Overall Solution for Oligo Synthesis Synthesizer

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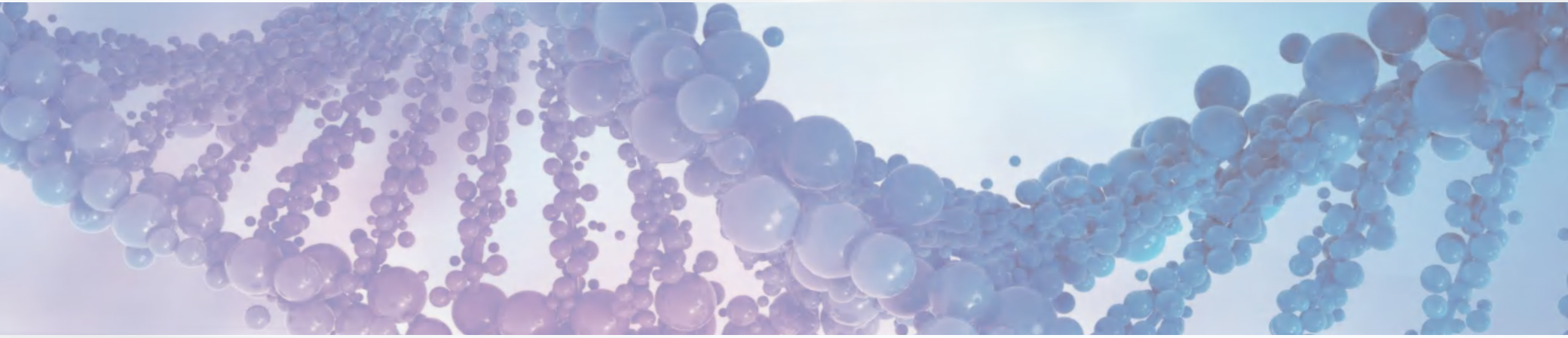
About us



Yocell Biotechnology is your trusted partner in the field of bioprocess. Yocell has a team of energetic young scientists and engineers. From initial R&D to production, we are committed to providing the most reliable solutions for biotechnology scientists and engineers around the world. Accepting the challenges of continuous innovation in biotechnology and solving problems from multiple perspectives are the most impressive qualities of the team.

Pragmatic

Always listen carefully to your needs and provide the most competitive solutions.

Efficient

Respond quickly and have a strong supply chain to ensure fast delivery.

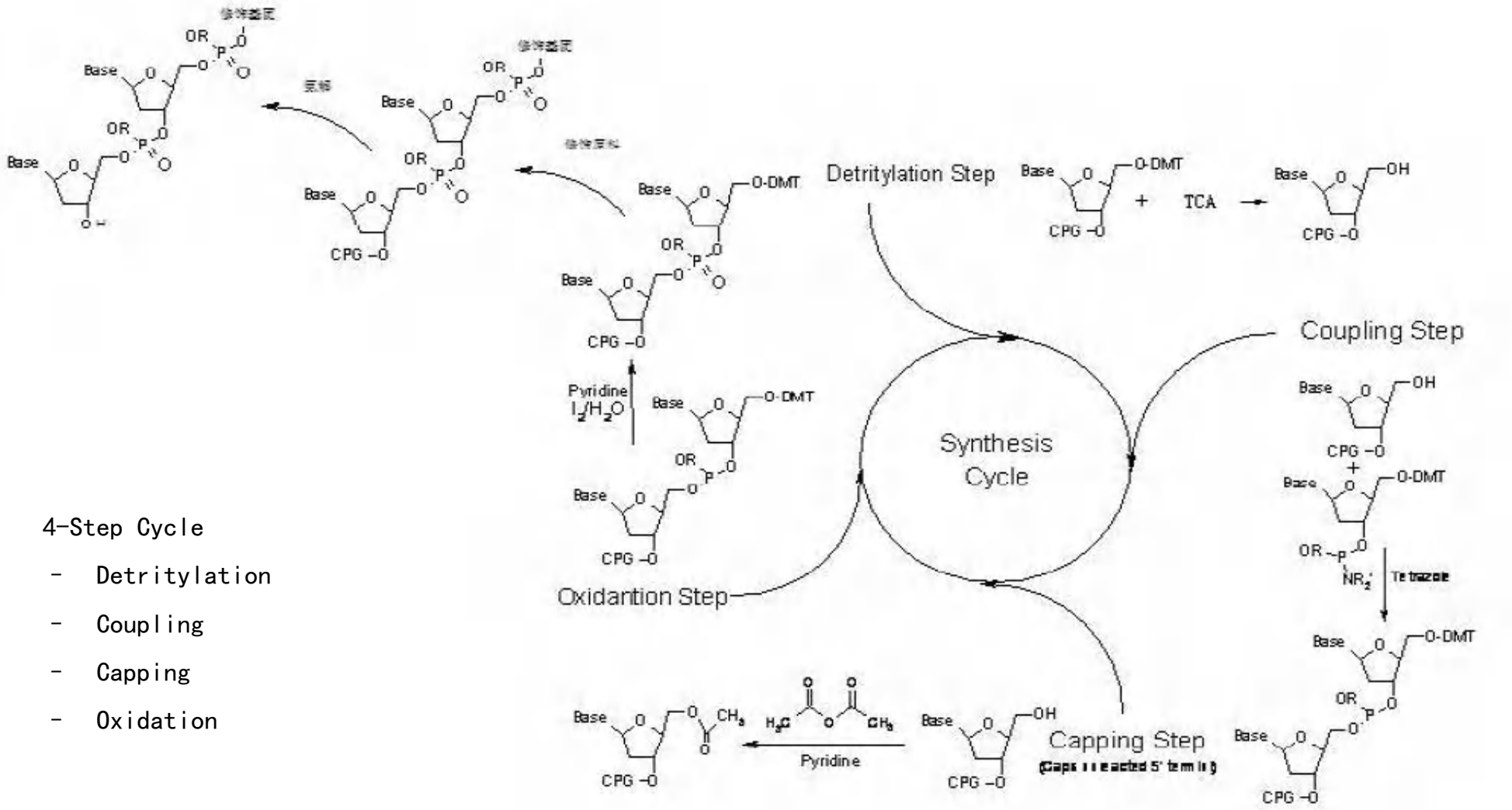
Focus

Continuous attention and passion for innovation in the field of biotechnology control.

Advantages

	Other suppliers	Yocell
Synthesizer	Property rights unknow	• Complete patents and independent intellectual property rights to meet customers'needs for auditing
Synthetic Reagents & Raw Materials	None	• Full set of synthetic reagents • No.1 in market share
Synthesis Technology	None	• Complete synthesis technology solutions
Automation upgrade	None	• Upgraded synchronously • Rapid automated system enable our daily output of 50,000 oligos
After-sales maintence	None	• 18 domestic cities with engineers • 24-hour customer service online

Synthesis Principle



4-Step Cycle

- Detritylation
- Coupling
- Capping
- Oxidation

Parameters Comparison of Synthesizers

Specifications \ Catalog Number	Syn-HL12	Syn-HCY-12P（Dedicated for Nucleic Acid Drugs）	Syn-HCY-24P	Syn-HCY-96P	Syn-HCY-192P/384	Syn-HCY-768P
Multiple programs	**Support**	**Support**	**Support**	**Support**	Not supported	Not supported
DMT detection	**Support**	**Support**	**Support**	Not supported	Not supported	Not supported
Temperature, humidity, and liquid level monitoring	**Support**	**Support**	**Support**	Not supported	Not supported	Not supported
Throughput per run	1	12	24	96	192	768
Synthesis capacity per column	100μmol-12mmol	100n-3μmol/3-200μmol	100nmol-3μmol	25nmol-3μmol	25nmol-3μmol	2-50nmole
Amidite positions (types)	**18**	**10-28**	**10-28**	24	4-20（Scalable & Customizable）	4-6（Scalable & Customizable）
Reagent positions (types)	12	7-9	7-9	9	6	6
Single cycle synthesis time	20-45min	≤6min	≤6min	6-7min	≤6.5min	≤6.5min
Dimensions (mm)	700*550*870	850*550*1050	850*550*1050	1090*713*918	1200*700*680	1200*700*680
Types of synthesized products	DNA / RNA / LNA / Probes / Nucleic Acid Drugs				DNA Gene Synthesis	
Protective Gas: Nitrogen/Argon, Purity ≥ 99.9%;Temperature: 15-25℃;Humidity: ≤ 30%RH;Power: 1500W						

High-Capacity Nucleic Acid Synthesizer

Syn-HL12

Application

The Yocell Syn-HL12 High-Capacity Nucleic Acid Synthesizer is mainly used for synthesizing nucleic acids such as DNA, RNA, and special monomers (LNA, dU, dI), as well as thio-modified nucleic acids. It is suitable for clinical research, pharmaceutical development, and the synthesis of molecular diagnostic probes, and is designed specifically for laboratory research and process development. The instrument supports a robust and scalable oligonucleotide synthesis process, covering large-scale nucleic acid synthesis up to 12 mmol.

Performance

1. Synthesis Scale: 200 nM – 12 mM
2. Synthesis Channel: 1
3. Synthesis Length: ≤ 80 nt
4. Synthesis Efficiency: > 99% for DNA; > 98.8% for RNA
5. Monomer Reagents: 18
6. Auxiliary Reagents: 12
7. Cycle Time: 20 – 45 min
8. Pump Speed: 0 – 200 mL/min (single pump)
9. Solid Support Type: Resin, CPG
10. Synthesis Types: DNA, RNA, LNA; 5'-end modifications (FAM, etc.); 3'-end modifications (NH_2, MGB-, BHQ series, etc.); thio, OME, F-substituted, 2'-O-MOE, etc.
11. Monomer Equivalents: 2 – 2.5 fold
12. Monitoring Types: UV (200–700 nm), conductivity, pH, pressure, flow rate
13. System Protection: Argon or nitrogen
14. Inlet Pressure: 0.3 – 0.35 bar
15. Valves: 7 low dead-volume valves
16. Chemical Solvent Compatibility: Compatible with common DNA/RNA synthesis reagents, including acetonitrile, deprotection, coupling, capping, oxidation, and thio reagents
17. Power Supply: AC 110–220 V, 50–60 Hz
18. Maximum Power: 1500 W

Dimension

1. 700 × 550 × 870 mm (L × W × H), Weight: 65 kg

Delivery

1. Syn-HL12: 1 unit

High Throughput Oligo Synthesizer-12P

12

Syn-HCY-12P

Application

High throughput synthesizer-12P is mainly used for synthesizing DNA, RNA, special monomers (LNA, dU, dI) and thio- modified types, which is suitable for the research and development of general synthesis, detection probes, special modified markers, nucleic acid nanomaterials and nucleic acid drugs.The equipment can be used for the synthesis of 12 oligonucleotides in less than 2 hours by setting different programs for different synthesis columns, with a single column yield of 10 nmol to 100 µmol.

Performance

1. Independent synthesis of 1 to 12 sequences with a fully isolated fluid path design. Both monomers and reagents utilize separate lines with no shared tubing, minimizing the impact of cross-contamination and residual impurities.
2. Supports simultaneous execution of multiple synthesis programs to meet the flexible synthesis requirements of different monomers.
3. Cycle time for standard bases is less than 6 minutes.
4. Capable of synthesizing DNA, RNA, and modified oligonucleotides.
5. Single-channel synthesis scale: 100nmol - 3µmol or 3 - 200µmol.
6. Coupling efficiency ≥ 99%.
7. Amidite positions: 10 - 28 types; Auxiliary reagent positions: 7 - 9 types (scalable).
8. Automatic power-off protection with auto-shutdown upon completion of synthesis.
9. Synthesis program controls: Pause, cancel, and mid-synthesis modification functions.
10. Inert gas chamber to ensure high coupling efficiency.
11. Optional upgrades: DMT detection, liquid level monitoring, and temperature/humidity monitoring..

Dimension

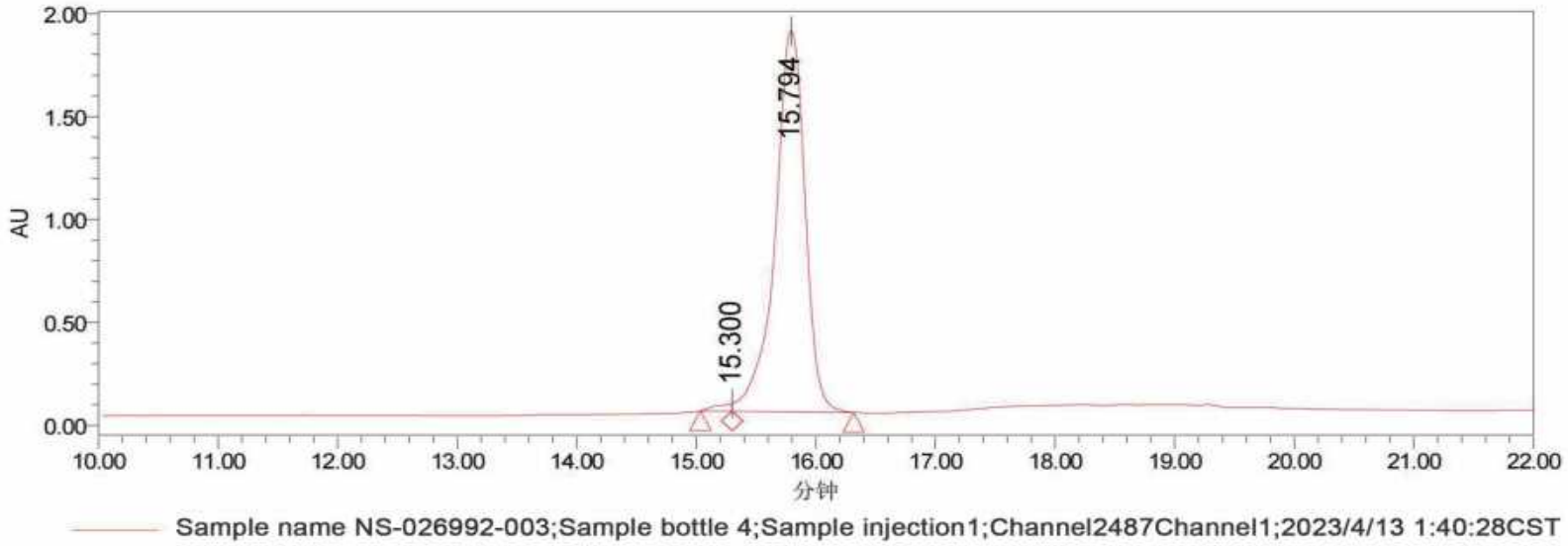
850*550*1050mm (LxWxH), 35kg weight

Delivery

1. Syn-HCY-12P: 1 unit
2. Special customization options are available, such as adding additional amidite positions.

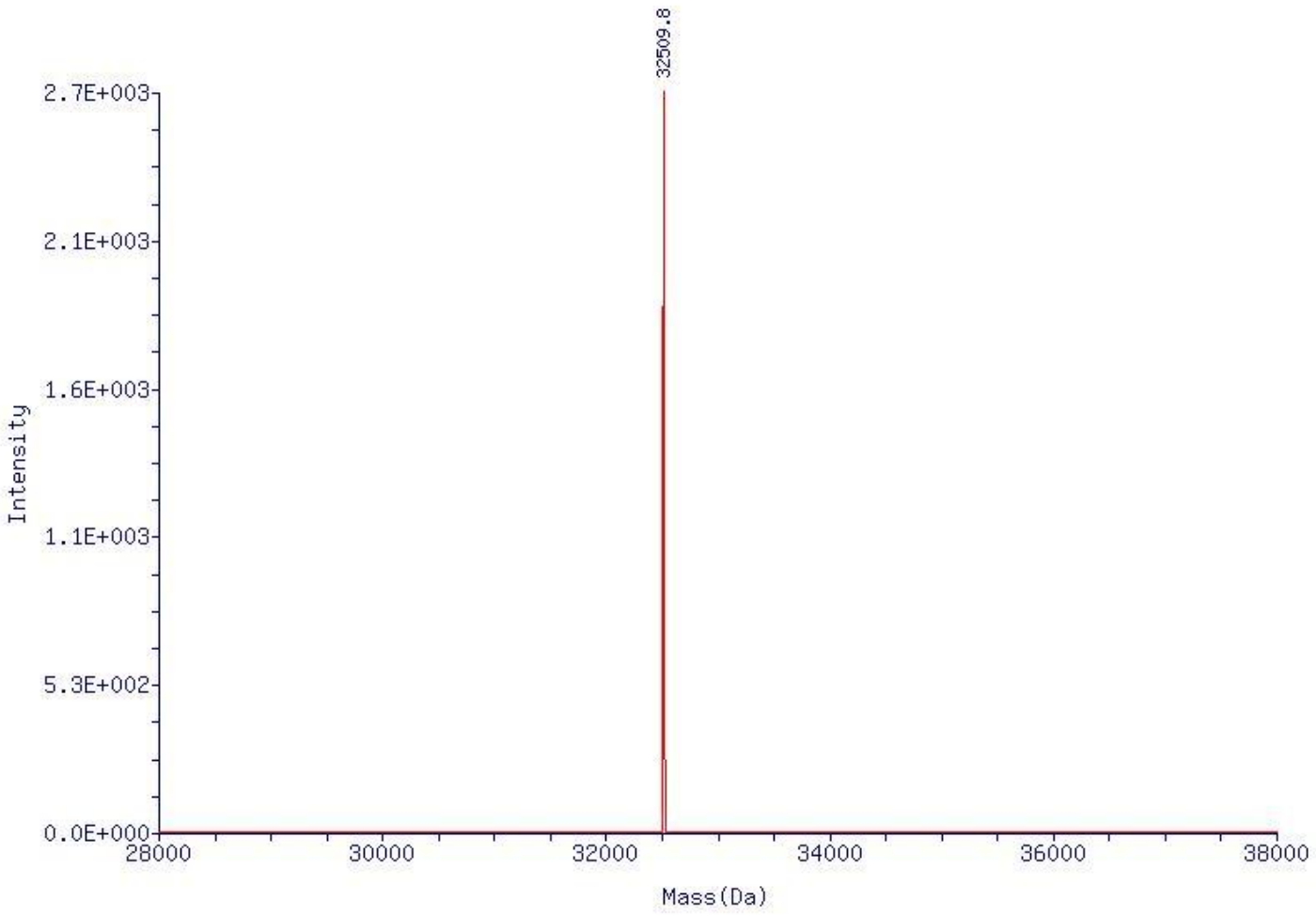
103nt sgRNA synthesis

synthesize 103nt sgRNA, 200nmole column,
50-60nmole crude products, HPLC 5nmole, purity over 90%



	Sample name	Retention time (min)	Area (μV · s)	Height (μV)	% Area
1	NS-026992-003	15.794	32148715	1852305	98.94
2	NS-026992-003	15.300	343771	37204	1.06

100nt Mass Spectrometry



High Throughput Oligo Synthesizer-24P

24

Syn-HCY-24P

Application

High throughput synthesizer-24P is mainly used for synthesizing DNA, RNA, special monomers (LNA, dU, dI) and thio- modified types, which is suitable for the research and development of general synthesis, detection probes, special modified markers, nucleic acid nanomaterials and nucleic acid drugs.The equipment can be used for the synthesis of 24 oligonucleotides in less than 2 hours by setting different programs for different synthesis columns, with a single column yield of 25 nmol to 3 µmol.

Performance

1. Independent synthesis of 1 to 24 sequences with a fully isolated fluid path design. Both monomers and reagents utilize separate lines with no shared tubing, minimizing the impact of cross-contamination and residual impurities.
2. Supports simultaneous execution of multiple synthesis programs to meet the flexible synthesis requirements of different monomers.
3. Cycle time for standard bases is less than 6 minutes.
4. Capable of synthesizing DNA, RNA, and modified oligonucleotides.
5. Single-channel synthesis scale: 25nmol - 3µmol.
6. Coupling efficiency ≥ 99%.
7. Amidite positions: 10 - 28 types; Auxiliary reagent positions: 7 - 9 types (scalable).
8. Automatic power-off protection with auto-shutdown upon completion of synthesis.
9. Synthesis program controls: Pause, cancel, and mid-synthesis modification functions.
10. Inert gas chamber to ensure high coupling efficiency.
11. Optional upgrades: DMT detection, liquid level monitoring, and temperature/humidity monitoring..

Dimension

850*550*1050mm (LxWxH), 35kg weight

Delivery

1. Syn-HCY-24P: 1 unit
2. Special customization options are available, such as adding additional amidite positions.

High Throughput Oligo Synthesizer-96P

96

Syn-HCY-96P

Application

High Throughput Oligo Synthesizer-96P is mainly used for synthesizing nucleic acids such as DNA, RNA, special monomers (LNA, dU, dI), and thio-modified nucleic acids. It is suitable for research and development in fields such as general synthesis, detection probes, specially modified labeled probes, modified primers, and nucleic acid drugs.With a single-channel yield of 25 nmol to 3 µmol, this equipment is ideal for research institutions or enterprises requiring the rapid synthesis of multiple oligonucleotides.

Performance

1. Amidite positions: 24; Auxiliary reagent positions: 9
2. Capable of synthesizing 96 columns in one run, with support for 12 simultaneous synthesis programs
3. Synthesis of DNA, RNA, and modified oligonucleotides
4. Single-channel synthesis scale: 25 nmol - 3µmol
5. Coupling efficiency ≥ 99%
6. Synthesis product length ≥ 200 bases
7. Cycle time: 6 - 7 minutes
8. Automatic power-off protection with auto-shutdown after synthesis completion
9. Synthesis program controls: pause, cancel, and mid-synthesis modification
10. Synthesis data logging function
11. Amidite/reagent delivery method: rapid single-row 8- well dispensing
12. Amidite/reagent driving method: protective gas displacement
13. During operation, the height of pressurized reagent bottles is less than 1.5 meters, effectively ensuring operator safety

Dimension

1090*713*918mm (LxWxH), 85kg weight

Delivery

1. Syn-HCY-96P: 1 unit
2. Special customization options are available, such as adding additional amidite positions.

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High Throughput Oligo Synthesizer-192P

192

Syn-HCY-192P

Application

High Throughput Oligo Synthesizer-192P is mainly used for synthesizing nucleic acids such as DNA, RNA, special monomers (LNA, dU, dI), and thio-modified nucleic acids. It is suitable for research and development in fields such as general synthesis, detection probes, specially modified labeled probes, modified primers, and nucleic acid drugs.With a single-channel yield of 25 nmol to 3 µmol, this equipment is ideal for research institutions or enterprises requiring the rapid synthesis of multiple oligonucleotides.

Performance

1. Amidite positions: 8; Auxiliary reagent positions: 7
2. 2×96-well synthesis plates, totaling 192 synthesis columns
3. Capable of synthesizing DNA, RNA, and modified oligonucleotides
4. Single - channel synthesis scale: 25 nmol - 3µmol
5. Coupling efficiency ≥ 99%
6. Synthesis product length ≥ 200 bases
7. Cycle time ≤ 6.5 minutes
8. Automatic power-off protection with auto - shutdown after synthesis completion
9. Synthesis program controls: pause, cancel, and mid - synthesis modification
10. Synthesis data logging function
11. Amidite/reagent delivery method: rapid single - row 8 - well dispensing
12. Amidite/reagent driving method: protective gas displacement
13. During operation, the height of pressurized reagent bottles is less than 1.5 meters, effectively ensuring operator safety.

Dimension

1200*700*680mm (LxWxH), 80kg weight

Delivery

1. Syn-HCY-192P: 1 unit
2. Special customization options are available, such as adding additional amidite positions.

High-Throughput Nucleic Acid Purification System-192

Syn-CHY-192

Application

High-Throughput Nucleic Acid Purification System-192 is designed for use with the High-Throughput Nucleic Acid Synthesizer-192P. It is primarily used for the automated deprotection and purification of DNA synthesis primers, capable of purifying 2×96-well plates in 12 minutes.Featuring 2 fixed plate positions and powerful functionality, it offers thorough elution, speed, convenience, and time - saving benefits. This system is ideal for enterprises and R&D institutions requiring the deprotection and purification of large - volume DNA products.

Performance

1. Capable of purifying 2×96 - well plates within 12 minutes, effectively removing DMT, desalting, and removing certain protecting groups after ammonolysis.
2. Utilizes a 1 - to - 8 channel solenoid valve bank to precisely control reagent dispensing, with 8 channels operating simultaneously.
3. Supports dispensing of up to 5 different reagents.
4. All fluid paths use PTFE tubing for reagent delivery, providing excellent corrosion resistance and preventing contamination.
5. Features an imported PEEK material needle plate and 316L seamless stainless steel capillary needles, ensuring accurate positioning, no splashing, minimal reagent waste, corrosion resistance, and uniform, column - shaped liquid output.
6. Enables rapid waste discharge from synthesis columns, with left and right chambers controlled independently to avoid mutual interference.
7. Temperature requirement: 20℃ ~ 25℃.
8. Relative humidity: 20%RH ~ 50%RH, with no condensation.
9. Air cleanliness requirement: Dust - free environment.
10. Power supply requirement: AC220V.

Dimension

1、1200*700*680mm (LxWxH), 80kg weight

Delivery

1. Syn-HCY-192P: 1 unit
2. Industrial Tablet PC: 1 unit

High-Throughput Nucleic Acid Purification System-768

Syn-CHY-768

Application

High-Throughput Nucleic Acid Purification System-768 is designed for use with the High-Throughput Nucleic Acid Synthesizer-768B. It is primarily used for the automated deprotection and purification of DNA synthesis primers, capable of purifying 2×384-well plates in 12 minutes.Featuring 2 fixed plate positions and powerful functionality, it offers thorough elution, speed, convenience, and time - saving benefits. This system is ideal for enterprises and R&D institutions requiring the deprotection and purification of large - volume DNA products.

Performance

1.Purification of up to 768 primers using 2×384 - well plates.

2. One- click purification for simple and fast operation.

3. Reagent bottle positions: 5×1 (4L bottle each).

4. Single- run purification time: ≤12 minutes.

5. Reagent discharge method: Positive pressure blow- out.

6. Purification data logging function.

7. Purification programs are editable and customizable.

8. Temperature requirement: 20℃ ~ 25℃.

9. Relative humidity: 20%RH ~ 50%RH, no condensation.

10. Air cleanliness requirement: Dust - free.

11. Power supply requirement: AC220V.

Dimension

1、1200*700*680mm (LxWxH), 80kg weight

Delivery

1. Syn-HCY-192P: 1 unit

2. Industrial Tablet PC: 1 unit

Dissolution instrument-4C

Syn-RJY-4C

Introduction

The dissolution instrument-4C is mainly used for dissolving different amidites in different channels in equal molar amounts, and is suitable for using in laboratories and synthetic production enterprises.

Technical indicators

1. Punching accuracy: 5ul
2. 4 channels
3. Mode of beating liquid: automatic beating liquid/timing beating liquid
4. Independent channels to prevent cross-contamination
5. Rated voltage: 220V

Dimension

500*350*560mm (L*W*H), weight: 8kg

Delivery

Syn-RJY-4C : 1 unit

Ammonolyser

Syn-AJY-5L

Introduction

Ammonolyser is used for post-synthesis ammonolysis. It can be used for the simultaneous ammonolysis of several 96-well synthetic plates.The temperature of the ammonia digester is adjusted by a temperature-controlled device. The ammonia digester is filled with ammonia gas and a certain pressure is built up.

Technical indicators

1. Support 2 96-well plates with 192 primers for ammonia resolution.
2. 550KPa safety pressure protection, overpressure electronic alarm and automatically stop the air intake, while the mechanical safety valve automatically exhaust to reduce the pressure,triple safety protection.
3. 600KPa high pressure automatic rapid exhaust pressure relief.
4. 90℃/2H rapid ammonolysis, cutting efficiency ≥99%
5. Musical cues at the end of the ammonolysis reaction.

Working environment

1. Temperature requirement:20℃~25℃.
2. Ventilation requirements: must be placed in the fume hood.
3. Air cleanliness requirements: none.
4. Power requirements: AC220V
5. Power:1100W

Dimensions

1.600*400*400(L*W*H), weight 40kg

Delivery

1. Syn-AJY-5L : 1 unit
2.96-well plate placement rack 1 set.

High throughput Oligo dispenser-1C

Syn-FZY-1C 1V

Introduction

Disspenser-1C is mainly used for accurate dilution,dispensing and oligo fading after purification. It adopts the upper computer control system and multi-axis servo motor drive, the whole dispensing process is accurate and efficient. Pipetting of 96-well plates to 96 centrifuge tubes in minutes. The pipetting program is imported directly from the table, which is easy to operate and the precise motor movement makes the pipetting volume more accurate.

Technical indicators

1.Dispensing modes: 96 - well plate to 96 - well plate, 96 - well plate to 120 - well plate, 384 - well plate to 384 - well plate, 384 - well plate to 120 - well plate;

2. Dispensing channels: 1;

3. Contamination - preventive pipetting path, effectively avoiding cross - contamination;.

Working environment

1. Temperature requirement: 20℃~25℃

2. Relative humidity: 20%RH~50%RH,non-condensing

3. Air cleanliness requirements: no dust

4. Power requirement: AC220V

5. Power:1100W

Dimension

1090*804*900(L*W*H) Weight: 90kg

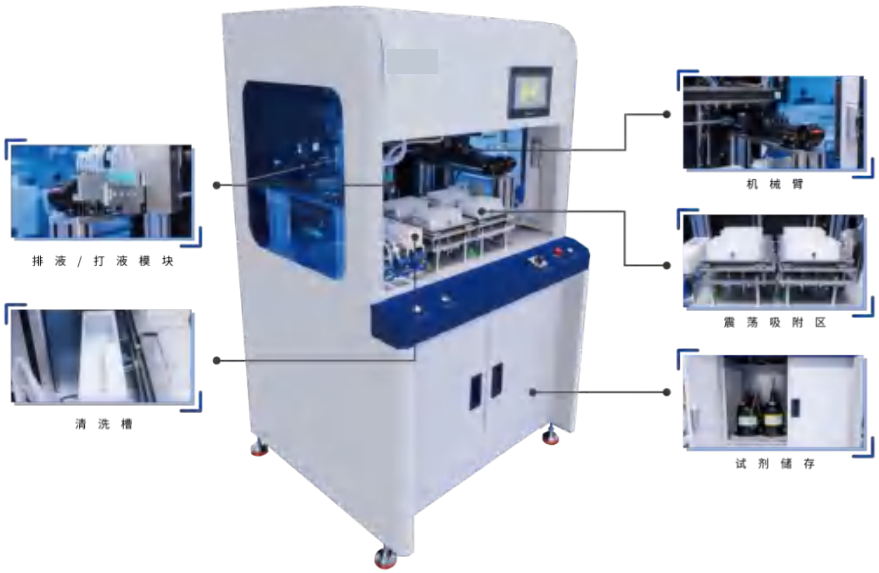
Delivery

1. Syn-FZY-1C IV : 1 unit

2. Industrial all-in-one computer 1 set

3. 120-well plate centrifuge tube bracket 16 pieces

High-throughput nucleic acid extraction and purification workstation



Seq-TQY-4

Introduction

The High - Throughput Nucleic Acid Extraction System is mainly used for the extraction of various types of samples, such as DNA or RNA, plasmids, viruses, as well as the purification of PCR products. It requires no personnel intervention and features one - click start and fast extraction speed. It is compatible with a variety of equipment and instruments to achieve a fully automated laboratory workflow.

Technical indicators

1. Integrated equipment design with efficient reagent storage, saving laboratory space.
2. The entire nucleic acid extraction process requires no additional consumables and no pre-aliquoted reagents.
3. 8-channel simultaneous pipetting with independent X and Y axis movement for fast, precise operation and flexible workflow adaptation.
4. Processing capacity: 4×96 samples per 30 minutes, capable of extracting up to 10,000 samples per day.
5. Flexible program editing and simple operation, enabling "one - click start."
6. Closed- tube extraction to minimize introduction of contaminants.
7. Automatic waste collection for safe and environmentally friendly operation.
8. Self - cleaning function with UV disinfection after each run.

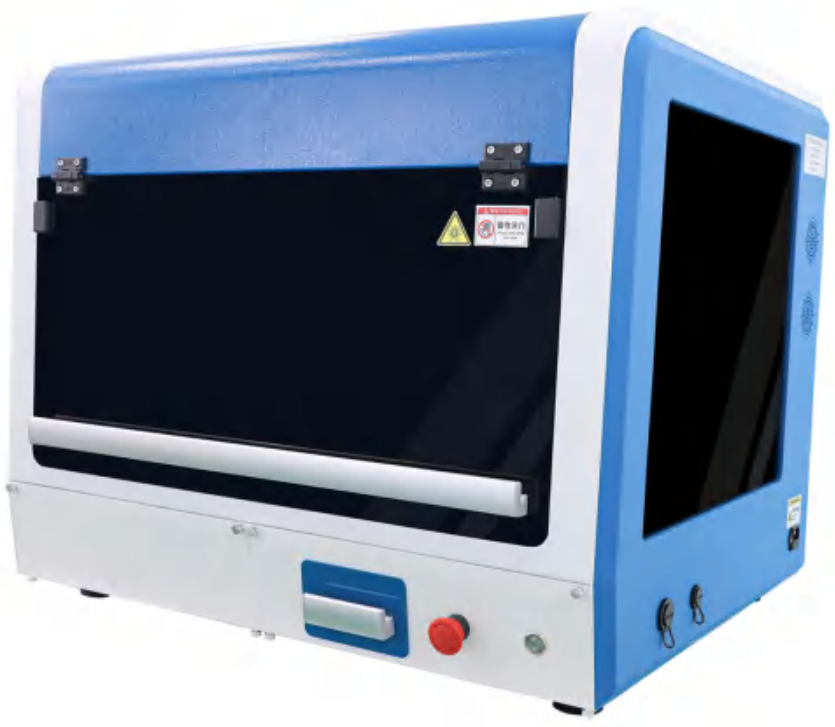
Dimension

850mm*800mm*1450mm(L*W*H) Weight: 115kg

Delivery

1. Seq-TQY-4 : 1 unit

High-throughput Glue Cutter



Seq-QJY-1C

Introduction

High-throughput glue cutter can realize automatic glue imaging, and complete automatic glue cutting, avoiding UV irradiation when cutting glue by human. The device irradiates the glue block from below by UV light, displays the strips in the dark room, identifies the location of each strip according to the camera and inputs it into the software system. The software determines the strip location based on the data information, then controls the movement of the relevant mechanical arm,which drives the glue cutting module to remove the corresponding strip.

Technical indicators

1. Applicable samples:200*245mm recycling glue
2. Sample flux 96 bars
3. reagent consumables type 96-well plate
4. Nucleic acid content≥100ng
5. Recovery rate≥90%
6. UV lamp:8w*6pcs
7. Reflection wavelength:365nm
8. Glue cutting tool:1 glue cutting head
9. Transmission filter plate size:200*245mm
10. Recognizable fragment:100-5000bp.

Working environment

1. Temperature:25±40℃ 2. Humidity:≤90%RH 3. Strip size:7*3mm 4. Rated voltage:220V

Dimension

Device size:820x580x661mm (L*W*H).

Delivery

1. Seq-QJY-1C ：1 unit

Vacuum Centrifugal Concentrator (equipped with cold trap and vacuum pump)

Syn-NSY

Introduction

The centrifugal concentrator uses a combination of centrifugal force, vacuum, and heating to rapidly evaporate solvents from samples, thereby achieving sample concentration. It is widely used in biology, microbiology, biochemistry, pharmaceutical research, analytical chemistry, and other fields.

Technical indicators

1. Rotation speed (r/min): 0–1500
2. Temperature range: room temperature to 80°C, adjustable in 0.1°C increments
3. Total power: 500 W
4. Concentration time: 0–99 h 59 min
5. Rotor: 0.2–50 ml.

Dimension

520*350*240mm (L*W*H).

Delivery

1. Syn-NSY : 1 unit

Corrosion-Resistant Rotor Dehumidification System

Syn-CSJ

Introduction

The corrosion - resistant rotor dehumidification system can strictly control the temperature and humidity inside the synthesis chamber through a combination of mechanical buttons and humidity control.

Technical indicators

1. Input voltage: 220 V / 50 Hz
2. Input power: 5.5 kW
3. Maximum input current: 24 A
4. Operating environment: −20 ~ +70 ℃
5. Storage temperature: −20 ℃ ~ +70 ℃
6. Dehumidification capacity: 3 kg/h
7. Test conditions: T = 20 ℃, RH = 60%
8. Regeneration air flow: 200 m³/h (150 Pa), Φ100 mm
9. Process air flow: 600 m³/h (200 Pa), Φ160 mm
10. Regeneration heating method: PTC + SCR precise temperature control
11. Rotor size: 550 × 200 mm
12. Control method: Mechanical buttons + humidity control
13. Process air filter: G4 primary aluminum alloy, washable, corrosion- resistant
14. Regeneration air filter: G4 primary aluminum alloy, washable, corrosion- resistant
15. Control logic: MCU + customizable
16. Noise level: 60 dB.

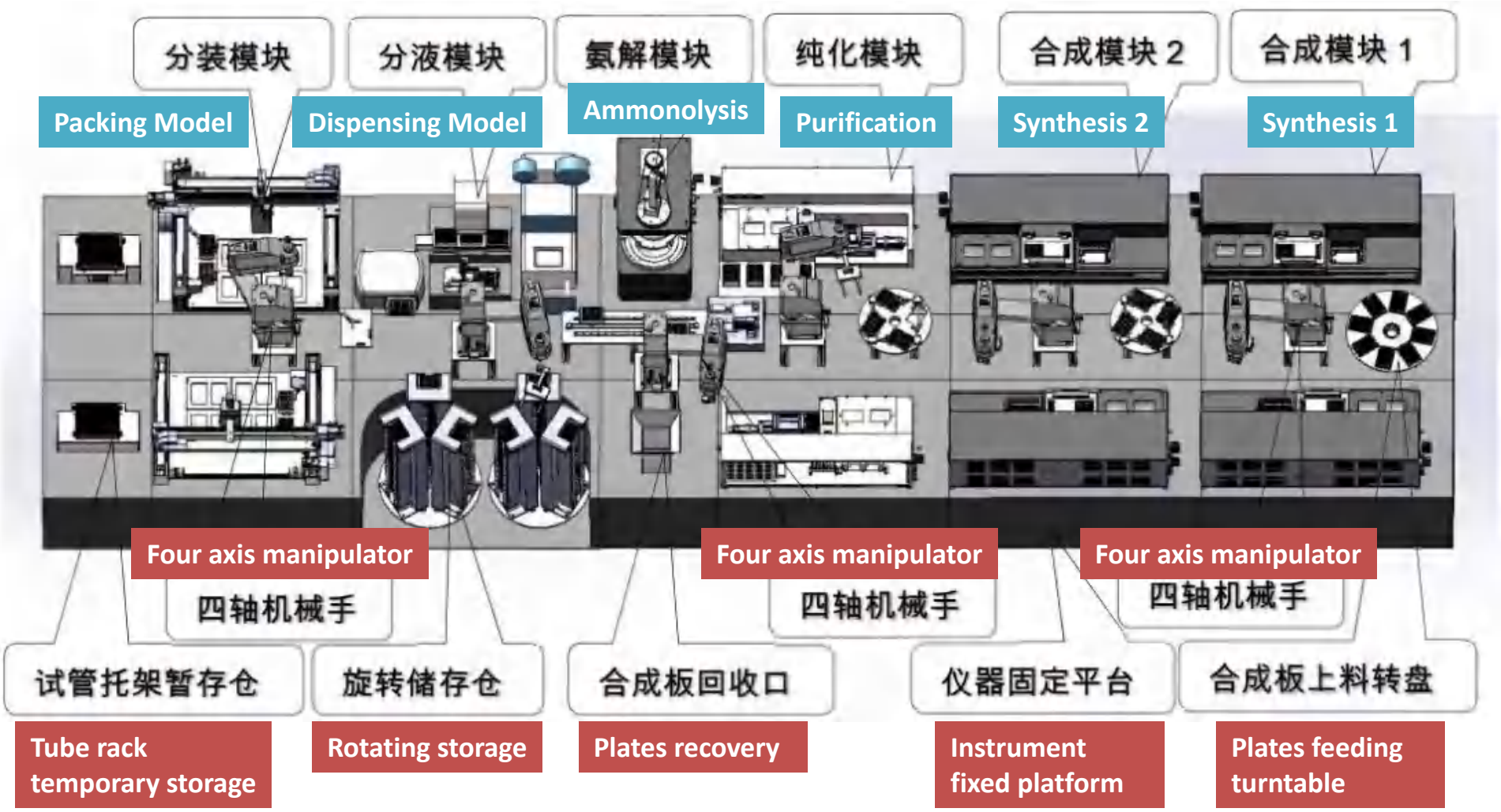
Dimension

1. Unit dimensions: 930 mm*513 mm*622 mm (L*W*H)
2. Packaging dimensions: 1200 mm * 700 mm * 900 mm (L*W*H)
3. Net weight / Gross weight: 62 kg.

Delivery

1. Syn-CSJ : 1 unit

Synthesis Automation Solutions



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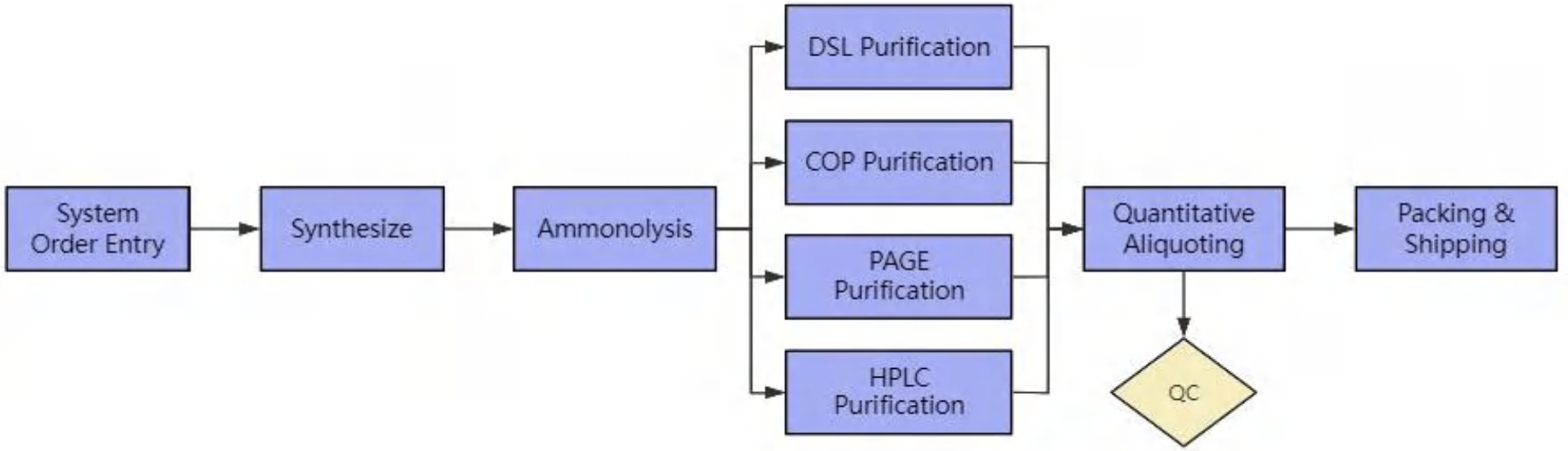
Oligonucleotide Synthesis Process Flow
(More detailed process specifications will be provided after cooperation)



Synthesizer
Independently Developed

Ammonolysis System
Independently Developed Leading Domestic Technology

Purification System

Measuring Instrument
High- throughput, stable between batches

Dispensing System
Independently developed, high degree of automation

Quality Control Instruments
MS, CE, HPLC, etc.

Gene Synthesis Process Flow
(More detailed process specifications will be provided after cooperation)