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Summary of research
HbA1c, Diabetes, Cardiovascular Disease
**Application Lay Summary:**

1a: This proposal seeks access to UKBiobank data to support identification of genetic variants underlying glycated haemoglobin (HbA1c) variation, to empower biological pathway discovery, and to elucidate the impact of loci influencing HbA1c on its utility as a diagnostic measure for type 2 diabetes, and on cardiovascular disease risk.

The applicants are part of the UK Biobank Cardiometabolic Consortium, and are world-leaders in the genetics of type 2 diabetes (T2D) and related traits. They have played leading roles in global genetic discovery efforts for these phenotypes and the UKBiobank data offers many opportunities to strengthen and extend these research activities.

1b: The research we plan is entirely congruent with the stated aim of UK Biobank to improve "the prevention, diagnosis and treatment of a wide range of serious and life-threatening illnesses"

HbA1c is a diagnostic measure for diabetes. Both diabetes and heart disease are listed as target conditions for UK Biobank.

1c: Glycated haemoglobin (HbA1c) is used to measure glucose control, and to diagnose diabetes. We will: a) search for genetic variants associated with HbA1c in non-diabetic participants at the start of the study (baseline); b) integrate these data with other studies to extend the list of genetic variants influencing HbA1c and identify biological pathways; c) investigate the effect of variants in those with baseline type 2 diabetes, and in new diabetes cases as they emerge, and explore whether variants can predict diabetes onset, progression or response to treatment; c) investigate whether genetic variants are associated with cardiovascular disease risk.
1d: We wish to study the full cohort.