Children's Hospital of Philadelphia

Informed Consent and HIPAA Authorization Form

Study Title: Magnetic Resonance Spectroscopy (MRS) Estimates of Glutathione (GSH) and GABA as biomarkers of Pathophysiology in FRDA

Version Date: September 29th, 2025

Principal Investigator: Dr. David Lynch **Telephone:** (215) 590-2242

You or your child may be eligible to take part in a research study. This form gives you important information about the study. It describes the purpose of this research study, and the risks and possible benefits of participating.

In the sections that follow, the word "we" means the study doctor and other research staff. If you are a parent or legal guardian who is giving permission for a child, please note that the word "you" refers to your child.

Study Overview

You are being asked to take part in this research study because you have a diagnosis of Friedreich Ataxia (FRDA), or you have typical development.

The purpose of this study is to understand GABA and Glutathione (GSH) levels in the brains of patients with FRDA. It is hoped that if we find brain imaging differences that are sensitive to the progression of FA, they might then be able to be used in future clinical trials to test new treatments.

If you agree to take part, your participation will last for approximately 2.5 hours per visit. Additionally, you may be asked to return for a second visit within 12 months, and a third visit within 24 months.

As a participant in the research, you will complete:

- Brain MRI scan(s)
- Completion of a questionnaire
- Pregnancy test (if applicable)

The main risks of this study are potential breach of confidentiality and possible discomfort from the MRI brain imaging. One of the MRI sequences is not FDA approved. Participation in this study is voluntary. There is no direct benefit from participating in this study, however, the data from this study will potentially provide knowledge for the future of FRDA research.

If there is anything in this form you do not understand, please ask questions. Please take your time. You do not have to take part in this study if you do not want to. If you take part, you can leave the study at any time. If you do not choose to take part in this study, you can discuss treatment options with your doctor. You may also be eligible for a different research study. Please see below for additional details about the study.

How many people will take part?

About 60 individuals will take part in this study. This will include approximately 40 participants with a diagnosis of FRDA and 20 participants without FRDA who are matched by age and sex.

What are the study procedures?

Magnetic Resonance Imaging (MRI): An MRI scan takes a picture of your brain. MRI uses a combination of a large magnet radio waves and a computer to produce pictures. The MRI scan will take about 90 minutes. If applicable, we may ask you to return for visit 2 and 3. No sedation or contrast will be used. All the MRI measures used in this study are FDA-approved except for one. There are no medical risks associated with this protocol. For participants who express discomfort with MRI, we will have the opportunity for subjects to try a mock MRI scan to get familiar with it. The mock MRI is a replica of an MRI machine, without the magnetic component, and it includes the lights and sounds that the real MRI machine makes, so subjects have a chance to practice being in the MRI before the actual scan. During the MRI you can watch a DVD movie to enjoy the MRI exam more. We will ask you to stay as still as you can during the MRI. Some procedures may need to be repeated in order to ensure we collect the most useable data possible. For instance, we may need to repeat some sequences of the MRI scan if you move too much during the scan.

Pregnancy Test: : If you are pregnant or nursing you cannot take part in this research study. If you have started having periods or you are 11 years or older, an MRI technician will ask you questions to make sure you are not pregnant. If there is a possibility that you are pregnant you can elect to take a urine pregnancy test. About 2 teaspoons of urine will be needed. The results will be shared with you (the child) and not with your parent(s). We encourage you to tell your parents the results, but we cannot make you do that. If you are found to be pregnant, or if there is a chance you are pregnant but decide not to take the urine pregnancy test, you will not be able to do the MRI portion of this study.

Medical and Research Record Review: We will review your medical records to collect information about your medical history, current health, FRDA diagnosis, current medications, and results of clinical tests. If you are participating in the Natural History Study on FRDA, we will also review your research records as part of this study

Medication Form: We will administer a medication form for us to collect detailed information on the medications you are currently taking.

Handedness Questionnaire: We will administer a questionnaire that asks you questions about which hand you prefer to use for various tasks.

What will be done with my data during this study?

During the study, we will collect brain MRI data and urine (if applicable) from you during the study procedures. By agreeing to participate in this study, you agree to provide your data to CHOP for research purposes.

Will I receive any results from the tests done as part of this study?

Results that are obtained through FDA-approved MRI sequences/tests and pregnancy tests results that could be important for your clinical care will be shared with you. We will not share other results with you.

What are the risks of this study?

Taking part in a research study involves inconveniences and risks. The main risks of taking part in this study are discussed below.

Risks of MRI Imaging: There are no known risks of physical harm associated with MRI. However, MRI machines produce loud banging noises, which cause some people to become stressed or upset. You may also feel uncomfortable inside the magnet if you do not like to be inside small places or have difficulty lying still. The MRI magnet is always on and attracts certain metal objects. Any metal objects on or inside of your body may heat up, move, and/or not function properly within the scanning room. Metal objects in the room can fly through the air toward the magnet and hit those nearby. There are many safety measures in place to reduce these risks. The staff will screen all people and materials entering the scanning room for metal. When the study begins, the door to the room will be closed to minimize the risk of someone accidentally bringing a metal object into the scanner room. The MRI sequence that is not FDA approved is considered to be no more than minimal risk.

Risk of Pregnancy Tests: If a pregnancy test is positive, you may feel uncomfortable when discussing the positive result with a member of the research team.

Risks Related to Breach of Privacy and Confidentiality: As with any study involving collection of data, there is the possibility of breach of confidentiality of data. Every precaution will be taken to secure your personal information to ensure confidentiality.

At the time of participation, each participant will be assigned a study identification number. This number will be used on data collection forms and in the database instead of names and other private information. A separate list will be maintained that will link each participant's name to the study identification number for future reference and communication.

Risks of Handedness Questionnaire: There are no known risks of this questionnaire, however, participants may skip answering questions that they do not want to answer.

Risks of Medication Form: There are no known risks of this form, and every precaution will be taken to secure your personal information when recording your responses to this form.

Are there any benefits to taking part in this study?

There will be no direct benefit to you from taking part in this study. The knowledge gained from this study may help us understand common brain neurotransmitter

levels in children and adults with FRDA, and thus represent a potential target for intervention.

Do you need to give your consent in order to participate?

You need to give your consent in order to participate in this study. If you decide to participate in this study, you must sign this form. A copy will be given to you to keep as a record.

What are your responsibilities?

Please consider the study time commitments and responsibilities of a research subject when making your decision about participating in this study. This study involves potentially three visits to CHOP over the course of 24 months.

What happens if you decide not to take part in this study?

Participation in this study is voluntary. You do not have to take part in order to receive care at CHOP. If you decide not to take part or if you change your mind later there will be no penalties or loss of any benefits to which you are otherwise entitled.

Can you stop your participation in the study early?

You can stop being in the study at any time. You do not have to give a reason.

Can the study doctor take you out of the study early?

The study doctor may take you off the study if there is a lack of adherence to study treatment or visit schedules. The Investigator may also withdraw participants from the study and not have them complete the imaging visit if they do not meet study criteria.

What choices do you have other than this study?

- Not participating in this study.
- You may discuss other options available to you with your doctor.

What about privacy, authorization for use of Personal Health Information (PHI) and confidentiality?

As part of this research, health information about you will be collected. This will include information from medical records, and study procedures. We will review records from existing research studies (UNIFAI/FACOMS), if and when applicable for FRDA participants. Information related to your medical care at CHOP will go in your medical record. This could include MRI imaging done in the clinical lab. Medical records are available to CHOP staff. Staff will view your records when required as part of their job. Staff are required to keep your information private. Information that could identify you will not be shared with anyone - unless you provide your written consent, or it is required or allowed by law. We will do our best to keep your personal information private and confidential. However, we cannot

guarantee absolute confidentiality. Your personal information may be disclosed if required by law.

The results of this study may be shown at meetings and published in journals to inform other doctors and health professionals. We will keep your identity private in any publication or presentation.

Several people and organizations may review or receive your identifiable information. They will need this information to conduct the research, to assure the quality of the data, or to analyze the data. These groups include:

- Members of the research team and other authorized staff at CHOP.
- Members of The Friedreich Ataxia Research Alliance (FARA) who fund this study.
- People from agencies and organizations that perform independent accreditation and/or oversight of research, such as the Department of Health and Human Services, Office for Human Research Protections.
- The Food and Drug Administration (FDA)

By law, CHOP is required to protect your health information. The research staff will only allow access to your health information to the groups listed above. By signing this document, you are authorizing CHOP to use and/or release your health information for this research. Some of the organizations listed above may not be required to protect your information under Federal privacy laws. If permitted by law, they may be allowed to share it with others without your permission.

There is no set time for destroying the information that will be collected for this study. Your permission to use and share the information and data from this study will continue until the research study ends and will not expire. Researchers will continue to analyze data for many years, and it is not possible to know when they will be completely done.

Can you change your mind about the use of personal information?

You may change your mind and withdraw your permission to use and disclose your health information at any time. To take back your permission, it is preferred that you inform the investigator in writing.

Dr. David Lynch
CHOP Abramson Research Center
3615 Civic Center Blvd, Rm 502
Philadelphia, PA 19104

In the letter, state that you changed your mind and do not want any more of your health information collected. The personal information that has been collected already will be used if necessary for the research. No new information will be collected. If you withdraw your permission to use your personal health information, you will be withdrawn from the study.

Financial Information

While you are in this study, the cost of your usual medical care – procedures, medications, and doctor visits – will continue to be billed to you or your insurance.

If your parent is a CHOP employee, their employment will not be affected by your decision to participate or not participate in this study.

If your parent is a CHOP employee and they receive compensation for your participation in the study, this compensation is considered taxable for CHOP employees.

Will there be any additional costs?

There will be no additional costs to you from taking part in this study.

Will you be paid to take part in this study?

Participants will be compensated with a $100 stipend at each study visit completion for taking part and giving up their valuable time. Clincards will be assigned to parents/guardians of study participants, as participants are all under age 18. Onsite parking vouchers will be provided for free parking to those driving by car to CHOP. Participants will be given a meal expense amount of $10 for each participant and $10 for one accompanying parent/guardian/caregiver as applicable. If you receive payment using a bankcard, the bank will have access to identifiable information. The bank will not have access to any medical information.

Who is funding this research study?

The Friedreich's Ataxia Research Alliance (FARA) is funding part 1 of this study. The secondary scans will be funded by BiogenUS Corporation.

What if you have questions about the study?

If you have questions about the study, or how your data are going to be used, call the study investigator, Dr. David Lynch at (215) 590-2242. You may also talk to your own doctor if you have questions or concerns.

The Institutional Review Board (IRB) at The Children's Hospital of Philadelphia has reviewed and approved this study. The IRB looks at research studies like these and makes sure research subjects' rights and welfare are protected. If you have questions about your rights or if you have a complaint, you can call the IRB Office at 215-590-2830. A description of this clinical trial will be available on http://www.ClinicalTrials.gov, as required by U.S. Law. This Web site will not include information that can identify you. At most, the Web site will include a summary of the results. You can search this Web site at any time.

What will be done with my data when this study is over?

Information that can identify you may be kept permanently in a computer database at CHOP.
Your data may be shared with researchers/institutions at, or outside of CHOP. This could include for profit companies. We will not ask for your consent before using or sharing your data for future research. We will remove identifiers from them before sharing them with others. This means that nobody who works with them for future research will know who you are. Therefore, you will not receive any results or financial benefit from future research done on your data.

If you leave the study, you can ask to have the data collected about you removed. You can also ask us to remove information that identifies you from the data. Some of this may not be possible if your data has already been shared.

Optional Consent for Use of Identifiable Data for Future Research

As part of the study, we will collect medical and other information from you. We may wish to use this data in future research studies related to the study of FRDA. Your data may be shared with outside institutions for research purposes. The data will be given a unique code and may include information that can identify you. Information that can identify you may be kept permanently in a computer database at CHOP.

Future research could occur at CHOP, or at outside institutions, which could include for profit companies.

- Your identifiable data may be shared with other researchers at CHOP or outside of CHOP. They will use them for future research.

  We may not ask for your consent before using or sharing your identifiable or data. You will not receive any results or financial benefit from the future research done on your data.

If you leave the study, you can ask to have the data collected about you removed. You can also ask us to remove information that identifies you from the data. This may not be possible if your data has already been shared.

Please indicate whether you will allow the identifiable data to be used for future research by putting your initials next to one of the following choices:

_____ (initials) NO, my identifiable data may not be used for future research. They may be used for this study only.

_____ (initials) YES, my identifiable data may be used for other future research studies.

Consent for Future Contact for Research (Optional)

There may be studies in the future that are looking to understand FRDA which you may be eligible for. You are under no obligation to participate in these studies. If you are interested in learning about these studies indicate your preference below.

_____ (initials) YES, you may contact me in the future about other studies. I understand that I am under no obligation to take part.

_____ (initials) NO, I am only interested in taking part in this study.

Consent to Have any FDA-Approved Abnormal Brain Imaging Results Shared with Your non-CHOP Primary Care Provider (Optional)

If there is an identified health concern, images from FDA-approved sequences may be shared with your non-CHOP primary care provider if you agree below. If you are seen by a Primary Care Provider through CHOP, your Primary Care Provider would already have access to the information regarding this imaging. Imaging results that are not FDA-approved can only be used for research purposes by approved study staff and will not be released for clinical purposes.

_____(initials) YES, you may contact my Primary Care Provider to share my FDA approved brain imaging results if there is an identified health concern.

_____(initials) NO, you may not contact my Primary Care Provider if there is an identified health concern unless it is potentially life threatening.

If yes, please provide your Primary Care Provider's Contact information below:

Name: _____

Practice Location: _____Phone: _____

Consent to Take Part in this Research Study and Authorization to Use and Disclose Health Information for the Research

The research study and consent form have been explained to you by:

Person Obtaining Consent	Signature of Person Obtaining Consent
	Date

By signing this form, you are indicating that you have had your questions answered, you agree to take part in this research study, and you are legally authorized to consent to your child's participation. You are also agreeing to let CHOP use and share you or your child's health information as explained above. If you don't agree to the collection, use and sharing of your child's health information, your child cannot participate in this study. **NOTE:** *A foster parent is not legally authorized to consent to a foster child's participation.*

Name of Subject

Name of Authorized Representative (if different than subject)	Relation to subject: ☐ Parent ☐ Legal Guardian
Signature of Authorized Representative	Date

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Assent to Take Part in this Research Study

For Children Capable of Providing Assent:

I have explained this study and the procedures involved to _____ in terms he/she could understand and that he/she freely assented to take part in this study.

_____
Person Obtaining Assent

_____ _____
Signature of Person Obtaining Assent Date

This study has been explained to me and I agree to take part.

_____ _____
Signature of Subject (optional for children 7 years and above) Date

For Children Unable to Assent:

I certify that _____ was not capable of understanding the procedures involved in the study sufficiently to assent to study participation.

_____
Person Responsible for Obtaining Assent

_____ _____
Signature of Person Responsible Date