Optimized Automated Solid Phase Synthesis of Oligonucleotides and Derivatives

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An optimized automated synthesizer is presented for assembling oligonucleotides, thio-oligonucleotides and 5′-modified oligonucleotides including: chemical phosphorylation, multihydroxyl derivatization with a non-nucleosidic phosphoramidite. The incorporation of biotin, fluorescein and rhodamine phosphoramidites is described. The purification and structure determination of oligo-nucleotides was confirmed using high performance liquid chromatography (HPLC), capillary electrophoresis (CE) and laser desorption mass spectrometry (LDMS). Several applications and confirming data will be presented for gene synthesis and polymerase chain reaction (PCR) experiments.

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