

4. Objectives

The aim of the work is to develop innovative genome analysis methodologies with the focus on re-sequencing of genomes. In particular, the following topics are addressed:

- 1) Adapting oligonucleotide fingerprinting (OFP) technologies to miniaturized arrayed formats and multiplexed hybridisation, therefore increasing the speed and throughput significantly over current methodologies;
- 2) Down-sizing of the hybridisation assay to the nano-liter scale coupled with optical methods of detection (laser excitation + CCD-camera) towards reduction of cost and increase of samples number per assay;
- 3) Managing automated hybridisation and detection procedures with DNA arrays and micro- or nano-scale liquid handling systems, using fluorescence-based techniques and LNA-modified oligoprobes;
- 4) Achieving a measurably higher accuracy in the detection of sequence.