Title: Congenital Fibrosis of the Extraocular Muscles Overview *GeneReview* Table 3
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Note: The following information is provided by the authors listed above and has not been reviewed by *GeneReviews* staff.

Table 3. *TUBB3* Possible Genotype-Phenotype Correlations

Reference Sequences	DNA Nucleotide Change (Predicted Protein Change)	Additional CFEOM3 Findings	Brain MRI	Other Features
NM_006086.4 NP_006077.2	c.185G>A (p.Arg62Gln) [Tischfield et al 2010]		Normal	None
	c.211G>A (p.Gly71Arg) [Whitman et al 2016]	Esotropic eye position	Thinning or agenesis of corpus callosum, ↑ & abnormal cortical gyration, basal ganglia & thalamus dysgenesis, brain stem hypoplasia, incomplete rotation of hippocampus, hypoplasia of optic & oculomotor nerves	DD, hypotonia
	c.292G>A (p.Gly98Ser) [Whitman et al 2016]	Can be unilateral, esotropic eye position	Thinning of corpus callosum, ↑ & abnormal cortical gyration, basal ganglia & thalamus dysgenesis, brain stem hypoplasia, incomplete rotation of hippocampus, cerebellar vermis hypoplasia w/dysmorphic folia, hypoplasia of optic & oculomotor nerves	DD, hypotonia
	c.784C>T (p.Arg262Cys) [Tischfield et al 2010]	Can be unilateral or bilateral; severity of eye movement limitation & ptosis varies between persons, even w/in a family.	Anterior commissure hypoplasia, mild corpus callosum hypoplasia, mild basal ganglia dysgenesis.	None
	c.785G>A (p.Arg262His) [Tischfield et al	Profound restrictions of eye	• Anterior commissure hypoplasia, corpus callosum hypoplasia,	DD, facial weakness, progressive axonal

	2010; Authors, personal observations]	movements, exotropia	basal ganglia dysgenesis • Hypoplastic-to-absent olfactory bulbs, olfactory sulci, & oculomotor & facial nerves	sensorimotor polyneuropathy, congenital joint contractures, Kallmann syndrome (hypogonadotropic hypogonadism w/anosmia; see Isolated GnRH Deficiency)
	c.904G>A (p.Ala302Thr) [Tischfield et al 2010]	Severity of eye movement limitation & ptosis varies between persons.	Anterior commissure hypoplasia, corpus callosum hypoplasia.	DD
	c.1138C>T (p.Arg380Cys) [Tischfield et al 2010]		Anterior commissure hypoplasia, corpus callosum hypoplasia, basal ganglia dysgenesis	DD
	c.1228G>A (p.Glu410Lys) [Tischfield et al 2010, Chew et al 2013]	Profound restrictions of eye movements, exotropia	Anterior commissure hypoplasia, corpus callosum hypoplasia, hypoplastic to absent olfactory bulbs, olfactory sulci, & oculomotor & facial nerves (Note: no basal ganglia dysgenesis)	DD, facial weakness, midface hypoplasia, Kallmann syndrome (hypogonadotropic hypogonadism w/anosmia; see Isolated GnRH Deficiency), progressive sensorimotor polyneuropathy, vocal cord paralysis, cyclic vomiting
	c.1249G>A (p.Asp417Asn) [Tischfield et al 2010]	Severity of eye movement limitation & ptosis varies between persons.	Anterior commissure hypoplasia, mild corpus callosum hypoplasia, mild basal ganglia dysgenesis	Weakness, progressive axonal sensorimotor polyneuropathy
	c.1249G>C (p.Asp417His) [Tischfield et al 2010]	Profound restrictions of eye movements, exotropia	Anterior commissure hypoplasia	DD, facial weakness, progressive axonal sensorimotor polyneuropathy, congenital joint contractures

DD = developmental delay; ID = intellectual disability

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