

**Applicant**

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**Project Title**

Genetics of Vitamin D

**Project Summary**

Vitamin D insufficiency affects 40% of adults and has been linked to many adverse health outcomes. A quarter of the variability in the biomarker of vitamin D in humans, 25 hydroxyvitamin D (25OHD), is attributable to environmental factors such as diet and sun exposure, while half of it has been attributed to genetics. Nevertheless, the known genetic determinants of 25OHD explain ~7.5% of its variability. Since vitamin D insufficiency can be safely and efficiently treated, predicting which people in the general population have low 25OHD is of clinical utility. Here, we seek to identify novel genetic determinants of 25OHD, by combining CLSA data to data from 440,000 individuals from UK Biobank. We will then use this information to improve risk stratification for vitamin D insufficiency through machine learning algorithms applied to genotypic data. This study will enable a better understanding of the mechanisms of vitamin D insufficiency and a more efficient management of people at risk.

**Keywords**

25 hydroxyvitamin D, GWAS, Genomic prediction