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Letter to the Editor

DNA ploidy and chromosome (FISH) pattern analysis of peripheral nerve sheath tumors

To the Editor,

This report contains highly informative image DNA cytometry and Fluorescence *in situ* Hybridization (FISH) data on the DNA ploidy analysis of peripheral nerve sheath tumors [3]. The FISH analysis used DNA probes specific for centromeric regions combined with automatic image analysis. The data support the notion that the ploidy pattern determination combined with FISH analysis is a highly useful diagnostic tool. The authors conclude that "DNA cytometry gives an 'overview' whereas FISH gives more detailed information". Such studies are to be encouraged to be extended not only to other clinical cases but also are worthwhile to be further developed from the point of FISH methodology. A diagnostically highly relevant long term perspective would be to identify by FISH in such tumor cell populations the cancer stem cells giving rise to malignant growth. Towards this goal, it should be important to promote FISH techniques to the point where not only numerical chromosome enumeration, break point analysis, or large amplifications/deletions contribute to clinical analysis but where detailed FISH analyses will allow to diagnose automatically cancer related genetic instabilities, from the chromosomal level down to microdeletions and amplifications, perhaps even point mutations. Such methods require to develop new FISH strategies, based on highly increased sensitivity, down to short target sequences considerably below the present "commercial" level in the 10 to 100 kbp range. Such developments appear to be possible e.g. applying novel methods such as combinatorial "smart" oligonucleotide FISH using pools of specifically designed, synthesized and fluorescence labelled, single stranded oligonucleotides, or a combination of such oligonucleotides with nanoprobe approaches [1]. For some of these analyses, the combination of such labelling techniques with novel approaches of light optical "nanoscopy" may be needed [2]. Once such novel strategies will have been implemented, they are envisaged to allow on the single cell level a plethora of diagnostic analyses presently possible only with molecular biology tools, usually requiring a large number of cells.

References

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