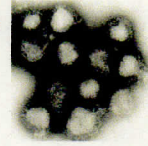## The development of a novel influenza A virus vaccine using *Bifidobacterium longum*

Kobe Graduate School
Health Science Master course 1st grade
Suzuka Ozaki

About Influenza

Influenza virus cause sometimes pandemic.
The most effective prevention way of influenza is vaccination.
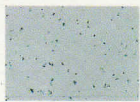However, present vaccine has some problems.

We think that development of the universal vaccine for influenza virus is urgent business.
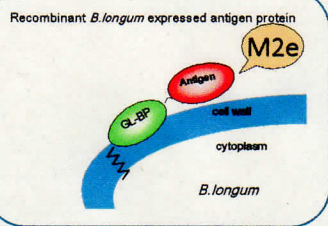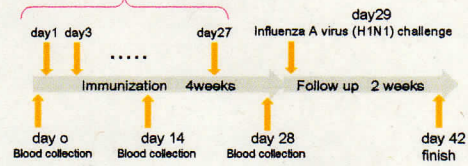

Vaccine platform

Shuttle vector

electroporation

Wilde type *Bifidobacterium longum*

Recombinant *B.longum* expressed antigen protein

M2e

Antigen

GL-BP

cell wall

cytoplasm

B.longum

Animal experiment

Oral administration every other day (14 times)

day1 day3 ..... day27

day29 Influenza A virus (H1N1) challenge

Immunization 4weeks Follow up 2 weeks

day 0 Blood collection
day 14 Blood collection
day 28 Blood collection
day 42 finish

groups
- PBS (control)
- Wilde type *B.longum* (control)
- M2e expression *B.longum*
- M2e 5 expression *B.lomgum*
- FliC-M2e expression *B.longum*

Balb/C mice, female, 8 weeks old

Body weight change while vaccination

- PBS
- *B.longum*
- M2e expression *B.longum*
- M2e × 5 expression *B.longum*
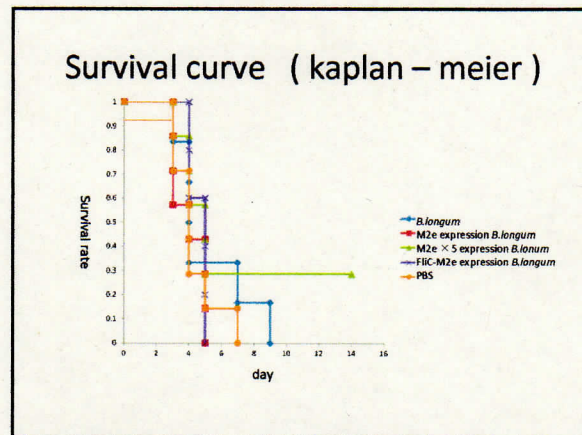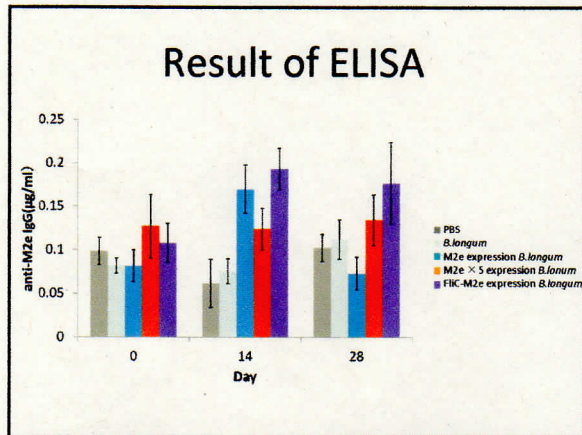- FliC-M2e expression *B.longum*
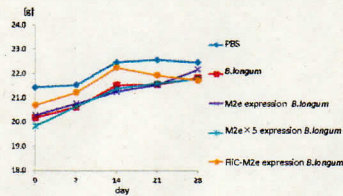
Body weight change after influenza A virus challenge

- PBS
- *B.longum*
- M2e expression *B.longum*
- M2e × 5 expression *B.longum*
- FliC-M2e expression *B.longum*
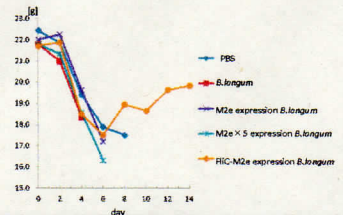
Method

ELISA
M2e antigen coating over night , 4℃
↓
Wash 2% Tween-PBS , 4 times
↓
Sample
↓
Wash 2% Tween-PBS , 4 times
↓
Second-antibody HRP
↓
Wash 2% Tween-PBS , 4 times
↓
TMB
↓
Measuring OD 640nm

Result of ELISA

Survival curve （kaplan – meier）

Discussion

・Significant levels of anti-M2e serum antibody IgG was observed in M2e expression *B.longum* group and FliC-M2e expression *B.longum* group.

・We have to do animal experiment again and confirm the efficacy of the recombinant *B.longum*.

Thank you for listening!