

ANTIBODY DISCOVERY

Synthetic gene and gene fragment solutions for drug development research



Reliable & fast turnaround times



High-quality dsDNA fragments



Easy to scale for automation

HIGH-THROUGHPUT SOLUTIONS FOR FAST ANTIBODY DISCOVERY & OPTIMIZATION

The drug discovery process includes steps from target assessment to lead optimization and applies a variety of molecular engineering and synthetic biology methods. IDT has several gene and gene fragment solutions that can help with this early discovery phase.

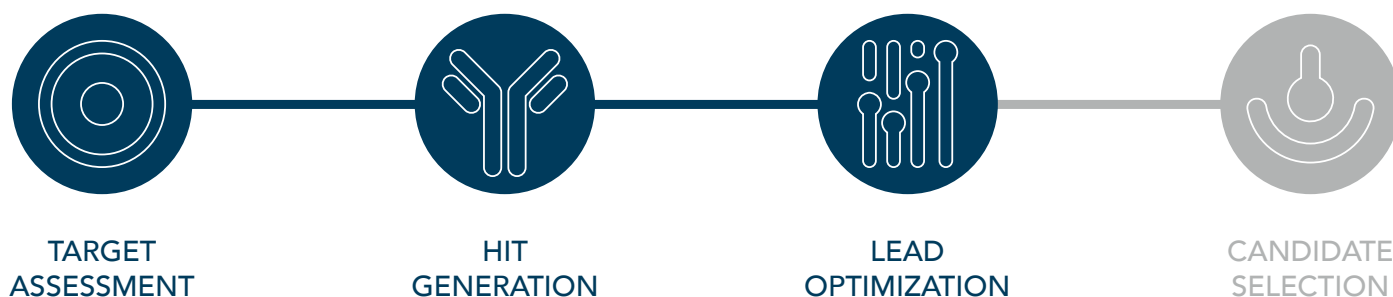


Figure 1. Antibody drug discovery workflow.

UTILIZING SYNTHETIC DNA FRAGMENTS FOR HIT GENERATION

Researchers can use several methods to generate antibodies. Synthetic DNA fragments are particularly useful when generating antibody fragments, such as single-domain nanobodies, which are easier to produce than traditional monoclonal antibodies, making them ideal for antibody-antigen interaction studies and to help identify potential hits for a desired drug target.

IDT offers three types of double-stranded DNA fragments: **gBlocks™ Gene Fragments**, **gBlocks HiFi Gene Fragments**, and **eBlocks™ Gene Fragments**. These fragments allow for convenient cloning of the antibody of choice and are also useful for a variety of *in vitro* selection techniques like phage or yeast display.

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IDT GENE FRAGMENTS ARE A SCALABLE SOLUTION FOR HIGH-THROUGHPUT SCREENING

During the hit generation phase, hundreds of antibody variants may be generated and subsequently profiled. Identification of which hits have high titers and have reached pre-selection criteria for affinity, selectivity, and toxicity, is made easier with synthetic gene fragments from IDT (in particular, eBlocks Gene Fragments) as they are complementary to high-throughput screening approaches that may be used during this phase.

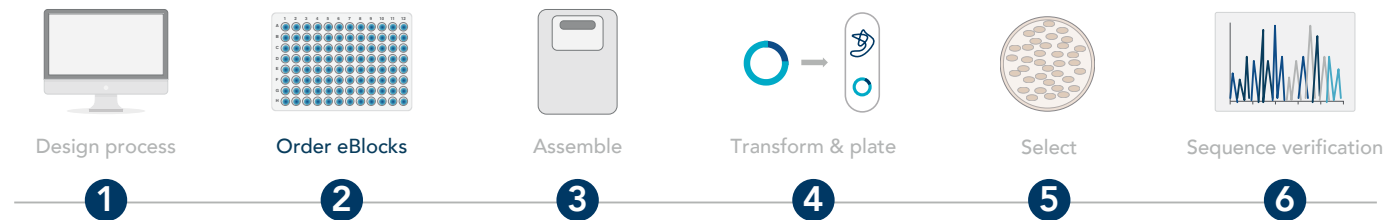


Figure 2. Automating high-throughput workflows. Researchers can design custom and ready-to-use gene fragments for DNA assembly, transformation, plating, and sequence verification steps for high-throughput screening in antibody discovery workflows.

SYNTHESIZING AND OPTIMIZING LEADS WITH DSDNA FRAGMENTS

Before selecting which leads to move forward as the therapeutic antibody candidate, promising leads can be further optimized. During the lead optimization phase, lead antibody molecules are selected, and additional alterations of the sequences can be done to improve efficacy and safety, as well as binding affinity. IDT **gene fragments** can be used to synthesize and optimize these sections (e.g., humanization via the Fc region or creation of bi-specifics), or site-directed mutagenesis libraries can be created. For researchers that prefer to skip cloning in-house, complete genes, which are cloned into vectors, can be **ordered**.

PRODUCT SUMMARY

	eBlocks™ Gene Fragments	gBlocks™ Gene Fragments	gBlocks™ HiFi Gene Fragments	Gene synthesis	Rapid Genes
Category	Linear dsDNA fragment	Linear dsDNA fragment	Linear dsDNA fragment	dsDNA cloned in a plasmid	dsDNA cloned in a plasmid
Available lengths (bp)	300–1,500	125–3,000	1,000–3,000	25–5,000+	125–2,000
Median error rate	1:5,000	1:5,000	1:12,000	N/A*	N/A*
Estimated shipping time (business days)	1–3	2–8**	6–10	8–12	5–8
Yield	200 ng	250–1,000 ng	1000 ng	3 µg to 100 µg	1 µg
Format	Plate	Tube or Plate	Tube	Tube or Plate	Plate
Application	Screening and antibody discovery	Gene construction and controls	Gene construction, pathway design, in vitro transcription	Protein expression and large constructs	Screening and antibody discovery

* Clonal genes contain no mutations present above IDT's sequencer-noise threshold.

** This estimated shipping time is for tubes only. Plates estimated ship date is 10–15 business days.

RELATED PRODUCTS

Antibody discovery workflow stage	IDT—related products
Target assessment	Alt-R™ Custom CRISPR gRNA Libraries, rhAmpSeq™ CRISPR Analysis System, xGen™ NGS products
Hit generation	oPools™ Oligo Pools, Ultramer™ DNA Oligonucleotides
Lead optimization	xGen™ NGS products, oPools Oligo Pools

> FOR MORE INFORMATION, VISIT WWW.IDTDNA.COM/ANTIBODYDISCOVERY

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