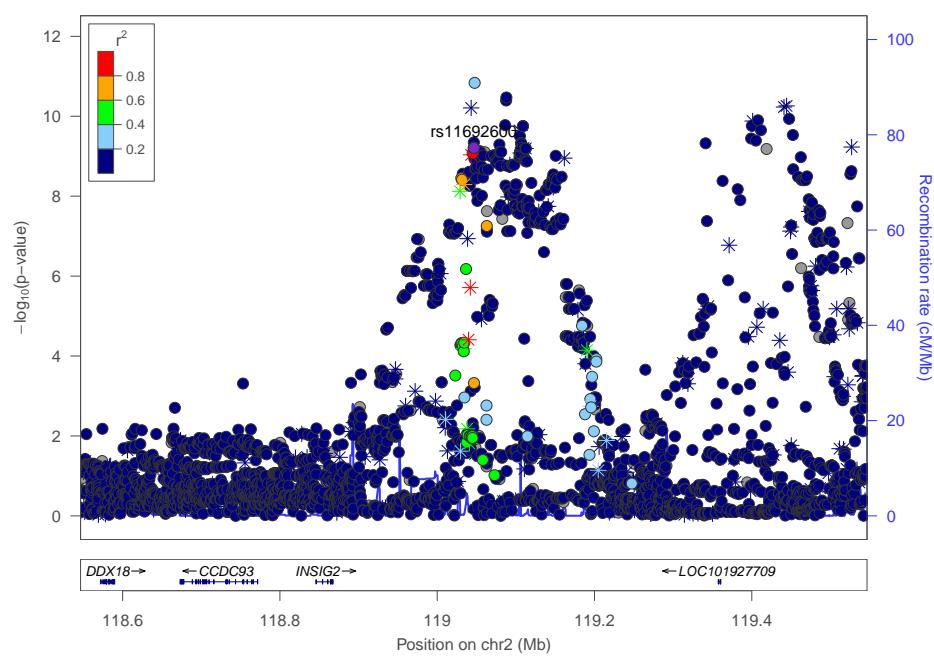
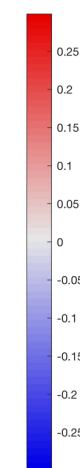
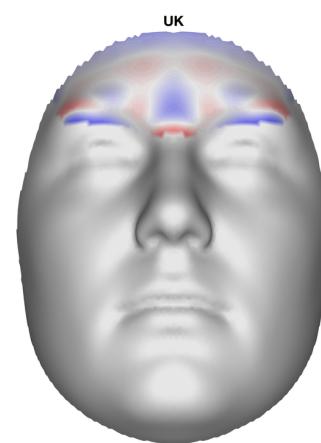
A

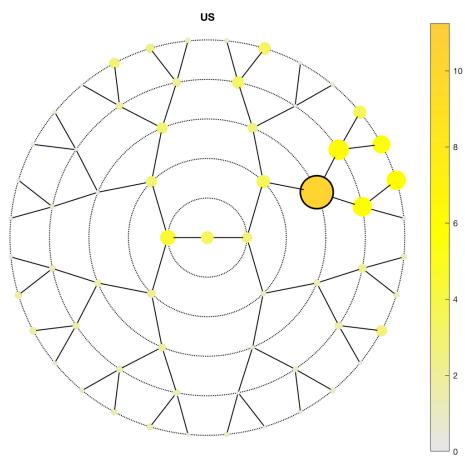
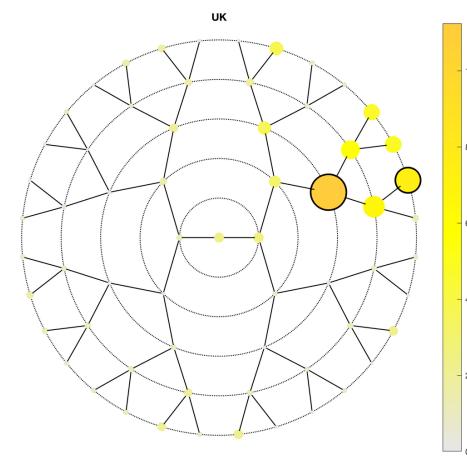
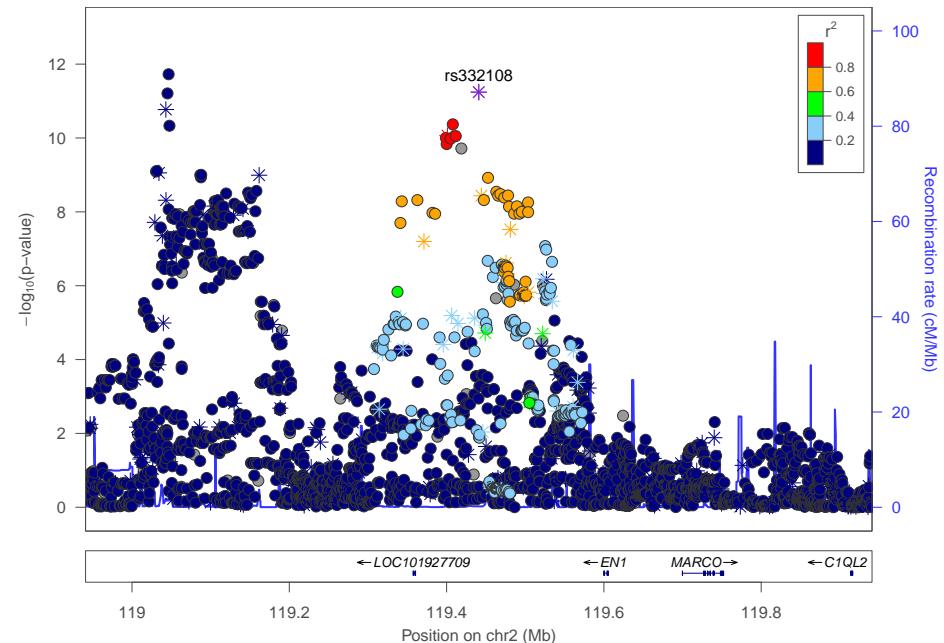
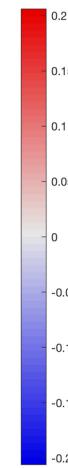
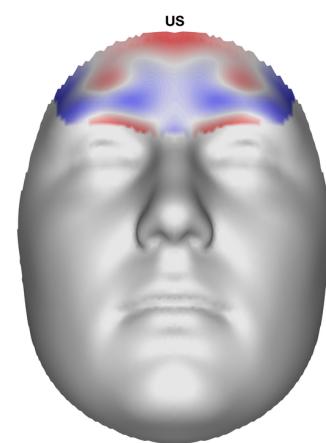
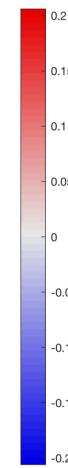
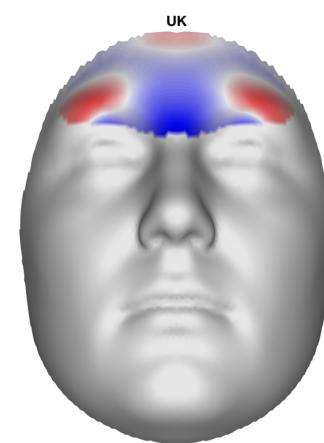
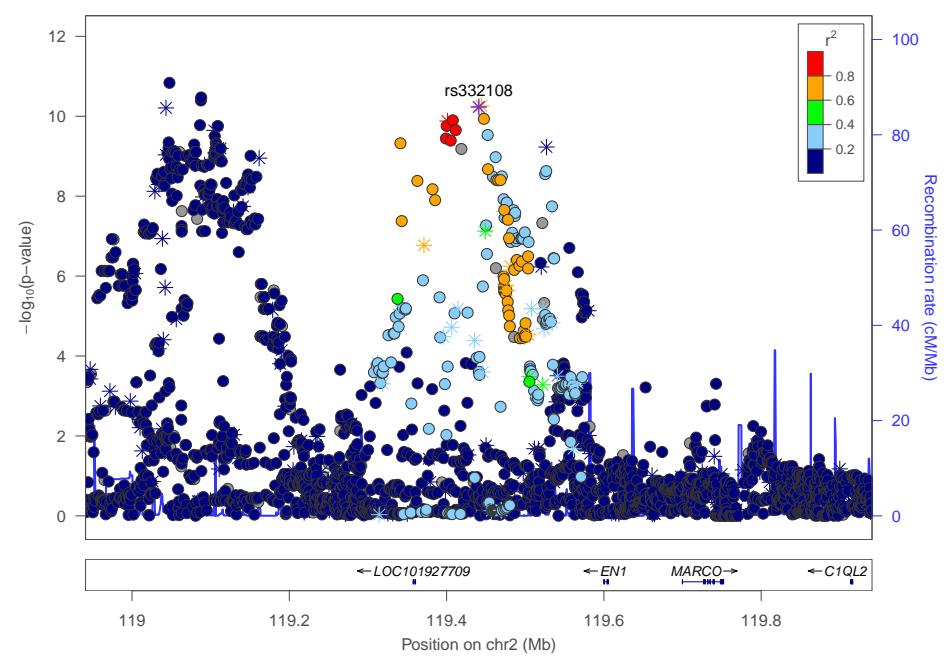


C



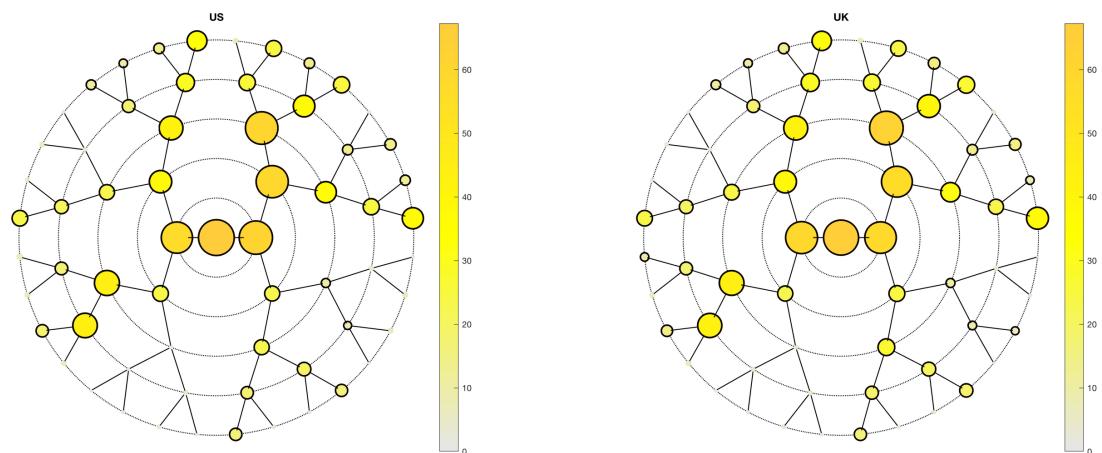
B



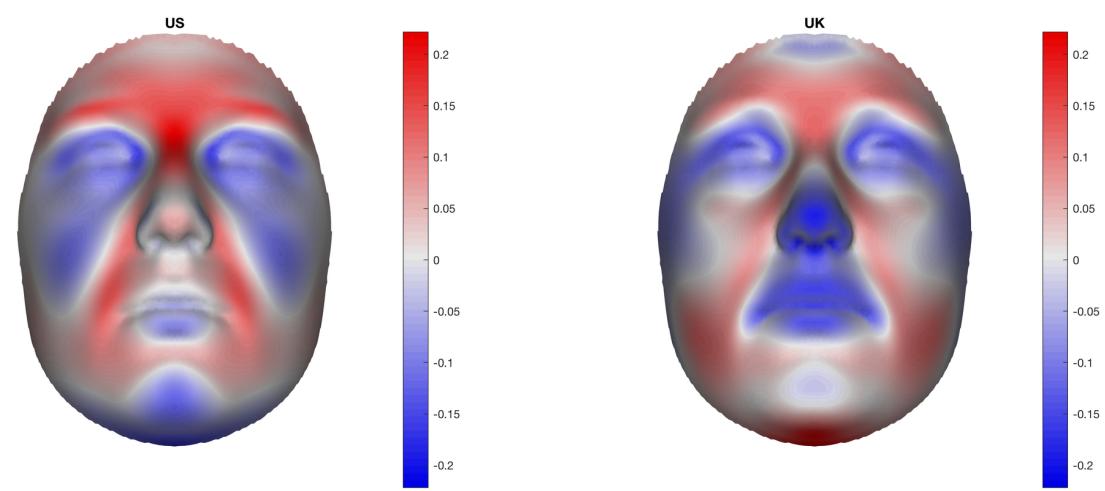
**A****A****C****B****B**

# Multi-peak locus 8: rs970797

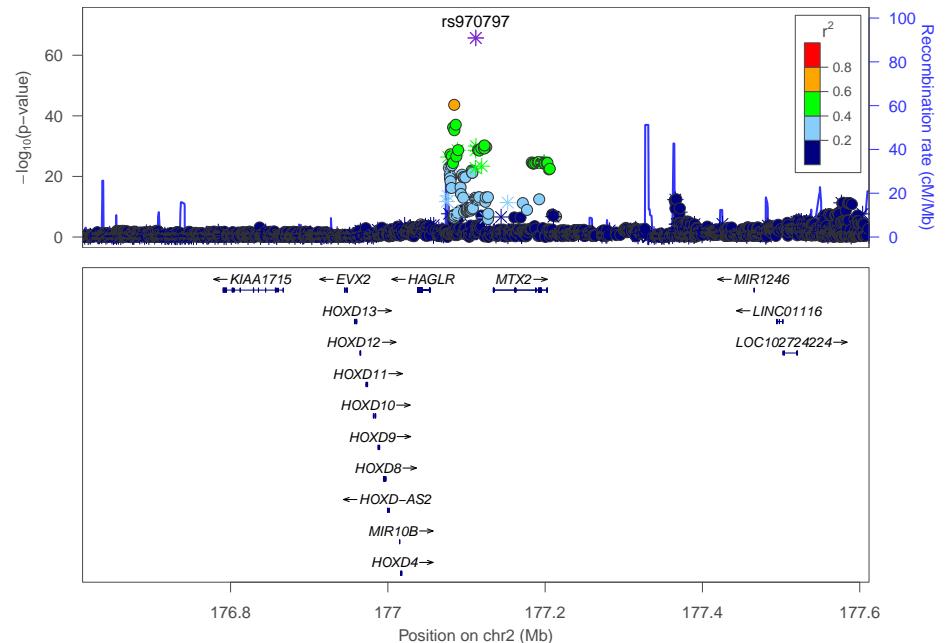
CHR2 - See final page for captions



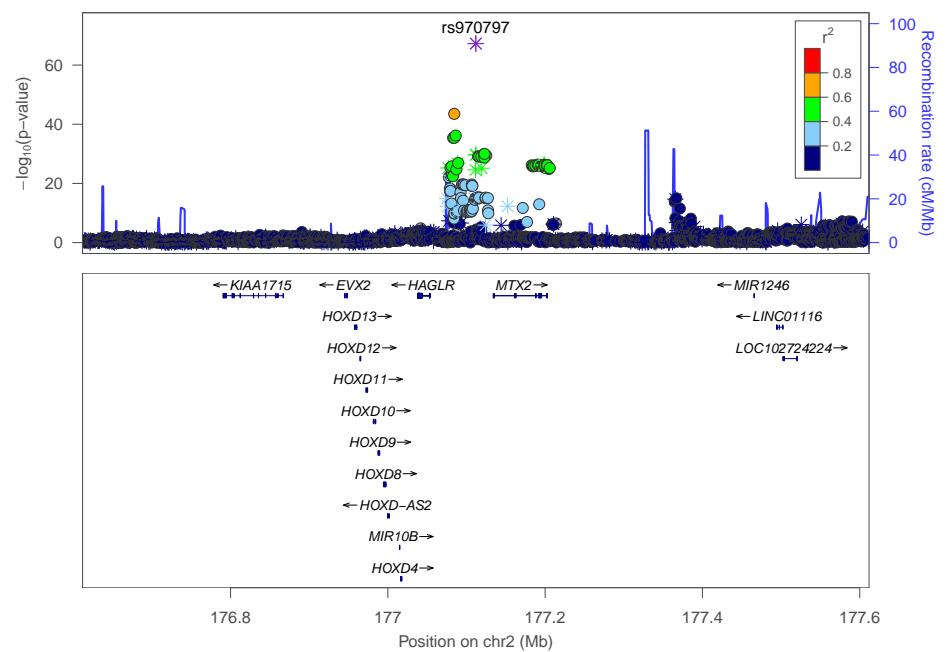
A

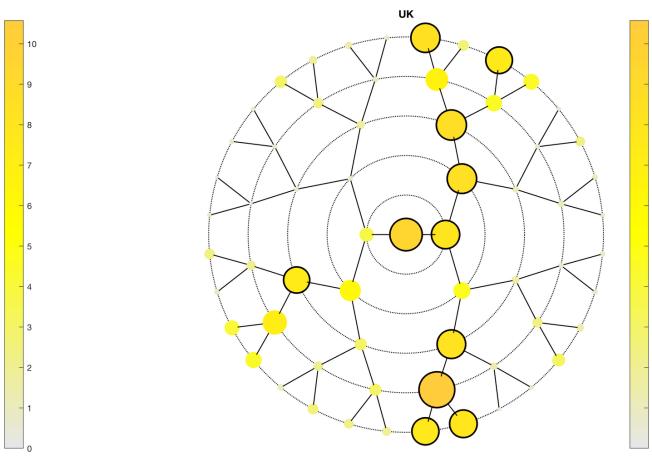
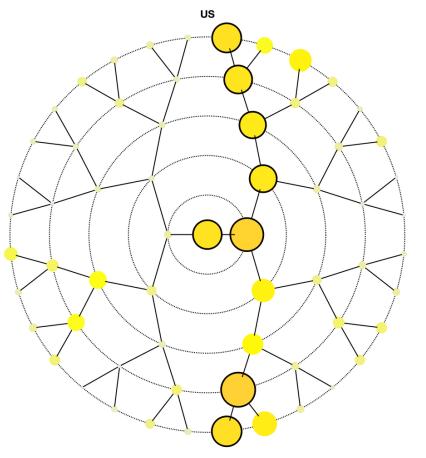
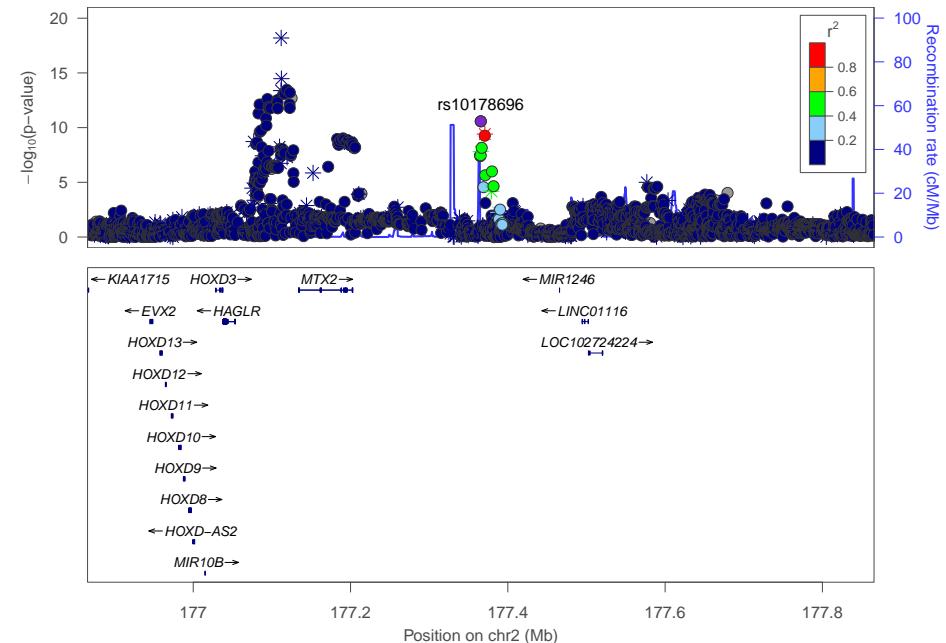
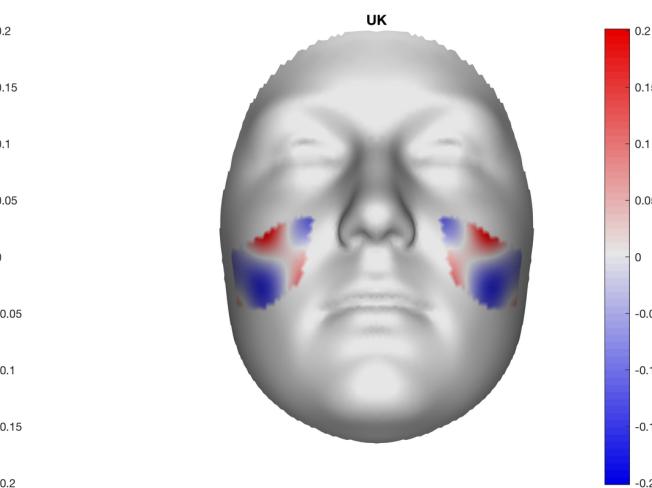
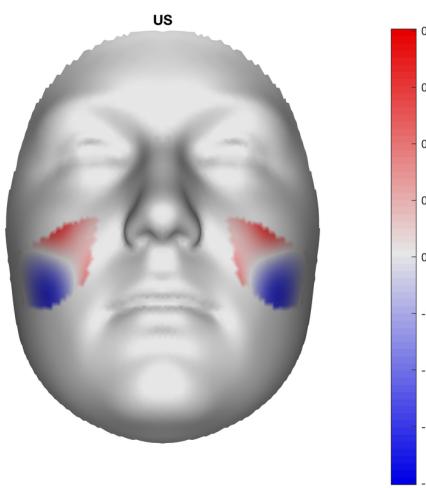
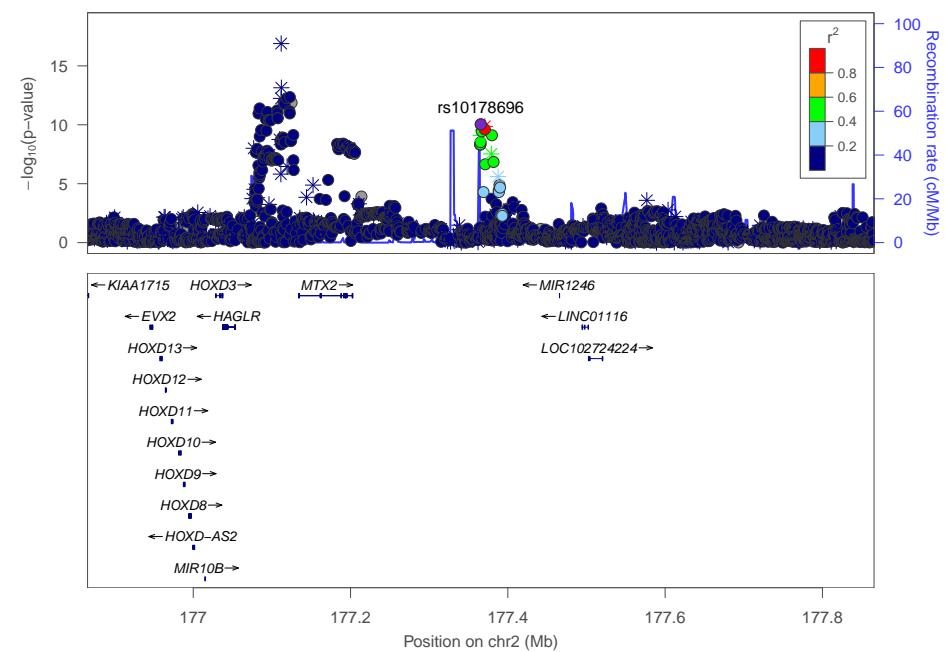


B



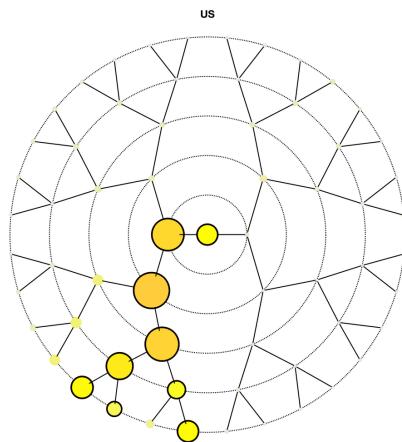
C



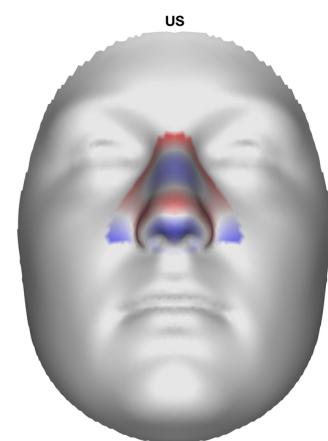
**A****C****B**

# Multi-peak locus 9: rs58022575

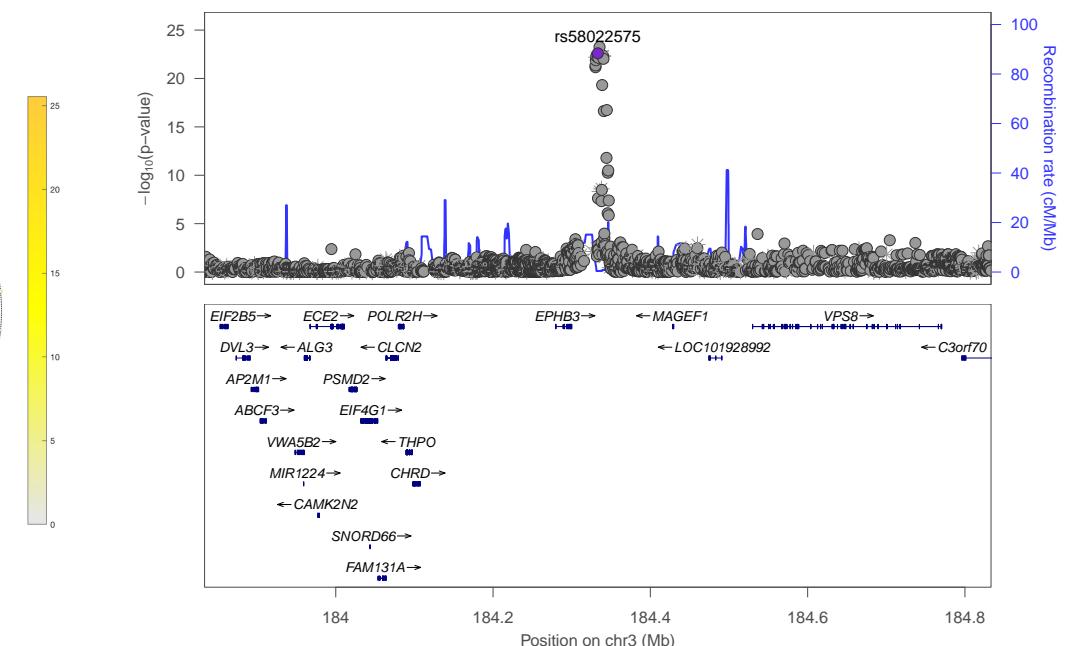
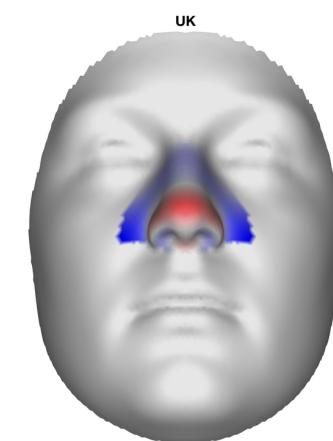
CHR3 - See final page for captions



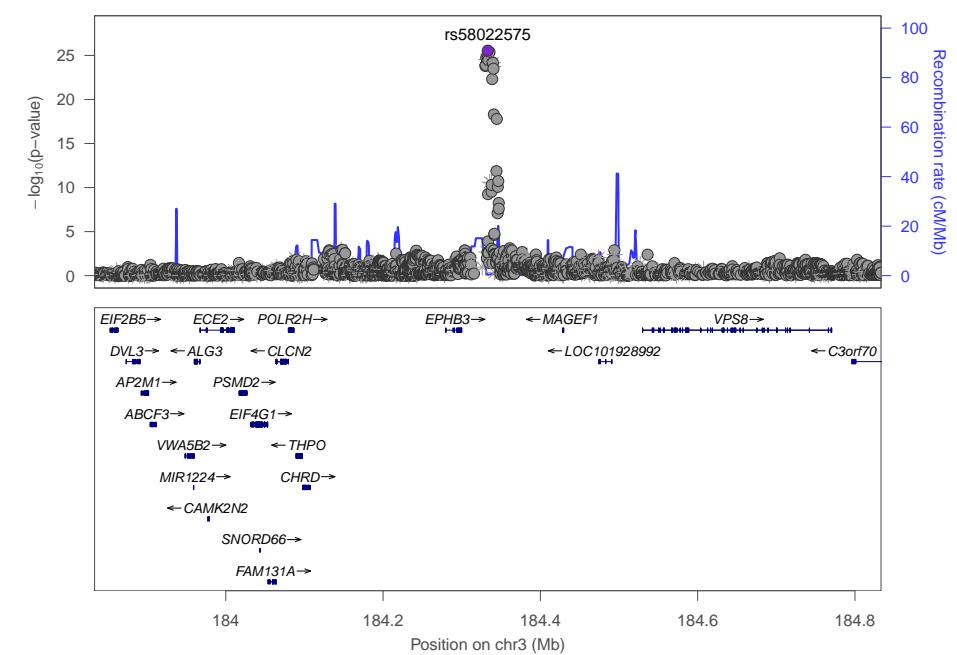
A



B

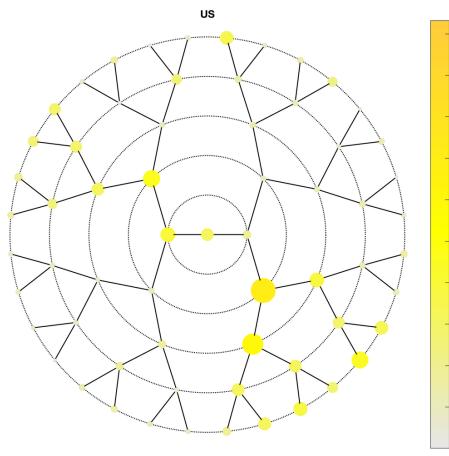


C

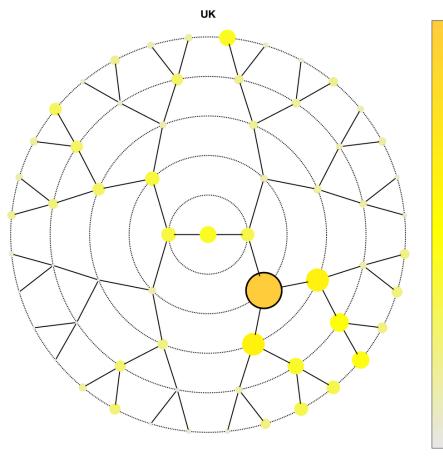


# Multi-peak locus 9: rs56081252

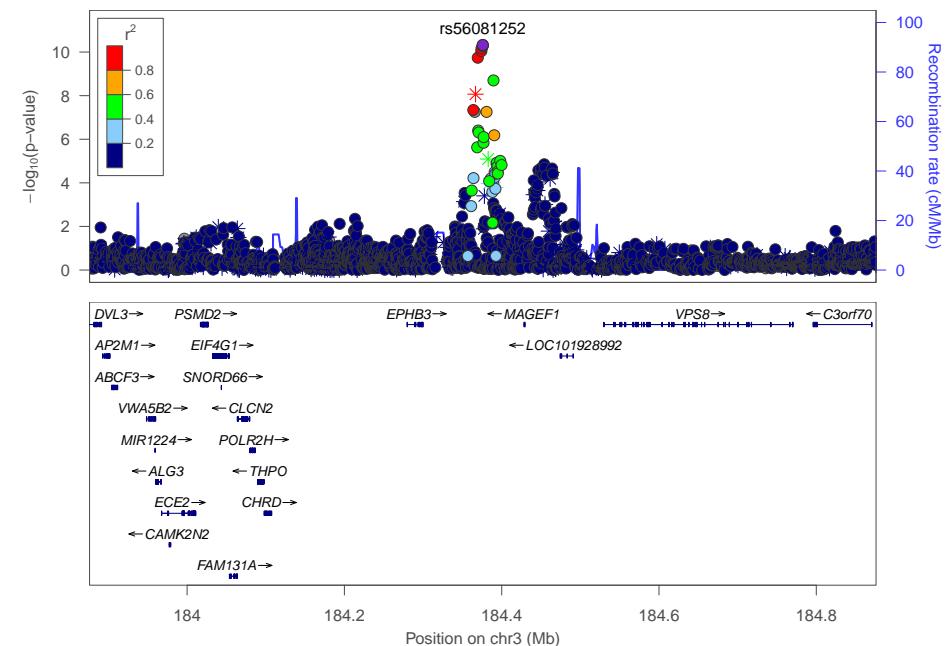
CHR3 - See final page for captions



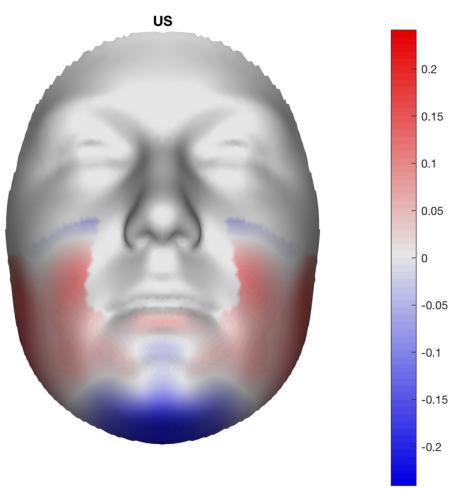
**A**



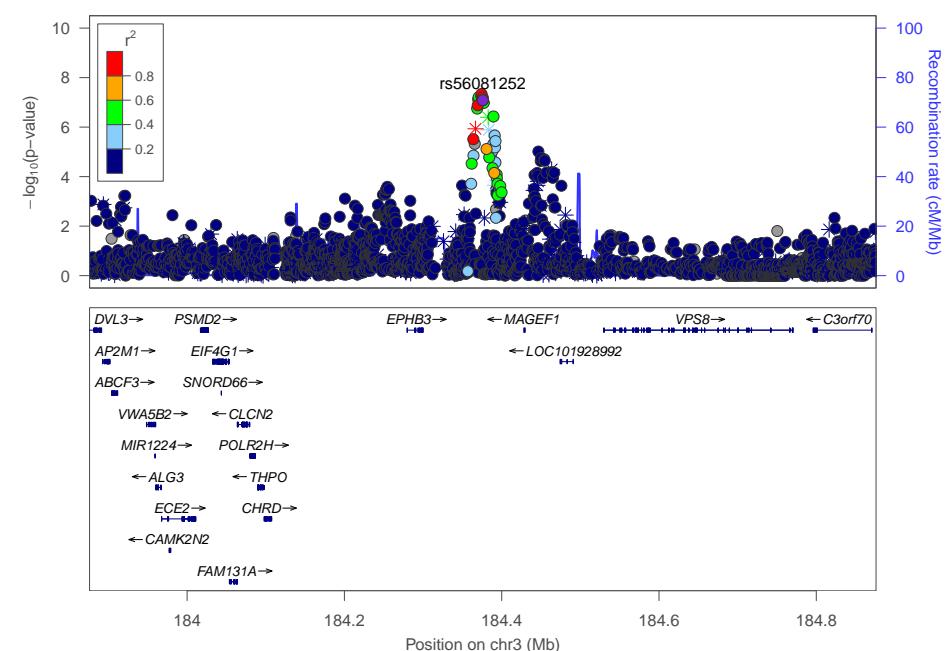
**A**

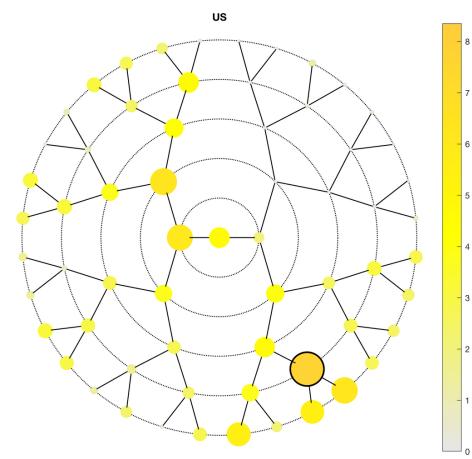
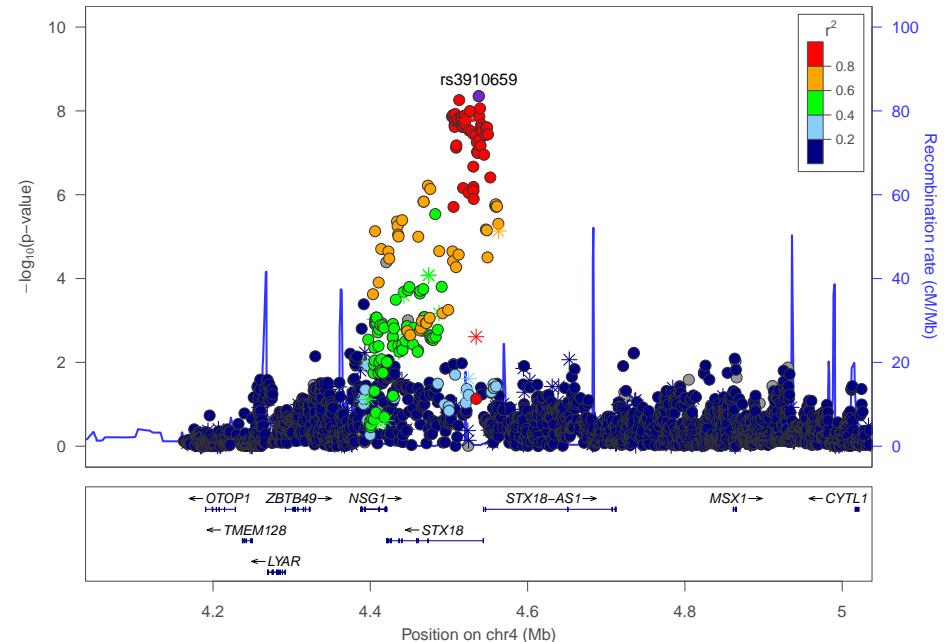
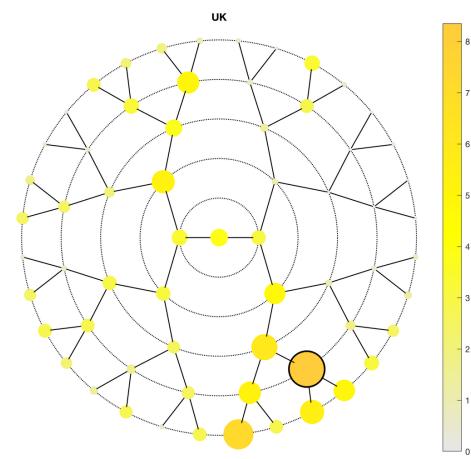
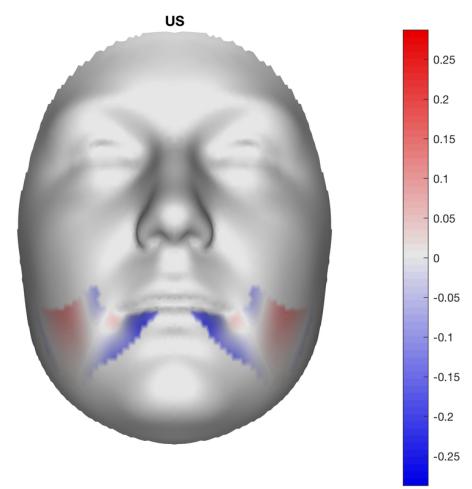
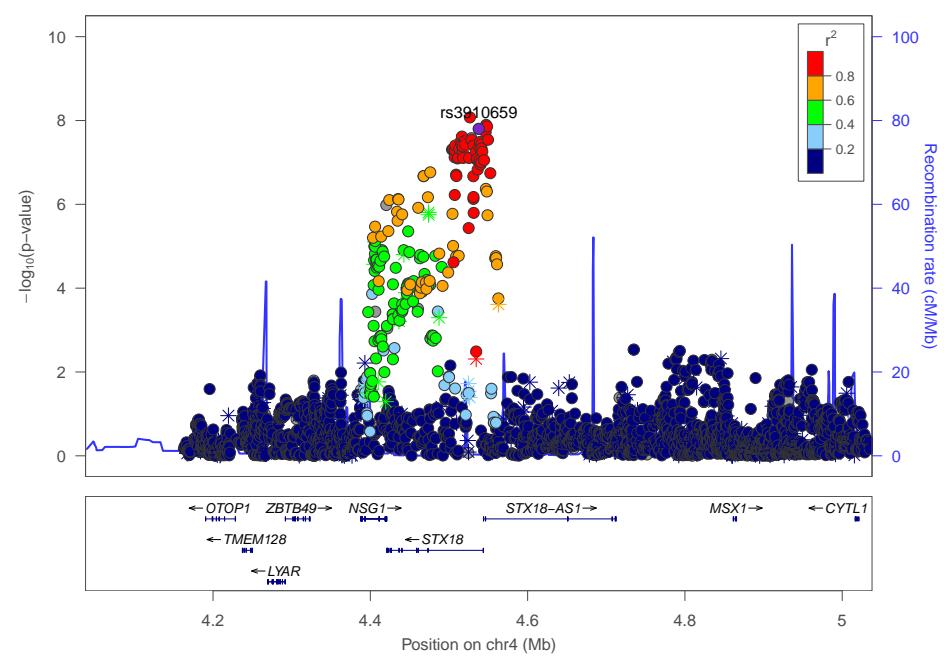
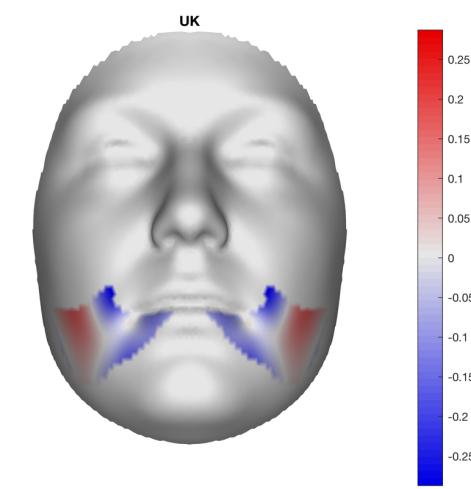


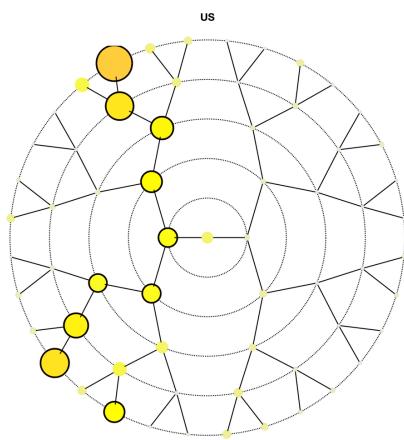
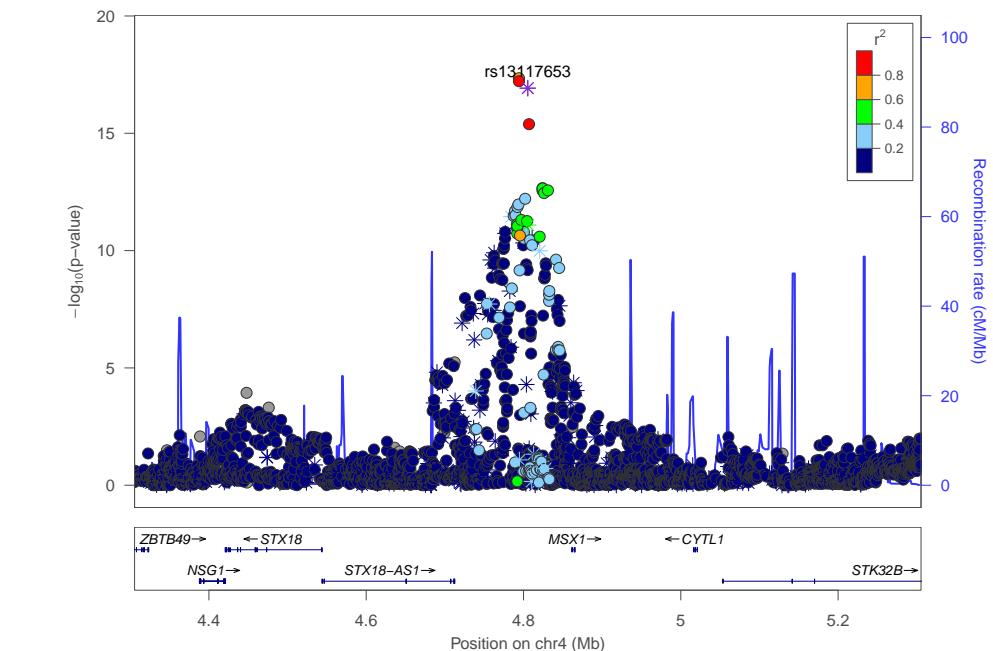
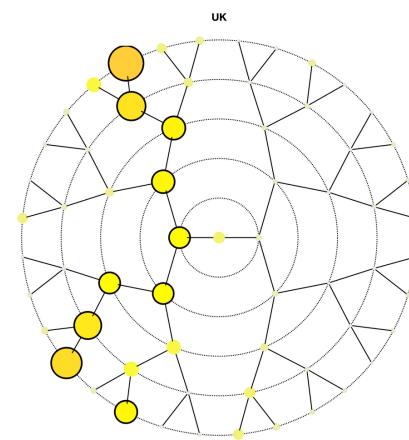
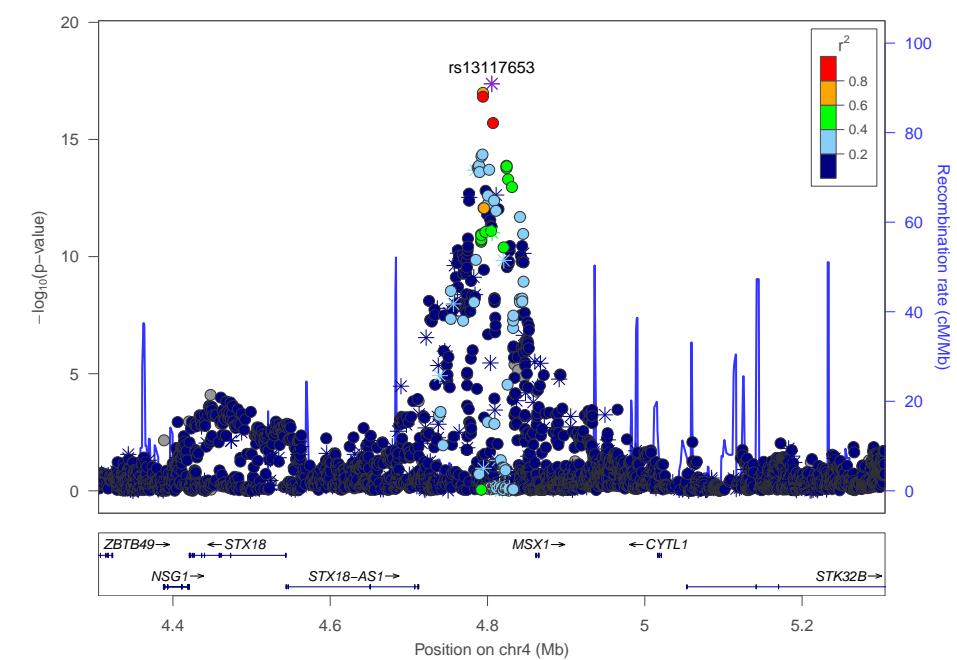
**C**

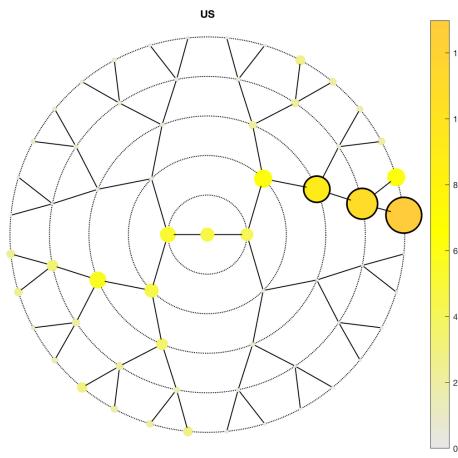
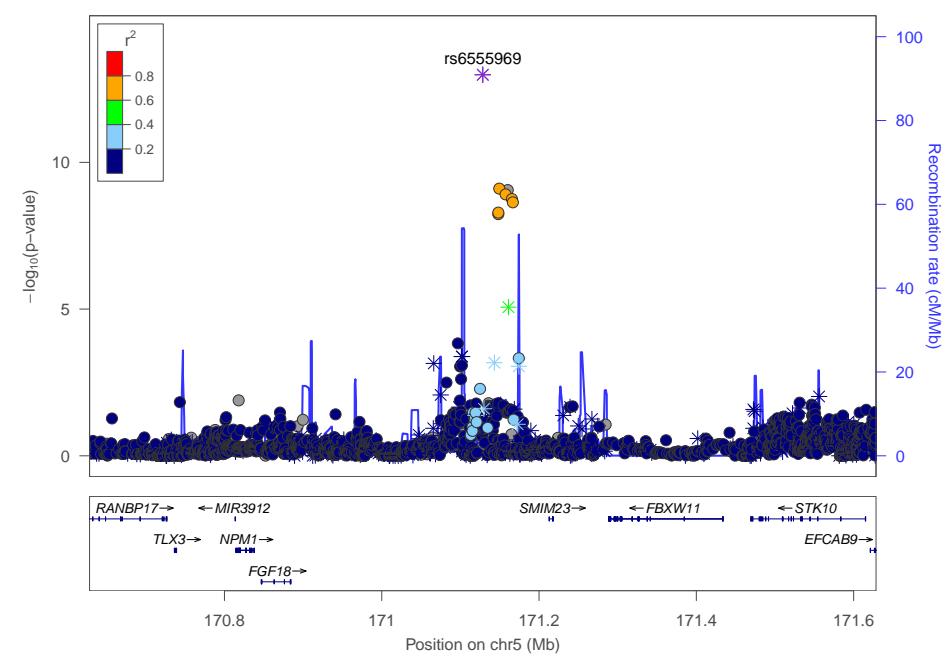
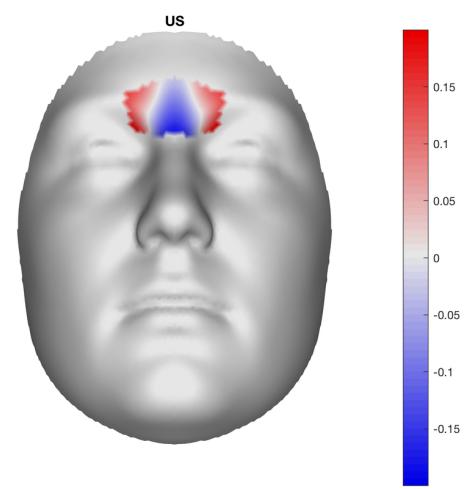
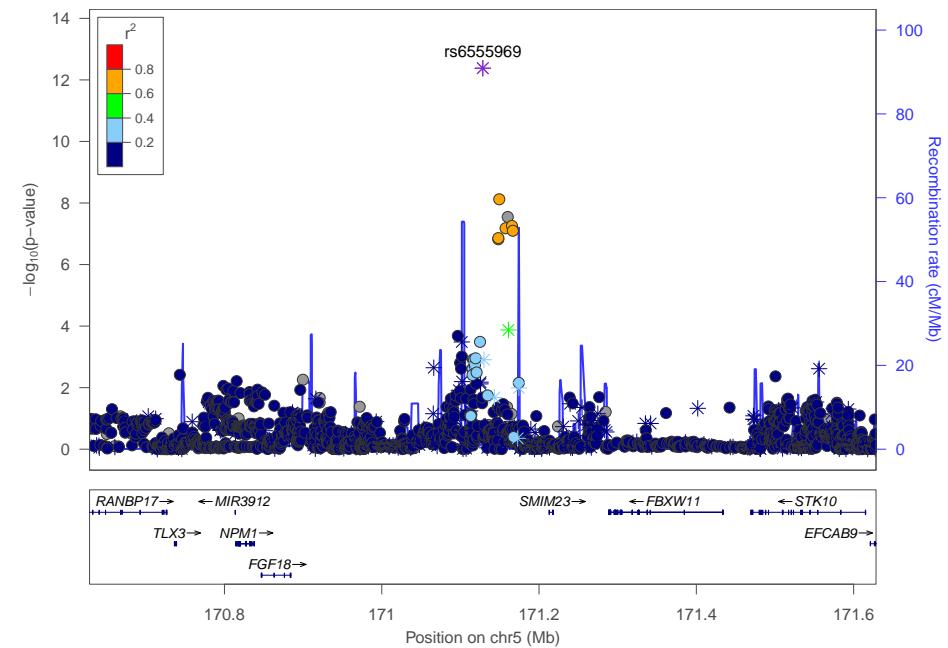
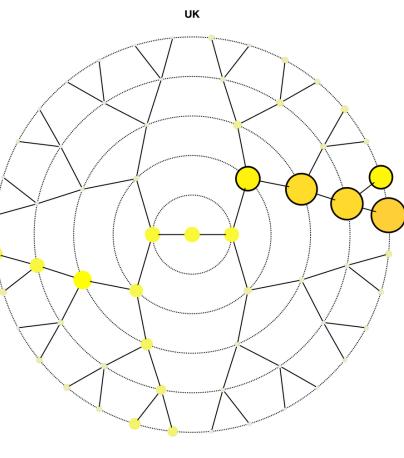


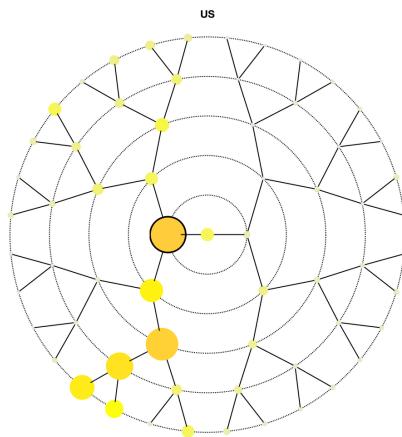
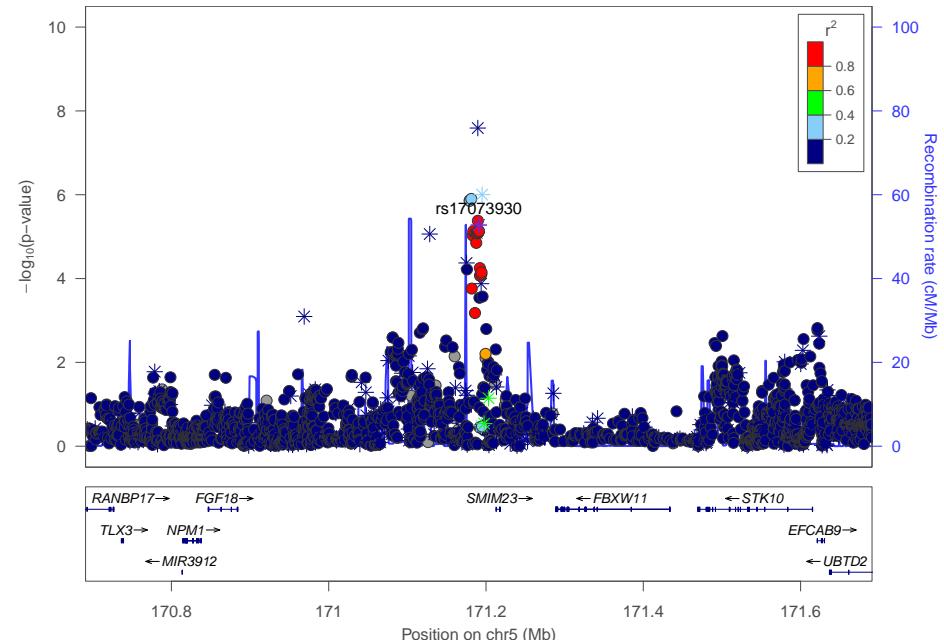
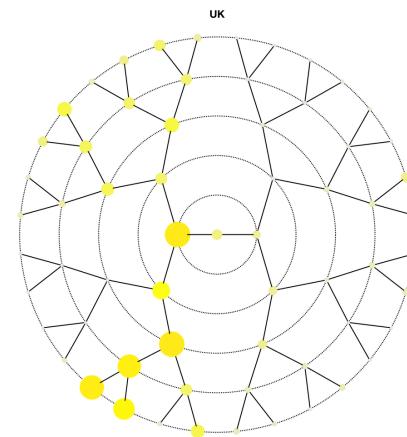
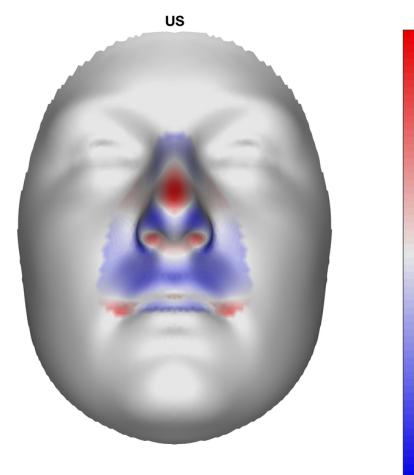
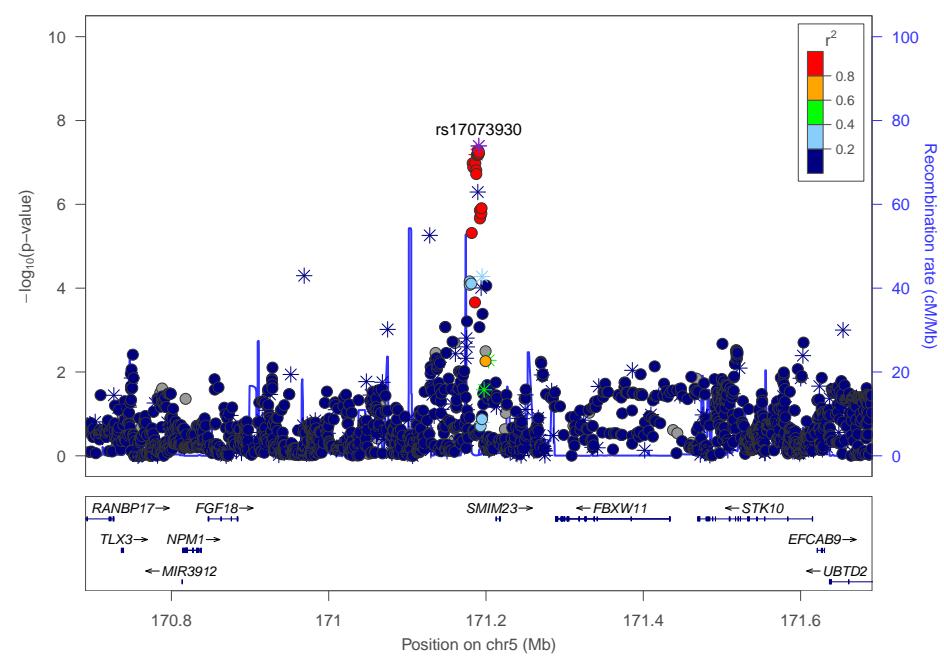
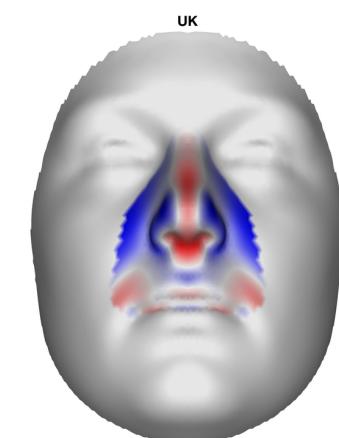
**B**

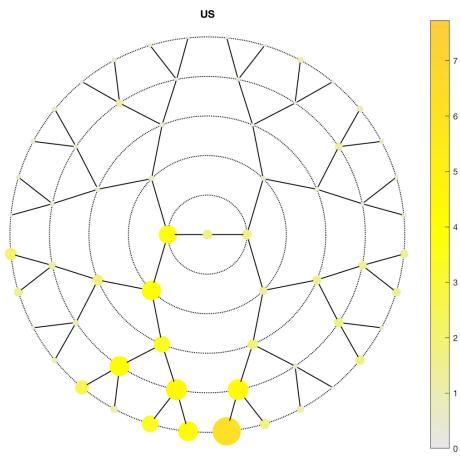
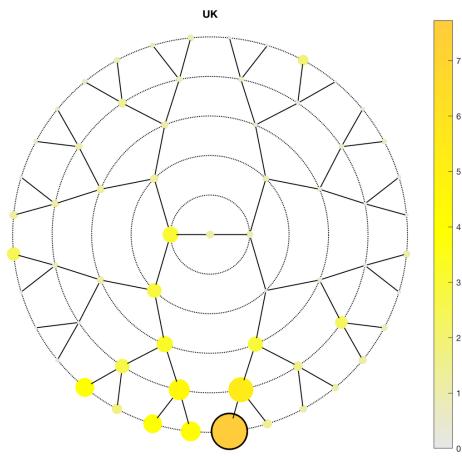
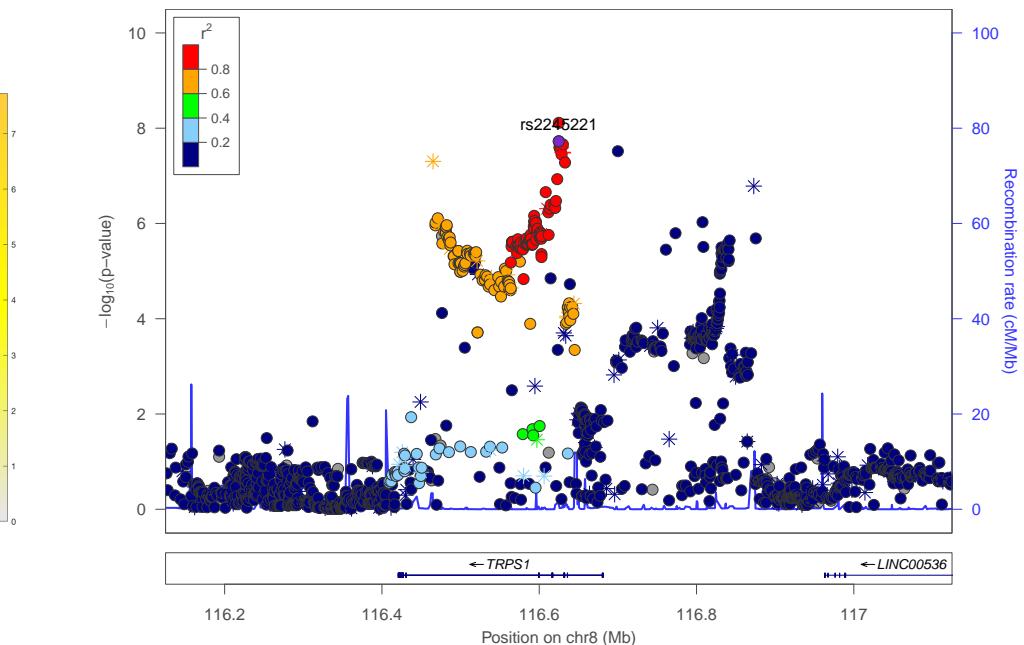
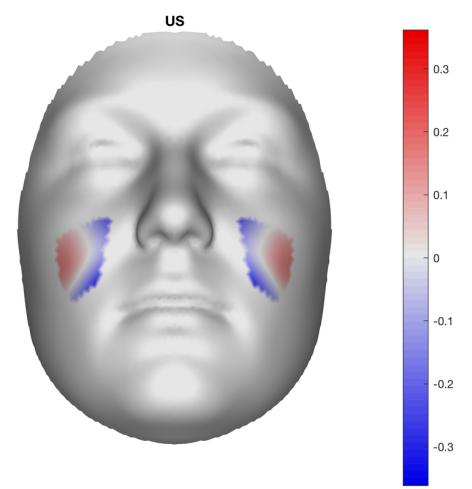
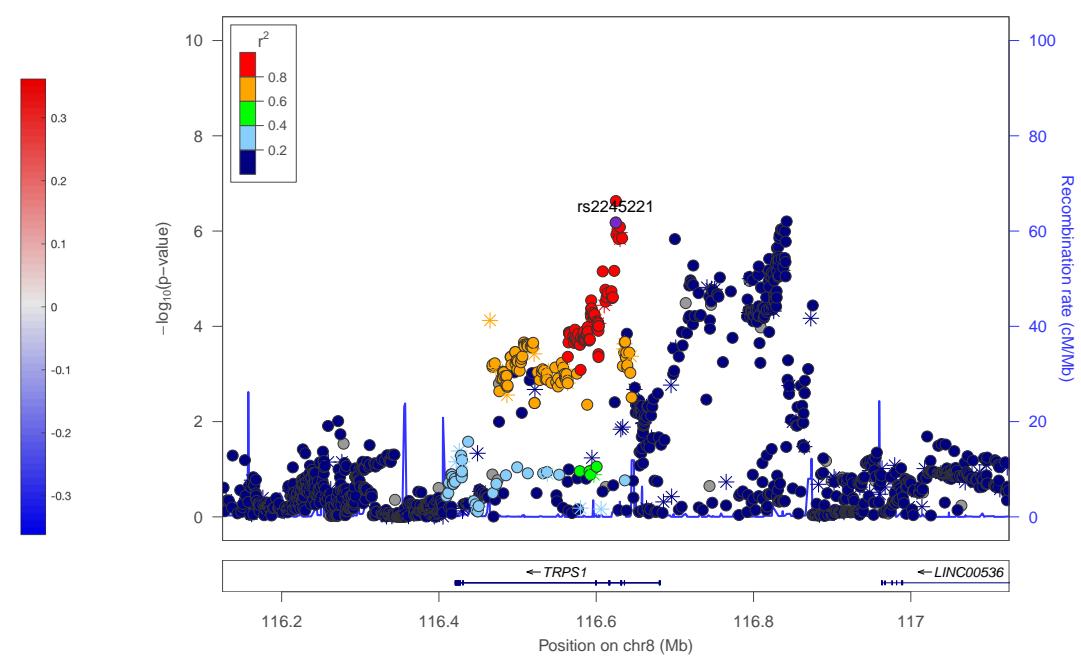


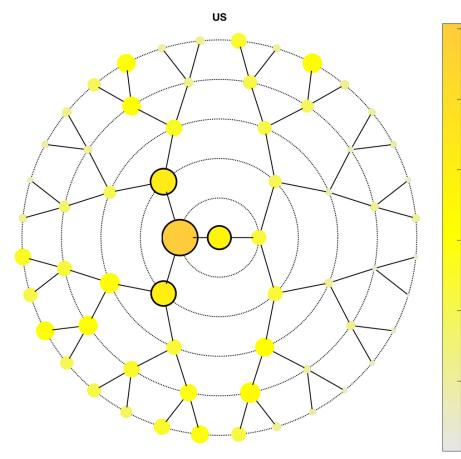
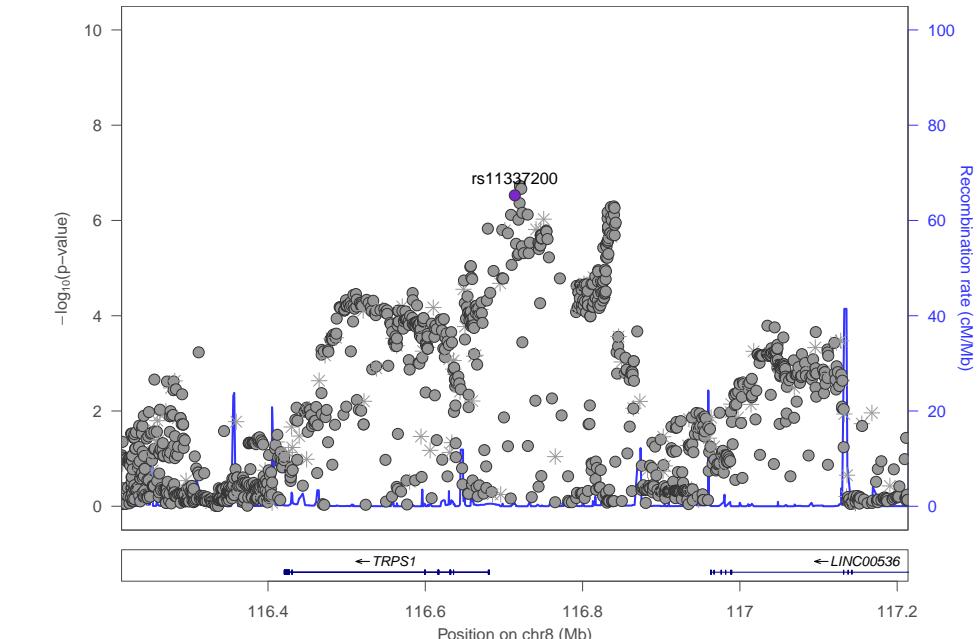
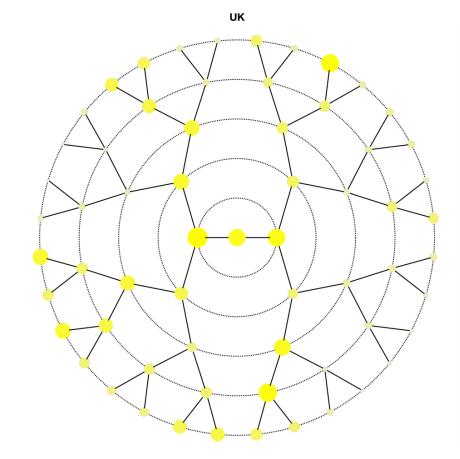
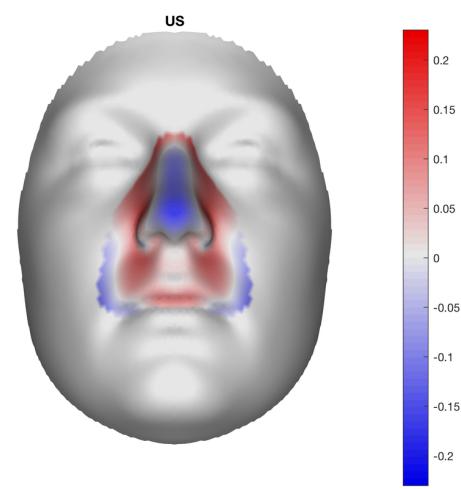
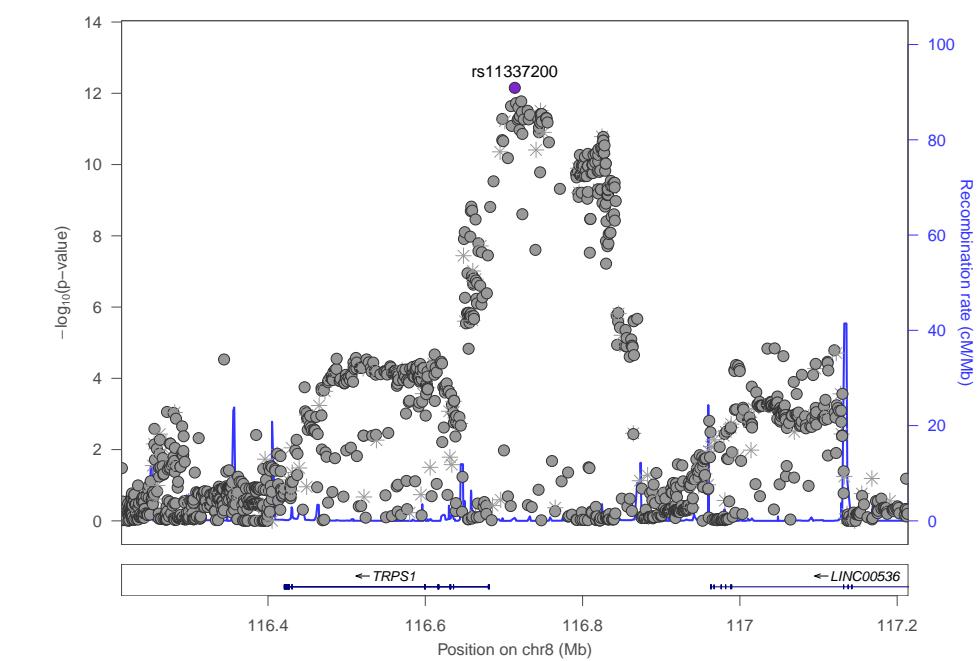
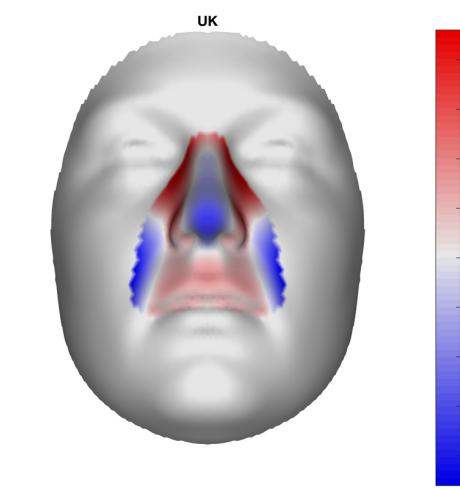
**A****C****B**

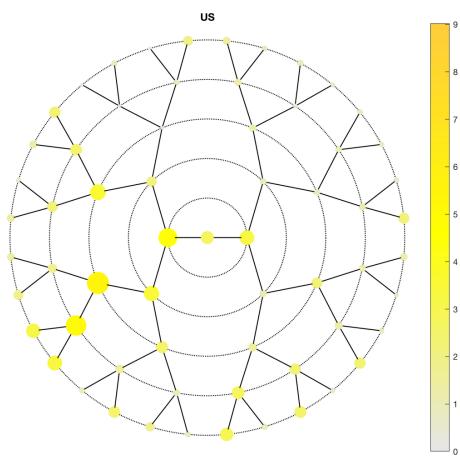
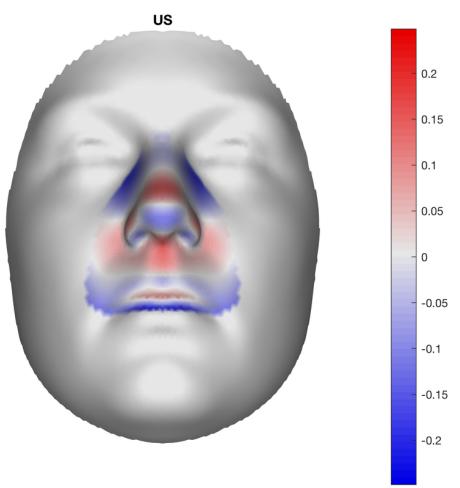
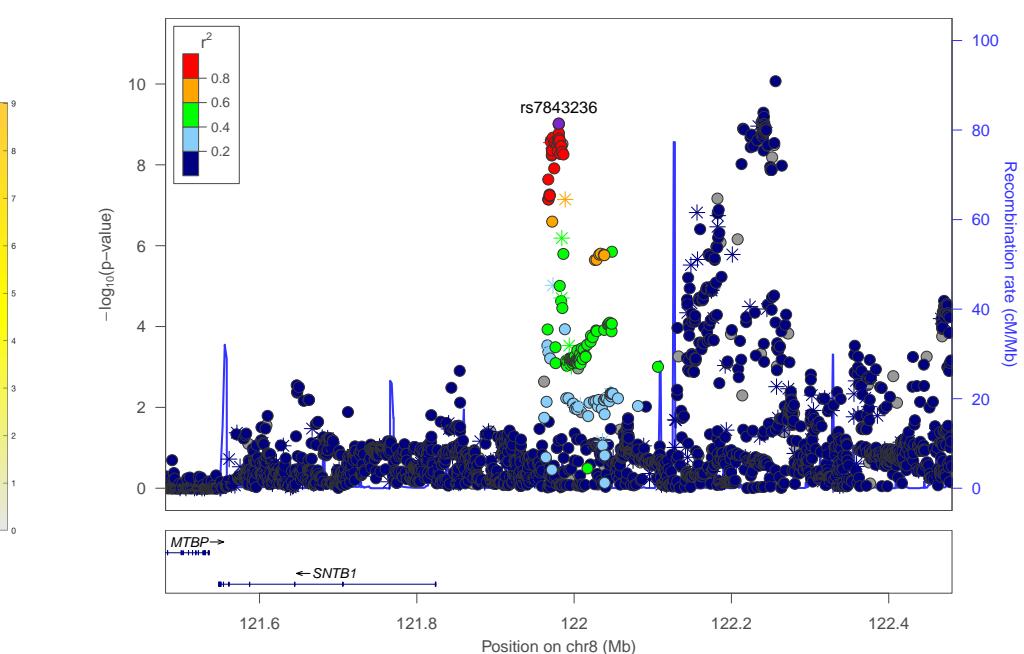
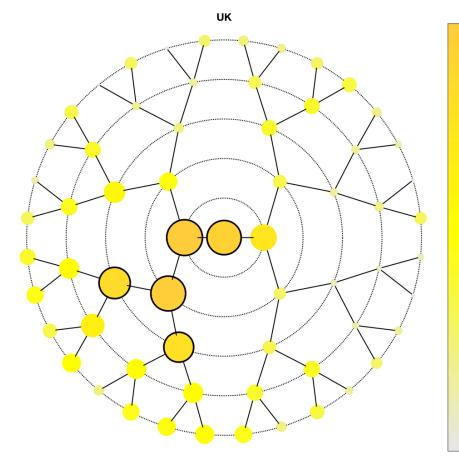
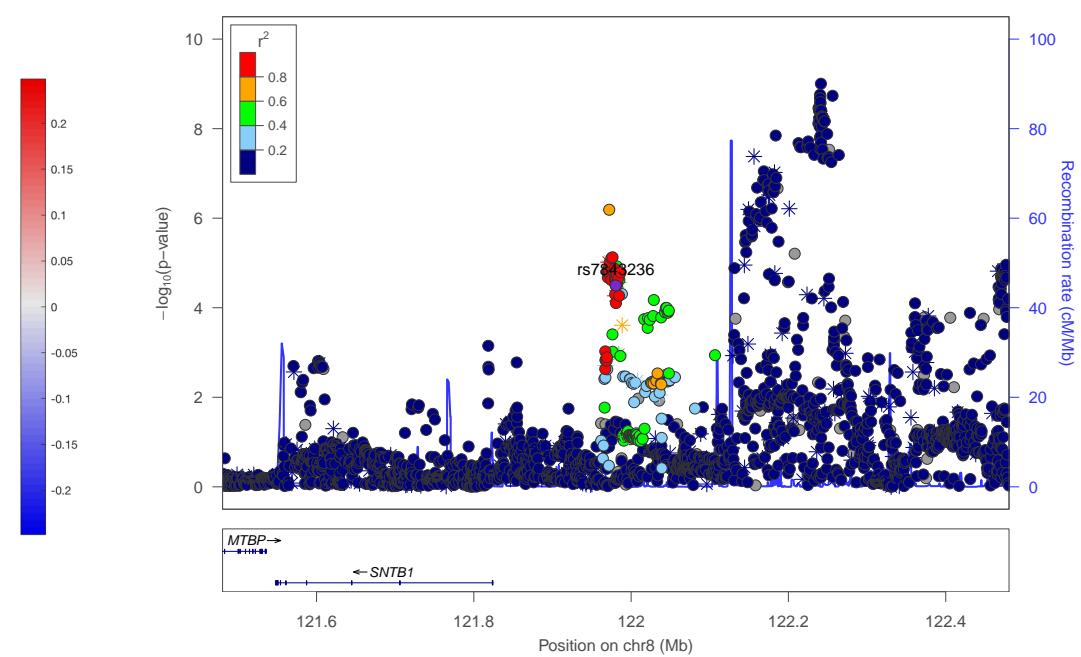
**A****C****B**

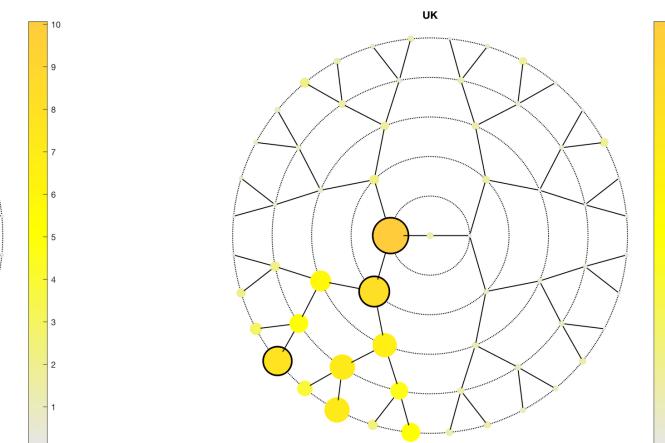
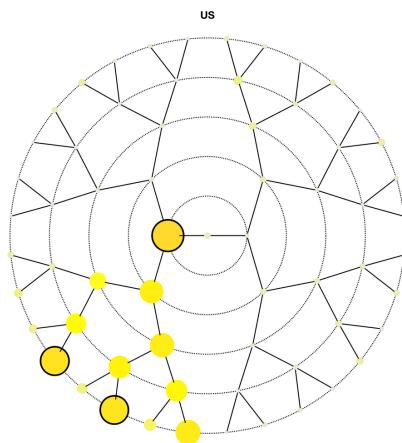
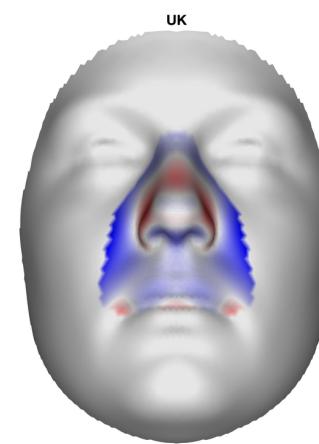
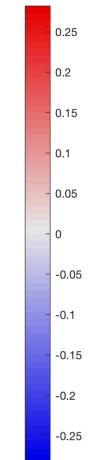
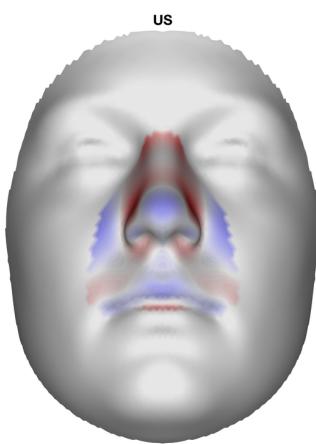
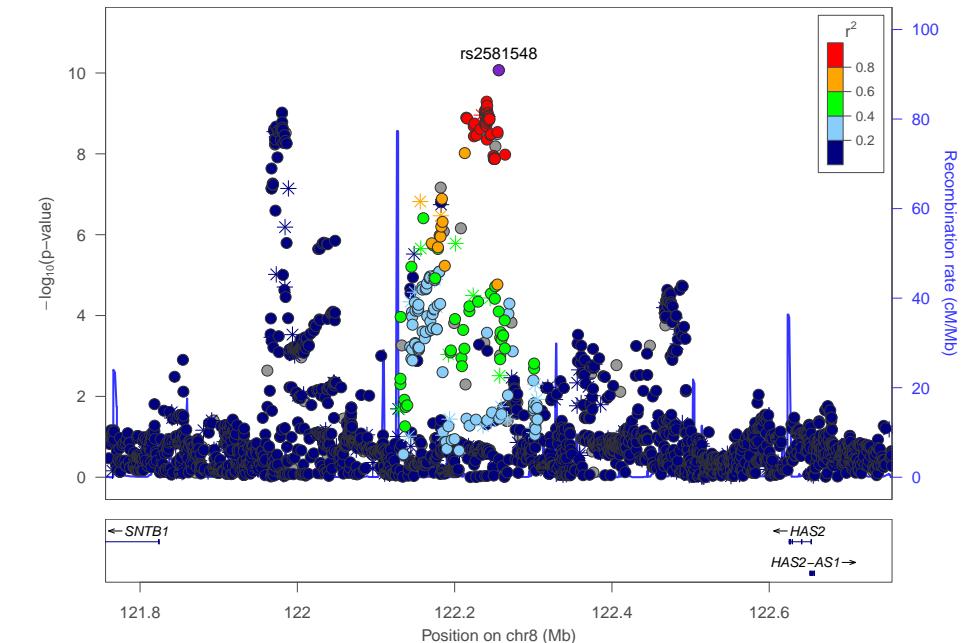
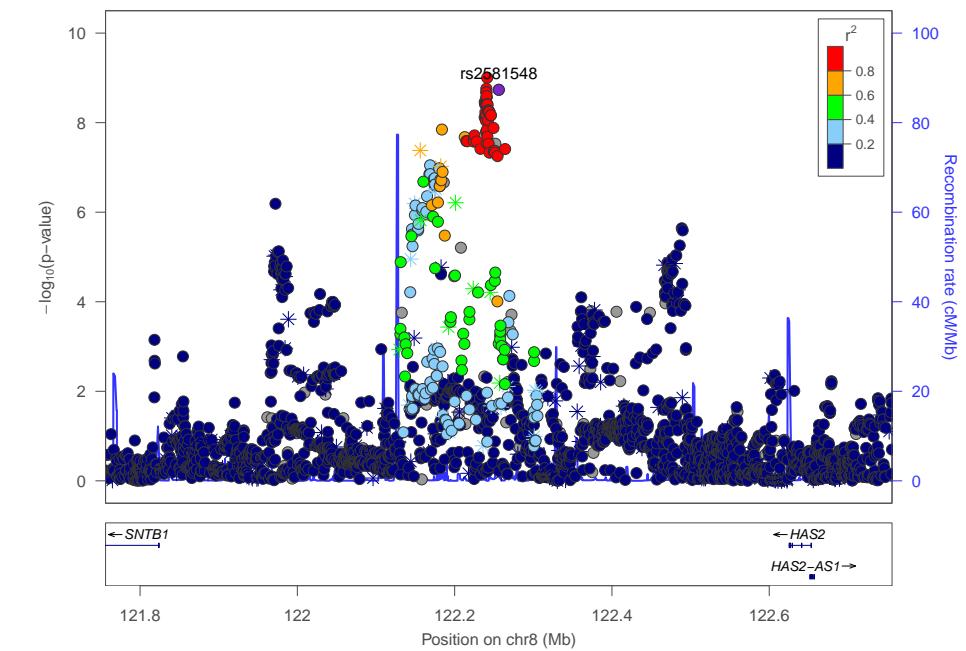
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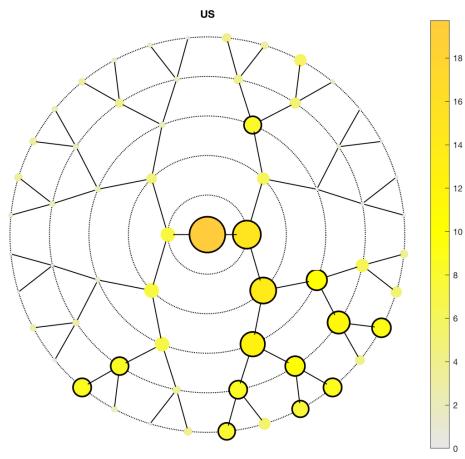
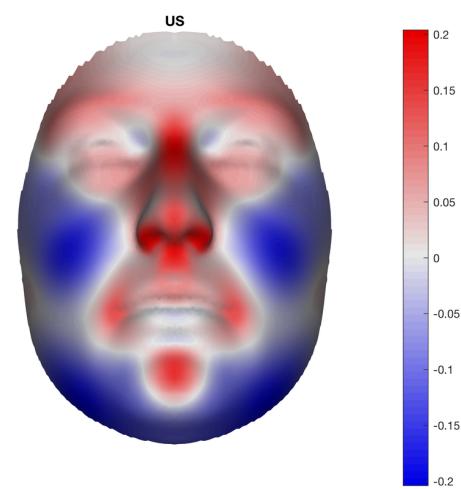
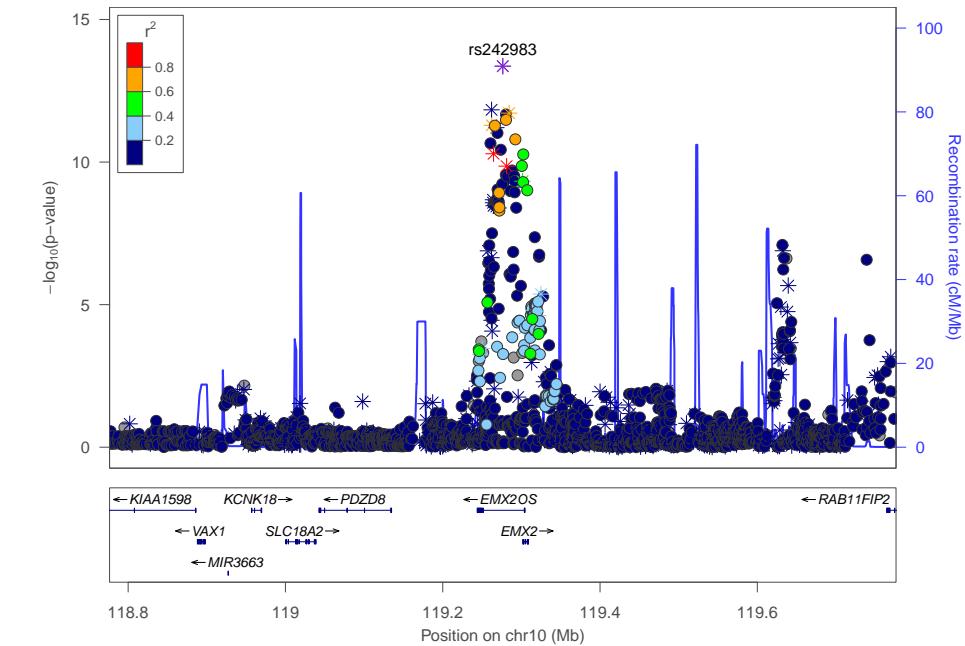
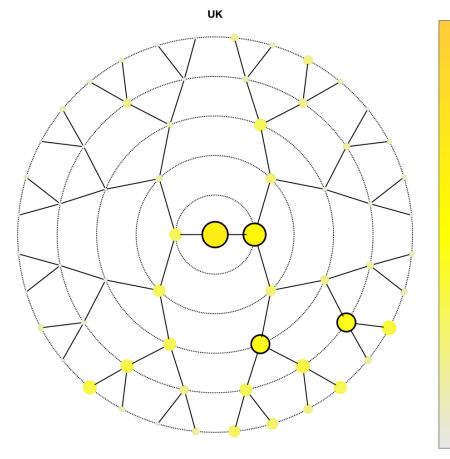
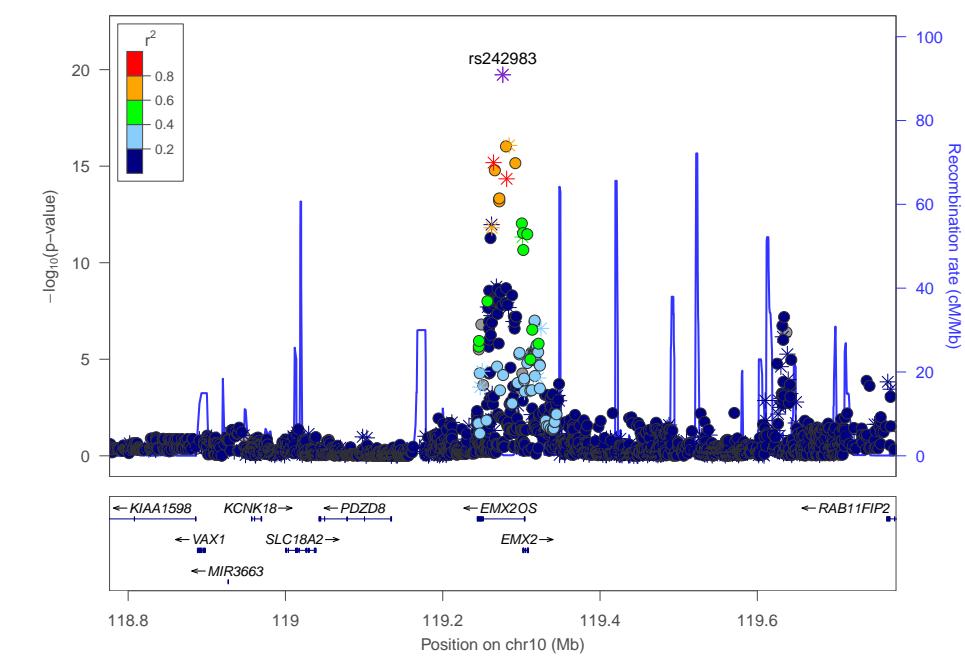
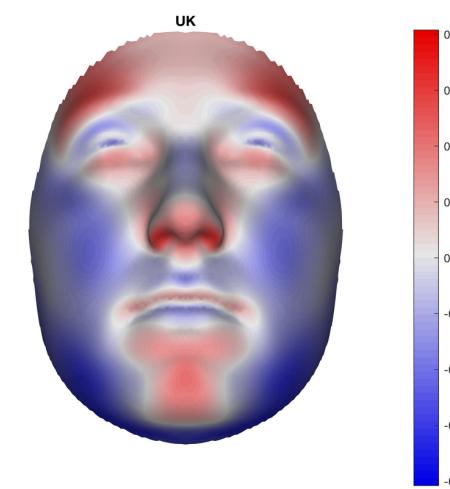
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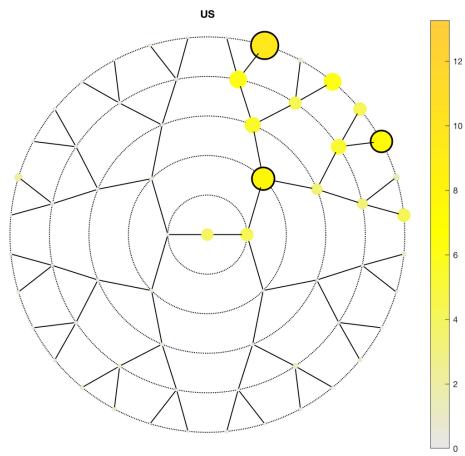
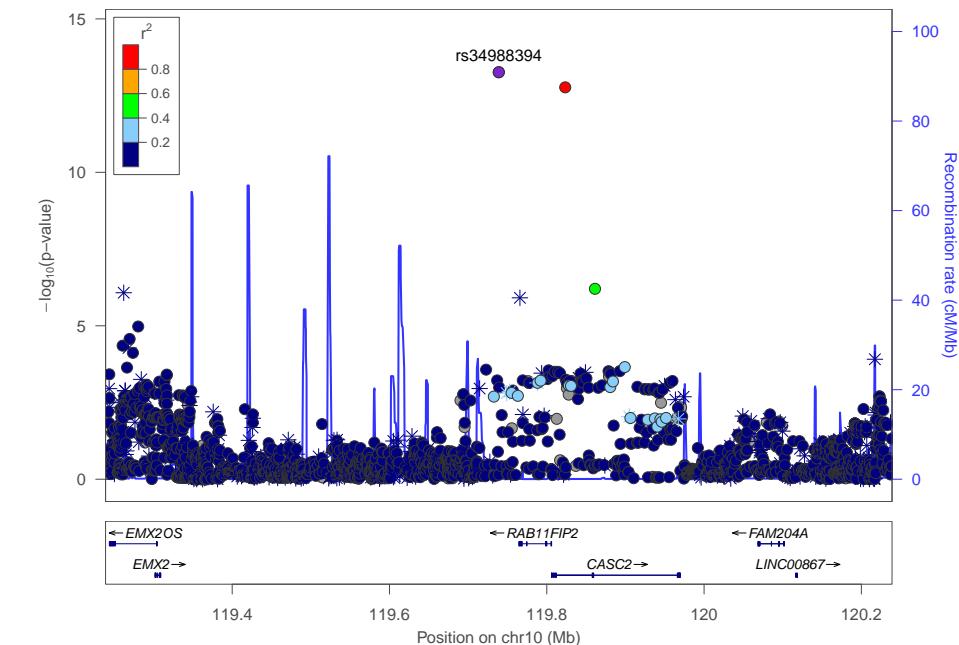
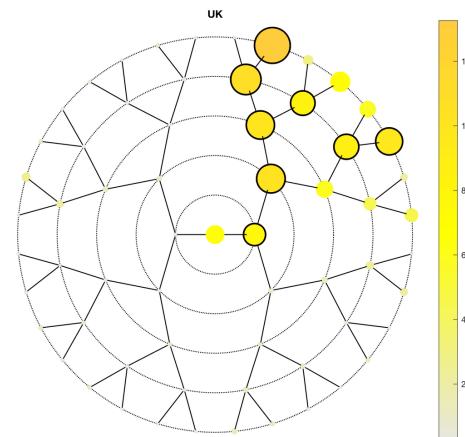
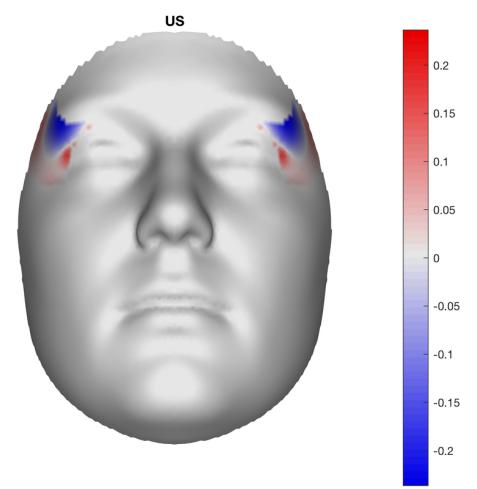
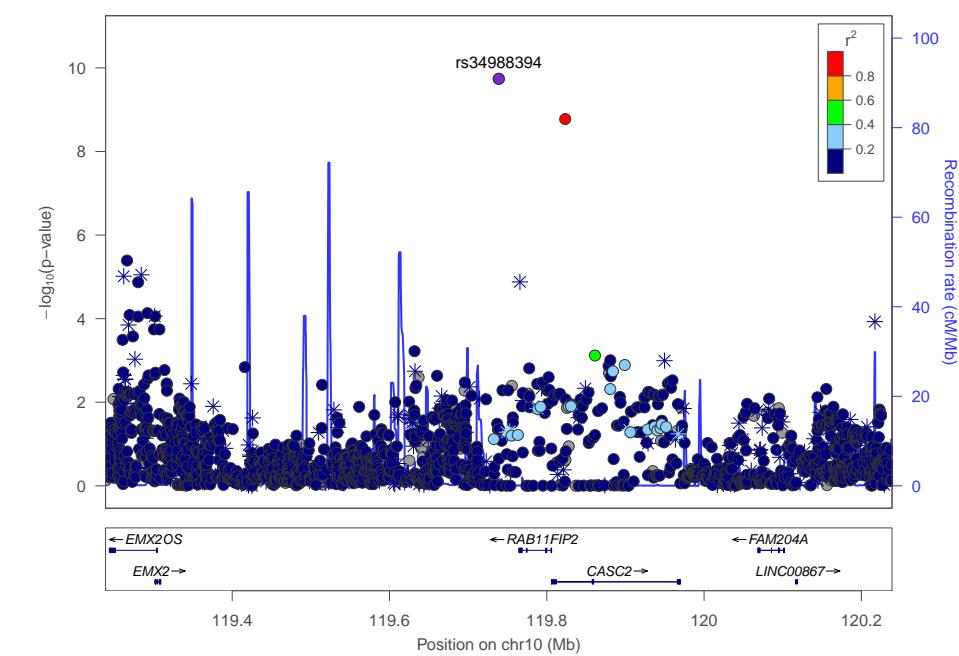
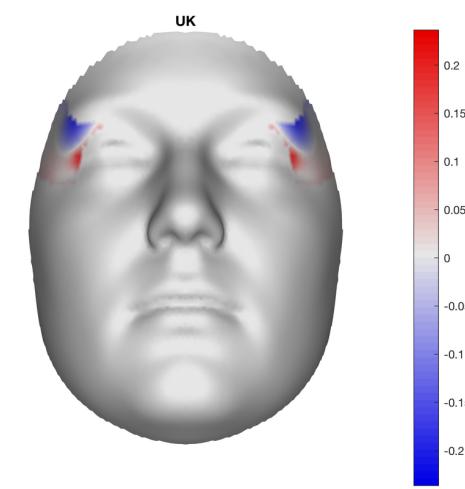
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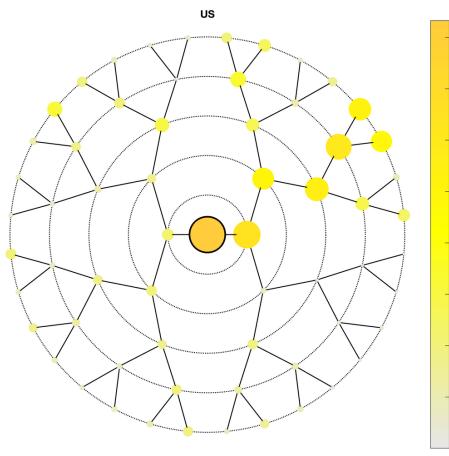
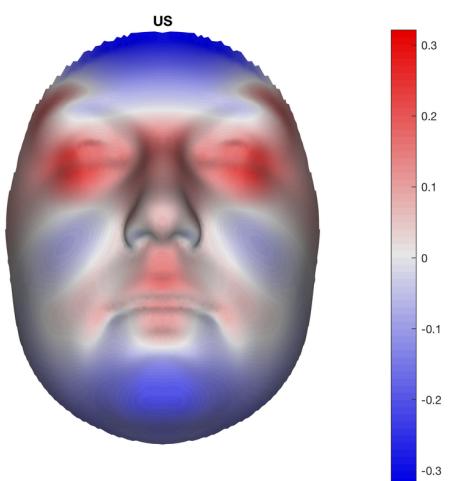
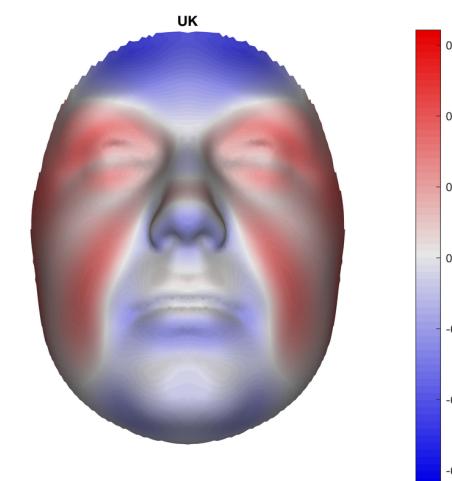
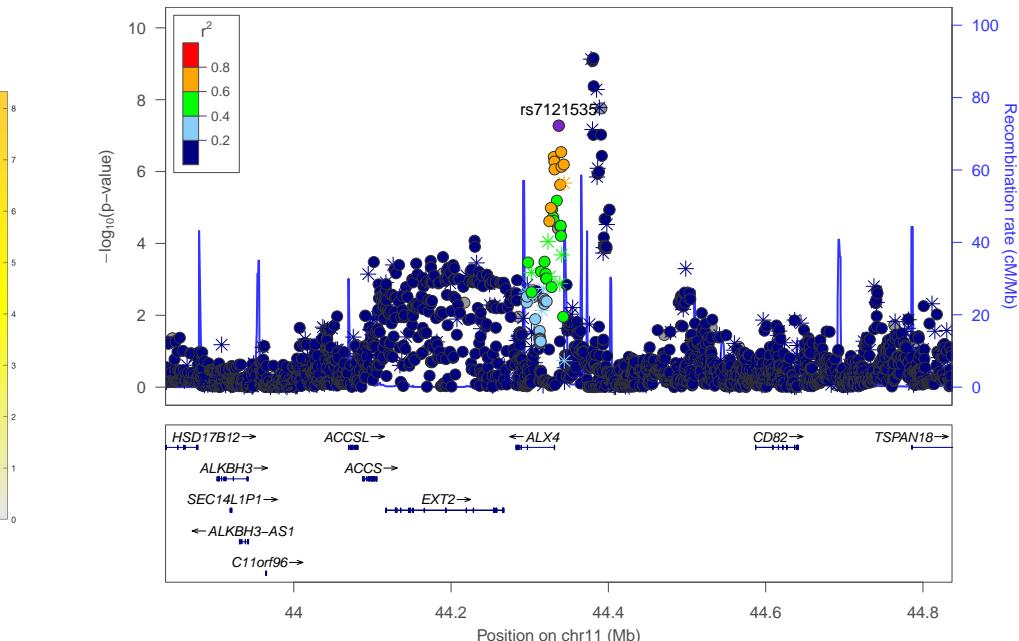
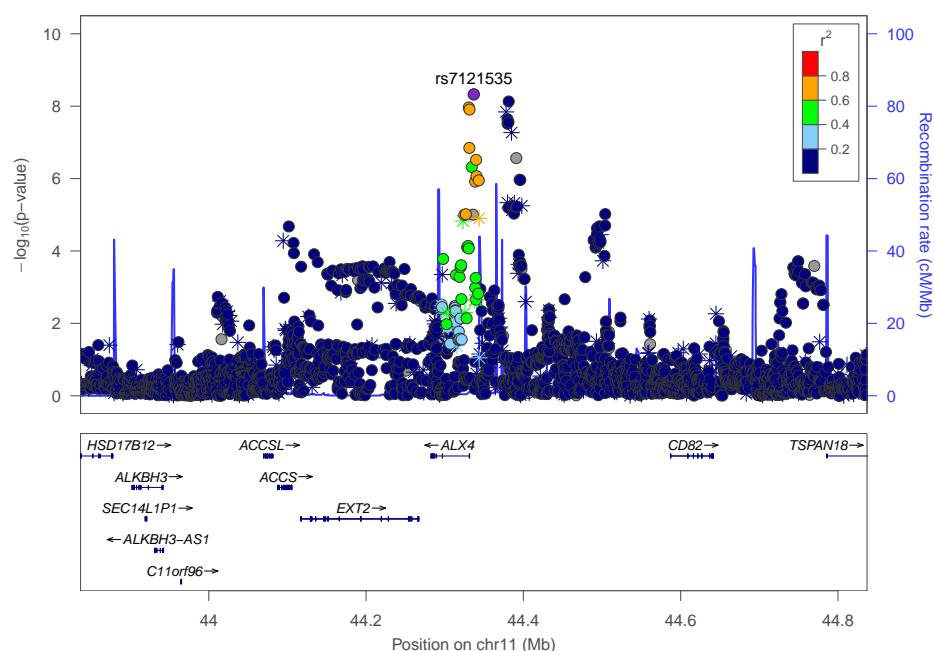
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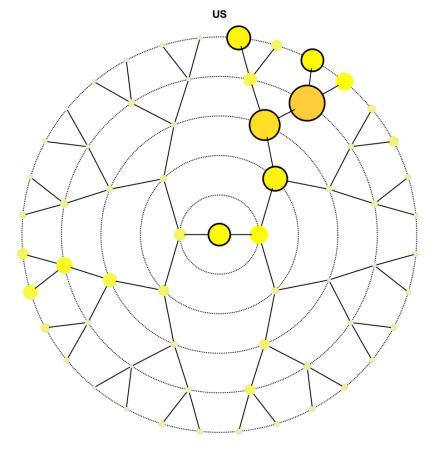
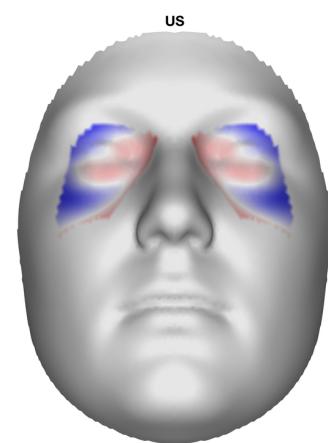
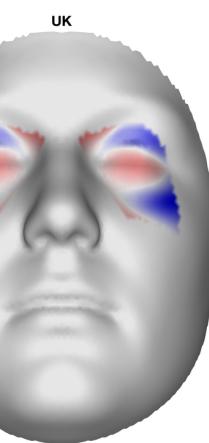
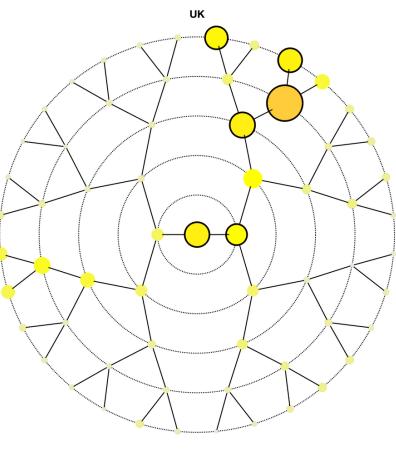
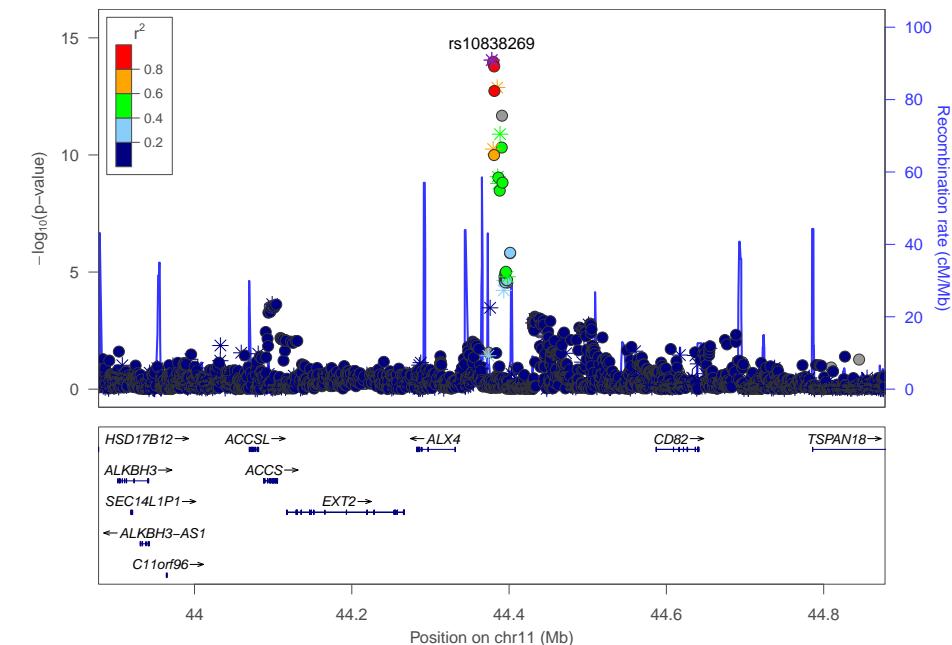
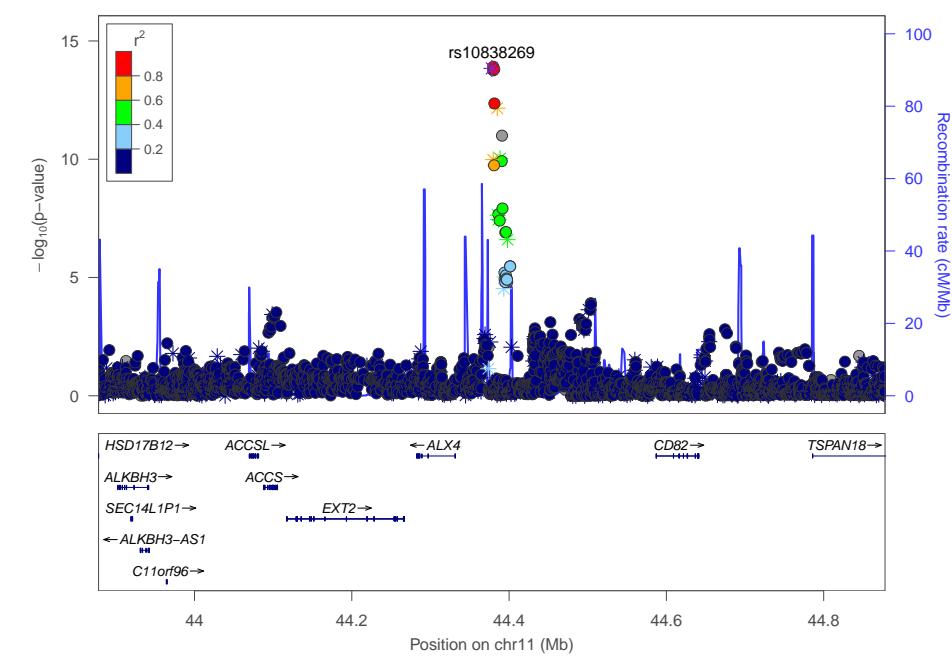
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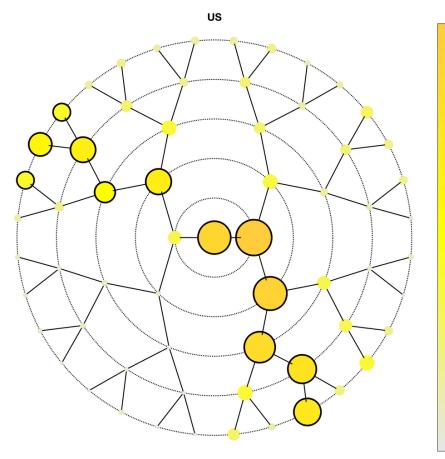
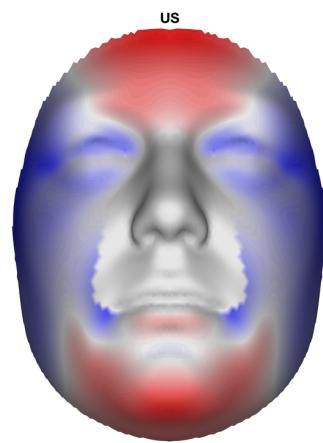
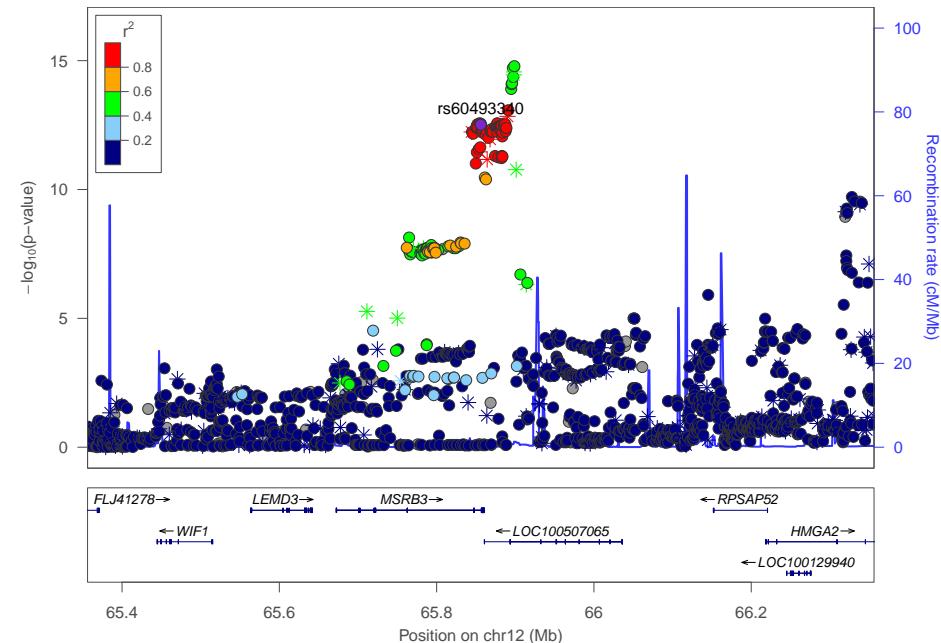
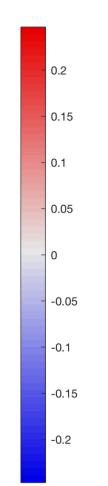
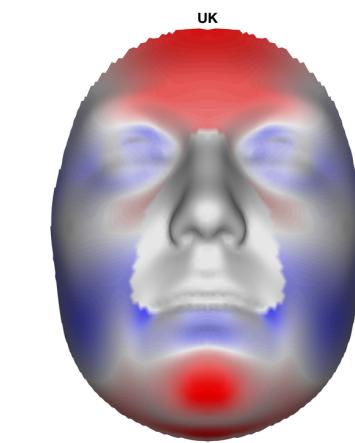
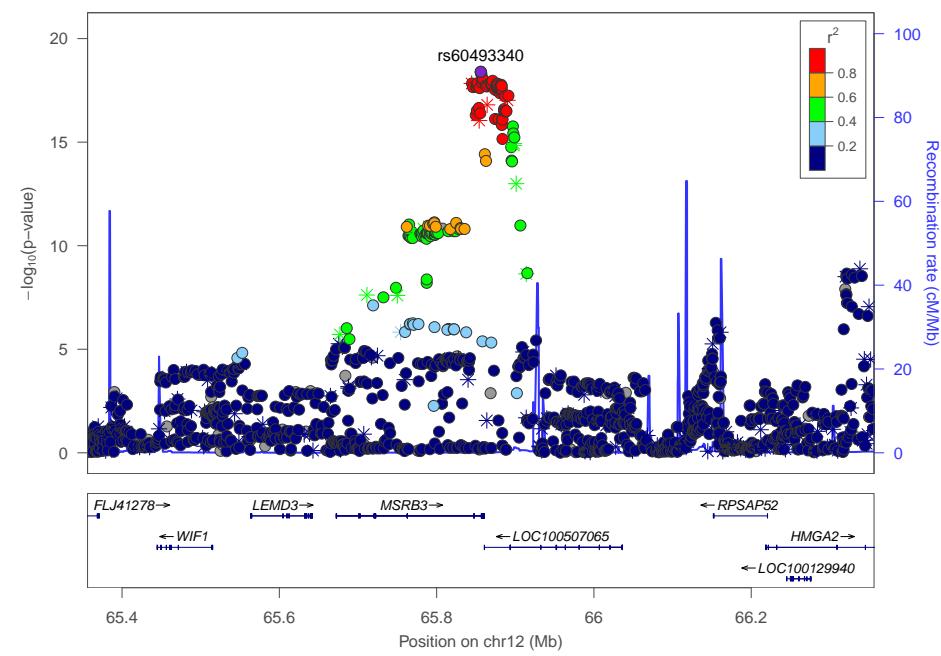
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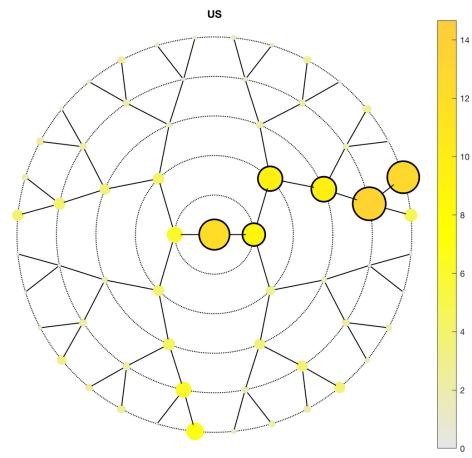
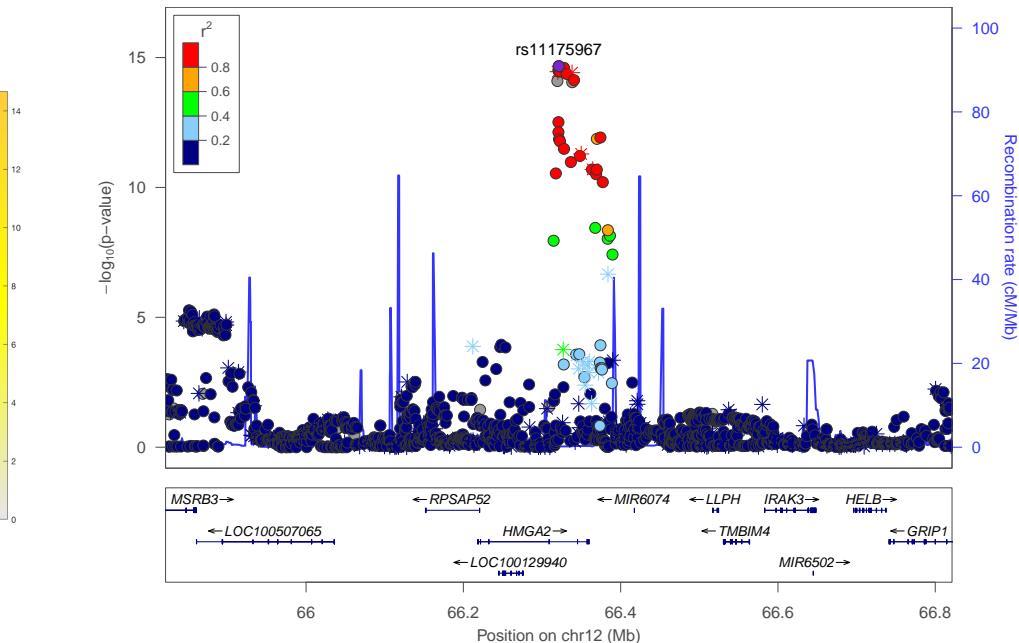
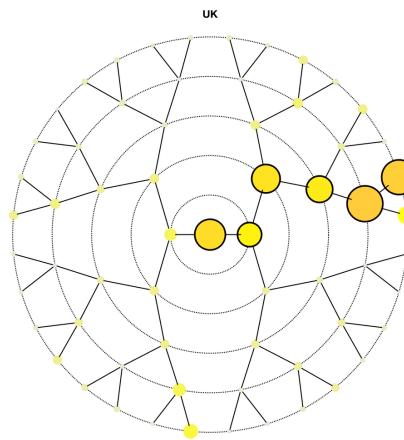
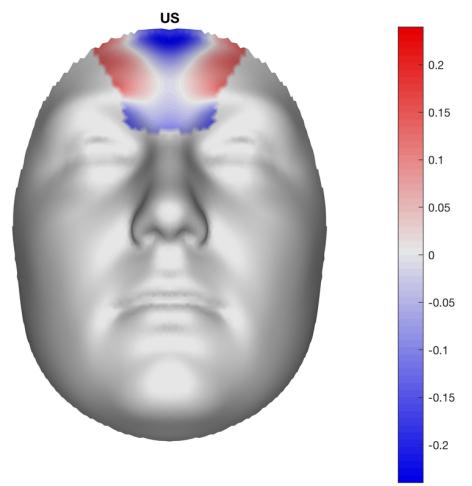
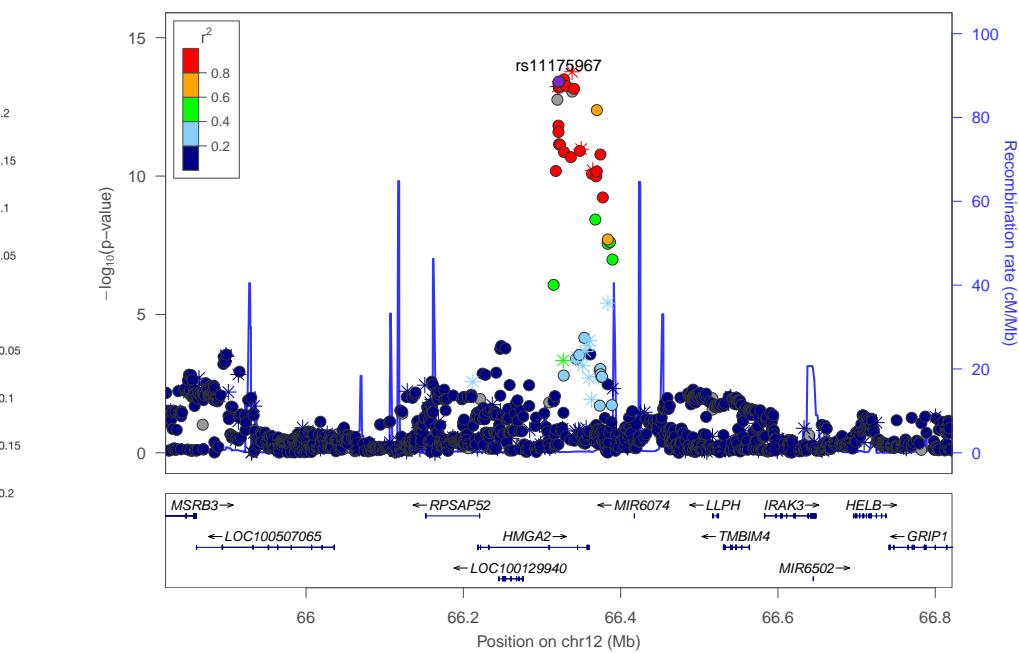
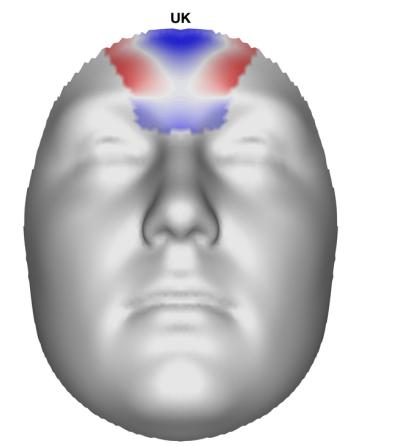
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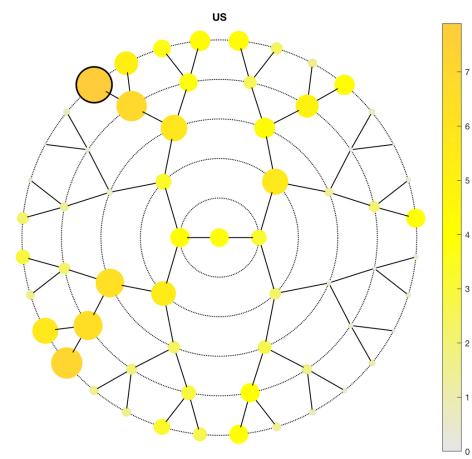
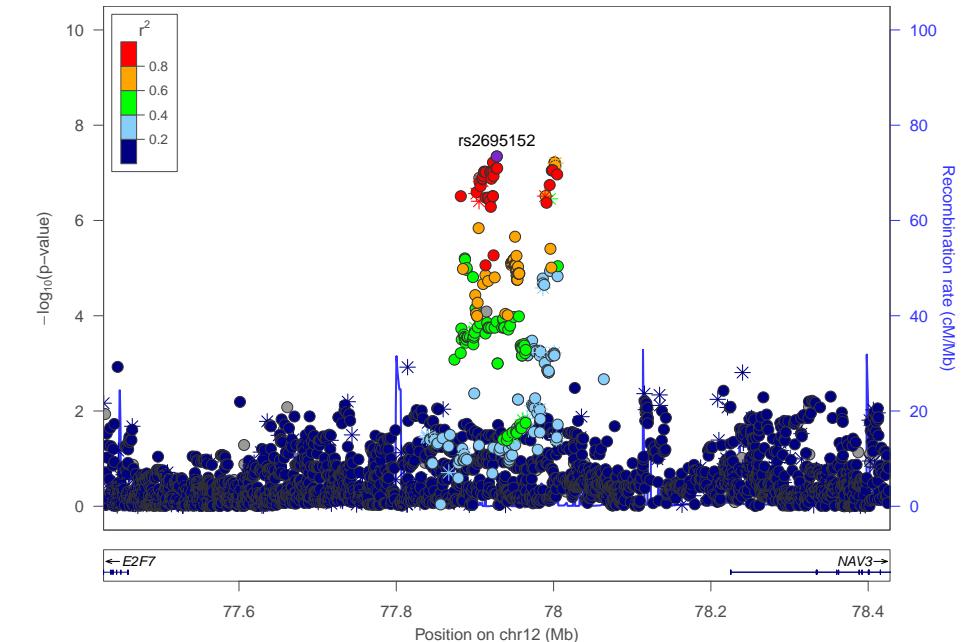
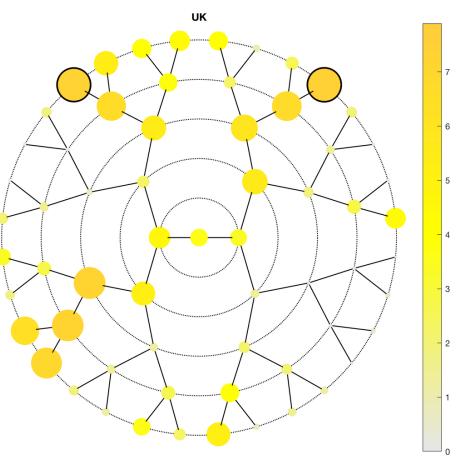
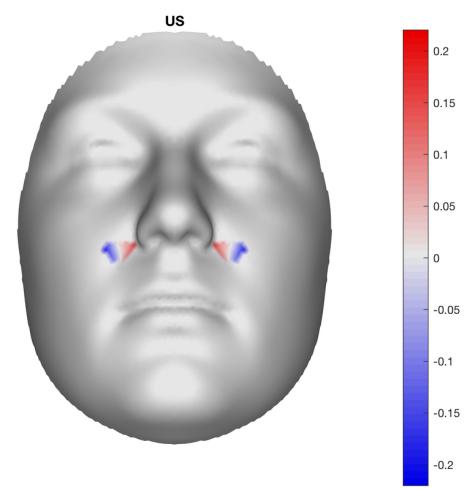
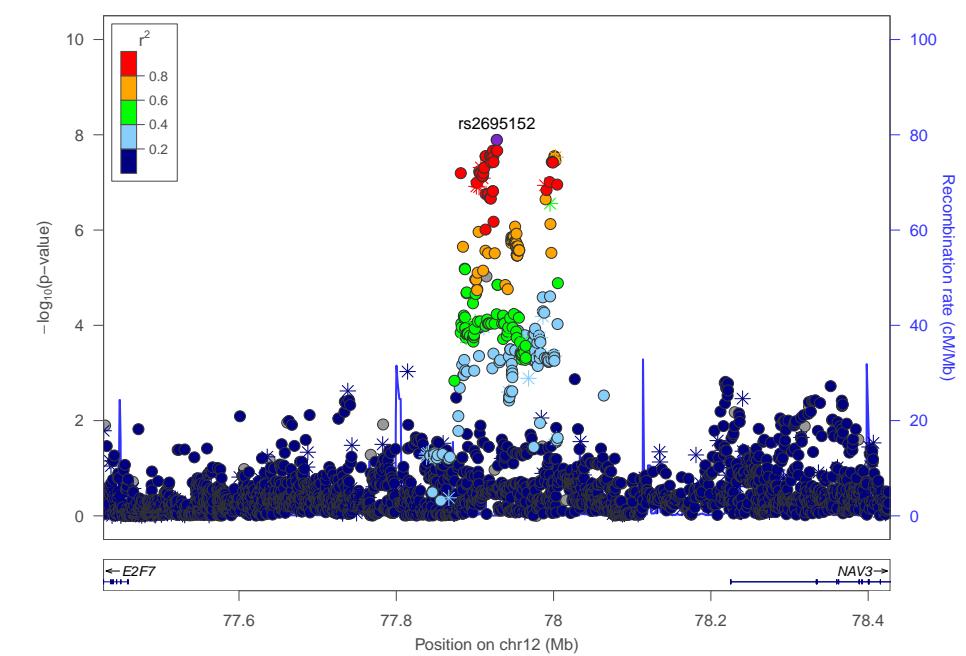
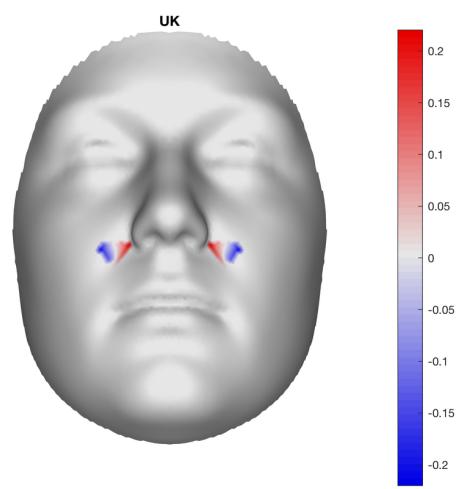
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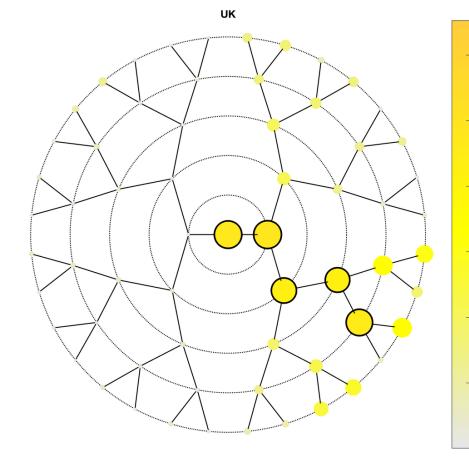
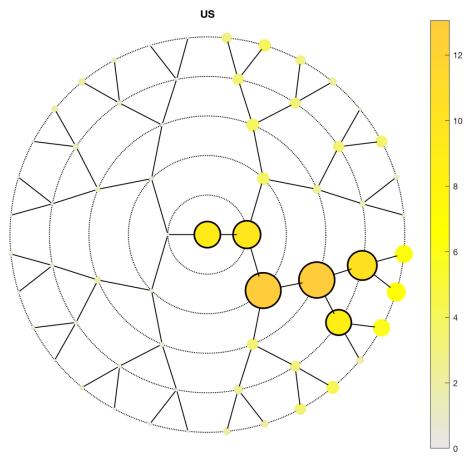
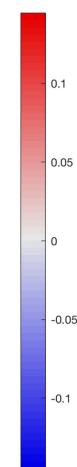
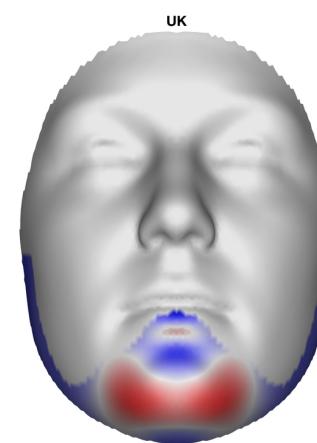
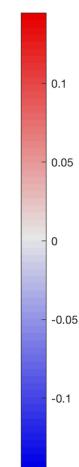
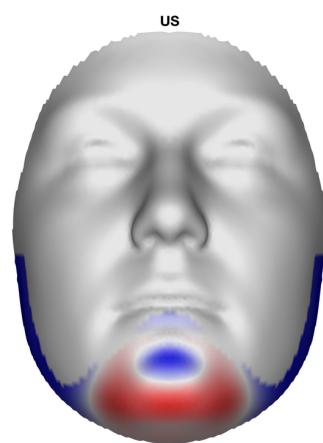
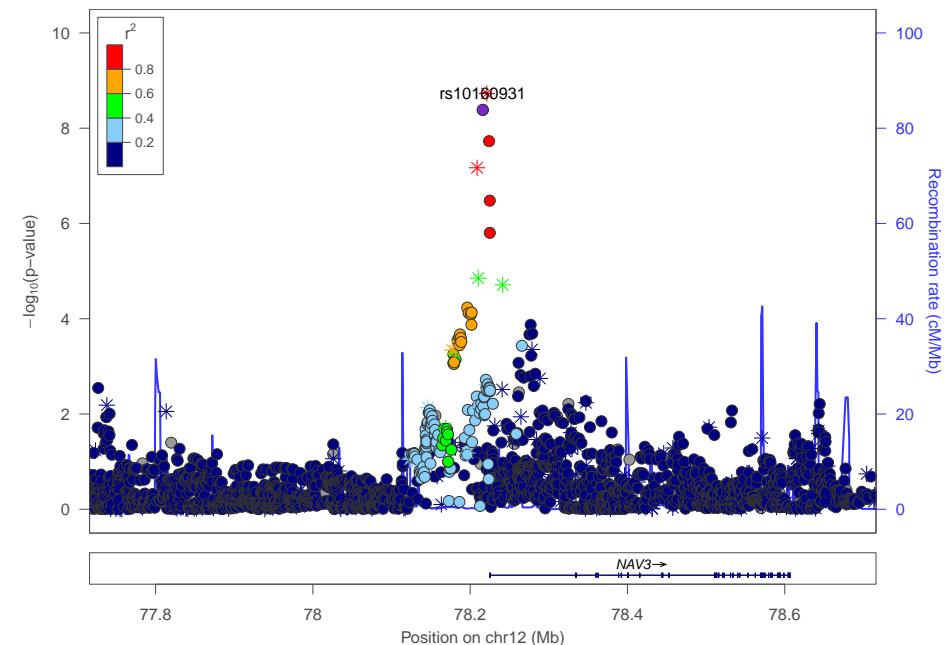
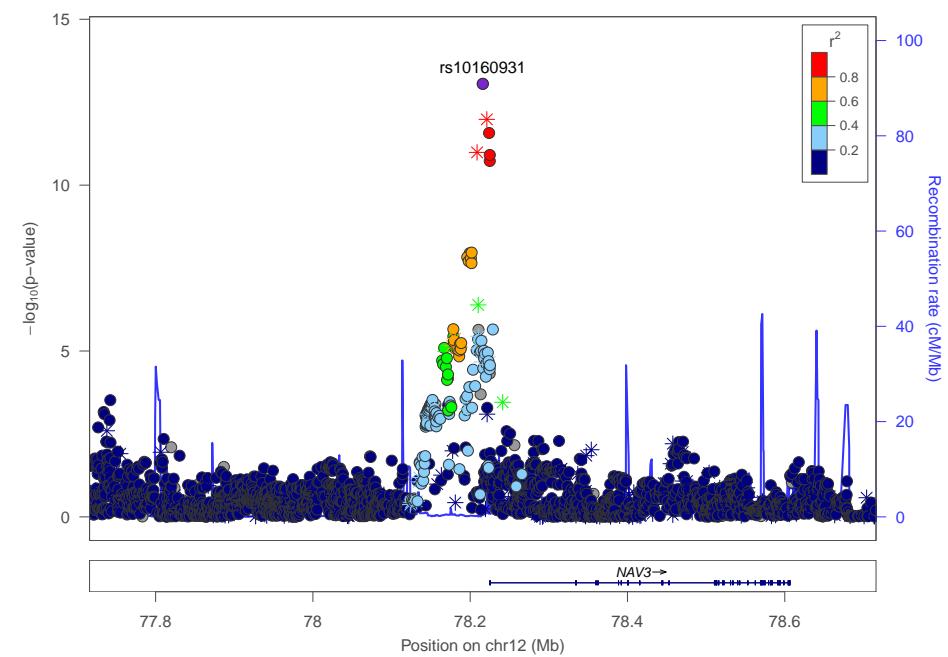
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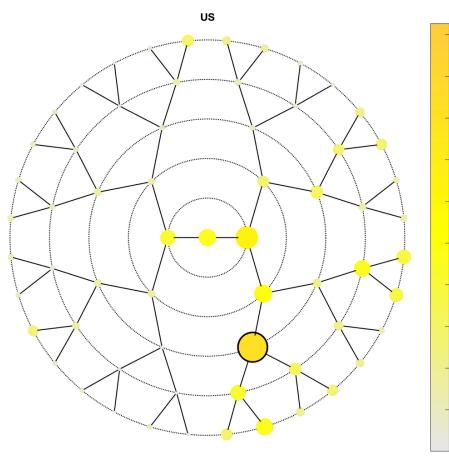
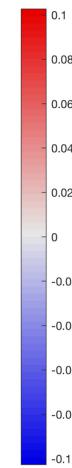
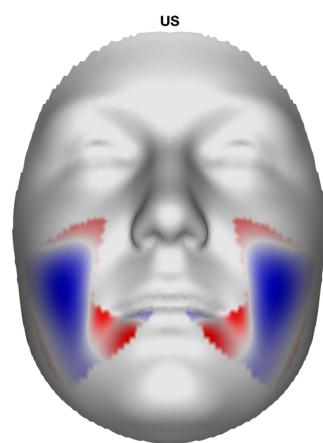
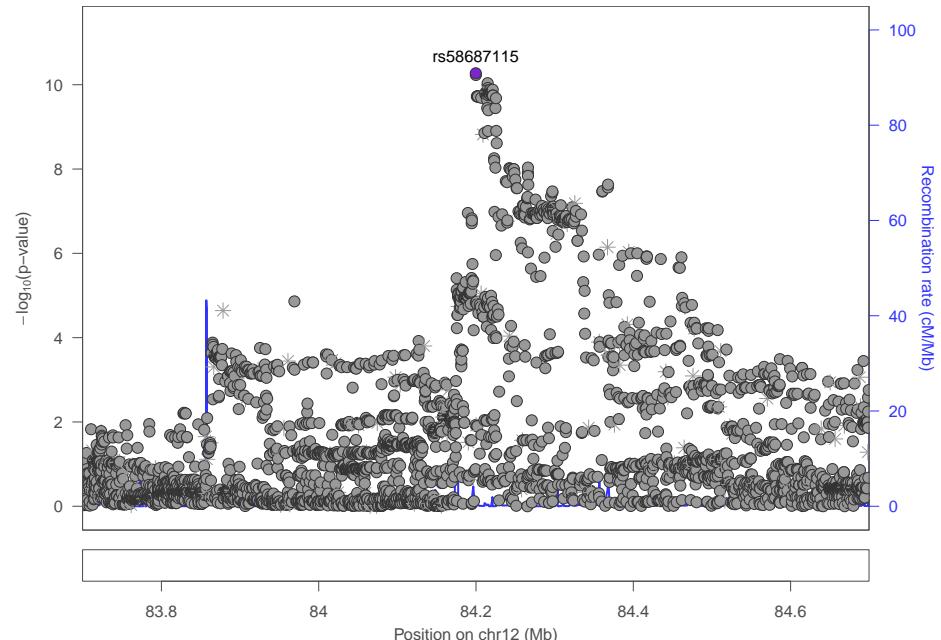
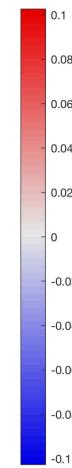
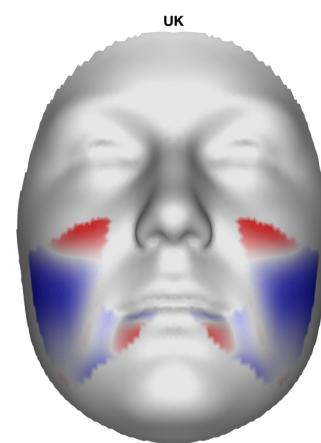
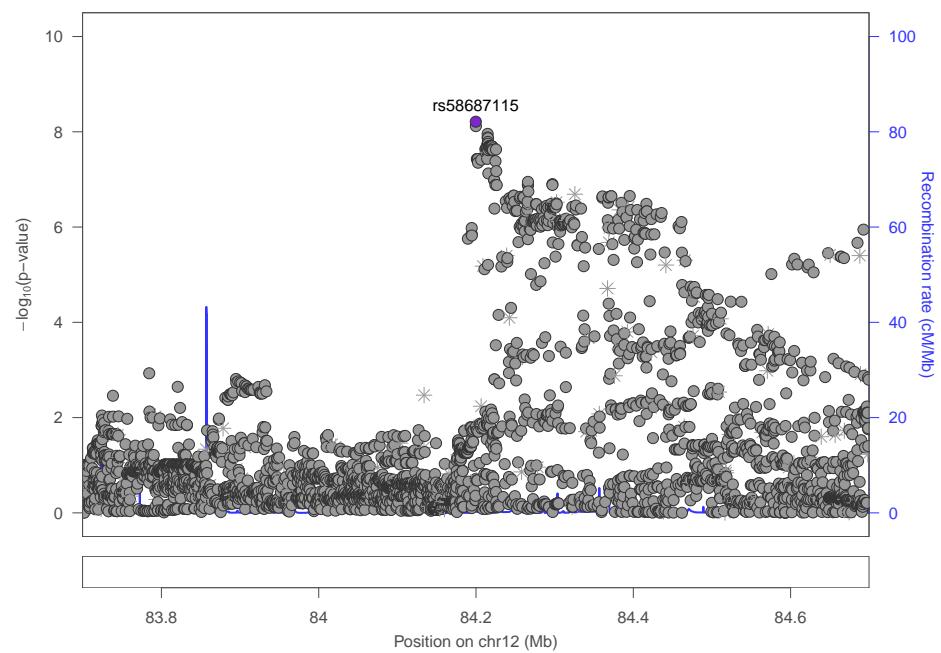
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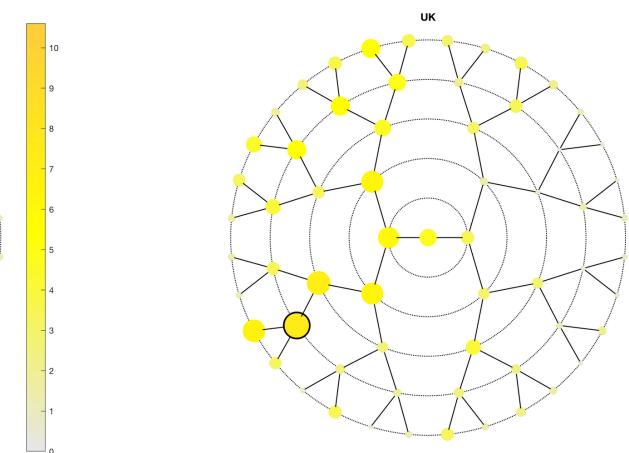
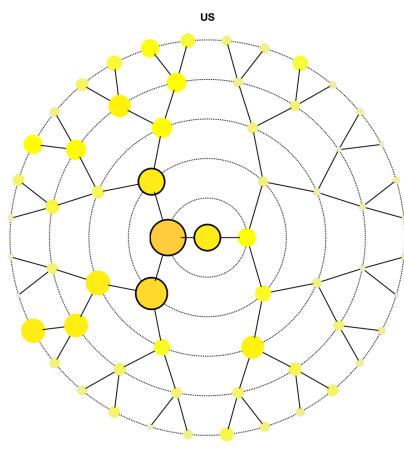
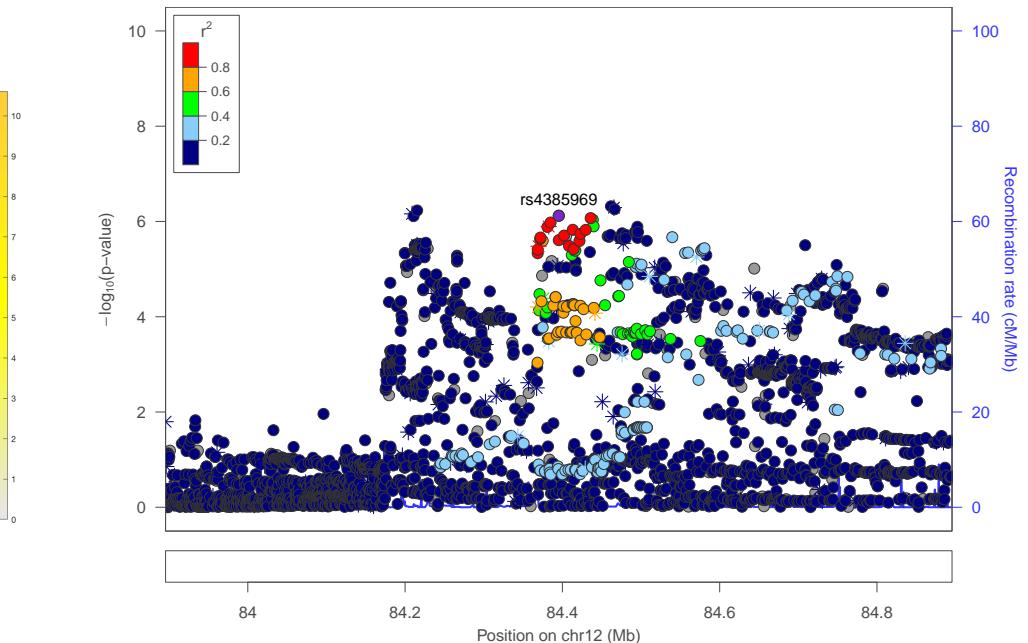
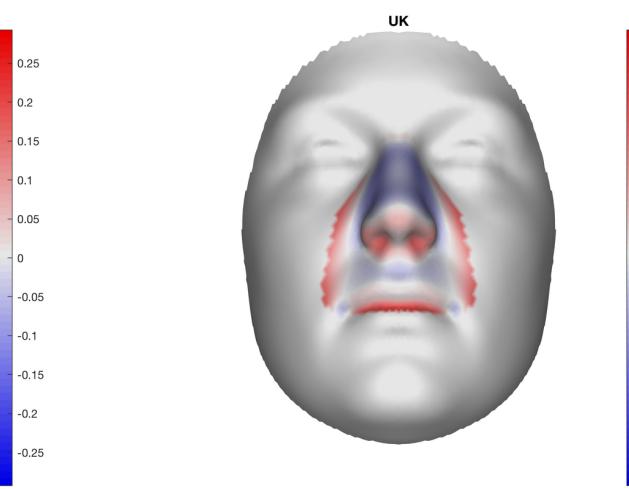
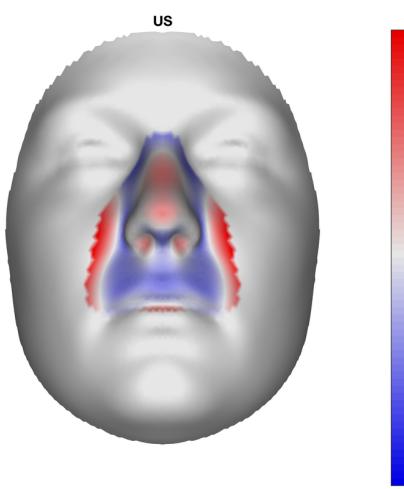
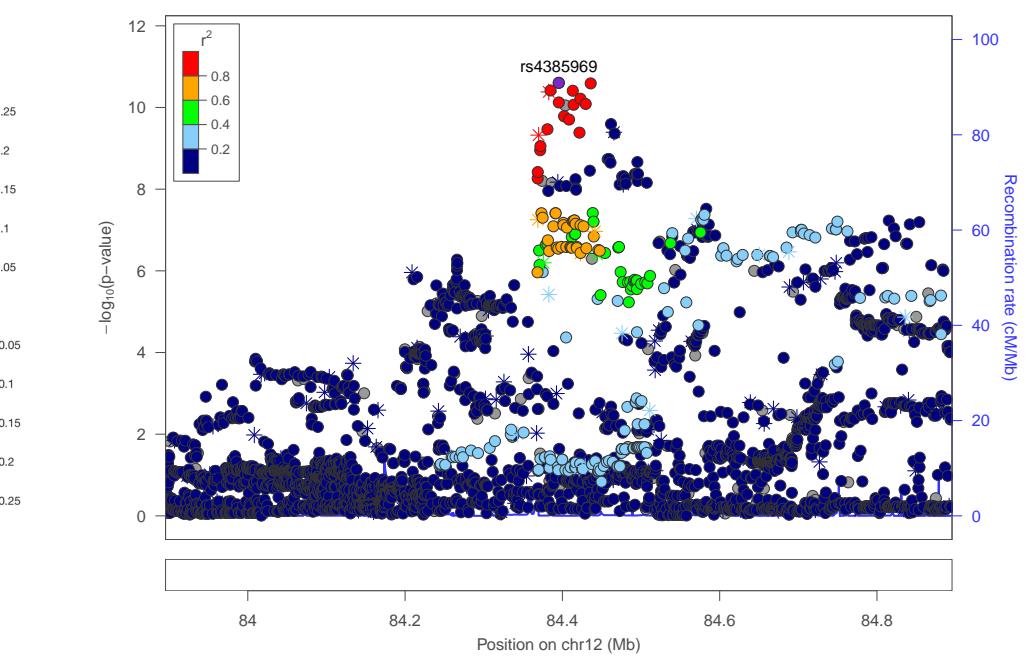
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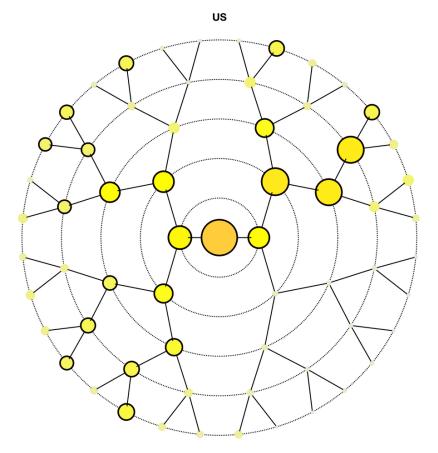
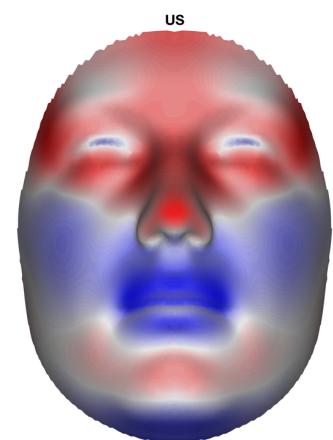
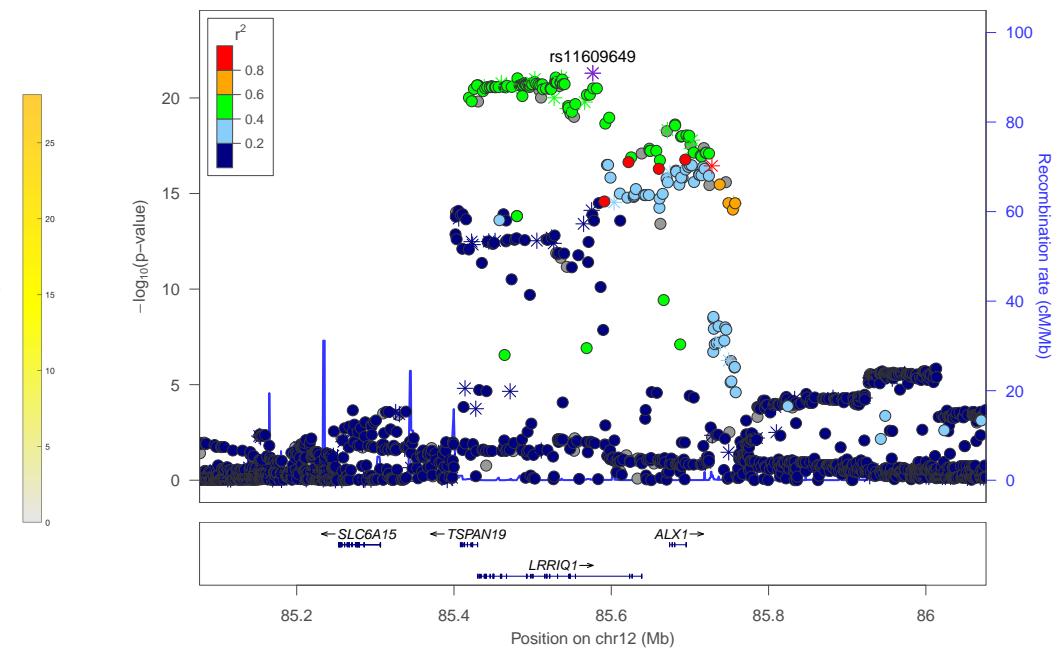
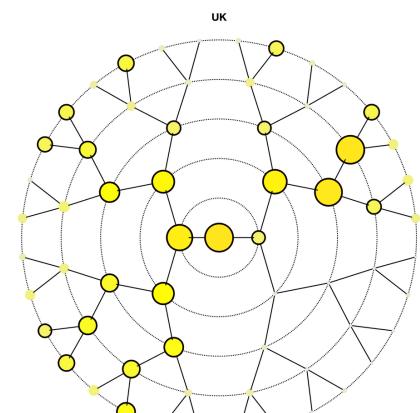
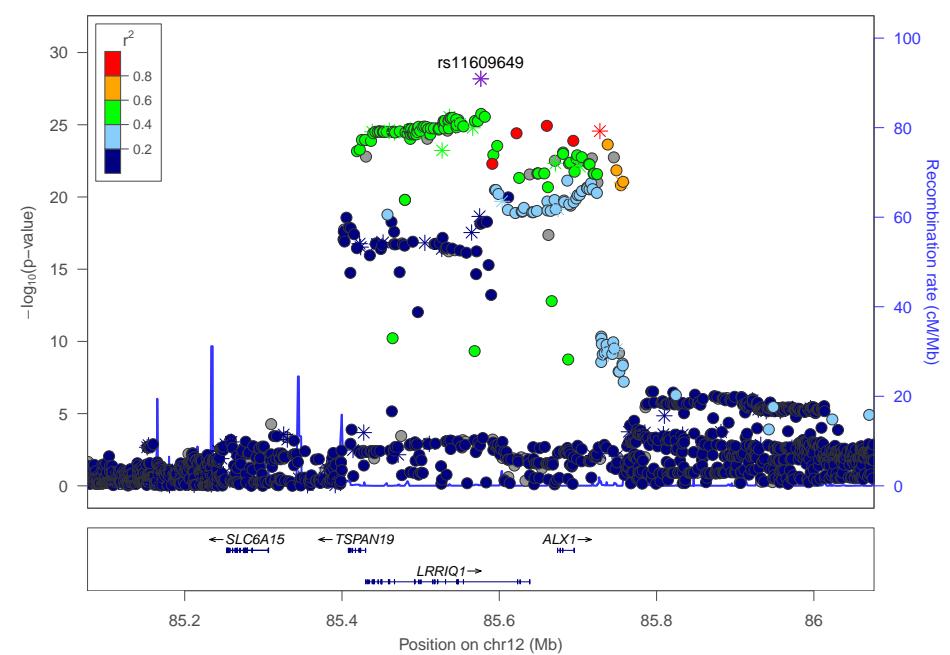
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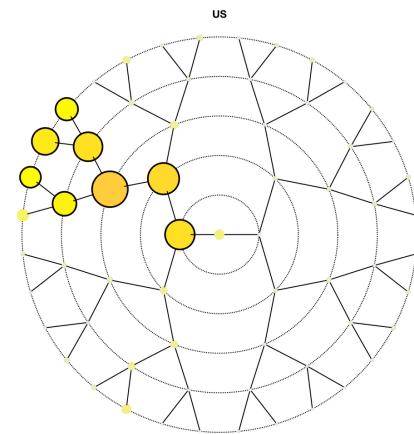
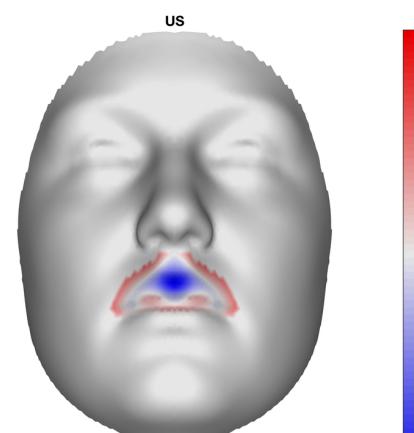
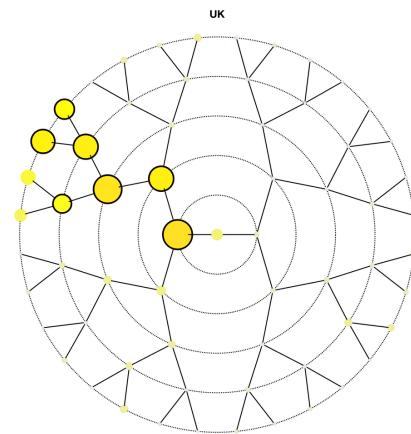
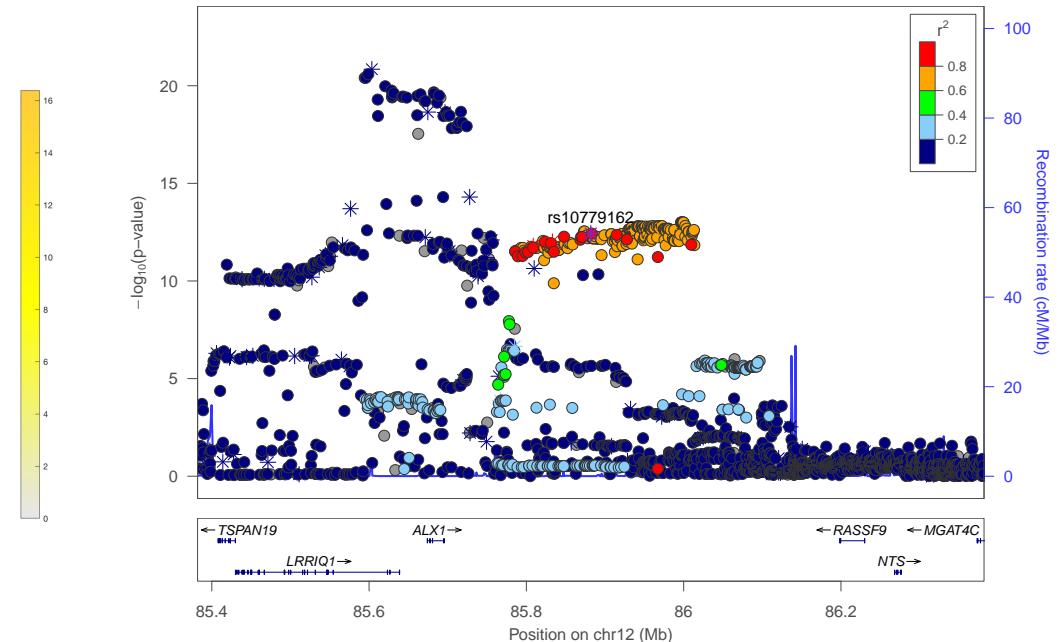
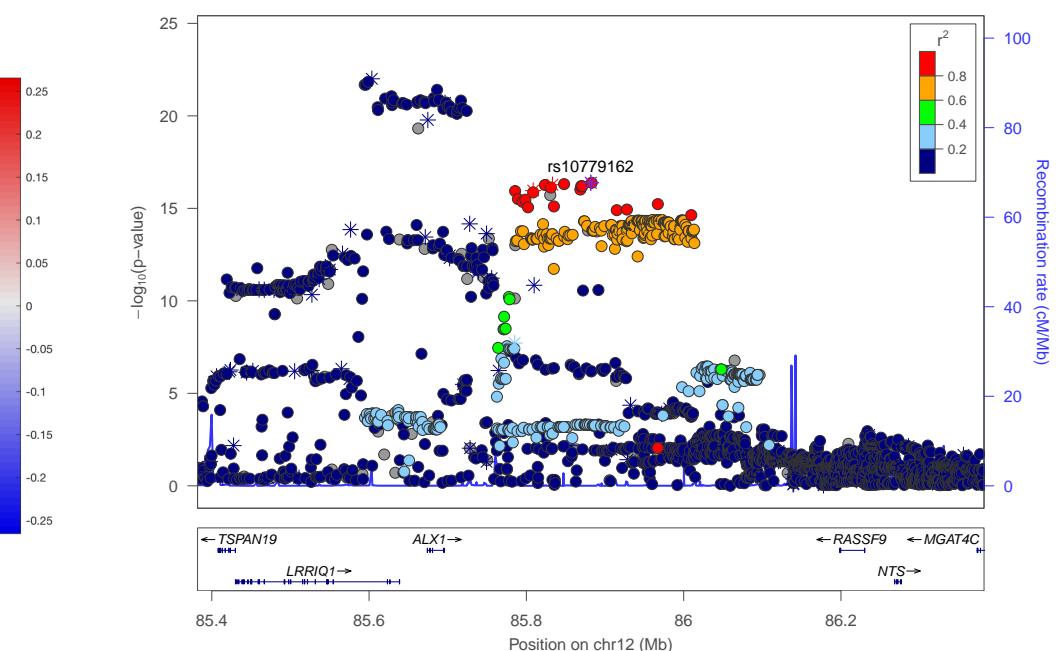
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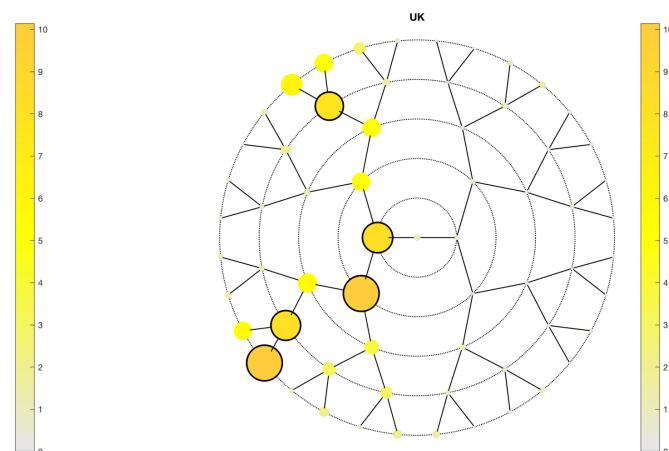
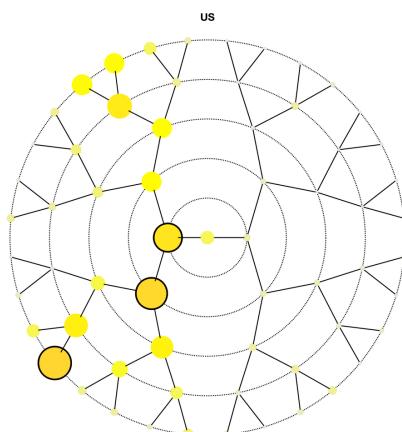
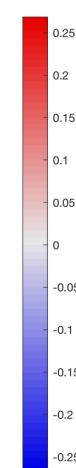
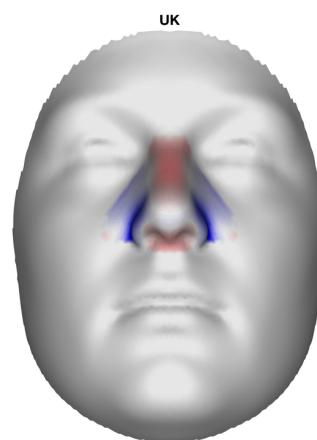
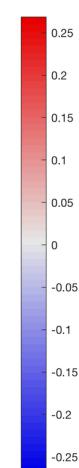
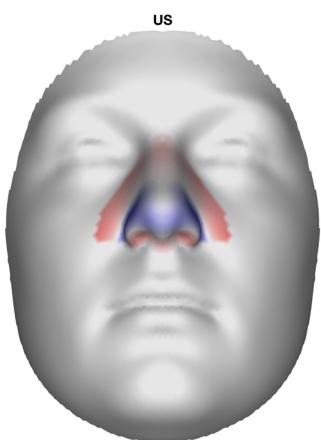
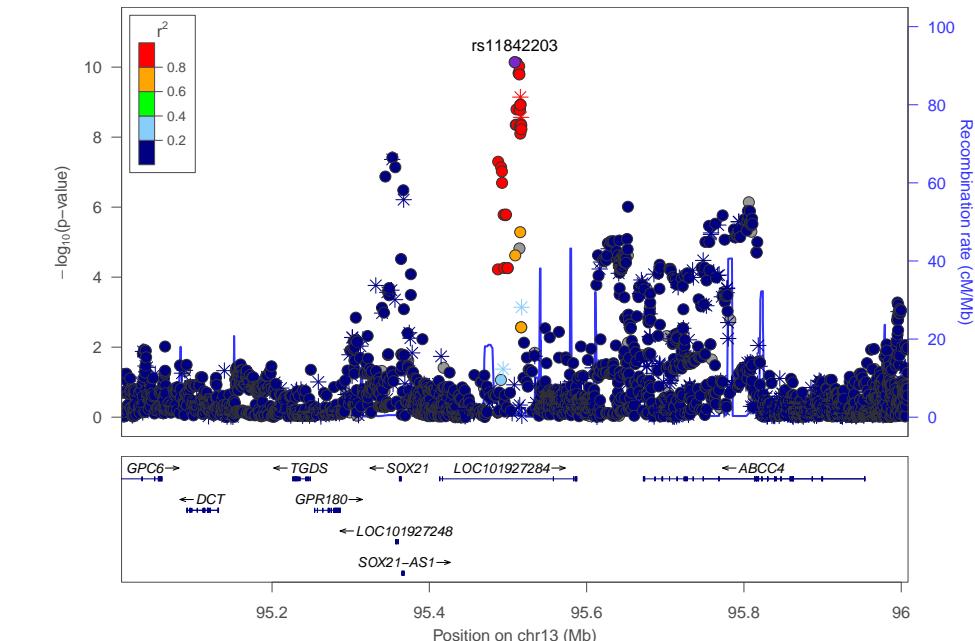
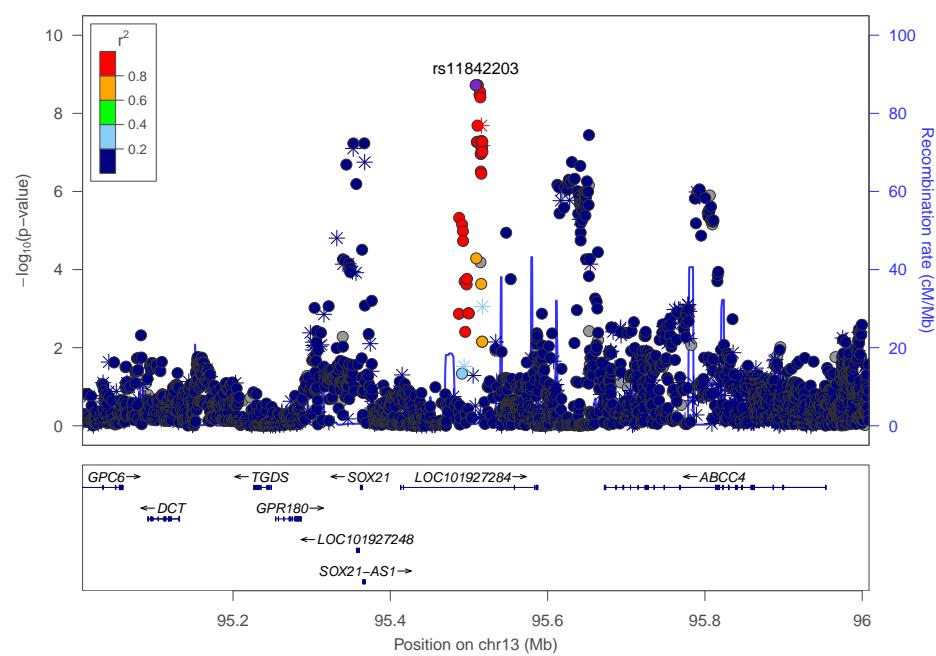
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**A****B****C**

**A****C****B**

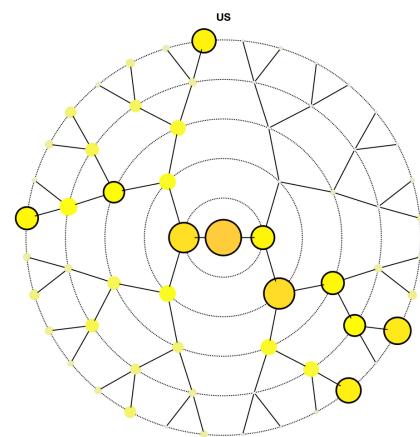
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**A****B****A****C**

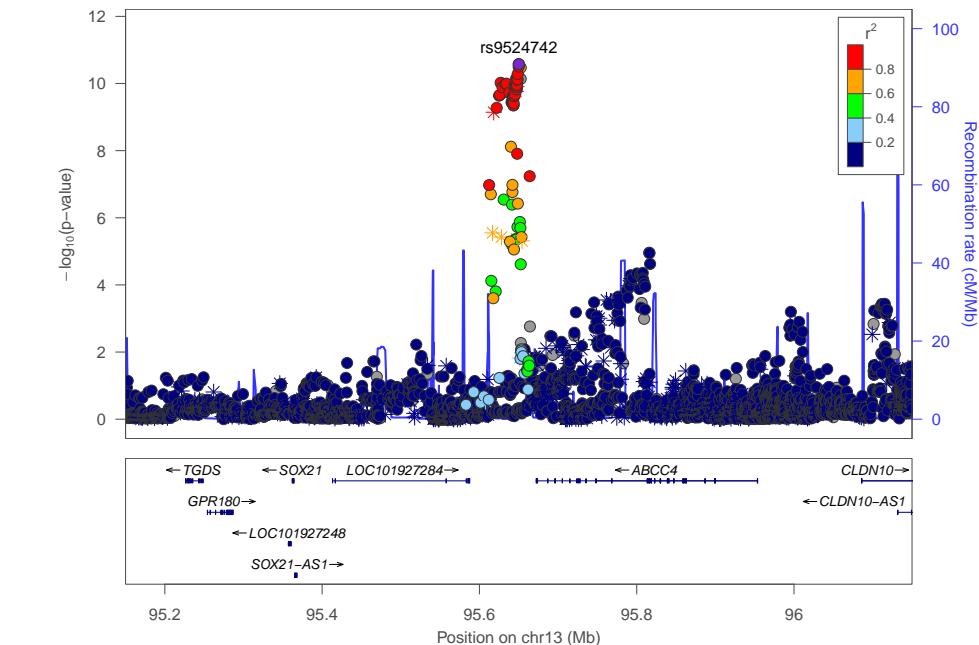
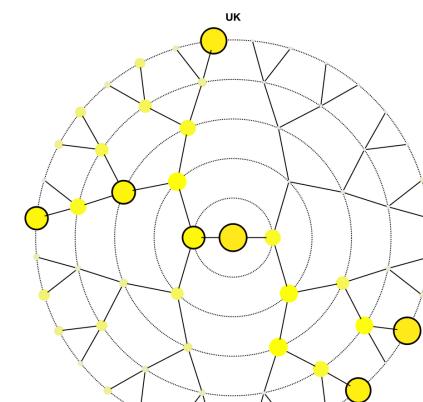
**A****B****C**

# Multi-peak locus 20: rs9524742

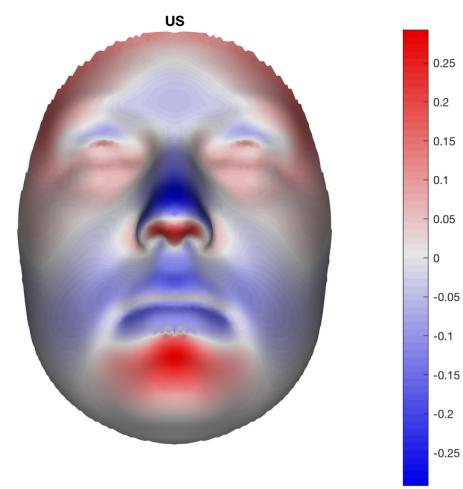
CHR13 - See final page for captions



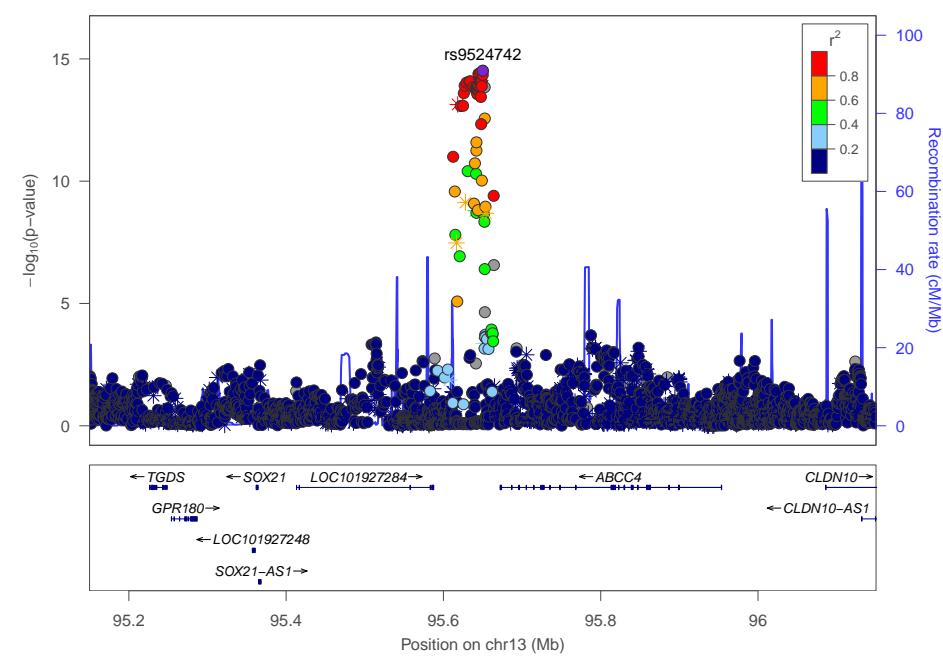
A

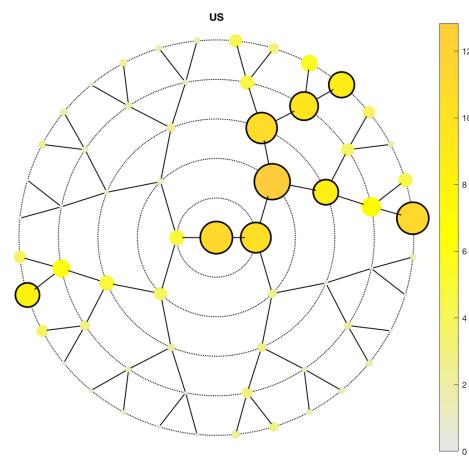
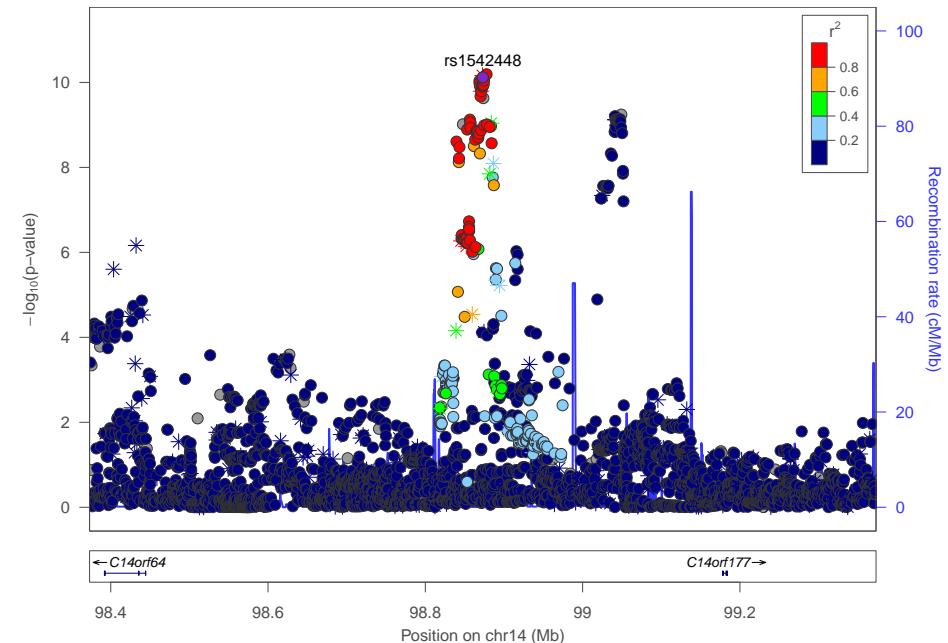
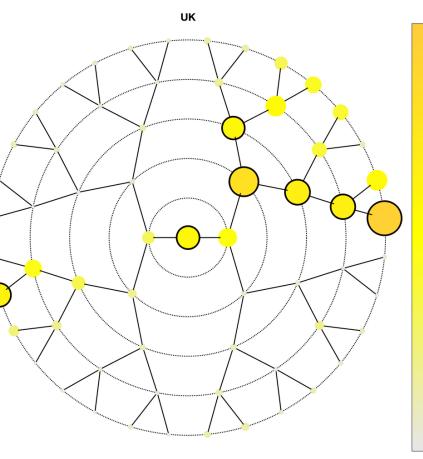
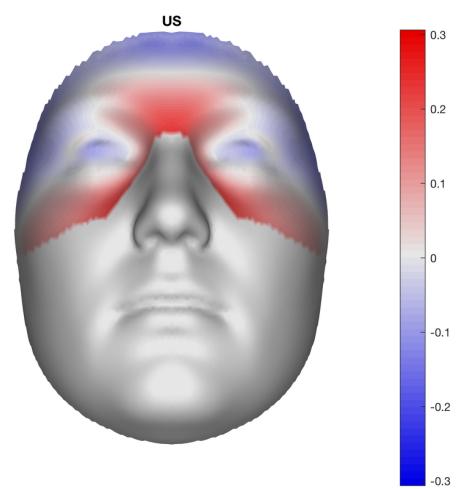
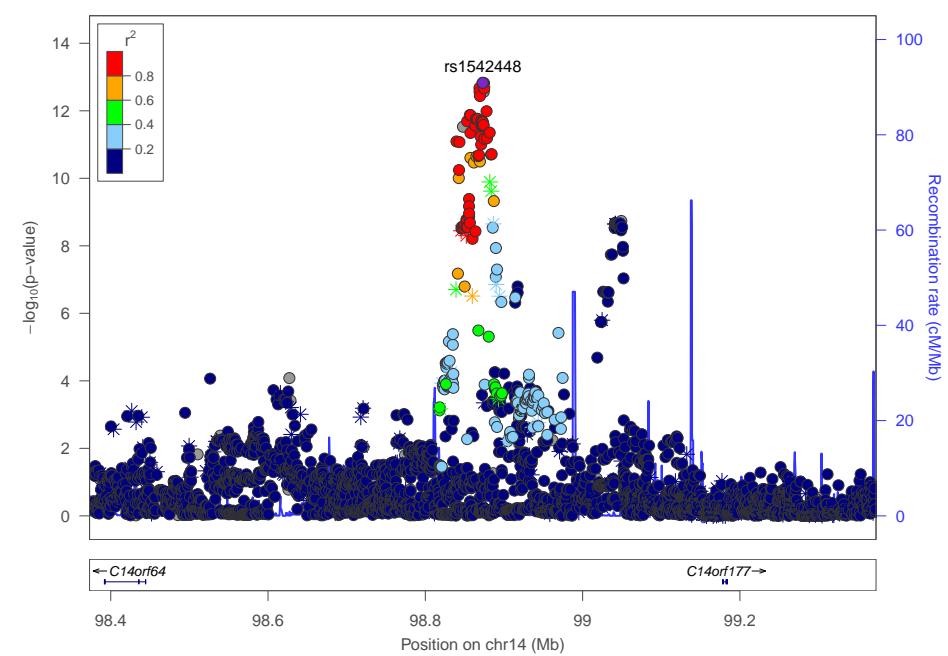
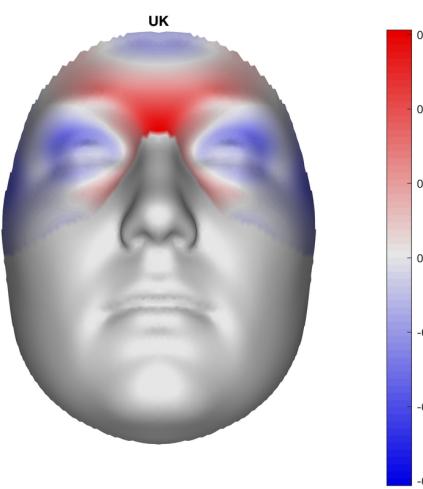


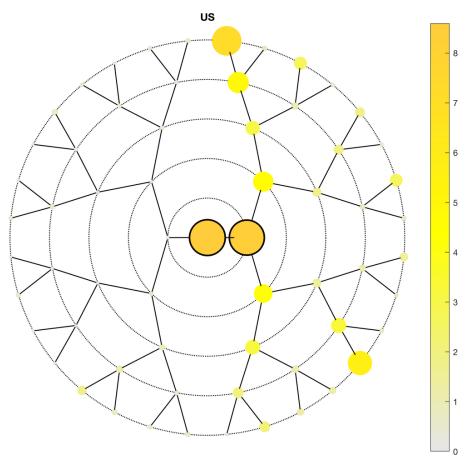
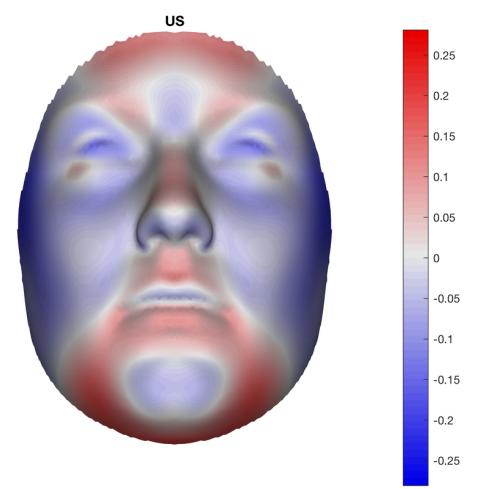
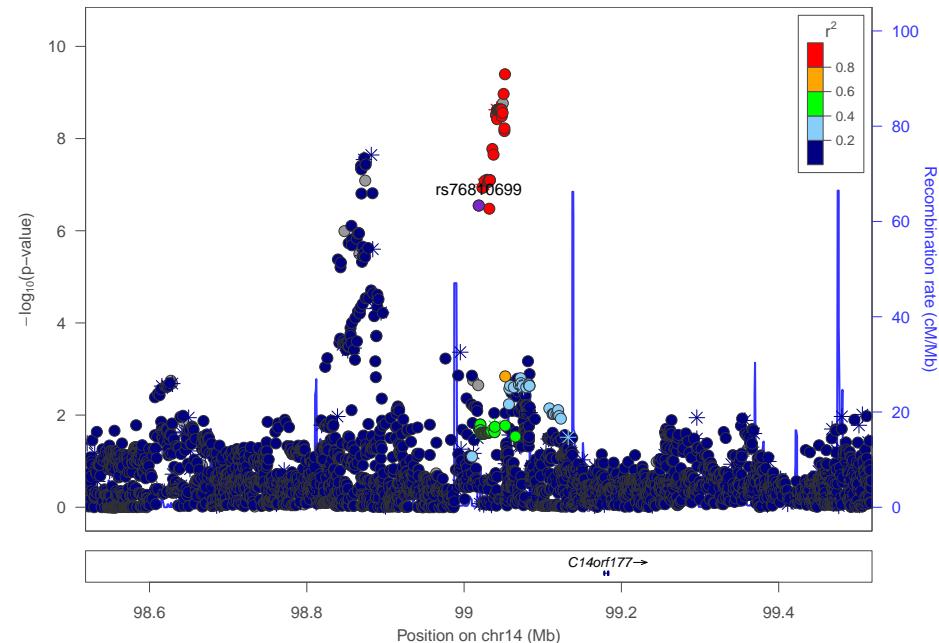
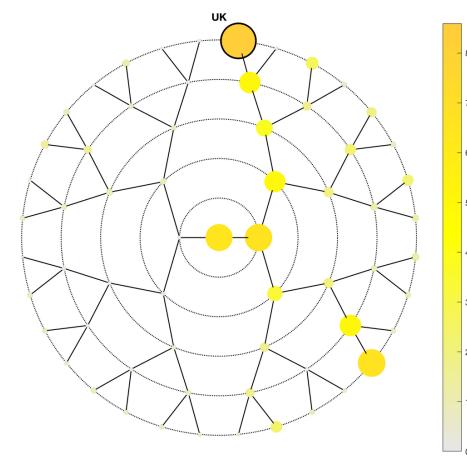
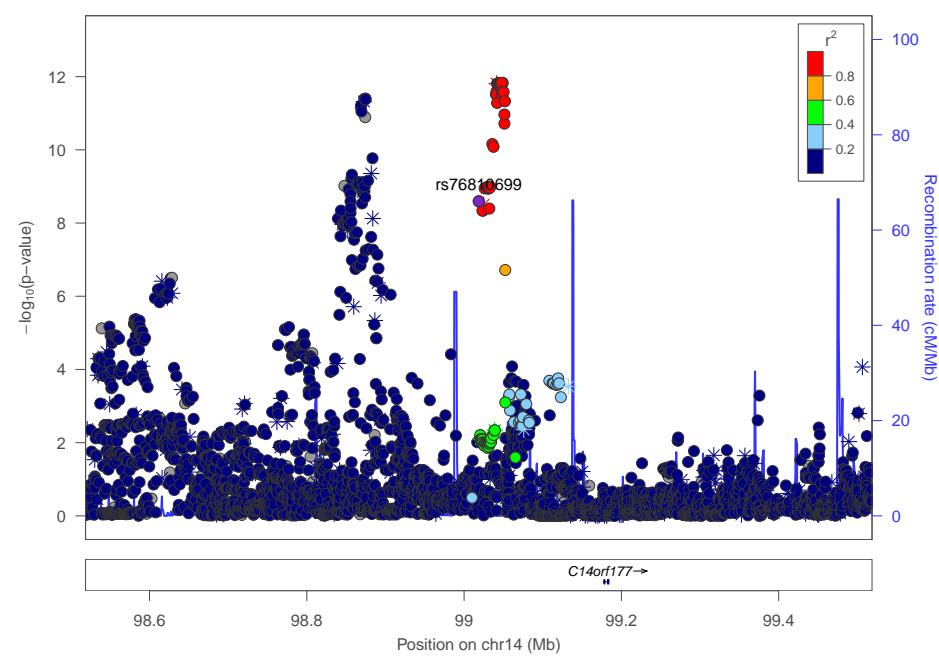
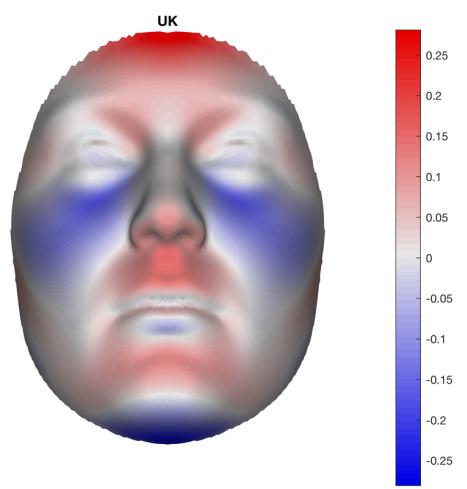
C

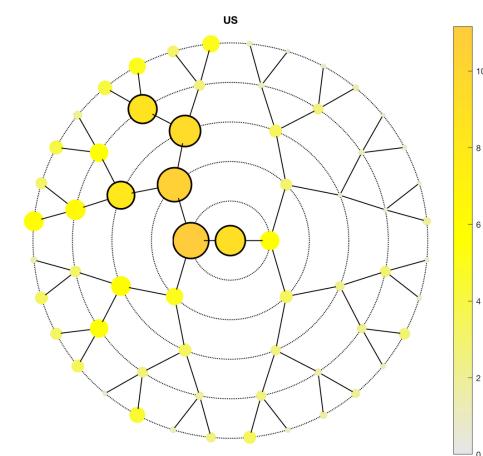


B

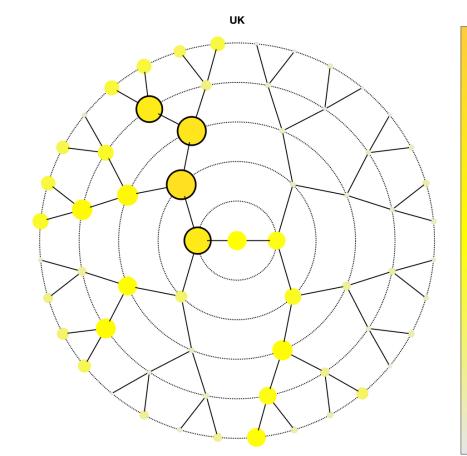


**A****C****B**

**A****B**

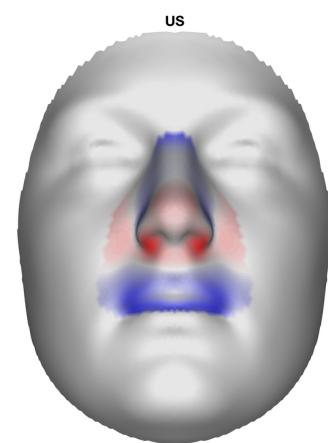


A



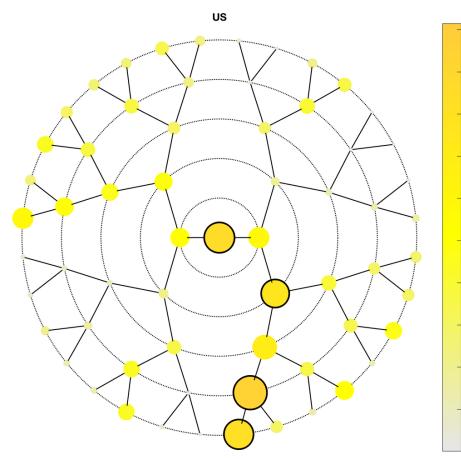
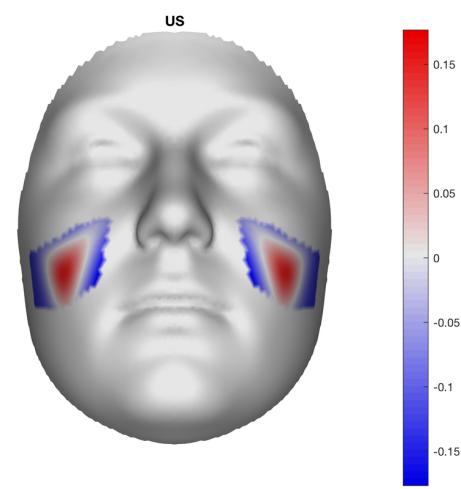
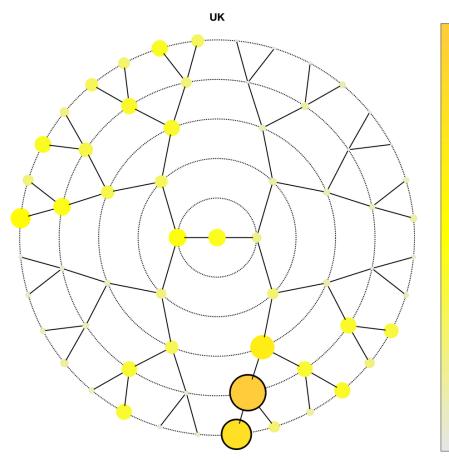
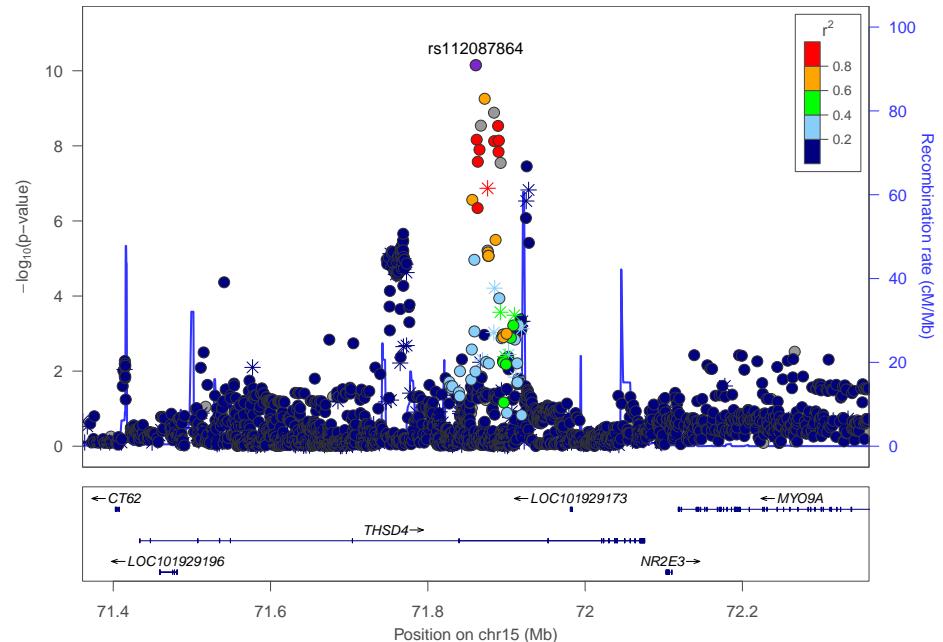
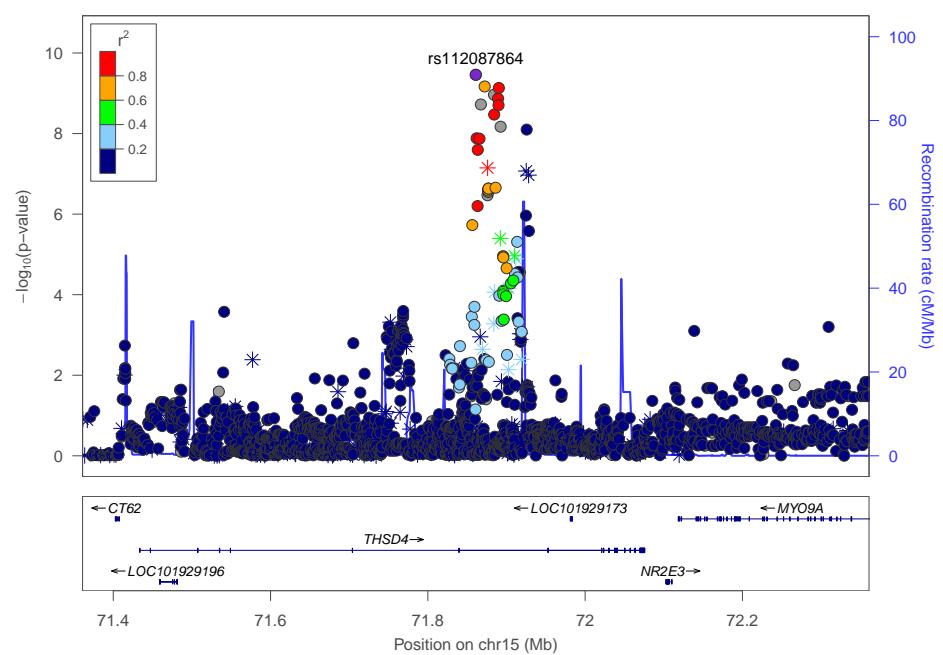
This figure displays a Manhattan plot with two y-axes. The left y-axis represents  $-\log_{10}(p\text{-value})$  from 0 to 8. The right y-axis represents the recombination rate in cM/Mb from 0 to 80. The x-axis shows the position on chr15 in Mb, ranging from 71.4 to 72.2. A color scale in the top-left corner indicates linkage disequilibrium (ranging from 0.2 to 0.8). A blue line represents the recombination rate across the genome. Red dots at the top indicate a peak near rs34430707. Below the plot, a genomic track shows gene locations and orientations for LRRC49, CT62, LOC101929196, THSD4, LOC101929173, NR2E3, and MYO9A.

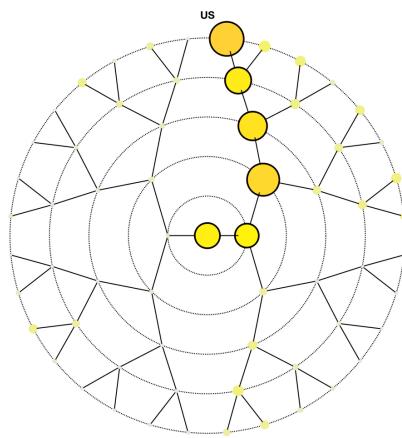
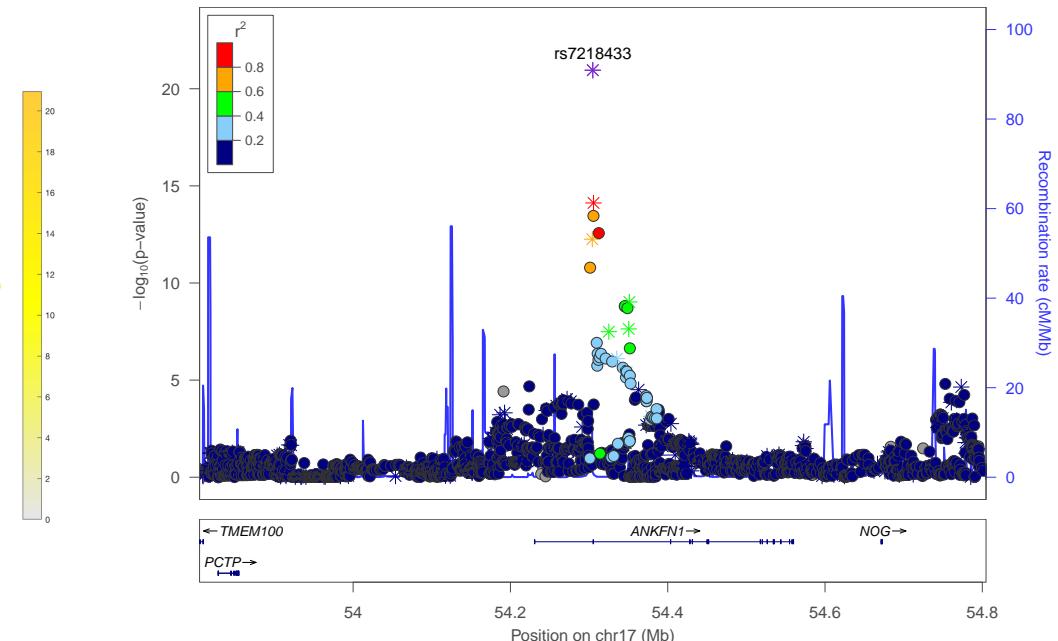
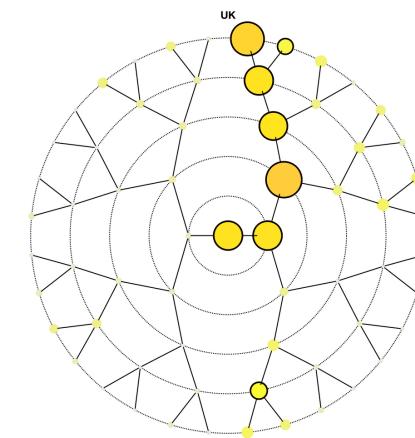
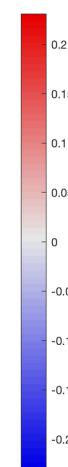
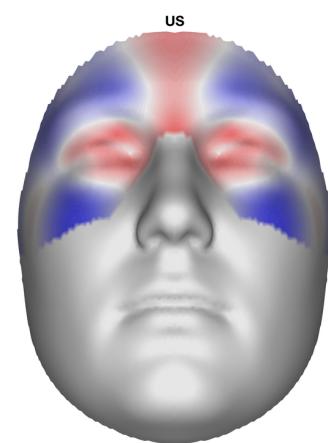
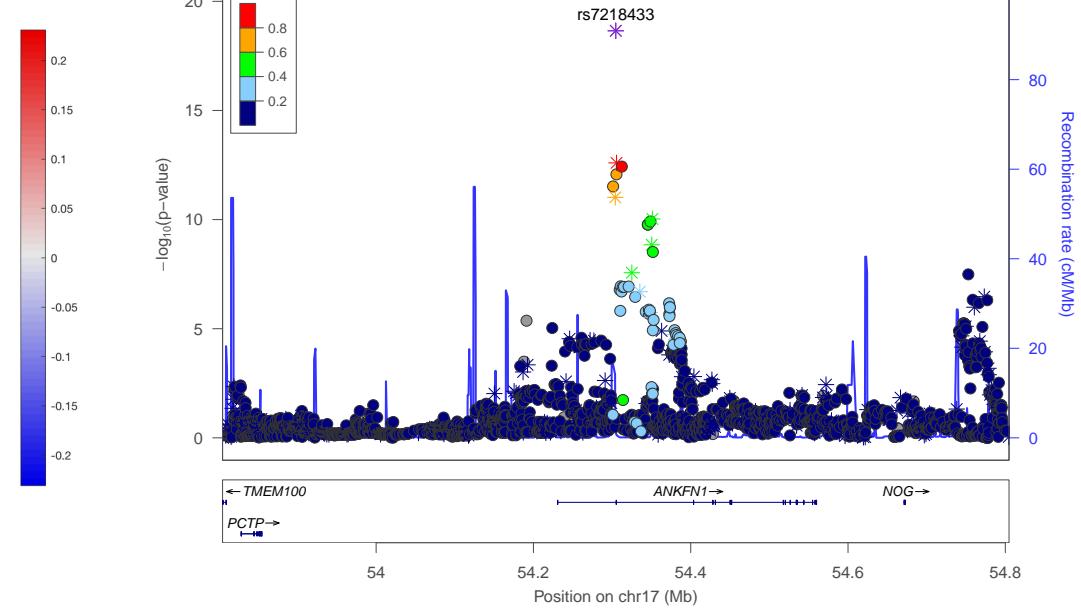
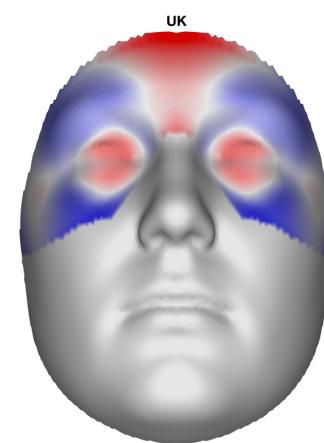
6



B

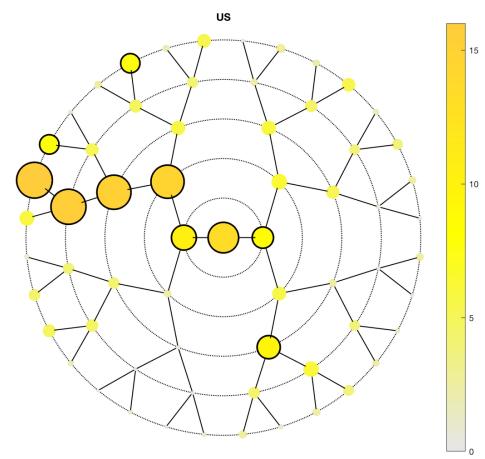


**A****B****A****C**

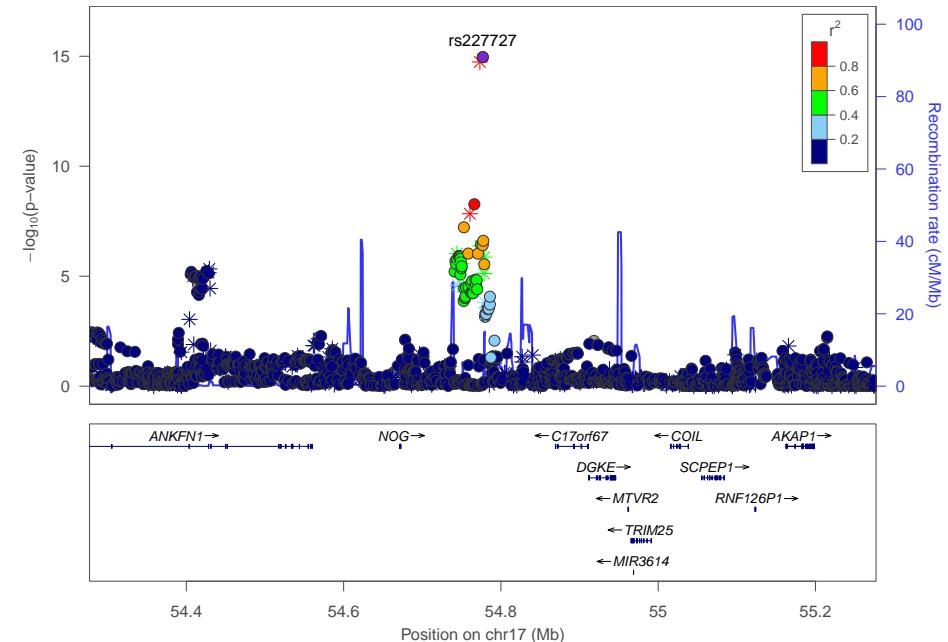
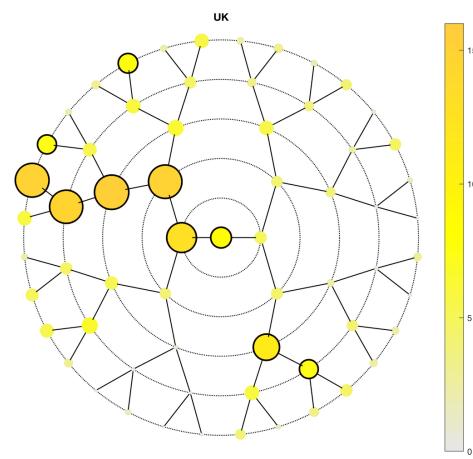
**A****C****B**

# Multi-peak locus 23: rs227727

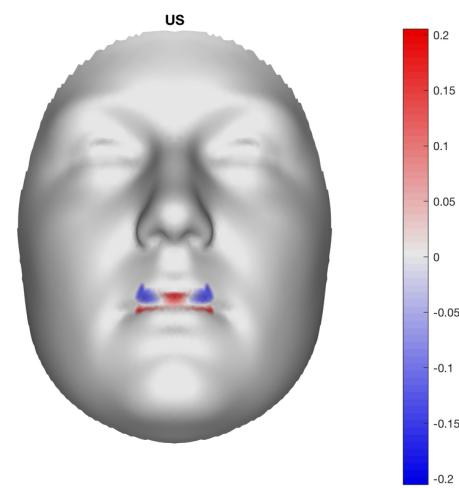
CHR17 - See final page for captions



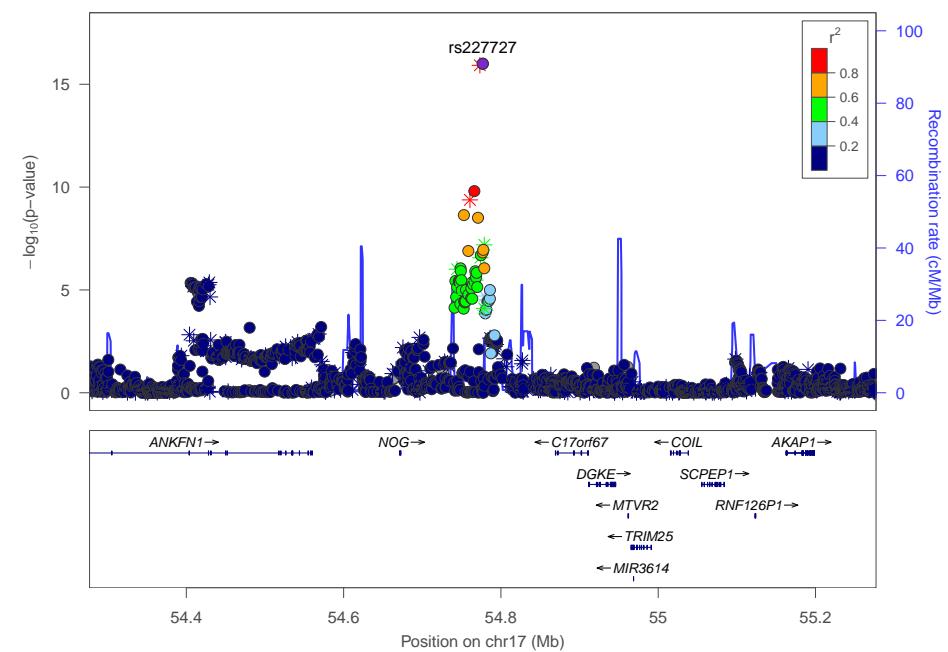
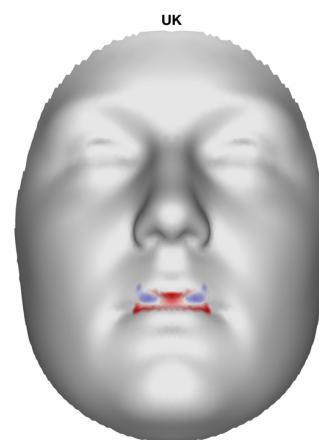
**A**

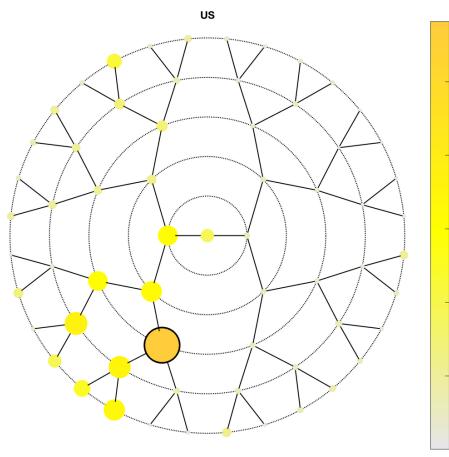
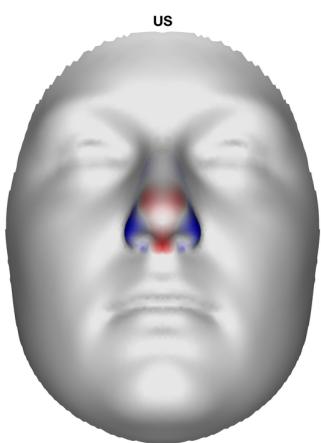
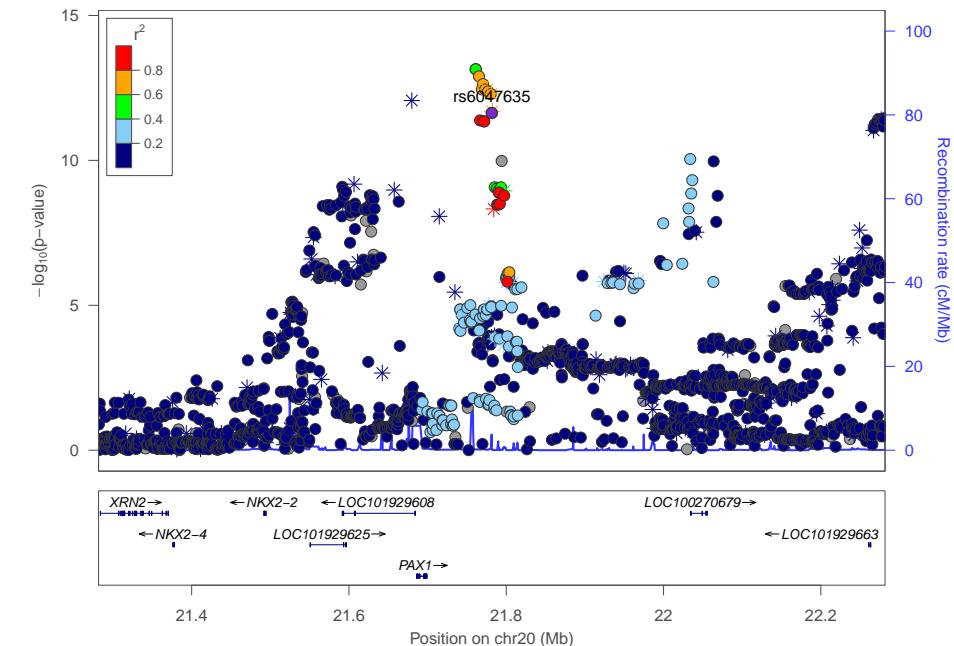
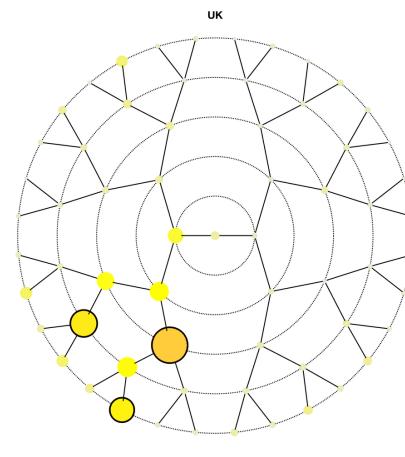
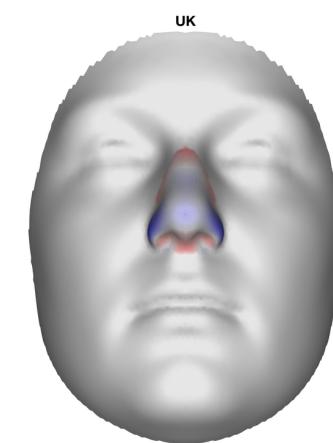
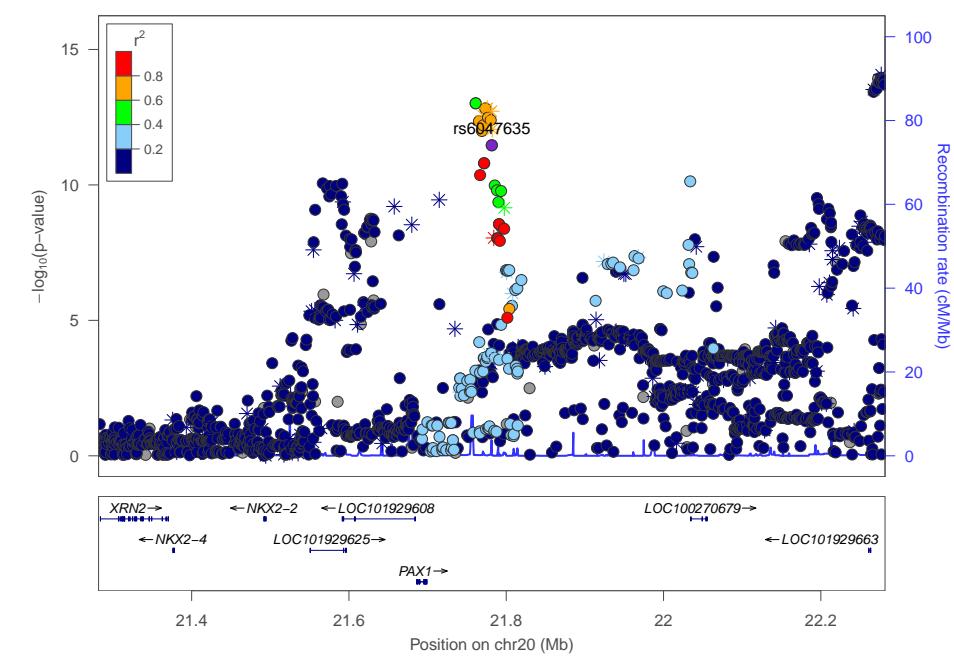


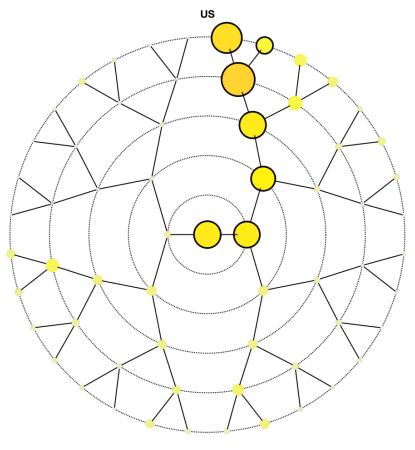
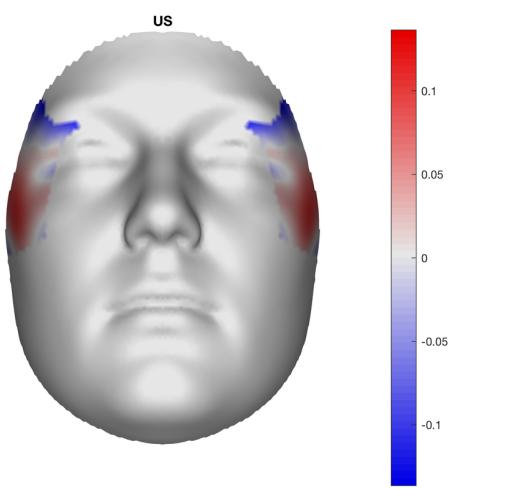
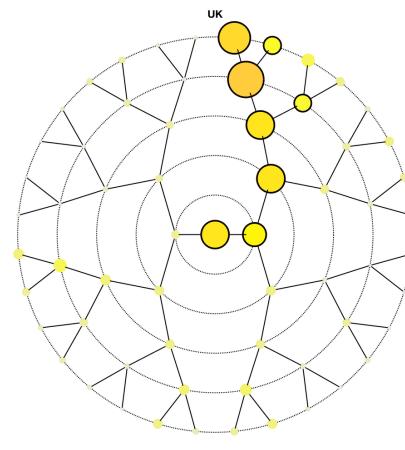
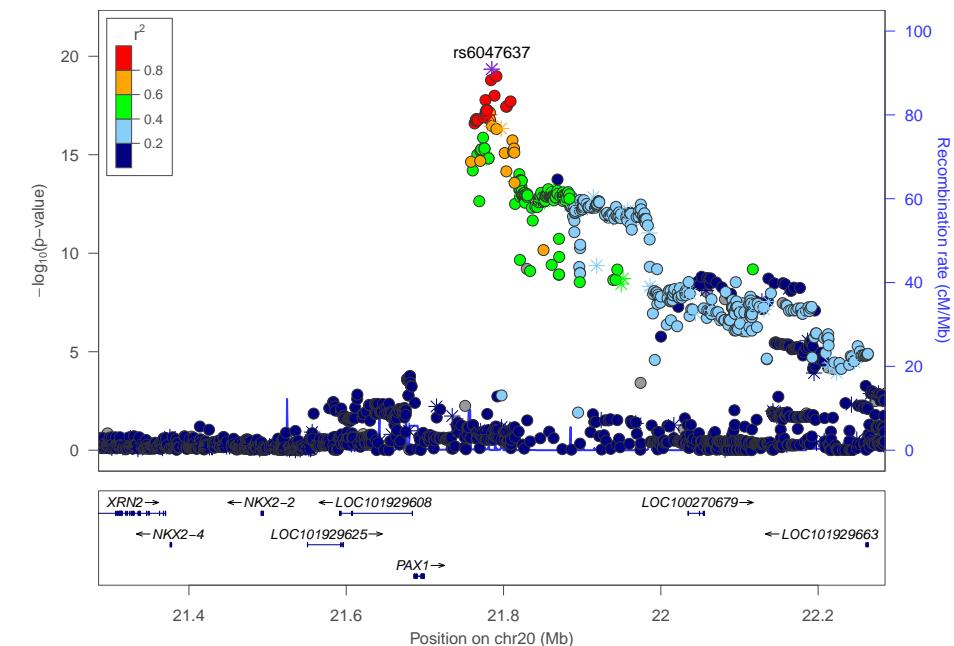
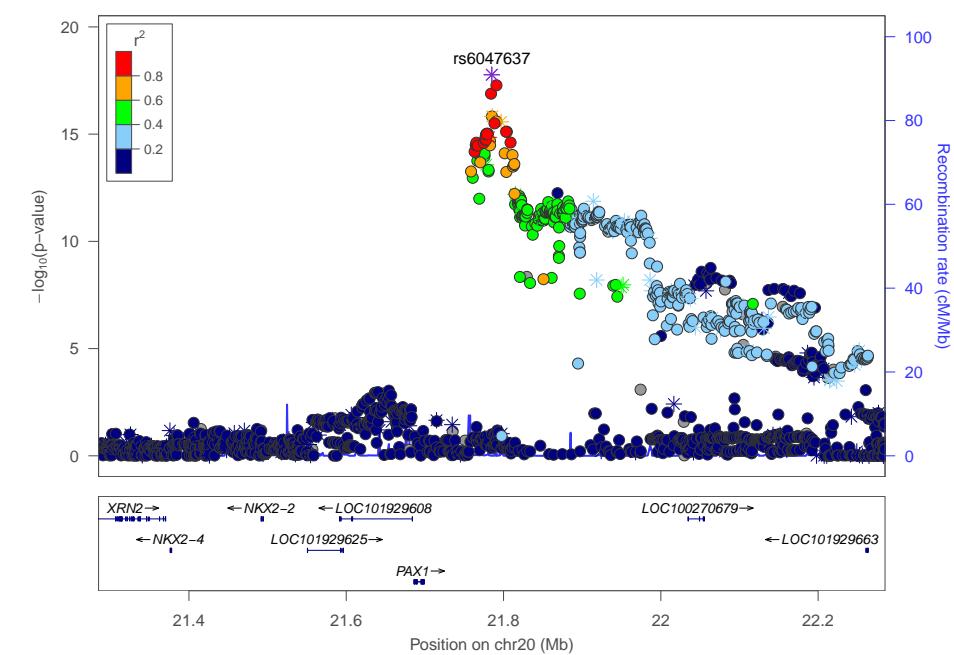
**C**



**B**



**A****B****C**

**A****B****C**

**Overview figures of 24 multi-peak loci.** For each of the twenty-four multi-peak loci (listed in Supplementary Table 5): (A)  $-\log_{10}(p\text{-value})$  of the meta-analysis one-sided, right-tailed p-value per facial segment in META<sub>US</sub> and META<sub>UK</sub> tracks. Black-encircled facial segments have reached genome-wide significance ( $P = 5 \times 10^{-8}$ ). (B) The normal displacement (displacement in the direction locally normal to the facial surface) in each quasi landmark of the facial segment reaching the lowest p-value in META<sub>US</sub> and META<sub>UK</sub>, going from the minor to the major allele. Blue indicates inward depression; red indicates outward protrusion. (C) LocusZoom plots in META<sub>US</sub> (top) and META<sub>UK</sub> (bottom), for the segment in which the SNP had its lowest p-value (one-sided). Points are colored based on linkage disequilibrium ( $r^2$ ) in the 1000 Genomes Phase 3 EUR population. Asterisks represent genotyped SNPs and circles represent imputed SNPs.