1. Have multiple brain MRIs been performed? [ ]  Yes [ ]  No, single brain MRI
	1. If yes, how many have been performed? [ ]  2 [ ]  3 [ ]  4 [ ]  5 [ ]  6 [ ]  >6
	2. If >6 specify:

Table for recording MRI results

| Brain MRI | Date Performed  | Age of affected | Site Performed |
| --- | --- | --- | --- |
| 1st | Data to be filled in by site | [derived field] | Data to be filled in by site |
| 2nd | Data to be filled in by site | [derived field] | Data to be filled in by site |
| 3rd | Data to be filled in by site | [derived field] | Data to be filled in by site |

1. Was sedation used? [ ]  Yes [ ]  No
2. General description of field of view/ anatomical positioning:
3. Magnetic field strength of scanner used:

[ ]  1.5 T [ ]  3.0 T [ ]  7.0 T [ ]  Other: T

1. Head circumference at time of scan: cm
2. Total time in scanner (include all studies done within each particular session): HH:MM
3. RF receiver coil(s) and number of channels: (Choose all that apply)

[ ]  Head coil [ ]  Neck coil [ ]  Spine Array [ ]  Body coil (transmit)

1. Sequences used: [ ]  T1-weighted [ ]  T2-weighted [ ]  FLAIR [ ]  DWI [ ]  SWI [ ]  GE [ ]  Other, specify:
2. Specify sequence name of T1 or T2 used:
3. Contrast used: [ ]  Yes [ ]  No
	1. If YES, name of the contracts: dosage:
4. T1-MRI sequence parameters
	1. Slice orientation: [ ]  Axial [ ]  Coronal [ ]  Sagittal [ ]  Oblique
	2. Field of view: x mm2
	3. In-plane resolution: x mm2
	4. Slice thickness: mm
	5. Gap between slices: mm or % (for 2D acquisition)
	6. Number of slices:
	7. Repetition time (TR): ms
	8. Echo time (TE): ms
	9. Acquisition time: minutes

[ ]  Check box if items #11 a-f are the same for all sequences.

1. T2 sequence parameters (copy the following sections if parameters are different for the 2 sequences)
	1. Slice orientation: [ ]  Axial [ ]  Coronal [ ]  Sagittal [ ]  Oblique
	2. Field of view: x mm2
	3. In-plane resolution: x mm2
	4. Slice thickness: mm
	5. Gap between slices: mm or %
	6. Number of slices:
	7. Repetition time (TR): ms
	8. Echo time (TE): ms
	9. Acquisition time: minutes
2. FLAIR sequence parameters (copy the following sections if parameters are different for the 2 sequences)
	1. Slice orientation: [ ]  Axial [ ]  Coronal [ ]  Sagittal [ ]  Oblique
	2. Field of view: x mm2
	3. In-plane resolution: x mm2
	4. Slice thickness: mm
	5. Gap between slices: mm or %
	6. Number of slices:
	7. Repetition time (TR): ms
	8. Echo time (TE): ms
	9. Acquisition time: minutes
	10. Inversion time (TI): ms
3. DWI sequence parameters
	1. Type of diffusion sequence: [ ]  Single shot EPI [ ]  Multi shot EPI
	2. Slice orientation: [ ]  Axial [ ]  Sagittal [ ]  Coronal
	3. Slice thickness: mm
	4. Gap between slices: mm
	5. B0: [ ]  B1000 [ ]  Other, specify:
4. Post contrast T1WI
	1. Specify type/name of postcontrast T1 sequence used:
	2. Slice orientation: [ ]  Axial [ ]  Sagittal [ ]  Coronal
	3. Slice thickness: mm
	4. Gap between slices: mm
	5. Repetition time (TR): ms
	6. Echo time (TE): ms
5. Name of the scanner manufacturer:

**[ ]** GE **[ ]** Siemens **[ ]** Philips **[ ]** Toshiba **[ ]** Other, specify:

1. Clinical read of MRIs
	1. Reader blinded to clinical data?[ ]  Yes [ ]  No
	2. Quality of images technically satisfactory?[ ]  Yes [ ]  No [ ]  Partially, specify:
2. Lesions found[ ]  Yes [ ]  No
	1. If YES, type of lesion(s): [ ]  Cortical [ ]  WM [ ]  Striatal [ ]  Globus Pallidus [ ]  Thalamic

[ ]  Brainstem [ ]  Cerebellum [ ]  Other, specify:

* 1. If vascular infarct or other abnormalities, specify:
1. Malformations
	1. Cortical migration anomalies: [ ]  Yes [ ]  No
		1. If YES, indicate location and specify(s): **[ ]**  Frontoparietal **[ ]** Temporal **[ ]** Occipital **[ ]** Insular
	2. Commissural: [ ]  Normal [ ]  Abnormal
		1. If Abnormal, specify:
	3. Striatum: [ ]  Normal [ ]  Abnormal
		1. If Abnormal, specify:
	4. Brainstem: [ ]  Normal [ ]  Abnormal
		1. If Abnormal, specify:
	5. Cerebellum: [ ]  Normal [ ]  Abnormal
		1. If Abnormal, specify:
2. White matter changes
	1. White matter on T2 weighted images: [ ]  Normal [ ]  Abnormal (if diffuse mark all)
		1. If Abnormal, indicate location(s):

**[ ]**  Frontal

**[ ]** Parietal

**[ ]** Temporal

**[ ]**  Occipital

**[ ]**  Brainstem

**[ ]** Superficial

**[ ]** Periventricular

**[ ]** Deep

**[ ]** Cerebellar

* + 1. If Abnormal, indicate pattern if possible:

**[ ]**  Leukodystrophy

**[ ]** Hypomyelination/delayed myelination

**[ ]** Tigroid

**[ ]** Vanishing

**[ ]** Vascular injury

**[ ]** Non-specific

* 1. Compacted white matter tracts:
		1. Corpus Callosum: **[ ]** Involved **[ ]** Spared
		2. Anterior limb internal capsule: **[ ]** Involved **[ ]** Spared
		3. Posterior limb internal capsule: **[ ]** Involved **[ ]** Spared
		4. Anterior commissure: **[ ]** Involved **[ ]** Spared
	2. White matter on DWI: [ ]  Normal [ ]  Abnormal: (if diffuse mark all)
		1. If Abnormal, indicate location(s) and specify the DWI characteristic (facilitated/ homogeneous reduced / heterogeneous components)

**[ ]**  Frontal

**[ ]** Parietal

**[ ]** Temporal

**[ ]**  Occipital

**[ ]** Superficial

**[ ]** Periventricular

**[ ]** Deep

**[ ]** Cerebellar

**[ ]** Brainstem

1. Cavitation: [ ]  Yes [ ]  No
	1. If Abnormal, indicate location(s):

**[ ]** Frontal

**[ ]** Parietal

**[ ]** Temporal

**[ ]**  Occipital

**[ ]** Periventricular

**[ ]** Deep WM

**[ ]** Cerebellar WM

**[ ]**  Diffuse

**[ ]**  Striatal

**[ ]**  Thalamic

1. Grey matter hyperintensity
	1. Grey matter hyperintensityon T2/FLAIR images**:** [ ]  Yes [ ]  No
		1. If YES, specify**:**

**[ ]** Cortex

**[ ]** Caudate

**[ ]** Putamen

**[ ]** Pallidum

**[ ]** Thalamus

**[ ]** Subthalamic nucleus

**[ ]** Mammillary body

**[ ]** Substantia nigra

**[ ]** Red Nucleus

**[ ]** Periaqueductal Grey

**[ ]** Cerebellar Nuclei

**[ ]** Floor of the Fourth Ventricle

**[ ]** Colliculi

**[ ]** Other, specify:

* 1. If cortical involvement: [ ]  Classic MELAS stroke [ ]  Atypical metabolic stroke

[ ]  Vascular stroke [ ]  POLG-RD cortical involvement [ ]  Other, specify:

* 1. If cortical involvement location:

**[ ]**  Frontal

**[ ]** Parietal

**[ ]** Temporal

**[ ]**  Occipital

**[ ]**  Insular

**[ ]**  Cerebellar

1. Subependymal cysts: [ ]  Yes [ ]  No
	1. If YES, indicate location(s): [ ]  Frontoparietal [ ]  Temporal [ ]  Occipital
2. Ventricles**:** [ ]  Normal [ ]  Abnormal
	1. **[ ]** Dilation **[ ]**  Other, specify:
3. Abnormal Enhancement: [ ]  Yes [ ]  No
	1. If Abnormal, indicate location(s): **[ ]** Cortex [ ]  White matter [ ]  Basal Ganglia [ ]  Thalamus [ ]  Brainstem [ ] Cerebellum [ ]  Cranial nerve enhancement
4. Eye abnormalities: [ ]  Yes [ ]  No
	1. If YES, specify:

**[ ]** Optic Nerve Abnormalities

**[ ]**  Microphthalmia

**[ ]**  Cataract

1. Comments if needed:

Recorder Signature: Date:

## General Instructions

This form contains data elements that are collected for brain magnetic resonance imaging. Responses to categories are obtained from health professionals performing the procedure.

Important note: All of the data elements included on this CRF Module are classified as Core (i.e., strongly recommended for all mitochondrial disease clinical studies to collect).

Please see the Data Dictionary for element classifications.

## Specific Instructions

Please see the Data Dictionary for definitions for each of the data elements included in this CRF Module.

* Multiple MRIs performed – Answer, only if brain MRI was performed.
* Brain MRI date performed - Date/time should be recorded to the level of granularity known (e.g., year, year and month, complete date plus hours and minutes, etc.) and in an unambiguous format acceptable to the study database like DD-MMM-YYYY. When date/time data are prepared for aggregation or sharing, they should be converted to the format specified by [ISO 8601](https://www.iso.org/iso-8601-date-and-time-format.html); YYYY-MM-DD T:hh:mm:ss.
* Brain MRI age of affected – This is recorded for each brain MRI performed. This is a derived element based on Date of Birth and Visit Date.
* Scanner strength – Choose one.
* Head circumference – Record the head circumference of the participant as well as the units for the measurement. Answer should be recorded in centimeters (cm).
* RF receiver coil(s) and number of channels – Choose all that apply.
* T2 sequence parameters – If the sequences are different for T1 and T2 sequence parameters, record the T2 parameters as indicated. If they are the same, leave the T2 parameters section blank.
* FLAIR sequence parameters – If the sequences are different for T1 and FLAIR sequence parameters, record the FLAIR parameters as indicated. If they are the same, leave the FLAIR parameters section blank.
* Contrast used – Choose one. If yes, record the name of the contrast agent and its dosage.
* Field of view – Answer should be recorded as a dimension (AAxAA) and in millimeters squared (mm2).
* Plane resolution – Answer should be recorded as a dimension (AAxAA) and in millimeters squared (mm2).
* Slice thickness – Answer should be recorded in millimeters squared (mm2).
* Gap between slices – Answer should be recorded in millimeters squared (mm2) or % (for 2D acquisition).
* Repetition time – Answer should be recorded in milliseconds (ms).
* Acquisition time – Answer should be recorded in minutes.