

# Oligonucleotide CDMO services overview

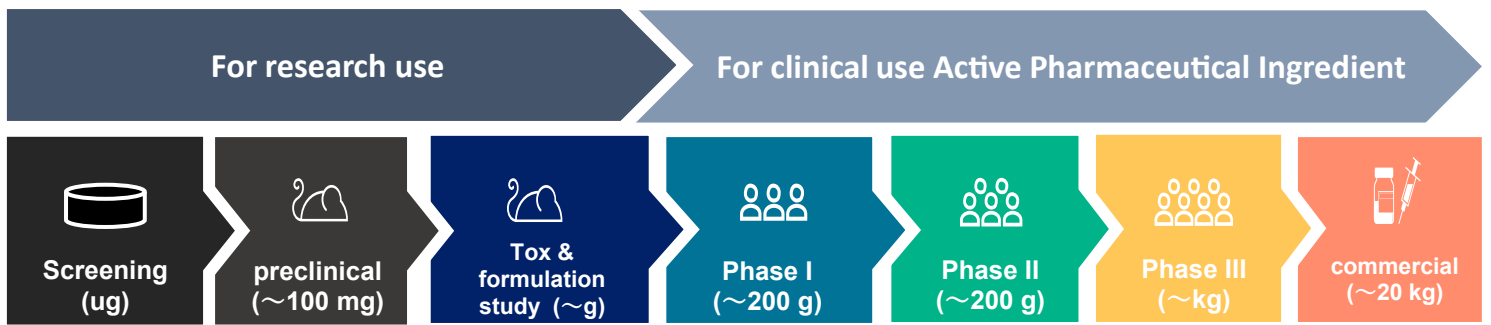
## - Our products



A seamless supply from research use to commercial launch

### High quality oligonucleotides

Ajinomoto Bio-Pharma Services supports your whole development stages of oligonucleotide therapeutics. Our capability provides high quality oligonucleotides by using solid phase synthesis and liquid phase synthesis as well.



$\mu$ g to kg scale custom oligonucleotide synthesis

**AJIPHASE®**

#### Research to large scale synthesis

- ◆ GLP-use manufacturing
- ◆ GMP manufacturing
- ◆ Bridging to AJIPHASE®
  - Equivalency studies
  - Scale up design

#### Development

- ◆ Analytical – Testing/Stability/validation
- ◆ Comparability studies
- ◆ Process development/Optimization

# Custom Oligonucleotide manufacturing

## Oligonucleotide manufacturing (by solid phase synthesis)

Offer variety of types oligonucleotides.

- ASO
- CpG ODN
- Aptamer
- Conjugation with peptide / fluorescence
- Enzymatic conjugation
- siRNA
- sgRNA, long chain RNA
- miRNA mimic / inhibitor

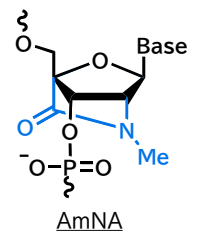
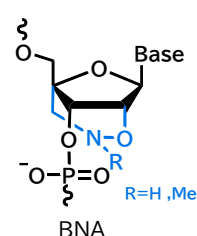
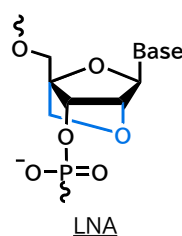
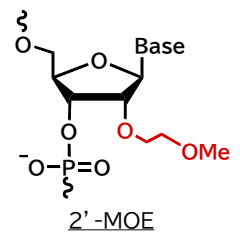
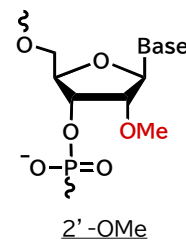
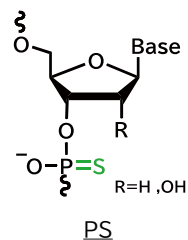


### Capabilities

		Small scale	Middle scale	GMP grade
Details	Quantities	$\mu\text{g} - \text{mg}$	10 mg – 10 g	10 g – kg
	Synthesizer	nS-8 (Original synthesizer)	OP100 & OP10	OligoProcess & OP400
	Purification	HPLC	MPLC & HPLC	MPLC & HPLC
	Desalting	Lab type	UF	UF
	Lyophilization	Lab type	Bulk	Bulk
	Specification	Ex) Purity: over 90%(RP-LC) Endotoxin: less than 0.5 EU/mg	TBD	TBD

## Other options

- Phosphonothioate (PS)
- 2' modification (OMe, MOE, F, etc.)
- 2' -4' bridged nucleotide (LNA/BNA/AmNA)
- Base modification
- inverted dT
- Spacer
- Terminal and/or insert modification
- etc.

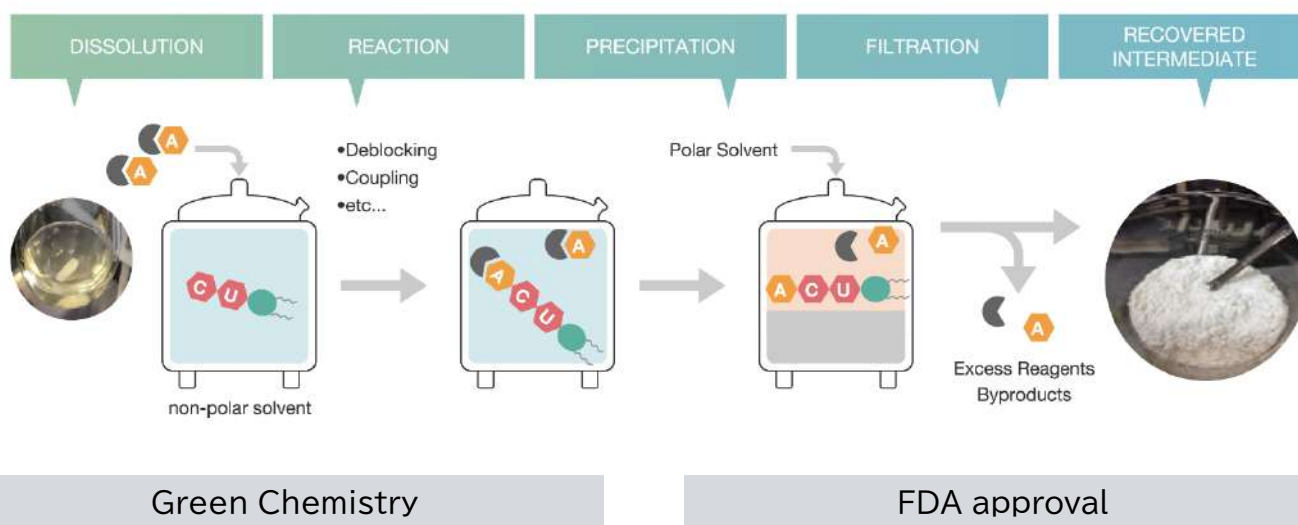


# AJIPHASE®

## Innovative liquid phase synthesis for oligonucleotide, peptide, PMO and PPMO; AJIPHASE®

AJIPHASE® is a hybrid of solid and solution phase syntheses that uses an anchor to make the molecules very soluble in non-polar solvents, providing a homogenous mixture.

- Mass production with High quality
- High reproductivity
- Seamless scale up from lab to commercial



## Functional conjugation

### Functional conjugation

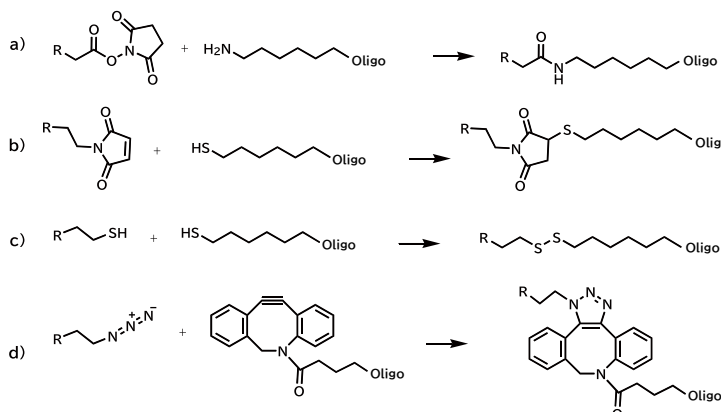
- fluorescence, quencher

	Purple	:Alexa750, Cy7
	Red	:Alexa647, Alexa 594, Cy5
	Orange	:Alexa568
	Yellow	:Alexa546, Cy3, TAMRA
	Yellow green	:Alexa532
	Yellow blue	:Alexa488, BODIPY FL, 6-FAM
	Quencher	:BHQ, Dabcyl

- 5' end or 3' end phosphorylation
- Biotin
- Cholesterol, Tocopherol, DIG
- PEG (liner, branch)
- Peptide, etc.

[Options]

- Amino oligo + NHS ester compound
- Thiol oligo + Maleimide compound
- Thiol oligo + Thiol compound
- DBCO oligo + Azide compound



# Analytical services

- Methods development
- Method verification/validation
- Stability studies
- Contracted analysis

Confirm quality	Purity (RP-LC)
	Tm value
	Water content (KF)
	Endotoxin
	NMR
	ICP



Identification	sequencing
	ESI-MS

Please contact us if you request other ten above test items.

# Other services

## CpG-ODN

The sequences contain CpG motif which induces strong innate immunity. It activates innate immunity by being recognized by Toll-Like receptor9 (TLR9).

DNA fragment includes CpG motif

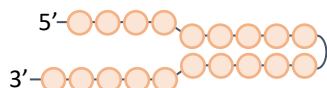
As adjuvant

### **D35** (Type-A/D CpG-ODN)

- Target cell: pDCs
- Induced cytokines: IFN- $\alpha$

[Structure of DNA fragment]

- ✓ PS partly
- ✓ Hairpin structure
- ✓ poly G tail, palindrome



### **K3** (Type-B/K CpG-ODN)

- Target cell: B cell
- Induced cytokines : IL-6, other

[Structure of DNA fragment]

- ✓ Full PS
- ✓ Liner structure



# Contact to

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### Note

The specification and prices are subject to change without notice.  
As Jun 2023