

Title: Holoprosencephaly Overview *GeneReview* Table 2

Authors: Muenke M, Gropman A

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Note: The following information is provided by the authors listed above and has not been reviewed by *GeneReviews* staff.

Table 2. Summary of Sequence Variations in *SHH*

Mutations	Sequence Change	Expected Effect	Type of Mutation	Reference
	160-161 insGCTG	3-4 ins	Insert with frameshift	Nanni et al 1999
	189-196 del	13-15 del	Deletion with frameshift	Nanni et al 1999
	91G→A	G31R	Missense	Roessler et al 1996
	263→A	D88V	Missense	Nanni et al 1999
	298C→T	Q100X	Nonsense	Roessler et al 1996
	300G→C	Q100H	Missense	Odent et al 1999
	313A→T	K105X	Nonsense	Roessler et al 1996
	345C→A	N115K	Missense	Nanni et al 1999
	349T→G	W117G	Missense	Roessler et al 1996
	349T→C	W117R	Missense	Roessler et al 1996
	474C→G	Y158X	Nonsense	Odent et al 1999
	562G→C	E188Q	Missense	Odent et al 1999
	625C→T	Q209X	Nonsense	Nanni et al 1999
	664G→A	D222N	Missense	Odent et al 1999
	671T→A	V224E	Missense	Roessler et al 1997
	676G→A	A226T	Missense	Roessler et al 1997
	708C→A	S236R	Missense	Nanni et al 1999
	766G→T	E256X	Nonsense	Nanni et al 1999
	939-959 del	263-269 del	Deletion in frame	Nanni et al 1999
	939-959 del	263-269 del	Deletion in frame	Roessler et al 1997

Mutations	Sequence Change	Expected Effect	Type of Mutation	Reference
	850G→T	E284X	Nonsense	Roessler et al 1997
	869G→A	G290D	Missense	Nanni et al 1999
	1283-1291 del	378-380 del	Deletion in frame	Nanni et al 1999
	1147G→A	A383T	Missense	Roessler et al 1997
	1361-1375 del	404-408 del	Deletion in frame	Nanni et al 1999
	1270C→G	P424A	Missense	Nanni et al 1999
	1308C→T	S436L	Missense	Nanni et al 1999
Polymorphisms	Sequence Change	Expected Effect	Frequency	Reference
	570G→A	S190S	2/344	Nanni et al 1999
	585G→A	S195S	2/344	Roessler et al 1997
	630C→T	G210G	1/344	Nanni et al 1999
	825G→A	A275A	1/344	Present study
	876G→A	G292G	1/344	Roessler et al 1997
	885C→T	S295S	1/344	Nanni et al 1999
	1005G→A	V335V	2/344	Present study

References

Nanni L, Ming JE, Bocian M, Steinhaus K, Bianchi DW, Die-Smulders C, Giannotti A, Imaizumi K, Jones KL, Campo MD, Martin RA, Meinecke P, Pierpont ME, Robin NH, Young ID, Roessler E, Muenke M. The mutational spectrum of the sonic hedgehog gene in holoprosencephaly: SHH mutations cause a significant proportion of autosomal dominant holoprosencephaly. *Hum Mol Genet.* 1999;8:2479–88.

Odent S, Atti-Bitach T, Blayau M, Mathieu M, Aug J. Expression of the Sonic hedgehog (SHH) gene during early human development and phenotypic expression of new mutations causing holoprosencephaly. *Hum Mol Genet.* 1999;8:1683–9.

Roessler E, Belloni E, Gaudenz K, Jay P, Berta P, Scherer SW, Tsui LC, Muenke M. Mutations in the human Sonic Hedgehog gene cause holoprosencephaly. *Nat Genet* 1996;14:357-60

Roessler E, Ward DE, Gaudenz K, Belloni E, Scherer SW, Donnai D, Siegel-Bartelt J, Tsui LC, Muenke M. Cytogenetic rearrangements involving the loss of the Sonic Hedgehog gene at 7q36 cause holoprosencephaly. *Hum Genet.* 1997;100:172–81.