

## P26

### **MALDI-TOF MASS SPECTROMETRIC DETERMINATION OF RATIOS OF WILD TYPE TO MUTANT OLIGOMERS IN ACUTE MYELOID LEUKEMIA**

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As part of an ongoing study into the detection of residual disease and early detection of remission in acute myeloid leukemia (AML) a Micromass/WATERS [MALDI-LR](#) Matrix Assisted Laser Induced Dissociation Ionisation Mass Spectrometer (MALDI-TOF) was used to determine the minimum concentration detection limits and maximum ratio of wild type to mutant in a single nucleotide substitution.

Leukemia is a clonal disease affecting the white blood cells. Diagnosis of the disease is conventionally performed by microscopic examination of a collection of cells with detection of 5:95 Leukemic to healthy cells being the cut off point for clinical relapse.

Mutations in the genome of the leukemic cells may be used as markers for identification and quantitative purposes. In acute myeloid leukemia (AML), single nucleotide substitutions of Cytosine->Thymine (C->T) are the most commonly detected mutations in the mitochondrial DNA of the leukemic cells.

Analysis of oligomers differing by only one nucleotide by MALDI-TOF-MS may be a useful screening tool and may offer lower detection levels for ratio of wild type to mutant cells. This poster presents results from MALDI-TOF-MS analysis of a range of concentrations, ratios and oligomer sizes to determine the minimum limits of detection. The lower the limits of detection the better the personalisation of chemotherapy and radiotherapy treatment and the earlier a relapse may be detected.