sema4

123456-2-X

Please place green collection kit barcode here.

GENERAL TEST REQUISITION

Phone: **800-298-6470** / Fax: 646-859-6870
Branford CT Lic#: CL-0830
Stamford CT Lic#: CL-1016

Please fill out all the highlighted fields. Failure to do so may result in delayed testing and delivery of results.

PATIENT INFORMATION

Sema4 will use this information to contact the patient via automatic email, SMS, and/or phone regarding payment, testing status, and online results access. By submitting this requisition, I confirm that I have obtained the patient's authorization to be contacted by Sema4 by these means (email address must be specific to patient listed on form).

PATIENT EMAIL ADDRESS	PATIENT MOBILE/PRIMARY NUMBER
RECOMMENDED	REQUIRED
LAST NAME	FIRST NAME
REQUIRED	REQUIRED

DATE OF BIRTH	SEX ASSIGNED AT BIRTH	PATIENT IS A SPERM/EGG DONOR
MM / DD / YYYY	REQUIRED ☐ MALE ☐ FEMALE ☐ INTERSEX	☐ YES ☐ NO

PARTNER / SPOUSE LAST NAME	PARTNER / SPOUSE FIRST NAME
PATIENT/CLIENT MRN	PARTNER / SPOUSE DATE OF BIRTH
	MM / DD / YYYY
ADDRESS	CITY / STATE / ZIP
REQUIRED	REQUIRED

BILLING INFORMATION

Bill to: ☐ Insurance (Provide ICD10 in Indications for Testing) ☐ Client/Institution ☐ Self Pay/No Insurance

POLICYHOLDER LAST NAME	POLICYHOLDER FIRST NAME	POLICYHOLDER DOB
REQUIRED	REQUIRED	MM / DD / YYYY
INSURANCE CARRIER	INSURANCE ID	GROUP NO.
REQUIRED	REQUIRED	REQUIRED

BILLING ADDRESS
REQUIRED

OTHER HEALTH COVERAGE (IDENTIFY)

ASSIGNMENT AND RELEASE: I hereby authorize my insurance benefits be paid directly to the provider and I understand that I am financially responsible for uncovered services. I also authorize the release of any information required to process the claim. Billing inquiries, please call 800-298-6470.

SIGNATURE **DATE** MM / DD / YYYY

REFERRING PROVIDER INFORMATION

NAME	GENETIC COUNSELOR
REQUIRED	
ADDRESS	CLINIC / INSTITUTION
REQUIRED	REQUIRED
	TELEPHONE
	FAX

PROVIDER SIGNATURE OF CONSENT (REQUIRED): I certify that this patient (and/or their legal guardian, as necessary) has been informed of the benefits, risks, and limitations of the laboratory test(s) requested. I have answered this person's questions. I have obtained a signed informed consent from this patient or their legal guardian for this testing in accordance with applicable laws and regulations, including N.Y. Civil Rights Law Section 79-L, and will retain this consent in the patient's medical record.

SIGNATURE **DATE** MM / DD / YYYY

INDICATIONS FOR TESTING

SPECIMEN TYPE

(Please contact laboratory for alternate specimen types)

☐ AMNIOTIC FLUID ☐ BLOOD ☐ CVS
☐ DBS ☐ PLASMA ☐ URINE
☐ OTHER _____
☐ CULTURED CELLS (Origin) _____

DATE / TIME SPECIMEN DRAWN
AM PM MM / DD / YYYY

DATE SPECIMEN SENT
MM / DD / YYYY

☐ LMP MM / DD / YYYY

GESTATIONAL AGE ON SONO

INDICATIONS FOR TEST:

Is the patient pregnant? ☐ Yes ☐ No Currently using birth control medication? ☐ Yes ☐ No

PLEASE PROVIDE ICD10(S) HERE (REQUIRED)

LABORATORY TEST(S) ORDERED

Test Selection (Required)

Cytogenetics and Cytogenomics

Chromosome Analysis

☐ Chromosome Analysis (includes AFP with amniotic fluid)
Includes reflex to microarray if no growth for POC specimens
☐ Reflex to microarray if normal chromosomes
☐ Additional Cell Culture: ☐ Hold ☐ Grow
☐ Mosaicism study

Chromosomal Microarray: Array Comparative Genomic Hybridization (aCGH) 180K + SNP
For prenatal specimens, please submit maternal blood for Maternal Cell Contamination (MCC)
☐ Prenatal chromosomal microarray (lower resolution)
☐ High Resolution Chromosomal Microarray
Include blood (1 EDTA purple top, 1 Sodium heparin green top) from the parents of the proband/pregnancy if available. ☐ included _____ mother _____ father

Fluorescent in situ Hybridization (FISH)

☐ Aneuploidy FISH (chromosomes 13,18,21,X,Y)
☐ FISH other: _____

Pharmacogenetic Tests

☐ Comprehensive PGx Panel
☐ Cardiovascular PGx Panel
☐ Psychiatry PGx Panel
☐ Pain PGx Panel
☐ Oncology PGx Panel
☐ Pediatric PGx Panel
☐ Epilepsy PGx Panel
☐ Custom PGx Testing:
gene(s):_____
☐ Tamoxifen Metabolites, Plasma

Molecular

For all testing related to Carrier Screening and Natalis, please refer to our test-specific requisition forms.

Diagnostic Testing
(please refer to our website for additional diagnostic testing offerings)
☐ Single gene: _____
☐ Targeted Testing: variant _____
(please include previous report if available)
☐ Phase analysis

Infertility/Pregnancy Loss
☐ Test for Microdeletions of Y Chromosome (male)
☐ Cystic Fibrosis with *CFTR* Intron 9 PolyT (male)
☐ *MTHFR* - c.665C>T (p.Ala222Val) add-on
☐ Thrombophilia Test (2 variants below)
☐ F2 - c.*97G>A ☐ F5 - c.1601G>A (p.Arg534Gln)

Please refer to our test-specific requisition forms for more defined or smaller panels

Hearing and Vision Loss Panels
☐ Comprehensive Hearing and Vision Loss (308 genes)
☐ Comprehensive Hearing Loss (92 genes)
☐ Comprehensive Vision Loss (250 genes)

Neurodevelopmental Panels
☐ Comprehensive Epilepsy and Autism Panel (401 genes)
☐ Comprehensive Epilepsy Panel (226 genes)
☐ Comprehensive Autism Panel (228 genes)
☐ STAT Autism Panel (30 genes)
☐ Microcephaly (78 genes)

Skeletal Panels
☐ Craniosynostosis (8 genes)
☐ Limb defects (7 genes + ZRS regulatory region)
☐ *FGFR3* Hotspot Panel ☐ Reflex to sequencing if negative
☐ *FGFR3* Full Gene Sequencing

Cardiovascular Panels
☐ Comprehensive Cardiovascular Panel (241 genes)
☐ Comprehensive Cardiomyopathy Panel (190 genes)
☐ Noonan Spectrum Disorders Panel (19 genes)
☐ Comprehensive Immunodeficiency Panel (250 genes)

Immunodeficiency Panels
☐ Comprehensive Immunodeficiency Panel (250 genes)

Genotyping and Targeted Analysis
☐ Chitotriosidase
☐ Chronic Kidney Disease *APOL1* genotyping (African American)

Craniosynostoses

Please inquire regarding which exons are tested & which genes are analyzed on a reflex basis

☐ Antley-Bixler syndrome *(FGFR2)*
☐ Apert syndrome *(FGFR2)*
☐ Beare-Stevenson Syndrome *(FGFR2)*
☐ Carpenter Syndrome *(RAB23)*
☐ Craniofrontonasal Syndrome (CFNS) *(EFNB1)*
☐ Craniosynostosis, Boston Type (CRS2) *(MSX2)*
☐ Craniosynostosis with Radial Defects *(TWIST1, REC QL4)*
☐ Crouzon Syndrome *(FGFR2, FGFR3)*
☐ Crouzon and Acanthosis Syndrome (Crouzoodermoskeletal Syndrome) *(FGFR3)*
☐ Jackson-Weiss Syndrome *(FGFR2, FGFR3)*
☐ Non-Syndromic Coronal Syndrome *(FGFR2, FGFR3)*
☐ Muenke Syndrome *(FGFR3)*
☐ Pfeiffer Syndrome *(FGFR1, FGFR2, FGFR3)*
☐ POR Deficiency *(POR)*
☐ Saethre-Chotzen Syndrome (SC2) *(TWIST1, FGFR2, FGFR3)*

Biochemical

Please circle the specimen type for each biochemical test selected below

Analyte Tests
☐ Amino Acids Full Panel: P, U, C
☐ Phenylalanine/Tyrosine, DBS
☐ Amino Acids Selective Panel (PKU/MSUD): P
☐ Acylcarnitine Profile: P, D
☐ Carnitine: P, U
☐ Organic Acids Profile: U
☐ Orotic Acid: U
☐ Methylmalonic Acid: P, U
☐ Succinylacetone: U
☐ Quantitative Glycosaminoglycans: U (chondroitin,dermatan, and heparan sulfates)
☐ Aminolevulinic Acid and Porphobilinogen: U, P
☐ Quantitative Keratan Sulfate: U
☐ Lyso-GL1, P (Gaucher Disease)
☐ Psychosine: P (Krabbe Disease)
☐ Carbohydrate Deficient Transferrin: P
☐ N-Glycan Profiling: P
☐ O-Glycan Profiling: P
☐ Lyso-Gb3: P (Fabry Disease)
☐ Lyso-SPM: P (Niemann-Pick Disease)

Enzyme Tests
☐ Hexosaminidase A (Tay-Sachs Disease): W, S
☐ Hexosaminidase B (Sandhoff Disease): W, S
☐ Acid-β-Glucosidase (Gaucher Disease): W
☐ Chitotriosidase (Gaucher Biomarker): P
☐ α-Galactosidase A (Fabry Disease): W, P
☐ Lysosomal Acid Lipase: W (Wolman Disease/Cholesteryl Ester Storage Disease)
☐ α-L-Iduronidase (MPS-I): W
☐ α-Glucosidase (Pompe Disease): W
☐ Acid Sphingomyelinase (Niemann-Pick A/B): W
☐ β-Galactocerebrosidase (Krabbe Disease): W

Legend: ***P = Plasma, U = Urine, S = Serum, C = Cerebrospinal Fluid (CSF), D = Dried Blood Spot (DBS), W = White Blood Cells (WBC)***

COMPLETE AND SUBMIT ALL PAGES TO LABORATORY

Molecular Genes by Panel

PANELS	GENES
Comprehensive Hearing and Vision Loss Panel:	*ABCA4, ABHD12, ACTG1, ADAM9, ADGRV1, AGK, AHI1, AIFM1, AIPL1, ALMS1, AP3B1, ARL13B, ARL6, BBS1, BBS10, BBS12, BBS2, BBS4, BBS5, BBS7, BBS9, BCOR, BEST1, BLOC1S6, BMP4, C2ORF71, C5ORF42, C8ORF37, CA4, CABP4, CACNA1D, CACNA1F, CACNA2D4, CAPN5, CC2D2A, CCDC50, CDH23, CDH3, CDHR1, CEACAM16, CEP164, CEP290, CEP41, CERKL, CHM, CIB2, CLDN14, CLN3, CLN5, CLN6, CLN8, CLRN1, CNGA1, CNGA3, CNGB1, CNGB3, CNNM4, COCH, COL11A1, COL11A2, COL2A1, COL9A1, COL9A2, CRB1, CRX, CRYAA, CRYAB, CRYBB1, CRYBB3, CTSD, CYP1B1, CYP4V2, DHDDS, DIABLO, DIAPH1, DNAJC5, EDN3, EDNRB, EFEMP1, ELOVL4, ERCC6, ESPN, ESRRB, EYA1, EYA4, EYS, FAM161A, FLVCR1, FOXC1, FOXE3, FRAS1, FREM1, FREM2, FRMD7, FSCN2, FYCO1, FZD4, GCNT2, GIPC3, GJA8, GJB2, GJB6, GNAT1, GNAT2, GNPTG, GPR143, GPR179, GPSM2, GRHL2, GRIP1, GRK1, GRM6, GRXCR1, GSDME, GUCA1A, GUCA1B, GUCY2D, HARS, HCCS, HESX1, HGF, HPS1, HPS3, HPS4, HPS5, HPS6, HSF4, IFT140, ILDR1, IMPDH1, IMPG2, INPP5E, IQCB1, JAG1, KARS, KCNJ13, KCNQ1, KCNQ4, KCNV2, KIF11, KIF7, KLHL7, LCA5, LHFPL5, LOXHD1, LRAT, LRIT3, LRP5, LRTOMT, LYST, LZTFL1, MAK, MARVELD2, MERTK, MFRP, MFSD8, MITF, MKKS, MKS1, MSRB3, MT-RNR1, MTTP, MYH14, MYH9, MYO15A, MYO3A, MYO6, MYO7A, MYOC, NDP, NMNAT1, NPHP1, NPHP3, NPHP4, NR2E3, NRL, NYX, OAT, OCA2, OFD1, OPA1, OPA3, OPN1SW, OTOA, OTOF, OTOG, OTOGL, OTX2, P2RX2, PANK2, PAX3, PAX6, PCDH15, PDE6A, PDE6B, PDE6C, PDE6G, PDE6H, PEX1, PEX10, PEX14, PEX16, PEX19, PEX2, PEX5, PEX6, PEX7, PGK1, PHYH, PITPNM3, PITX2, PITX3, PJVK, PLA2G5, POU3F4, POU4F3, PPT1, PRCD, PROM1, PRPF3, PRPF31, PRPF6, PRPF8, PRPH2, PRPS1, PTPRQ, PXDN, RAB28, RAX2, RBP3, RBP4, RD3, RDH12, RDH5, RDX, RGR, RGS9, RGS9BP, RHO, RIMS1, RLBP1, ROM1, RP1, RP1L1, RP2, RPE65, RPGR, RPGRIP1, RPGRIP1L, RS1, SAG, SDCCAG8, SEMA4A, SERPINB6, SIX1, SIX5, SLC24A1, SLC26A4, SLC45A2, SMOC1, SMPX, SNRNP200, SOX10, SOX2, SPATA7, STRA6, STRC+, TBC1D24, TCTN1, TCTN2, TCTN3, TDRD7, TECTA, TGFBI, TIMM8A, TIMP3, TMC1, TMEM126A, TMEM216, TMEM231, TMEM237, TMEM67, TMIE, TMPRSS3, TOPORS, TPP1, TPRN, TREX1, TRIM32, TRIOBP, TRPM1, TSPAN12, TSPEAR, TTC21B, TTC8, TULP1, TYR, TYRP1, UBIAD1, USH1C, USH1G, USH2A, VCAN, VSX2, WDR19, WFS1, WHRN, ZNF423*
Comprehensive Epilepsy and Autism Panel:	*ABAT, ABCD1, ACSL4, ACY1, ADGRG1, ADGRV1, ADNP, ADSL, AFF2, AGO1, AHI1, AIFM1, ALDH5A1, ALDH7A1, ALG13, AMT, ANK3, ANKRD11, AP1S2, AP4B1, AP4E1, AP4M1, AP4S1, ARFGEF2, ARHGEF9, ARID1A, ARID1B, ARX, ASPM, ATP13A2, ATP1A2, ATP2A2, ATP6AP2, ATP6V0A2, ATP7A, ATP8A2, ATR, ATRX, AUTS2, BCKDK, BCL11A, BCOR, BRAF, BRWD3, C12ORF57, CA8, CACNA1A, CACNA1C, CACNA1H, CACNA2D2, CACNB4, CASK, CASR, CBL, CC2D1A, CCDC22, CCDC88C, CCM2, CDKL5, CDKN1C, CHD2, CHD7, CHD8, CHRNA2, CHRNA4, CHRNA7, CHRNB2, CLCN2, CLCN4, CLN3, CLN5, CLN6, CLN8, CNTNAP2, COL18A1, COL4A1, CPA6, CREBBP, CSTB, CTCF, CTNNB1, CTSD, CUL3, CUL4B, CYP27A1, D2HGDH, DCX, DDHD2, DDX3X, DEAF1, DEPDC5, DHCR7, DIS3L2, DKC1, DLG3, DMD, DNAJC5, DNM1, DNMT3A, DOCK7, DPYD, DYNC1H1, DYRK1A, EBP, EEF1A2, EFHC1, EHMT1, EIF2S3, ELP4, EMX2, EPM2A, EZH2, FGD1, FGFR3, FKRP, FLNA, FLVCR2, FMR1, FOLR1, FOXG1, FOXP1, FOXP2, FTSJ1, GABRA1, GABRB2, GABRB3, GABRD, GABRG2, GAMT, GATAD2B, GATM, GCSH, GDI1, GK, GLDC, GLI2, GLI3, GNAO1, GNB1, GOSR2, GPC3, GPHN, GRIA3, GRIK2, GRIN1, GRIN2A, GRIN2B, GRIP1, HCCS, HCN1, HCN4, HDAC8, HGSNAT, HIP1, HNRNPU, HPRT1, HRAS, HSD17B10, HTRA1, HUWE1, IDS, IL1RAPL1, IQSEC2, ITPA, KANSL1, KAT6A, KAT6B, KCNA1, KCNA2, KCNB1, KCNJ1, KCNJ10, KCNJ11, KCNMA1, KCNQ2, KCNQ3, KCNT1, KCTD13, KCTD7, KDM5C, KDM6A, KIF1A, KIF1BP, KIRREL3, KMT2A, KMT2D, KRAS, KRIT1, L1CAM, L2HGDH, LAMC3, LAMP2, LARGE1, LAS1L, LBR, LGI1, LIAS, LINS1, LRP2, MAGEL2, MAGI2, MAN1B1, MAOA, MAP2K1, MAP2K2, MAPK10, MBD5, MBTPS2, MCPH1, MECP2, MED12, MED13L, MED23, MEF2C, MFSD8, MID1, MTHFR, MTOR, MYT1L, NAA10, NAGLU, NDE1, NDP, NDUFA1, NECAP1, NEXMIF, NF1, NFIX, NHLRC1, NHS, NIPBL, NLGN4X, NOTCH3, NPRL2, NPRL3, NRAS, NRXN1, NRXN3, NSD1, NSDHL, NSUN2, OCRL, OFD1, OPHN1, OTC, PACS1, PAFAH1B1, PAK3, PANK2, PAX6, PCDH19, PDCD10, PDHA1, PGK1, PHF6, PHF8, PIGA, PIGN, PIGO, PIGV, PLA2G6, PLCB1, PLP1, PNKP, PNPO, POGZ, POLG, POMGNT1, POMT1, POMT2, PORCN, PPT1, PQBP1, PRICKLE1, PRICKLE2, PRPS1, PRRT2, PTCH1, PTCHD1, PTEN, PTPN11, PURA, RAB39B, RAD21, RAF1, RAI1, RARS2, RBM10, RELN, RIT1, RNASEH2A, RNASEH2B, RNASEH2C, ROGDI, RPL10, RPS6KA3, SAMHD1, SATB2, SCARB2, SCN1A, SCN1B, SCN2A, SCN3A, SCN5A, SCN8A, SCN9A, SERPINI1, SETBP1, SETD2, SETD5, SGSH, SHANK2+, SHANK3+, SHOC2, SIK1, SLC12A5, SLC13A5, SLC16A2, SLC19A3, SLC1A2, SLC25A1, SLC25A19, SLC25A22, SLC2A1, SLC35A2, SLC4A10, SLC6A1, SLC6A4, SLC6A8, SLC9A6, SMARCA2, SMARCA4, SMARCB1, SMARCE1, SMC1A, SMC3, SMS, SNAP25, SNAP29, SOS1, SOX11, SOX5, SPRED1, SPTAN1, ST3GAL3, ST3GAL5, STX1B, STXBP1, SYN1, SYNGAP1, SYP, SZT2, TAF1, TBC1D24, TBL1XR1, TBR1, TBX1, TCF12, TCF20, TCF4, THOC2, TIMM8A, TMEM231, TMLHE, TPP1, TRAPPC9, TREX1, TRIO, TRPM6, TSC1, TSC2, TSPAN7, TUBA1A, TUBA8, TUBB, TUBB2A, TUBB2B, TUBB3, TUBG1, TUSC3, UBE2A, UBE3A, UNC80, UPF3B, USP9X, VANGL1, VPS13A, VPS13B, WAC, WDR45, WDR62, WDR81, WWOX, YWHAE, ZC4H2, ZDHHC9, ZEB2, ZMYND11, ZNF407, ZNF711*
Comprehensive Epilepsy Panel:	*ABAT, ACY1, ADGRG1, ADGRV1, ADSL, ALDH5A1, ALDH7A1, ALG13, AMT, AP1S2, ARFGEF2, ARHGEF9, ARX, ASPM, ATP1A2, ATP2A2, ATP6AP2, ATP6V0A2, ATR, ATRX, BCKDK, CACNA1A, CACNA1H, CACNA2D2, CACNB4, CASK, CASR, CCDC88C, CCM2, CDKL5, CHD2, CHRNA2, CHRNA4, CHRNA7, CHRNB2, CLCN2, CLN3, CLN5, CLN6, CLN8, CNTNAP2, COL18A1, COL4A1, CPA6, CREBBP, CSTB, CTSD, CUL4B, DCX, DEPDC5, DNAJC5, DNM1, DOCK7, DYRK1A, EEF1A2, EFHC1, EHMT1, EMX2, EPM2A, FGD1, FGFR3, FKRP, FLNA, FLVCR2, FOLR1, FOXG1, GABRA1, GABRB2, GABRB3, GABRD, GABRG2, GAMT, GATM, GCSH, GLDC, GLI2, GNAO1, GNB1, GOSR2, GPC3, GPHN, GRIA3, GRIN1, GRIN2A, GRIN2B, HCN1, HCN4, HIP1, HNRNPU, HSD17B10, HTRA1, IQSEC2, ITPA, KANSL1, KCNA1, KCNA2, KCNB1, KCNJ1, KCNJ10, KCNJ11, KCNMA1, KCNQ2, KCNQ3, KCNT1, KCTD7, KDM5C, KIF1BP, KMT2D, KRIT1, LARGE1, LBR, LGI1, LIAS, MAGI2, MAPK10, MBD5, MCPH1, MECP2, MEF2C, MFSD8, MTHFR, MTOR, NDE1, NDUFA1, NECAP1, NHLRC1, NIPBL, NOTCH3, NPRL2, NPRL3, NRXN1, OPHN1, PAFAH1B1, PAK3, PANK2, PAX6, PCDH19, PDCD10, PHF6, PIGA, PIGO, PIGV, PLA2G6, PLCB1, PLP1, PNKP, PNPO, POLG, POMGNT1, POMT1, POMT2, PPT1, PQBP1, PRICKLE1, PRICKLE2, PRRT2, PTEN, RAB39B, RAI1, RARS2, RELN, RNASEH2A, RNASEH2B, RNASEH2C, ROGDI, SAMHD1, SCARB2, SCN1A, SCN1B, SCN2A, SCN3A, SCN5A, SCN8A, SCN9A, SERPINI1, SETBP1, SHANK3+, SIK1, SLC12A5, SLC13A5, SLC19A3, SLC1A2, SLC25A19, SLC25A22, SLC2A1, SLC35A2, SLC4A10, SLC6A1, SLC6A8, SLC9A6, SMC1A, SMC3, SMS, SNAP25, SNAP29, SPTAN1, ST3GAL3, ST3GAL5, STX1B, STXBP1, SYN1, SYNGAP1, SYP, SZT2, TBC1D24, TBX1, TCF4, TPP1, TREX1, TRPM6, TSC1, TSC2, TUBA1A, TUBA8, TUBB, TUBB2A, TUBB2B, TUBB3, TUBG1, UBE3A, VANGL1, VPS13A, VPS13B, WDR62, WWOX, ZEB2*
Comprehensive Autism Spectrum Disorder Panel:	*ABCD1, ACSL4, ADNP, ADSL, AFF2, AGO1, AHI1, AIFM1, ALDH5A1, ANK3, ANKRD11, AP1S2, AP4B1, AP4E1, AP4M1, AP4S1, ARID1A, ARID1B, ARX, ATP13A2, ATP7A, ATP8A2, ATRX, AUTS2, BCKDK, BCL11A, BCOR, BRAF, BRWD3, C12ORF57, CA8, CACNA1C, CASK, CBL, CC2D1A, CCDC22, CDKL5, CDKN1C, CHD2, CHD7, CHD8, CLCN4, CNTNAP2, CREBBP, CTCF, CTNNB1, CUL3, CYP27A1, D2HGDH, DDHD2, DDX3X, DEAF1, DHCR7, DIS3L2, DKC1, DLG3, DMD, DNMT3A, DPYD, DYNC1H1, DYRK1A, EBP, EHMT1, EIF2S3, ELP4, EZH2, FGD1, FMR1, FOLR1, FOXG1, FOXP1, FOXP2, FTSJ1, GATAD2B, GDI1, GK, GLI3, GNS, GPC3, GRIA3, GRIK2, GRIN2B, GRIP1, HCCS, HDAC8, HGSNAT, HPRT1, HRAS, HUWE1, IDS, IL1RAPL1, KAT6A, KAT6B, KCTD13, KDM5C, KDM6A, KIF1A, KIRREL3, KMT2A, KRAS, L1CAM, L2HGDH, LAMC3, LAMP2, LAS1L, LINS1, LRP2, MAGEL2, MAN1B1, MAOA, MAP2K1, MAP2K2, MBD5, MBTPS2, MECP2, MED12, MED13L, MED23, MEF2C, MID1, MYT1L, NAA10, NAGLU, NDP, NEXMIF, NF1, NFIX, NHS, NIPBL, NLGN4X, NRAS, NRXN1, NRXN3, NSD1, NSDHL, NSUN2, OCRL, OFD1, OPHN1, OTC, PACS1, PAFAH1B1, PCDH19, PDHA1, PGK1, PHF6, PHF8, PIGN, PNKP, POGZ, PORCN, PQBP1, PRPS1, PTCH1, PTCHD1, PTEN, PTPN11, PURA, RAB39B, RAD21, RAF1, RAI1, RARS2, RBM10, RIT1, RPL10, RPS6KA3, SATB2, SCN1A, SCN2A, SETBP1, SETD2, SETD5, SGSH, SHANK2+, SHANK3+, SHOC2, SLC16A2, SLC25A1, SLC6A1, SLC6A4, SLC6A8, SLC9A6, SMARCA2, SMARCA4, SMARCB1, SMARCE1, SMC1A, SOS1, SOX11, SOX5, SPRED1, STXBP1, SYN1, SYNGAP1, TAF1, TBL1XR1, TBR1, TCF12, TCF20, TCF4, THOC2, TIMM8A, TMEM231, TMLHE, TRAPPC9, TRIO, TSC1, TSC2, TSPAN7, TUBA1A, TUSC3, UBE2A, UBE3A, UNC80, UPF3B, USP9X, VPS13B, WAC, WDR45, WDR81, YWHAE, ZC4H2, ZDHHC9, ZEB2, ZMYND11, ZNF407, ZNF711*
STAT Autism Spectrum Disorder Panel:	*AHI1, AP1S2, ARX, CACNA1C, CDKL5, CNTNAP2, DHCR7, FMR1, GPC3, GRIA3, IL1RAPL1, KDM5C, MECP2, NLGN4X, NRXN1, NSD1, OPHN1, OTC, PCDH19, PTCHD1, PTEN, RAB39B, SHANK2+, SHANK3+, SLC6A8, SLC9A6, TSC1, TSC2, UBE3A, UPF3B*
Microcephaly Panel:	*ACTB, ACTG1, ADGRG1, ARFGEF2, ARX, ASPM, ATR, ATRIP, CASK, CDK5RAP2, CDKL5, CDON, CENPJ, CEP135, CEP152, CEP63, CREBBP, DCX, DHCR7, DISP1, DLL1, DYNC1H1, EP300, ERCC6, ERCC8, FGF8, FKRP, FKTN, FOXG1, FOXH1, GAS1, GLI2, HDAC8, KIF11, KIF2A, KNL1, LARGE1, MCPH1, MECP2, MED17, MRE11, NBN, NDE1, NHEJ1, NIN, NIPBL, NODAL, PAFAH1B1, PCNT, PHGDH, PNKP, POMGNT1, POMT1, POMT2, PTCH1, RAB18, RAB3GAP1, RAB3GAP2, RAD21, RBBP8, RELN, RNU4ATAC, SHH, SIX3, SLC25A19, SLC9A6, SMC1A, SMC3, STAMBP, STIL, TDGF1, TGIF1, TUBA1A, TUBG1, UBE3A, VLDLR, WDR62, ZIC2*
Craniosynostosis Panel:	*ENFB1, FGFR1, FGFR2, FGFR3, MSX2, POR, RAB23, TWIST1*
Limb Defects Panel:	*GLI3, HOXD13, ROR2, SALL1, SALL4, TBX5, WNT7A,* ZRS
Comprehensive Cardiovascular Panel:	*A2ML1, ABCC9, ACADVL, ACTA2, ACTC1, ACTN2, ACVR2B, ACVRL1, ADAMTS2, AGK, AGL, AKAP9, ALG1, ALG12, ALMS1, ALPK3, ANK2, ANKRD1, APOB, ARSB, ATP7A, BAG3, BCOR, BMPR1B, BMPR2, BRAF, CACNA1C, CACNA2D1, CACNB2, CALM1, CALM2, CALM3, CASQ2, CAV1, CAV3, CAVIN4, CBL, CBS, CHD7, CHRM2, CHST14, COL1A1, COL1A2, COL3A1, COL5A1, COL5A2, COX10, COX15, CPT2, CRELD1, CRYAB, CSRP3, CTNNA3, DES, DMD, DNAH5, DOLK, DSC2, DSG2, DSP, DTNA, EFEMP2, EIF2AK4, ELAC2, ELN, EMD, ENG, EYA4, FBN1, FBN2, FHL1, FKBP14, FKRP, FKTN, FLNA, FLNC, FOXH1, GAA, GATA4, GATA6, GATAD1, GBA, GBE1, GDF1, GDF2, GJA1, GJA5, GLA, GLB1, GPC3, GPD1L, GUSB, HADHA, HAND1, HCN4, HEXB, HRAS, IDUA, ILK, JAG1, JPH2, JUP, KCNA5, KCND3, KCNE1, KCNE2, KCNE3, KCNE5, KCNH2, KCNJ2, KCNJ5, KCNJ8, KCNK3, KCNQ1, KRAS, LAMA4, LAMP2, LDB3, LDLR, LDL-RAP1, LEFTY2, LMNA, LZTR1, MAP2K1, MAP2K2, MAT2A, MED12, MED13L, MEIS2, MFAP5, MIB1, MLYCD, MTO1, MUT, MYBPC3, MYH11, MYH6, MYH7, MYL2, MYL3, MYLK, MYLK2, MYOM1, MYOZ2, MYPN, NDUFA10, NDUFA12, NDUFA2, NDUFA9, NDUFAF2, NDUFAF6, NDUFS3, NDUFS4, NDUFS7, NDUFS8, NEBL, NEXN, NF1, NKX2-5, NKX2-6, NODAL, NOTCH1, NPPA, NR2F2, NRAS, NSD1, OBSCN, PCCA, PCCB, PCSK9, PDLIM3, PET100, PGM1, PHYH, PKP2, PLEKHM2, PLN, PLOD1, PMM2, PPP1CB, PRDM16, PRKAG2, PRKG1, PTPN11, RAF1, RANGRF, RASA1, RASA2, RBM20, RIT1, RYR2, SCN10A, SCN1B, SCN2B, SCN3B, SCN4B, SCN5A, SCO1, SDHA, SDHAF1, SGCD, SGSH, SHOC2, SKI, SLC22A5, SLC25A20, SLC2A10, SLC39A13, SLMAP, SMAD3, SMAD4, SMAD6, SMAD9, SNTA1, SOS1, SOS2, SPRED1, SURF1, TAZ, TBX1, TBX5, TCAP, TGFB2, TGFB3, TGFBR1, TGFBR2, TMEM43, TMEM70, TMPO, TNNC1, TNNI3, TNNT2, TPM1, TRDN, TRPM4, TTN, TTR, TXNRD2, VCL, ZFPM2, ZIC3*
Comprehensive Cardiomyopathy Panel:	*ABCC9, ACADVL, ACTA2, ACTC1, ACTN2, AGK, AGL, AKAP9, ALG1, ALG12, ALMS1, ALPK3, ANK2, ANKRD1, ARSB, BAG3, BRAF, CACNA1C, CACNA2D1, CACNB2, CALM1, CALM2, CALM3, CASQ2, CAV3, CAVIN4, CBL, CBS, CHRM2, COL3A1, COL5A1, COL5A2, COX10, COX15, CPT2, CRYAB, CSRP3, CTNNA3, DES, DMD, DOLK, DSC2, DSG2, DSP, DTNA, ELAC2, EMD, EYA4, FBN1, FBN2, FHL1, FKRP, FKTN, FLNA, FLNC, GAA, GATA4, GATA6, GATAD1, GBA, GBE1, GJA5, GLA, GLB1, GPD1L, GUSB, HADHA, HCN4, HEXB, HRAS, IDUA, ILK, JAG1, JPH2, JUP, KCNA5, KCND3, KCNE1, KCNE2, KCNE3, KCNE5, KCNH2, KCNJ2, KCNJ5, KCNJ8, KCNQ1, KRAS, LAMA4, LAMP2, LDB3, LMNA, MAP2K1, MAP2K2, MED12, MIB1, MLYCD, MTO1, MUT, MYBPC3, MYH11, MYH6, MYH7, MYL2, MYL3, MYLK, MYLK2, MYOM1, MYOZ2, MYPN, NDUFA10, NDUFA12, NDUFA2, NDUFA9, NDUFAF2, NDUFAF6, NDUFS3, NDUFS4, NDUFS7, NDUFS8, NEBL, NEXN, NKX2-5, NOTCH1, NPPA, NRAS, OBSCN, PCCA, PCCB, PDLIM3, PET100, PGM1, PHYH, PKP2, PLEKHM2, PLN, PLOD1, PMM2, PRDM16, PRKAG2, PRKG1, PTPN11, RAF1, RANGRF, RASA1, RBM20, RIT1, RYR2, SCN10A, SCN1B, SCN2B, SCN3B, SCN4B, SCN5A, SCO1, SDHA, SDHAF1, SGCD, SGSH, SHOC2, SKI, SLC22A5, SLC25A20, SLC2A10, SLMAP, SMAD3, SMAD4, SNTA1, SOS1, SURF1, TAZ, TBX1, TBX5, TCAP, TGFB2, TGFB3, TGFBR1, TGFBR2, TMEM43, TMEM70, TMPO, TNNC1, TNNI3, TNNT2, TPM1, TRDN, TRPM4, TTN, TTR, TXNRD2, VCL*
Noonan Spectrum Disorders Panel:	*A2ML1, BRAF, CBL, HRAS, KRAS, LZTR1, MAP2K1, MAP2K2, NF1, NRAS, PPP1CB, PTPN11, RAF1, RASA2, RIT1, SHOC2, SOS1, SOS2, SPRED1*
Comprehensive Immunodeficiency Panel	*ACD, ACP5, ADA, ADA2, ADAM17, ADAR, AICDA, AIRE, AK2, AP3B1, B2M, BTK, C1QA, C1QB, C1QC, C1S, C2, C3, C4A, C4B, C5, C6, C7, C8A, C8B, C9, CARD11, CARD14, CARD9, CASP10, CASP8, CCDC39, CCDC40, CD19, CD247, CD27, CD3D, CD3E, CD3G, CD40, CD40LG, CD46, CD59, CD79A, CD79B, CD81, CD8A, CEBPE, CFB, CFD, CFH, CFHR1, CFHR3, CFI, CFP, CHD7, CIITA, CLPB, COPA, CORO1A, CR2, CSF2RA, CSF3R, CTC1, CTLA4, CTPS1, CTSC, CXCR4, CYBA, CYBB, DCLRE1B, DCLRE1C, DGKE, DKC1, DNMT3B, DOCK2, DOCK8, DUOX2, ELANE, EPCAM, EPG5, FADD, FAS, FASLG, FCN1, FERMT1, FERMT3, FOXN1, FOXP3, G6PC3, G6PD, GATA2, GATA3, GFI1, GUCY2C, HAX1, HPS1, HPS4, HPS6, ICOS, IFIH1, IFNGR1, IFNGR2, IGHM, IGLL1, IKBKB, IKBKG, IL10, IL10RA, IL10RB, IL12B, IL12RB1, IL17F, IL17RA, IL17RC, IL18, IL18RAP, IL1RN, IL21, IL21R, IL23R, IL2RA, IL2RG, IL36RN, IL7R, IN080, IRAK4, IRF7, IRF8, IRGM, ISG15, ITGAM, ITGB2, ITK, JAGN1, JAK1, JAK3, LAMTOR2, LCK, LIG1, LIG4, LPIN2, LRBA, LRRC8A, LYST, MAGT1, MALT1, MAP3K14, MASP2, MEFV, MRE11, MVK, MYD88, MYO5B, NBN, NCF1, NCF2, NCF4, NFAT5, NFKB1, NFKB2, NFKBIA, NHEJ1, NHP2, NLRC4, NLRP12, NLRP3, NOD2, NOP10, NRAS, ORAI1, PGM3, PIK3CD, PIK3R1, PLCG2, PMS2, PNP, POLE, PRF1, PRKCD, PRKDC, PTEN, PTPRC, RAB27A, RAC2, RAG1, RAG2, RBCK1, RET, RFX5, RFXANK, RFXAP, RHOH, RMRP, RNASEH2A, RNASEH2B, RNASEH2C, RORC, RTEL1, SAMHD1, SBDS, SERPING1, SH2D1A, SKIV2L, SLC35C1, SLC37A4, SLC9A3, SMARCAL1, SP110, SPINK5, STAT1, STAT3, STAT5B, STIM1, STK4, STX11, STXBP2, TAP1, TAP2, TAPBP, TAZ, TBX1, TCN2, TERC, TERT, TINF2, TLR3, TMEM173, TNFAIP3, TNFRSF13B, TNFRSF13C, TNFRSF1A, TNFSF12, TREX1, TRIM22, TRNT1, TTC37, TTC7A, TYK2, UNC13D, UNG, USB1, VPS13B, VPS45, WAS, WIPF1, WRAP53, XIAP, ZAP70, ZBTB24*

Pharmacogenetic Genes by Panel

PANELS	GENES
Comprehensive PGx Panel:	*ABCB1, ABCG2, ADRA2A, COMT, CYP1A2, CYP2B6, CYP2C, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP3A4, CYP3A5, CYP4F2, DPYD, DRD2, F2, F5, G6PD, GRIK4, HTR2A, HTR2C, NUDT15, OPRM1, SLCO1B1, TPMT, UGT1A1, UGT2B15, VKORC1*
Cardiovascular PGx Panel:	*ABCG2, CYP2C, CYP2C19, CYP2C9, CYP2D6, CYP3A4, CYP4F2, F2, F5, SLCO1B1, VKORC1*
Epilepsy PGx Panel:	*ABCG2, COMT, CYP2B6, CYP2C19, CYP2C9, CYP2D6, GRIK4, OPRM1, UGT2B15*
Oncology PGx Panel:	*CYP2C8, CYP2D6, DPYD, G6PD, NUDT15, TPMT, UGT1A1*
Pain PGx Panel:	*ABCG2, COMT, CYP2B6, CYP2C19, CYP2C9, CYP2D6, G6PD, OPRM1*
Pediatric PGx Panel:	*CYP2C19, CYP2C9, CYP2D6, CYP3A5, DPYD, SLCO1B1, TPMT, UGT1A1, VKORC1*
Psychiatry PGx Panel:	*COMT, CYP1A2, CYP2B6, CYP2C19, CYP2C9, CYP2D6, DRD2, GRIK4, HTR2A, HTR2C, UGT2B15*

COMPLETE AND SUBMIT ALL PAGES TO LABORATORY

Informed Consent for Genetic Testing

If you do not have legal authority and capacity to sign this consent under law, a legal representative who is at least eighteen (18) years of age and has the legal authority and capacity to do so must sign this consent and authorization on your behalf.

I hereby request the genetic testing ordered by my health care provider, which may include molecular, cytogenetic, and/or biochemical analyses of my sample(s). I have received information (please see www.sema4.com/testcatalog for test-specific information sheet) from my physician or from a genetic counselor that described, in words that I understand, the nature of the genetic testing that I am about to undergo.

I understand that specimen(s), such as a peripheral blood, saliva, cheek swab, dried blood spot, skin biopsy, amniotic fluid, chorionic villus, and/or urine sample, will be taken from me. I understand that these samples will be used for determining if I have a genetic disease, am a carrier of a genetic disease, or am more likely to develop a genetic disease or condition.

The nature of the genetic test(s) ordered in connection with this consent has been explained to me, and the accuracy of the test and its risks and limitations have been detailed. I understand that infrequent errors may occur, even though the likelihood of an incorrect diagnosis or a misinterpretation of the result is extremely small. I understand that a negative result reduces, but does not eliminate, the possibility that I carry a variant(s) in the gene(s) analyzed or in other genes that are not included in the test. I understand that a positive result is an indication that I may be predisposed to or have a specific disease or condition and I may consider further independent testing, consult my physician or pursue genetic counseling. Knowledge of genetic information will improve over time and new information may become available in the future that could impact the interpretation of my results.

I understand that test results may reveal incidental, unsought information, such as discovering an undiagnosed disorder. I understand that this testing may yield results that are of unknown clinical significance and that parental or other relative's specimens may also be tested to determine whether a specific finding was inherited. This testing may reveal cases of adoption or demonstrate that a person is not the biological father or mother of the patient. An error in the diagnosis may occur if the true biological relationships of the family members involved are not as I have described.

I understand that the results of this testing will become part of my medical record and may only be disclosed to individuals who have legal access to this record or to individuals I designate to receive this information. My test results will be explained to me by a genetic counselor or by my healthcare provider, who will have the opportunity to discuss my results with a geneticist.

There are federal and state laws that address genetic discrimination. The US Genetic Information Nondiscrimination Act may prohibit discrimination based on genetic information by employers and health insurers. This law, however, does not protect people in the military nor protect against discrimination by other types of insurance, such as life, disability, or long-term care insurance.

Sample management

Sema4 may deidentify and retain your left-over sample to use for operational, quality control, validation and improvement purposes. Other than retention for these uses, your sample will be destroyed at the end of the testing process or within 60 days of sample collection, whichever is longer.

De-identified research

Sema4 may de-identify and use all data and information generated and received in connection with this test to support medical and academic research relating to health, disease prevention, drug development, and other scientific purposes. I will receive no compensation in connection with such research. Data and information are "de-identified" by removing any information that could be used to identify a specific person, such as a name, email address, or date of birth. Sema4 may also give the de-identified data and information to its research partners and may submit it to research databases for use in scientific and medical research. Examples of such research include projects to understand the risk factors and outcomes for various conditions and can be found at www.sema4.com/research.

If I do not want to have my de-identified data and information used in research as set forth above, I may withdraw this consent by emailing privacy@sema4.com, and I understand that the change will apply to all data generated from tests that I have undergone with Sema4. I further understand that this withdrawal will not apply to any information that has already been de-identified and cannot be identified by Sema4.

Permission to contact

I understand that Sema4 may wish to contact me in the future, including for the following reasons: research purposes, the provision of general information about research findings, and/or the provision of information about the results of tests on my sample(s). If I wish to opt-out out of future contact for research purposes, I will notify Sema4 by emailing privacy@sema4.com.

My healthcare provider has discussed my test order(s) with me, and I hereby consent to have my specimen tested. I have been encouraged to ask questions and agree that any questions I have asked have been answered to my satisfaction. If my legal representative is signing this consent and authorization, my legal representative is satisfied that they have received enough information to sign on my behalf.

Please complete all required (*) fields and optional applicable fields below:

Patient Name*	Patient's DOB*	Date*
Signature of Patient or Legal Representative*	Email Address*	Phone Number*
Legal Representative Name (if applicable)		

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