

Title: Action Myoclonus – Renal Failure Syndrome *GeneReview* – Table 4

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

**Table 4. Pathogenic Variants in *SCARB2* Causing AMRF Syndrome**

Standard Naming Convention DNA Nucleotide Change	Location	Protein Amino Acid Change	Reference Sequence	Reference
c.111delC Frameshift and premature stop	Exon 1		N/A	Hopfner et al [2011]
c.296delA Frameshift	Exon 3	p.Asn99IlefsTer34	NM_005506	Berkovic et al [2008]
c.361C>T	Exon 3	p.Arg121Ter	NM_005506	Fu et al [2014]
c.435_436insAG	Exon 4	p.Trp146SerfsTer16	NM_005506	Berkovic et al [2008]
c.533G>A Nonsense	Exon 4	p.Trp178Ter	N/A	Balreira et al [2008]
c.424-2A>C Splice-site	Intron 4	-	NM_005506	Dibbens et al [2009]
c.666delCCTTA Frameshift	Exon 5	p.Tyr222Ter	NM_005506	Dibbens et al [2009] Hopfner et al [2011]
c.704+1G>A Splice-site	Intron 5		N/A	Perandones et al [2012] Perandones et al [2014]
c.704+1G>C Splice-site	Intron 5		NM_005506	Dibbens et al [2009]
c.862C>T Nonsense	Exon 7	p.Gln288Ter	NM_005506	Berkovic et al [2008] Dibbens et al [2011]
c.1015_1016insT	Exon 8	p.His341ThrfsTer7	NM_005506	Guerrero-Lopez [2012]
c.1087C>A Missense	Exon 8	p.His363Asn	N/A	Dardis et al [2009]
c.1116-2A>C Splice-site	Intron 8	-	NM_005506	Dibbens et al [2009]
c.1187+3insT Splice-site	Intron 9		NM_005506	Dibbens et al [2011]
c.1239+1G>T Splice-site	Intron 10	-	NM_005506	Berkovic et al [2008]
c.1258delG Frameshift	Exon 11	p.Glu420ArgfsTer5	NM_005506	Dibbens et al [2009]
c.1270C>T	Exon 11	p.Arg42Ter	NM_005506	Zeigler et al [2014] He et al [2014]
c.1385_1390del6insATGCATGCACC	Exon 11	p.Gly462AspfsTer34	NM_005506	Higashiyama et al [2013] Fu et al [2013]
c.1412A>G	Exon 12	p.Gln471Gly	NM_005506	Velayati et al [2011]

N/A = not available

## References

- Balreira A, Gaspar P, Caiola D, Chaves J, Beirao I, Lima JL, Azevedo JE, Miranda MC. A nonsense mutation in the LIMP-2 gene associated with progressive myoclonic epilepsy and nephrotic syndrome. *Hum Mol Genet.* 2008;17:2238-43.
- Berkovic SF, Dibbens LM, Oshlack A, Silver JD, Katerelos M, Vears DF, Lullmann-Rauch R, Blanz J, Zhang KW, Stankovich J, Kalnins RM, Dowling JP, Andermann E, Andermann F, Faldini E, D'Hooge R, Vadlamudi L, Macdonell RA, Hodgson BL, Bayly MA, Savige J, Mulley JC, Smyth GK, Power DA, Saftig P, Bahlo M. Array-based gene discovery with three unrelated subjects shows SCARB2/LIMP-2 deficiency causes myoclonus epilepsy and glomerulosclerosis. *Am J Hum Genet.* 2008;82:673-84.
- Dardis A, Filocamo M, Grossi S, Ciana G, Franceschetti S, Dominissini S, Rubboli G, Di Rocco M, Bembi B. Biochemical and molecular findings in a patient with myoclonic epilepsy due to a mistarget of the beta-glucosidase enzyme. *Mol Genet Metab.* 2009;97:309-11.
- Dibbens LM, Karakis I, Bayly MA, Costello DJ, Cole AJ, Berkovic SF. Mutation of SCARB2 in a patient with progressive myoclonus epilepsy and demyelinating peripheral neuropathy. *Arch Neurol.* 2011;68:812-3.
- Dibbens LM, Michelucci R, Gambardella A, Andermann F, Rubboli G, Bayly MA, Joensuu T, Vears DF, Franceschetti S, Canafoglia L, Wallace R, Bassuk AG, Power DA, Tassinari CA, Andermann E, Lehesjoki AE, Berkovic SF. SCARB2 mutations in progressive myoclonus epilepsy (PME) without renal failure. *Ann Neurol.* 2009;66:532-6.
- Fu YJ, Aida I, Tada M, Tada M, Toyoshima Y, Takeda S, Nakajima T, Naito H, Nishizawa M, Onodera O, Kakita A, Takahashi H. Progressive myoclonus epilepsy: extraneuronal brown pigment deposition and system neurodegeneration in the brains of Japanese patients with novel SCARB2 mutations. *Neuropathol Appl Neurobiol.* 2014;40:551-63.
- Guerrero-López R, García-Ruiz PJ, Giráldez BG, Durán-Herrera C, Querol-Pascual MR, Ramírez-Moreno JM, Más S, Serratosa JM. A new SCARB2 mutation in a patient with progressive myoclonus ataxia without renal failure. *Mov Disord.* 2012;27:1826-7.
- Higashiyama Y, Doi H, Wakabayashi M, Tsurusaki Y, Miyake N, Saitsu H, Ohba C, Fukai R, Miyatake S, Joki H, Koyano S, Suzuki Y, Tanaka F, Kuroiwa Y, Matsumoto N. A novel SCARB2 mutation causing late-onset progressive myoclonus epilepsy. *Mov Disord.* 2013;28:552-3.
- Hopfner F, Schormair B, Knauf F, Berthele A, Tolle TR, Baron R, Maier C, Treede RD, Binder A, Sommer C, Maihofner C, Kunz W, Zimprich F, Heemann U, Pfeufer A, Nabauer M, Kaab S, Nowak B, Gieger C, Lichtner P, Trenkwalder C, Oexle K, Winkelmann J. Novel SCARB2 mutation in action myoclonus-renal failure syndrome and evaluation of SCARB2 mutations in isolated AMRF features. *BMC Neurol.* 2011;11:134.
- Perandones C, Micheli FE, Pellene LA, Bayly MA, Berkovic SF, Dibbens LM. A case of severe hearing loss in action myoclonus renal failure syndrome resulting from mutation in SCARB2. *Mov Disord.* 2012;27:1200-1.
- Perandones C, Pellene LA, Micheli F. Reply: A new SCARB2 mutation in a patient with progressive myoclonus ataxia without renal failure. *Mov Disord.* 2014;29:158-9.
- Velayati A, DePaolo J, Gupta N, Choi JH, Moaven N, Westbroek W, Goker-Alpan O, Goldin E, Stubblefield BK, Kolodny E, Tayebi N, Sidransky E. A mutation in SCARB2 is a modifier in Gaucher disease. *Hum Mutat.* 2011;32:1232-8.
- Zeigler M, Meiner V, Newman JP, Steiner-Birmanns B, Bargal R, Sury V, Mengistu G, Kakhlon O, Leykin I, Argov Z, Abramsky O, Lossos A. A novel SCARB2 mutation in progressive myoclonus epilepsy indicated by reduced beta-glucocerebrosidase activity. *J Neurol Sci.* 2014;339:210-3.