OVERVIEW

The scope of research carried out by our Group ranges from the identification of aetiological agents and mechanisms, to the translation of the findings into the clinical and Public Health domains, focusing on bladder, pancreatic, and breast cancers. We employ a wide variety of biomarkers to better characterise exposures, genetic susceptibility patterns, and cancer outcomes. Omics data provide a unique opportunity in this regard and the Group explores its integration in epidemiologic studies.

The strategic goals of the Group are to:

→ Identify non-genetic and genetic factors, as well as their interactions, associated with cancer development and progression and with its molecular/omics subphenotypes.
→ Develop and apply statistical/informatics tools to model the risk, prediction, and clinical course of patients with cancer by integrating epidemiologic with omics information.
→ Assess clinical and public health strategies for cancer control using current genomic tests and data.

“We have undertaken in-depth analyses integrating omics and non-omics data to predict pancreatic and bladder cancer risk and outcome, and have assessed the challenges that epidemiology faces in this endeavour.”
Research highlights during 2016, the Group mainly focussed its research on pancreatic and bladder cancers. Regarding pancreatic cancer (PC), we have further analysed the epidemiological and clinical data from the PanGenEU study and have characterised the risk of PC associated with diabetes, multimorbidity patterns and family history of cancer, among others. We have completed the genome-wide association study (GWAS) and, in collaboration with the international consortia, we are now replicating the primary findings. We are exploring in collaboration with experts in the field, genome-wide methylation data generated with the Illumina 850K array in cases and controls. We also participated in a study that identified 3 new pancreatic cancer susceptibility signals on chromosomes 1q21.1, 5p15.33 and 8q24.21. Regarding bladder cancer (BC), we showed that common SNPs have a limited role in predicting BC outcomes and reported, for the first time, a heritability estimate for disease outcome by assessing the predictive ability of the models, including up to 371,304 SNPs for tumour recurrence and progression. We have also provided proof of concept for the joi

Translational activities

We coordinate the COST Action BM2004 EUPancreas (www.eupancreas.com). This Action includes 250 multidisciplinary members from 22 EU countries, European governmental and nongovernmental institutions, and private companies. Several scientific, training, and dissemination activities have been conducted during 2016. By endorsing the Pancreatic Cancer Europe (PCE) multi-stakeholder platform, we have actively participated in several activities aimed at increasing the awareness of PC in the general population, the medical community, and among health policy makers. The Group has actively participated in setting up a European-based clinical registry of PC (PancreoB) jointly with the EPC; the Joint Research Centre from the European Community, and the European Network of Cancer Registries. The Group has also contributed to the development of recommendations for a state strategy for personalised/precision medicine, led by the Roche Institute. Another area our Group contributed to was the identification of different sources of big data and the importance of unstructured data for potential future uses in drug discovery; the main practical and ethical challenges to unravelling the full potential of big data in healthcare were discussed. 

Publications


Patent


Awards and Recognition