FETAL AKINESIA PANEL DG-4.0.0 (98 GENES)

Gene	*Twist X2 covered >10x*	*Twist X2 covered >20x*	*WGS covered >10x*	*WGS covered >20x*	*Associated Phenotype description and OMIM disease ID*
ACTA1	100.0%	100.0%	100.0%	97.1%	Congenital myopathy 2B, severe infantile, autosomal recessive, 620265;?Myopathy, scapulohumeroperoneal, 616852;Congenital myopathy 2C, severe infantile, autosomal dominant, 620278;Congenital myopathy 2A, typical, autosomal dominant, 161800
ADCY6	100.0%	100.0%	100.0%	99.4%	Lethal congenital contracture syndrome 8, 616287
ADGRG6	100.0%	99.8%	100.0%	98.0%	Lethal congenital contracture syndrome 9, 616503
ALG3	100.0%	100.0%	100.0%	97.8%	Congenital disorder of glycosylation, type Id, 601110

ASCC1	86.7%	86.6%	100.0%	98.3%	Spinal muscular atrophy with congenital bone fractures 2, 616867;Barrett esophagus/esophageal adenocarcinoma, 614266
ATP1A2	100.0%	100.0%	100.0%	99.3%	Developmental and epileptic encephalopathy 98, 619605;Fetal akinesia, respiratory insufficiency, microcephaly, polymicrogyria, and dysmorphic facies, 619602;Alternating hemiplegia of childhood 1, 104290;Migraine, familial basilar, 602481;Migraine, familial hemiplegic, 2, 602481
BICD2	100.0%	100.0%	100.0%	99.1%	Spinal muscular atrophy, lower extremity-predominant, 2B, autosomal dominant, 618291;Spinal muscular atrophy, lower extremity-predominant, 2A, autosomal dominant, 615290
BIN1	100.0%	100.0%	100.0%	98.8%	Centronuclear myopathy 2, 255200
BLTP1	100.0%	99.9%	100.0%	98.7%	Alkuraya-Kucinskas syndrome, 617822

CACNA1S	100.0%	100.0%	100.0%	99.2%	{Thyrotoxic periodic paralysis, susceptibility to, 1}, 188580;Congenital myopathy 18 due to dihydropyridine receptor defect, 620246;Hypokalemic periodic paralysis, type 1, 170400;{Malignant hyperthermia susceptibility 5}, 601887
CHAT	100.0%	100.0%	99.9%	98.1%	Myasthenic syndrome, congenital, 6, presynaptic, 254210
CHRNA1	100.0%	100.0%	100.0%	98.9%	Myasthenic syndrome, congenital, 1B, fast-channel, 608930;Myasthenic syndrome, congenital, 1A, slow-channel, 601462;Multiple pterygium syndrome, lethal type, 253290
CHRNB1	100.0%	100.0%	100.0%	97.7%	?Myasthenic syndrome, congenital, 2C, associated with acetylcholine receptor deficiency, 616314;Myasthenic syndrome, congenital, 2A, slow-channel, 616313

CHRND	100.0%	100.0%	100.0%	99.0%	?Myasthenic syndrome, congenital, 3C, associated with acetylcholine receptor deficiency, 616323;Multiple pterygium syndrome, lethal type, 253290;Myasthenic syndrome, congenital, 3B, fast-channel, 616322;?Myasthenic syndrome, congenital, 3A, slow-channel, 616321
CHRNE	100.0%	100.0%	100.0%	97.2%	Myasthenic syndrome, congenital, 4A, slow-channel, 605809;Myasthenic syndrome, congenital, 4C, associated with acetylcholine receptor deficiency, 608931;Myasthenic syndrome, congenital, 4B, fast-channel, 616324
CHRNG	100.0%	100.0%	100.0%	99.6%	Multiple pterygium syndrome, lethal type, 253290;Escobar syndrome, 265000
CHST14	100.0%	100.0%	100.0%	91.9%	Ehlers-Danlos syndrome, musculocontractural type 1, 601776
CNTNAP1	100.0%	100.0%	100.0%	98.9%	Lethal congenital contracture syndrome 7, 616286;Hypomyelinating neuropathy, congenital, 3, 618186

COL6A1	100.0%	100.0%	100.0%	99.4%	Ullrich congenital muscular dystrophy 1A, 254090;Bethlem myopathy 1A, 158810
COL6A2	100.0%	100.0%	100.0%	99.6%	?Myosclerosis, congenital, 255600;Ullrich congenital muscular dystrophy 1B, 620727;Bethlem myopathy 1B, 620725
COL6A3	100.0%	100.0%	100.0%	99.1%	Bethlem myopathy 1C, 620726;Ullrich congenital muscular dystrophy 1C, 620728;Dystonia 27, 616411
COX15	100.0%	100.0%	100.0%	98.5%	Mitochondrial complex IV deficiency, nuclear type 6, 615119
CRPPA	100.0%	100.0%	100.0%	98.5%	Muscular dystrophy-dystroglycanopathy (limb-girdle), type C, 7, 616052;Muscular dystrophy-dystroglycanopathy (congenital with brain and eye anomalies), type A, 7, 614643
DHCR24	100.0%	100.0%	100.0%	99.2%	Desmosterolosis, 602398
DHCR7	96.2%	96.2%	100.0%	99.7%	Smith-Lemli-Opitz syndrome, 270400

DNM2	100.0%	100.0%	100.0%	98.3%	Centronuclear myopathy 1, 160150;Charcot-Marie-Tooth disease, axonal type 2M, 606482;Charcot-Marie-Tooth disease, dominant intermediate B, 606482;Lethal congenital contracture syndrome 5, 615368
DOK7	100.0%	100.0%	100.0%	98.0%	Fetal akinesia deformation sequence 3, 618389;Myasthenic syndrome, congenital, 10, 254300
ECEL1	100.0%	100.0%	100.0%	99.0%	Arthrogryposis, distal, type 5D, 615065
EGR2	100.0%	100.0%	100.0%	98.1%	Dejerine-Sottas disease, 145900;Charcot-Marie-Tooth disease, type 1D, 607678;Hypomyelinating neuropathy, congenital, 1, 605253
ERBB3	100.0%	100.0%	100.0%	99.1%	?Lethal congenital contractural syndrome 2, 607598;{?Erythroleukemia, familial, susceptibility to}, 133180;Visceral neuropathy, familial, 1, autosomal recessive, 243180

ERCC5	100.0%	100.0%	100.0%	98.5%	Xeroderma pigmentosum, group G, 278780;Cerebrooculofacioskeletal syndrome 3, 616570;Xeroderma pigmentosum, group G/Cockayne syndrome, 278780
ERCC6	100.0%	100.0%	100.0%	98.8%	UV-sensitive syndrome 1, 600630;Cerebrooculofacioskeletal syndrome 1, 214150;?De Sanctis-Cacchione syndrome, 278800;Cockayne syndrome, type B, 133540;{Macular degeneration, age-related, susceptibility to, 5}, 613761;Premature ovarian failure 11, 616946;{Lung cancer, susceptibility to}, 211980
FBN2	99.2%	99.2%	100.0%	99.3%	Macular degeneration, early-onset, 616118;Contractural arachnodactyly, congenital, 121050

FKRP	100.0%	100.0%	100.0%	99.9%	Muscular dystrophy-dystroglycanopathy (congenital with or without impaired intellectual development), type B, 5, 606612;Muscular dystrophy-dystroglycanopathy (limb-girdle), type C, 5, 607155;Muscular dystrophy-dystroglycanopathy (congenital with brain and eye anomalies), type A, 5, 613153
FLNC	100.0%	100.0%	100.0%	99.4%	Cardiomyopathy, familial hypertrophic, 26, 617047;Arrhythmogenic right ventricular dysplasia, familial, 617047;Cardiomyopathy, familial restrictive 5, 617047;Myopathy, distal, 4, 614065;Myopathy, myofibrillar, 5, 609524
FLVCR2	100.0%	100.0%	100.0%	99.0%	Proliferative vasculopathy and hydranencephaly-hydrocephaly syndrome, 225790

GBA1	100.0%	100.0%	100.0%	99.5%	{Lewy body dementia, susceptibility to}, 127750;Gaucher disease, type II, 230900;Gaucher disease, type IIIC, 231005;Gaucher disease, type III, 231000;Gaucher disease, type I, 230800;Gaucher disease, perinatal lethal, 608013;{Parkinson disease, late-onset, susceptibility to}, 168600
GBE1	100.0%	99.9%	100.0%	98.4%	Glycogen storage disease IV, 232500;Polyglucosan body disease, adult form, 263570
GLDN	100.0%	100.0%	100.0%	98.1%	Lethal congenital contracture syndrome 11, 617194
GLE1	100.0%	100.0%	100.0%	98.9%	Lethal congenital contracture syndrome 1, 253310;Congenital arthrogryposis with anterior horn cell disease, 611890

GMPPB	100.0%	100.0%	100.0%	99.4%	Muscular dystrophy-dystroglycanopathy (limb-girdle), type C, 14, 615352;Muscular dystrophy-dystroglycanopathy (congenital with impaired intellectual development), type B, 14, 615351;Muscular dystrophy-dystroglycanopathy (congenital with brain and eye anomalies), type A, 14, 615350
IGHMBP2	100.0%	100.0%	100.0%	99.2%	Charcot-Marie-Tooth disease, axonal, type 2S, 616155;Neuronopathy, distal hereditary motor, autosomal recessive 1, 604320
KIF5C	99.3%	99.3%	100.0%	98.4%	Cortical dysplasia, complex, with other brain malformations 2, 615282
KLHL40	100.0%	100.0%	100.0%	99.5%	Nemaline myopathy 8, autosomal recessive, 615348
KLHL41	100.0%	100.0%	100.0%	96.9%	Nemaline myopathy 9, 615731
LGI4	100.0%	100.0%	100.0%	99.5%	Arthrogryposis multiplex congenita 1, neurogenic, with myelin defect, 617468

LMNA	100.0%	100.0%	100.0%	99.2%	Mandibuloacral dysplasia, 248370;Heart-hand syndrome, Slovenian type, 610140;Cardiomyopathy, dilated, 1A, 115200;Emery-Dreifuss muscular dystrophy 3, autosomal recessive, 616516;Restrictive dermopathy 2, 619793;Charcot-Marie-Tooth disease, type 2B1, 605588;Emery-Dreifuss muscular dystrophy 2, autosomal dominant, 181350;Hutchinson-Gilford progeria, 176670;Lipodystrophy, familial partial, type 2, 151660;Muscular dystrophy, congenital, 613205;Malouf syndrome, 212112
LMOD3	100.0%	100.0%	100.0%	97.1%	Nemaline myopathy 10, 616165
MAGEL2	100.0%	100.0%	100.0%	99.2%	Schaaf-Yang syndrome, 615547
MEGF10	100.0%	100.0%	100.0%	99.2%	Congenital myopathy 10A, severe variant, 614399;Congenital myopathy 10B, mild variant, 620249

MPZ	100.0%	100.0%	100.0%	98.1%	Charcot-Marie-Tooth disease, type 2I, 607677;Dejerine-Sottas disease, 145900;Charcot-Marie-Tooth disease, type 1B, 118200;Roussy-Levy syndrome, 180800;Charcot-Marie-Tooth disease, dominant intermediate D, 607791;Hypomyelinating neuropathy, congenital, 2, 618184;Charcot-Marie-Tooth disease, type 2J, 607736
MTM1	99.7%	99.2%	97.6%	70.5%	Myopathy, centronuclear, X-linked, 310400
MUSK	100.0%	100.0%	100.0%	99.3%	Fetal akinesia deformation sequence 1, 208150;Myasthenic syndrome, congenital, 9, associated with acetylcholine receptor deficiency, 616325
MYBPC1	100.0%	100.0%	100.0%	98.4%	Congenital myopathy 16, 618524;Lethal congenital contracture syndrome 4, 614915;Arthrogryposis, distal, type 1B, 614335
MYCN	100.0%	100.0%	99.9%	94.5%	Feingold syndrome 1, 164280;Megalencephaly-polydactyly syndrome, 620748

MYH3	100.0%	100.0%	99.9%	97.5%	Contractures, pterygia, and spondylocarpostarsal fusion syndrome 1A, 178110;Contractures, pterygia, and spondylocarpotarsal fusion syndrome 1B, 618469;Arthrogryposis, distal, type 2B3 (Sheldon-Hall), 618436;Arthrogryposis, distal, type 2A (Freeman-Sheldon), 193700
MYH8	100.0%	100.0%	100.0%	98.5%	Carney complex variant, 608837;Trismus-pseudocamptodactyly syndrome, 158300
MYL11	100.0%	100.0%	100.0%	99.7%	Arthrogryposis, distal, type 1C, 619110
MYOD1	100.0%	100.0%	100.0%	99.0%	Congenital myopathy 17, 618975
NEB	99.7%	99.2%	99.6%	97.4%	Nemaline myopathy 2, autosomal recessive, 256030;Arthrogryposis multiplex congenita 6, 619334
NEK9	100.0%	100.0%	100.0%	98.7%	?Arthrogryposis, Perthes disease, and upward gaze palsy, 614262;Nevus comedonicus, somatic, 617025;Lethal congenital contracture syndrome 10, 617022

NUP88	93.4%	93.4%	100.0%	97.9%	Fetal akinesia deformation sequence 4, 618393
PHGDH	100.0%	100.0%	100.0%	99.2%	Neu-Laxova syndrome 1, 256520;Phosphoglycerate dehydrogenase deficiency, 601815
PIEZO2	100.0%	100.0%	100.0%	98.8%	Arthrogryposis, distal, type 5, 108145;Arthrogryposis, distal, with impaired proprioception and touch, 617146;Arthrogryposis, distal, type 3, 114300;?Marden-Walker syndrome, 248700
PIP5K1C	100.0%	100.0%	100.0%	98.8%	Lethal congenital contractural syndrome 3, 611369
PLOD1	100.0%	100.0%	100.0%	98.5%	Ehlers-Danlos syndrome, kyphoscoliotic type, 1, 225400
PSAT1	100.0%	100.0%	100.0%	98.3%	Neu-Laxova syndrome 2, 616038;Phosphoserine aminotransferase deficiency, 610992
PTRH2	100.0%	100.0%	100.0%	98.8%	Infantile-onset multisystem neurologic, endocrine, and pancreatic disease, 616263

RAPSN	100.0%	100.0%	100.0%	99.1%	Fetal akinesia deformation sequence 2, 618388;Myasthenic syndrome, congenital, 11, associated with acetylcholine receptor deficiency, 616326
RIPK4	100.0%	100.0%	100.0%	99.7%	CHAND syndrome, 214350;Popliteal pterygium syndrome, Bartsocas-Papas type 1, 263650
RYR1	100.0%	99.9%	100.0%	98.7%	Congenital myopathy 1B, autosomal recessive, 255320;Congenital myopathy 1A, autosomal dominant, with susceptibility to malignant hyperthermia, 117000;King-Denborough syndrome, 619542;{Malignant hyperthermia susceptibility 1}, 145600

SCN4A	100.0%	100.0%	100.0%	98.6%	Paramyotonia congenita, 168300;Hyperkalemic periodic paralysis, 170500;Congenital myopathy 22B, severe fetal, 620369;Hypokalemic periodic paralysis, type 2, 613345;Myotonia congenita, atypical, acetazolamide-responsive, 608390;Myasthenic syndrome, congenital, 16, 614198;Congenital myopathy 22A, classic, 620351
SCYL2	100.0%	100.0%	100.0%	97.3%	Arthrogryposis multiplex congenita 4, neurogenic, with agenesis of the corpus callosum, 618766
SELENON	93.0%	90.9%	99.8%	95.4%	Congenital myopathy 3 with rigid spine, 602771
SLC5A7	100.0%	100.0%	100.0%	99.1%	Neuronopathy, distal hereditary motor, autosomal dominant 7, 158580;Myasthenic syndrome, congenital, 20, presynaptic, 617143
SLC6A9	100.0%	100.0%	100.0%	99.5%	Glycine encephalopathy with normal serum glycine, 617301

SMN1	93.9%	93.9%	99.5%	90.4%	Spinal muscular atrophy-2, 253550;Spinal muscular atrophy-4, 271150;Spinal muscular atrophy-3, 253400;Spinal muscular atrophy-1, 253300
SMPD4	100.0%	100.0%	100.0%	99.4%	Neurodevelopmental disorder with microcephaly, arthrogryposis, and structural brain anomalies, 618622
SRPK3	100.0%	99.7%	99.2%	78.9%	
STAC3	100.0%	100.0%	100.0%	98.5%	Congenital myopathy 13, 255995
SYNE1	100.0%	100.0%	100.0%	98.7%	Arthrogryposis multiplex congenita 3, myogenic type, 618484;Emery-Dreifuss muscular dystrophy 4, autosomal dominant, 612998;Spinocerebellar ataxia, autosomal recessive 8, 610743
TBCD	91.1%	90.1%	100.0%	98.7%	Encephalopathy, progressive, early-onset, with brain atrophy and thin corpus callosum, 617193
TNNI2	100.0%	100.0%	100.0%	99.6%	Arthrogryposis, distal, type 2B1, 601680
TNNT3	100.0%	100.0%	100.0%	99.7%	Arthrogryposis, distal, type 2B2, 618435

TOR1A	91.2%	90.6%	100.0%	96.1%	Arthrogryposis multiplex congenita 5, 618947;Dystonia-1, torsion, 128100;{Dystonia-1, modifier of},
TPM2	100.0%	100.0%	100.0%	99.2%	Arthrogryposis, distal, type 2B4, 108120;Arthrogryposis, distal, type 1A, 108120;Congenital myopathy 23, 609285
TPM3	100.0%	100.0%	100.0%	98.9%	Congenital myopathy 4A, autosomal dominant, 255310;Congenital myopathy 4B, autosomal recessive, 609284
TRIP4	100.0%	100.0%	100.0%	98.2%	?Muscular dystrophy, congenital, Davignon-Chauveau type, 617066;Spinal muscular atrophy with congenital bone fractures 1, 616866

TRPV4	100.0%	100.0%	100.0%	98.9%	Neuronopathy, distal hereditary motor, autosomal dominant 8, 600175;Spondylometaphyseal dysplasia, Kozlowski type, 184252;Digital arthropathy-brachydactyly, familial, 606835;[Sodium serum level QTL 1], 613508;SED, Maroteaux type, 184095;Metatropic dysplasia, 156530;Scapuloperoneal spinal muscular atrophy, 181405;Hereditary motor and sensory neuropathy, type IIc, 606071;?Avascular necrosis of femoral head, primary, 2, 617383;Parastremmatic dwarfism, 168400;Brachyolmia type 3, 113500

TTN	99.6%	99.1%	100.0%	98.6%	Muscular dystrophy, limb-girdle, autosomal recessive 10, 608807;Cardiomyopathy, familial hypertrophic, 9, 613765;Congenital myopathy 5 with cardiomyopathy, 611705;Tibial muscular dystrophy, tardive, 600334;Cardiomyopathy, dilated, 1G, 604145;Myopathy, myofibrillar, 9, with early respiratory failure, 603689
TUBA1A	100.0%	100.0%	100.0%	99.3%	Lissencephaly 3, 611603
TUBB2B	100.0%	100.0%	100.0%	99.7%	Cortical dysplasia, complex, with other brain malformations 7, 610031
UBA1	100.0%	99.7%	98.9%	73.2%	Spinal muscular atrophy, X-linked 2, infantile, 301830;VEXAS syndrome, somatic, 301054
VIPAS39	100.0%	100.0%	100.0%	99.2%	Arthrogryposis, renal dysfunction, and cholestasis 2, 613404

VPS33B	100.0%	100.0%	100.0%	98.5%	Keratoderma-ichthyosis-deafness syndrome, autosomal recessive, 620009;Cholestasis, progressive familial intrahepatic, 12, 620010;Arthrogryposis, renal dysfunction, and cholestasis 1, 208085
WDR62	98.8%	98.7%	100.0%	99.5%	Microcephaly 2, primary, autosomal recessive, with or without cortical malformations, 604317
ZC4H2	100.0%	99.9%	96.5%	62.9%	Wieacker-Wolff syndrome, 314580;Wieacker-Wolff syndrome, female-restricted, 301041
ZMPSTE24	100.0%	100.0%	100.0%	98.7%	Mandibuloacral dysplasia with type B lipodystrophy, 608612;Restrictive dermopathy 1, 275210

Gene symbols used follow HGCN guidelines: Gray KA, Yates B, Seal RL, Wright MW, Bruford EA. Nucleic Acids Res. 2015 Jan 43(Database issue):D1079-85.
TWIST X2 Covered 10x describes the percentage of a gene's coding sequence that is covered at least 10x when analyzed by WES using TWIST X2 chemistry.
TWIST X2 Covered 20x describes the percentage of a gene's coding sequence that is covered at least 20x when analyzed by WES using TWIST X2 chemistry.
srWGS GRCh38 Covered 10x describes the percentage of a gene's coding sequence that is covered at least 10x when analyzed by WGS mapped against GRCh38.
srWGS GRCh38 Covered 20x describes the percentage of a gene's coding sequence that is covered at least 20x when analyzed by WGS mapped against GRCh38.
non-protein coding genes are covered, but as coverage statistics are based on protein coding regions, statistics could not be generated.
OMIM release used for OMIM disease identifiers and descriptions : March 17th, 2023.
This list is accurate for panel version DG 4.0.0

Ad 1. "No OMIM phenotype" signifies a gene without a current OMIM association Ad 2. OMIM phenotype descriptions between {} signify risk factors