

**Application number/Title:** 40525: Body fat composition and risk of obesity-related cancers among adults with normal body mass index in the UK Biobank cohort

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**Keywords provided by the Applicant PI to describe the research project:**

Obesity-related-cancers, body-fat-composition, inflammatory-markers, metabolic-markers

**Application Lay Summary:**

Over the years, it has been thought that being normal weight (i.e. having BMI between 18.5kg/m<sup>2</sup> and 24.9kg/m<sup>2</sup>) is not associated with altered risk of obesity-related cancers such as breast, endometrial and colorectal cancers. Recently, this long-held view has been called into question, as this BMI category also includes individuals who possess abnormalities, such as excess body fat and high insulin levels, that can promote the development of cancer. Very few studies have, however, been conducted to explore whether risk of obesity-related cancers among normal size adults differs by levels of body fat. So far, the findings from existing studies suggest that, like overweight/obese adults, normal weight individuals with excess body fat may also have an increased risk of obesity-related cancers, specifically breast and colorectal cancer. Given the scarcity of studies, or lack thereof, in this area, we propose to undertake this study to improve our knowledge of the role of body fat composition in the development of obesity-related cancers among normal sized men and women. We will use statistical methods to assess the association between body fat and selected obesity-related cancers among the participants. As excess body fat also causes changes in levels of cancer-associated inflammatory/metabolic markers, we will also 1) assess the associations between the markers and body fat composition and 2) examine whether the association between body fat composition and the cancers is mediated by selected markers. We intend to complete this study within six months. This study can provide important information that will help to more accurately determine risk of obesity-related cancers among adults with normal BMI. Such information will also be valuable in developing strategies to reduce the risk of cancer development.