

Blockmer™ Oligonucleotide Fragments

Versatile building blocks for efficient linear and convergent oligosynthesis

As the oligonucleotide industry pivots toward large-population diseases and extrahepatic indications, the rising demand for higher API volumes and complex chemistries necessitates a new era of synthesis efficiency.^{1,2}

In an exclusive collaboration with NATIAS, Entegris offers ready-to-use Blockmer Oligonucleotide Fragments in North America and Europe. Blockmers are starting materials of 3 to 10 nucleotides that aid in the manufacture of oligonucleotide therapeutics across a variety of production approaches. Our novel solution phase manufacturing method for Blockmers permits rapid, high-volume supply, allowing for expedited and efficient scale-up of your oligonucleotide manufacturing process.

Blockmers are engineered to improve synthesis efficiency across all linear and convergent synthesis processes. Their modular architecture allows precise control of protecting groups, internucleotide linkages, and terminal functionalities. Customized Blockmers support solid phase oligosynthesis (SPOS), liquid phase oligosynthesis (LPOS), and enzymatic manufacturing workflows while reducing impurity burden, accelerating development, and shortening time-to-clinic. Blockmers provide innovators and CDMOs with the freedom to optimize yield, purity, and cost.

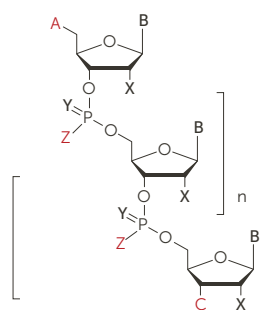
Blockmer Use Cases

01 SPOS Couple Blockmers instead of monomers for higher purity and yields

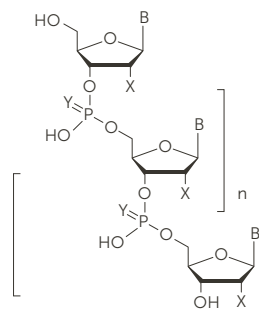
02 Solid Support Attachment Add Blockmers directly to solid supports such as CPG

03 LPOS Use Blockmers in place of monomers for more efficient liquid phase synthesis

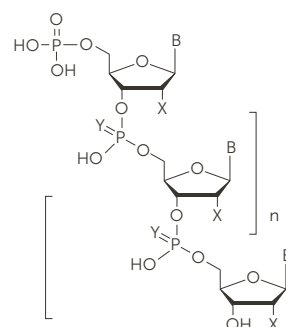
04 Hybrid Use Blockmers to enable enzymatic ligation or biocatalytic convergent synthesis



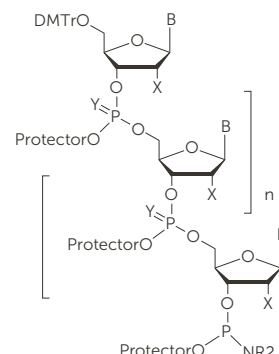
General Blockmer structure



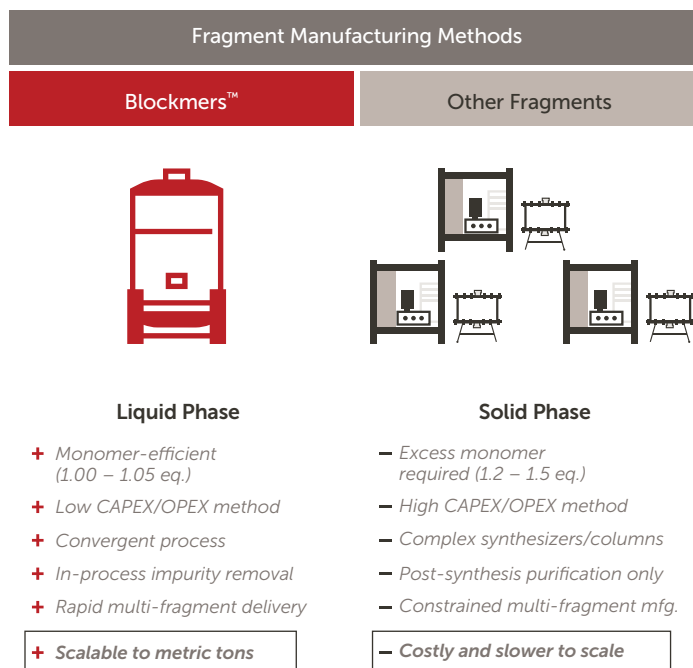
Blockmer fragment



Blockmer fragment 5' phosphorylated



Blockmer amidite




The high productivity of our liquid-phase fragment manufacturing method make Blockmers suitable for gram to ton-scale oligosynthesis, whether you utilize SPOS, LPOS, or hybrid synthesis for your API.


Blockmers Benefit Both Process Development and Manufacturing Groups

Blockmer feature	Advantages	Who benefits?
Flexible 5' protection options	Tailored synthesis workflows using DMT, MMT, hydroxyl, terminally phosphorylated, or custom groups to match process and scale requirements	Process development
Internucleotide linkage control	Support for phosphate and phosphorothioate linkages, enabling sequence flexibility	Process development
Configurable 3' functionality	Choice of cyanoethyl amidite, allyl amidite, hydroxyl, or custom designs for phosphoramidite synthesis or ligation flexibility	Process development
Broad base and sugar modifications	Compatibility with DNA, 2'-F, 2'-OMe, 2'-MOE, LNA, and other custom chemistries which support diverse oligonucleotide modalities	Process development
Solution-phase production	Direct scaling from gram to metric ton quantities with consistent quality and improved manufacturing efficiency	CDMOs and manufacturing
Multi-platform compatibility	Seamless integration across synthesis platforms reducing process constraints and enabling hybrid manufacturing strategies	CDMOs and manufacturing


Why Blockmers?




Higher Purity
Reduced N-1 impurities through convergent synthesis approaches




Higher Yield
Improved yields and batch-to-batch consistency



Scalable
Customized fragments enable seamless scaleup from g to metric ton



Sustainable
Reduced solvent consumption and process mass intensity



Future-Proof
Flexible platform for use across linear and convergent synthesis

References

¹ AlShaer, Danah, *Pharmaceuticals*, MDPI, 2026, 19, 244

² Blog, 13 Mar. 2025, [What's Next in Oligo Manufacturing: Oligo Modification Tools, Blockmers, and High Purity Starting Materials](#) | Hapatune

LEARN MORE

No other company has both the expertise and experience to provide transformative new solutions for your processes. For more information, please contact [customer service](#).



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