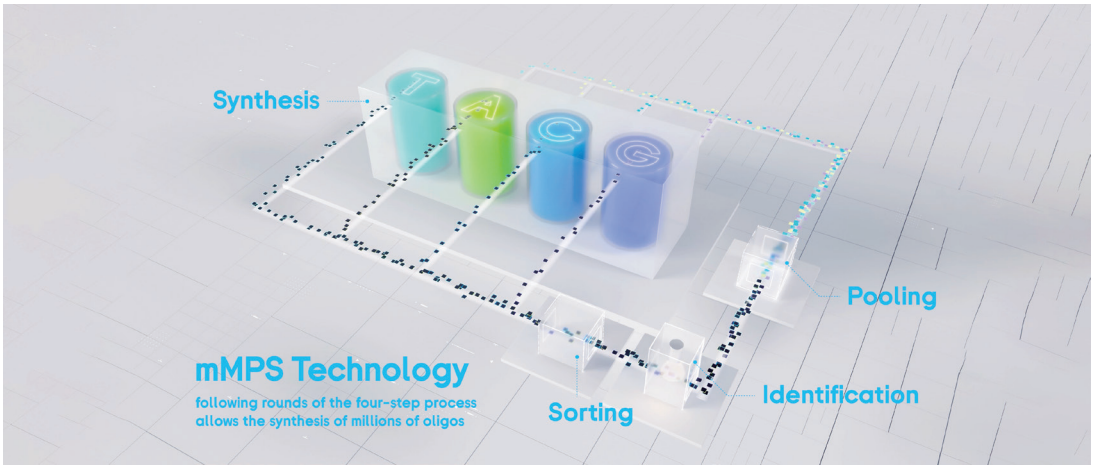
Advancing life science with Synbio innovation

High-throughput Gene Synthesis

GCATbio is revolutionizing high-throughput gene synthesis by leveraging novel oligo synthesis and cutting edge assembly tools to deliver high quality, low cost genes. The underlying DNA synthesizer, called mMPS (microchip-based Massive in Parallel Synthesis) produces up to 100,000 oligos per run with unmatched yield, precision, and flexibility. Coupled with 100% NGS sequence verification, this platform empowers laboratories to tackle large-scale synthetic biology projects at a cost that's within reach of nearly all budgets.

In addition to gene synthesis, the mMPS synthesizer also supports diverse applications, including ultra pure oligo synthesis, chromosome synthesis, variant library construction, DNA storage, and beyond.

HIGH-THROUGHPUT GENE SYNTHESIS WORKFLOW



DNA Sequence Design
Intelligent Automated Software Design

DNA Synthesis
mMPS High-throughput DNA Synthesizer(>10^5 Oligos /run)

Gene Assembly
Highly Efficient Automated DNA Assembly

Sequence Verification
High-throughput Verification (>1000 genes/run)

KEY BENEFITS

High throughput:
Annual synthesis capacity exceeding 1 billion base pairs; 100% verified by high-throughput sequencing

Highly automated:
An industry-leading modular automation platform, ensuring high efficiency and stable quality

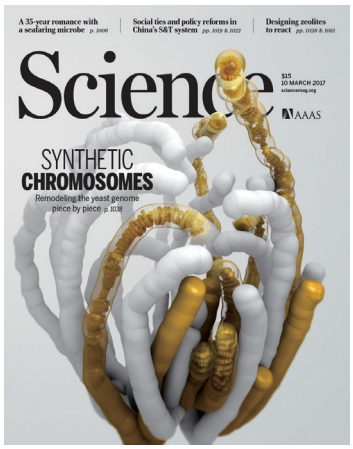
Extensive genome synthesis experience:
Supports projects involving the synthesis of chromosomes and genomes at Mbp level

High-throughput Gene Synthesis

GCATbio

CASE

01 Synthesis of Eukaryotic Chromosomes (Sc2.0)



Several core members of GCATbio have made significant contributions to the Sc2.0 project. GCATbio's proprietary high-throughput gene synthesis platform supported the synthesis of three million bases, one quarter of the whole genome. The team also developed SynGenomeDesigner, a software platform for efficient and automated hierarchical genome design. This platform is suitable to efficiently assemble genomes for various model organisms including *E. coli, C.elegans etc.*

02 Applications in DNA Storage

The DNA data storage research is greatly supported by the high-throughput gene synthesis platform, which synthesized and assembled more than 54 Kb ultra-long fragments. Their sequences are verified to 100% accurate by NGS sequencing.

References

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Deep functional analysis of synII, a 770-kilobase synthetic yeast chromosome[J]. Science, 2017, 355(6329): eaaf4791.

Ping Z, Chen S, Zhou G, et al. Towards practical and robust DNA-based data archiving using the yin–yang codec system[J]. Nature Computational Science, 2022, 2(4): 234-242.

Boost your scientific endeavors with GCATbio High-throughput Gene Synthesis

1. Upload Order Information
2. Sequence Analysis And Optimization
3. DNA Synthesis And Assembly
4. Cloning Into Vector
5. Sequencing Verification
6. Delivery

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