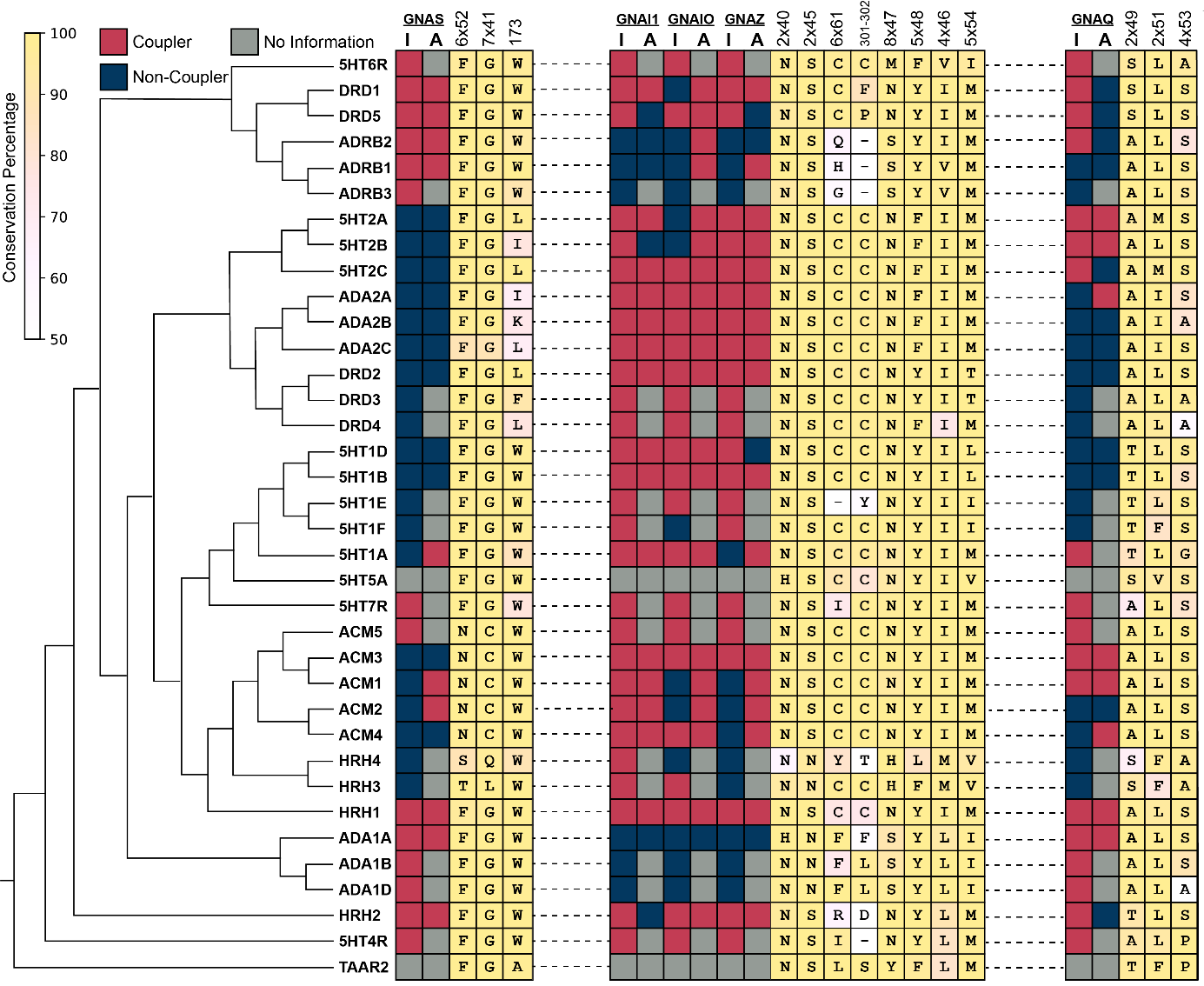
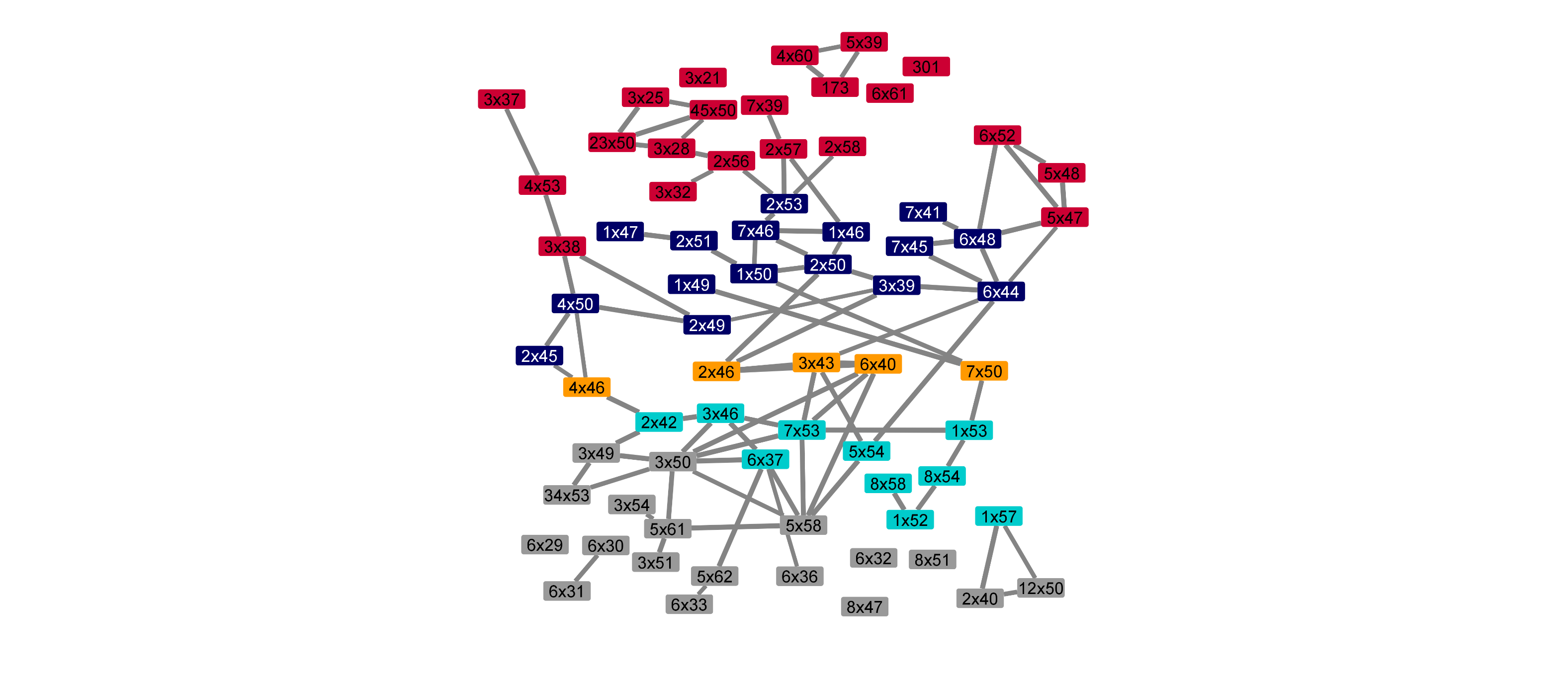
**Supplementary Figures**



**Supplementary Figure 1: Phylogenetic profiling of residues that determine selectivity for each g protein**

Phylogenetic tree of aminergic receptors is presented with important selectivity determining positions and coupling profiling information from two different sources. The conservation of each amino acid for a given receptor was shown in a yellow scale between 50 and 100 percentage.

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**Supplementary Figure 2: Selective pathways for activation containing all conserved residues**

This network contains complete list of conserved residues for each layer we demonstrated in Figure 2b. Each layer from top to bottom is represented with a different color. Some of the nodes are lack an edge due to the filtration step that we applied based on frequency of the information change between two residues.