

# Research on multi-omics and environmental risk factors for inflammatory bowel disease in south-central China

<b>Submission date</b> 07/09/2021	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 15/09/2021	<b>Overall study status</b> Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 24/09/2021	<b>Condition category</b> Digestive System	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Inflammatory bowel disease (IBD) includes Crohn's disease (CD) and ulcerative colitis (UC), a group of long-term conditions that involve inflammation of the gut. Due to the high burden of illness and progressive disability associated with IBD and the increasingly high cost of its management, effective prevention strategies for the occurrence and progression of IBD are needed.

Genetic and environmental factors contribute to the development of IBD and the mechanism is complex and still unclear. Also, intestinal bacteria, fungi, viruses, and other microorganisms (microbiome) have a crucial role. Therefore, genetic susceptibility, environmental risk factors, the microbiome, and their interplay in IBD still need more exploration.

This study will include adults and children in south-central China, and aims to establish an IBD population cohort, database, and biological specimen bank in Hunan province, China to explore the impact of different treatments on the prognosis and long-term prognosis of IBD patients and to identify environmental predisposition factors for IBD. This study also aims to discover subtypes of IBD and the markers of each subtype and find new targets to provide new prevention and treatment methods for IBD.

### Who can participate?

1. Patients of all ages with IBD (including Crohn's disease and ulcerative colitis) or suspected IBD
2. Healthy participants of all ages without gastrointestinal diseases and symptoms

### What does the study involve?

Data and samples will be collected by participating centers at the start of the study and during the follow-up period (3 years). Optional consent will be sought from patients to collect all information and samples.

### What are the possible benefits and risks of participating?

Participants will be informed that they are unlikely to benefit directly. The study won't involve any extra visits or procedures outside of the standard of care treatment other than optional sample collection. This will involve minor discomfort associated with blood sampling.

Where is the study run from?

The Third Xiangya Hospital and Hunan Children's Hospital (China)

When is the study starting and how long is it expected to run for?

January 2021 to December 2026

Who is funding the study?

1. National Natural Science Foundation of China (China)
2. Key Project of Research and Development Plan of Hunan Province (China)

Who is the main contact?

Prof. Xiaoyan Wang

wangxiaoyan@csu.edu.cn

## Contact information

### Type(s)

Scientific

### Contact name

Prof Xiaoyan Wang

### ORCID ID

<https://orcid.org/0000-0002-7281-1078>

### Contact details

138 Tongzibo Road

Hexi Yuelu District

Changsha

China

410013

+86 (0)13974889301

wangxiaoyan@csu.edu.cn

## Additional identifiers

### Clinical Trials Information System (CTIS)

Nil known

### Protocol serial number

Nil known

## Study information

### Scientific Title

Research on the occurrence and development of inflammatory bowel disease based on multi-omics and environmental risk factor analysis: a longitudinal cohort study of adults and children with inflammatory bowel disease in south-central China

## Acronym

XY-IBD

## Study objectives

The hypothesis of the cross-sectional study is that using multi-omics data to discover the molecular subtypes of inflammatory bowel disease (IBD) and the molecular markers of each subtype will find new targets for the prevention and treatment of IBD and the comorbidities of IBD.

The aim of the longitudinal study is to explore the impact of different treatments on the prognosis and long-term prognosis of IBD patients; and the impact of heavy metals, microcystins, diet, sleep and mental state on the prognosis and long-term prognosis of IBD patients.

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

1. Approval pending, Ethics Committee of The Third Xiangya Hospital of Central South University (+86 (0)731-88618938; xy3irb@163.com, xy3irbreview@163.com)
2. Approval pending, Ethics Committee of Hunan Children's Hospital (+86 (0)731-85356014; 1341029443@qq.com)

## Study design

Prospective cohort study and case-control study

## Primary study design

Observational

## Study type(s)

Diagnostic

## Health condition(s) or problem(s) studied

Inflammatory bowel disease (IBD), including Crohn's disease (CD), ulcerative colitis (UC)

## Interventions

Baseline measurement (Spring 2021):

For adult patients, when they are hospitalized in The Third Xiangya Hospital, they will be asked if they are willing to take part in the program and sign the letter of contentment. Those who agree to be participants will give researchers their biological samples including blood, fecal, urine, and saliva. Those participants will also fill a questionnaire related to diet, life habits, and other environmental factors.

For pediatric patients, when they are hospitalized in the Hunan Children's Hospital, their guardians will be asked if they are willing to be participants. Samples are the same with adult patients. Questionnaires will be filled by both the children and their guardians.

For healthy controls, they are recruited to go to the hospital healthy center to fill the questionnaire and provide their biological samples. Those samples will be analyzed for whole gene sequencing, metagenome, metabolomics, metaproteomics, other environmental risks like algal toxins, and the number of heavy metals.

First follow up (Summer 2021):

Six months after the baseline measurements, blood samples are collected for laboratory tests including haemoglobin, platelets, albumin, calprotectin and CRP, and participants undergo an endoscopic examination with biopsies and scoring (Ulcerative Colitis Endoscopic Index of Severity (UCEIS) for UC, Crohn's Disease Endoscopic Index of Severity (CDEIS) for CD). Each patient should be scored for disease activity (Modified Mayo score for UC, Crohn's Disease Activity Index (CDAI) for CD). Patients who accept anti-TNF $\alpha$  therapy are evaluated for curative effect and anti-antibody testing. The same version of the questionnaire provided at baseline will be used as well.

Patients will be followed up every 6 months. Register data will be collected and analysis will be carried out by the study statistician. The total duration of this study is 3 years.

## **Intervention Type**

Other

## **Primary outcome(s)**

1. Multi-omics integrated analyses including blood metabolomics, fecal metabolomics, metagenomics, and metaproteomics, measured using the Illumina sequencing platform and liquid chromatograph-mass spectrometer (LC-MS) at baseline
2. Degree of disease activity measured by CDAI and Mayo score at baseline and follow-up (every 6 months for 3 years)
3. Degree of disease in endoscopy measured by UCEIS and CDEIS at baseline and follow-up (every 6 months for 3 years)
4. Degree of inflammation in vivo measured using hemoglobin, platelets, albumin, calprotectin and CRP tests at baseline and follow-up (every 6 months for 3 years)
5. Resistance to anti-TNF $\alpha$  measured by the concentration of anti-antibody at follow-up (every 6 months for 3 years)

## **Key secondary outcome(s)**

1. Genetic characteristics measured using whole gene sequencing at baseline
2. Environment factors measured using Algal toxins and heavy metals at baseline
3. Living habits and psychological factors measured using the Pittsburgh Sleep Quality Index (PSQI), Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7), and the Inflammatory Bowel Disease Questionnaire (IBDQ) at baseline and follow-up (every 6 months for 3 years)

## **Completion date**

01/12/2026

# **Eligibility**

## **Key inclusion criteria**

Patients:

1. Patients with inflammatory bowel disease (including Crohn's disease and ulcerative colitis) or suspected IBD patients in The Third Xiangya Hospital and Hunan Children's Hospital
2. Be willing to take part in this program and provide written informed consent (if children, the consents are signed by the guardians)
3. All ages

**Controls:**

1. Healthy participants from the Health Management Center of The Third Xiangya Hospital and Hunan Children's Hospital
2. All ages

**Participant type(s)**

Mixed

**Healthy volunteers allowed**

No

**Age group**

All

**Sex**

All

**Key exclusion criteria**

1. Patients who are unable to cooperate with work due to mental or physical reasons
2. Healthy controls who have gastrointestinal diseases and symptoms

**Date of first enrolment**

01/09/2021

**Date of final enrolment**

01/12/2023

**Locations****Countries of recruitment**

China

**Study participating centre**

**The Third Xiangya Hospital, Central South University**

138 Tongzipo Road

Hexi Yuelu District

Changsha

China

410013

**Study participating centre**

**Hunan Children's Hospital**

86 Ziyuan Road

Changsha

China

410007

# Sponsor information

## Organisation

Third Xiangya Hospital

## ROR

<https://ror.org/05akvb491>

# Funder(s)

## Funder type

Research organisation

## Funder Name

National Natural Science Foundation of China (81970494)

## Alternative Name(s)

Chinese National Science Foundation, Natural Science Foundation of China, National Science Foundation of China, NNSF of China, NSF of China, National Nature Science Foundation of China, Guójiā Zìrán Kēxué Jījīn Wěiyuánhùi, , NSFC, NNSF, NNSFC

## Funding Body Type

Government organisation

## Funding Body Subtype

National government

## Location

China

## Funder Name

Key Project of Research and Development Plan of Hunan Province (2019SK2041)

## Alternative Name(s)

## Funding Body Type

Government organisation

## Funding Body Subtype

Local government

**Location**

China

**Results and Publications****Individual participant data (IPD) sharing plan**

The data-sharing plans for the current study are unknown and will be made available at a later date.

**IPD sharing plan summary**

Data sharing statement to be made available at a later date