



Changing the World with Silkworms

# KAICO

## Company Bio

April 2025



**Changing the world with silkworms**

**MISSION**



**GOAL**

**Create novel oral vaccines made from silkworms**





## Recombinant Protein Production Platform

# Who We Are



- **Began the journey at Kyushu University in 2018.**
  - ✓ A Japanese national university leading in the entomology field.
- **Brought in novel know-how from Kyushu University.**
  - ✓ Expression of recombinant proteins using silkworms
  - ✓ Modifying natural proteins to additional functions
- **Core tech: “Silkworm-baculovirus\* protein expression system”**
- **Vaccines using the core tech are under development.**
  - ✓ Not only injectables but also the oral type
  - ✓ The Japanese government grants both development projects\*\*



\* baculovirus: a type of virus that infects silkworms but humans.

\*\* 1). Japan Agency for Medical Research and Development (AMED), 2). Ministry of Economy, Trade and Industry

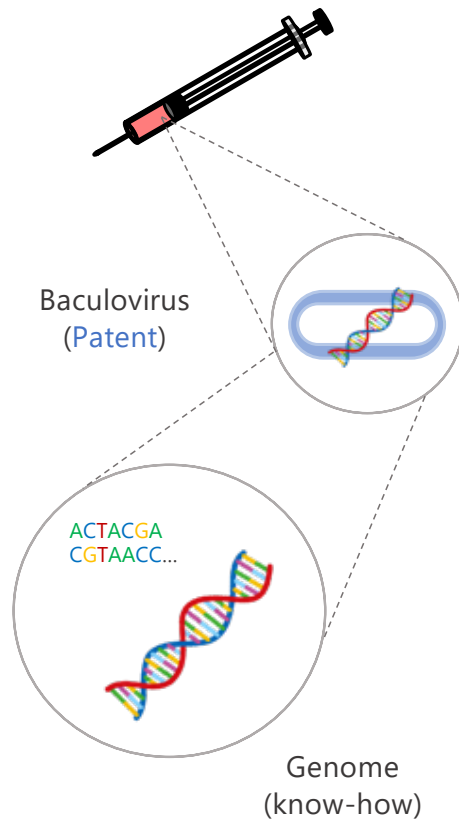


# Core Technology: Silkworm-Baculovirus Protein Expression System

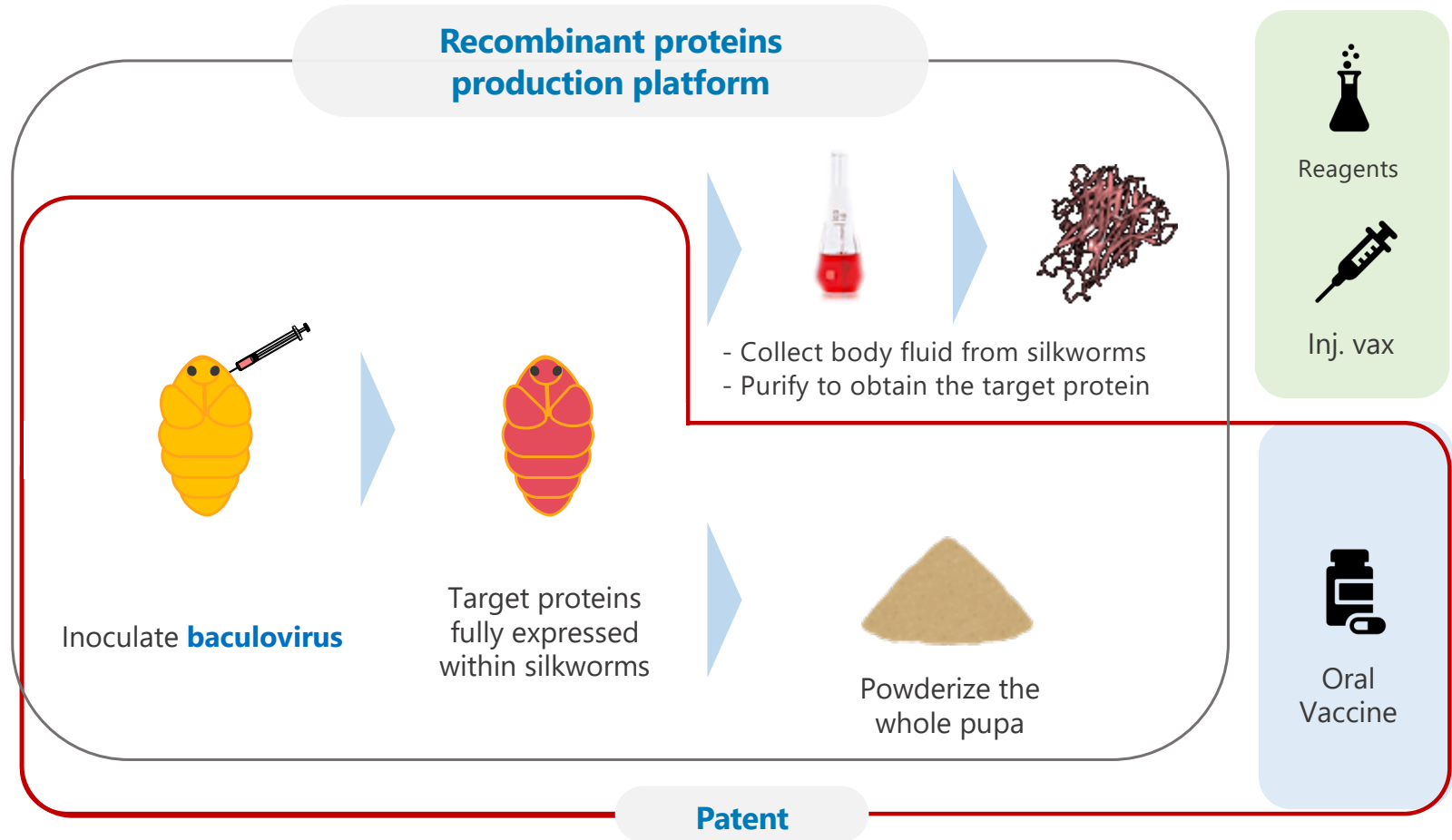


## Recombinant baculovirus

= baculovirus with  
target protein gene



## Recombinant proteins production platform



# Our Strength

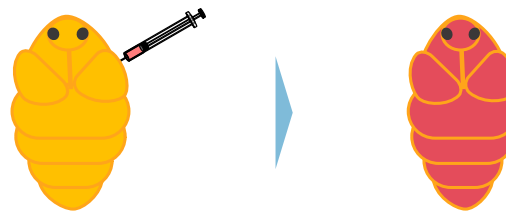


## Fully customizable design



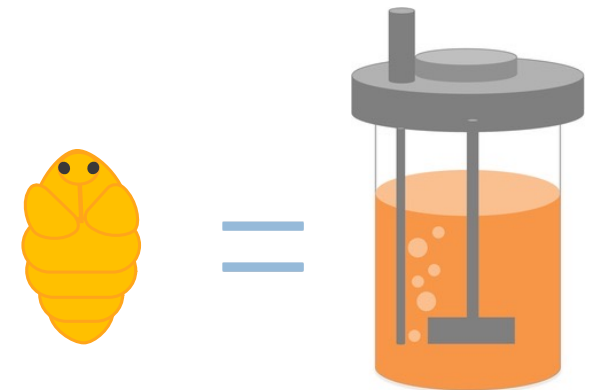
- Codon optimization, tag swapping, secretory signal adjustment.

## Difficult Targets Welcome



- Expression rate = 100%
- Complex structures (VLPs), insoluble proteins, membrane, etc.

## Flexible scaling

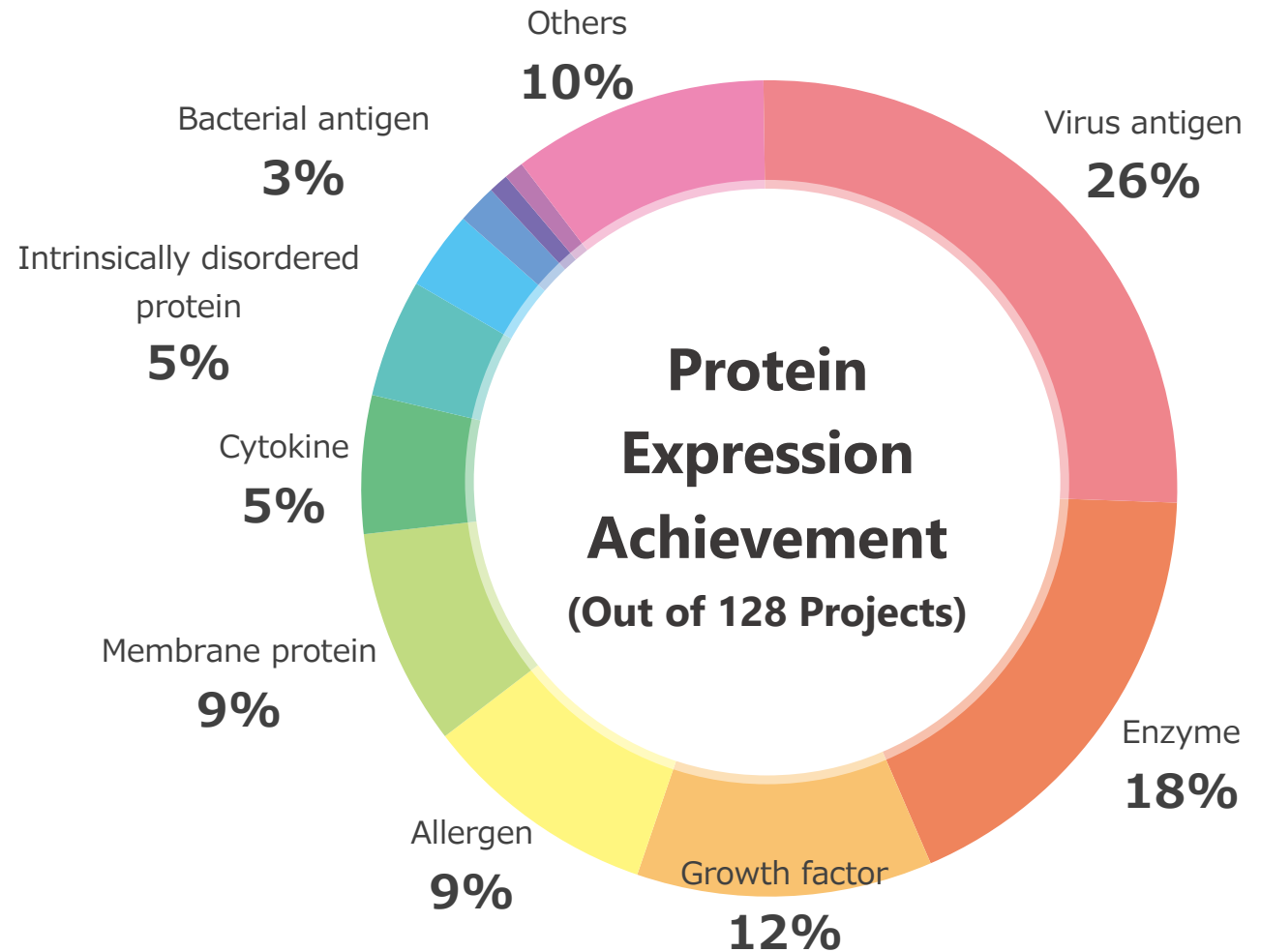


- Scalable production by increasing silkworm pupae.
- Flexible system for low-volume, multi-protein expression.

# Feasible for Any Types of Proteins



- **Expression rate: 100%**
- **In-house development of full-length recombinant IgG antibodies**
- **Yield: Several dozen  $\mu\text{g}$  to several mg per pupa**



# Examples of Expressed Protein



## < Successful cases of protein expression where other CDMOs failed >

Toxic protein  
(Japanese Pharmaceutical company)

Plant-derived, 63kDa

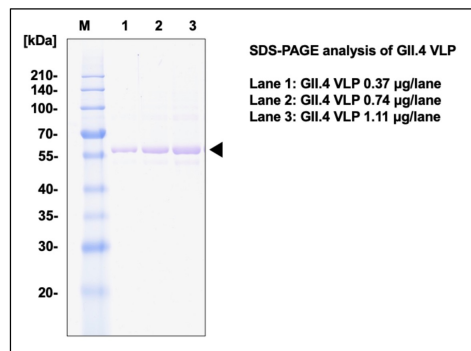


Functional Protein  
(Japanese Bio-related company)

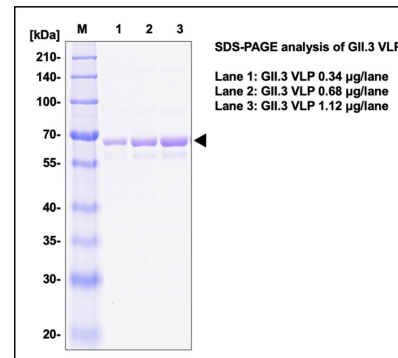
Human-derived, 37kDa



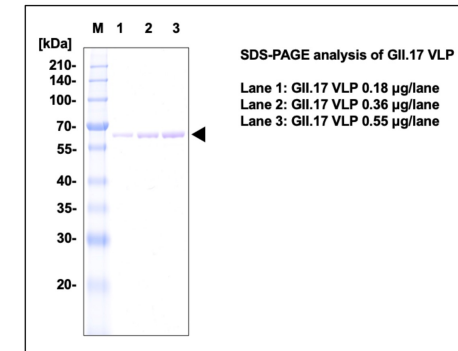
## < Norovirus VLPs >



GII.4



GII.3



GII.17



# Six Business Portfolio



Core Technology  
Recombinant proteins  
production platform

① CDMO of recombinant proteins



② Sales of reagent



③ Diagnostics & supplement



④ Inj. vaccines for animals



⑤ Immune-enhancing feeds  
for animals



⑥ Vaccines for humans



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**Powders made from silkworm pupae stimulate the immune system and promote steady growth.**



# What is an Immune-Enhancing Feed Additive?



**Feed that can be mixed with daily crops to boost immunity**

## Benefits

- Nonstress for livestock
- Decreasing the frequency of vaccination
- Reducing the cost and time of the injection process
- Equivalent efficacy to the conventional vaccines

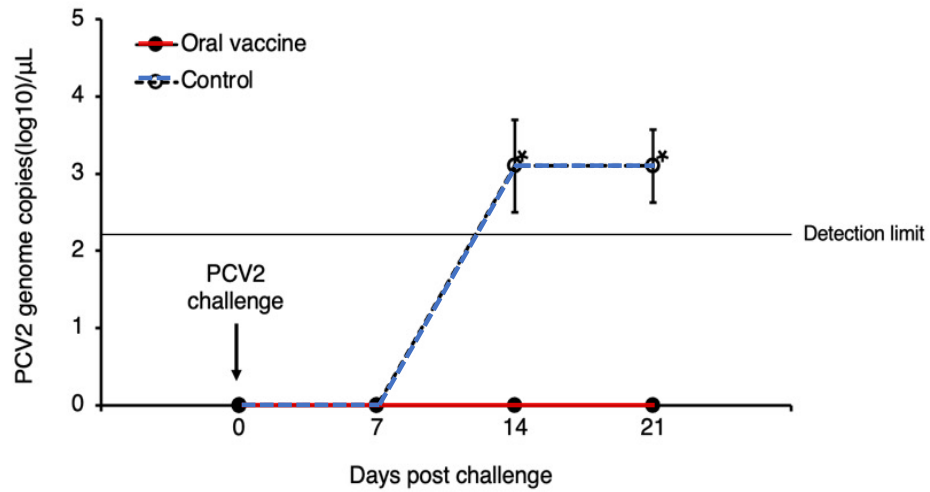
# Target: Porcine Circovirus 2 (PCV2)



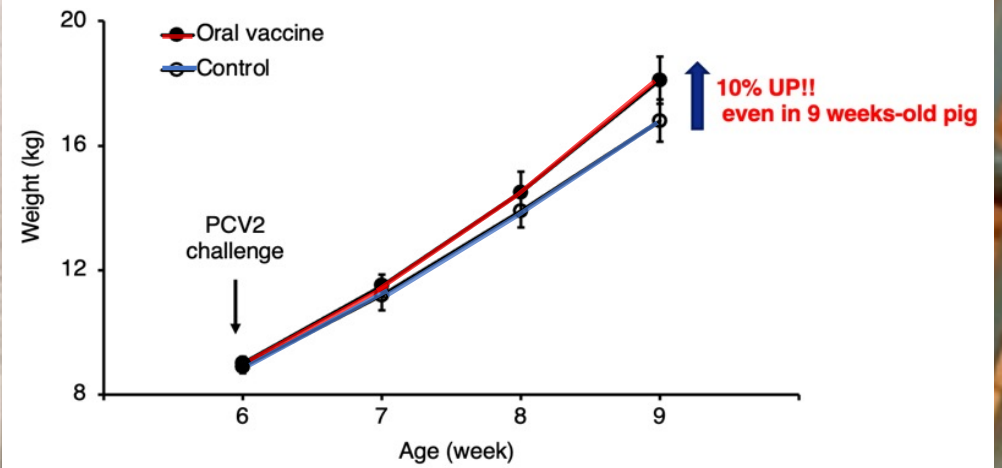
- Growth retardation
- Leading to loss of income for farmers
- Injecting one by one = Burden on farmers

**KAICO uses its core technology to develop the orally administrative PCV2 protective product**





**Suppression of Viremia**



**Weight Gain**

# KAICO Powder is easy, safe, and stress-free



**KAICO Powder**

**Normal feed**

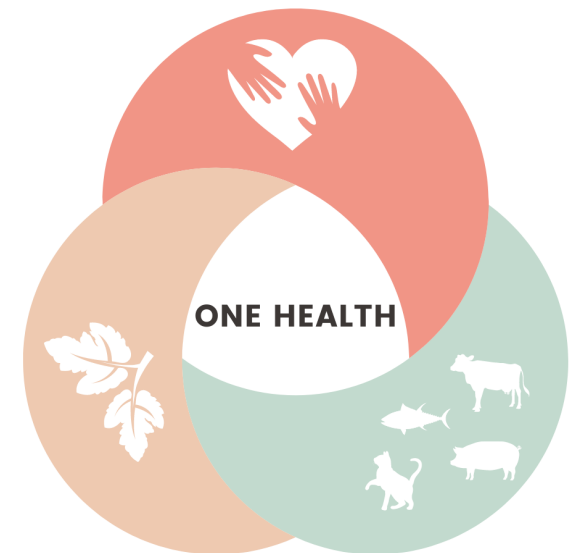
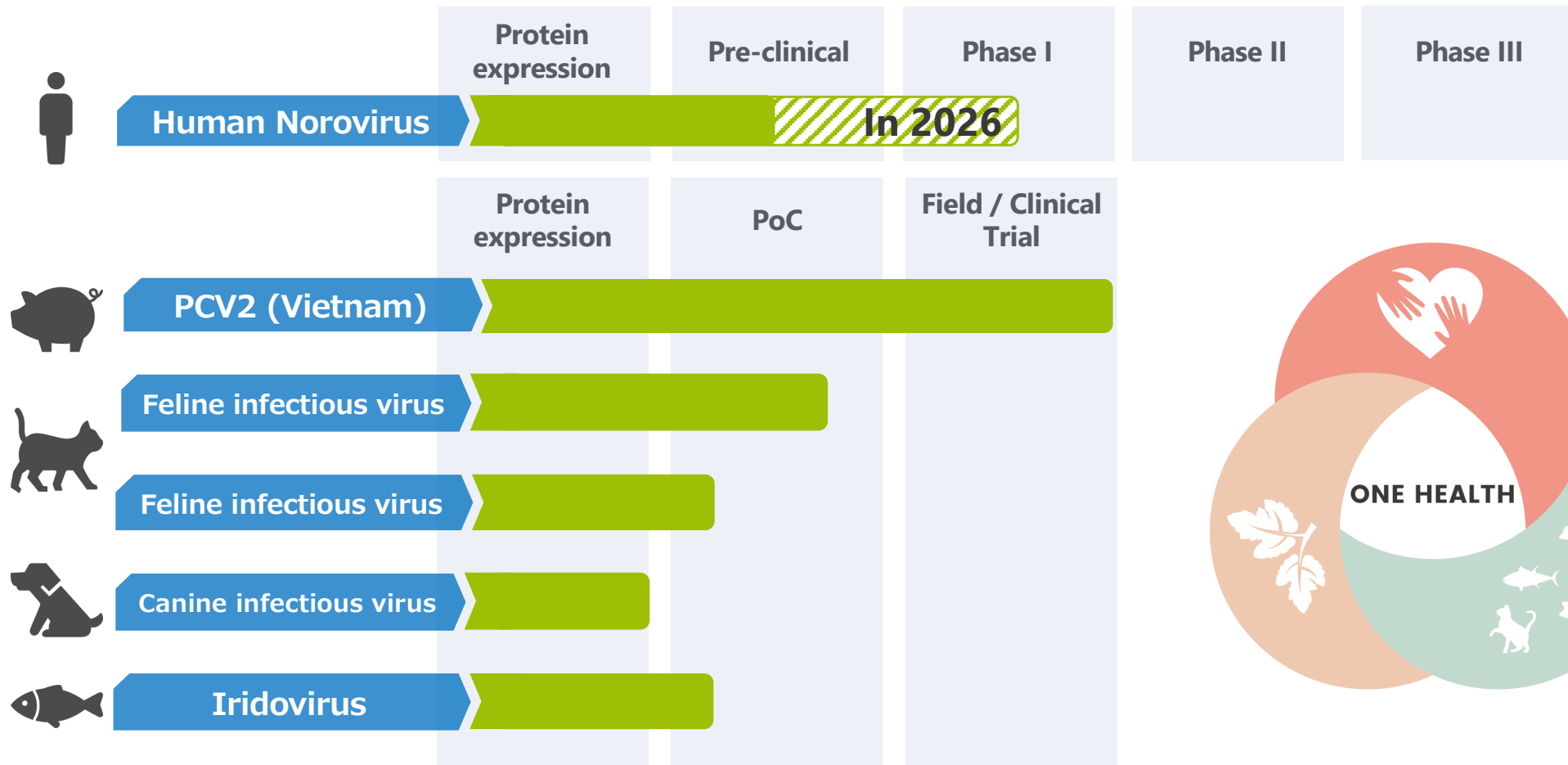
**Mixing**

**Feeding**

**What used to require 7 people and an hour  
can now be done in 5 minutes by a single person.**



# Product Pipeline



# How to Reach the Market?



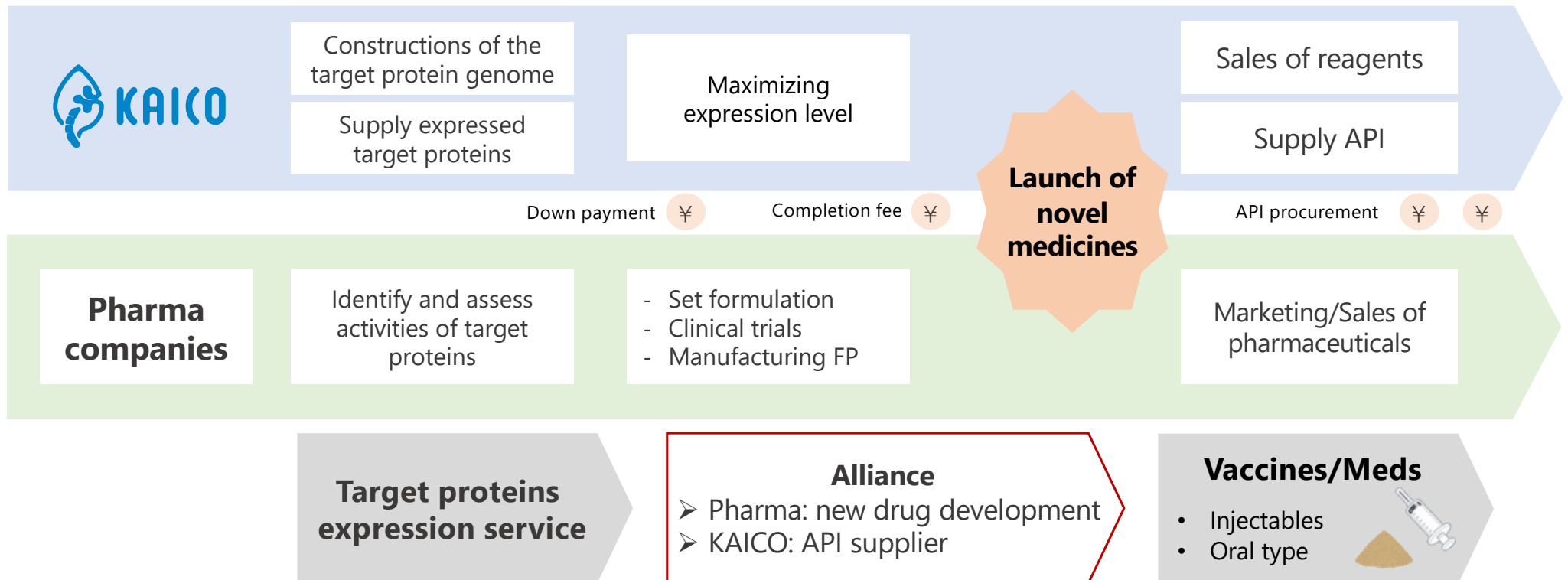
- Research & Development
- Supply raw materials



## Partner companies

- Research & Development
- Registration & Launch
- Sales & Marketing

# Business scheme



# Next Generation Circular Bio-Platform



**We reimagine ancient Japanese sericulture, bridging between traditional wisdom and cutting-edge medical innovation in a sustainable ecosystem.**

**Our venture begins with mulberry cultivation and evolves into a next-generation circular bio-manufacturing platform that leverages local resources, minimizes environmental impact, and pioneers the future of medicine.**

# About KAICO



Name KAICO Ltd.

Address 4-1, Kyudai-Shinmachi, Nishi-ku, Fukuoka City, Japan

CEO Kenta Yamato

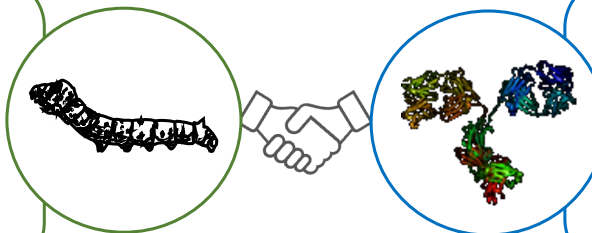
Founding April 2018

Awards

- Ministry of METI Award at the Japan Open Innovation Awards 2023
- JHVS Venture Award (Japan Healthcare Venture Summit)
- Japan Science and Technology Agency Chairman Award at Awards for Academic Startups 2022, etc.



Kyushu Univ.  
Dept. Agriculture  
Prof. Kusakabe  
Insect molecular genetics



Kyushu Univ.  
Dept. Engineering  
Prof. Kamiya  
Enzyme Engineering  
Biomolecular Engineering



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