

Dimitra Repana

Dimitra is a medical doctor and her clinical and research interest lies in gastrointestinal oncology and especially colorectal cancer.

Originally from Greece, she graduated from the Medical School of the University of Thessaly. During her training in Medical Oncology she was awarded a scholarship from the Hellenic Society of Medical Oncology and decided to come to London in 2013 to continue her training at Guy's and St. Thomas' NHS Foundation Trust. In 2016, she moved into full research, funded by a BRC/NIHR Clinical Research Fellowship and joined the Ciccarelli lab at King's College London. The group is now based at the Francis Crick Institute where all laboratory work is done.

Outline of Research (Full Time PhD)

Functional validation of predicted synthetic lethal interactions in colorectal cancer patients

The aim of Dimitra's PhD project is to identify new genetic targets for personalized treatment of colorectal cancer based on the concept of synthetic lethality. The inactivation of genes as a result of cancer alterations is not always deleterious for the cells because alternative genes or pathways can act as functional compensators of the lost functions. These compensations are important for cell survival but at the same time represent acquired cancer vulnerabilities that can be exploited for cancer treatment.

This study aims to identify the functional compensators of cancer-specific inactivated genes and validate them in primary cultures derived from patients with colorectal cancer. Eligible patients underwent surgery for colorectal cancer, have given consent for whole genome sequencing within the 100,000 Genome Project and additional tissue sampling for King's Health Partners Cancer Biobank. Their whole genome sequence data is used to identify loss-of-function mutations and their potential functional compensators based on sequence identity, biochemical pathways and interaction network data. The predictions will be validated in primary cell cultures derived from the colorectal cancer and the matched normal control.