

เอกสารและสิ่งอ้างอิง

- ดวงพร พูลสุขสมบัติ, นพดล แสงจันทร์, ยุวลักษณ์ ขอประเสริฐ, ดาริกา กิ่งเนตร และ วรลักษณ์ ตั้งคณะกุล. 2544. เชื้อเลปโตสไปราจากหนูในภาคตะวันออกเฉียงเหนือ ปี 2542-2543. วารสารวิชาการสาธารณสุข. 10(3): 516-525.
- ดวงดาว บุญยอด, ศันสนีย์ ตันตัจฉัม, พรพิพย์ ลักษณะกุล, ขวลิต เกียรติวิษณุกุล และ ทิพวัลย์ จิตตะวิกุล. 2544. เชื้อเลปโตสไปราในผู้ป่วยบริเวณภาคเหนือตอนล่าง. วารสารวิชาการสาธารณสุข. 10(3): 508-515.
- มธุรส พงษ์ลิขิตมงคล. 2542. ชีวิตมีระบบภูมิคุ้มกัน, น. 461-475. ใน มนตรี จุฬาววัฒนทล และ ประหยัด โกมารทัต, บรรณาธิการ. ชีวิตมี. ภาควิชาชีวเคมี คณะวิทยาศาสตร์ มหาวิทยาลัยมหิดล, กรุงเทพฯ.
- ศันสนีย์ ตันตัจฉัม, วาสนา เชื้อนแก้ว และ ดวงดาว บุญยอด. 2546. การศึกษาภูมิคุ้มกันต่อเชื้อ เลปโตสไปราในสัตว์และผู้ป่วยจังหวัดแพร่. วารสารวิชาการสาธารณสุข. 12(2): 265-272.
- สุรินทร์ ปิยะโชคณกุล. 2545. พันธุวิศวกรรมเบื้องต้น. พิมพ์ครั้งที่ 2. มหาวิทยาลัยเกษตรศาสตร์, กรุงเทพฯ.
- สำนักงานโครงการควบคุมโรคเลปโตสไปโรซิส และกองโรคติดต่อทั่วไป กรมควบคุมโรคติดต่อ กระทรวงสาธารณสุข. 2544. คู่มือวิชาการโรคเลปโตสไปโรซิส. พิมพ์ครั้งที่ 2. ชุมชนสหกรณ์การเกษตรแห่งประเทศไทย จำกัด, กรุงเทพฯ.
- สำนักกระบาดวิทยา กรมควบคุมโรค กระทรวงสาธารณสุข. 2546. การระบาดของโรคเลปโตสไปโรซิส หลังน้ำท่วมที่อำเภอหาดใหญ่ จังหวัดสงขลา พุทธศักราช-ธันวาคม 2543. รายงานเฝ้าระวังทางระบาดวิทยาประจำสัปดาห์ ฉบับภาคผนวก. 34(1): 306-312.
- สำนักกระบาดวิทยา กรมควบคุมโรค กระทรวงสาธารณสุข. 2549. ซีโรกรุ๊ปของเชื้อเลปโตสไปราที่ตรวจพบในปี 2548. รายงานเฝ้าระวังทางระบาดวิทยาประจำสัปดาห์. 37(16): 273-277.
- อำนาจ ทองชิต. 2546. เลปโตสไปโรซิส ที่โรงพยาบาลหนองบัวลำภู พ.ศ. 2543. วารสารวิชาการสาธารณสุข. 12(1): 81-88.

- Auran, N.E., R.C. Johnson and D.M. Ritz. 1972. Isolation of the outer sheath of *Leptospira* and its immunogenic properties in hamsters. **Infect. Immun.** 5(6): 968–975.
- Bal, A.M., R.S. Bharadwaj, S.A. Joshi, A.S. Kagal and V.P. Arjunwadkar. 2002. Common infecting leptospiral serovars in and around Pune, Maharashtra. **Indian J. Med. Res.** 115: 14–16.
- Ballard, S.A., M. Go, R.P. Segers and B. Adler. 1998. Molecular analysis of the *dnaK* locus of *Leptospira interrogans* serovar Copenhageni. **Gene.** 216(1): 21–29.
- _____, R.P. Segers, N. Bleumink-Pluym, J. Fyfe, S. Faine and B. Adler. 1993. Molecular analysis of the hsp (groE) operon of *Leptospira interrogans* serovar Copenhageni. **Mol. Microbiol.** 8(4): 739–751.
- Baril, C. and I. Saint Girons. 1990. Sizing of the *Leptospira* genome by pulsed-field agarose gel electrophoresis. **FEMS Microbiol. Lett.** 59(1–2): 95–99.
- Barnett, J.K., D. Barnett, C.A. Bolin, T.A. Summers, E.A. Wagar, N.F. Cheville, R.A. Hartskeerl and D.A. Haake. 1999. Expression and distribution of leptospiral outer membrane components during renal infection of hamsters. **Infect. Immun.** 67(2): 853–861.
- Bharier, M.A., F.A. Eiserling and S.C. Rittenberg. 1971. Electron microscopic observations on the structure of *Treponema zuelzeri* and its axial filaments. **J. Bacteriol.** 105(1): 413–421.
- Birch-Andersen, A., K. Hovind Hougen and C. Borg-Petersen. 1973. Electron microscopy of *Leptospira*. 1. *Leptospira* strain Pomona. **Acta Pathol. Microbiol. Scand [B] Microbiol. Immunol.** 81(6): 665–676.
- Boursaux-Eude, C., I. Saint Girons and R. Zuerner. 1995. *IS1500*, an *IS3*-like element from *Leptospira interrogans*. **Microbiology.** 141: 2165–2173.
- Brenot, A., D. Trott, I. Saint Girons and R. Zuerner. 2001. Penicillin-binding proteins in *Leptospira interrogans*. **Antimicrob. Agents Chemother.** 45(3): 870–877.

- Buchanan, S.G. and N.J. Gay. 1996. Structural and functional diversity in the leucine-rich repeat family of proteins. **Prog. Biophys. Mol Biol.** 65(1-2): 1-44.
- Cacciapuoti, B., L. Ciceroni and D.A. Barbini. 1990. Fatty acid profiles in the family Leptospiraceae. **Zentralbl. Bakteriол.** 274(1): 16-27.
- Chamaillard, M., S.E. Girardin, J. Viala and D.J. Philpott. 2003. Nods, Nalps and Naip: intracellular regulators of bacterial-induced inflammation. **Cell. Microbiol.** 5(9): 581-592.
- Chang, A. and S. Faine. 1970. Electron-microscopic evidence for reactions of axial filaments of *Leptospira* with IgM and IgG antibodies. **Bull. World Health Organ.** 43(4): 571-577.
- Chang, J.Y., D.M. Brown and A.N. Glazer. 1969. Characterization of the subunits of the flagella of *Proteus vulgaris*. **J. Biol. Chem.** 244(19): 5196-5200.
- Chang, R.S. and C.D. Mc. 1954. Erythrocyte sensitizing substance from five strains of Leptospirae. **Am. J. Trop. Med. Hyg.** 3(3): 481-489.
- Chunduru, S., H. Kawami, R. Gullick, W. J. Monacci, G. Dougherty and M. L. Cutler. 2002. Identification of an alternatively spliced RNA for the Ras suppressor *RSU-1* in human gliomas. **J. Neurooncol.** 60(3): 201-211.
- Ciceroni, L., E. Stepan, A. Pinto, P. Pizzocaro, G. Dettori, L. Franzin, R. Lupidi, S. Mansueto, A. Manera, A. Ioli, L. Marcuccio, R. Grillo, S. Ciarrocchi and M. Cinco. 2000. Epidemiological trend of human leptospirosis in Italy between 1994 and 1996. **Eur. J. Epidemiol.** 16(1): 79-86.
- Cinco, M, E. Vecile, R. Murgia, P. Dobrina and A. Dobrina. 1996. *Leptospira interrogans* and *Leptospira* peptidoglycans induce the release of tumor necrosis factor alpha from human monocytes. **FEMS Microbiol. Lett.** 138(2-3): 211-214.

- Cohn M. 2002. The immune system: a weapon of mass destruction invented by evolution to even the odds during the DNAs. **Immunol. Rev.** 185: 24–38
- Cullen, P.A., S.J. Cordwell, D.M. Bulach, D.A. Haake and B. Adler. 2002. Global analysis of outer membrane proteins from *Leptospira interrogans* serovar Lai. **Infect. Immun.** 70(5): 2311–2318.
- Cutler, M.L., R.H. Bassin, L. Zanoni and N. Talbot. 1992. Isolation of *rsp-1*, a novel cDNA capable of suppressing v-Ras transformation. **Mol. Cell. Biol.** 12(9): 3750–3756
- de la Pena-Moctezuma, A., D.M. Bulach and B. Adler. 2001. Genetic differences among the LPS biosynthetic loci of serovars of *Leptospira interrogans* and *Leptospira borgpetersenii*. **FEMS Immunol. Med. Microbiol.** 31(1): 73–81.
- _____, _____, T. Kalambaheti and B. Adler. 1999. Comparative analysis of the LPS biosynthetic loci of the genetic subtypes of serovar Hardjo: *Leptospira interrogans* subtype Hardjoprajitno and *Leptospira borgpetersenii* subtype Hardjobovis. **FEMS Microbiol. Lett.** 177(2): 319–326.
- De-Souza, L. and M.C. Koury. 1992. Chemical and biological properties of endotoxin from *Leptospira interrogans* serovars Canicola and Icterohaemorrhagiae. **Braz. J. Med. Biol. Res.** 25(5): 467–475.
- Dikken, H., E. Kmety, A. de Geus, N. Adinarayanan and V.E. Timmer. 1978. Two new *Leptospira* serovars belonging to the Hebdomadis serogroup. **Trop. Geogr. Med.** 30(4): 537–542.
- _____, _____, _____ and V.E. Timmer. 1979. A new leptospiral serovar in The pyrogenes serogroup. **Trop. Geogr. Med.** 31(3): 405–408.
- Ellis, J., P. Dodds and T. Pryor. 2000. Structure, function and evolution of plant disease resistance genes. **Curr. Opin. Plant Biol.** 3(4): 278–284.

- Faine, S. 1959. Virulence in leptospirae. III. Comparison of sensitivities of virulent and of avirulent *Leptospira icterohaemorrhagiae* to cultural conditons. **J. Bacteriol.** 77(5): 599–603.
- _____, and J. Vanderhoeden. 1964. Virulence-Linked Colonial and Morphological Variation in *Leptospira*. **J. Bacteriol.** 88: 1493–1496.
- Farrelly, H.E., B. Adler and S. Faine. 1987. Opsonic monoclonal antibodies against lipopolysaccharide antigens of *Leptospira interrogans* serovar Hardjo. **J. Med. Microbiol.** 23(1): 1–7.
- Federici, L., A Di Matteo, J Fernandez-Recio, D Tsernoglou and F Cervone. 2006. Polygalacturonase inhibiting proteins: players in plant innate immunity. **Trends Plant Sci.** 11(2): 65–70.
- Fukunaga, M., I. Horie and I. Mifuchi. 1990. Isolation and characterization of the 5S rRNA gene of *Leptospira interrogans*. **J. Bacteriol.** 172(6): 3264–3268.
- _____, _____ and _____. 1989. Nucleotide sequence of a 23S ribosomal RNA gene from *Leptospira interrogans* serovar Canicola strain Moulton. **Nucleic Acids Res.** 17(5): 2123.
- _____, _____ and _____. 1989a. The number of large ribosomal RNA genes in *Leptospira interrogans* and *Leptospira biflexa*. **Microbiol. Immunol.** 33(6): 459–466.
- _____, _____ and _____. 1989b. Unique organization of *Leptospira interrogans* rRNA genes. **J. Bacteriol.** 171(11): 5763–5767.
- Girons, I.S., P. Bourhy, C. Ottone, M. Picardeau, D. Yelton, R.W. Hendrix, P. Glaser and N. Charon. 2000. The LE1 bacteriophage replicates as a plasmid within *Leptospira biflexa*: construction of an *L. biflexa*-*Escherichia coli* shuttle vector. **J. Bacteriol.** 182(20): 5700–5705.
- Gravekamp, C., H. Van de Kemp, M. Franzen, D. Carrington, G.J. Schoone, G.J. Van Eys, C.O. Everard, R.A. Hartskeerl and W.J. Terpstra. 1993. Detection of seven species of pathogenic leptospires by PCR using two sets of primers. **J. Gen. Microbiol.** 139(8): 1691–1700.

- Guitian, F.J., F.J. Garcia-Pena, J. Oliveira, M.L. Sanjuan and E. Yus. 2001. Serological study of the frequency of leptospiral infections among dairy cows in farms with suboptimal reproductive efficiency in Galicia, Spain. **Vet. Microbiol.** 80(3):275–284.
- Haake, D.A. 2000. Spirochaetal lipoproteins and pathogenesis. **Microbiology.** 146(7): 1491–1504.
- Haake, D.A., C.I. Champion, C. Martinich, E.S. Shang, D.R. Blanco, J.N. Miller and M.A. Lovett. 1993. Molecular cloning and sequence analysis of the gene encoding OmpL1, a transmembrane outer membrane protein of pathogenic *Leptospira* spp. **J. Bacteriol.** 175(13): 4225–4234.
- _____, G. Chao, R.L. Zuerner, J.K. Barnett, D. Barnett, M. Mazel, J. Matsunaga, P.N. Levett and C.A. Bolin. 2000. The leptospiral major outer membrane protein LipL32 is a lipoprotein expressed during mammalian infection. **Infect. Immun.** 68(4): 2276–2285.
- _____, C. Martinich, T.A. Summers, E.S. Shang, J.D. Pruetz, A.M. McCoy, M.K. Mazel and C.A. Bolin. 1998. Characterization of leptospiral outer membrane lipoprotein LipL36: downregulation associated with late-log-phase growth and mammalian infection. **Infect. Immun.** 66(4): 1579–1587.
- _____ and J. Matsunaga. 2002. Characterization of the leptospiral outer membrane and description of three novel leptospiral membrane proteins. **Infect. Immun.** 70(9): 4936–4945.
- _____, M.K. Mazel, A.M. McCoy, F. Milward, G. Chao, J. Matsunaga and E.A. Wagar. 1999. Leptospiral outer membrane proteins OmpL1 and LipL41 exhibit synergistic immunoprotection. **Infect. Immun.** 67(12): 6572–6582.
- _____, E.M. Walker, D.R. Blanco, C.A. Bolin, M.N. Miller and M.A. Lovett. 1991. Changes in the surface of *Leptospira interrogans* serovar Grippityphosa during in vitro cultivation. **Infect. Immun.** 59(3): 1131–1140.

- Haraga, A. and S.I. Miller. 2003. A *Salmonella enterica* serovar Typhimurium translocated leucine-rich repeat effector protein inhibits NF-kappa B-dependent gene expression. **Infect. Immun.** 71(7): 4052–4058.
- _____ and _____. 2006. A *Salmonella* type III secretion effector interacts with the mammalian serine/threonine protein kinase PKN1. **Cell. Microbiol.** 8(5): 837–846.
- Hartman, A.B., M. Venkatesan, E.V. Oaks and J.M. Buysse. 1990. Sequence and molecular characterization of a multicopy invasion plasmid antigen gene, ipaH, of *Shigella flexneri*. **J. Bacteriol.** 172(4): 1905–1915.
- He P, XY Zhang, XK Guo, BY Hu, XT Huang, Y Yang and GP Zhao. 2004. Identification and analysis of genes present in *Leptospira interrogans* serovar lai but absent in *L. biflexa* serovar monvalerio. **Acta Biochim Biophys Sin (Shanghai).** 36(12): 832–839.
- Hedengren, M., B. Asling, M.S. Dushay, I. Ando, S. Ekengren, M. Wihlborg and D. Hultmark. 1999. Relish, a central factor in the control of humoral but not cellular immunity in *Drosophila*. **Mol. Cell.** 4(5): 827–837.
- Hookey, J.V. 1992. Detection of Leptospiraceae by amplification of 16S ribosomal DNA. **FEMS Microbiol. Lett.** 69(3): 267–274.
- Hovind-Hougen, K., A. Birch-Andersen, R. Henrik-Nielsen, M. Orholm, J.O. Pedersen, P.S. Teglbjaerg and E.H. Thaysen. 1982. Intestinal spirochetosis: morphological characterization and cultivation of the spirochete *Brachyspira aalborgi* gen. nov., sp. nov. **J. Clin. Microbiol.** 16(6): 1127–1136.
- Hsu, D., M.J. Pan, Y.C. Zee and R.B. LeFebvre. 1990. Unique ribosome structure of *Leptospira interrogans* is composed of four rRNA components. **J. Bacteriol.** 172(6): 3478–3480.
- Iino, T. 1969. Genetics and chemistry of bacterial flagella. **Bacteriol. Rev.** 33(4): 454–475.

- Inohara, N. and G. Nunez. 2003. NODs: intracellular proteins involved in inflammation and apoptosis. **Nat. Rev. Immunol.** 3(5): 371–382.
- Johnson, R.C. and V.G. Harris. 1967. Differentiation of pathogenic and saprophytic leptospires I: Growth at low temperatures. **J. Bacteriol.** 94(1): 27–31.
- Johnson, R.C., V.G. Harris and J.K. Walby. 1969. Characterization of leptospires according to fatty acid requirements. **J. Gen. Microbiol.** 55(3): 399–407.
- Kalambaheti, T., D.M. Bulach, K. Rajakumar and B. Adler. 1999. Genetic organization of the lipopolysaccharide O-antigen biosynthetic locus of *Leptospira borgpetersenii* serovar Hardjobovis. **Microb. Pathog.** 27(2): 105–117.
- Kedzierski, L., J. Montgomery, J. Curtis and E. Handman. 2004. Leucine-rich repeats in host-pathogen interactions. **Arch. Immunol. Ther. Exp. (Warsz).** 52(2): 104–112.
- Kelson, J.S., B. Adler, A.J. Chapman and S. Faine. 1988. Identification of leptospiral flagellar antigens by gel electrophoresis and immunoblotting. **J. Med. Microbiol.** 26(1): 47–53.
- Kobe, B. and J. Deisenhofer. 1993. Crystal structure of porcine ribonuclease inhibitor, a protein with leucine-rich repeats. **Nature.** 366(6457): 751–756.
- _____, and _____. 1994. The leucine-rich repeat: a versatile binding motif. **Trends Biochem. Sci.** 19(10): 415–421.
- _____ and _____. 1995. Proteins with leucine-rich repeats. **Curr. Opin. Struct. Biol.** 5(3): 409–416.
- _____ and A.V. Kajava. 2001. The leucine-rich repeat as a protein recognition motif. **Curr. Opin. Struct. Biol.** 11(6): 725–732.
- Koizumi, N. and H. Watanabe. 2003. Identification of a novel antigen of pathogenic *Leptospira* spp. that reacted with convalescent mice sera. **J. Med. Microbiol.** 52: 585–589.

- Koizumi, N. and H. Watanabe. 2004. Leptospiral immunoglobulin-like proteins elicit protective immunity. **Vaccine**. 22(11–12): 1545–1552.
- _____ and _____. 2005. Leptospirosis vaccines: past, present, and future. **J. Postgrad. Med.** 51(3): 210–214.
- Koo, Y.B., I. Ji, R.G. Slaughter and T.H. Ji. 1991. Structure of the luteinizing hormone receptor gene and multiple exons of the coding sequence. **Endocrinology**. 128(5): 2297–2308.
- Kusum, M., N. Boonsarthorn, M. Biaklang, U Sina, P. Sawanpanyalert and P. Naigowit. 2005. Comparison of leptospiral serovars identification by serology and cultivation in northeastern region, Thailand. **J. Med. Assoc. Thai**. 88(8):1098–1102.
- Lee, S.H., S. Kim, S.C. Park and M.J. Kim. 2002. Cytotoxic activities of *Leptospira interrogans* hemolysin SphH as a pore-forming protein on mammalian cells. **Infect. Immun.** 70(1): 315–322.
- Lemaitre, B., E. Nicolas, L. Michaut, J.M. Reichhart and J.A. Hoffmann. 1996. The dorsoventral regulatory gene cassette spatzle/Toll/cactus controls the potent antifungal response in *Drosophila* adults. **Cell**. 86(6): 973–983.
- Leung, K.Y. and S.C. Straley. 1989. The yopM gene of *Yersinia pestis* encodes a released protein having homology with the human platelet surface protein GPIb alpha. **J. Bacteriol.** 171(9): 4623–4632.
- Lecuit M, H. Ohayon, L. Braun, J. Mengaud and P. Cossart. 1997. Internalin of *Listeria monocytogenes* with an intact leucine-rich repeat region is sufficient to promote internalization. **Infect. Immun.** 65(12):5309–5319.
- Levett, P.N. 2001. Leptospirosis. **Clin. Microbiol. Rev.** 14(2): 296–326.

- Li, C., L. Corum, D. Morgan, E.L. Rosey, T.B. Stanton and N.W. Charon. 2000a. The spirochete FlaA periplasmic flagellar sheath protein impacts flagellar helicity. **J. Bacteriol.** 182(23): 6698–6706.
- _____, A. Motaleb, M. Sal, S.F. Goldstein and N.W. Charon. 2000b. Spirochete periplasmic flagella and motility. **J. Mol. Microbiol. Biotechnol.** 2(4): 345–354.
- Listgarten, M.A. and S.S. Socransky. 1964. Electron Microscopy of Axial Fibrils, Outer Envelope, and Cell Division of Certain Oral Spirochetes. **J. Bacteriol.** 88: 1087–1103.
- Livermore, B.P. and R.C. Johnson. 1974. Lipids of the Spirochaetales: comparison of the lipids of several members of the genera *Spirochaeta*, *Treponema*, and *Leptospira*. **J. Bacteriol.** 120(3): 1268–1273.
- Marino, M., L. Braun, P. Cossart and P. Ghosh. 1999. Structure of the InlB leucine-rich repeats, a domain that triggers host cell invasion by the bacterial pathogen *L. monocytogenes*. **Mol. Cell.** 4(6): 1063–1072.
- Martinez, R.J., D.M. Brown and A.N. Glazer. 1967. The formation of bacterial flagella. 3. Characterization of the subunits of the flagella of *Bacillus subtilis* and *Spirillum serpens*. **J. Mol. Biol.** 28(1): 45–51.
- Matsunaga, J., M.A. Barocchi, J. Croda, T.A. Young, Y. Sanchez, I. Siqueira, C.A. Bolin, M.G. Reis, L.W. Riley, D.A. Haake and A.I. Ko. 2003. Pathogenic *Leptospira* species express surface-exposed proteins belonging to the bacterial immunoglobulin superfamily. **Mol. Microbiol.** 49(4): 929–945.
- _____, T.A. Young, J.K. Barnett, D. Barnett, C.A. Bolin and D.A. Haake. 2002. Novel 45-kilodalton leptospiral protein that is processed to a 31-kilodalton growth-phase-regulated peripheral membrane protein. **Infect. Immun.** 70(1): 323–334.

- Matsunaga, J., Y. Sanchez, X. Xu and D.A. Haake. 2005. Osmolarity, a key environmental signal controlling expression of leptospiral proteins LigA and LigB and the extracellular release of LigA. **Infect. Immun.** 73(1): 70–78.
- Mengaud, J., M. Lecuit, M. Lebrun, F. Nato, J.C. Mazie and P. Cossart. 1996. Antibodies to the leucine-rich repeat region of internalin block entry of *Listeria monocytogenes* into cells expressing E-cadherin. **Infect. Immun.** 64(12): 5430–5433.
- Merien, F., P. Amouriaux, P. Perolat, G. Baranton and I. Saint Girons. 1992. Polymerase chain reaction for detection of *Leptospira* spp. in clinical samples. **J. Clin. Microbiol.** 30(9): 2219–2224.
- Miao, E.A., C.A. Scherer, R.M. Tsois, R.A. Kingsley, L.G. Adams, A.J. Baumler and S.I. Miller. 1999. *Salmonella typhimurium* leucine-rich repeat proteins are targeted to the SPI1 and SPI2 type III secretion systems. **Mol. Microbiol.** 34(4): 850–864.
- Midwinter, A., S. Faine and B. Adler. 1990. Vaccination of mice with lipopolysaccharide (LPS) and LPS-derived immuno-conjugates from *Leptospira interrogans*. **J. Med. Microbiol.** 33(3): 199–204.
- Miller, D.A., M.A. Wilson, W.J. Owen and G.W. Beran. 1990. Porcine leptospirosis in Iowa. **J. Vet. Diagn. Invest.** 2(3): 171–175.
- Mitchison, M., J.I. Rood, S. Faine and B. Adler. 1991. Molecular analysis of a *Leptospira borgpetersenii* gene encoding an endoflagellar subunit protein. **J. Gen. Microbiol.** 137(7): 1529–1536.
- Mudd, S., K. Polevitzky and T.F. Anderson. 1943. Bacterial Morphology as shown by the Electron Microscope: V. *Treponema pallidum*, *T. macrodentium* and *T. microdentium*. **J. Bacteriol.** 46(1): 15–24.

- Nascimento, A.L., A.I. Ko, E.A. Martins, C.B. Monteiro-Vitorello, P.L. Ho, D.A. Haake, S. Verjovski-Almeida, R.A. Hartskeerl, M.V. Marques, M.C. Oliveira, C.F. Menck, L.C. Leite, H. Carrer, L.L. Coutinho, W.M. Degrave, O.A. Dellagostin, H. El-Dorry, E.S. Ferro, M.I. Ferro, L.R. Furlan, M. Gamberini, E.A. Giglioti, A. Goes-Neto, G.H. Goldman, M.H. Goldman, R. Harakava, S.M. Jeronimo, I.L. Junqueira-de-Azevedo, E.T. Kimura, E.E. Kuramae, E.G. Lemos, M.V. Lemos, C.L. Marino, L.R. Nunes, R.C. de Oliveira, G.G. Pereira, M.S. Reis, A. Schrieffer, W.J. Siqueira, P. Sommer, S.M. Tsai, A.J. Simpson, J.A. Ferro, L.E. Camargo, J.P. Kitajima, J.C. Setubal and M.A. Van Sluys. 2004a. Comparative genomics of two *Leptospira interrogans* serovars reveals novel insights into physiology and pathogenesis. **J. Bacteriol.** 186(7): 2164–2172.
- _____, S. Verjovski-Almeida, M.A. Van Sluys, C.B. Monteiro-Vitorello, L.E. Camargo, L.A. Digiampietri, R.A. Harstkeerl, P.L. Ho, M.V. Marques, M.C. Oliveira, J.C. Setubal, D.A. Haake and E.A. Martins. 2004b. Genome features of *Leptospira interrogans* serovar Copenhageni. **Braz. J. Med. Biol. Res.** 37(4): 459–477.
- Nauman, R.K., S.C. Holt and C.D. Cox. 1969. Purification, ultrastructure, and composition of axial filaments from *Leptospira*. **J. Bacteriol.** 98(1): 264–280.
- Nicholson, V.M. and J.F. Prescott. 1993. Outer membrane proteins of three pathogenic *Leptospira* species. **Vet. Microbiol.** 36(1–2): 123–138.
- Palmer, M.F., W.J. Zochowski, M. Palmer, S.A. Waitkins and W. Zochowski. 2000. Survival of leptospire in commercial blood culture systems. **J. Clin. Pathol.** 53(9): 713–714.
- Picardeau, M., A. Brenot and I. Saint Girons. 2001. First evidence for gene replacement in *Leptospira* spp. Inactivation of *L. biflexa* flaB results in non-motile mutants deficient in endoflagella. **Mol. Microbiol.** 40(1): 189–199.
- Postic, D, N. Riquelme-Sertour, F. Merien, P. Perolat and G. Baranton. 2000. Interest of partial 16S rDNA gene sequences to resolve heterogeneities between *Leptospira* collections: application to *L. meyeri*. **Res. Microbiol.** 151(5): 333–341.

- Ramadass, P., B. D. Jarvis, R. J. Corner, D. Penny and R. B. Marshall. 1992. Genetic characterization of pathogenic *Leptospira* species by DNA hybridization. **Int. J. Syst. Bacteriol.** 42(2): 215–219.
- Ren, S.X., G. Fu, X.G. Jiang, R. Zeng, Y.G. Miao, H. Xu, Y.X. Zhang, H. Xiong, G. Lu, L.F. Lu, H.Q. Jiang, J. Jia, Y.F. Tu, J.X. Jiang, W.Y. Gu, Y.Q. Zhang, Z. Cai, H.H. Sheng, H.F. Yin, Y. Zhang, G.F. Zhu, M. Wan, H.L. Huang, Z. Qian, S.Y. Wang, W. Ma, Z.J. Yao, Y. Shen, B.Q. Qiang, Q.C. Xia, X.K. Guo, A. Danchin, I. Saint Girons, R.L. Somerville, Y.M. Wen, M.H. Shi, Z. Chen, J.G. Xu and G.P. Zhao. 2003. Unique physiological and pathogenic features of *Leptospira interrogans* revealed by whole-genome sequencing. **Nature.** 422(6934): 888–893.
- Seepersaud, R., S. B. Hanniffy, P. Mayne, P. Sizer, R. Le Page and J. M. Wells. 2005. Characterization of a novel leucine-rich repeat protein antigen from group B streptococci that elicits protective immunity. **Infect. Immun.** 73(3): 1671–1683.
- Shang, E.S., M.M. Exner, T.A. Summers, C. Martinich, C.I. Champion, R.E. Hancock and D.A. Haake. 1995. The rare outer membrane protein, OmpL1, of pathogenic *Leptospira* species is a heat-modifiable porin. **Infect. Immun.** 63(8): 3174–3181.
- Shang, E.S., T.A. Summers and D.A. Haake. 1996. Molecular cloning and sequence analysis of the gene encoding LipL41, a surface-exposed lipoprotein of pathogenic *Leptospira* species. **Infect. Immun.** 64(6): 2322–2330.
- Shevchenko, D.V., D.R. Akins, E. Robinson, M. Li, T.G. Popova, D.L. Cox and J.D. Radolf. 1997. Molecular characterization and cellular localization of TpLRR, a processed leucine-rich repeat protein of *Treponema pallidum*, the syphilis spirochete. **J. Bacteriol.** 179(10): 3188–3195.

- Shimizu, T., E. Matsusaka, K. Takayanagi, T. Masuzawa, Y. Iwamoto, T. Morita, I. Mifuchi and Y. Yanagihara. 1987. Biological activities of lipopolysaccharide-like substance (LLS) extracted from *Leptospira interrogans* serovar Canicola strain Moulton. **Microbiol. Immunol.** 31(8): 727–735.
- Shinagawa and Yanagawa. 1972. Isolation and characterization of a leptospiral type-specific antigen. **Infect. Immun.** 5(1): 12–19.
- Skrzypek E, T Myers-Morales, SW Whiteheart, SC Straley. 2003. Application of a *Saccharomyces cerevisiae* model to study requirements for trafficking of *Yersinia pestis* YopM in eucaryotic cells. **Infect Immun.** 71(2): 937–947.
- Stamm, L.V., F.C. Gherardini, E.A. Parrish and C.R. Moomaw. 1991. Heat shock response of spirochetes. **Infect. Immun.** 59(4): 1572–1575.
- Takahashi, N., Y. Takahashi and F.W. Putnam. 1985. Periodicity of leucine and tandem repetition of a 24–amino acid segment in the primary structure of leucine-rich alpha 2–glycoprotein of human serum. **Proc. Natl. Acad. Sci. U S A.** 82(7): 1906–1910.
- Takeda, K., T. Kaisho and S. Akira. 2003. Toll-like receptors. **Annu. Rev. Immunol.** 21: 335–376.
- Terpstra, W.J., H. Korver, J. van Leeuwen, P.R. Klatser and A.H. Kolk. 1985a. The classification of Sejroe group serovars of *Leptospira interrogans* with monoclonal antibodies. **Zentralbl. Bakteriол. Mikrobiol. Hyg [A].** 259(4): 498–506.
- _____, G.S. Ligthart and G.J. Schoone. 1985b. ELISA for the detection of specific IgM and IgG in human leptospirosis. **J. Gen. Microbiol.** 131(2): 377–385.
- Terpstra, W.J., G.J. Schoone, G.S. Ligthart and J. ter Schegget. 1987. Detection of *Leptospira interrogans* in clinical specimens by in situ hybridization using biotin-labelled DNA probes. **J. Gen. Microbiol.** 133(4): 911–914.

- Terpstra, W.J., G.J. Schoone and J. ter Schegget. 1986. Detection of leptospiral DNA by nucleic acid hybridisation with ^{32}P - and biotin-labelled probes. **J. Med. Microbiol.** 22(1): 23–28.
- Trueba, G.A., C.A. Bolin and R.L. Zuerner. 1992. Characterization of the periplasmic flagellum proteins of *Leptospira interrogans*. **J. Bacteriol.** 174(14): 4761–4768.
- Underhill, D.M. and A. Ozinsky. 2002. Phagocytosis of microbes: complexity in action. **Annu. Rev. Immunol.** 20: 825–852.
- Vado-Solis, I., M. F. Cardenas-Marrufo, B. Jimenez-Delgadillo, A. Alzina-Lopez, H. Laviada-Molina, V. Suarez-Solis and J. E. Zavala-Velazquez. 2002. Clinical-epidemiological study of leptospirosis in humans and reservoirs in Yucatan, Mexico. **Rev. Inst. Med. Trop. Sao Paulo.** 44(6): 335–340.
- Vinh, T., B. Adler and S. Faine. 1986. Ultrastructure and chemical composition of lipopolysaccharide extracted from *Leptospira interrogans* serovar Copenhageni. **J. Gen. Microbiol.** 132(1): 103–109.
- Werts, C., R.I. Tapping, J.C. Mathison, T.H. Chuang, V. Kravchenko, I. Saint Girons, D.A. Haake, P.J. Godowski, F. Hayashi, A. Ozinsky, D.M. Underhill, C.J. Kirschning, H. Wagner, A. Aderem, P.S. Tobias and R.J. Ulevitch. 2001. Leptospiral lipopolysaccharide activates cells through a TLR2-dependent mechanism. **Nat. Immunol.** 2(4): 346–352.
- Woodward, M.J. and J.S. Redstone. 1994. Deoxynucleotide sequence conservation of the endoflagellin subunit protein gene, *flaB*, within the genus *Leptospira*. **Vet. Microbiol.** 40(3–4): 239–251.
- Yanagihara, Y., K. Kamisango, K. Takeda, I. Mifuchi and I. Azuma. 1983. Identification of 4-O-methylmannose in cell wall polysaccharide of *Leptospira*. **Microbiol. Immunol.** 27(8): 711–715.

- Yasuda, P.H., A. Steigerwalt, A.G. Sulzer, K.R. Kaufmann, A.F. Roger, D.J. Brenner. 1987. Dextribonucleotide acid relatedness between serogroup and serovars in the family *Leptospiraceae* proposals for seven new *Leptospira* species. **Int. J. Syst. Bacteriol.** 37: 407–415.
- Zeilstra-Ryalls, J., O. Fayet and C. Georgopoulos. 1991. The universally conserved GroE (Hsp60) chaperonins. **Annu. Rev. Microbiol.** 45: 301–325.
- Zuber, U. and W. Schumann. 1994. CIRCE, a novel heat shock element involved in regulation of heat shock operon *dnaK* of *Bacillus subtilis*. **J. Bacteriol.** 176(5): 1359–1363.
- Zuerner, R.L. 1991. Physical map of chromosomal and plasmid DNA comprising the genome of *Leptospira interrogans*. **Nucleic Acids Res.** 19(18): 4857–4860.
- _____, 1994. Nucleotide sequence analysis of *IS1533* from *Leptospira borgpetersenii*: identification and expression of two IS-encoded proteins. **Plasmid.** 31(1): 1–11.
- _____, D. Alt and C.A. Bolin. 1995. *IS1533*–based PCR assay for identification of *Leptospira interrogans* sensu lato serovars. **J. Clin. Microbiol.** 33(12): 3284–3289.
- _____, and C.A. Bolin. 1997. Differentiation of *Leptospira interrogans* isolates by *IS1500* hybridization and PCR assays. **J. Clin. Microbiol.** 35(10): 2612–2617.