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Distinguished Professor

Professional Specialty: Molecular Virology, Pathogenesis, Laboratory Diagnosis

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Education background & professional career:

1998-2002 Ph.D. MRC Virology Unit, University of Glasgow (Scotland, UK)

1995-1997 M.Sc. Graduate Institute of Veterinary Microbiology, National Chung-Hsing University (Taiwan)

1991-1995 B.V.M Department of Veterinary Medicine, National Chung-Hsing University (Taiwan)

2014 (Feb-Aug) visiting scholar in Prof. Peter Palese Lab (Icahn School of Medicine at Mount Sinai, USA)

2004 - 2005 Postdoctoral research fellow (University of Cambridge, UK)

2002 - 2004 Postdoctoral research fellow (Department of MMI, University of Alberta, Canada)

Honours:

1. Overseas Research Student Award (ORS), UK: 1998-2001
2. Scholarship for Postgraduate Students (University of Glasgow):1998-2001
3. The outstanding young faculty of National Chung-Hsing University (2010, 2011)
4. Distinguished Professor, National Chung-Hsing University (2015-now)

Researches :

The major researches in my lab:

1. **Avian Influenza viruses (AIVs)** cause severe diseases in poultry worldwide. We aimed to investigate the impact of the viral NS1 protein on viral infection dynamics. By exchange of the NS segment, the replication of reassortant AIVs was significantly affected and that is significantly related to the modulatory effect of NS1 on host anti-viral responses and viral RdRp activity. These results indicate that NS1 is a critical factor responsible for the diverse traits of AIVs in Taiwan.
2. **Orf virus (ORFV)**, a parapoxvirus, causes endemic disease in goats. Since 2007, we initiated the ORFV studies, not only in molecular epidemiology but also in the pathogenesis aspect. In particular, we revealed the function and mechanism of OV20.0 protein on counteracting innate immune response and suppressing RNA interference machinery. Extending from the understanding of its distinct immune regulatory effect, we are currently exploring the oncolytic activity of ORFV in several cancer models.
3. Development of methods and identification of biomarkers for diagnosis of animal cancers and renal diseases.

Selected publication (2018-2021): * corresponding author. #Co-first author

1. Kuan, C.Y., S.C. Ou, C.C. Chang, P.L. Kao, R.S. Tsai, P.Rattanapanadda, T.L Lin, K. Maeda, T.L. Cheng, Y.J. Lee, S.T. Chuang, S.L. Lin, H.Y. Liu, F.Y. Lin, J.W. Lin, W.L. Hsu* and C.C. Chou*. 2023. Epidemiology of Severe Fever with Thrombocytopenia Syndrome in Dogs and Cats in Taiwan. *Viruses* 2023, 15(12), 2338.
2. Kuan C.Y., T.L. Lin, S.C. Ou, S.T. Chuang, J. P.W. Chan, K. Maeda, T. Mizutani, M.P. Wu, F. Lee, F.T. Chan, C.C. Chang, R.L. Liang, S.F. Yang, T.C. Liu, W.C. Tu, H.Y. Tzeng, C.J. Lee, C.F. Lin, H.H. Lee, J.H. Wu, H.C. Lo, K.C. Tseng, **W.L. Hsu***, and C.C. Chou*. 2023. The First Nationwide Surveillance of Severe Fever with Thrombocytopenia Syndrome in Ruminants and Wildlife in Taiwan. *Viruses* 15(2): 441.
3. Tu, E.C., **W.L. Hsu*** and J. T. C. Tzen*. 2023. Strictinin, a Major Ingredient in Yunnan Kucha Tea Possessing Inhibitory Activity on the Infection of Mouse Hepatitis Virus to Mouse L Cells. *Molecules*. 28(3): 1080.
4. Liu, Y.C., G.R. Liao, A. Y. Tsai, C.Y. Tseng, C.Y. Kuan, R.S. Tsai, R. A. Albrecht, R.L. Kuo, I.C. Cheng, W.T. Liang, S.C. Ou*, **W.L.Hsu***. 2023. NS2 is a key determinant of compatibility in reassortant avian influenza virus with heterologous H7N9-derived NS segment. *Virus Research*. 324: 199028
5. Yamada Y, Chuang ST, Tseng CY, Liao GR, Liu SW, Tseng YY, Lin FY, **Hsu WL***. 2023 Deletion of gene OV132 attenuates Orf virus more effectively than gene OV112. *Appl Microbiol Biotechnol*. 107(2-3):835-851.
6. Wang, C.H., C.Y. Tseng, **W.L. Hsu***, J.T.C*. Tzen. 2022. Establishment of a Cell Line Stably Expressing the Growth Hormone Secretagogue Receptor to Identify Crocin As a Ghrelin Agonist. *Biomolecules* 2022, 12, 1813
7. Li, C.Z.#, H.M. Chang#, **W.L. Hsu#**, P. Venkatesan, H.C. Lin, and P.S. Lai. 2022. Curcumin-Loaded Oil-Free Self-Assembled Micelles Inhibit the Influenza A Virus Activity and the Solidification of Curcumin-Loaded Micelles for Pharmaceutical Applications. *Pharmaceutics* 14: 2422. (# Equal contribution.) (IF: 6.321)
8. Chung, Y.T., C.Y. Kuan, G.R. Liao, R. Albrecht, Y.Y. Tseng, Y.C. Hsu, S.C. Ou, **W.L. Hsu***. 2022. A variant NS1 protein from H5N2 avian influenza virus suppresses PKR activation and promotes replication and virulence in mammals. *Emerg Microbes Infect.* 11(1):2291-2303. (IF: 19.56)

9. Li, T.H. #, **W.L. Hsu**#, C.Y. Chen#, Y.C. Chen, Y.C. Wang, M.A. Tsai, I.C. Chen, and C.C. Chang*. 2022. Preparation of Recombinant Glycoprotein B (gB) of Chelonid Herpesvirus 5 (ChHV5) for Antibody Production and Its Application for Infection Detection in Sea Turtles. *Scientific Reports*. 12:11022. (IF: 4.38)
10. W.J. Wang, M.C. Chou, Y.J. Lee, **W.L. Hsu***, and G.J. Wang*. 2022. A simple electrochemical immunosensor based on a gold nanoparticle monolayer electrode for neutrophil gelatinase-associated lipocalin detection. *Talanta*. 246: 123530 (4 May 2022) (IF: 6.057)
11. Chen, Y.C., W.Y. Chin, C.C. Chang, S.T. Chuang, and **W.L. Hsu***. 2021. Potential Risk Factors Associated with Infection with Bovine Leukaemia Virus in Dairy and Beef Cattle in Taiwan. *Pathogens* 10(12): 1553
12. Liao, G.R., Y.Y. Tseng, C.Y. Tseng, C.Y. Lo, **W.L. Hsu***. 2021. The orf virus (ORFV) protein OV20.0 interacts with the microprocessor complex subunit DGCR8 to regulate miRNA biogenesis and ORFV infection. *FEBS Letters*. 595 (2021) 2897-2908. (IF: 4.124)
13. Tseng, Y.Y., C.Y. Kuan, M. Mibayashi, C.J. Chen, P. Palese, R. A. Albrecht, **W.L. Hsu***. 2021. Interaction between NS1 and cellular MAVS contributes to NS1 mitochondria targeting. *Viruses*. 13: 1909. (IF: 5.079)
14. M.H. Liao, X.R. Wang, **W.L. Hsu***, Jason T.C. Tzen*. 2021. Pu'er tea rich in strictinin and catechins prevents biofilm formation of two cariogenic bacteria, *Streptococcus mutans* and *Streptococcus sobrinus*. *Journal of Dental Sciences*. Accepted in May 25, 2021. (IF: 2.08)
15. Lin, H.W., Y.J. Lee, D.J. Yang, M.C. Hsieh, C.C. Chen, **W.L. Hsu**, Y.Y. Chang*, C.W. Liu*. 2021. Anti-inflammatory effects of Flos Lonicerae Japonicae Water Extract are regulated by the STAT/NF- κ B pathway and HO-1 expression in Virus-infected RAW264.7 cells. *Int J Med Sci*. Mar 30;18(11):2285-2293. (IF 5.923)
16. Liao, G.R., Y.Y. Tseng, C.Y. Tseng, Y.P. Huang, C.H. Tsai, H.P. Liu, **W.L. Hsu***, 2021. K160 in the RNA-binding domain of the orf virus virulence factor OV20.0 is critical for its functions in counteracting host antiviral defense. *FEBS Letters*. 595: 1721-1733. (IF: 4.124)
17. Tseng, Y.Y., G.R. Liao, A. Lien, and **W.L. Hsu***. 2021. Current concepts in the development of therapeutics against human and animal coronavirus diseases by targeting NP. *Computational and Structural Biotechnology Journal* 19 (2021) 1072-1080.
18. Lin, P.R., P.C. Kuo, Y.C. Lia, C.F. Jhuo, **W.L. Hsu***, Jason T.C. Tzen*. 2020. Theacrine and strictinin, two major ingredients for the anti-influenza activity of Yunnan Kucha tea. *Journal of Ethnopharmacology* November, 262: 113190. (IF:4.36)
19. Jing, H.#, **W.L. Hsu**#, V. Wu, H.J. Tsai, S.F. Tsai, P. S Tsai, T. S. Lai, and Y.J. Lee*. 2020. Urine hemojuvelin in cats with naturally occurring kidney diseases. *Journal of Veterinary Internal Medicine*. May 34(3):1222-1230.(IF: 3.33)
20. Chen, Y.C., C.C. Chang, **W.L. Hsu***, and S.T. Chuang*. 2020. Dairy cattle with bovine leukaemia virus RNA show significantly increased leukocyte counts. *Veterinary Journal* 257:105449. (IF: 2.688)
21. Wang W.C., C.Y. Kuan, Y.J. Tseng, C.H. Chang, Y.C. Liu, Y.C. Chang, Y.C. Hsu, M.K. Hsieh, S.C. OU*, **W.L. Hsu***. The Impacts of Reassortant Avian Influenza H5N2 Virus NS1 Proteins on Viral Compatibility and Regulation of Immune Responses. 2020. *Frontiers in Microbiology*. Mar.12; 11:280. (IF: 5.64)
22. Lin, T.L.#, S.C. Ou#, K. Maeda, H. Shimoda, Jacky P.W. Chan, W.C. Tu, **W.L. Hsu*** and C.C. Chou*. 2020. The First Discovery of Severe Fever with Thrombocytopenia Syndrome Virus in Taiwan. *Emerging Microbes and infections*. 9: 148-151.(IF: 7.163)
23. Chen, Y.C., J.W. Liao, S.C. Chang, and **W.L. Hsu***. 2020. Expression frequency of c-kit isoforms and its prognostic potential in canine mammary Tumours. *Veterinary and Comparative Oncology*. Sep;18:303-314. (IF: 2.613)
24. Hsieh#, J.C. C.Y. Li#, **W.L. Hsu***, S.T. Chuang*. 2019 Dec. Molecular epidemiological and serological studies of Bovine Leukemia Virus in Taiwan. *Frontiers in Vet Sci*.6: 427. (IF: 3.412)
25. Yamada Y., G.R. Liao I, C.Y. Tseng., Y.Y. Tseng, **W.L. Hsu***. 2019 Establishment and characterization of transformed Goat Primary cells by expression of Simian Virus 40 Large T Antigen for orf virus propagations. *PLOS One* Dec 5;14(12):e0226105 (IF 3.240)
26. Wu, P.H.#, **W.L. Hsu**#, P.S. Jason Tsai, V.C. Wu, H.J. Tsai, Y.J. Lee. 2019 Identification of urine neutrophil gelatinase-associated lipocalin molecular forms and their association with different urinary diseases in cats. *BMC Vet Res*. 15: 306.
27. Chen, Y.C., S.C. Chang, Y.H. Huang, Y.J. Lee, C.C. Chang, J.W. Liao, and **W.L. Hsu***. 2019 Expression and the molecular forms of neutrophil gelatinase-associated lipocalin and matrix metalloproteinase 9 in canine mammary tumors. *Veterinary and Comparative Oncology*. 17(3):427-438. (IF: 2.613)
28. Liao, G.R., Y.Y. Tseng, C.Y. Tseng, F.Y. Lin, Y. Yamada, H.P. Liu, C.Y. Kuan, **W.L. Hsu***. 2019. Adenosine Deaminase Acting on RNA 1 Associates with Orf Virus OV20.0 and Enhances Viral Replication. *J. Virology*. 93:e01912-18. (IF: 5.103)
29. Richart, S. M.#, Y.L. Li#, Y. Mizushima, Y.Y. Chang, T.Y. Chung, G.H. Chen, J. T.C. Tzen, K.S. Shia and **W.L. Hsu***. 2018. Synergic effect of curcumin and its structural analogue (Monoacetylcurcumin) on anti-influenza virus infection. *JFDA*. 26:1015-1023. (IF: 6.079)
30. Dony Mathew, **Wei-Li Hsu***. 2018 Antiviral Potential of Curcumin. *Journal of Functional Foods* 40: 692-699. (IF: 4.451)

Patterns:

1. Novel *Enterococcus faecium* LJS-01 and its use for probiotic (No I-417054), 2013, Taiwan
2. Tumor specific antigen, recombinant protein, antibody, and primer thereof, and the method for identifying mammalian tumors, 2016, Taiwan.