More than any other species, humans form social ties to individuals who are neither kin nor mates, and these ties tend to be with similar people. Here, we show that this similarity extends to genotypes. Across the whole genome, friends’ genotypes at the SNP level tend to be positively correlated (homophilic); however, certain genotypes are negatively correlated (heterophilic). A focused gene set analysis suggests that some of the overall correlation can be explained by specific systems; for example, an olfactory gene set is homophilic and an immune system gene set is heterophilic. Finally, homophilic genotypes exhibit significantly higher measures of positive selection, suggesting that, on average, they may yield a synergistic fitness advantage that has been helping to drive recent human evolution.