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The proposed new list of autosomal dominantly inherited ataxias

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| --- | --- | --- | --- | --- | --- |
| New designation | | Less common movement phenotype | Clinical clues | Inheritance | Locus symbol |
| **Pure or relatively pure ataxia** | | | | | |
| ATX-*SPTBN2 [1]* | |  | Pure ataxia  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 600224 | AD | SCA5 |
| ATX-*CACNA1A [2]* | |  | Pure ataxia. Allelic with episodic ataxia type 2 and familial hemiplegic migraine type 1.  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1140/  OMIM 183086 | AD | SCA6 |
| ATX-*TTBK2 [3]* | |  | Pure ataxia  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1757/  OMIM 604432 | AD | SCA11 |
| ATX-*PDYN [4]* | |  | Pure ataxia  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 610245 | AD | SCA23 |
| ATX-*ATXN8OS [5]* | |  | Relatively pure; pyramidal signs, neuropsychiatric features  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1268/  OMIM 608768 | AD | SCA8 |
| ATX-*PPP2R2B [6]* | |  | Relatively pure; head and hand tremor  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1202/  OMIM 604326 | AD | SCA12 |
| ATX-*PRKCG [7]* | |  | Relatively pure; sometimes other movement disorders (dystonia, myoclonus)  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1399/  OMIM 605361 | AD | SCA14 |
| ATX-*ITPR1 [8]*, [9] | |  | Relatively pure; myoclonus, dystonia  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1362/  OMIM 606658 | AD | SCA15/16 |
| ATX-KCND3 [10] | |  | Relatively pure; hand tremor, peripheral neuropathy, cognitive disturbances  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 607346 | AD | SCA19/22 |
| ATX-*FGF14 [11]* | |  | Relatively pure; early-onset hand tremor, orofacial dyskinesia, behavioural problems  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 609307 | AD | SCA27 |
| ATX-*TGM6 [12]* | |  | Relatively pure; pyramidal features, cervical dystonia  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 613908 | AD | SCA35 |
| ATX-*ELOVL5 [13]* | |  | Relatively pure; neuropathy  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 615957 | AD | SCA38 |
| ATX-CACNA1G [14] | |  | Pyramidal features; facial myokymia  http://omim.org/entry/604065 | AD | SCA42 |
| ATX-ELOVL4[15] | |  | Relatively pure; peripheral neuropathy  Erythrokeratodermia  http://omim.org/entry/133190 | AD | SCA34 |
| **Complex Ataxia (ataxias that can often have other neurological features)** | | | | | |
| ATX-*ATXN1[3]* |  | | Marked non-ataxia features; can have dominant choreapyramidal features, peripheral neuropathy, ophthalmoplegia  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1184/  OMIM 164400 | AD | SCA1 |
| ATX-*ATXN2 [16]* | Parkinsonism [17] | | Marked non-ataxia features, can have predominant parkinsonism or chorea; neuronopathy, dementia, myoclonus  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1275/  OMIM 183090 | AD | SCA2 |
| ATX-*ATXN3 [18]* | HSP, dystonia [19], [20] | | Marked non-ataxia features; can have predominant parkinsonism, dystonia, chorea, spasticity, neuropathy, lower motor neuron involvement  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1196/  OMIM 109150 | AD | SCA3 |
| ATX-*ATXN7 [21]* |  | | Retinitis pigmentosa with marked visual loss  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1256/  OMIM 164500 | AD | SCA7 |
| ATX-*ATXN10 [22]* |  | | Seizures  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1175/  OMIM 603516 | AD | SCA10 |
| ATX-*TBP [23]* | Chorea [24] | | Marked non-ataxia features, can present with predominant chorea. May be HD-like  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1438/  OMIM 607136 | AD | SCA17, HDL4 |
| ATX-*TMEM240 [25]* |  | | Cognitive impairment / mental retardation  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 607454 | AD | SCA21 |
| ATX-*AFG3L2 [26]* |  | | Ophthalmoparesis  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK54582/  OMIM 610246 | AD | SCA28 |
| ATX-*BEAN1 [27]* |  | | Hearing loss, vertigo  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 117210 | AD | SCA31 |
| ATX-*NOP56 [28]* |  | | Motor neuron involvement  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK231880/  OMIM 614153 | AD | SCA36 |
| ATX-*DNMT1 [29]* |  | | Sensorineural deafness, narcolepsy, dementia  GeneReviews http://www.ncbi.nlm.nih.gov/books/NBK84112/  OMIM: 126375 | AD | None |
| ATX-*ATN1 [30]* | Chorea [31] | | Dentatorubropallidoluysian atrophy (DRPLA): Myoclonus, chorea, parkinsonism, dementia, supranuclear gaze palsy, seizures (particularly in young patients)  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1491/  OMIM: 607462 | AD | None |
| ATX/HSP-*VAMP1 [32]* |  | | Spastic ataxia, supranuclear upgaze limitation  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1138/  OMIM 108600 | AD | SPAX1 |
| **Disorders that usually present with other phenotypes but can have predominant ataxia** | | | | | |
| *GFAP [33]* | Spastic ataxia [34] | | Usually presenting with infantile onset megalencephaly, (pseudo)bulbar signs, spasticity, cognitive deficits, developmental delay, white matter changes (Alexander disease)  GeneReviews  <http://www.ncbi.nlm.nih.gov/books/NBK1172/>  OMIM 137780 | AD |  |
| HSP-*KIF1C [35]*  Allelic with autosomal recessive spastic ataxia at the SAX2 locus. | Dystonia, ataxia [35] | | Pure and complicated, chorea, myoclonus, dysarthria, developmental delay, mild mental retardation, hypodontia, ptosis, short stature, sensorineural deafness, pes planus, white matter lesions.  GeneReviews: http://www.ncbi.nlm.nih.gov/books/NBK1509/  OMIM 611302 | AR | SPG58 |
| HSP/NBIA-*FA2H [36]* | Dystonia, Ataxia [37] | | Fatty Acid Hydroxylase-associated Neurodegeneration (FAHN) Dystonia, ataxia  Iron accumulation: GP (more subtle than other NBIAs)  Additional clinical features: Spastic tetraparesis, cognitive decline, cerebellar and brainstem atrophy, dysarthria, dysphagia, optic nerve atrophy, seizures  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1509/  OMIM 612319 | AR | SPG35 |
| HSP-*REEP1 [38]* | Ataxia [39] | | Pure or complex; distal motor neuronopathy, axonal Peripheral neuropathy, Silver-like syndrome, cerebellar ataxia, tremor, dementia.  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1509/  OMIM 610250 | AD | SPG31 |
| NBIA/DYT/PARK\*-*PLA2G6 [40]* | Ataxia [41] | | *PLA2G6*-associated neurodegeneration (PLAN):  Dystonia, parkinsonism, cognitive decline, pyramidal signs, psychiatric symptoms (adult phenotype), ataxia (childhood phenotype)  Iron accumulation: GP, SN in some; adults may have striatal involvement; about half of INAD and the majority of adult-onset cases lack brain iron accumulation on MRI  GeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1675/  OMIM 612953 | AR | NBIA2, PARK14 |
| HSP/NBIA- *FA2H [36]* | Dystonia, parkinsonism, ataxia [37] | | Fatty Acid Hydroxylase-associated Neurodegeneration (FAHN) [37]:  Iron accumulation: GP (more subtle than other NBIAs)  Additional clinical features: Spastic tetraparesis, cognitive decline, cerebellar and brainstem atrophy, dysarthria, dysphagia, optic nerve atrophy, seizuresGeneReviews  http://www.ncbi.nlm.nih.gov/books/NBK1509/  OMIM 612319 | AR | SPG35 |

AD: autosomal dominant; CPEO: chronic progressive external ophthalmoplegia

\* Mutations in this gene more commonly cause infantile neuroaxonal dystrophy (INAD): Developmental delay / regression, hypotonia, spasticity / pyramidal signs, optic nerve atrophy, sensorimotor neuropathy, seizures

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