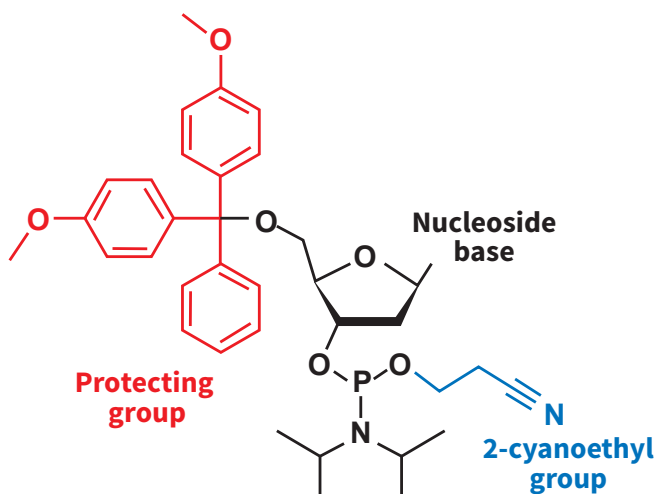


# Comprehensive Phosphoramidite chemistry capabilities for the synthesis of oligonucleotides



Natural DNA consists of nucleotides organized into repeating units that form a chemical chain, with each nucleotide linked to another by the action of enzymes. Creating synthetic DNA requires robust methods that both mimic natural processes and allow for the accurate assembly of custom oligonucleotide sequences. Methods for creating synthetic DNA mimic this process using a validated technology: Phosphoramidite chemistry. Phosphoramidite chemistry is the gold standard method for the synthesis of oligonucleotides and has been used in the industry for almost 35 years. Over the last five years 11 oligonucleotide therapies have been approved and more than 100 are being used for diagnostic applications. Currently more than 100 oligos are in clinical trials. Since the discovery of Phosphoramidite chemistry its high efficiency has allowed large volumes of oligonucleotide sequences to be synthesized up to 200 base pairs in length.

Aragen Life Sciences is a leading service provider for custom peptide synthesis tailored to specific customer requirements. This includes the chemical synthesis of various phosphoramidites with different protecting groups and modifications. Our experienced chemists offer the incorporation of custom modifications into the phosphoramidite backbone, such as fluorophores, labels, or other chemical groups, to meet specific research, diagnostic, or therapeutic requirements. Additionally, Aragen has the capability to scale up the synthesis of phosphoramidites from milligram to multi-gram or even larger quantities, depending on customer needs. Aragen performs extensive quality control measures, including analytical techniques such as NMR spectroscopy, HPLC, and mass spectrometry to validate the chemical structure and purity of the synthesized phosphoramidites."



Phosphoramidites, the chemical building blocks of oligo synthesis, consist of a protecting group (e.g., dimethoxytrityl, DMT) and a cyanoethyl reactive group. Since phosphoramidites are chemically manufactured, they are easy to modify or label for desired characteristics (e.g., thermostability, low immunogenicity, and target specificity).

Phosphoramidites are modified nucleosides and are a standard chemical used in modern DNA synthesis. These molecules permit the sequential addition of new bases to the DNA chain in an exquisitely simple and exceptionally efficient cyclic reaction. A standard phosphoramidite molecule contains a phosphite instead of the typical phosphate in nucleotides, as well as four specific protecting groups. These groups provide stable protection but can be easily removed when necessary. This allows DNA chemists to expose only the reactive centres required to produce a DNA-like molecule, providing a means for tight control over synthesis chemistry. Today, many modified versions of phosphoramidites exist, each with varying properties optimized for specific DNA synthesis processes.

### Aragen's Capabilities in Phosphoramidite chemistry:



Improved Safety



Green Chemistry



Shorter Time



Reduced Cost



Experienced Team

- A dedicated team of scientists for Phosphoramidite synthesis & Nucleoside and Nucleotide analogs.
- Control of impurities and Identification of CPP.
- Purification by resins chromatography and prep. HPLC
- Scale-up and GMP manufacturing
- Process safety studies and Process engineering Laboratory
- Analytical method development and validation

### Unparalleled capabilities to synthesize range of Nucleosides/tides:

- Natural and un-natural purine and pyrimidine base
- Modified sugars at C-2, C-3, C-4 and C-5
- Fluorinated nucleosides
- Phosphoramidate (ProTide) and chiral separation
  - Dioxalane Nucleoside
  - C-Nucleoside
- Deuterated nucleosides
- CPV Nucleoside and mono, di Triphosphates Protides
- Thia and Aza nucleosides

### Highlights:

- One-stop solution for route scouting, process development and manufacturing (from concept to commercial)
- R & D intensive & extensive analytical development
- Identification of phosphitylating agent, amenable for scale-up
- Improving isolation and purification methods
- Introducing Green chemistry – replacing hazardous tetrazole chemistry & oxidizing agents
- Flexible offerings – both FTE and FFS modes

Phosphoramidites play a crucial role in the synthesis of oligos for diagnostic and therapeutic applications. Collaborating with a CRO having extensive experience in phosphoramidite chemistry and with over 20 years of expertise and proficiency in tailoring and delivering top-notch, reliable, and expandable products can expedite the advancement of your oligo-based diagnostics and therapeutics. With a track record of over hundreds of projects for prominent pharmaceutical, biotech, healthcare, and life sciences firms, Aragen possesses the necessary experience in customizing novel nucleic acid technologies and scaling up operations. This positions Aragen perfectly to address your requirements in nucleic acid chemistry for both diagnostic and therapeutic oligos.

Let's begin the conversation

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