



Synthgene one-stop animal mRNA vaccine solution

Raw material product

Cap analogs, modified nucleotides, nucleotides, customized services

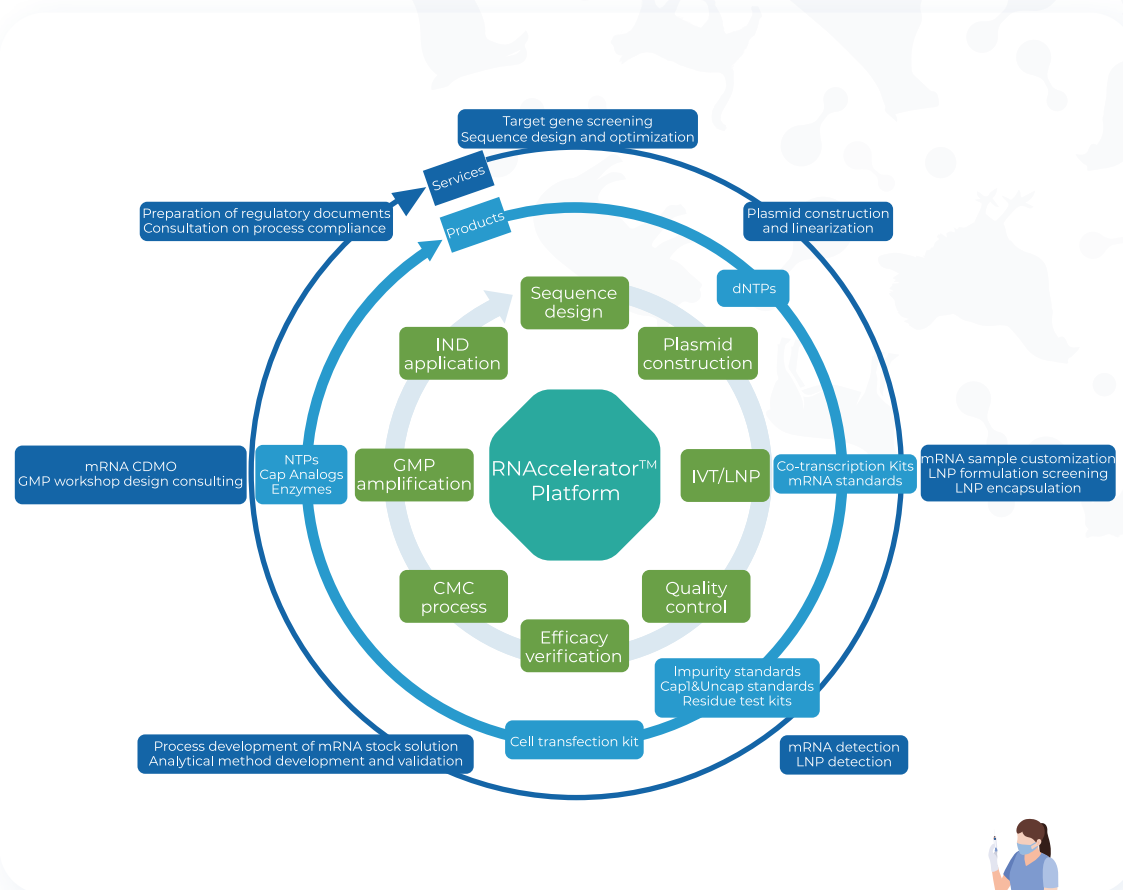


Technology platform

Nucleotides chemistry platform, Sequence design optimization platform, IVT platform, Screening platform

Characteristic service

Providing a full set of services from sequence design optimization, plasmid construction, IVT, LNP encapsulation, quality control, efficacy verification, CMC process, GMP amplification and filing, etc



Controllable cost of self-produced raw materials



Cap Analogs



Modified Nucleotides



Nucleotides

Sequence design optimization platform by AI

Sequence design



VS



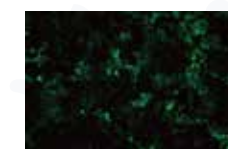
Sequence optimization



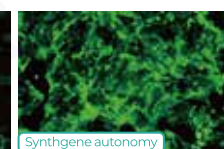
VS



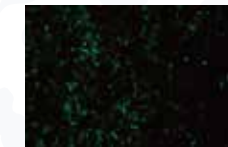
Autonomous and efficient mRNA delivery system



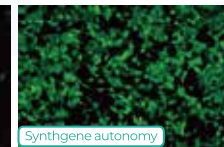
Pig (Sus scrofa)
PK-15 commercial LNP delivery



Pig (Sus scrofa)
PK-15 B5 delivery



Cow (Bos taurus)
MDBK commercial LNP delivery



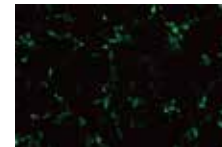
Cow (Bos taurus)
MDBK A4 delivery



Sheep (Ovis aries)
SK commercial LNP delivery



Sheep (Ovis aries)
SK E9 delivery



Dog (Canis lupus familiaris)
MDCK commercial LNP delivery



Dog (Canis lupus familiaris)
MDCK F11 delivery

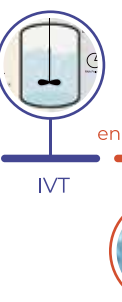
mRNA preparation process response



Sequence design optimization



Plasmid construction



IVT



LNP encapsulation



Quality control



Efficacy verification



CMC process



GMP amplification



Filing



Synthgene's
RNAccelerator™
Platform

Accelerate Animal mRNA Research



ABOUT US

Synthgene Biotechnology Co., Ltd. is a company that provides materials and services to support mRNA and oligonucleotide manufacturing. Founded in 2018 by a group of passionate nucleic acid chemists, the goal of the company is to debottle-neck the raw material supply and develop innovative solutions to support customers in the industry. The company has a robust quality system and ISO9001 certification to support cGMP manufacturing of mRNA raw materials that include NTPs, modified NTPs and cap analogs. For the GMP raw materials, Drug Master Files have been filed with FDA. In addition, Synthgene offers analytical development service and mRNA-related impurity standards and detection kits, LNP screening service, IVT process development and IVT kits for mRNA research. For solid-phase DNA and RNA synthesis, Synthgene offers high quality phosphoramidites to support cGMP oligo manufacturing. With over 200 people in R&D and AI-assisted discovery platform, Synthgene will continue to bring new products to the market.

DEVELOPMENT NOTES

2021.01

Moved into the new location with more than 20000 m²

2021.10

Anhui site was qualified to manufacture GMP raw materials at metric ton scale

2022.03

Raised over 300 million RMB in Series A+ funding

2022.06

Drug Master Files on selected NTPs and cap analogs were filed with FDA

2022.08

Nominated as a "Unicorn" company by the City of Nanjing

2023.07

Areterna LLC, Synthgene's US subsidiary, was founded in 2023

2023.08

1.2 billion RMB nucleic acid drug raw material base landed in Yixing

Pain points of animal disease prevention and control



01 Numerous pathogens with high variation

03 Poor vaccines effectiveness

05 Poor cost control

02 Difficulty in isolation and cultivation of pathogens

04 Poor vaccines safety

- FMD vaccines:** There are many strains of the virus, and the cross protection of existing vaccines is insufficient; synthetic peptides and inactivated vaccines cannot fully activate immune protective reactions.
- Rabies vaccines:** Inactivated vaccines require multiple immunizations to be effective; the cost of existing commercialized vaccines is relatively high.
- PRRS vaccines:** The strain has strong variability and the cross protection of existing vaccines is poor; the efficacy of inactivated vaccines is low; the attenuated vaccines have an ADE effect and carry the risk of recombination with field strains.
- ASF vaccines:** The virus has high pathogenicity and complex genome; the mechanisms of invasion, pathogenesis, and immune escape are complex; the protection of inactivated vaccines is poor; there are safety issues with inactivated vaccines and their development is difficult.

Animal mRNA vaccine

A new tool for animal disease prevention and control

	Inactivated Vaccines	Live Attenuated Vaccines	Recombinant Protein vaccine	Recombinant Live Vected Vaccines	DNA Vaccines	RNA vaccine
Strong humoral immune responses	●●	●●●●	●●	●●●●	●●	●●●●
Strong cellular immune responses	●	●●	●	●●●●	●●	●●●●
Rapid development and production	●●	●	●●	●●	●●●●	●●●●
Discrimination between infected and vaccinated animals	●	●	●●●●	●●●●	●●●●	●●●●
Multivalent vaccine	●	●	●●	●●	●●●●	●●●●
Infectious	×	●●	×	●●	×	×
Risk at genetic integration or mutation	×	●	×	●	●●	×
Adjuvants required	●	×	●	×/●	×/●	×

Low production cost



High security



Convenient production



Short research & development cycle



Wide immunization scenes



High titer

