DNA hairpin folding

DNA custom synthesized by IBA

Short DNA sequences with 3–9 loop nucleotides (thymines, dT), enclosed on both ends by 0–2 complementary nucleotides (cytosine, dC, and guanosine, dG) that can form a stem were custom synthesized by IBA GmbH. Kim et al. labeled these oligos at their 5' end with MR121 via an aliphatic amino modifier C3 using classical N-hydroxysuccinimide (NHS-ester) chemistry. MR121 is a fluorophore which can form nonfluorescent complexes with dG. Upon hairpin-loop formation a change in fluorescence is detectable and the loop formation can be investigated and related to the introduction of complementary stem nucleotides.

Figure: Schematic representation of conformational fluctuations of F-labeled DNA hairpin structures. MR121 (F = fluorophore) is attached at the 5' end and connected via a loop of polythymine (dT) to the intrinsic quencher guanosine (dG). The stem consists of 1 or 2 cytosine (dC, incorporated at the 5' end) and dG (incorporated at the 3' end) pairs. kcl, kop: constants for closing and opening of the hairpin-loop.

(Kindly provided by Prof. Dr. Markus Sauer)
"We were always fully satisfied with the exceptional quality, purity and reliability of the amount of unlabeled and labeled oligonucleotides as well as with the customer support provided by IBA."

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REFERENCES