INVITAE NEUROLOGY GENE PANEL TESTS

A broad menu covering the vast majority of inherited neurological conditions with both large comprehensive and smaller condition-specific panels curated by medical genetics experts.

CLINICAL AREA: CARDIOLOGY AND NEUROLOGY

Test name	# gene(s)	Gene list
Movement Disorders		
Invitae Dystonia Panel	18	ANO3, ATP1A3, ATP7B, GCH1, GNAL, HEXA, PNKD, PRKN, PRKRA, PRRT2, SGCE, SLC2A1, SLC6A3, SPR, TH, THAP1, TOR1A, TUBB4A
Add-on preliminary-evidence genes	5	CIZ1, DRD2, HPCA, KCTD17, TOR1AIP1
Invitae Hereditary Parkinson's Disease & Parkinsonism Panel	16	ATP7B, ATP13A2, DCTN1, DNAJC6, FBXO7, GCH1, LRRK2, PARK7, PINK1, PRKN, PRKRA, SLC6A3, SNCA, SPR, TH, VPS35
Add-on preliminary-evidence genes	2	CHCHD2, MAPT
Neurodegenerative Disorders		
Invitae Combined Hereditary Dementia and Amyotrophic Lateral Sclerosis Panel	23	ALS2, APP, CHCHD10, DCTN1, FUS, GRN, KIF5A, MAPT, OPTN, PFN1, PRNP, PSEN1, PSEN2, SETX, SNCA, SOD1, SPG11, TARDBP, TBK1, TFG, UBQLN2, VAPB, VCP
Add-on preliminary-evidence genes	5	CHMP2B, HNRNPA2B1, MATR3, SIGMAR1, SQSTM1
Invitae Amyotrophic Lateral Sclerosis Panel	16	ALS2, CHCHD10, DCTN1, FUS, KIF5A, OPTN, PFN1, SETX, SOD1, SPG11, TARDBP, TBK1, TFG, UBQLN2, VAPB, VCP
Add-on preliminary-evidence genes	4	CHMP2B, MATR3, SIGMAR1, SQSTM1
Invitae Frontotemporal Dementia Panel	9	CHCHD10, DCTN1, FUS, GRN, MAPT, TARDBP, TBK1, UBQLN2, VCP
Add-on preliminary-evidence genes	4	CHMP2B, HNRNPA2B1, PSEN1, SQSTM1
Invitae Hereditary Alzheimer's Disease Panel	3	APP, PSEN1, PSEN2
Invitae Hereditary Parkinson's Disease & Parkinsonism Panel	16	ATP7B, ATP13A2, DCTN1, DNAJC6, FBXO7, GCH1, LRRK2, PARK7, PINK1, PRKN, PRKRA, SLC6A3, SNCA, SPR, TH, VPS35
Add-on preliminary-evidence genes	2	CHCHD2, MAPT
Invitae Hereditary Prion Disease Test	1	PRNP
Neuromuscular Disorders		
Invitae Comprehensive Neuromuscular Disorders Panel	109	ACTA1, AGRN, ALG2, ANO5, ATP2A1, B3GALNT2, B4GAT1, BAG3, BIN1, CACNA1S, CAPN3, CAV3, CCDC78, CFL2, CHAT, CHKB, CHRNA1, CHRNB1, CHRND, CHRNE, CLCN1, CNTN1, COL12A1, COL6A1, COL6A2, COL6A3, COLQ, CPT2, CRYAB, DAG1, DES, DMD, DNAJB6, DNM2, DOK7, DPAGT1, DPM1, DPM2, DPM3, DYSF, EMD, FHL1, FKBP14, FKRP, FKTN, FLNC, GAA, GFPT1, GMPPB, GNE, GYS1, ISPD, ITGA7, KBTBD13, KCNJ2, KLHL40, KLHL41, LAMA2, LAMP2, LARGE1, LDB3, LMNA, LMOD3, MATR3, MEGF10, MTM1, MUSK, MYH2, MYH7, MYL2, MYOT, MYPN, NEB, PLEC, PNPLA2, POMGNT1, POMGNT2, POMK, POMT1, POMT2, PREPL, RAPSN, RXYLT1, RYR1, SCN4A, SELENON, SGCA, SGCB, SGCD, SGCG, SLC5A7, SMN1, SMN2, SQSTM1, STAC3, STIM1, TAZ, TCAP, TIA1, TNNT1, TNPO3, TOR1AIP1, TPM2, TPM3, TRAPPC11, TRIM32, TTN, VCP, VMA21
Add-on preliminary-evidence genes	13	ALG14, HNRNPA2B1, HNRNPDL, LAMB2, LIMS2, LRP4, MYF6, SNAP25, SUN1, SUN2, SYNE1, SYNE2, TMEM43
Add-on facioscapulohumeral muscular dystrophy type 2 (FSHD2) gene	1	SMCHD1
Invitae Congenital Myasthenic Syndrome Panel	16	AGRN, ALG2, CHAT, CHRNA1, CHRNB1, CHRND, CHRNE, COLQ, DOK7, DPAGT1, GFPT1, GMPPB, MUSK, PREPL, RAPSN, SLC5A7
Add-on preliminary-evidence genes	6	ALG14, LAMB2, LRP4, PLEC, SCN4A, SNAP25
Invitae Malignant Hyperthermia Susceptibility Panel	2	CACNA1S, RYR1

INVITAE NEUROLOGY GENE PANEL TESTS

CLINICAL AREA: CARDIOLOGY AND NEUROLOGY

Test name	# gene(s)	Gene list
Neuromuscular Disorders (continued)		
Invitae Comprehensive Muscular Dystrophy Panel	48	ANO5, B3GALNT2, B4GAT1, CAPN3, CAV3, CHKB, COL12A1, COL6A1, COL6A2, COL6A3, DAG1, DES, DMD, DNAJB6, DPM1, DPM2, DPM3, DYSF, EMD, FHL1, FKRP, FKTN, GAA, GMPPB, ISPD, ITGA7, LAMA2, LARGE1, LMNA, MYOT, PLEC, PNPLA2, POMGNT1, POMGNT2, POMK, POMT1, POMT2, RXYLT1, SGCA, SGCB, SGCD, SGCG, TCAP, TNPO3, TOR1AIP1, TRAPPC11, TRIM32, TTN
Add-on preliminary-evidence genes	7	HNRNPDL, LIMS2, SUN1, SUN2, SYNE1, SYNE2, TMEM43
Add-on facioscapulohumeral muscular dystrophy type 2 (FSHD2) gene	1	SMCHD1
Invitae Congenital Muscular Dystrophy Panel	27	B3GALNT2, B4GAT1, CHKB, COL12A1, COL6A1, COL6A2, COL6A3, DAG1, DMD, DPM1, DPM2, DPM3, FKRP, FKTN, GMPPB, ISPD, ITGA7, LAMA2, LARGE1, LMNA, POMGNT1, POMGNT2, POMK, POMT1, POMT2, RXYLT1, TCAP
Invitae Dystroglycanopathy Panel	17	B3GALNT2, B4GAT1, DAG1, DPM1, DPM2, DPM3, FKRP, FKTN, GMPPB, ISPD, LARGE1, POMGNT1, POMGNT2, POMK, POMT1, POMT2, RXYLT1
Invitae Dystrophinopathies Test	1	DMD
Invitae Emery-Dreifuss Muscular Dystrophy Panel	3	EMD, FHL1, LMNA
Add-on preliminary-evidence genes	5	SUN1, SUN2, SYNE1, SYNE2, TMEM43
Invitae Limb-Girdle Muscular Dystrophy Panel	31	ANO5, CAPN3, CAV3, DAG1, DES, DMD, DNAJB6, DYSF, FKRP, FKTN, GAA, GMPPB, ISPD, LMNA, MYOT, PLEC, PNPLA2, POMGNT1, POMK, POMT1, POMT2, SGCA, SGCB, SGCD, SGCG, TCAP, TNPO3, TOR1AIP1, TRAPPC11, TRIM32, TTN
Add-on preliminary-evidence genes	2	HNRNPDL, LIMS2
Add-on facioscapulohumeral muscular dystrophy type 2 (FSHD2) gene	1	SMCHD1
Invitae Comprehensive Myopathy Panel	52	ACTA1, ANO5, ATP2A1, BAG3, BIN1, CACNA1S, CAV3, CCDC78, CFL2, CNTN1, COL12A1, COL6A1, COL6A2, COL6A3, CPT2, CRYAB, DES, DNAJB6, DNM2, DYSF, FHL1, FKBP14, FLNC, GNE, GYS1, KBTBD13, KCNJ2, KLHL40, KLHL41, LDB3, LMNA, LMOD3, MATR3, MEGF10, MTM1, MYH7, MYL2, MYOT, MYPN, NEB, RYR1, SCN4A, SELENON, SQSTM1, STAC3, STIM1, TIA1, TNNT1, TPM2, TPM3, TTN, VCP
Add-on preliminary-evidence gene	1	MYF6
Invitae Congenital Myopathy Panel	27	ACTA1, BIN1, CCDC78, CFL2, CNTN1, COL12A1, COL6A1, COL6A2, COL6A3, DNM2, FKBP14, KBTBD13, KLHL40, KLHL41, LMOD3, MEGF10, MTM1, MYH7, MYPN, NEB, RYR1, SELENON, STAC3, TNNT1, TPM2, TPM3, TTN
Add-on preliminary-evidence gene	1	MYF6
Invitae Autophagic Vacuolar Myopathy Panel	3	DES, LAMP2, VMA21
Invitae Central Core Disease Test	1	RYR1
Invitae Centronuclear Myopathy Panel	6	BIN1, CCDC78, DNM2, MTM1, RYR1, TTN
Add-on preliminary-evidence gene	1	MYF6
Invitae Congenital Fiber-Type Disproportion Panel	7	ACTA1, LMNA, MYH7, RYR1, SELENON, TPM2, TPM3
Invitae Distal Myopathy Panel	18	ANO5, BAG3, CAV3, CRYAB, DES, DNAJB6, DYSF, FHL1, FLNC, GNE, LDB3, MATR3, MYH7, MYOT, SQSTM1, TIA1, TTN, VCP
Invitae Inclusion Body Myopathy Panel	4	GNE, MYH2, TTN, VCP
Add-on preliminary-evidence gene	1	HNRNPA2B1

INVITAE NEUROLOGY GENE PANEL TESTS

CLINICAL AREA: CARDIOLOGY AND NEUROLOGY

Test name	# gene(s)	Gene list
Neuromuscular Disorders (continued)		
Invitae Multiminicore Disease Panel	2	RYR1, SELENON
Invitae Myofibrillar Myopathy Panel	8	BAG3, CRYAB, DES, DNAJB6, FHL1, FLNC, LDB3, MYOT
Invitae Nemaline Myopathy Panel	11	ACTA1, CFL2, KBTBD13, KLHL40, KLHL41, LMOD3, MYPN, NEB, TNNT1, TPM2, TPM3
Invitae Periodic Paralysis Panel	4	CACNA1S, KCNJ2, RYR1, SCN4A
Invitae Type VI Collagenopathy Panel	3	COL6A1, COL6A2, COL6A3
Add-on preliminary-evidence gene	1	COL12A1
Invitae Myotonia and Paramyotonia Congenita Panel	2	CLCN1, SCN4A
Invitae Spinal Muscular Atrophy Panel	2	SMN1, SMN2
Neuropathies and Related Disorders		
Invitae Comprehensive Neuropathies Panel	72	AARS, AIFM1, ATL1, ATL3, ATP7A, BICD2, BSCL2, CHCHD10, DCTN1, DNAJB2, DNM2, DNMT1, DST, DYNC1H1, EGR2, ELP1, FBXO38, FGD4, FIG4, GAN, GARS, GDAP1, GJB1, GNB4, HARS, HINT1, HSPB1, HSPB8, IGHMBP2, INF2, KIF1A, LITAF, LMNA, LRSAM1, MED25, MFN2, MORC2, MPZ, MTMR2, NDRG1, NEFL, NGF, NTRK1, PDK3, PLEKHG5, PMP22, PRPS1, PRX, RAB7A, REEP1, RETREG1, SBF2, SCN11A, SCN9A, SH3TC2, SIGMAR1, SLC25A46, SLC52A2, SLC52A3, SLC5A7, SPG11, SPTLC1, SPTLC2, TFG, TRIM2, TRPV4, TTR, UBA1, VAPB, WNK1, YARS, VRK1
Add-on preliminary-evidence genes	9	CCT5, FLRT1, HSPB3, LAS1L, MARS, PRDM12, SCN10A, SETX, SURF1
Add-on spinal muscular atrophy genes	2	SMN1, SMN2
Invitae Charcot-Marie-Tooth Disease Comprehensive Panel	43	AARS, AIFM1, BSCL2, DNAJB2, DNM2, DYNC1H1, EGR2, FGD4, FIG4, GARS, GDAP1, GJB1, GNB4, HARS, HINT1, HSPB1, HSPB8, IGHMBP2, INF2, LITAF, LMNA, LRSAM1, MED25, MFN2, MORC2, MPZ, MTMR2, NDRG1, NEFL, PDK3, PLEKHG5, PMP22, PRPS1, PRX, RAB7A, SBF2, SH3TC2, SLC25A46, SPG11, TFG, TRIM2, TRPV4, YARS
Add-on preliminary-evidence genes	2	MARS, SURF1
Invitae Charcot-Marie-Tooth Disease Autosomal Dominant Panel	24	AARS, BSCL2, DNM2, DYNC1H1, EGR2, GARS, GDAP1, GNB4, HARS, HSPB1, HSPB8, INF2, LITAF, LMNA, LRSAM1, MFN2, MORC2, MPZ, NEFL, PMP22, RAB7A, TFG, TRPV4, YARS
Add-on preliminary-evidence gene	1	MARS
Invitae Charcot-Marie-Tooth Disease Autosomal Recessive Panel	21	DNAJB2, EGR2, FGD4, FIG4, GDAP1, HINT1, IGHMBP2, LMNA, LRSAM1, MED25, MFN2, MTMR2, NDRG1, NEFL, PLEKHG5, PRX, SBF2, SH3TC2, SLC25A46, SPG11, TRIM2
Add-on preliminary-evidence gene	1	SURF1
Invitae Charcot-Marie-Tooth Disease X-linked Panel	4	AIFM1, GJB1, PDK3, PRPS1
Invitae Hereditary Sensory and Autonomic Neuropathy Panel	15	ATL1, ATL3, DNMT1, DST, ELP1, KIF1A, NGF, NTRK1, RAB7A, RETREG1, SCN11A, SCN9A, SPTLC1, SPTLC2, WNK1
Add-on preliminary-evidence genes	2	CCT5, PRDM12
Invitae Familial Dysautonomia Test	1	ELP1
Invitae Hereditary Motor Neuropathies Panel	23	ATP7A, BICD2, BSCL2, CHCHD10, DCTN1, DNAJB2, DYNC1H1, FBXO38, GARS, HINT1, HSPB1, HSPB8, IGHMBP2, PLEKHG5, REEP1, SIGMAR1, SLC5A7, SMN1, SMN2, TRPV4, UBA1, VAPB, VRK1
Add-on preliminary-evidence gene	1	HSPB3
Invitae Spinal Muscular Atrophy Panel	2	SMN1, SMN2

INVITAE NEUROLOGY GENE PANEL TESTS

CLINICAL AREA: CARDIOLOGY AND NEUROLOGY

Test name	# gene(s)	Gene list
Neuropathies and Related Disorders (continued)		
Invitae Small Fiber Neuropathy Test	1	SCN9A
Add-on preliminary-evidence gene	1	SCN10A
Invitae Riboflavin Transporter Deficiency Neuronopathy Panel	2	SLC52A2, SLC52A3
Invitae Hereditary Spastic Paraplegia Comprehensive Panel	45	ABCD1, ALDH18A1, ALS2, AP4B1, AP4E1, AP4M1, AP4S1, AP5Z1, ATL1, B4GALNT1, BSCL2, C12orf65, CYP2U1, CYP7B1, DDHD1, DDHD2, ERLIN2, FA2H, GBA2, GJC2, HEXA, HSPD1, KDM5C, KIF1A, KIF1C, KIF5A, L1CAM, NIPA1, NT5C2, PLP1, PNPLA6, REEP1, REEP2, RTN2, SACS, SLC16A2, SPART, SPAST, SPG11, SPG21, SPG7, TECPR2, VAMP1, WASHC5, ZFYVE26
Add-on preliminary-evidence genes	20	AMPD2, ARL6IP1, ARSI, ATP13A2, C19orf12, CCT5, CPT1C, ENTPD1, ERLIN1, EXOSC3, IBA57, MAG, PGAP1, RAB3GAP2, SLC33A1, TFG, USP8, VPS37A, ZFR, ZFYVE27
Invitae Hereditary Spastic Paraplegia Autosomal Dominant Panel	13	ALDH18A1, ATL1, BSCL2, HSPD1, KIF1A, KIF5A, NIPA1, REEP1, REEP2, RTN2, SPAST, VAMP1, WASHC5
Add-on preliminary-evidence genes	3	CPT1C, SLC33A1, ZFYVE27
Invitae Hereditary Spastic Paraplegia Autosomal Recessive Panel	30	ALDH18A1, ALS2, AP4B1, AP4E1, AP4M1, AP4S1, AP5Z1, B4GALNT1, C12orf65, CYP2U1, CYP7B1, DDHD1, DDHD2, ERLIN2, FA2H, GBA2, GJC2, HEXA, KIF1A, KIF1C, NT5C2, PNPLA6, REEP2, SACS, SPART, SPG11, SPG21, SPG7, TECPR2, ZFYVE26
Add-on preliminary-evidence genes	17	AMPD2, ARL6IP1, ARSI, ATP13A2, C19orf12, CCT5, ENTPD1, ERLIN1, EXOSC3, IBA57, MAG, PGAP1, RAB3GAP2, TFG, USP8, VPS37A, ZFR
Invitae Hereditary Spastic Paraplegia X-linked Panel	5	ABCD1, KDM5C, L1CAM, PLP1, SLC16A2
Cardiomyopathy and Skeletal Muscle Disease		
Invitae Cardiomyopathy and Skeletal Muscle Disease Panel	116	ABCC9, ACTA1, ACTC1, ACTN2, AGL, ANO5, ATP2A1, B3GALNT2, B4GAT1, BAG3, BIN1, CACNA1C, CAPN3, CAV3, CCDC78, CFL2, CHKB, CNTN1, COL12A1, COL6A1, COL6A2, COL6A3, CPT2, CRYAB, CSRP3, DAG1, DES, DMD, DNAJB6, DNM2, DOLK, DPM1, DPM2, DPM3, DSC2, DSG2, DSP, DYSF, EMD, EYA4, FHL1, FKBP14, FKRP, FKTN, FLNC, GAA, GLA, GMPPB, GNE, GYS1, HCN4, ISPD, ITGA7, JUP, KBTBD13, KLHL40, KLHL41, LAMA2, LAMP2, LARGE1, LMNA, LMOD3, MATR3, MEGF10, MTM1, MYBPC3, MYH7, MYL2, MYL3, MYOT, MYPN, NEB, PKP2, PLEC, PLN, PNPLA2, POMGNT1, POMGNT2, POMK, POMT1, POMT2, PRKAG2, RAF1, RBM20, RXYLT1, RYR1, RYR2, SCN5A, SELENON, SGCA, SGCB, SGCD, SGCG, SLC22A5, SQSTM1, STAC3, STIM1, TAZ, TCAP, TIA1, TMEM43, TNNC1, TNNI3, TNNT1, TNNT2, TNPO3, TOR1AIP1, TPM1, TPM2, TPM3, TRAPPC11, TRIM32, TTN, TTR, VCL, VCP
Add-on preliminary-evidence genes	36	ANKRD1, CALR3, CHRM2, CTF1, CTNNA3, DTNA, FHL2, GATA4, GATA6, GATAD1, HNRNPDL, ILK, JPH2, LAMA4, LDB3, LIMS2, LRRC10, MYF6, MYH6, MYLK2, MYOM1, MYOZ2, NEBL, NEXN, NKX2-5, NPPA, PDLIM3, PLEKHM2, PRDM16, SUN1, SUN2, SYNE1, SYNE2, TGFB3, TMPO, TXNRD2
Add-on autosomal recessive syndromic pediatric cardiomyopathy genes	7	ACADVL, ALMS1, DNAJC19, ELAC2, MTO1, SDHA, TMEM70

INVITAE NEUROLOGY GENE PANEL TESTS

CLINICAL AREA: PEDIATRIC AND RARE DISEASE

Test name		# gene(s)	Gene list
Epilepsy, Seizures, and Developmental Brain Abnormalities			
Invitae Epilepsy Panel		146	ADSL, ALDH5A1, ALDH7A1, ALG13, ARHGEF9, ARX, ATP1A2, ATP1A3, ATRX, BRAT1, C12orf57, CACNA1A, CACNA2D2, CARS2, CASK, CDKL5, CHD2, CHRNA2, CHRNA4, CHRNB2, CLCN4, CLN2 (TPP1), CLN3, CLN5, CLN6, CLN8, CNTNAP2, CSTB, CTSD, DEPDC5, DNAJC5, DNM1, DOCK7, DYRK1A, EEF1A2, EFHC1, EHMT1, EPM2A, FARS2, FOLR1, FOXG1, FRRS1L, GABBR2, GABRA1, GABRB2, GABRB3, GABRG2, GAMT, GATM, GLRA1, GNAO1, GOSR2, GRIN1, GRIN2A, GRIN2B, HCN1, HNRNPU, IER3IP1, IQSEC2, ITPA, JMJD1C, KANSL1, KCNA2, KCNB1, KCNC1, KCNH2, KCNJ10, KCNMA1, KCNQ2, KCNQ3, KCNT1, KCTD7, LGI1, LIAS, MBD5, MECP2, MEF2C, MFSD8, MTOR, NEDD4L, NEXMIF, NGLY1, NHLRC1, NPRL3, NRXN1, PACS1, PCDH19, PIGA, PIGN, PIGO, PLCB1, PNKD, PNKP, PNPO, POLG, PPT1, PRICKLE1, PRIMA1, PRRT2, PURA, QARS, RELN, ROGDI, SATB2, SCARB2, SCN1A, SCN1B, SCN2A, SCN3A, SCN8A, SCN9A, SERPINI1, SGCE, SIK1, SLC12A5, SLC13A5, SLC19A3, SLC25A12, SLC25A22, SLC2A1, SLC35A2, SLC6A1, SLC6A8, SLC9A6, SMC1A, SNX27, SPATA5, SPTAN1, ST3GAL5, STRADA, STX1B, STXBP1, SYN1, SYNGAP1, SYNJ1, SZT2, TBC1D24, TCF4, TPK1, TSC1, TSC2, UBE3A, WDR45, WWOX, ZDHHC9, ZEB2
	Add-on preliminary-evidence genes	35	ABAT, ARHGEF15, ATP6AP2, CACNA1H, CACNB4, CASR, CERS1, CNTN2, CPA6, DIAPH1, FASN, GABRD, GAL, GPHN, KCNA1, KCND2, KCNH5, KPNA7, LMNB2, NECAP1, PIGG, PIGQ, PIK3AP1, PRDM8, PRICKLE2, RBFOX1, RBFOX3, RYR3, SCN5A, SETD2, SLC35A3, SNAP25, SRPX2, ST3GAL3, TBL1XR1
	Add-on genes for glycine encephalopathy	3	AMT, GCSH, GLDC
	Add-on FLNA gene	1	FLNA
	Add-on PTEN gene	1	PTEN
	Add-on RANBP2 gene	1	RANBP2
Invitae Alternating Hemiplegia of Childhood Panel		2	ATP1A2, ATP1A3
	Add-on clinically overlapping Genes	3	CACNA1A, SCN1A, SLC2A1
Invitae Baraitser-Winter Cerebrofrontofacial Syndrome Panel		2	ACTB, ACTG1
Invitae Cerebral Cavernous Malformations Panel		3	CCM2, KRIT1, PDCD10
Invitae CHARGE Syndrome Test		1	CHD7
Invitae Early Infantile Epileptic Encephalopathy Panel		59	ALDH7A1, ARHGEF9, ARX, BRAT1, CACNA2D2, CASK, CDKL5, CHD2, CLCN4, DNM1, DOCK7, EEF1A2, FARS2, FOLR1, FRRS1L, GABBR2, GABRA1, GABRB3, GNAO1, GRIN1, GRIN2A, GRIN2B, HCN1, HNRNPU, IER3IP1, KCNA2, KCNB1, KCNMA1, KCNQ2, KCNQ3, KCNT1, PCDH19, PIGA, PIGN, PIGO, PLCB1, PNKP, PNPO, PURA, SCN1A, SCN2A, SCN8A, SCN9A, SIK1, SLC12A5, SLC13A5, SLC25A12, SLC25A22, SLC2A1, SLC35A2, SLC6A1, SMC1A, SPTAN1, STXBP1, SYNGAP1, SZT2, TBC1D24, WDR45, WWOX
	Add-on preliminary-evidence genes	10	ARHGEF15, ATP1A2, COQ4, GPHN, KCNH5, MTOR, NECAP1, NEDD4L, SCN1B, ST3GAL3
Invitae Holoprosencephaly Panel		6	FGFR1, GLI2, SHH, SIX3, TGIF1, ZIC2
	Add-on preliminary-evidence genes	4	CDON, FOXH1, NODAL, PTCH1
Invitae Neurodegeneration with Brain Iron Accumulation Panel		11	ATP13A2, C19orf12, COASY, CP, DCAF17, FTL, FUCA1, PANK2, PLA2G6, SQSTM1, WDR45
	Add-on preliminary-evidence genes	3	FA2H, KIF1A, TRIM32
Invitae Rett/Angelman and Related Disorders Panel		24	ADSL, ALDH5A1, ATRX, CDKL5, CNTNAP2, DYRK1A, EHMT1, FOXG1, GABBR2, IQSEC2, KANSL1, MBD5, MECP2, MEF2C, NGLY1, NRXN1, SATB2, SCN8A, SLC9A6, STXBP1, TCF4, UBE3A, WDR45, ZEB2
	Add-on preliminary-evidence genes	4	GABRD, HDAC8, TBL1XR1, JMJD1C
Invitae Tuberous Sclerosis Complex Panel		2	TSC1, TSC2

