Application number/Title: 26002 - Investigating the associations between sex steroid hormone concentrations and risk of cancer development and survival

Applicant PI: Dr Kostas Tsilidis

Applicant institution: Imperial College London, Epidemiology and Biostatistics, Praed Street, Norfolk Place, St Mary's Hospital Campus, London W2 1PG. United Kingdom

Funding Body: Imperial College London

Collaborators:
1) Dr Kostas Tsilidis
2) Professor David Lopez
3) Dr Marc Gunter

Collaborating Institutions and Addresses:
1) University of Ioannina, School of Medicine, Department of Hygiene and Epidemiology, S. Niarchos Avenue, Ioannina 45110. Greece.
2) University of Texas (UT Health), Health Science Center at Houston, School of Public Health, Epidemiology and Urology, Suite E-629, 1200 Pressler Street, Houston TX 77030. United States.
3) International Agency for Research on Cancer, Nutrition and Metabolism, 150 Cours Albert Thomas, Lyon 69372. France.

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

Sex steroid hormones, GWAS, EWAS, Cancer

Application Lay Summary:

1a: We propose to investigate the associations between genetic variants related to sex steroid hormone concentrations (e.g., testosterone and estradiol) and sex hormone binding globulin (SHBG), pre-diagnostic serum concentrations of the aforementioned hormones and risk of cancer development, death and survival, overall and by cancer site. We also propose to conduct a genome-wide association study (GWAS) and an exposure-wide association study (EWAS) for testosterone, estradiol and SHBG concentrations.

1b: The role of sex steroid hormones in cancer development and survival is unclear. Hormonal factors are important determinants of breast cancer risk, but several unanswered questions remain. Prostatic growth strongly depends on androgens, but epidemiological evidence has failed to show statistically significant associations for prostate cancer risk. Several other cancers appear to have different sex-specific incidence rates, and it has been hypothesized that sex hormones may alter their risk. If causal, associations between sex hormones and risk of cancer development and survival might be of great importance for public health, as estrogens and androgens decrease with increasing age.

1c: We propose to explore the associations between genetic variants related to sex steroid hormone concentrations identified in genome-wide association studies and risk of cancer development, death and survival, overall and by cancer site. In addition, we will investigate associations between pre-diagnostic serum testosterone, estradiol and SHBG concentrations and risk of cancer development and survival.

1d: We request to get genetic, risk factor, biomarker, and clinical data for the full cohort. Linkages to death and cancer registry data will be also requested to appropriately study risk of cancer development, death and survival.