Ethics and Consent Protocol

Project Title: The Interplay of Circulating MicroRNAs and Gut Microbiome Diversity in Predicting Early-Onset Type 2 Diabetes Mellitus Risk

Date: October 2025
Version: 1.0

1. Institutional Review Board (IRB) Approval

The complete research protocol, informed consent forms, recruitment materials, and all data collection instruments will be submitted to the Institutional Review Board (IRB) or equivalent Ethics Committee for formal review and approval **prior to the commencement of any research activity involving human subjects.** Modifications to the protocol will require submission and approval of an amendment by the IRB.

2. Participant Recruitment and Selection

2.1 Minimizing Bias and Coercion:
Recruitment will be conducted by research nurses who are not involved in the direct clinical care of potential participants to minimize the risk of undue influence or coercion. Participants will be recruited from outpatient clinics via IRB-approved flyers and referrals.
2.2 Inclusion/Exclusion Criteria:
Strict inclusion/exclusion criteria will be applied consistently across all three study groups (EO-T2DM, High-Risk, Controls) to ensure scientific validity and appropriate ethical boundary setting.

3. Informed Consent Process

3.1 Capacity and Voluntariness:
The research staff will assess the capacity of all potential participants to provide informed consent. Emphasis will be placed on the voluntary nature of participation and the explicit right to decline participation or withdraw at any time without affecting their standard medical care or legal rights.
3.2 Elements of Consent:
The consent form will clearly detail:

- The purpose and nature of the study (including the collection of blood and fecal samples).
- The procedures involved and the estimated time commitment.
- Potential risks (e.g., minor bruising from venipuncture) and benefits (direct benefit to science, potential future benefit to high-risk individuals).
- The use of anonymized data and samples for the current study and, separately, for future research (optional consent).
- The procedures for data storage, privacy protection, and destruction.

- Contact information for the PI and the IRB for questions or concerns.

4. Risk Mitigation and Confidentiality

4.1 Risk Management:
The primary physical risk (venipuncture) will be mitigated by using certified phlebotomy staff. The potential psychosocial risk of identifying an individual as 'High-Risk' will be managed by providing appropriate referrals to institutional preventive medicine or endocrinology counseling, as needed, at no cost to the participant.
4.2 Confidentiality:
Confidentiality will be maintained through the use of a secure, limited-access Master Linkage Key and Study-Specific Alphanumeric Codes (SAACs) for all samples and data. Published results will only contain aggregate data, and no individual participant will ever be identifiable in any resulting publication or presentation.

5. Management of Results and Incidental Findings

5.1 Study Results:
Participants will be offered the option to receive a summary of the general study findings once the project is complete and published. Individual molecular or microbial results will generally not be returned to participants due to their research nature (i.e., they are not clinically validated or certified).
5.2 Incidental Findings:
A protocol is in place to handle unexpected clinical findings (e.g., severe anemia discovered during blood work). Such findings will be immediately communicated to the participant's primary care physician (with participant consent) or directly to the participant with clear advice to seek medical follow-up.