

Technology/ Title	Insect cell-based influenza virus-like particle (VLP) vaccines	
Technology Type	<input type="checkbox"/> Biotechnology	<input type="checkbox"/> Device/Diagnostics
	<input checked="" type="checkbox"/> Pharmaceutical	<input type="checkbox"/> Others: _____ -
Contact Person	Name: Hua-Hsuan Liang	Title: Acting Section Chief
	Telephone(work): 886-37-206166#33206	Mobile:
	Email: huahsuan@nhri.edu.tw	
Link	https://iv.nhri.org.tw/zhtw/faculty/%e6%9d%8e%e6%95%8f%e8%a5%bf/	
Technology Description	<p>The current seasonal influenza vaccines are mainly produced using egg-based platforms. Recent studies have found that egg-based platforms could induce antigenic variation which further reduce vaccine efficacy. Therefore, the egg-based seasonal influenza vaccines will be replaced by other platforms gradually.</p> <p>Insect cells have been used to develop recombinant HA (rHA) protein and VLP vaccines for seasonal and pandemic influenza vaccines. We have developed H7N9 rHA and VLP vaccine candidates and found that VLP vaccines is more immunogenic than rHA in mice. In addition, we also found our in-house seasonal influenza VLP vaccines are more immunogenic than the commercial seasonal influenza rHA vaccine in mice. Therefore, the insect cell-based influenza VLP vaccines have great commercial potentials.</p>	
Intellectual Property	In submission.	
Key Publications	<p>Ting-Hui Lin, Min-Yuan Chia, Chun-Yang Lin, Yi-Qi Yeh, U-Ser Jeng, Wen-Guey Wu, Min-Shi Lee* (2019, Mar). Improving immunogenicity of influenza virus H7N9 recombinant hemagglutinin for vaccine development. Vaccine.</p> <p>Lai, C. C., Cheng, Y. C., Chen, P. W., Lin, T. H., Tzeng, T. T., Lu, C. C., Lee, M. S*, & Hu, A. Y. (2019). Process development for pandemic influenza VLP vaccine production using a baculovirus expression system. Journal of biological engineering, 13, 78.</p>	
Business Opportunity	We are doing fundraising for USD 10 millions to initiate clinical trials. In addition, we are looking for partners to co-develop other vaccine candidates, including adjuvant and novel delivery platforms.	