

## **Principal Investigator**

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## **Summary of research**

Chronobiology, Mental Health, Latitude, Obesity, Urbanisation, GWAS

## **Application Lay Summary:**

**1a:** We will explore what factors influence our circadian rhythms and sleep patterns, including lifestyle, place of birth, length of time spent in the UK up to recruitment date, and genetics. We will investigate whether various aspects of sleep – such as lark versus owl, shift working and insomnia – impact on our physical and mental health and whether the relationship is influenced by urban living and other lifestyle factors.

**1b:** Diseases associated with the urban environment are increasing in incidence and significance for global health. This work will help improve the prevention, diagnosis and treatment of the diseases of urbanisation by providing information on the relationship between factors associated with city life (shiftwork, disruption of circadian rhythms, reduced exposure to sunlight) and cardio-metabolic and mental health. The proposed work will also provide data that can be used to identify those individuals at increased susceptibility to the disrupted lifestyle factors of the urban environment due to their sex, age, genotype, ethnicity or latitude of origin.

**1c:** We will use statistical tests to investigate whether sleep and circadian rhythm are related to aspects of physical and mental health and whether these are modulated by living in an urban environment, or by individual daily rhythms, latitude of birth. We will also investigate if chronotype and circadian rhythmicity are associated with demographic and lifestyle factors, and if this parameter affects the risk of mental and metabolic disease independent of known risk factors. We will investigate whether variation in genes that influence normal and disturbed sleep patterns modifies or underlies any relationships we find between lifestyle and mental and metabolic health.

**1d:** This study will include the full cohort of the Biobank database