

# Exploiting *Campylobacter jejuni* phage receptor binding protein for rapid and specific bacterial detection

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Nov 20th 2024

IABS virtual meeting

# BACKGROUND



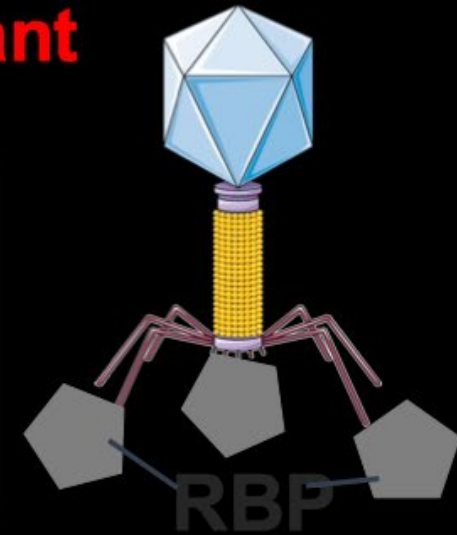
## *Campylobacter jejuni*

- Gram-negative microorganism
- Foodborne pathogen, causes neuropathy conditions such as Miller-Fisher and Guillain-Barre syndromes

**Early and accurate detection is as important as treatment strategies**

### Phage Receptor Binding Protein (RBP)

- Attachment apparatus
- Major protein that ensure host specificity
- Promising bacterial detection tool



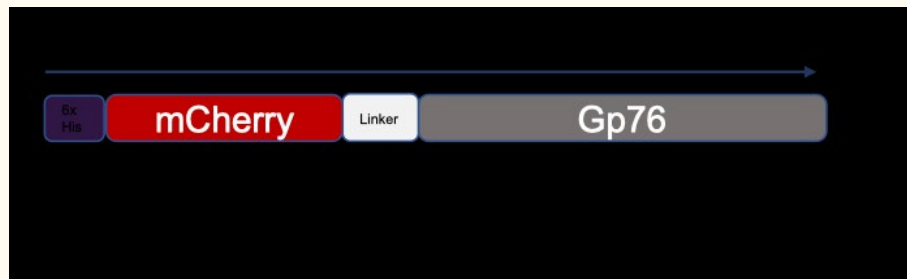
**Utilization of RBP for rapid detection of *Campylobacter***

# RESEARCH FLOWS

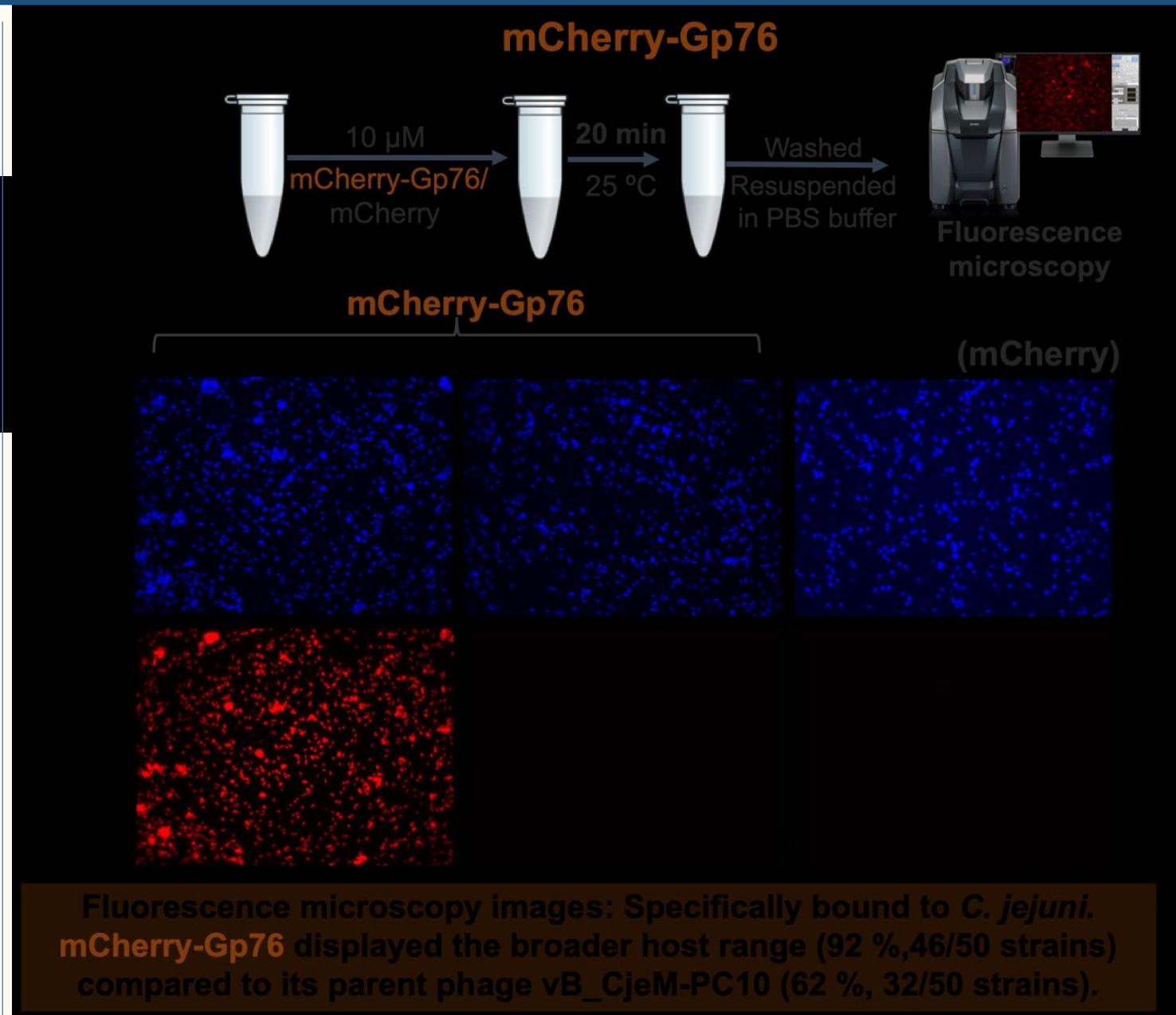
## ❖ Synthesis, Expression and Purification of chimeric protein



Gp76 – 1032 bp  
Protein id – QVW54049.1



**mCherry-Gp76** and mCherry were successfully expressed and purified

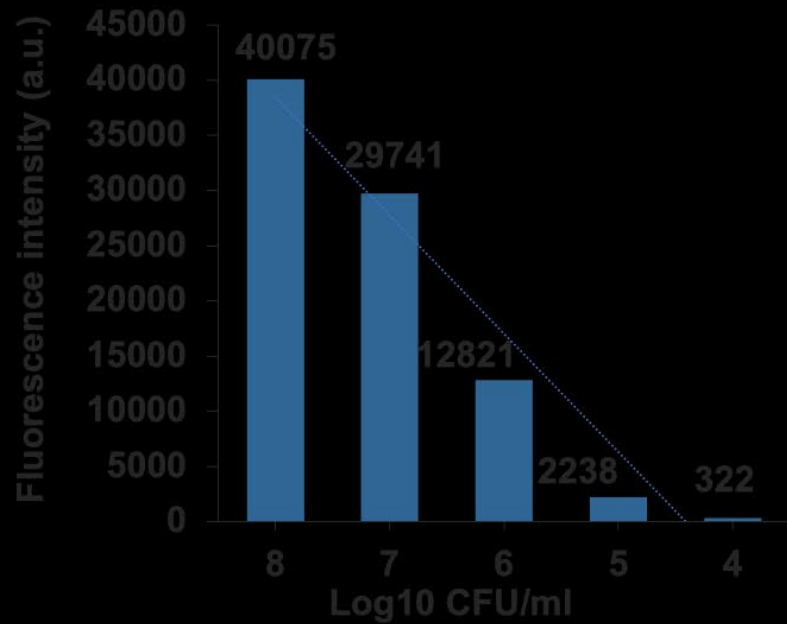


# RESEARCH FLOWS

## mCherry-Gp76

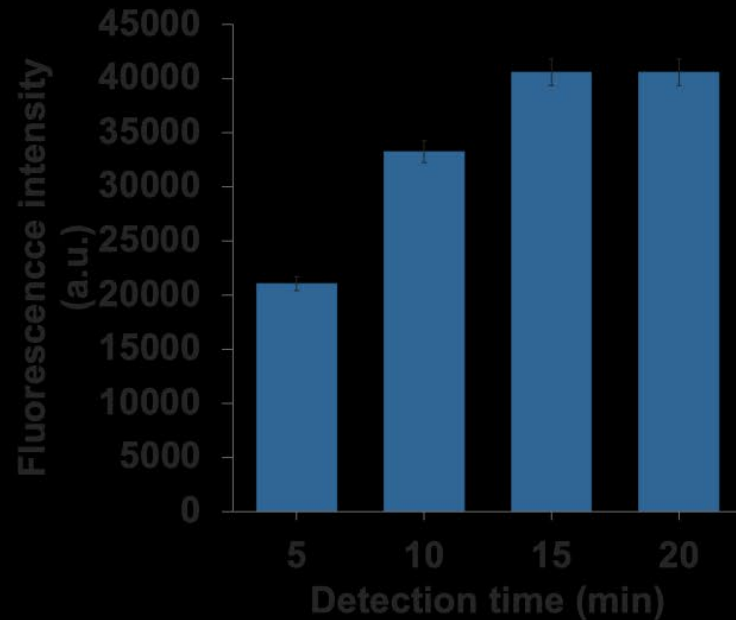
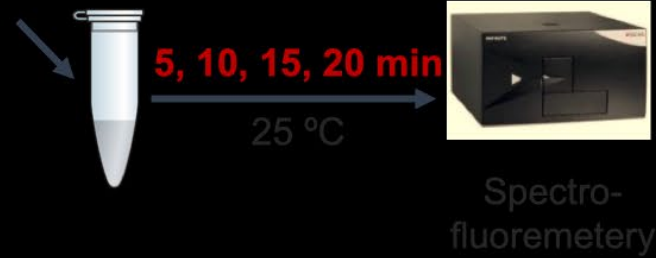


8,7,6,5,4 Log<sub>10</sub> CFU/ml



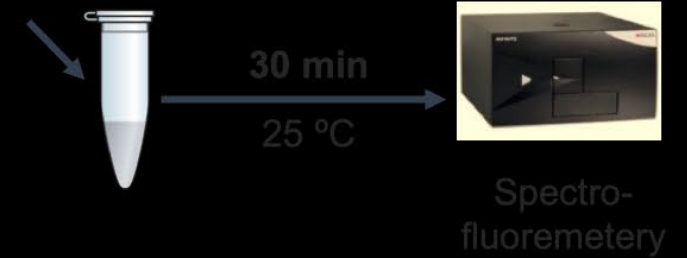
High sensitivity level: Detectable from minimum infectable concentration.

## mCherry-Gp76

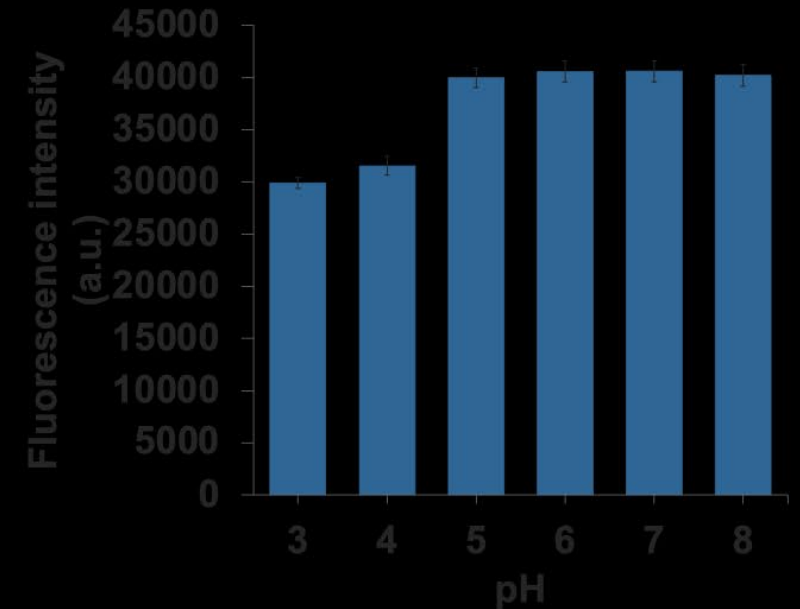


mCherry-Gp76 displayed the shortest detection time from 5 min.

## mCherry-Gp76

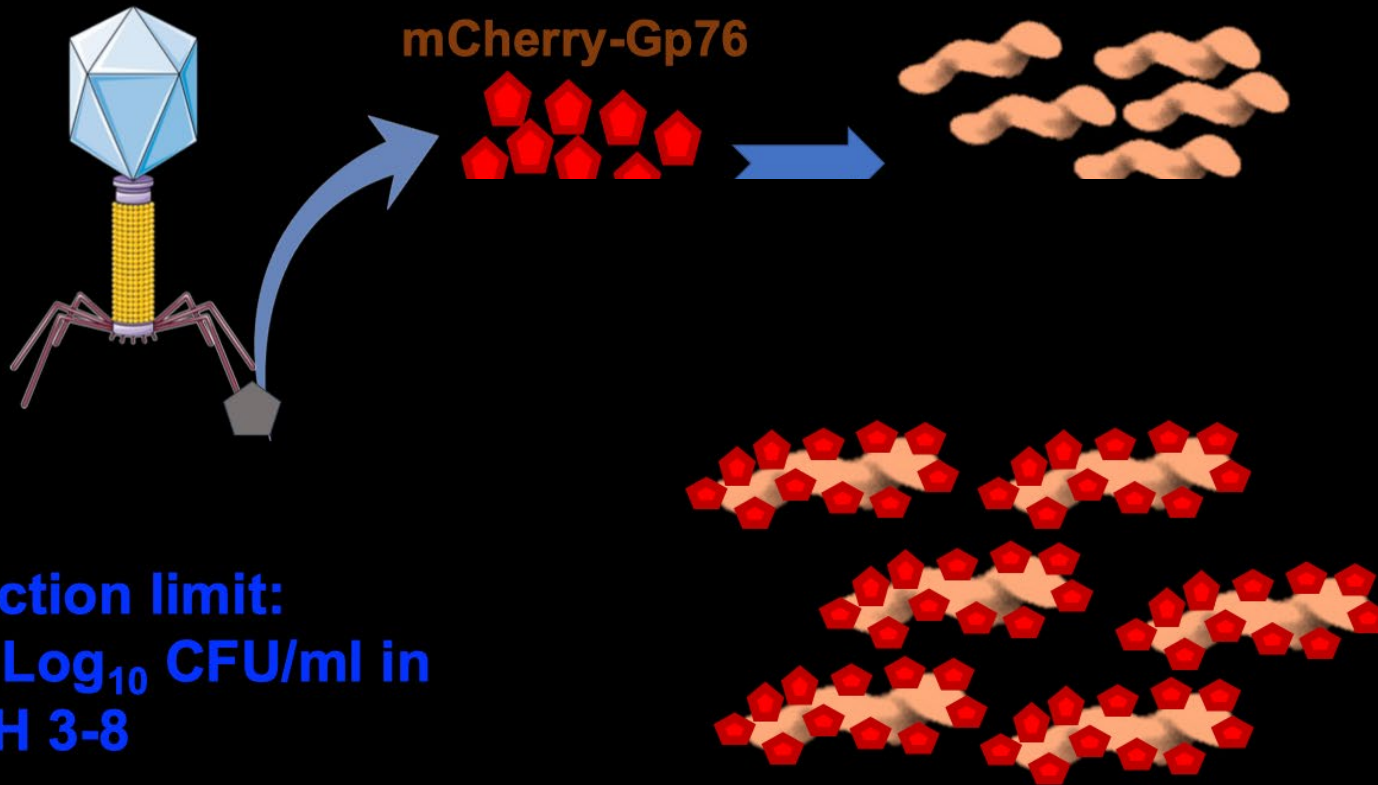


pH 3,4,5,6,7,8



Detectable in various pH level that is ideal range of chicken intestine.

## CONCLUSION

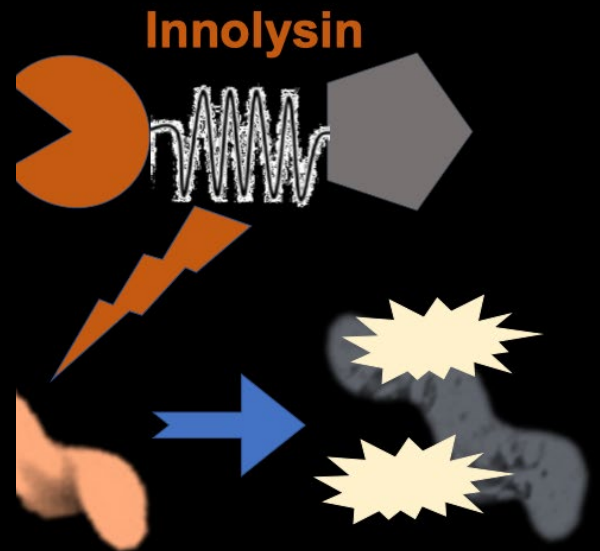
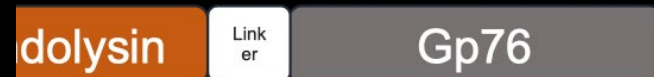


Detection limit:  
> 4 Log<sub>10</sub> CFU/ml in  
at pH 3-8

RBP Gp76 was valid  
rapid detection bion  
of *C. jejuni* outbreaks.

## FUTURE DIRECTION

- Construction of Innolysin (Fusion of receptor binding protein and lysin)



icidal against *C. jejuni*  
without resistance emergence