

*Title:* **Strategies for the synthesis of trimer DNA building blocks**

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The application of oligonucleotides in the field of medicine has grown lastly due the multiple applications of these molecules. Examples are the treatment of diseases like cancer or, considering the actual situation, the detection of SARS-CoV-2. The applications of the oligonucleotides are broad and are expected to become important drugs for the future in the medicine field. Owing all these facts, it will be required to develop methods to produce an important amount to supply new projects and treatments. The problems to solve in the synthesis of large amounts of this type of molecules are related to the presence of the functional groups around the molecule, the selection of the appropriate protecting groups and different facts that will appear along the project.

This work will consist in the comparison of two different methods to synthesize an oligonucleotide. The objective will be the preparation of protected blocks of two and three units by the coupling of monomer of nucleotides either by the solution coupling method or by solid-phase synthesis. Finally, we will deliberate which method is more efficient to synthesize these oligonucleotide blocks in more quantity and in less time, as well as considering other facts observed during the synthesis.

**Keywords:** medicine, oligonucleotides, dimer, trimer, monomer, nucleotides, solid-phase synthesis, solution synthesis.