



Sino Biological Inc

A Worldwide Leading Provider of Reagents and
CRO Services

CONTENT



Corporate Overview



Technology Platforms



CRO Services

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Corporate Overview

66,000 sq ft lab & office space
25,000 sq ft GMP facility



Our people

~400 Employees & growing
30% of staff with masters or PhD Degree



Core Business

Products: genes, proteins, antibodies, and cell culture supporting reagents
Services: recombinant expression, antibody development, and biological assays

Global Presence

30+ Global Distributors
Customers in 90+ countries



Your distributor in Switzerland

LubioScience GmbH
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+41 (0)41 417 02 80

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www.lubio.ch



Philadelphia, PA, US.



Headquarter in Beijing, China

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Technology Platforms

Sino's Technology Platforms

Recombinant Expression

- 3 major expression systems
- Recombinant proteins
- Recombinant antibodies

Antibody Development

- Mouse mAb
- Rabbit mAb
- Rabbit pAb
- ELISA kit development

Bioassays

- Molecular biology
- Immunoassays
- Physical-chemical testing
- Cellular assays
- Viral neutralization assays

Current Capacities

Number of Bioreactors In-House:

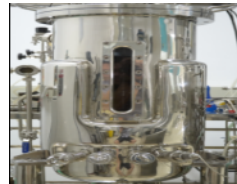
8L—10; 20L— 20;
40L—10; 50L— 6;
100L—3; 250L—3;
300L—1; 500L—1;
750L—1; 1500L—1.

Number of Shaking Incubators In-House : 20+

>600 flasks(20mL~200mL) per week

mg-g level production

From plate to flask, from 8L to 750L Bioreactors

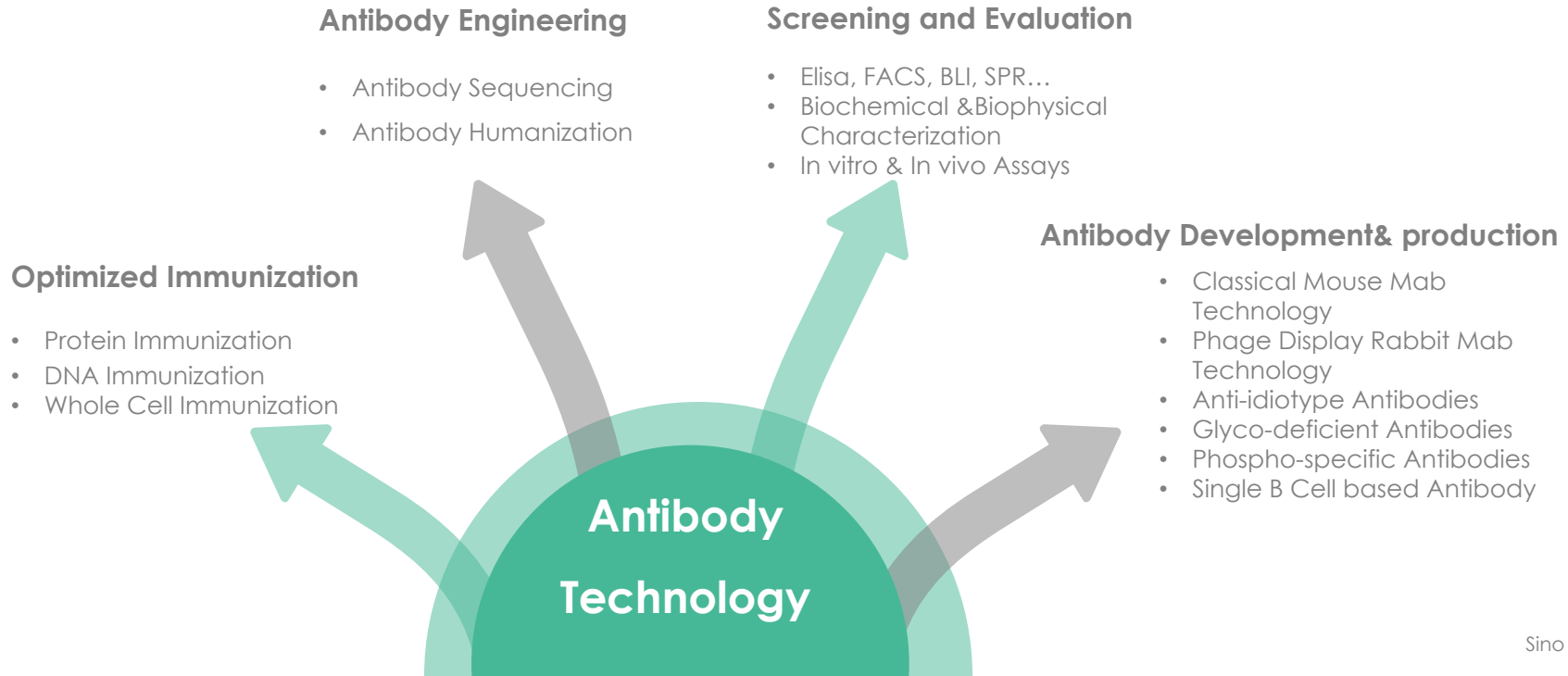


Recombinant Production Service

- Four expression systems
HEK293, CHO, Insect cells, and E. coli
- Over 5000 projects completed
- 6-8 weeks from gene synthesis to protein



Antibody Technology Platform



03

CRO Services

Sino's CRO Services

Recombinant Expression

Recombinant antibody

- HEK293/CHO
- **HTP antibody production** (50+ Abs)
- **From mg to gram level**

Recombinant protein

- HEK293/CHO
- Baculovirus-insect
- E. coli
- Starting from gene synthesis

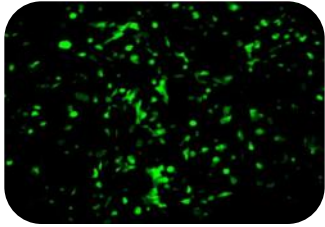
- Hybridoma sequencing & culture service

Antibody Development

Antibody development

- Mouse mAb (hybrdomas)
- Rabbit mAb (phage display/single B cell sorting)
- Rabbit pAb
- ELISA kit development
- **Various service packages**

Recombinant Expression Platform



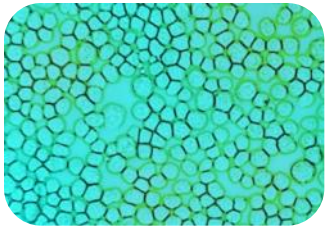
HEK293/ CHO cell

- Sino Biological's mammalian transient expression system, mainly using **CHO** and **HEK293** as expression hosts, can provide flexible services from proteins to antibodies.
- For recombinant antibodies, the success rate is greater than **98%**



E. coli

- The *E.coli* system is by far the most widely used and economical expression system.
- With abundant experience of both **soluble protein expression, and inclusion protein refolding**, Sino Biological has rich experience in dealing with various kinds of proteins.



Insect cell

- The Baculovirus-insect cell system is suitable for proteins that are potentially harmful to mammalian cells, such as kinases and toxic proteins.
- Sino Biological is specialized in baculovirus-Insect cell protein expression and has successfully accomplished **500+** custom projects so far.

General Process for Recombinant Production

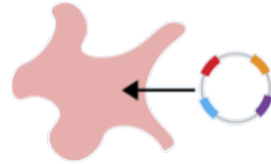
Evaluation
&
Discussion



Gene Synthesis



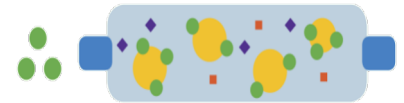
Vector
Construction



Transfection



Expression



Purification



Quality Control



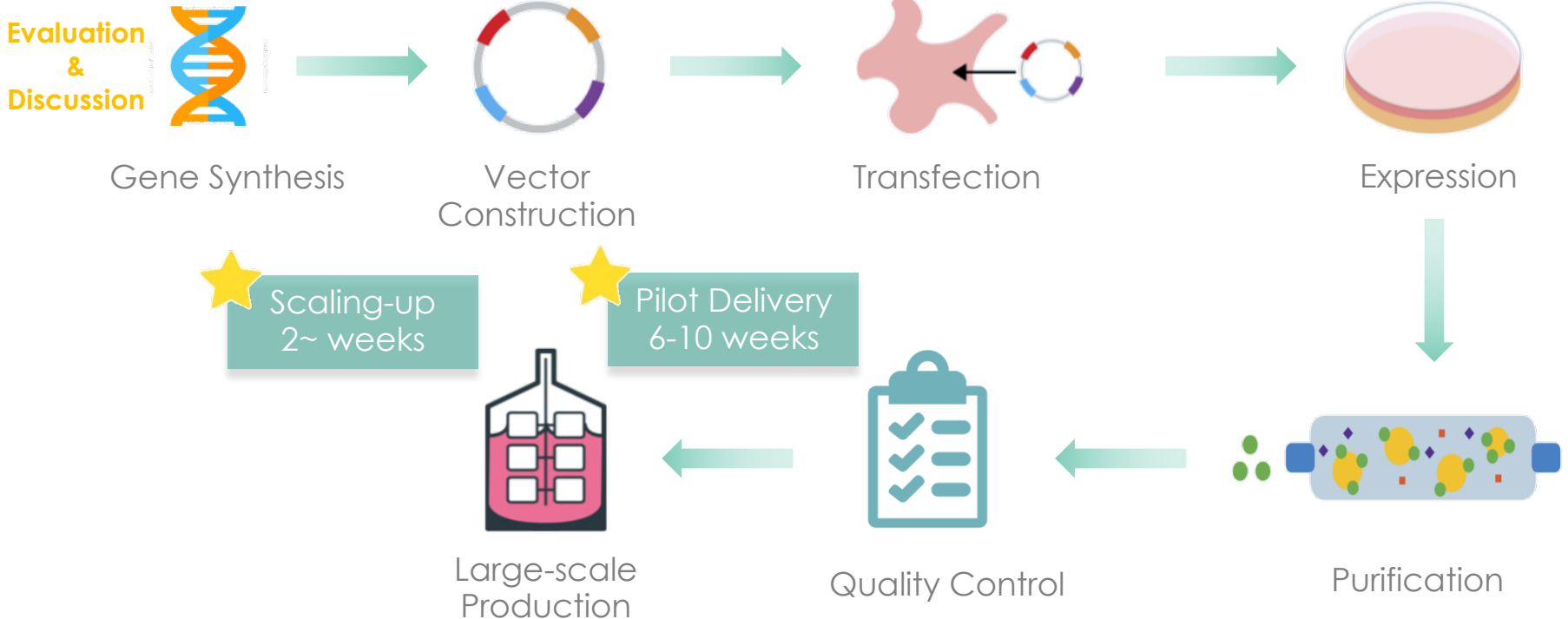
Large-scale
Production



Scaling-up
2~ weeks



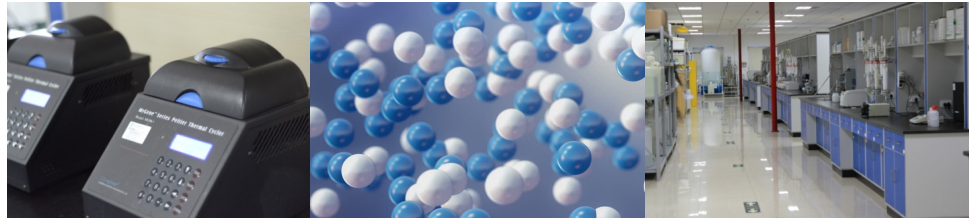
Pilot Delivery
6-10 weeks



Advantages of Sino Biological Recombinant Expression Services

Core in-house technologies

- ✓ **Free** codon optimization
- ✓ **Free cDNA** if from Sino's cDNA catalogue (>20,000 off-the-shelf genes)
- ✓ **In-house platform** with proprietary vectors, transfection reagents, medium
- ✓ **Abundant tags** available (His, FLAG, GST, MBP, HA, etc.)
- ✓ Experience expressing **thousands of proteins for** in house research
- ✓ Sino's researchers have on average **10+ years** experience
- ✓ Various facilities for **large-scale** production, ~1000L
- ✓ **>99.5%** success rate for antibody production
- ✓ All processes done in house



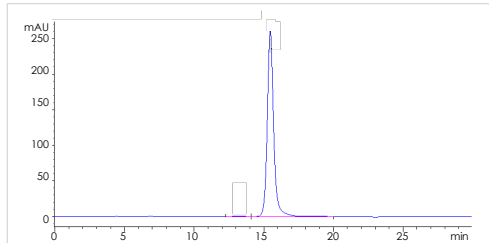
Recombinant Expression Services – Proteins

Service Package	Timeline	Quality Test	Deliverables
Pilot Study (feasibility; <1mg)	6-8 weeks (HEK/CHO/ <i>E.coli</i>) 8-10 weeks (baculovirus-insect)	<ul style="list-style-type: none">• Regular Purity(SDS-PAGE), Concentration(UV)	<ul style="list-style-type: none">• Purified Protein• QC Report
Large-scale Production	2~ weeks (after pilot study)	<ul style="list-style-type: none">• Customized Purity(SEC-HPLC), Endotoxin Level, HPLC, Affinity(Biacore/Octet), Activity, etc.	

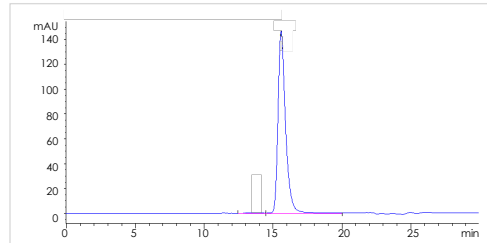
Recombinant Expression Services – Antibodies

- From small scale (mg) to large scale production (grams)
- Experience with scFv, Fab, Bi-specifics and antibodies of non-human species
- Purification process and ELISA assay for IgG1, IgG2a, IgG2b, IgG3, IgM, IgA
- Production of Glycosylation-Deficient Recombinant Antibodies
- Near **100%** success rate with competitive price and fast turnaround

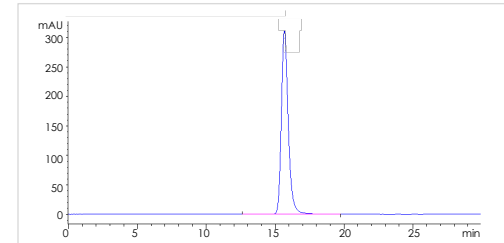
Human IgG1 (SEC-HPLC 99.5% ET<0.43EU/mg)



Human IgG4 SEC-HPLC 99.7% ET<0.50EU/mg



Human IgG2 (SEC-HPLC 100% ET<0.6EU/mg)



Customized rAb Production – Types of Services

Expression System	Time Line	Notes
SinoExpress HTP mAb expression services (mAb only)	3 weeks*	<ul style="list-style-type: none"> • 0.1-5mg mAb production • >95% purity • Endotoxin levels upon request • A minimum of 5 constructs required
Sino Transient Expression Services (mAb and other antibody-like constructs known to have comparable expression levels)	4-10 weeks	<ul style="list-style-type: none"> • 5mg-gram level • 95% by SEC <i>(available)</i> • <1EU/mg <i>(available)</i> • Conjugation service <i>(available)</i>
Sino Customized Expression Services (Heavily engineered mAb, Bi-specific, scFv, and other modified antibody-like constructs)	6-8 weeks	<ul style="list-style-type: none"> • Customized expression • May require pilot expression • Customized QC standard • Affinity testing available (ELISA, BiaCore, Octet)
Sino Corporate Expression Service Program	TBD	<ul style="list-style-type: none"> • High volume corporate customers • Customized Master Services Agreement • All projects receive highest priority • Corporate package tailored to specific demand • May include both protein and antibody expression services

Antibody Development



Featured Services

- Mouse Monoclonal Antibody Development (hybridomas)
- Rabbit Monoclonal Antibody Development (phage display / single B cell sorting)
- Rabbit Polyclonal Antibody Production
- **Immunogen design & preparation service**
- ELISA kit development
- Hybridoma Culture and Sequencing Service

Service Packages

- Anti-idiotypic antibody development ([rabbit pAb/mouse mAb](#))
- Phospho-specific antibody development ([rabbit pAb/mouse mAb](#))
- Speedy antibody development (shortened immunization time)

Antibody Development Service Overview

Service Package	Workflow	Time line
Standard Polyclonal Antibody Services	2 rabbits immunized - Protein A purified/affinity purified	10-14 weeks
	Peptide synthesis-2 rabbits immunized - Protein A purified/affinity purified	14-20 weeks
	Antigen expression-2 rabbits immunized - Protein A purified/affinity purified	14-20 weeks
Speedy Polyclonal Antibody Services	2 rabbits immunized - Protein A purified/affinity purified	45 days
Phospho-Specific Polyclonal Antibody Services	Peptide synthesis-2 rabbits immunized - Protein A purified/affinity purified	14-20 weeks
Mouse Monoclonal Antibody Services	5-10 mice immunized - fusion and screening - antibody production & purification	Standard 4-6 months Speedy 3-4 months
Rabbit Monoclonal Antibody Services	2 rabbits immunized - phage display library-screening-antibody production & purification	Standard 4-6 months Speedy 3-4 months

Thank You

Your local point of contact

Basel area

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All other areas

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