Application number/Title: 44033 - Adherence to dietary patterns, genetic predisposition and incidence of coronary artery disease

Applicant PI: Dr Romina di Giuseppe

Applicant institution: University Hospital Schleswig-Holstein, Kiel, Germany

Keywords provided by the Applicant PI to describe the research project: coronary artery disease, dietary patterns, genetic risk score, latent class analysis, latent transitional analysis, risk factors

Collaborator: Dr Krasimira Aleksandrova, German Institute of Human Nutrition Potsdam-Rehbrücke, Nuthetal, Germany

Application Lay Summary:

Coronary artery disease (CAD) is a complex trait with heritable, environmental, and lifestyle factors contributing to disease risk and disease course. Both, genetic as well as dietary factors are known to be associated with risk for new-onset (incident) CAD. However, data on the interplay of dietary patterns (a more comprehensive analytical approach to diet than single food analyses) and genetic variants (cumulatively expressed as genetic risk score) on the risk of incident CAD are lacking. We are applying for data from the UK Biobank to address this issue. Specifically, we are aiming to:

1. Derive a priori (Alternate Mediterranean Diet, Alternate Healthy Eating Index-2010, and the Dietary Approach to Stop Hypertension) and a posteriori (using PFA, PCA, RRR, and LCA) dietary patterns based on data from the UK Biobank;
2. Assess associations between these derived dietary patterns and incident CAD - as defined in (46) - within the UK biobank.
3. Assess whether the association of dietary patterns with incident CAD differs by genetic risk (based on a weighted genetic risk score).
4. Investigate influences of scoring alternatives on CAD risk.
5. Investigate changes of dietary patterns over time and their determinants and assess how these changes relate to CAD status alone and according CAD-GRS categories.

The present project will increase our understanding of the complex interplay between genetic factors and nutrition with respect to incident CAD. It might
inform future personalized heart-nutrition strategies aimed at preventing CAD. Full cohort required. Data request: FFQ and FFQ repeated measures, web-based 24-hour-recall questionnaires, clinical, anthropometric and CVD biomarkers data, family history of CAD, genetic data, CAD endpoints.