

**P054** Electrochemical assay for p53-DNA interactions using immunoprecipitation at magnetic beads

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Electrochemical methods in connection with magnetic beads (MB) technology have recently been applied in sequence-specific DNA sensing (DNA hybridization, primer extension-based SNP probing) as well as to detect interactions with some proteins (such as MutS) with DNA anchored at the MB. In this work we used immunoprecipitation at MB to study DNA binding by the tumour suppressor protein p53. The technique relies on capture of the p53-DNA complexes at protein G-coated MB via an anti-p53 antibody, followed by release of DNA from the complex and its voltammetric determination. Electrochemical techniques are sensitive to DNA structure, making thus possible to distinguish between, for example, DNA molecules containing or lacking free ends. Owing to this fact we were able to use label-free voltammetric measurements to follow competitive binding of p53 to various DNA substrates, including linear or supercoiled forms of plasmid DNAs containing or not containing a specific p53 target sequence. Alternatively, electroactive tags such as osmium tetroxide complexes or nitrophenyl-labelled nucleotides, were introduced in oligonucleotide substrates to improve specificity of detection of the sequence-specific p53-DNA binding.