The majority of early-onset primary dystonias, which may appear during childhood or early adulthood, are due to mutations of a gene known as DYT1. This gene has been mapped to the long arm of chromosome 9 at 9q34.1. In about 90 to 95 percent of cases, symptoms begin in a limb and then spread to other regions of the body. This form of dystonia has an average age of onset of 12 and seldom develops after age 29.

DYT6 dystonia is an autosomal dominant primary dystonia that has been mapped to chromosome 8 (8p21q22). It is rarer than DYT1 dystonia and has been studied in two Mennonite families in the United States. In nearly all individuals with this form of dystonia, the disorder begins at an initial site but spreads to multiple body regions, most commonly the limbs, head, or neck. Severe difficulties with speech articulation have been noted.

Other familial primary dystonias identified are DYT7, DYT2, and DYT4, all of which have been noted in specific ethnic groups, primarily of European descent.