

# BIOPRODUCTION

*RECOMBINANT PROTEIN & ANTIBODY*



**Expert in Antibody Engineering**

From Research to Discovery

ISO 9001 : 2015 certified

**covalab**  
R&D in Biotechnology

# BIOPRODUCTION

COVALAB, YOUR PARTNER IN ANTIBODY ENGINEERING SINCE 1995

— — MADE IN FRANCE - ISO 9001 : 2015 CERTIFIED



**Eukaryotic production**  
(CHO, HEK)



**Prokaryotic production**  
(E. Coli)



**Transient & stable transfection**



**Large scale application**  
(from mg to g)



**Tailor-made service**



**Fee for service**



**Animal free**



**Quality control**

**Total project duration : ~ 2 months**

**STEP 1:** Recombinant Protein Feasibility Study

1 week

Go / No go step

**STEP 2:** Development of Expression Model

3 - 4 weeks

Go / No go step

**STEP 3:** Recombinant Protein / Antibody Pilot Production

2 - 4 weeks

Go / No go step

**STEP 4:** Recombinant Protein / Antibody Production

Min. 4 weeks

First delivery

Covalab provides a large and various bioproduction service for proteins (**tag, ...**) and antibodies (**including their fragments**).

We are using eucaryotic or prokaryotic systems and offering a large range of bioproduction scale starting from milliliter and **up to 12 L** bioreactor.

All proteins and antibodies productions occur in our ISO-certified manufacturing facility. Reactivity, high quality production and tailor made services are our main objective.

# RECOMBINANT PROTEIN



**EUKARYOTIC PRODUCTION** (*CHO, HEK*)

**PROKARYOTIC PRODUCTION** (*E. Coli*)

## STEP 1 : RECOMBINANT PROTEIN FEASIBILITY STUDY

Bibliography study  
Sequence analysis  
Expression and purification strategy proposal (tag selection)

OPTIONAL : Hybridoma sequencing

## STEP 2 : DEVELOPMENT OF EXPRESSION MODEL

Primers design  
Gene synthesis including a tag (codon optimization)  
Subcloning into an expression vector for eukaryotic/prokaryotic model  
Amplification and purification of the plasmid  
Control by sequencing

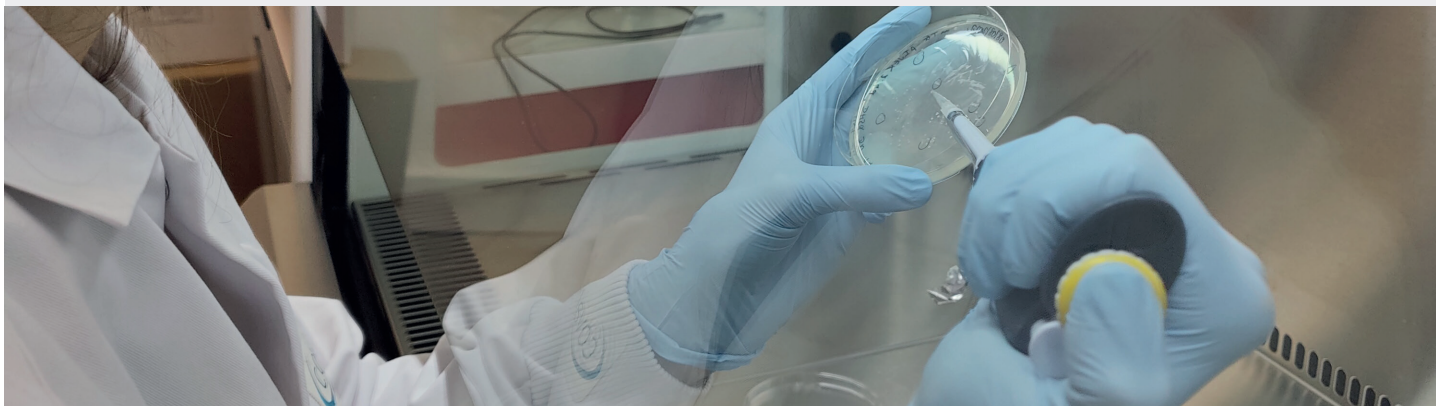
## STEP 3 : RECOMBINANT PROTEIN PILOT PRODUCTION

For eukaryotic production: Transient transfection in CHO / HEK cells  
For prokaryotic production: Bacterial culture (*E. coli*) and best conditions selection

Pilot production small scale volume ( $\approx 100$  mL)  
Protein purification by affinity chromatography  
Protein characterization and yield estimation  
Material transfert for validation

## STEP 4 : RECOMBINANT PROTEIN PRODUCTION IN EUKARYOTIC MODEL

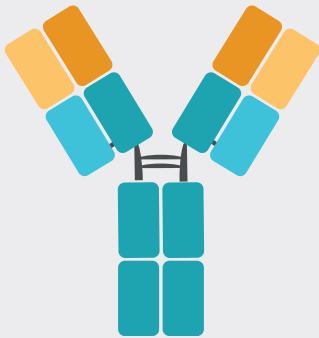
Transient transfection / Stable transfection in CHO / HEK cells  
In vitro production (1 - 12 L)  
Protein purification by affinity chromatography  
Polishing step  
Protein characterization and yield estimation  
Endotoxin level, HCPs  
Production, purification and quality control report



# RECOMBINANT ANTIBODY



## FULL LENGTH AND FRAGMENTS



FULL LENGTH



Fab



ScFv



VHH

We also offer engineering services such as **isotype switching** (change of an immunoglobulin from one type to another) or **antibody reformatting** (change of the variable region into an antibody fragment).  
A specific request? Contact us and let's see how we can work together!

# ADDITIONAL SERVICE



## LABELLING

Our expertise in coupling strategies allows us to provide a full range of services of antibodies and proteins labelling with various labels according to well-established procedures.

### Available labels :

Biotin  
Enzyme (HRP, ALP...)  
Fluorophores  
...

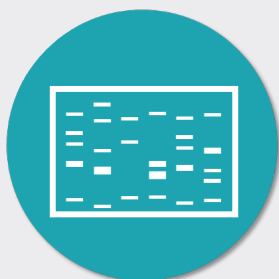
Discover our offer **CovaDye** !

Our custom fluorescent labelling for an ultra-personalized service with a full range of wavelength, ask us for our specific CovaDye leaflet or visit our website!

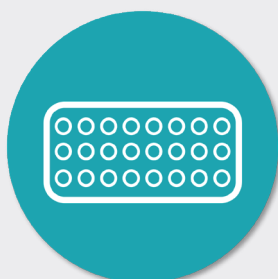


# VALIDATION & QUALITY CONTROL

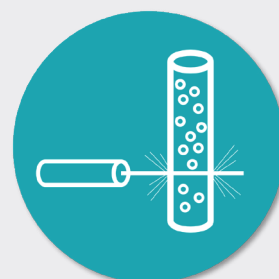
To meet the criteria and quality requirements of each, Covalab offers many validation and quality controls such as:



SDS-Page  
Western Blot



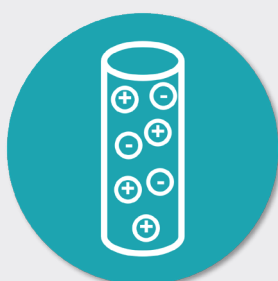
ELISA



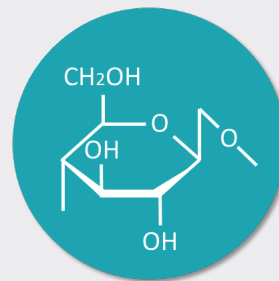
Flow Cytometry



High Pressure Size Exclusion  
Chromatography (HPSEC)



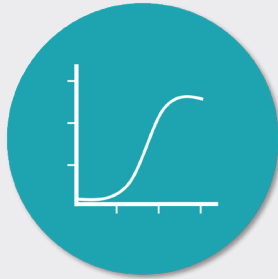
Ion Exchange  
Chromatography (IEC)



Glycosylation  
Study



Mass Spectrometry  
Analysis



Affinity Determination  
(KD)



Endotoxin Level  
Determination



HCPs Analysis



Bioassay  
(immunoassay,...)



And more upon request !

SCIENTIFIC  
SUPPORT  
**EXPERTISE**  
HIGH  
QUALITY  
**REACTIVITY**  
FLEXIBILITY  
SINCE 1995

 covalab  
R&D in Biotechnology

## CONTACT US

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ISO 9001:2015

**BUREAU VERITAS**  
Certification

