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Flow-FISH as diagnostic test for telomere length measurement in humans

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The progressive shortening of telomeres and the activation of telomerase have been considered to be one of the key mechanisms in cellular immortalization and tumor progression. Telomere length measurement is an important tool to investigate telomere biology and the contribution of telomere dysfunction to degenerative disorders. Several methods are available to measure telomere length. The majority of studies and diagnostic laboratories apply one of the following methods: (1) terminal restriction fragment (TRF) analysis by Southern blot, (2) fluorescence *in situ* hybridization combined with flow cytometry (flow-FISH), or (3) quantitative PCR (qPCR). We will summarize current data about these methodologies employed in different tools and use different parameters, often hampering comparisons between studies. Flow-FISH has a better performance in the measurement of telomere length of clinical samples but Flow-FISH accuracy, precision, and reproducibility are crucial when diagnosis is the main goal.

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