Informed Consent

Project name: Multicenter analysis of genomic and metabolic data of neonatal genetic diseases

Leading unit: The Sixth Affiliated Hospital, Sun Yat-sen University

Project leader: Hu Hao

Department: Pediatrics

Research period: September 1, 2022 to December 31, 2025

Project number: EK-YCDX-20220803

NCT No.: none.

Version No.: V1.0

Version Date: August 03, 2022

Application for exemption of informed consent

Project name: Multicenter analysis of genomic and metabolic data of neonatal genetic diseases

Project leader: Hu Hao

Dear Ms / Sir :

We will carry out a study on the Multicenter analysis of genomic and metabolic data of neonatal genetic diseases, and invite you to participate in the study. This study has been approved by the Ethics Committee of The Sixth Affiliated Hospital, Sun Yat-sen University.

Please read this informed consent form as carefully as possible before you decide whether to participate in the study. It helps you understand the study and why it was conducted, the process and duration of the study, and the benefits, risks, and discomforts that may result from participating in the study. If you wish, you can also discuss it with your relatives and friends, or ask your doctor for an explanation to help you make a decision. If you are participating in other studies, please inform the researchers.

1. Purpose of the study

(1) Gene sequencing data (138 genes related to 133 common genetic diseases) and tandem mass spectrometry metabolomics data (11 amino acids and 28 acylcarnitines) of about 40,000 newborns from the South China Neonatal Genetic Screening Alliance participating units were collected and collated to complete the database construction of genes and mass spectrometry.

(2) A retrospective analysis of the incidence, pathogenic mutations, suspected pathogenic mutations, and the carrying rate of unexplained mutations of 133 common neonatal genetic diseases in 40,000 cases was conducted, and the distribution of high-frequency variation sites in the population was counted, providing a scientific basis for the selection of mutation sites for large-scale genetic screening of neonatal genetic diseases.

(3) Protein function prediction and enzyme catalytic activity analysis were performed on high-frequency mutation sites of genetic metabolic diseases (IEM). Characteristic metabolites were analyzed and verified for mutation sites with low enzyme catalytic activity. The feasibility of using protein function artificial intelligence analysis platform and tandem mass spectrometry metabolite data to accurately predict the pathogenicity of genetic metabolic lesions was explored.

(4) Explore the use of genome and metabolome big data and machine learning algorithms such as Random forest, Support Vector Machine, Elastic net, Multilayer Perceptron to construct prediction models for common genetic diseases, and strive to achieve accurate diagnosis and prediction of common genetic diseases using simple

tandem mass spectrometry metabolome data, and expand the application range of tandem mass spectrometry technology for disease detection.

2. Possible benefits of research

There is no direct economic benefit for all the test subjects included in this study, but for the positive children included in this study, free first-generation sequencing verification is provided, and professional genetic counseling and clinical treatment advice are provided to parents by pediatric clinicians with the consent of the parents of the children.

3. The possible risks of this project, the discomfort and inconvenience to you.

This study is an retrospective study that does not interfere with your clinical diagnosis and treatment process.

The whole research process is supervised by the relevant departments of Guangdong Second Provincial General Hospital. If you encounter any questions in the research process, you can consult with the research doctor.

4. Privacy protection

Your medical records (including medical records and physical and chemical examination reports, etc.) will be kept in the hospital according to the regulations. The personal data you participated in the study and in the study are confidential, and the research results report after the study will not reveal your personal identity. Superior health / pharmaceutical / research management departments, hospital ethics committees, researchers and sponsor representatives will be allowed to consult your medical records in order to verify the procedures and / or data of clinical research. We will strictly protect the privacy of your personal medical data within the scope of existing laws.

5. Subjects ' rights

Whether to participate depends entirely on your voluntary. You can refuse to participate in this study, or withdraw from the study at any time during the study process, without any reason, which will not affect your relationship with the doctor, will not affect the loss of your medical or other interests, and you will not be discriminated against or retaliated against.

Finally, thank you for reading the above materials. If you decide to participate in this study, please tell your doctor that they will arrange everything about the study for you. Please keep this information. You can always find out about the information. If you need to consult and study the relevant issues, you can contact the doctor in charge. The doctor in charge contacted 020-38777850. If you have any questions about your rights and interests in this study, please contact our Ethics Committee at 020 - 38777850.

Subject Statement

I have read this informed consent form carefully, I have had the opportunity to ask questions and all questions have been answered. I understand that participation in this study is voluntary, I can choose not to participate in this study, or at any time notify the researcher to withdraw without discrimination or retaliation, any of my medical treatment and rights will not be affected. If I need another diagnosis / treatment, or if I do not comply with the trial plan, or for other reasonable reasons, the researcher may terminate my continued participation in this clinical study. I voluntarily agreed to participate in the clinical study, and I will receive a signed original ' informed consent ' (including personal reading material and informed signature page).

Signature of subject：　　date：

Contact number：

Signature of legal representative [if applicable]：

Relationship with subjects：

Contact number：

date：

Statement by researchers

I have accurately informed the subjects of the content of the informed consent form and answered the questions of the subjects. The subjects volunteered to participate in this clinical study.

Researchers signature：　　date：

Contact number：