TRANSFERRING CODE TO DIAGNOSIS

Order Form 'Epilepsy, Metabolic & Brain Development Disorders'

General Information

CeGaT Center for Genomics and Transcriptomics

Patient

Surname: _____

First name: _____

Date of birth: _____

Sex: ❑ male ❑ female

Material

❑ Blood ____ ml (min. 3 ml EDTA-blood)

❑ Dried blood spot cards (at least 10 spots)

❑ DNA ____ µg (min. 5 µg DNA, concentr. ≥ 50 ng/µl) DNA-No.: _____

❑ Other specimen _____

External ID: _____

Date of sample collection: _____

Samples can be sent by mail in a cardboard box or air cushion envelope. Samples should not be exposed to direct sunlight. Dried blood spot cards can be ordered for free (info@cegat.com).

Sender / Clinic

Surname:

First name:

Institution:

Street:

Postcode/City:

Country:

Phone:

Email:

If applicable, please include a VAT number or a copy of your business registration certificate.

VAT: _____

Invoice

❑ to patient ❑ to sender / clinic

Declaration of consent

By signing this form, I declare that I have received comprehensive information about the genetic background related to the disease in question as well as the possibilities and limitations of molecular genetic testing. I understand that I have the right to withdraw my consent to genetic analyses.

I have been informed, and agree, that the data obtained in the analysis will be recorded, evaluated, or stored in an anonymized form in scientific databases, and further, in accordance with data protection and medical confidentiality, that the request, or parts thereof, may be transmitted to a specialized cooperating laboratory. I have been informed, and agree, that all data collected by CeGaT GmbH is electronically stored, processed, and used. I also consent to the data being transmitted electronically (e.g. by e-mail or fax).

If you do not check these boxes, your answer will be recorded as "No".

I consent to the storage of my genetic material for additional tests and/or quality control (for max. 10 years). ❑ Yes ❑ No

I consent to the storage of my test results beyond the timespan of 10 years (as required by German law). ❑ Yes ❑ No

I consent to the anonymous storage and use of surplus genetic material and/or test results for scientific research. ❑ Yes ❑ No

Genetic variation may sometimes be identified, which does not fit within the scope of the requested genetic analysis (so-called secondary findings report). The reporting of these variants is limited to pathogenic alterations within selected genes, for which a treatment or course of action exists for you or your family (according to the current guidelines of the American College of Medical Genetics and Genomics; ACMG SF V2.0; Kalia et al., 2017, PMID: 27854360). There is no claim of a comprehensive analysis of the genes included within the secondary findings report. An absence of secondary findings cannot be used to indicate a reduced disease risk.

With regard to secondary findings I would like:

❑ to be informed

❑ to NOT be informed

Please Note

Our panels are regularly updated to reflect current scientific research. It should therefore be recognized that there is the possibility that the list of genes on the order form may have changed slightly (genes added or removed) by the time the sample is analyzed in the laboratory. By signing this form, the patient accepts that the list of genes actually analyzed may be slightly different from what is currently listed. When NGS is utilized more than the requested genes are sequenced for each sample.

This declaration of consent can be completely or partially withdrawn at any time. I have had sufficient time to consider giving my consent.

_____ Patient / Legal Guardian (Block letters)

_____ Doctor (Surname, First name)

Doctor's stamp / Barcode

X _____ Patient / Legal Guardian (Date, Signature)

X _____ Doctor (Date, Signature)

Contact

To discuss the diagnostic strategy please do not hesitate to contact us.
Phone: +49 7071 565 44-55
Email: diagnostic-support@cegat.de

DAkkS Deutsche Akkreditierungsstelle D-ML-13206-01-00

CAP ACCREDITED COLLEGE of AMERICAN PATHOLOGISTS CLIA CERTIFIED ID: 99D2130225

CeGaT is accredited by DAkkS according to DIN EN ISO 15189:2014, by the College of American Pathologists (CAP) and CLIA.

Order Form 'Epilepsy, Metabolic & Brain Development Disorders'

Indication

Indication / Suspected Diagnosis:

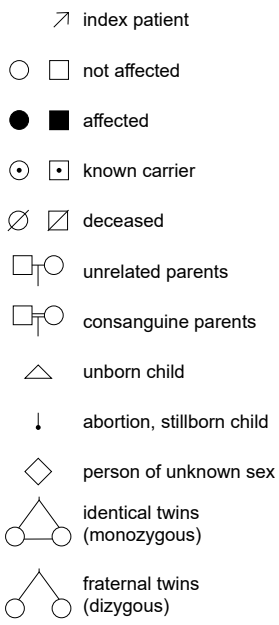
Clinical Major Symptoms:

Preliminary genetic diagnostics:

Please include a copy of all existing reports of your patient.

Pedigree

Consanguinity: ❑ Yes ❑ No Ethnic origin: _____



Family medical history

Are there other family members who currently have or have had the same or a similar disease as the patient?

❑ Yes ❑ No

If yes, please list the affected family members:

Name (not required)	Relationship to the patient (e.g. mother)	Age of onset	Diagnosis / Symptoms

Order Form 'Epilepsy, Metabolic & Brain Development Disorders'

Medical History

Clinical features

1. Epileptic seizures

❑ No ❑ Yes; onset? _____

Etiology/Seizure types: _____

Sleep-related ❑ No ❑ Yes: _____

EEG ❑ Not performed ❑ Yes **(please attach copy of results if patient agrees)**

Further information: _____

2. Psychomotor development

❑ Progression ❑ Stagnation ❑ Regression

Intellectual disability	❑ No	❑ Yes
Speech / Language impairment	❑ No	❑ Yes
Motor deficits	❑ No	❑ Yes
Abnormal muscle tone	❑ No	❑ Yes; type? _____
Acute encephalopathy	❑ No	❑ Yes
Cerebellar dysfunction	❑ No	❑ Yes; onset? _____
Extrapyramidal dysfunction	❑ No	❑ Yes; onset? _____
Dementia	❑ No	❑ Yes; onset? _____

Remarks: _____

3. Clinical findings

Dysmorphic features	❑ No	❑ Yes; details: _____
Skin abnormalities	❑ No	❑ Yes; details: _____
Impaired vision	❑ No	❑ Yes; onset? _____

Other anomalies: _____

4. Head circumference

❑ Normal ❑ Microcephalic ❑ Macrocephalic P-Value: _____

5. MRI

❑ Not performed ❑ Yes **(please attach copy of results if patient agrees)**

Remarks: _____

6. Pregnancy history

Abnormal	❑ No	❑ Yes (please answer following questions)
Bleedings	❑ No	❑ Yes
Infection	❑ No	❑ Yes; details: _____
Medication	❑ No	❑ Yes; details: _____
Preterm birth	❑ No	❑ Yes; gestation week? _____
Hypoxia	❑ No	❑ Yes; pH umbilical cord? _____

Other noticeable occurrences: _____

7. Birth data

Size: _____ Weight: _____ Head circumference: _____

Noticeable problems: _____

8. Genetic analyses ❑ Not performed ❑ Yes **(please attach copy of results if patient agrees)**

Array CGH: ❑ No ❑ Yes

Sequencing: ❑ No ❑ Yes

Other: _____

9. Metabolic tests ❑ Not performed ❑ Yes **(please attach copy of results if patient agrees)**

Abnormalities: _____

10. Further information _____

Inquiry Array-CGH

❑ Please perform Array-CGH before Panel Diagnostics

❑ Array-CGH analysis has already been performed

❑ Array-CGH analysis not required

Inquiry - Brain Development Disorders

All genes listed on this order form, and the entire mitochondrial genome, are sequenced in parallel. This allows you to select multiple gene sets, or choose individual genes in addition to your selected gene set. As there is no additional laboratory expenditure, there is only a moderate price increase due to the subsequent analysis and interpretation. We are happy to answer your questions or send you an individual quote. Please contact us at info@cegat.com.

❑ **Large Panel Diagnostic Option (670 Genes, EPI-D45)**

In addition to the full analysis of the requested gene set(s), we will expand the analysis to all pathogenic and likely pathogenic variants (ACMG class 4 and 5) in genes which are related to the indication described for the proband on the entire diagnostic panel (670 genes in total).

❑ **Microcephaly and Pontocerebellar Hypoplasia (71 Genes, BRN01)**
AMPD2, ANKLE2, ASNS, ASPM, ATR, BRF1, CASK, CDC45, CDC6, CDK5RAP2, CDK6, CDT1, CENPE, CENPJ, CEP135, CEP152, CEP63, CHMP1A, CIT, CKAP2L, CLP1, DYRK1A, EIF2S3, EXOSC3, EXOSC8, FOXG1, GMNN, IER3IP1, KAT6A, KIF11, KNL1, MBD5, MCPH1, MFSD2A, NIN, NSMCE2, ORC1, ORC4, ORC6, PCLO, PHC1, PLK4, PNKP, PPP1R15B, PQBP1, QARS, RARS2, RBBP8, SASS6, SEPSECS, SLC1A4, SLC25A19, SMARCA2, SPATA5, STAMBP, STIL, TOE1, TRAIP, TRMT10A, TSEN15, TSEN2, TSEN34, TSEN54, TUBGCP4, TUBGCP6, VLDLR, VPS53, VRK1, WDR62, WDR73, ZNF335

❑ **Neuronal Migration Disorders (72 Genes, BRN02)**
ACTB, ACTG1, ADGRG1, AKT3, ARFGEF2, ARX, B3GALNT2, B3GNT1, CCND2, CDK5, COL4A1, COL4A2, CRADD, DAG1, DCHS1, DCX, DDX3X, DYNC1H1, EMX2, ERMARD, FAT4, FH, FKRP, FKTN, FLNA, GMPPB, GRIN1, GRIN2B, IER3IP1, ISPD, KATNB1, KIF1BP, KIF2A, KIF5C, LAMB1, LAMC3, LARGE, MEF2C, MTOR, NDE1, NEDD4L, OCLN, PAFAH1B1, PI4KA, PIK3CA, PIK3R2, POMGNT1, POMGNT2, POMK, POMT1, POMT2, PRUNE1, RAB18, RAB3GAP1, RAB3GAP2, RELN, RTTN, SHH, SIX3, TBC1D20, TMEM5, TMTC3, TUBA1A, TUBA8, TUBB, TUBB2A, TUBB2B, TUBB3, TUBG1, VLDLR, WDR62, WDR81

❑ **Holoprosencephaly spectrum (9 Genes, BRN03)**
CDON, FGFR1, GLI2, PTCH1, SHH, SIX3, TDGF1, TGIF1, ZIC2

❑ **Macrocephaly (53 Genes, BRN04)**
AKT2, AKT3, APC2, ASPA, ASXL2, BRAF, BRWD3, CCDC88C, CCND2, CRADD, CUL4B, DNMT3A, EED, EZH2, FIBP, GCDH, GFAP, GPC3, HEPACAM, HERC1, HRAS, HUWE1, IGF2, KPTN, KRAS, L1CAM, MAP2K1, MAP2K2, MED12, MLC1, MTOR, NFIX, NRAS, NSD1, PHF6, PIGA, PIGN, PIGT, PIK3CA, PIK3R2, PPP2R5B, PPP2R5C, PPP2R5D, PTCH1, PTEN, RAB39B, RIN2, RNF125, RNF135, SETD2, SOS1, STRADA, TBC1D7

❑ **Leukodystrophy / Leukoencephalopathy (77 Genes, BRN05)**
AARS, AARS2, ABCD1, ACOX1, ADAR, AIMP1, ALDH3A2, ARSA, ASPA, BCAP31, CLCN2, CSF1R, CTC1, CYP27A1, DARS, DARS2, EARS2, EIF2B1, EIF2B2, EIF2B3, EIF2B4, EIF2B5, FAM126A, FUCA1, GALC, GBE1, GCDH, GFAP, GJC2, HEPACAM, HIKESHI, HSD17B4, HSPD1, HTRA1, IFIH1, L2HGDH, LMNB1, MLC1, NAXE, NOTCH3, PEX1, PEX10, PEX11B, PEX12, PEX13, PEX14, PEX16, PEX19, PEX2, PEX26, PEX3, PEX5, PEX6, PEX7, PLEKHG2, PLP1, POLR1C, POLR3A, POLR3B, PSAP, PYCR2, RARS, RNASEH2A, RNASEH2B, RNASEH2C, RNASET2, SAMHD1, SCP2, SLC16A2, SLC17A5, SNORD118, SOX10, STN1, SUMF1, TREX1, TUBB4A, VPS11

❑ **Aicardi-Goutières syndrome (7 Genes, BRN06)**
ADAR, IFIH1, RNASEH2A, RNASEH2B, RNASEH2C, SAMHD1, TREX1

■ **Joubert syndrome**
To analyze the genes associated with Joubert syndrome we ask you to order the latest version via EYE07 (Order form Eye Diseases).

❑ **Cornelia de Lange syndrome (6 Genes, BRN08)**
HDAC8, NIPBL, RAD21, SMC1A, SMC3, UBE2A

❑ **Cerebral Microangiopathies (12 Genes, BRN09)**
CCM2, COL4A1, COL4A2, CTC1, GLA, HTRA1, KRIT1, NOTCH3, PDCD10, SNORD118, STN1, TREX1

❑ **Leukodystrophy / Leukoencephalopathy and Differential Diagnoses (131 Genes, BRN10)**
AARS, AARS2, ABCD1, ACOX1, ADAR, AIMP1, ALDH3A2, APOPT1, ARSA, ASPA, BCAP31, BOLA3, CLCN2, COL4A1, COL4A2, CSF1R, CTC1, CYP27A1, DARS, DARS2, EARS2, EIF2B1, EIF2B2, EIF2B3, EIF2B4, EIF2B5, ERCC6, ERCC8, FA2H, FAM126A, FKRP, FKTN, FOLR1, FUCA1, GALC, GAN, GBE1, GCDH, GFAP, GJC2, GLA, GLB1, GLRX5, GMPPB, HEPACAM, HEXA, HIKESHI, HSD17B4, HSPD1, HTRA1, IBA57, IDS, IFIH1, ISCA2, KCNT1, KIF5A, L2HGDH, LAMA2, LARGE, LMNB1, LYRM7, MCOLN1, MLC1, MTFMT, NAXE, NDUFS1, NDUFV1, NEU1, NFU1, NOTCH3, NPC1, NPC2, OCLN, PC, PEX1, PEX10, PEX11B, PEX12, PEX13, PEX14, PEX16, PEX19, PEX2, PEX26, PEX3, PEX5, PEX6, PEX7, PHGDH, PLA2G6, PLAA, PLEKHG2, PLP1, POLG, POLR1C, POLR3A, POLR3B, POMGNT1, POMT1, POMT2, PPT1, PSAP, PSAT1, PYCR2, RARS, RNASEH2A, RNASEH2B, RNASEH2C, RNASET2, SAMHD1, SCP2, SDHA, SDHAF1, SLC16A2, SLC17A5, SLC1A4, SLC25A12, SNORD118, SOX10, SPTAN1, STN1, SUMF1, SURF1, TPP1, TREM2, TREX1, TUBB4A, TUFM, TYMP, TYROBP, VPS11

❑ **Coffin-Siris syndrome (6 Genes, BRN12)**
ARID1A, ARID1B, SMARCA4, SMARCB1, SMARCE1, SOX11

Inquiry – Epilepsy

❑ **Large Panel Diagnostic Option (670 Genes, EPI-D45)**

In addition to the full analysis of the requested gene set(s), we will expand the analysis to all pathogenic and likely pathogenic variants (ACMG class 4 and 5) in genes which are related to the indication described for the proband on the entire diagnostic panel (670 genes in total).

❑ **Familial and Idiopathic Epilepsy (31 Genes, EPI01)**
ALDH7A1, CACNA1A, CHRNA2, CHRNA4, CHRNB2, DEPDC5, GABRA1, GABRB3, GABRG2, GRIN2A, KCNA1, KCNMA1, KCNQ2, KCNQ3, KCNT1, LGI1, MTOR, NPRL2, NPRL3, PCDH19, PRRT2, RELN, RORB, SCN1A, SCN1B, SCN2A, SCN8A, SLC1A3, SLC2A1, STX1B, TBC1D24

❑ **Epilepsy and Developmental Delay (including Epileptic Encephalopathies) (97 Genes, EPI02)**
AARS, ALDH7A1, ALG13, AMT, AP3B2, ARHGEF9, ARV1, ARX, BRAT1, CACNA1A, CAD, CASK, CDKL5, CHD2, CLCN4, CNNM2, DDX3X, DENND5A, DNM1, DOCK7, EEF1A2, FGF12, FOXG1, FRRS1L, GABRA1, GABRB1, GABRB2, GABRB3, GAMT, GLDC, GNAO1, GNB1, GRIN1, GRIN2A, GRIN2B, GRIN2D, HACE1, HCN1, HNRNPU, IQSEC2, ITPA, KCNA2, KCNB1, KCNQ2, KCNT1, KIAA2022, MBD5, MBOAT7, MDH2, MECP2, MEF2C, MOCS1, MOCS2, NECAP1, PACS2, PCDH19, PIGA, PLCB1, PLPBP, PNKP, PNPO, POLG, PURA, QARS, ROGDI, SCN1A, SCN2A, SCN8A, SIK1, SLC12A5, SLC13A5, SLC1A2, SLC25A12, SLC25A22, SLC2A1, SLC35A2, SLC6A1, SLC6A8, SLC9A6, SMC1A, SPTAN1, ST3GAL3, ST3GAL5, STXBP1, SYNGAP1, SYNJ1, SZT2, TBC1D24, TCF4, TPP1, TSC1, TSC2, UBA5, UBE3A, WDR45, WWOX, ZEB2

❑ **Progressive Myoclonus Epilepsy and Neuronal Ceroid Lipofuscinosis (28 Genes, EPI05)**
AFG3L2, ASAH1, ATP13A2, CARS2, CERS1, CLN3, CLN5, CLN6, CLN8, CSTB, CTSD, CTSF, DNAJC5, EPM2A, GOSR2, GRN, KCNC1, KCTD7, LMNB2, MFSD8, NEU1, NHLRC1, PPT1, PRDM8, PRICKLE1, SCARB2, SERPINI1, TPP1

❑ **GPI anchor deficiency with or without Hyperphosphatasia (13 Genes, EPI12)**
PGAP1, PGAP2, PGAP3, PIGA, PIGG, PIGL, PIGM, PIGN, PIGO, PIGT, PIGV, PIGW, PIGY

❑ **Migraine (9 Genes, EPI14)**
ATP1A2, ATP1A3, CACNA1A, NOTCH3, POLG, PRRT2, SCN1A, SLC1A3, SLC2A1

❑ **Hyperekplexia (3 Genes, EPI15)**
GLRA1, GLRB, SLC6A5

❑ **Metabolic/Mitochondrial Epilepsy (100 Genes, EPI19)**
AARS2, ABAT, ABCC8, ACY1, ADK, ADSL, ALDH5A1, ALDH7A1, AMT, ATIC, AUH, BCKDHA, BCKDHB, BCKDK, BCS1L, BTD, CAD, CARS2, CNNM2, COQ4, COQ8A, COX8A, CPT1A, CPT2, D2HGDH, DARS2, DBT, DHFR, DLD, DNM1L, DPYD, EARS2, ETFA, ETFB, ETFDH, ETHE1, FARS2, FOLR1, FOXRED1, GAMT, GATM, GCDH, GCH1, GCK, GCSH, GFM1, GLDC, GLUD1, GLUL, GPHN, HADH, HLCS, HPD, IDH2, INSR, ITPA, IVD, KCNJ11, L2HGDH, LIAS, MDH2, MLYCD, MMACHC, MOCS1, MOCS2, MT-ATP6 (m.8993T>G/C), MT-TK (m.8344A>G), MT-TL1 (m.3243A>G, m.3271T>C), MTHFR, NARS2, NDUFA1, PC, PCBD1, PCCA, PCCB, PDHA1, PDHX, PDSS2, PET100, PHGDH, PLPBP, PNPO, POLG, PSAT1, PSPH, PTS, QDPR, SDHA, SLC16A1, SLC19A3, SLC1A2, SLC25A1, SLC2A1, SLC46A1, SLC6A8, SLC6A9, SUOX, SURF1, TWNK, VARS2

Inquiry – Metabolic Diseases

❑ **Large Panel Diagnostic Option (670 Genes, EPI-D45)**

In addition to the full analysis of the requested gene set(s), we will expand the analysis to all pathogenic and likely pathogenic variants (ACMG class 4 and 5) in genes which are related to the indication described for the proband on the entire diagnostic panel (670 genes in total).

❑ **Congenital Disorders of Glycosylation (CDG syndrome) (48 Genes, MET01)**
ALG1, ALG11, ALG12, ALG13, ALG2, ALG3, ALG6, ALG8, ALG9, B4GALT1, CAD, CCDC115, COG1, COG2, COG4, COG5, COG6, COG7, COG8, DDOST, DHDDS, DOLK, DPAGT1, DPM1, DPM2, DPM3, GMPPA, MAN1B1, MGAT2, MOGS, MPDU1, MPI, NGLY1, NUS1, PGM1, PMM2, RFT1, SLC35A1, SLC35A2, SLC35C1, SLC39A8, SRD5A3, SSR4, STT3A, STT3B, TMEM165, TMEM199, TUSC3

❑ **Lysosomal Disorders (38 Genes, MET02)**
AGA, ARSA, ARSB, CTNS, CTSA, FUCA1, GALC, GALNS, GBA, GLA, GLB1, GM2A, GNPTAB, GNPTG, GNS, GUSB, HEXA, HEXB, HGSNAT, HYAL1, IDS, IDUA, LIPA, MAN1B1, MAN2B1, MANBA, MCOLN1, NAGA, NAGLU, NEU1, NPC1, NPC2, PSAP, SGSH, SLC17A5, SMPD1, SUMF1, VPS33A

❑ **Peroxisome Biogenesis Disorders: Zellweger spectrum disorder (19 Genes, MET03)**
ABCD1, ACOX1, AMACR, HSD17B4, PEX1, PEX10, PEX11B, PEX12, PEX13, PEX14, PEX16, PEX19, PEX2, PEX26, PEX3, PEX5, PEX6, PEX7, SCP2

❑ **Pyridoxine- and Folic Acid-dependent epilepsy (7 Genes, MET04)**
ALDH7A1, DHFR, FOLR1, MTHFR, PLPBP, PNPO, SLC46A1

❑ **Urea Cycle Disorders (8 Genes, MET05)**
ARG1, ASL, ASS1, CPS1, NAGS, OTC, SLC25A13, SLC25A15

❑ **Glycine encephalopathy (5 Genes, MET06)**
AMT, GCSH, GLDC, LIAS, SLC6A9

❑ **Hyperphenylalaninemia (6 Genes, MET07)**
DNAJC12, GCH1, PAH, PCBD1, PTS, QDPR

❑ **Maple Syrup Urine Disease and DLD Deficiency (4 Genes, MET08)**
BCKDHA, BCKDHB, DBT, DLD

❑ **Molybdenum Cofactor and Sulfite Oxidase Deficiency (4 Genes, MET09)**
GPHN, MOCS1, MOCS2, SUOX

❑ **Methylmalonic acidemia (15 Genes, MET10)**
ABCD4, ACSF3, ALDH6A1, CD320, HCFC1, LMBRD1, MCEE, MLYCD, MMAA, MMAB, MMACHC, MMADHC, MUT, SUCLA2, SUCLG1

❑ **3-Methylglutaconic aciduria (6 Genes, MET11)**
AUH, CLPB, DNAJC19, OPA3, SERAC1, TAZ

❑ **Hyperinsulinemic hypoglycemia (7 Genes, MET12)**
ABCC8, GCK, GLUD1, HADH, INSR, KCNJ11, SLC16A1

❑ **Maturity-onset Diabetes of the Young (MODY) (12 Genes, MET13)**
ABCC8, BLK, CEL, GCK, HNF1A, HNF1B, HNF4A, INS, KLF11, NEUROD1, PAX4, PDX1

❑ **Glycogen Storage Disease (23 Genes, MET14)**
AGL, ALDOA, ENO3, FBP1, G6PC, GAA, GBE1, GYG1, GYS1, GYS2, LAMP2, LDHA, PFKM, PGAM2, PHKA1, PHKA2, PHKB, PHKG2, PRKAG2, PYGL, PYGM, SLC2A2, SLC37A4

❑ **Fatty acid oxidation disorders (15 Genes, MET15)**
ACADM, ACADS, ACADSB, ACADVL, CPT1A, CPT2, ETFA, ETFB, ETFDH, HADH, HADHA, HMGCL, HMGCS2, SLC22A5, SLC25A20

Additional analyses

For further information and advice please do not hesitate to contact our Diagnostic Support team at any time.
www.cegat.de/en/diagnostic-support | diagnostic-support@cegat.de | Phone +49 7071 565 44-55