

REFERENCES

1. Anderson NL and Anderson NG. Proteome and proteomics: new technologies, new concepts, and new words. *Electrophoresis*. 1998; 19(11): 1853-1861.
2. Ansai T, Yu W, Urnowey S, Barik S, Takehara T. Construction of a *pepO* gene-deficient mutant of *Porphyromonas gingivalis*: Potential role of endopeptidase O in the invasion of host cells. *Oral Microbiol. Immunol.* 2003; 18: 398-400.
3. Arends JP and Zanen HC. Meningitis caused by *Streptococcus suis* in humans. *Rev Infect Dis.* 1988; 10: 131-137.
4. Baums CG and Valentin-Weigand P. Surface-associated and secreted factors of *Streptococcus suis* in epidemiology, pathogenesis and vaccine development. *Anim Health Res Rev.* 2009; 10(1): 65-83.
5. Bayle L, Chimalapati S, Schoehn G, Brown J, Vernet T, Durmort C. Zinc uptake by *Streptococcus pneumoniae* depends on both AdcA and AdcAII and is essential for normal bacterial morphology and virulence. *Mol Microbiol.* 2011; 82(4): 904-916.
6. Benga L, Fulde M, Neis C, Goethe R, Valentin-Weigand P. Polysaccharide capsule and suilysin contribute to extracellular survival of *Streptococcus suis* co-cultivated with primary porcine phagocytes. *Vet Microbiol.* 2008; 132(1-2): 211-219.
7. Berthelot-Herault F, Morvan H, Keribin AM, Gottschalk M, Kobisch M. Production of muraminidase-released protein (MRP), extracellular factor (EF) and suilysin by field isolates of *Streptococcus suis* capsular types 2, 1/2, 9, 7 and 3 isolated from swine in France. *Vet Res.* 2000; 31: 473-479.

8. Bergmann S, Rohde M, Chhatwal GS, Hammerschmidt S. Alpha-Enolase of *Streptococcus pneumoniae* is a plasmin (ogen)-binding protein displayed on the bacterial cell surface. *Mol. Microbiol.* 2001; 40: 1273–1287.
9. Bierne H, Mazmanian SK, Trost M, Pucciarelli MG, Liu G, Dehoux P, *et al.* Inactivation of the *srtA* gene in *Listeria monocytogenes* inhibits anchoring of surface proteins and affects virulence. *Mol Microbiol.* 2002; 43: 869–881.
10. Bini L, Sanchez-Campillo M, Santucci A, Magi B, Marzocchi B, Comanducci M, *et al.* Mapping of *Chlamydia trachomatis* proteins by immobilized polyacrylamide two-dimensional electrophoresis: Spot identification by N-terminal sequencing and immunoblotting. *Electrophoresis.* 1996; 17: 185–190.
11. Bisno AL, Brito MO, Collins CM. Molecular basis of group A streptococcal virulence. *Lancet Infect Dis.* 2003; 3: 191–200.
12. Blackstock WP and Weir MP. Proteomics: quantitative and physical mapping of cellular proteins. *Trends Biotechnol.* 1999; 17(3): 121-127.
13. Brassard J, Gottschalk M, Quessy S. Cloning and purification of the *Streptococcus suis* serotype 2 glyceraldehyde-3-phosphate dehydrogenase and its involvement as an adhesin. *Vet Microbiol.* 2004; 102(1-2): 87–94.
14. Cai YY, Yan WJ, Xu WC, Yin YB, He YJ, Wang H, Zhang XM. Screening and identification of DnaJ Interaction Proteins in *Streptococcus pneumoniae*. *Curr Microbiol.* 2013; 67: 732–741.
15. Carson JA, Ansai T, Awano S, Yu W, Takehara T, Turner AJ. Characterization of PgPepO, a bacterial homologue of endothelin-converting enzyme-1. *Clin. Sci. (Lond.).* 2002; 103: 90–93.

16. Chabot-Roy G, Willson P, Segura M, Lacouture S, Gottschalk M. Phagocytosis and killing of *Streptococcus suis* by porcine neutrophils. *Microb. Pathog.* 2006; 41(1): 21–32.
17. Charland N, Harel J, Kobisch M, Lacasse S, Gottschalk M. *Streptococcus suis* serotype 2 mutants deficient in capsular expression. *Microbiology.* 1998; 144: 325-332.
18. Charland N, Nizet V, Rubens CE, Kim KS, Lacouture S, Gottschalk M. *Streptococcus suis* serotype 2 interactions with human brain microvascular endothelial cells. *Infect Immun.* 2000; 68(2): 637–643.
19. Chau PY, Huang CY, Kay R. *Streptococcus suis* meningitis. An important underdiagnosed disease in Hong Kong. *Med J Aust.* 1983; 1: 414-417.
20. Chen B, Zhang A, Xu Z, Li R, Chen H, Jin M. Large-scale identification of bacteria-host crosstalk by affinity chromatography: Capturing the interactions of *Streptococcus suis* proteins with host cells. *J Proteome Res.* 2011; 10(11): 5163-5174.
21. Curran TM, Ma Y, Rutherford GC and Marquis RE. Turning on and turning off the arginine deiminase system in oral streptococci. *Can J Microbiol.* 1998; 44: 1078–1085.
22. Dion N, LeMoual H, Fournie-Zaluski MC, Roques BP, Crine P, Boileau G. Evidence that Asn542 of neprilysin (EC 3.4.24.11) is involved in binding of the P20 residue of substrates and inhibitors. *Biochem J.* 1995; 311: 623–627.
23. Elliott SD. Streptococcal infection in young pigs. I. An immunochemical study of the causative agent (PM streptococcus). *J Hyg (Camb).* 1966; 64: 205-212.

24. Esgleas M, Li Y, Hancock MA, Harel J, Dubreuil JD, Gottschalk M. Isolation and characterization of alpha-enolase, a novel fibronectin-binding protein from *Streptococcus suis*. *Microbiology*. 2008; 154: 2668-2679.
25. Esgleas M, Dominguez-Punaro Mde L, Li Y, Harel J, Dubreuil JD, Gottschalk M. Immunization with SsEno fails to protect mice against challenge with *Streptococcus suis* serotype 2. *FEMS Microbiol. Lett.* 2009; 294(1): 82–88.
26. Ferrando ML, Fuentes S, de Greeff A, Smith H, Wells JM. ApuA, a multifunctional alpha-glucan-degrading enzyme of *Streptococcus suis*, mediates adhesion to porcine epithelium and mucus. *Microbiology*. 2010; 156: 2818-2828.
27. Fittipaldi N, Sekizaki T, Takamatsu D, de la Cruz Domínguez-Punaro M, Harel J, Bui NK, *et al.* Significant contribution of the *pgdA* gene to the virulence of *Streptococcus suis*. *Mol. Microbiol.* 2008a; 70(5): 1120–1135.
28. Fittipaldi N, Sekizaki T, Takamatsu D, Harel J, Domínguez-Punaro Mde L, Von Aulock S, *et al.* d-alanylation of lipoteichoic acid contributes to the virulence of *Streptococcus suis*. *Infect Immun.* 2008b; 76(8): 3587–3594.
29. Fittipaldi N, Fuller TE, Teel JF, Wilson TL, Wolfram TJ, Lowery DE, *et al.* Serotype distribution and production of muramidase-released protein, extracellular factor and suilysin by field strains of *Streptococcus suis* isolated in the United States. *Vet Microbiol.* 2009; 139: 310–317.
30. Fittipaldi N, Segura M, Grenier D, Gottschalk M. Virulence factors involved in the pathogenesis of the infection caused by the swine pathogen and zoonotic agent *Streptococcus suis*. *Fut. Microbiol.* 2012; 7: 259-279.

31. Fongcom A, Pruksakorn S, Netsirisawan P, Pongprasert R, Onsibud P. *Streptococcus suis* Infection: A Prospective study in Northern Thailand. *Southeast Asian J Trop Med Public Health*. 2009; 40: 511-517.
32. Fontaine MC, Perez-Casal J, Willson PJ. Investigation of a novel DNase of *Streptococcus suis* serotype 2. *Infect Immun*. 2004; 72(2): 774-781.
33. Froeliger EH, Oetjen J, Bond JP, Fives-Taylor P. *Streptococcus parasanguis* pepO encodes an endopeptidase with structure and activity similar to those of enzymes that modulate peptide receptor signaling in eukaryotic cells. *Infect Immun*. 1999; 67: 5206-5214.
34. Garmory HS and Titball RW. ATP-binding cassette transporters are targets for the development of antibacterial vaccines and therapies. *Infect Immun*. 2004; 72: 6757-6763.
35. Ge J, Feng Y, Ji H, Zhang H, wu Wang C, *et al*. Inactivation of dipeptidyl peptidase IV attenuates the virulence of *Streptococcus suis* serotype 2 that causes streptococcal toxic shock syndrome. *Curr. Microbiol*. 2009; 59(3): 248-255.
36. Geng H, Zhu L, Yuan Y, Zhang W, Li W, Wang J, *et al*. Identification and characterization of novel immunogenic proteins of *Streptococcus suis* serotype 2. *J Proteome Res*. 2008; 7: 4132-42.
37. Gómez-Gascóna L, Luqueb I, Olaya-Abrila A, Jiménez-Munguíaa I, Orbegoza-Medinaa RA, Peralboc E, *et al*. Exploring the pan-surfome of *Streptococcus suis*: Looking for common protein antigens. *J Proteomics*. 2012; 75: 5654-5666.
38. Gottschalk MG, Lacouture S, Dubreuil JD. Characterization of *Streptococcus suis* capsular type 2 haemolysin. *Microbiology*. 1995; 141: 189-195.

39. Gottschalk M and Segura M. The pathogenesis of the meningitis caused by *Streptococcus suis*: the unresolved questions. *Vet Microbiol.* 2000; 76: 259-272.
40. Gottschalk M, Segura M, Xu J. *Streptococcus suis* infections in humans: the Chinese experience and the situation in North America. *Anim Health Res Rev.* 2004; 8(1): 29-45.
41. Gottschalk M, Xu J, Calzas C, Segura M. *Streptococcus suis*: a new emerging or an old neglected zoonotic pathogen?. *Fut. Microbiol.* 2010; 5(3): 371–391.
42. Gottschalk M, Karriker L, Ramirez A, Schwartz KJ, Stevenson G, Zimmerman J. *Streptococcosis* In: *Diseases of Swine*. Wiley Publishers. 2011; (In Press).
43. de Greeff A, Buys H, Verhaar R, Dijkstra J, Van Alphen L, Smith HE. Contribution of fibronectin-binding protein to pathogenesis of *Streptococcus suis* serotype 2. *Infect Immun.* 2002; 70(3): 1319–1325.
44. Haesebrouck F, Pasmans F, Chiers K, Maes D, Ducatelle R, Decostere A. Efficacy of vaccines against bacterial diseases in swine: what can we expect?. *Vet Microbiol.* 2004; 100: 255-268.
45. Haas G, Karaali G, Ebermayer K, Metzger WG, Lamer S, Zimny-Arndt U, et al. Immunoproteomics of *Helicobacter pylori* infection and relation to gastric disease. *Proteomics.* 2002; 2: 313–324.
46. Haataja S, Tikkanen K, Liukkonen J, Francois-Gerard C, Finne J. Characterization of a novel bacterial adhesion specificity of *Streptococcus suis* recognizing blood group P receptor oligosaccharides. *J.Biol.Chem.* 1993; 268: 4311-4317.

47. Haataja S, Tikkanen K, Nilsson U, Magnusson G, Karlsson KA, Finne J. Oligosaccharide-receptor interaction of the Gal α 1–4Gal binding adhesin of *Streptococcus suis*. Combining site architecture and characterization of two variant adhesin specificities. *J.Biol.Chem.* 1994; 269: 27466-27472.
48. Haleis A, Alfa M, Gottschalk M, Bernard K, Ronald A, Manickam K. Meningitis caused by *Streptococcus suis* serotype 14, North America. *Emerg Infect Dis.* 2009; 15: 350-352.
49. Hill JE, Gottschalk M, Brousseau R, Harel J, Hemmingsen SM, Goh SH. Biochemical analysis, cpn60 and 16S rDNA sequence data indicate that *Streptococcus suis* serotypes 32 and 34, isolated from pigs, are *Streptococcus orisratti*. *Vet Microbiol.* 2005; 107: 63-69.
50. Jacobs AA, Loeffen PL, van den Berg AJ, Storm PK. Identification, purification, and characterization of a thiol-activated hemolysin (suilysin) of *Streptococcus suis*. *Infect Immun.* 1994; 62: 1742-1748.
51. Jing HB, Yuan J, Wang J, Yuan Y, Zhu L, Liu XK, *et al.* Proteome analysis of *Streptococcus suis* serotype 2. *Proteomics.* 2008; 8: 333-349.
52. Kay R, Cheng AF, Tse CY. *Streptococcus suis* infection in Hong Kong. *QJM:monthly journal of the Association of Physicians.* 1995; 88: 39-47.
53. Kerdsin A, Oishi K, Sripakdee S, Boonkerd N, Polwichai P, Nakamura S, *et al.* Clonal dissemination of human isolates of *Streptococcus suis* serotype 14 in Thailand. *J Med Microbiol.* 2009; 58: 1508-1513.
54. Kerdsin A, Dejsirilert S, Puangpatra P, Sripakdee S, Chumla K, Boonkerd N, *et al.* Genotypic profile of *Streptococcus suis* serotype 2 and clinical features of infection in humans, Thailand. *Emerg Infect Dis.* 2011; 17: 835-842.

55. Kim SW, Choi IH, Kim SN, Kim YH, Pyo SN, Rhee DK. Molecular cloning, expression, and characterization of dnaK in *Streptococcus pneumoniae*. *FEMS Microbiol. Lett.* 1998; 161: 217–224.
56. Kim D, Han K, Oh Y, Kim CH, Kang I, Lee J, *et al.* Distribution of capsular serotypes and virulence markers of *Streptococcus suis* isolated from pigs with polyserositis in Korea. *Can J Vet Res.* 2010; 74: 314–316.
57. Kouki A, Pieters RJ, Nilsson UJ, Loimaranta V, Finne J, Haataja S. Bacterial adhesion of *Streptococcus suis* to host cells and its inhibition by carbohydrate ligands. *Biology.* 2013; 2: 918-935.
58. Lalioui L, Pellegrini E, Dramsi S, Baptista M, Bourgeois N, Doucet-Populaire F, *et al.* The SrtA Sortase of *Streptococcus agalactiae* is required for cell wall anchoring of proteins containing the LPXTG motif, for adhesion to epithelial cells, and for colonization of the mouse intestine. *Infect Immun.* 2005; 73: 3342–3350.
59. Lalonde M, Segura M, Lacouture S, Gottschalk M. Interactions between *Streptococcus suis* serotype 2 and different epithelial cell lines. *Microbiology.* 2000; 146: 1913-1921.
60. Langford P, Williams AE, Kroll JS. Superoxide dismutases of pathogenic and non-pathogenic *Streptococcus suis* Type 2 isolates. *FEMS Microbiol. Lett.* 1991; 61(2–3): 347–350.
61. Lecours MP, Gottschalk M, Houde M, Lemire P, Fittipaldi N, Segura M. Critical role for *Streptococcus suis* cell wall modifications and suilysin in resistance to complement-dependent killing by dendritic cells. *J Infect Dis.* 2011; 204(6): 919-929.

62. Lemos JA, Burne RA, Castro AC. Molecular cloning, purification and immunological responses of recombinants GroEL and DnaK from *Streptococcus pyogenes*. *FEMS Immunol. Med. Microbiol.* 2000; 28: 121–128.
63. Li Y, Martinez G, Gottschalk M, Lacouture S., Willson P, Dubreuil JD, *et al.* Identification of a surface protein of *Streptococcus suis* and evaluation of its immunogenic and protective capacity in pigs. *Infect Immun.* 2006; 74: 305–312.
64. Linke C, Caradoc-Davies TT, Young PG, Proft T, Baker EN. The laminin-binding protein Lbp from *Streptococcus pyogenes* is a zinc receptor. *J Bacteriol.* 2009; 191(18): 5814–5823.
65. Lowry OH, Rosebrough NJ, Farr AL, Randall RJ. Protein measurement with the Folin phenol reagent. *J Biol Chem.* 1951; 193: 265–275.
66. Lun ZR, Wang QP, Chen XG, Li AX, Zhu XQ. *Streptococcus suis*: an emerging zoonotic pathogen. *Lancet Infect Dis.* 2007; 7: 201–209.
67. Mai NT, Hoa NT, Nga TV, Linh le D, Chau TT, Sinh DX, *et al.* *Streptococcus suis* meningitis in adults in Vietnam. *Clin Infect Dis.* 2008; 46: 659–667.
68. Mandanici F, Gómez-Gascón L, Garibaldi M, Olaya-Abril A, Luque I, Tarradas C, *et al.* A surface protein of *Streptococcus suis* serotype 2 identified by proteomics protects mice against infection. *J Proteomics.* 2010; 73: 2365–2369.
69. Martinez G, Harel J, Lacouture S, Gottschalk M. Cloning and partial characterization of the gene encoding the putative elongation factor Ts of *Streptococcus suis* serotype 2. *Arch Microbiol.* 2003; 180: 298–302.
70. Matsumoto M, Sakae K, Hashikawa S, Torii K, Hasegawa T, Horii T, *et al.* Close correlation of streptococcal DNase B (sdaB) alleles with emm genotypes in *Streptococcus pyogenes*. *Microbiol Immunol.* 2005; 49: 925–9.

71. Michaud S, Duperval R, Higgins R. *Streptococcus suis* meningitis: First case reported in Quebec. *Can J Infect Dis*. 1996; 7: 329-331.
72. de Moor CE. Septicaemic infections in pigs caused by haemolytic streptococci of new Lancefield groups designated R, S and T. *Antonie van Leeuwenhoek*. 1963; 29: 272-280.
73. Navarre WW and Schneewind O. Surface proteins of gram-positive bacteria and mechanisms of their targeting to the cell wall envelope. *Microbiol Mol Biol Rev*. 1999; 63(1): 174-229.
74. Norton PM, Rolph C, Ward PN, Bentley RW, Leigh JA. Epithelial invasion and cell lysis by virulent strains of *Streptococcus suis* is enhanced by the presence of suilysin. *FEMS Immunol Med Microbiol*. 1999; 26: 25-35.
75. Okwumabua O and Chinnapapakagari S. Identification of the gene encoding a 38-kilodalton immunogenic and protective antigen of *Streptococcus suis*. *Clin. Diagn. Lab. Immunol*. 2005; 12: 484-490.
76. Palmer M. The family of thiol-activated, cholesterol-binding cytolysins. *Toxicon*. 2001; 39(11): 1681-1689.
77. Pancholi V and Fischetti VA. Alpha-enolase, a novel strong plasmin(ogen) binding protein on the surface of pathogenic streptococci. *J. Biol. Chem*. 1998; 273: 14503-14515.
78. Pancholi V. Multifunctional alpha-enolase: its role in diseases. *Cell Mol Life Sci*. 2001; 58: 902-920.

79. Papa R, Artini M, Cellini A, Tilotta M, Galano E, Pucci P, Amoresano A, Selan L. A new anti-infective strategy to reduce the spreading of antibiotic resistance by the action on adhesion-mediated virulence factors in *Staphylococcus aureus*. *Microb Pathog*. 2013; 63: 44-53.
80. Paterson GK and Mitchell TJ. The role of *Streptococcus pneumonia* sortase A in colonisation and pathogenesis. *Microbes Infect*. 2006; 8: 145–153.
81. Perch B, Lind K. Immunological relationships of *Streptococcus* MG to group K streptococcus, strain K 4a. *Acta Pathol Microbiol Scand*. 1968; 73: 220-228.
82. Perch B, Kristjansen P, Skadhauge K. Group R streptococci pathogenic for man. *Acta Pathol Microbiol Scand*. 1968; 74: 69-76.
83. Phiwpan K, Sittiju W, Thukthaung T, Chanarat P. Detection of virulence-associated genes of virulent *Streptococcus suis* by multiplex PCR. *J Med Tech Assoc*. 2010; 38: 3130-3137.
84. Phuapradit P, Boongird P, Boonyakarnkul S. Meningitis caused by *Streptococcus suis* in humans. *Intern Med*. 1987; 3: 120-122.
85. Princivalli MS, Palmieri C, Magi G, Vignaroli C, Manzin A, Camporese A, *et al*. Genetic diversity of *Streptococcus suis* clinical isolates from pigs and humans in Italy (2003-2007). *Eurosurveillance*. 2009; 14(33): 1-7.
86. Race PR, Bentley ML, Melvin JA, Crow A, Hughes RK, Smith WD, *et al*. Crystal structure of *Streptococcus pyogenes* sortase A: implications for sortase mechanism. *J Biol Chem*. 2009; 284: 6924–6933.
87. Ragunathan P, Spellerberg B, Ponnuraj K. Structure of laminin-binding adhesin (Lmb) from *Streptococcus agalactiae*. *Acta Crystallogr D Biol Crystallogr*. 2009; 65(Pt12): 1262–1269.

88. Reuter G. Culture media for enterococci and group D-streptococci. *Int J Food Microbiol.* 1992; 17: 101-111.
89. Rodríguez-Ortega MJ, Luque I, Tarradas C, Bárcena JA. Overcoming function annotation errors in the Gram-positive pathogen *Streptococcus suis* by a proteomics-driven approach. *BMC Genomics.* 2008; 9: 1-12.
90. Sanford SE, Tilker AME. *Streptococcus suis* Type 2-Associated disease in swine: observations of a one-year study. *J Am Vet Med Assoc.* 1982; 181: 673-676.
91. Segura M, Gottschalk M. *Streptococcus suis* interactions with the murine macrophage cell line J774: adhesion and cytotoxicity. *Infect Immun.* 2002; 70: 4312-4322.
92. Si Y, Yuan F, Chang H, Liu X, Li H, Cai K, *et al.* Contribution of glutamine synthetase to the virulence of *Streptococcus suis* serotype 2. *Vet Microbiol.* 2009; 139: 80-88.
93. Silva LM, Baums CG, Rehm T, Wisselink HJ, Goethe R, Valentin-Weigand P. Virulence-associated gene profiling of *Streptococcus suis* isolates by PCR. *Vet Microbiol.* 2006; 115: 117-127.
94. Slomiany BL and Slomiany A. Endothelin-1-dependent leptin induction in gastric mucosal inflammatory responses to *Helicobacter pylori* lipopolysaccharide. *Biochem. Biophys. Res. Commun.* 2005; 336: 1106-1111.
95. Smith HE, Vecht U, Gielkens ALJ, Smits MA. Cloning and nucleotide-sequence of the gene encoding the 136-kilodalton surface protein (muramidase-released protein) of *Streptococcus suis* type-2. *Infect Immun.* 1992; 60: 2361-2367.

96. Smith HE, Vecht U, Wisselink HJ, Stockhofe-Zurwieden N, Biermann Y, Smits MA. Mutants of *Streptococcus suis* types 1 and 2 impaired in expression of muramidase released protein and extracellular protein induce disease in newborn germfree pigs. *Infect Immun*. 1996; 64: 4409–4412.
97. Smith HE, Wisselink HJ, Stockhofe-Zurwieden N, Vecht U, Smits MM. Virulence markers of *Streptococcus suis* type 1 and 2. *Adv Exp Med Biol*. 1997; 418: 651–655.
98. Smith HE, Damman M, van der Velde J, Wagenaar F, Wisselink HJ, Stockhofe-Zurwieden N, *et al*. Identification and characterization of the cps locus of *Streptococcus suis* serotype 2: the capsule protects against phagocytosis and is an important virulence factor. *Infect Immun*. 1999; 67: 1750–1756.
99. Spellerberg B, Rozdzinski E, Martin S, Weber-Heynemann J, Schnitzler N, Lutticken R, *et al*. Lmb, a protein with similarities to the LraI adhesin family, mediates attachment of *Streptococcus agalactiae* to human laminin. *Infect Immun*. 1999; 67(2): 871–878.
100. Staats JJ, Feder I, Okwumabua O, Chengappa MM. *Streptococcus suis*: past and present. *Vet Res Commun*. 1997; 21(6): 381–407.
101. Suankratay C, Intalaporn P, Nunthapisud P, Arunyingmongkol K, Wilde H. *Streptococcus suis* meningitis in Thailand. *Southeast Asian J Trop Med Public Health*. 2004; 35(4): 868–876.
102. Takamatsu D, Wongsawan K, Osaki M, Nishino H, Ishiji T, Tharavichitkul P, *et al*. *Streptococcus suis* in humans, Thailand. *Emerg Infect Dis*. 2008; 14:181–183.

103. Tan C, Fu S, Liu M, Jin M, Liu J, Bei W, *et al.* Cloning, expression and characterization of a cell wall surface protein, 6-phosphogluconate-dehydrogenase, of *Streptococcus suis* serotype 2. *Vet Microbiol.* 2008; 130: 363-370.
104. Tang J, Wang C, Feng Y, Yang W, Song H, Chen Z, *et al.* Streptococcal toxic shock syndrome caused by *Streptococcus suis* serotype 2. *PLoS Med.* 2006; 3(5): 668-676.
105. Tharavichitkul P, Wongsawan K, Takenami N, Pruksakorn S, Fongcom A, Gottschalk M, *et al.* Correlation between PFGE groups and *mrp/epf/sly* genotypes of human *Streptococcus suis* serotype 2 in Northern Thailand. *J Pathogens.* 2014; 1-5.
106. Valentin-Weigand P. Intracellular invasion and persistence: survival strategies of *Streptococcus suis* and *Mycobacterium avium* ssp. *paratuberculosis*. *Berl. Munch. Tierarztl. Wochenschr.* 2004; 117(11-12): 459-463.
107. Vanier G, Sekizaki T, Dominguez-Punaro MC, Esgleas M, Osaki M, Takamatsu D, *et al.* Disruption of *srtA* gene in *Streptococcus suis* results in decreased interactions with endothelial cells and extracellular matrix proteins. *Vet Microbiol.* 2008; 127: 417-24.
108. Vanier G, Segura M, Lecours MP, Grenier D, Gottschalk M. Porcine brain microvascular endothelial cell-derived interleukin-8 is first induced and then degraded by *Streptococcus suis*. *Microb. Pathog.* 2009; 46(3): 135-143.
109. Vanier G, Fittipaldi N, Slater JD, Dominguez-Punaro ML, Rycroft AN, Segura M, *et al.* New putative virulence factors of *Streptococcus suis* involved in invasion of porcine brain microvascular endothelial cells. *Microb. Pathogs.* 2009; 46: 13-20.

110. Vecht U, Wisselink HJ, Jellema ML, Smith HE. Identification of two proteins associated with virulence of *Streptococcus suis* type 2. *Infect Immun*. 1991; 59: 3156-3162.
111. Vilaichone RK, Vilaichone W, Nunthapisud P, Wilde H. *Streptococcus suis* infection in Thailand. *J Med Assoc Thai*. 2002; 85: 109–117.
112. Wahid RM, Yoshinaga M, Nishi J, Maeno N, Sarantuya J, Ohkawa T, *et al*. Immuneresponse to a laminin-binding protein (Lmb) in group A streptococcal infection. *Pediatr Int*. 2005; 47(2): 196–202.
113. Wang K and Lu C. Adhesion activity of glyceraldehyde-3-phosphate dehydrogenase in a Chinese *Streptococcus suis* Type 2 strain. *Berl. Munch. Tierarztl. Wochenschr*. 2007; 20(5–6): 207–209.
114. Wang C, Li M, Feng Y, Zheng F, Dong Y, Pan X, *et al*. The involvement of sortase A in high virulence of STSS-causing *Streptococcus suis* serotype 2. *Arch Microbiol*. 2009; 191: 23–33.
115. Wang Y, Yi L, Wu Z, Shao J, Liu G, Fan H, *et al*. Comparative proteomic analysis of *Streptococcus suis* biofilms and planktonic cells that identified biofilm infection-related immunogenic proteins. *PLoS ONE*. 2012; 7(4): 1-8.
116. Wartha F, Beiter K, Normark S, Henriques-Normark B. Neutrophil extracellular traps: casting the NET over pathogenesis. *Curr. Opin. Microbiol*. 2007; 10(1): 52–56.
117. Weiser JN, Bae D, Fasching C, Scamurra RW, Ratner AJ, Janoff EN. Antibody-enhanced pneumococcal adherence requires IgA1 protease. *Proc. Natl Acad. Sci. USA*. 2003; 100(7): 4215–4220.

118. Wei Z, Li R, Zhang A, He H, Hua Y, Xia J, *et al.* Characterization of *Streptococcus suis* isolates from the diseased pigs in China between 2003 and 2007. *Vet Microbiol.* 2009; 137: 196–201.
119. Wertheim HF, Nghia HD, Taylor W, Schultz C. *Streptococcus suis*: an emerging human pathogen. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America.* 2009; 48: 617-625.
120. Wisselink HJ, Smith HE, Stockhofe-Zurwieden N, Peperkamp K, Vecht U. Distribution of capsular types and production of muramidase-released protein (MRP) and extracellular factor (EF) of *Streptococcus suis* strains isolated from diseased pigs in seven European countries. *Vet Microbiol.* 2000; 74: 237–248.
121. Wu Z, Zhang W, Lu C. Comparative proteome analysis of secreted proteins of *Streptococcus suis* serotype 9 isolates from diseased and healthy pigs. *Microb Pathog.* 2008a; 45: 159-166.
122. Wu Z, Zhang W, Lu C. Immunoproteomic assay of surface proteins of *Streptococcus suis* serotype 9. *FEMS Immunol Med Microbiol.* 2008b; 53: 52-59.
123. Wu Z, Zhang W, Shao J, Wang Y, Lu Y, Lu C. Immunoproteomic assay of secreted proteins of *Streptococcus suis* serotype 9 with convalescent sera from pigs. *Folia Microbiol.* 2011; 56: 423–430.
124. Yang XW, Li C, Yang ZB, Wu LP, Hua XG. Differentiation of secreted proteins from a virulent and an avirulent strain of *Streptococcus suis* serotype 2. *Thai J Vet Med.* 2013; 43(1): 57-67.
125. Ye C, Zhu X, Jing H, Du H, Segura M, Zheng H, *et al.* *Streptococcus suis* sequence type 7 outbreak, Sichuan, China. *Emerg Infect Dis.* 2006; 12: 1203–1208.

126. Ying T, Wang H, Li HM, Wang J, Wang J, Shi Z, *et al.* Immunoproteomics of outer membrane proteins and extracellular proteins of *Shigella flexneri* 2a 2457T. *Proteomics*. 2005; 5: 4777–4793.
127. Yu H, Jing H, Chen Z, Zheng H, Zhu X, Wang H, *et al.* Human *Streptococcus suis* Outbreak, Sichuan, China. *Emerg Infect Dis*. 2006; 12(6): 914–920.
128. Zhang W and Lu CP. Immunoproteomic assay of membrane-associated proteins of *Streptococcus suis* type 2 China vaccine strain HA9801. *Zoonoses and public health*. 2007a; 54: 253-259.
129. Zhang W and Lu CP. Immunoproteomics of extracellular proteins of Chinese virulent strains of *Streptococcus suis* type 2. *Proteomics*. 2007b; 7: 4468-4476.
130. Zhang A, Xie C, Chen H, Jin M. Identification of immunogenic cell wall-associated proteins of *Streptococcus suis* serotype 2. *Proteomics*. 2008; 8: 3506–3515.
131. Zhang A, Chen B, Mu X, Li R, Zheng P, Zhao Y, *et al.* Identification and characterization of a novel protective antigen, Enolase of *Streptococcus suis* serotype 2. *Vaccine*. 2009; 27(9): 1348–1353.
132. Zhang W, Liu G, Tang F, Shao J, Lu Y, Bao Y, *et al.* Pre-absorbed immunoproteomics: A novel method for the detection of *Streptococcus suis* surface proteins. *PLoS ONE*. 2011; 6(6): 1-7.
133. Zhang H, Ma Z, Li Y, Zheng J, Yi L, Fan H, *et al.* Identification of a novel collagen type I-binding protein from *Streptococcus suis* serotype 2. *Vet J*. 2013a; 197: 406–414.

134. Zhang YM, Shaoa ZQ, Wang J, Wang L, Li X, Wang C, *et al.* Prevalent distribution and conservation of *Streptococcus suis* Lmb protein and its protective capacity against the Chinese highly virulent strain infection. *Microbiol Res.* 2013b; 1-7.
135. Zheng B, Zhang Q, Gao J, Han H, Li M, Zhang J, Qi1 J, Yan J, Gao GF. Insight into the Interaction of Metal Ions with TroA from *Streptococcus suis*. *PloS One.* 2011; 6(5): 1-14.
136. Zhou J, Zhang X, He K, Wang W, Ni Y, Zhu H, *et al.* Characterization and proteome analysis of inosine 5-monophosphate dehydrogenase in epidemic *Streptococcus suis* serotype 2. *Curr Microbiol.* 2014; 1-7.
137. Zhu W, Wu C, Sun X, Zhang A, Zhu J, Hua Y, *et al.* Characterization of *Streptococcus suis* serotype 2 isolates from China. *Vet Microbiol.* 2013; 166: 527–534.
138. Kouki, A. "Identification and characterisation of a novel adhesin of *Streptococcus suis* and its use as a target of adhesion inhibition and bacterial detection", Ph.D. Thesis, Turku University, 2012.
139. Schreur, P.W. "Interactions of *Streptococcus suis* with the innate immune system". Ph.D. Thesis, Utrecht University, 2012.