Circular ssDNA Synthesis

GenCefe Biotech has successfully developed circular single-stranded DNA (CssDNA) synthesis technology, providing researchers in gene expression, gene therapy, and vaccine development with a powerful new tool.

- **Enhanced Stability:** The circular DNA structure prevents degradation in cells, ensuring long-term stable expression.
- **High Transfection Efficiency:** Compared to linear DNA, CssDNA offers superior transfection efficiency, making it particularly suitable for gene therapy and DNA vaccine development.
- **Versatile Applications:** Whether for gene expression vectors, virology studies, nanotechnology, or gene editing, our CssDNA provides reliable and stable support.
- **Custom Solutions:** From sequence design to synthesis, we offer fully customized services to meet your specific research needs.

Case Study: Successfully synthesized 80 nt circular DNA (CssDNA)

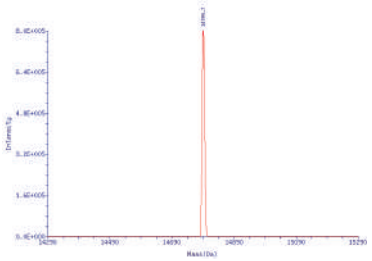
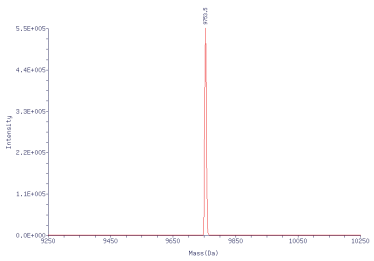


Fig. 1-1. MS before cyclization



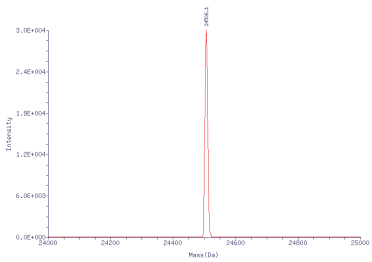
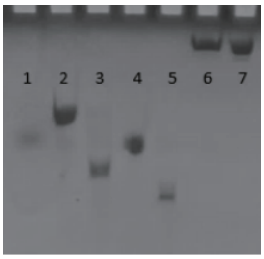


Fig. 1-2. MS after cyclization

Fig. 1 According to MS, the difference in target MV before and after cyclization is about 37, which is consistent with the expected characteristics of linearized DNA cyclization in the experimental design. In this project, 2 H_2O molecules are removed during the cyclization of linearized DNA, and the MV is expected to decrease by ~36 after cyclization.



1: Marker
2: Linear DNA fragment 1
3: Linear DNA fragment 1 treated with linear digestion enzyme (digested)
4: Linear DNA fragment 2
5: Linear DNA fragment 2 treated with linear digestion enzyme (digested)
6: Circular DNA
7: Circular DNA treated with linear digestion enzyme (undigested)

Fig. 2 Verification of DNA cyclization using linear DNA digestion enzyme. Under the same experimental conditions, both linear and circular DNA were treated with linear digestion enzyme. The linear DNA was digested, while the circular DNA showed no significant change.

Service Specifications

	Length	Turnaround Time	Order
CssDNA Synthesis	≤60 nt	7+ days	Get a Quote
	61-100 nt	Get a Quote	Get a Quote

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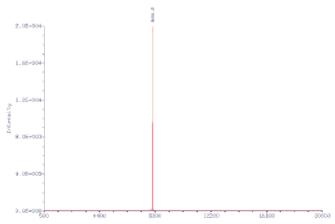
circRNA Synthesis

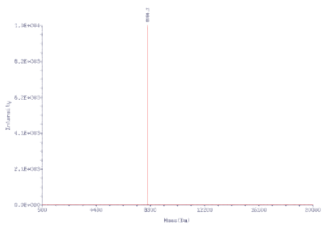
GenCefe Biotech has successfully developed a chemical synthesis technology for circRNA, complementing our in vitro transcription (IVT) circRNA platform. This enables us to provide tailored circRNA solutions with varying lengths and purity to meet your diverse research needs.

- **Dual-Platform Technology:** With both chemical synthesis and IVT platforms, we can produce circRNA of different lengths, modifications, and applications, ensuring flexibility for your research.
- **Chemical Synthesis Platform:** Specializing in short circRNA segments, we offer high-purity, high-yield, and fast-turnaround synthesis, ideal for miRNA sponges and functional fragment screening.
- **IVT Platform:** Designed for efficient synthesis of long circRNA (≥200 nt), suitable for functional studies and drug development.
- **Expert Team:** With extensive experience in circular oligonucleotide synthesis, our team provides professional technical support and fully customized services to meet your specific requirements.

Case Study: Successfully synthesized 25 nt circRNA

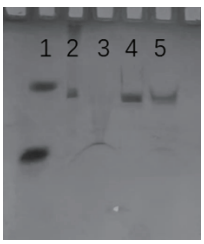


Left: LC-MS during the cyclization reaction



Right: LC-MS after the cyclization reaction

Fig. 1 The target molecular weight before and after cyclization differs by 17.6, which is consistent with the characteristics of linearized RNA cyclization. During the cyclization of linearized RNA, an additional phosphodiester bond is formed, and a water molecule is removed, resulting in a decrease in molecular weight of 18.



1: Marker
2: Linear RNA
3: Linear RNA treated with linear digestion enzyme (digested)
4: Circular RNA
5: Circular RNA treated with linear digestion enzyme (undigested)

Fig. 2 Verification of RNA cyclization using linear RNA digestion enzyme. Linear and circular RNA fragments of the same size were treated with linear digestion enzyme. The linear RNA was digested, while the circular RNA showed no significant change.

Service Specifications

	Length	Turnaround Time	Order
circRNA Synthesis	≤60 nt	7+ days	Get a Quote
	61-100 nt	Get a Quote	Get a Quote
IVT circRNA	>200 nt	2+ weeks	Get a Quote

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