



How to talk to your pediatrician about Sema4 Natalis

A guide to starting the conversation about supplemental newborn screening

In the United States, almost every child is screened for certain medical conditions shortly after birth. Most babies who are born with these conditions appear healthy at first. Without early screening, a condition may not be discovered until symptoms appear. This may be too late to prevent serious health consequences. Proactive screening can help identify conditions early in life, so that treatment can be started immediately.

Each state determines which conditions babies will be screened for, so different states may test for different conditions. In general, most states screen for 34 conditions that are recommended by the federal government. This is also known as the Recommended Uniform Screening Panel (RUSP). You can check which conditions your state screens for at babysfirsttest.org.

Sema4 Natalis is a more extensive newborn screen that can be performed in addition to state tests. It screens for every condition on the RUSP and all state panels, as well as 84 additional conditions that can benefit from early detection.



Before your appointment

Before your visit with your pediatrician, it is helpful to collect some information about your family medical history and your child's health to help determine whether testing with Natalis is right for your child. It's a good idea to have the answers to the following questions prepared.

Have your answers ready

Was the biological mother identified as a carrier of an X-linked condition? (Check one)

Yes

If yes, for which condition(s)?

No

I'm not sure

Were the biological parents identified as a carrier couple? (Check one)

Yes

If yes, for which condition(s)?

No

I'm not sure

If any family members (1st or 2nd degree relatives) have been diagnosed with a condition covered by Sema4 Natalis, please list the relative and their condition. You can find a full list of conditions at sema4.com/products/Natalis/conditions/

At your appointment

At your appointment with your pediatrician, the following are some questions that may help you start the conversation.

Questions to ask your pediatrician

- ❓ What conditions are included on my state's newborn screen?
- ❓ Could additional screening benefit my child?
- ❓ How is Natalis different from carrier screening or prenatal tests?
- ❓ What happens if my child screens positive for a genetic condition?
- ❓ Would Sema4 Natalis be right for my child?

For your pediatrician

To order Natalis, your pediatrician should

- Reach out to Sema4 to request a kit
- Collect DNA samples from you and your child
- Complete the test requisition form included at the end of this document

To learn more, visit sema4.com/Natalis or call **800-298-6470**.



PEDIATRICIAN NATALIS TEST REQUISITION

SPECIMENS: 1428 Madison Ave., Rm AB2-25, New York, NY 10029
 MAIL: One Gustave L. Levy Place, Box 1497, New York, NY 10029-6574
 Phone: **800-298-6470** / Fax: 646-859-6870
 Tax ID# 47-5349024/ CLIA# 33D2097541

ACCESSION NO.	DATE / /
---------------	----------

PATIENT INFORMATION

LAST NAME	FIRST NAME
CLIENT MRN	DATE OF BIRTH / /
	BIOLOGICAL SEX <input type="checkbox"/> M <input type="checkbox"/> F

REFERRING PROVIDER INFORMATION

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 / /

LEGAL GUARDIAN INFORMATION

LAST NAME	FIRST NAME
TELEPHONE	
ADDRESS	
PHONE	EMAIL

PATIENT SPECIMEN INFORMATION

SPECIMEN TYPE
 BLOOD SALIVA CHEEK SWAB (preferred) OTHER _____

DATE OF COLLECTION: _____

INDICATION FOR TEST:
ICD10 Dx CODE(S) Z13.9: Encounter for screening, unspecified
 P09: Abnormal findings on neonatal screening
 Z13.228: Encounter for screening for other metabolic disorders
 Other (please specify ICD10): _____

Select patient pay or institutional billing below. For patient pay orders, Sema4 will send the guardian an email to complete payment online after our lab receives the specimen(s).

Patient pay Institutional billing

Guardian Payment Agreement: I understand that I am financially responsible for these service and that my insurance will not be billed. I will contact Sema4 with any billing inquiries at 800-298-6470, option 3.

PARENTAL SPECIMEN INFORMATION

Please also provide specimen for one biological parent
 Biological Mother Biological Father Not available

SPECIMEN TYPE
 BLOOD SALIVA CHEEK SWAB (preferred) OTHER _____

DATE OF COLLECTION: _____

SIGNATURE _____ DATE / /

LABORATORY TEST(S) ORDERED

Molecular

NEW Natalis
 Includes (individual genes listed on reverse side):
 166 Disease genes, 10 Pharmacogenetic genes

Please Note: Consent must be collected on all individuals who are submitting a sample to Sema4. Please complete Page 3 for Patient consent and page 4 for Biological Parent consent.

SEMA4 NATALIS FAMILY MEDICAL HISTORY QUESTIONNAIRE

- What is the ethnicity of the child?** (Please check all that apply.)

<input type="checkbox"/> African American	<input type="checkbox"/> North African
<input type="checkbox"/> Ashkenazi Jewish	<input type="checkbox"/> North/Central American
<input type="checkbox"/> Caucasian	<input type="checkbox"/> Sephardic Jewish
<input type="checkbox"/> Cajun/French Canadian	<input type="checkbox"/> South American
<input type="checkbox"/> East Asian	<input type="checkbox"/> South Asian
<input type="checkbox"/> Hispanic Caribbean	<input type="checkbox"/> Sub-Saharan African
<input type="checkbox"/> Mizrahi Jewish	<input type="checkbox"/> Other: _____
- Were there any abnormal prenatal testing results during the pregnancy?** (Please check all that apply.)
 - Abnormal ultrasound
 - Fetal AFP analysis
 - Fetal chromosome analysis
 - Fetal chromosomal microarray
 - Maternal serum screening (First Trimester Screening, AFP, Quadruple Screen, etc.)
 - Noninvasive prenatal testing (NIPT)
 - None
 - Not sure
- Do the biological parents/relatives have any of the conditions tested in this screening?**
 - Yes If yes, what is the condition(s) name(s)? _____
 - Who is the family member with the condition(s)? _____
 - No
- What is the primary reason for pursuing testing?**
 - The family is interested in additional screening for their healthy child
 - The child is suspected of having an inherited condition and seeking a diagnosis.
- Has the child had a bone marrow transplant or a stem cell transplant?**
 - Yes
 - No
- Has the child had routine state newborn screening?**
 - Yes
 - No
 - Unsure
- Is the child generally healthy with no major physical medical problems and not currently under the care of a medical specialist with exception of optometrist, dentist, and allergist, or specialist associated with traumatic injury?**
 - Yes
 - No
- Is the child currently receiving any medications other than antibiotics?**
 - Yes
 - No

Patient Name: _____	Patient Name: _____	Patient Name: _____	Patient Name: _____
---------------------	---------------------	---------------------	---------------------

GENES INCLUDED ON NATALIS

DISEASE GENES	
ABCC8	Familial Hyperinsulinism (ABCC8-Related)
ABCD1	Adrenoleukodystrophy, X-Linked
ACADM	Medium Chain Acyl-CoA Dehydrogenase Deficiency
ACADVL	Very Long Chain Acyl-CoA Dehydrogenase Deficiency
ACAT1	Beta-Ketothiolase Deficiency
ADA	Adenosine Deaminase Deficiency
AGL	Glycogen Storage Disease, Type III
AGXT	Primary Hyperoxaluria, Type 1
AKR1D1	Congenital Bile Acid Synthesis Defect (AKR1D1-Related)
ALDH7A1	Pyridoxine-Dependent Epilepsy
ALDOB	Hereditary Fructose Intolerance
ALPL	Hypophosphatasia
ANK1	Spherocytosis, Type 1
AQP2	Nephrogenic Diabetes Insipidus, Type II
ARG1	Argininemia
ARSA	Metachromatic Leukodystrophy
ARSB	Mucopolysaccharidosis Type VI
ASL	Argininosuccinic Aciduria
ASS1	Citrullinemia, Type 1
AVPR2	Nephrogenic Diabetes Insipidus (AVPR2-Related) / Nephrogenic Syndrome of Inappropriate Antidiuresis
BCKDHA	Maple Syrup Urine Disease, Type 1a
BCKDHB	Maple Syrup Urine Disease, Type 1b
BTD	Biotinidase Deficiency
CASR	Neonatal Hyperparathyroidism / Autosomal Dominant Hypocalcemia
CBS	Homocystinuria (CBS-Related)
CD3D	Immunodeficiency 19
CD3E	Immunodeficiency 18
CFTR	Cystic Fibrosis
COL4A3	Alport Syndrome (COL4A3-Related)
COL4A4	Alport Syndrome (COL4A4-Related)
COL4A5	Alport Syndrome (COL4A5-Related)
CPS1	Carbamoylphosphate Synthetase I Deficiency
CPT1A	Carnitine Palmitoyltransferase IA Deficiency
CPT2	Carnitine Palmitoyltransferase II Deficiency
CTNS	Cystinosis
CYBA	Chronic Granulomatous Disease (CYBA-related)
CYBB	Chronic Granulomatous Disease (CYBB-related)
CYP11B1	Congenital Adrenal Hyperplasia due to 11-Beta-Hydroxylase Deficiency
CYP11B2	Corticosterone Methyloxidase Deficiency
CYP27A1	Cerebrotendinous Xanthomatosis
DBT	Maple Syrup Urine Disease, Type 2
DCLRE1C	Omenn Syndrome / Severe Combined Immunodeficiency, Athabaskan-Type
DLD	Lipoamide Dehydrogenase Deficiency
DUOX2	Thyroid Dysmorphogenesis 6
DUOXA2	Thyroid Dysmorphogenesis 5
EPB42	Spherocytosis, Type 5
ETFA	Glutaric Acidemia, Type IIa
ETFB	Glutaric Acidemia, Type IIb
ETFDH	Glutaric Acidemia, Type IIc
ETHE1	Ethylmalonic Encephalopathy
F9	Factor IX Deficiency
FAH	Tyrosinemia, Type I
FBN1	Marfan syndrome and other FBN1-related disorders
FBP1	Fructose-1,6-Bisphosphatase Deficiency
FOLR1	Neurodegeneration due to Cerebral Folate Transport Deficiency
G6PC	Glycogen Storage Disease, Type Ia
G6PD	Hemolytic Anemia (G6PD-Related)
GAA	Glycogen Storage Disease, Type II
GALE	Galactose Epimerase Deficiency
GALK1	Galactokinase Deficiency
GALNS	Mucopolysaccharidosis Type IVa
GALT	Galactosemia
GAMT	Cerebral Creatine Deficiency Syndrome 2
GATM	Cerebral Creatine Deficiency Syndrome 3
GCDH	Glutaric Acidemia, Type I

GCH1	Dopa-Responsive Dystonia / BH4-Deficient Hyperphenylalaninemia B
GLA	Fabry Disease
GLUD1	Hyperinsulinism-Hyperammonemia Syndrome
GRHPR	Primary Hyperoxaluria, Type 2
GSS	Glutathione Synthetase Deficiency
GYS2	Glycogen storage disease, Type 0
HADH	Familial Hyperinsulinemic Hypoglycemia 4 / 3-Hydroxyacyl-CoA Dehydrogenase Deficiency
HADHA	Long-Chain 3-Hydroxyacyl-CoA Dehydrogenase Deficiency
HADHB	Mitochondrial Trifunctional Protein Deficiency (HADHB-Related)
HAX1	Congenital Neutropenia (HAX1-Related)
HBA1/HBA2	Alpha-Thalassemia (copy number)
HBB	Beta-Globin-Related Hemoglobinopathies
HLC5	Holocarboxylase Synthetase Deficiency
HMGCL	HMG-CoA Lyase Deficiency
HMGCS2	HMG-CoA Synthase 2 Deficiency
HOGA1	Primary Hyperoxaluria, Type 3
HPD	Tyrosinemia, type III
HSD3B2	3-Beta-Hydroxysteroid Dehydrogenase Type II Deficiency
HSD3B7	Congenital Bile Acid Synthesis Defect (HSD3B7-Related)
IDS	Mucopolysaccharidosis Type II
IDUA	Mucopolysaccharidosis Type I
IGSF1	Central Hypothyroidism and Testicular Enlargement
IL2RG	X-Linked Severe Combined Immunodeficiency
IL7R	Severe Combined Immunodeficiency (IL7R-Related)
INS	Permanent Neonatal Diabetes Mellitus (INS-Related)
IVD	Isovaleric Acidemia
IYD	Thyroid Dysmorphogenesis 4
JAG1	Alagille syndrome 1 / Tetralogy of Fallot
JAK3	Severe Combined Immunodeficiency (JAK3-Related)
KCNJ11	Familial Hyperinsulinism (KCNJ11-Related)
KCNQ2	Early Infantile Epileptic Encephalopathy 7 / Benign Neonatal Seizures 1
LDLR	Familial Hypercholesterolemia
LHX3	Combined Pituitary Hormone Deficiency 3
LIPA	Wolman Disease / Cholesteryl Ester Storage Disease
LMBRD1	Methylmalonic Aciduria and Homocystinuria, Cobalamin F Type
LPL	Lipoprotein Lipase Deficiency
MAT1A	Methionine Adenosyltransferase I/III Deficiency
MCCC1	3-Methylcrotonyl-CoA Carboxylase Deficiency (MCCC1-Related)
MCCC2	3-Methylcrotonyl-CoA Carboxylase Deficiency (MCCC2-Related)
MCEE	Methylmalonyl-CoA Epimerase Deficiency
MLYCD	Malonyl-CoA Decarboxylase Deficiency
MMAA	Methylmalonic Acidemia (MMAA-Related)
MMAB	Methylmalonic Acidemia (MMAB-Related)
MMACHC	Methylmalonic Aciduria and Homocystinuria, Cobalamin C Type
MMADHC	Methylmalonic Aciduria and Homocystinuria, Cobalamin D Type
MPI	Congenital Disorder of Glycosylation, Type Ib
MPL	Congenital Amegakaryocytic Thrombocytopenia
MTR	Homocystinuria-Megaloblastic Anemia, Cobalamin G Type
MTRR	Homocystinuria, Cobalamin E Type
MTTP	Abetalipoproteinemia
MUT	Methylmalonic Acidemia (MUT-Related)
NAGS	N-Acetylglutamate Synthase Deficiency
OAT	Ornithine Aminotransferase Deficiency
OTC	Ornithine Transcarbamylase Deficiency
PAH	Phenylalanine Hydroxylase Deficiency
PAX8	Congenital Hypothyroidism due to Thyroid Dysgenesis or Hypoplasia
PCBD1	BH4-deficient Hyperphenylalaninemia D
PCCA	Propionic Acidemia (PCCA-Related)
PCCB	Propionic Acidemia (PCCB-Related)
PHGDH	3-Phosphoglycerate Dehydrogenase Deficiency

PHKB	Glycogen Storage Disease, Type IXb
PNPO	Pyridoxamine 5'-Phosphate Oxidase Deficiency
POU1F1	Combined Pituitary Hormone Deficiency 1
PROP1	Combined Pituitary Hormone Deficiency 2
PRRT2	Familial Infantile Convulsions with Paroxysmal Choreoathetosis
PTPRC	Severe Combined Immunodeficiency (PTPRC-Related, CD45)
PTS	6-Pyruvoyl-Tetrahydropterin Synthase Deficiency
PYGL	Glycogen storage disease, Type VI
QDPR	BH4-deficient Hyperphenylalaninemia C
RAG1	Omenn syndrome and other RAG1-related disorders
RAG2	Omenn Syndrome (RAG2-Related)
RB1	Retinoblastoma
SCN2A	Early Infantile Epileptic Encephalopathy 11 / Benign Familial Infantile Seizures 3
SCN8A	Early Infantile Epileptic Encephalopathy 13 / Benign Familial Infantile Seizures 5
SLC22A5	Primary Carnitine Deficiency
SLC25A13	Citrin Deficiency
SLC25A15	Hyperornithinemia-Hyperammonemia-Homocitrullinuria Syndrome
SLC25A20	Carnitine Acylcarnitine Translocase Deficiency
SLC2A1	Glucose transporter 1 deficiency syndrome and other SLC2A1-related disorders
SLC39A4	Acrodermatitis Enteropathica
SLC4A1	Distal Renal Tubular Acidosis / Spherocytosis, Type 4
SLC5A5	Thyroid Dysmorphogenesis 1
SLC7A7	Lysinuric Protein Intolerance
SMN1	Spinal Muscular Atrophy (copy number)
SMPD1	Niemann-Pick Disease (SMPD1-Related)
SPR	Sepiapterin Reductase Deficiency
STAR	Lipoid Adrenal Hyperplasia
TAT	Tyrosinemia, Type II
TAZ	Barth Syndrome
TCIRG1	Osteopetrosis 1
TG	Thyroid Dysmorphogenesis 3
TH	Segawa Syndrome
THRA	Congenital Nongoitrous Hypothyroidism 6
TPO	Thyroid Dysmorphogenesis 2A
TRHR	Generalized Thyrotropin-Releasing Hormone Resistance
TRMU	Acute Infantile Liver Failure
TSHB	Congenital Nongoitrous Hypothyroidism 4
TSHR	Congenital Nongoitrous Hypothyroidism 1 / Nonautoimmune Hyperthyroidism
TTPA	Ataxia With Isolated Vitamin E Deficiency
UGT1A1	Crigler-Najjar Syndrome, Types 1 & 2 / Gilbert Syndrome
WT1	Wilms tumor, type 1 and other WT1-related disorders

PHARMACOGENETIC GENES	
CYP2C19	Cytochrome P450-2C19
CYP2C9	Cytochrome P450-2C9
CYP2D6	Cytochrome P450-2D6
CYP3A5	Cytochrome P450-3A5
DPYD	Dihydropyrimidine dehydrogenase
MT-RNR1	Mitochondrially encoded 12S RNA
SLCO1B1	Solute Carrier Organic anion transporter family member 1B1
TPMT	Thiopurine S-methyltransferase
UGT1A1	UDP glucuronosyltransferase family 1 member A1
VKORC1	Vitamin K epoxide reductase complex subunit 1

Informed Consent for Children

This informed consent describes the benefits, risks, and limitations of undergoing DNA testing on your child for certain genetic conditions with Sema4 Natalis. **Your child's DNA will not be analyzed by Sema4 unless you confirm that you have read and understood the contents of this form.**

This is a voluntary test that you are choosing for your child. You may wish to seek additional, independent genetic counseling on your child's behalf prior to agreeing to this form. If you have any questions about your medical care, you should seek the advice of your physician or other qualified healthcare provider. Never disregard professional medical advice or delay seeking it.

What is this test?

This has two components, and tests whether your child is affected or at risk to be affected with one of the genetic conditions included on Natalis and also tests for genes that predict your child's drug response variability to certain medications.

The screening component of this test looks at your child's genetic material for evidence of disease-related changes in 193 different genes. These genes are for diseases that occur in infancy or early childhood and for which there is treatment or medical management that, when administered early in an infant or child's life, may significantly improve their clinical outcome. This test will only report back genetic changes that indicate a child is affected with the disease, but it will not report back whether your child is merely a "carrier" of the variation associated with a disease. The test will also not report changes that have not been classified as "pathogenic" or "likely pathogenic", which means that they are known to cause a disease, according to the laboratory standards and guidelines published by The American College of Genetics and Genomics.

This test also looks at an additional ten genes that are implicated in drug response variability—referred to as "pharmacogenetic" or PGx genes—for a subset of 30 medications that may be prescribed during childhood. For these genes, we will only report those genetic changes that are clinically relevant and that have therapy recommendations affiliated with them. Please note that these genetic changes are much more common than the disease-causing changes included in the screening component of this test, and most people carry at least one genetic change in these ten pharmacogenetic genes.

A complete list of the genes and corresponding conditions screened for by the screening and the PGx components of the test may be found at sema4.com/Natalis/conditions. This test does not screen for any other genetic conditions, and Sema4 will not perform any other analysis on your child's sample without your consent.

Is genetic counseling included?

Board Eligible/Certified Genetic Counselors are available to support your physician in the event that there are any positive results. Genetic Counselors are available to explain any positive pharmacogenetic results to you directly. Because our Genetic Counselors conduct focused sessions via telephone and/or video, it is strongly recommended that all positive disease-related results be discussed in the setting of a formal evaluation by a clinical geneticist (or similar provider).

What are the possible benefits of this test?

Your child's screening results may help you identify a previously undiagnosed genetic disease that has a specific treatment or medical management plan that could improve clinical outcome in your child and aid in reproductive planning for future pregnancies. Further, the pharmacogenetic component of this test may help guide your child's physician when selecting appropriate medications.

What are the limitations and risks of this test?

This test is designed to detect gene variants associated with only certain genetic diseases. It cannot detect every variant associated with each disease, nor does it look for all known genetic diseases that could affect your child. This test only provides information about the specific conditions and PGx genes tested. Negative results do not guarantee that you or your children will be healthy. No single genetic test can detect all of the possible gene variants that could cause a disease. This test only reports changes (variants) that are pathogenic or likely pathogenic and will not report a variant that is of uncertain significance. This means that, even if your child tests negative, there is a chance that he or she may still develop one of the genetic conditions on this test. In addition, it is possible that your child may receive a positive result for a disease that he/she might not be significantly affected with due to incomplete penetrance. This is because in some disorders, not all individuals who carry genetic variants that have been shown to cause a particular disease will exhibit symptoms of that disease. Please contact your physician or inquire through the genetic counseling services, as this test is not meant to replace medical care from your own physician. It is recommended that you seek the advice of your physician or other appropriate healthcare professional with any questions you may have regarding your results.

Some biological factors, such as a history of bone marrow transplantation or recent blood transfusions, may limit the accuracy of results. As with all medical tests, there is a chance of a "false positive" or a "false negative" result. A false positive result means that a gene variant was detected, but it is not actually there. Similarly, a false negative result means the test did not identify a gene variant that you actually have.

Additionally, you understand that genetic testing may reveal sensitive information about your child's health, your own health, or that of your relatives. Test results may reveal incidental, unsuspected information, such as discovering an undiagnosed disorder, revealing cases of adoption, or demonstrating that a person is not the father or mother of this child.

Sample storage

By signing this consent form, I agree that Sema4 may store, de-identify, and use my child's sample and information to support medical and academic research relating to health, disease prevention, drug development, and other scientific purposes, and that my child will receive no compensation in connection with such research. If my child is a resident of New York, my child's sample will not be retained for more than 60 days after collection unless I give my consent at the end of this document.

I understand that I may decline to have my child's sample retained for de-identified research purposes by Sema4 by initialing here: _____. I understand that I may withdraw this consent at any time by contacting Sema4 (including by emailing privacy@sema4.com) and my child's specimen will be promptly destroyed.

De-identified research

Sema4 may also give the de-identified information to its research partners and may submit this de-identified information to research databases for use in scientific and medical research, including scientific databases that are maintained by the federal government, such as a database kept by the National Institutes of Health ("NIH") (an agency of the federal government that funds research). Researchers have to apply to the NIH to see the information in the database. Any information that could directly identify you (such your name or address) will not be provided to a scientific database. If I prefer not to have any of my child's de-identified health information used in research consistent with this consent, I may initial here _____ or request this by contacting Sema4, including by emailing privacy@sema4.com.

Permission to contact

I understand that Sema4 may wish to contact my child 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 child's sample(s). I understand that I may notify Sema4 to opt out of such future contact, including by emailing privacy@sema4.com.

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. In addition, incidental findings that are not related to the primary diagnosis may be identified in me/my child. An error in the diagnosis may occur if the true biological relationships of the family members involved are not as I have stated and this test may detect non-paternity.

The results of my/my child's test will be explained to me by a genetic counselor or by my physician who will have the opportunity to discuss my results with a geneticist. I have had the opportunity to have all of my questions answered. If I am signing this form on behalf of a minor for whom I am the legal guardian, I am satisfied that I have received enough information to sign on his or her behalf.

I understand that this consent is being obtained in order to protect my right to have all of my questions answered before testing. 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 who I designate to receive this information.

For residents of New York state only

By initialing here, I give consent to have my child's specimen anonymously used by Sema4 for scientific research related to genetic disease and stored for as long as the specimen is useful for such research purposes, not to exceed 10 years. Samples from residents of New York will not be retained for more than 60 days after collection without consent. I understand that I may withdraw this consent at any time by contacting Sema4 (including by emailing privacy@sema4.com) and that my child's specimen will be promptly destroyed.

Initials

Child's name

Date of Birth

Name and signature of legal guardian

Date

Informed Consent for Parents

Sema4's Natalis has been ordered for your child. This informed consent describes the benefits, risks, and limitations of your providing a specimen to be used for targeted molecular genetic testing solely so that Sema4 may better interpret test results for your child's test. **Your DNA will not be analyzed by Sema4 unless you confirm that you have read and understood the contents of this form.**

What is this test?

Your sample will undergo a DNA extraction process allowing for the storage of your DNA, should it be needed for testing. Should your child's preliminary Natalis results identify a genetic finding that warrants additional interpretation, you understand that your extracted DNA sample will be used for targeted molecular genetic testing so that Sema4 may better interpret test results for your child. The presence/absence of genetic findings in your DNA may impact the interpretation of your child's test results.

Sema4's Natalis has two components, and tests whether your child is affected with one of the genetic conditions included on our panel and also tests for genes that predict your child's drug response variability to certain medications. A complete list of the genes and corresponding conditions screened for by the screening component of the test may be found in the test information sheet and a complete list of the genes and medications included in the PGx component of this test may also be found on the test website: sema4.com/Natalis/conditions. This test does not screen for any other genetic conditions, and Sema4 will not perform any other analysis on your sample without your consent.

What are the risks of this test?

You understand that genetic testing may reveal sensitive information about your child's health, your own health, or that of your relatives. Test results may reveal incidental, unsought information, such as discovering an undiagnosed disorder, revealing cases of adoption, or demonstrating that a person is not the father or mother of this child.

Sample storage

By signing this consent form, I agree that Sema4 may store, de-identify, and use my sample and information to support medical and academic research relating to health, disease prevention, drug development, and other scientific purposes, and that I will receive no compensation in connection with such research. If I am a resident of New York, my sample will not be retained for more than 60 days after collection unless I give my consent at the end of this document. I understand that I may decline to have my sample retained for de-identified research purposes by Sema4 by initialing here: _____. I understand that I may withdraw this consent at any time by contacting Sema4 (including by emailing privacy@sema4.com) and my specimen will be promptly destroyed.

De-identified research

Sema4 may also give the de-identified information to its research partners and may submit this de-identified information to research databases for use in scientific and medical research, including scientific databases that are maintained by the federal government, such as a database kept by the National Institutes of Health ("NIH") (an

agency of the federal government that funds research). Researchers have to apply to the NIH to see the information in the database. Any information that could directly identify you (such your name or address) will not be provided to a scientific database.

If I prefer not to have any of my de-identified health information used in research consistent with this consent, I may initial here _____ or request this by contacting Sema4, including by emailing privacy@sema4.com.

Permission to contact

I understand that Sema4 may wish to contact me/my child 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/my child's sample(s). I understand that I may notify Sema4 to opt out of such future contact, including by emailing privacy@sema4.com.

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. In addition, incidental findings that are not related to the primary diagnosis may be identified in me/my child. An error in the diagnosis may occur if the true biological relationships of the family members involved are not as I have stated and this test may detect non-paternity.

The results of my/my child's test will be explained to me by a genetic counselor or by my physician who will have the opportunity to discuss my results with a geneticist. I have had the opportunity to have all of my questions answered. If I am signing this form on behalf of a minor for whom I am the legal guardian, I am satisfied that I have received enough information to sign on his or her behalf.

I understand that this consent is being obtained in order to protect my right to have all of my questions answered before testing. 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 who I designate to receive this information.

For residents of New York state only

Initials

By initialing here, I give consent to have my specimen anonymously used by Sema4 for scientific research related to genetic disease and stored for as long as the specimen is useful for such research purposes, not to exceed 10 years. Samples from residents of New York will not be retained for more than 60 days after collection without consent. I understand that I may withdraw this consent at any time by contacting Sema4 (including by emailing privacy@sema4.com) and that my specimen will be promptly destroyed.

Signature of person being tested (or guardian)

Date