LIÈGE université
Gembloux
Agro-Bio Tech

Le Corps professoral de

Gembloux Agro-Bio Tech - Université de Liège vous prie

de lui faire l'honneur d'assister à la défense publique de la dissertation originale que

Monsieur LI Lin,

Titulaire d'un diplôme de *master of veterinary sciences*,

présentera en vue de l'obtention du grade et du diplôme de

DOCTEUR EN SCIENCES AGRONOMIQUES ET INGENIERIE BIOLOGIQUE,

le 22 novembre 2018, à 8h30 précises (personne ne sera admis après cette heure),

en l'auditorium PhV (Physiologie végétale, bât. 48),

Avenue Maréchal Juin, 13 à 5030 GEMBLOUX.

Cette dissertation originale a pour titre :

« Contribution of reverse genetics in design of antiviral vaccines ».

Le jury est composé comme suit :

Président : Prof. M. VANDENBOL, Professeur ordinaire,
Membres : Prof. L. WILLEMS (Promoteur), Prof. G. TONG (Copromoteur - CAAS, Chine), Prof. N. EVERAERT, Dr M. SCHROYEN, Prof. N. GILLET (UNamur).

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Summary

Classical swine fever (CSF) and Pseudorabies are caused by Classical swine fever virus (CSFV) or Pseudorabies virus (PRV), respectively. Both of them induce important economic losses in many countries, such as China and other developing countries that lack good diagnostic methods and good vaccines. Therefore, in order to wipe out these viruses and protect the animals from virus infection, it is necessary to develop better diagnostic tools and vaccines. In the first part of my thesis, we developed an indirect enzyme-linked immune-sorbent assay (iELISA) to differentiate vaccinated animals from the infected. The results showed that the sensitivity (94.6%) and specificity (97.1%) of the test is very good. The iELISA can thus be employed to diagnose CSF.

In the second part of my thesis, we focused on the gE protein of PRV. Using the yeast-two hybrid system, I have isolated 8 proteins interacting with gE. One of these, Translocator protein (TSPO) was further characterized. Interaction of gE with TSPO was supported by coimmunoprecipitation and confocal imaging analyzes. We further demonstrate that overexpression of TSPO affects cholesterol levels and suppresses virus attachment and replication.

In the third part of my thesis, I studied another viral system. I wrote a review about oncogene-dependent replication of Human T-cell leukemia virus (HTLV-1) in the presence of a strong immune response.

In conclusion, I have made contributions to a better understanding of different viral systems and provided new tools to improve diagnostics and prevention.