



## 2022 IMPACT CIRCLE

### **Project Title**

Pilot study of nutritional ketosis effects on geroscience biomarkers

### **Investigator(s) and collaborations:**

Dr John Newman, MD, PhD

Dr Brianna Stubbs, DPhil.

### **Unmet Need/Primary Question:**

Does induction of nutritional ketosis through consumption of ketone esters affect any blood biomarkers of aging

### **Novel Hypothesis:**

Strong in vitro and preclinical evidence indicates that ketone bodies have a positive impact on multiple hallmarks of aging, including oxidative stress, inflammation and mitochondrial function. Ketone esters are a novel tool to induce nutritional ketosis without other dietary changes. Ketone esters have been mainly studied in the context of young healthy adults; no studies have investigated the effects in older adults. Our hypothesis is that ketone ester consumption will impact blood biomarkers of aging.

### **Project Proposal:**

We propose to analyze blood samples collected from a 12-week study of daily ketone ester ingestion in older adults (n = 15) compared to a placebo control group. Our proposed list of analytes is based on the TAME (Targeting Aging with Metformin) Study: IL-6, CRP, sTNFR1, Cystatin C, IGF-1, NT-proBNP, insulin, GDF15, and IGFbps. In addition we will measure DNA Methylation and oxidative stress as plasma concentrations of TBARS, and 8-Iso-Prostaglandin.

### **Description of Potential Impact:**

This will be the first clinical research that attempts to directly link nutritional ketosis to aging biomarkers. Whilst the study is also collecting measures of safety, tolerability, physical function, cognitive function and quality of life, the addition of these geroscience biomarkers will provide crucial mechanistic insight into how ketone bodies affect aging in humans.