

Generation of Gram-Positive Enhancer Matrix (Gem) Particles Displaying Immunostimulant Adjuvants

I. Title of Research: Generation of Gram-Positive Enhancer Matrix (Gem) Particles Displaying Immunostimulant Adjuvants

II. Research Team Members

Department	Name	Position
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	Dung	Professor
College of Aquaculture & Fisheries, Can Tho University	A/Prof. Huynh Truong Giang	Vice Dean
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III. Description of Industrial Needs and Research Result Applications

Our study aims to develop an adjuvant platform by displaying the Toll-like receptor 4 ligand, a truncated Suilysin D4 domain (tSlyD4), on Gram-positive bacteria. This platform will be validated and visualized in vitro using western blot and transmission electron microscopy (TEM). The immunostimulatory potential of this adjuvant platform will then be assessed in an animal model. We anticipate that this platform could be utilized with novel antigens to target diseases requiring a mucosal immune response.

IV. Performance of Research Team

With technological advancements, biological adjuvants play a crucial role in enhancing vaccine efficacy when combined with antigens. Currently, many commercial vaccines require improved efficacy through the incorporation of effective adjuvants. Our study has successfully identified, cloned, and expressed the truncated domain of *Streptococcus suis* suilysin (rSlyD4), with preliminary results showing expression at the expected size of 42 kDa. In further studies, rSlyD4 will be displayed on Gram-positive bacteria as an

adjuvant platform and combined with antigens in a subunit vaccine. We anticipate that this adjuvant platform could be applied to other antigens, thereby enhancing their vaccine efficacy.



Fig. 1: Student presented the result at “The 4th Joint Meeting of Veterinary Science in East Asia”, Hokkaido, Japan. 8-9, September 2024



Fig. 2: PI presented the results at “7th INTERNATIONAL BIOLOGY CONFERENCE 2024” in Vietnam, October 2, 2024



Fig. 3: PI contributed in the Program Chairmanship at the “7th INTERNATIONAL BIOLOGY CONFERENCE 2024” in Vietnam, October 2, 2024.