Why Synthetic RNA?

The benefits of synthetic RNA over plasmid-derived or *in vitro*-transcribed (IVT) guides include faster transfection readiness, greater accuracy and consistency, less laboratory time and lower labor costs. Because synthetic RNA is 100% DNA-free, there's no risk of integrating foreign DNA into cell lines.

There is no need to design, construct, sequence verify and purify plasmid DNA for every guide you want to test. And there's no need to spend hours working with expensive IVT kits.

Synthetic RNA has the advantage, particularly when forming a ribonucleoprotein (RNP) complex, of improving editing efficiency and consistency while reducing off-target effects.

Speed

Compared to plasmid-based RNA guides, there is no need to design, construct, sequence verify and purify plasmid DNA for every guide you want to test. And there's no need to spend precious lab hours working with expensive IVT kits.

Quality

Consistently pure RNA synthesis results in consistent CRISPR genome editing. By controlling the quality and exact amount of RNA for your transfection or microinjection, the highest on-target editing efficiency can be achieved.

Accuracy

When forming RNP complexes with Cas9, you will get the cleanest possible edits. After transfection and genome editing have occurred, Cas9 and exogenous RNA will degrade. The probability of off-target effects are greatly reduced.

Price

Synthetic RNA offers an unbeatable price point when compared to the cost (and labor) of preparing guide RNA through plasmid or IVT methods. Synthego can synthesize sgRNA and cr:tracrRNA at smaller scales than anyone else in the industry – meaning you only pay for what you need.

Throughput

Synthetic RNA offers the kind of scalability not feasible with other traditional guide RNA generation techniques. Synthego allows you to order libraries of thousands of guide RNAs to test – avoid huge amounts of labor and costs involved in creating guides using plasmids or IVT methods.

Easy to Use

Once a target sequence has been selected, it's easy to order RNA oligos through our online portal – which makes it as simple to order RNA for a single target as it does for a hundred. Once you click order, just sit back, relax and wait for your lyophilized RNA to show up in a few days.

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CRISPRevolution Synthetic RNA vs. Plasmid and IVT

	CRISPRevolution	Plasmid	IVT
Process	1. Choose target sequence 2. Order synthetic RNA from Synthego	1. Choose target sequence 2. Design/order DNA primers 3. PCR insert 4. Ligate into plasmid 5. Transform into cells 6. Screen cells 7. Sequence verify plasmid 8. Purify plasmid DNA	1. Choose target sequence 2. Design/order DNA primers 3. Assemble guide by PCR 4. Perform IVT 5. Purify guide RNA
Time to Transfection	Ready for transfection	7-14 days	1-3 days
Transfection Labor Time	Minimal	Days of lab work	Full day of lab work
Off-target Effects	Lowest	Variable	Variable
Efficiency	Up to 90% efficiency	Variable	Variable
Consistency	Highest	Variable	Variable

Trusted by Scientists

Customers around the globe depend on Synthego products for CRISPR genome engineering and research. Synthego is collaborating with many of the top life sciences universities to conduct CRISPR research in applications such as human stem cells, adherent cell lines and mouse embryos.

MIT · Johns Hopkins University · UCSF · Broad Institute · NIH · Stanford

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