

**A**

A phylogenetic tree showing the evolutionary relationships between 25 genes. The tree is rooted in the center and branches outwards. The genes are color-coded into six clusters: purple (top left), orange (top right), yellow (middle right), green (bottom right), blue (bottom left), and a partial blue cluster (bottom right). The genes are: GFAP, CHRNA3, CHRNA7A, CHRM1, A1F1, CHRM2, CHRNA10, PRIMA1, CHRM5, OLIG1, BOIE, COLQ, ACHE, CHRNA2, CHRNA2, NEU-N, CHRM1, CHRM3, CHRNA7, CHRNA4, CHRNA6, CHRNA3, CHRNA5, CHRNA4, CHAT, VACHT, WAGU, CHRNA9, CHRM6, CHRNA5, CHRNA4, CHRM1, CHRM3.

**B**

Phylogenetic tree showing the hierarchical clustering of 22 human chromosomes (Chr1-22). The tree is rooted at the bottom and branches upwards. Chromosomes are color-coded: blue (Chr1, Chr2, Chr3, Chr4, Chr5, Chr6, Chr7, Chr8, Chr9, Chr10, Chr11, Chr12, Chr13, Chr14, Chr15, Chr16, Chr17, Chr18, Chr19, Chr20, Chr21, Chr22), orange (Chr1, Chr2, Chr3, Chr4, Chr5, Chr6, Chr7, Chr8, Chr9, Chr10, Chr11, Chr12, Chr13, Chr14, Chr15, Chr16, Chr17, Chr18, Chr19, Chr20, Chr21, Chr22), green (Chr1, Chr2, Chr3, Chr4, Chr5, Chr6, Chr7, Chr8, Chr9, Chr10, Chr11, Chr12, Chr13, Chr14, Chr15, Chr16, Chr17, Chr18, Chr19, Chr20, Chr21, Chr22), and purple (Chr1, Chr2, Chr3, Chr4, Chr5, Chr6, Chr7, Chr8, Chr9, Chr10, Chr11, Chr12, Chr13, Chr14, Chr15, Chr16, Chr17, Chr18, Chr19, Chr20, Chr21, Chr22). The tree shows that chromosomes 1-22 are highly similar, with a small cluster of chromosomes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22. The tree also shows a distinct cluster of chromosomes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22.

[illegible]

D

Phylogenetic tree showing the relationships between 25 genes. The tree is rooted in the center and branches outwards. The genes are labeled with their names and are color-coded: blue (Chat, Vacht, Alfh, Chrm10, Colg, Prim1, Chrm3), green (Chrm6, Chrm3, Chrm4, Chrm5, Chrm2, Bche, Neu-N, Chrm1, Chrm2), orange (Chrm2, Bche, Neu-N, Chrm1, Chrm2), purple (Gfap, Olig1, Chrm4, Chrm5, Chrm4, Chrm5, Chrm2, Bche, Neu-N, Chrm1, Chrm2), and brown (Chrm2, Bche, Neu-N, Chrm1, Chrm2).