

## REFERENCES

- Angen, Ø., J. Jensen and D.T. Lavritsen.** 2001a. Evaluation of 5' Nuclease assay for detection of *Actinobacillus pleuropneumoniae*. *J. Clin. Microbiol.* 39:260-265.
- Angen, Ø., M.P.H. Heegaard, D.T. Lavritsen and V. Sorensen.** 2001b. Isolation of *Actinobacillus pleuropneumoniae* serotype 2 by immunomagnetic separation. *Vet. Microbiol.* 79:19-29.
- Ausubel, F.M., R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith and K. Struhl.** 1999. Short Protocols in molecular biology. Wiley. New York.
- Bag, Y.S., L.O. Andersen, L. Bastholm, F. Elling, Ø. Angen and P.M. Heegaard.** 2001. The transferrin receptor of *Actinobacillus pleuropneumoniae*: quantitation of expression and structural characterization using a peptide-specific monoclonal antibodies. *Vet. Microbiol.* 81:51-64.
- Beck, M., J.F. van den Bosch, I.M. Jongenelen, P.L. Loeffen, R. Nielsen, J. Nicolet and J. Frey.** 1994. RTX toxin genotypes and phenotypes in *Actinobacillus pleuropneumoniae* field strains. *J. Clin. Microbiol.* 32: 2749-2754.
- Belanger, M., C. Begin and M. Jacque.** 1995. Lipopolysaccharides of *Actinobacillus pleuropneumoniae* Bind Pig Hemoglobin. *Infect. Immun.* 63: 656-662.

- Blaber, M.** 1998. "Polymerase Chain Reaction (PCR) in BCH5425" (Online). Available  
<http://wine1.sb.fsu.edu/bch5425/lect123/lect23.htm> (1 February 2002)
- Blackall, P.J., R. Bowles, J.L. Pähoff and B.N. Smith.** 1999. Serological characterization of *Actinobacillus pleuropneumoniae* isolated from pigs in 1993 to 1996. Aus. Vet. J. 77:39-43.
- Blackall, P.J., H.L.B.M. Klaasen, H. van den Bosch, P. Kuhnert and J. Frey.** 2002. Proposal of a new serovar of *Actinobacillus pleuropneumoniae*: serovar 15. Vet. Microbiol. 84, 47-52.
- Blom, N.** 1996. "Nucleotide: the calculation of DNA mass" (Online). Available on [www.cbs.dtu.dk/staff/nikob/science/nuc\\_table.html](http://www.cbs.dtu.dk/staff/nikob/science/nuc_table.html) (21 April 2003).
- Bosse', J.T. and J. MacInnes.** 1997. Genetic and Biochemical Analyses of *Actinobacillus pleuropneumoniae* Urease. Infect. Immun. 65: 4389-4394.
- Bosse', J.T., H. Janson, B.J. Sheehan, A.J. Beddek, A.N. Rycroft, S. Kroll, S. and P.R. Langford.** 2002. *Actinobacillus pleuropneumoniae*: pathobiology and pathogenesis of infection. Microbes. Infect. 4: 225-35.
- Bunka, S., C. Christensen, A.A. Potter, P.J. Willson and G. Gerlach.** 1995. Cloning and Characterization of a Protective Outer Membrane Lipoprotein of *Actinobacillus pleuropneumoniae* Serotype 5. Infect. Immun. 63: 2797-2800.
- Chiers, K., I. van Overbeke, E. Donne, M. Baele, R. Ducatelle, T. de Baere and F. Haesebrouck.** 2001. Detection of *Actinobacillus pleuropneumoniae* in

culture from nasal and tonsilar swabs of pigs by a PCR assay based on the nucleotide sequence of *dsbE*-like gene. *Vet. Microbiol.* 83: 147-159.

**Cho, W.S. and C. Chae.** 2001a. Expression of the *apxIV* Gene in Pigs Naturally Infected with *Actinobacillus pleuropneumoniae*. *J. Comp. Path.* 125: 34-40.

**Cho, W.S. and C. Chae.** 2001b. Genotypic prevalence of *apxIV* in *Actinobacillus pleuropneumoniae* field isolates. *J. Vet. Diagn. Invest.* 13: 175-177.

**Choi, C., D. Kwon, K. Min and C. Chae.** 2001. Detection and Localization of ApxI, -II, and -III Genes of *Actinobacillus pleuropneumoniae* in Natural Porcine Pleuropneumonia by *In Situ* Hybridization. *Vet. Path.* 38: 390-395.

**Cruijsen, T.L.M., L.A.M.G. van Leengoed, T.C.E.M Dekker-nooren, E.J. Schoevers and J.H.M. Verheijden.** 1992. Phagocytosis and Killing of *Actinobacillus pleuropneumoniae* by Alveolar Macrophages and Polymorphonuclear Leukocytes Isolated from Pigs. *Infect. Immun.* 60: 4867-4871.

**Enoe, C., S. Anderson, V. Sorensen and P. Willeberg.** 2001. Estimation of sensitivity, specificity and predictive value of two serological tests for the detection of antibodies against *Actinobacillus pleuropneumoniae* serotype 2 in the absence of a reference test (gold standard). *Pre. Vet. Med.* 51: 227-243.

**Erlish, H.A. (eds).** 1992. PCR Technology: Principles and Applications for DNA Amplification. W.H. Freeman and Company. NY

**Frey, J.** 1995. Virulence in *Actinobacillus pleuropneumoniae* and RTX toxins. *Trends in Microbiol.* 3: 257-261.

**Frey, J., M. Beck, J.F. van den Bosch, R.P.A.M. Seger and J. Nicolet.** 1995.

Development of an efficient PCR method for toxin typing of *Actinobacillus pleuropneumoniae* strains. Mol. Cell. Probes. **9**: 277-282.

**Gerlach, G., S. Klashinsky, C. Anderson, A.A. Potter and P.J. Willson.** 1992.

Characterization of Two Genes Encoding Distinct Transferrin-Binding Proteins in Different *Actinobacillus pleuropneumoniae* Isolates. Infect. Immun. **60**: 3253-3261.

**Gerlach, G., C. Anderson, S. Klashinsky, A. Rossi-campos, A.A. Potter and P.J. Willson.** 1993. Molecular Characterization of a Protective Outer

Membrane Lipoprotein (*OmlA*) from *Actinobacillus pleuropneumoniae* Serotype 1. Infect. Immun. **61**: 565-572.

**Gram, T., P. Ahren and J.P. Nielsen.** 1996. Evaluation of a PCR for detection of *Actinobacillus pleuropneumoniae* in mixed culture from tonsils. Vet. Microbiol. **51**: 95-104.

**Gram, T. and P. Ahrens.** 1998. Improved Diagnosis PCR assay for *Actinobacillus pleuropneumoniae* based on the nucleotide sequence of an outer membrane lipoprotein. J. Clin. Microbiol. **36**: 443-448.

**Gram, T., P. Ahrens, M. Anderson and J.P. Nielsen.** 2000a. An *Actinobacillus pleuropneumoniae* PCR typing system based on the *apx* and *omlA* genes - evaluation of isolates from lungs and tonsils of pigs. Vet. Microbiol. **75**: 43-57.

- Gram, T., P. Ahren and Ø. Angen.** 2000b. Two *Actinobacillus pleuropneumoniae* Serotype 8 Reference Strains in Circulation. *J. Clin. Microbiol.* **38:** 468.
- Gottschalk, M., F. De Lasalle, S. Radacovici and J.D. Dubreuil.** 1994. Evaluation of long chain lipopolysaccharides (LC-LPS) of *Actinobacillus pleuropneumoniae* serotype 5 for the serodiagnosis of swine pleuropneumonia. *Vet. Microbiol.* **38:** 315-327.
- Haesebrouck H, K. Chiers, I. Van Overbeke and R. Ducatelle.** 1997 *Actinobacillus pleuropneumoniae* infections in pigs: the role of virulence factors in pathogenesis and protection. *Vet Microbiol.* **58:** 239-249.
- Hommez, J., L.A. Devriese, F. Castryck and P. Cassimon.** 1990. Slide precipitation: a simple method to type *Actinobacillus (Haemophilus) pleuropneumoniae*. *Vet. Microbiol.* **24:** 123-126.
- Inzana, T.J.** 1995. Simplified procedure for preparation of sensitized latex particles to detect capsular polysaccharides: application to typing and diagnosis of *Actinobacillus pleuropneumoniae*. *J. Clin. Microbiol.* **33:** 2297-2303.
- Inzana, T.J. and B. Fenwick.** 2001. Serological detection of *Actinobacillus pleuropneumoniae* in swine by capsular polysaccharide-biotin-streptavidin enzyme-linked immunosorbent assay. *J. Clin. Microbiol.* **39:** 1279-1282.
- Jacobsen, M.J. and J.P. Nielsen.** 1995. Development and evaluation of a selective and indicative medium for isolation of *Actinobacillus pleuropneumoniae*. *Vet. Microbiol.* **47:** 191-197.

- Jacobsen, M.J., J.P. Nielsen and R. Nielsen.** 1996. Comparison of Virulence of Different *Actinobacillus pleuropneumoniae* serotypes and biotypes using an aerosal infection model. *Vet. Microbiol.* 49: 159-168.
- Jansen, R., J. Briaire, E.M. Kamp, A.L.J. Gielkens and M. Smits.** 1993a. Cloning and Characterization of the *Actinobacillus pleuropneumoniae* RTX-toxin III (ApxIII) Operon. *Infect. Immun.* 61: 947-954.
- Jansen, R., J. Briaire, E.M. Kamp, A.L.J. Gielkens and M. Smits.** 1993b. Structural Analysis of the *Actinobacillus pleuropneumoniae* RTX-toxin I (ApxI) Operon. *Infect. Immun.* 61: 3688-3695.
- Jansen, R., J. Briaire, H.E. Smits, P. Dom, F. Haesebrouck, E.M. Kamp, A.L.J. Gielkens and M.A. Smits.** 1995. Knockout Mutants of *Actinobacillus pleuropneumoniae* Serotype 1 That Are Devoid of RTX Toxins Do Not Activate or Kill Porcine Neutrophils. *Infect. Immun.* 63: 27-37.
- Lohansson, E., K. Domeika, M. Berg, G.V. Alm and C. Fossum.** 2003. Characterisation of porcine monocyte-derived dendritic cells according to their cytokine profile. *Vet. Immun. Immunopath.* 91: 183-197.
- Kamp, E.M., N. Stockhöfe-zurwieden, L.A.M.G. van Leengoed and M.A. Smits.** 1997. Endobronchial Inoculation with Apx Toxins of *Actinobacillus pleuropneumoniae* Leads to Pleuropneumonia in Pigs. *Infect. Immun.* 65: 4350-4354.
- Klausen, J., L.O. Andresen, K. Barfod and V. Sørensen.** 2001. Blocking enzyme-linked immunosorbent assay for detection of antibodies against

*Actinobacillus pleuropneumoniae* serotype 6 in pig serum. Vet. Microbiol. 79: 11-18.

**Kielstein, P., H.H. Wuthe, Ø. Angen, R. Mutte and P. Ahrens.** 2001. Phenotypic and genetic characterization of NAD-dependent *Pasteurellaceae* from the respiratory tract of pigs and their possible pathogenetic importance. Vet. Microbiol. 81: 243-255.

**Kuhnert, P., B. Heyberger-Meyer, A.P. Burnens, J. Nicolet and J. Frey.** 1997. Detection of RTX toxin genes in gram-negative bacteria with a set of specific probes. Appl. Environ. Microbiol. 63: 2258-2265.

**Leiner, G., B. Franz, K. Strutzberg and G. Gerlach.** 1999. A Novel Enzyme-Linked Immunosorbent Assay Using the Recombinant *Actinobacillus pleuropneumoniae* ApxII Antigen for Diagnosis of Pleuropneumonia in Pig Herds. Clin. Diagn. Lab. Immunol. 6: 630-632.

**Lo, T.M., C.K. Ward and T.J. Inzana.** 1998. Detection and Identification of *Actinobacillus pleuropneumoniae* serotype 5 by multiplex PCR. J. Clin. Microbiol. 36: 1704-1710.

**Mittal, K.R., R. Higgins and S. Lariviere.** 1984. A 2-mercaptoethanol-tube agglutination test for diagnosis of *Haemophilus pleuropneumoniae* infection in pigs. Am. J. Vet. Res. 45: 715-719.

**Moral, C.H., A.C. Soriano, M.S. Salazar, J.Y. Marcos, S.S. Rarnos and G.N. Carrasco.** 1999. Molecular cloning and Sequencing of the *aroA* gene

- from *Actinobacillus pleuropneumoniae* and its use in a PCR assay for rapid detection. J. Clin. Microbiol. 37: 1575-1578.
- Møller, K. and M. Kilian.** 1990. V Factor-dependent members of the Family *Pasteurellaceae* in the Porcine Upper Respiratory Tract. J. Clin. Microbiol. 28: 2711-2716.
- Nielsen, R., T. Plambeck and N.T. Foged.** 1991. Blocking Enzyme-Linked Immunosorbent Assay for Detection of Antibodies to *Actinobacillus pleuropneumoniae* serotype 2. J. Clin. Microbiol. 29: 794-797.
- Osaki, M., Y. Sato, H. Tamura, H. Ito and T. Seikizaki.** 1997. Genetic diversity of the genes encoding the outer membrane lipoprotein [*omlA*] of *Actinobacillus pleuropneumoniae*. J. Vet. Med. Sci. 59: 213-215.
- Quin, P.J., M.E. Carter, B.K. Markey and G.R. Carter.** 1999. Clinical Veterinary Microbiology: Harcourt Publishers Limited.
- Rapp, V.J., R.F. Ross and B.Z. Erickson.** 1985. Serotyping of *Haemophilus pleuropneumoniae* by rapid slide agglutination and indirect fluorescent antibody tests in swine. Am.J.Vet.Res. 46: 185-192.
- Reinier M.** 1999. *Actinobacillus, Capnocytophaga, Eikenella, Kingelia, and Other Fastidious or Rarely Encountered Gram-Negative Rods*. In: Baron, E.J., M.A. Pfaffer, F.C. Tenover, R.H. Yolken (eds) Manual of Clinical Microbiology. Washington D.C., ASM press. pp 561-571.
- Rolfs, A., I. Schuller, U. Finckh and I. Weber-Rolfs.** 1992. PCR: Clinical Diagnostics and Research. Springer-Verlag. Berlin. Heidelberg. Germany.

- Saiki, R.K., S. Scharf, F. Falloona, K.B. Mullis, G.T. Horn, A. Erlish and N. Arnheim.** 1985. Enzymatic amplification of Beta-globulin genomic sequences and restriction site analysis for diagnosis of sickle cell anemia. *Science*. **230**: 1350-1354.
- Sakpuaram, T.** 1990. Biological and Serological studies of *Actinobacillus (Haemophilus) pleuropneumoniae* Isolated from Swine Pleuropneumonia in Japan and Thailand. Ph.D.dissertation. Azabu University. Sagamihara-shi. Kanagawa-ken. pp 229. Japan.
- Sambrook, J. and D.W. Russell.** 2001. Molecular Cloning: A Laboratory Manual. Cold Spring Harbor, New York.
- Schaller A., R. Kuhn, P. Kuhnert, J. Nicolet, T.J. Anderson, J.L. MacInnes, R.P.A.M. Seger and J. Frey.** 1999. Characterization of *apxIVA*, a new RTX determinant of *Actinobacillus pleuropneumoniae*. *Microbiology*. **145**: 2105-2116.
- Schaller, A., P. Kuhnert, V.A. de la Puente-Redondo, J. Nicolet and J. Frey.** 2000. Apx toxins in *Pasteurellaceae* species from animals. *Vet. Microbiol.* **74**: 365-376.
- Schaller, A., S.P. Djordjevic, G.J. Eamens, W.A. Forbes, R. Kuhn, P. Kuhnert, M. Gottschalk, J. Nicolet and J. Frey.** 2001. Identification and detection of *Actinobacillus pleuropneumoniae* by PCR based on the gene *apxIVA*. *Vet. Microbiol.* **79**: 47-62.

- Sirois, M., E.G. Lemire and R.C. Levesque.** 1991. Construction of a DNA Probe and Detection of *Actinobacillus pleuropneumoniae* by Using Polymerase Chain Reaction. *J. Clin. Microbiol.* **29:** 1183-1187.
- Taylor, D.J.** 1999. *Actinonacillus pleuropneumoniae*. In: Straw, B.E., S. D'Allaire, W.L. Mengeling, D.J. Taylor (Eds.), Diseases of Swine, Iowa State University Press, Ames, IO, pp.343-354.
- Tadjine, M. and K.R. Mittal.** 2001. Study of antigenic heterogeneity among *Actinobacillus pleuropneumoniae* serotype 7 strains. *Vet. Microbiol.* **78:** 49-60.
- Takashima, H., H. Sakai, T. Yanai and T. Masegi.** 1999. Detection of Antibodies against *Actinobacillus pleuropneumoniae* serotype 1, 2, 5 and 7 using the immunohistochemical staining. *J. Vet. Med. Sci.* **61:**713-716.
- Tonpitak, W., S. Thiede, W. Oswald, N. Baltes and G.F. Gerlach.** 2000. *Actinobacillus pleuropneumoniae* Iron Transport: A set of *exbBD* Genes Is Transcriptionally Linked to the *tbpB* Gene and Required for Utilization of Transferrin-Bound Iron. *Infect. Immun.* **68:**1164-1170.
- van de Kerkhof, A., F. Haesebrouck, K. Chiers, R. Ducatelle, E.M. Kamp and M.A. Smits.** 1996. Influence of *Actinobacillus pleuropneumoniae* and Its Metabolites on Porcine Alveolar Epithelial Cells. *Infect. Immun.* **64:**3905-3907.
- van Overbeke, I., K. Chiers, G. Charlier, I. Vandenberghe, J. van Beeumen, R. Ducatelle and F. Haesebrouck.** 2002. Characterization of the in vitro

adhesion of *Actinobacillus pleuropneumoniae* to swine alveolar epithelial cells. *Vet. Microbiol.* **88**: 59-74.

**Ward, C.K., M.L. Lawrence, H.P. Veit and T.J. Inzana.** 1998. Cloning and Mutagenesis of a Serotype-Specific DNA Region Involved in Encapsulation and Virulence of *Actinobacillus pleuropneumoniae* Serotype 5a: Concomitant Expression of Serotype 5a and 1 Capsular Polysaccharides in Recombinant *A. pleuropneumoniae* Serotype 1. *Infect. Immun.* **66**:3326-3336.

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
Copyright<sup>©</sup> by Chiang Mai University  
All rights reserved