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GCAT|genomes for life: A cohort of the genomes of catalonia, the microbiome, and DNA methylation alterations in gastrointestinal cancer

The cancer genome accumulates numerous genetic and epigenetic alterations. Microbiomes are now considered an essential component of health and disease. Bacteria can associate and have an impact in the epigenetic alterations of gastrointestinal cancer (GC). In one example, we reported that gastric cancer exhibited abnormally low DNA methylation compared with matching normal tissue or the normal tissue from first-degree relatives. Our results showed the link between an epigenetic alteration (DNA hypomethylation) and H. pylori infection. In another example, we described how other epigenetic abnormalities (DNA hypermethylation), may be aberrantly introduced in the human genome by *Mycoplasma hyorhinis* methyl transferases. Our findings unveiled a novel link between the microbiome and human epigenetics with special relevance to cancer epigenetics. A long-term prospective cohort study called Genomes for Life (GCAT) will be useful to further explore the association between GCs, their epigenetic alterations, and the microbiome and other environmental factors. The GCAT project was designed to explore the role of epidemiologic, genomic, and epigenomic factors in the development of cancer and other chronic diseases in Catalonia, Spain. GCAT will have recruited 22.000 participants at the end of 2017. Participants complete a detailed epidemiological questionnaire and undergo anthropometry measurements, and plasma, serum, and white blood cells are collected. The GCAT study has access to the Electronic Health Records (EHR) of the Catalan Public Health Care System. Participants will be followed at least 20 years after recruitment. Several approaches will be used to investigate the association of epidemiologic and genetic risk factors with various cancers and chronic diseases.

Biography

Manuel Perucho has completed his PhD at the University of Madrid, Spain and continued as a Postdoctoral Researcher at the Max-Planck-Institut, Berlin, and Cold Spring Harbor Laboratory, New York. He was Assistant and Associate Professor at the State University of New York (SUNY) at Stony Brook. Currently, he is the Director of the Predictive and Personalized Medicine of Cancer Program (PMPPC), Barcelona, and Adjunct Professor at Sanford-Burnham-Prebys Medical Discovery Institute (SBP), La Jolla, California. He was awarded the AACR Professorship in Basic Cancer Research in 2005. He has reviewed multiple research grants of many agencies and serves in Editorial Boards of several international journals.

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