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赴美研習豬瘟及非洲豬瘟病毒基因操作技術

新興傳染病組

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摘要

豬瘟和非洲豬瘟是影響全球養豬業的兩種非常重要的疾病。由於這些疾病在亞洲地區流行，且這兩種疾病在豬隻都具有快速傳播及高死亡率的特性，一旦入侵會造成產業重大衝擊與巨額經濟損失，亟需針對此兩疾病病原進行病毒基因操作研究，以因應防疫需求。爰此，本所兩名研究人員於本(113)年5月5日至5月18日奉派至美國康乃爾大學獸醫學院群體健康醫學與診斷科學部張永富教授實驗室，研習前述技術及動物疫苗設計理念與技術。研習期間，向張教授學習疫苗病毒株基因組的編輯與重組技術，如 mRNA 疫苗及多抗原表位疫苗設計，不僅提高了疫苗設計的效率和效力，還減少了實驗動物的使用，符合人道實驗的要求。同時也參訪了康乃爾大學動物衛生診斷中心，該中心配有先進的診斷技術和嚴格的安全管理。總體而言，本次研習除了提高我們在相關技術領域的專業知識，亦有助於未來疫苗研發工作中取得更多突破，進而提升我國防禦海外動物疾病的能力。

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A report on technique visit in US for genetic manipulation of classical swine fever virus and African swine fever virus

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Abstract

Classical swine fever and African swine fever are two critically important diseases affecting global pig industry. Prevalent in Asia, these diseases are known for their rapid transmission and high mortality rates among pigs. The potential invasion of these diseases poses significant risks to the industry and could lead to substantial economic losses, highlighting the urgent need for research in viral genetic manipulation to effectively combat these pathogens. In response to this need, two researchers from Veterinary Research Institute were assigned to Professor Yung-Fu Chang’s laboratoryat the Department of Population Medicine and Diagnostic Sciences, Cornell University College of Veterinary Medicine, from May 5 to May 18, 2024. During this period, they gained advanced skills and knowledge in vaccine design principles and techniques, including virus genome editing and recombination technologies such as mRNA vaccines and multi-epitope vaccines. These techniques enhance the efficiency and efficacy of vaccine development while also reducing the use of experimental animals, in line with humane research practices. Additionally, the researchers visited the Cornell University Animal Health Diagnostic Center, which is equipped with advanced diagnostic technologies and strict safety protocols. Overall, this training has significantly improved our expertise in relevant technologies and is expected to facilitate future breakthroughs in vaccine development, thereby strengthening our country's ability to defend against foreign animal diseases.