Project Summary, *Computational characterization of circulating DNA content from advanced cancer patients pre- and post-treatment.*

Circulating DNA (plasma DNA) is observed in healthy and diseased individuals. It has been recently reported that differential levels are observed in individuals with cancer compared to healthy, age-matched individuals. Sensitive platforms allow for the detection of somatic aberrations characteristics of primary tumor cells, but the extent to which one can reconstruct the entire tumor genomic profile from plasma DNA has to be defined. This project will tackle technical, computational and biological aspects (as tumor heterogeneity and lesion sub-clonality) that hinder the ability to readily quantify somatic aberrations from plasma DNA. Specifically, deep-sequencing approaches will be utilized to study the dynamics of plasma DNA and to pinpoint relevant somatic lesions in patients with advanced prostate cancer during treatment. The overarching clinical question is if plasma DNA can provide early biomarkers for treatment response/resistance.

Reference: Francesca Demichelis (Computational Oncology Laboratory)