

Previous References

- Allignet, J. and N. El Solh. 1995. Diversity among the Gram-positive acetyltransferases inactivating streptogramin A and structurally related compounds and characterization of a new staphylococcal determinant, *vatB*. *Antimicrob. Agents Chemother.* 39:2027-2036.
- Allignet, J., N. Liassine, and N. El Solh. 1998. Characterization of a staphylococcal plasmid related to pUB110 and carrying two novel genes, *vatC* and *vgbB*, encoding resistance to streptogramins A and B and similar antibiotics. *Antimicrob. Agents Chemother.* 42:1794-1798.
- Allignet, J., V. Loncle, C. Simenel, M. Delepierre, and N. El Solh. 1993. Sequence of a staphylococcal gene, *vat*, encoding an acetyltransferase inactivating the A-type compounds of virginiamycin-like antibiotics. *Gene.* 130:91-98.
- Allignet, J., V. Loncle, and N. El Solh. 1992. Sequence of a staphylococcal plasmid gene, *vga*, encoding a putative ATP-binding protein involved in resistance to virginianmycin A-like antibiotics. 117:45-51.
- Allignet, J., V. Loncle, P. Mazodier, and N. El Solh. 1988. Nucleotide sequence of a staphylococcal plasmid gene, *vgb*, encoding a hydrolase inactivating the B components of virginiamycin-like antibiotics. *Plasmid.* 20:271-275..
- Allignet, J., and N. El Solh. 1995. Diversity among the gram-positive acetyltransferases inactivation streptogramin A and structurally related compounds and characterization of a new staphylococcal determinant, *vatB*. *Antimicrob. Agents Chemother.* 39:2027-2036.
- Arthur, M., A. Andremont and P. Courvalin. 1987. Distribution of erythromycin esterase and rRNA methylase genes in members of the family *Enterobacteriaceae* highly resistant to erythromycin. *Antimicrob Agents Chemoth.* 31:404-409.
- Arthur, M., A. Brisson-Noel, and P. Courvalin. 1987. Origin and evolution of genes specifying resistance to macrolides, lincosamides and streptogramin antibiotics: data and hypothesis. *J. Antimicrob. Chemoth.* 20:783-802.
- Aparicio, G, A. Buche, C. Mendez, and J-A. Salas. 1996. Characterization of the ATPase activity of the N-terminal nucleotide binding domain of an ABC transporter involved in oleandomycin secretion by *Streptomyces antibioticus*. *FEMS microbiol. Let.* 141:157-162.

- Berryman, D.I., and J.I. Rood. 1989. Cloning and hybridization analysis of *ermP*, a macrolide-lincosamide-streptogramin B resistance determinant from *Clostridium perfringens*. *Antimicrob. Agents Chemother.* 33:1346-1353.
- Berryman, D.I., and J.I. Rood. 1995. The closely related *ermA/AM* genes from *Clostridium perfringens*, *Enterococcus faecalis* (pAM β 1), and *Streptococcus agalactiae* (pIP501), are flanked by variants of a directly repeated sequence. *Antimicrob. Agents Chemother.* 39:1830-1834.
- Berryman, D.I., M. Lyrstis and J.I. Rood. 1994. Cloning and sequence analysis of *ermQ*, the predominant macrolide-lincosamide-streptogramin B resistance gene in *Clostridium perfringens*. *Antimicrob. Agents Chemother.* 38:1041-1046.
- Betriu, C., Redondo, M., M.L. Palau, a. Sanchez, M. Gomez, E. Culebras, A. Boloiz and J.J Picazo. 2000. Comparative in vitro activities of linezolid, quinupristin-dalfopristin, moxifloxacin, and trovafloxacin against erythromycin-susceptible and -resistant streptococci. *Antimicrob. Agents Chemother.* 44:1838-1841.
- Beyer, D., and K. Pepper. 1998. The streptogramin antibiotics: update on their mechanism of action *Exp. Opin. Invest. Drugs.* 7:591-599.
- Brisson-Noel, A., M. Arthur, and P. Courvalin. 1988. Evidence for natural gene transfer from Gram-positive cocci to *Escherichia coli*. *J. Bacteriol.* 170:1739-1745.
- Brisson-Noel, A., and P. Courvalin. 1986. Nucleotide sequence of gene *linA* encoding resistance to lincosamides in *Staphylococcus haemolyticus*. *Gene.* 43:247-253.
- Brisson-Noel, A., P. Delrieu, D. Samain, and P. Courvalin. 1988. Inactivation of lincosaminide antibiotics in *Staphylococcus*. Identification of lincosaminide O-nucleotidyltransferases and comparison of the corresponding resistance genes.
- Bozdogan, B., L. Berrezouga and R. LeClercq. 1997. A new resistance gene, *linB*, conferring resistance to lincomycin by inactivation in *Enterococcus faecium* HM1025. Abstracts of the thirty-seventh Interscience Conference on Antimicrobial Agents and Chemotherapy, p 57. Sept 28-Oct 1 Toronto, Ontario, Canada.
- Calcutt, M.J., and E. Cundliffe. 1990. Cloning of a lincosamide resistance determinant from *Streptomyces caelestis*, the producer of celesticetin, and characterization of the resistance mechanism. *J. Bacteriol.* 172:4710-4714.
- Choi, S.S, S.K. Kim, T.G. Oh, and E.C. Choi. 1997. Role of mRNA termination in regulation of *ermK*. *J. Bacteriol.* 179:2065-2067.
- Chu, D. 1995. Recent developments in 14- and 15-membered macrolides. *Exp. Opin. Invest. Drugs.* 4:65-94.

- Chung, W.O., C. Werckenthin, S. Schwarz, and M.C. Roberts. 1999. Host range of the *ermF* rRNA methylase gene in human and animal bacteria. *J. Antimicrob. Chemother.* 43:5-14.
- Chung, W.O., J. Gabany, G.R. Persson, and M.C. Roberts. Distribution of *erm(F)* and *tet(Q)* in four oral bacterial species and genotypic variation between resistant and susceptible isolates. *J. Clin. Periodon.* (in press).
- Clancy, J., F. Dib-Hajj, J.W. Petitpas, and W. Yuan. 1997. Cloning and characterization of a novel macrolide efflux gene, *mreA*, from *Streptococcus agalactiae*. *Antimicrob. Agents Chemother.* 41:2719-2723.
- Clancy, J., J.W. Petitpas, F. Dib-Hajj, W. Yuan, M. Cronan, A. Kamath, J. Bergeron, and J. Retsema. 1996. Molecular cloning and functional analysis of a novel macrolide-resistance determinant *mefA* from *Streptococcus pyogenes*. *Mol. Microbiol.* 22:867-879.
- Clarebout, G. Villers, C. and Leclercq, R. 2001. *Antimicrob. Agents Chemother.* Macrolide resistance gene *mreA* of *Streptococcus agalactiae* encodes a flavokinase. 45:2280-2286.
- Clewell, D.B., S.E. Flanagan, and D.D. Jaworski. 1995. Unconstrained bacterial promiscuity: the Tn916-Tn1545 family of conjugative transposons. *Trends Microbiol.* 3:229-236.
- Cooper, A.J., N.B. Shoemaker and A.A. Salyers. 1996. The erythromycin resistance gene from the *Bacteroides* conjugal transposons Tc^rEm^r 7853 is nearly identical to *ermG* from *Bacillus sphaericus*. *Antimicrob. Agents Chemother.* 40:506-508.
- Council of Biology Editors, Inc. 1983. *CBE Style Manual: a guide for authors, editors, and publishers in the biological sciences*, 5th ed. Bethesda, Md.
- De Azavedo, J.C.S., M. Mcgavin, C. Duncan, D.E. Low and A. Mcgeer. 2001. Prevalence and mechanisms of macrolide resistance in invasive and noninvasive group B streptococcus isolates from Ontario, Canada. *Antimicrob. Agents Chemother.* 45:3504-3508.
- del Castillo, F., F. Baquero-Artigao, and A. Garcia-Perea. 1998. Influence of recent antibiotic therapy on antimicrobial resistance of *Streptococcus pneumoniae* in children with acute otitis media in Spain. *Pediatr. Infect. Dis. J.* 17:94-97.
- Eady, E.A., J.I., Ross, J.L. Tipper, C.E. Walters, J.H. Cove, and W.C. Noble. 1993. Distribution of genes encoding erythromycin ribosomal methylases and an erythromycin efflux pump in epidemiologically distinct groups of staphylococci. *J. Antimicrob. Chemoth.* 31:211-217.
- Epp, J.K., S.G. Burgett, and G.E. Schoner. 1987. Cloning and nucleotide sequence of a carbomycin-resistance gene from *Streptomyces thermotolerans*. *Gene.* 53:73-83.

- Farrow, K.A., D. Lyras and J.I. Rood. Submission to GenBank.
- Fraimow, H. and C. Knob. 1998. Amplification of macrolide efflux pumps *msr* and *mef* from *Enterococcus faecium* by polymerase chain reaction. Abstracts of the Annual General Meeting of the American Society for Microbiology. Abstract A-125 p. 22.
- Gay, K. and D.S. Stephens. 2001. Structure and dissemination of a chromosomal insertion element encoding macrolide efflux in *Streptococcus pneumoniae*. J Infect. Dis. 184:56-60.
- Hachler, H., B. Berger-Bachi and F.H. Kayser. 1987. Homology of a transferable tetracycline resistance determinant of *Clostridium difficile* with *Streptococcus (Enterococcus) faecalis* transposon Tn916. Antimicrob Agents Chemoth. 31:1033-1038.
- Halula, M., S. Manning, and F.L. Macrina. 1991. Nucleotide sequence of *ermFU*, macrolide-lincosamide-streptogramin (MLS) resistance gene encoding an RNA methylase from the conjugal element of *Bacteroides fragilis* V503. Nuc Acids Res. 19:3453.
- Hammerum, A.M., L. Jensen, L. Bogo and F. M. Aarestrup. 1998. Detection of the *satA* gene and transferability of virginiamycin resistance in *Enterococcus faecium* from food-animals. FEMS Microbiol. Lett. 168: 145-151.
- Hudson C.R., M.C. Roberts, and F.C. Gherardini. 1998. Evidence of conjugal transfer of an erythromycin resistance determinant in *Borrelia burgdorferi*. Abstracts of the 98th Annual Meeting of American Society of Microbiology, Atlanta GA. May 17-21.
- Inoye, M., T. Morohoshi, S. Horinouchi and T. Beppu. 1994. Cloning and sequences of two macrolide-resistance-encoding genes from mycinamicin-producing *Micromonospora grieorubida*. Gene 141:39-46.
- Jenkins, G., M. Zalacain, and E. Cundliffe. 1989. Inducible ribosomal RNA methylation in *Streptomyces lividans*, conferring resistance to lincomycin. J. Gen. Microbiol. 129:2703-2714.
- Jensen, L.B., A.M. Hammerum, F.M. Aarestrup, A.E. van den Bogaard and E.E. Stobberingh. 1998. Occurrence of *satA* and *vgb* genes in streptogramin-resistant *Enterococcus faecium* isolates of animal and human origins in the Netherlands. Antimicrob. Agents Chemother. 42:3330-3331.
- Jensen, L.B., N. Frimodt-Moller, F.M. Aarestrup. 1999. Presence of *erm* gene classes in Gram-positive bacteria of animal and human origin in Denmark. FEMS Microbiol. Lett. 170:151-158.
- Johnston, N., J.C. de Azavedo, J.D. Kellner, and D.E. Low. 1998. Prevalence and characterization of the mechanisms of macrolide, lincosamide, and streptogramin resistance in isolates of *Streptococcus pneumoniae*. Antimicrob. Agents Chemother. 42:2425-2426.

- Jones, R.N., M.A. Pfaller, and G.V. Doern. 1998. Comparative antimicrobial activity of trovafloxacin tested against 3049 *Streptococcus pneumoniae* isolates from the 1997-1998 respiratory infection season. *Diagn. Microbiol. Infect. Dis.* 32:119-126.
- Kamimiya, S. and B. Weisblum. 1996. GeneBank deposit: *Streptomyces viridochromogenes* rRNA (adenine-N6-) methyltransferase, *ermSV* gene. Accession number U59450.
- Kataja, J., H. Seppala, M. Skurnik, H. Sarkkinen, and P. Huovinen. 1998. Different erythromycin resistance mechanisms in Group C and Group G streptococci. *Antimicrob. Agents Chemother.* 42:1493-1494.
- Kataja, J., P. Huovinen, M. Skurnik, the Finnish Study Group for Antimicrobial Resistance, H. Seppala. 1999. Erythromycin resistance genes in group A streptococci in Finland. *Antimicrob. Agents Chemother.* 43:48-52.
- Kim, S-K, M-C. Baek, S-S. Choi, B-K. Kim and E-C. Choi. 1996. Nucleotide sequence, expression and transcriptional analysis of the *Escherichia coli mphK* gene encoding macrolide-phosphotransferase K. *Mol. Cells.* 6:153-160.
- Kovalic, D., R.B. Giannattasio, H-J. Jin and B. Weisblum. 1994. 23S rRNA domain V, a fragment that can be specifically methylated in vitro by the ErmSF (TlrA) methyltransferase. *J. Bacteriol.* 176:6992-6998.
- Leclercq, R., and P. Courvalin. 1991. Bacterial resistance to macrolide, lincosamide, and streptogramin antibiotics by target modification. *Antimicrob. Agents Chemoth.* 35:1267-1272.
- Leclercq, R., and P. Courvalin. 1991. Intrinsic and unusual resistance to macrolide, lincosamide, and streptogramin antibiotics in bacteria. *Antimicrob Agents Chemoth.* 35:1273-1276.
- Le Goffic, F., M.L., Capmau, M.L. Bonnet, C. Cerceau, C.J. Soussy, A. Dublanchet, and J. Duval. 1977. Plasmid-mediated pristinamycin resistance: PH1A, a pristinamycin 1A hydrolase. *Ann. Inst. Pasteur.* 128:471-474.
- Le Goffic, F., M.L., Capmau, M.L. Bonnet, C. Cerceau, C.J. Soussy, A. Dublanchet, and J. Duval. 1977. Plasmid-mediated pristinamycin resistance: PCIIA, a new enzyme which modifies pristinamycin IIA. *J. Antibiot.* 30:665-669.
- Levy, S.B., L.M. McMurry, V. Burdett, P. Courvalin, W. Hillen, M.C. Roberts, and D.E. Taylor. 1989. Nomenclature for tetracycline resistance determinants. *Antimicrob. Agents Chemother.* 33:1373-1374.
- Levy, S.B., L.M. McMurry, V. Burdett, P. Courvalin, W. Hillen, M.C. Roberts, J.I. Rood, and D.E. Taylor. Nomenclature for new tetracycline resistance determinants. *Antimicrob. Agents Chemother.* 43:1523-1524.
- Liu, M., F. Kirpekar, G.P. van Wezel, and S. Douthwaite. 2000. The tylosin resistance gene *tlrB* of *Streptomyces fradiae* encodes a methyltransferase that targets G748 in 23S rRNA. *Mol. Microbiol.* 37:811-820

- Low, D.E., and H.L. Nadler. 1997. A review of in vitro antibacterial activity of quinupristin/dalfopristin against methicillin-susceptible and -resistant *Staphylococcus aureus*. *J. Antimicrob. Chemother.* 39:53-58.
- Luna, V.A., P. Coates, E.A. Eady, J. Cove, T.T.H. Nguyen, and M.C. Roberts. 1999. A variety of Gram-positive bacteria carry mobile *mef* genes. *Antimicrob. Agents Chemother.* 44:19-25.
- Luna, V.A, S. Cousin, Jr., W.L.H. Whittington, and M.C. Roberts. 2000. Identification of the conjugative *mef* gene in clinical *Acinetobacter junii* and *Neisseria gonorrhoeae* isolates. *Antimicrob. Agents Chemother.* 44:2503-2506
- Martineau, F., F.J. Picard, N. Lansac, C. Menard, P.H. Roy, M. Ouellette, and M.G. Bergeron. 2000. Correlation between the resistance genotype determined by multiplex PCR assays and the antibiotic susceptibility patterns of *Staphylococcus aureus* and *Staphylococcus epidermidis*. *Antimicrob. Agents Chemother.* 44:231-238.
- Matsuoka, M., M. Inoue and Y. Nakajima. 1995. A mechanism of resistance to partial macrolide and streptogramin B antibiotics in *Staphylococcus aureus* clinically isolated in Hungary. *Biol Pharm. Bull.* 18:1482-1486.
- Matsuoka, M., M. Inoue and Y. Nakajima. 1997. A dyadic plasmid that shows MLS and PMS resistance in *Staphylococcus aureus*. *FEMS Microbiol Lett.* 148:91-96.
- Matsuoka, M., M. Inoue and Y. Nakajima. 1998. A new class of *erm* genes mediating MLS-coresistance in *Staphylococcus aureus*: it resides on plasmid pMS97 together with *msrSA'* gene coding for an active efflux pump. ICCAC Abstracts Sept 1998.
- Matsuoka, M., K. Endou, H. Kobayashi, M. Inoue and Y. Nakajima. 1998. A plasmid that encodes three genes for resistance to macrolide antibiotics in *Staphylococcus aureus*. *FEMS Microbiol. Lett.* 167:221-227.
- Meier, A., P. Kirschner, B. Springer, V.A. Steingrub, B.A. Brown, R.J. Wallace and E.C. Bottger. 1994. Identification of mutations in the 23S ribosomal RNA gene of clarithromycin resistant *Mycobacterium intracellulare*. *Antimicrob Agents Chemoth.* 38:381-384.
- Monod, M., S. Mohan, and D. Dubnau. 1987. Cloning and analysis of *ermG*, a new macrolide-lincosamide-streptogramin B resistance element from *Bacillus sphaericus*. *J. Bacteriol.* 169:340-350.
- Morohoshi, M.T., S. Horinouchi, and T. Beppu. 1994. Cloning and sequences of two macrolide-resistance-encoding genes from mycinamicin-producing *Micromonospora griseorubida*. *Gene* 141:39-46.
- Nakamura, A, I. Miyakozawa, K. Nakazawa, K. O'Hara, and T. Sawai. 2000. Detection and characterization of a macrolide 2'-phosphotransferase from a *Pseudomonas aeruginosa* clinical isolate. *Antimicrob. Agents Chemother.* 44:3241-3242

- Noguchi, H., A. Emura, H. Matsuyama, K. O'Hara, M. Sasatsu and M. Kono. 1995. Nucleotide sequence and characterization of erythromycin resistance determinant that encodes macrolide 2'-phosphotransferase I in *Escherichia coli*. *Antimicrob. Agents Chemother.* 39:2359-2363.
- Noguchi, H., J. Katayama, K. O'Hara. 1996. Cloning and nucleotide sequence of the *mphB* gene for macrolide 2'-phosphotransferase II in *Escherichia coli*. *FEMS Microbiol. Let.* 144:197-202.
- O'Hara, K., T. Kanda, K. Ohmiya, T. Ebisu, and M. Kono. 1989. Purification and characterization of macrolide 2'-phosphotransferase from a strain of *Escherichia coli* that is highly resistant to erythromycin. *Antimicrob. Agents Chemother.* 33:1354-1357.
- Ounissi, H., and P. Courvalin. 1985. Nucleated sequence of the gene *ereA* encoding the erythromycin esterase in *Escherichia coli*. *Gene.* 35:271-278.
- Pang, Y., B.A. Brown, V.A. Steingrube, R.J. Wallace Jr., and M.C. Roberts. 1994. Acquisition of gram-positive tetracycline resistance genes in *Mycobacterium* and *Streptomyces* species. *Antimicrob. Agents Chemother.* 38:1408-1412.
- Peschke, U., H. Schmidt, H-Z. Zhang, and W. Piepersberg. 1995. Molecular characterization of the lincomycin-production gene cluster of *Streptomyces lincolnensis* 78-11. *Mol. Microbiol.* 16:1137-1156.
- Pernodet, J.L., M.H. Blondelet-Rouault, and M. Guerineau. 1991. characterization of two spiramycin resistance genes for *Streptomyces ambofaciens*. Abstract p1-165. International Symposium on biology of Actinomycetes, August 11-16, 1991. University of Wisconsin, Madison, WI.
- Portillo, A. F. Ruiz-Larrea, M. Zarazaga, A. Alonso, J.L. Martinez and C. Torres. 2000. Marcolide resistance genes in *Enterococcus* spp. *Antimicrob. Agents Chemother.* 44:967-971.
- Rasmussen, J.L., D.A. Odelson, and F.L. Macrina. 1986. Complete nucleotide sequence and transcription of *ermF*, a macrolide-lincosamide-streptogramin B resistance determinant from *Bacteroides fragilis*. *J. Bacteriol.* 168:523-533.
- Rende-Fournier, R., R. LeClercq, M. Galimand, J. Duval, and P. Courvalin. 1993. Identification of the *satA* gene encoding a streptogramin A acetyltransferase in *Enterococcus faecium* BM4145. *Antimicrob Agents Chemoth.* 37:2119-2125.
- Reig, M., J-C. Galan, F. Baquero, and J.C. Perez-Diaz. 2001. *Antimicrob Agents Chemoth.* 45:630-632
- Rosato, A.E, B.S. Lee and K.A. Nash. 2001. Inducible macrolide resistance in *Corynebacterium jeikeium*. *Antimicrob Agents Chemoth.* 45:1982-1989

- Richardson, M.A., S. Kuhstoss, P. Solenberg, N.A. Schaus and R.N. Rao. 1987. A new shuttle cosmid vector, pKC505, for streptomycetes: its use in the cloning of three different spiramycin-resistance genes from a *Streptomyces ambofaciens* library. *Gene*. 61:231-241.
- Roberts, M.C. 1995. Distribution of tetracycline and macrolides-lincosamides-streptogramin B (MLS) genes in anaerobic bacteria. *Clin. Infect. Dis.* 20:S367-S369.
- Roberts, M.C., and M.B. Brown. 1994. Macrolide-lincosamide resistance determinants in streptococcal species isolated from the bovine mammary gland. *Vet Microbiol.* 40:253-261.
- Roberts, M.C., W.O. Chung, D. Roe, M. Xia, C. Marquez, G. Borthagaray, W.L. Whittington, and K.K. Holmes. 1999. Erythromycin resistant *Neisseria gonorrhoeae* and oral commensal *Neisseria* spp. carry known rRNA methylase genes. *Antimicrob. Agents Chemother.* 43:1367-1372.
- Roberts, M.C., W. Chung, and D.E. Roe. 1996. Characterization of tetracycline and erythromycin determinants in *Treponema denticola*. *Antimicrob Agents Chemother.* 40:1690-1694.
- Roberts, M.C., L.V. McFarland, P. Mullany, and M.E. Mulligan. 1994. Characterization of the genetic basis of antibiotic resistance in *Clostridium difficile*. *J. Antimicrob. Chemoth.* 33:419-429.
- Roberts, M.C., J. Sutcliffe, P. Courvalin, L.B. Jensen, J. Rood, and H. Seppala. Nomenclature for macrolide and macrolide-lincosamide streptogramin B antibiotic resistance determinants. *Antimicrob Agents Chemother.* 43:2823-2830.
- Roe, D.E., A. Weinberg, and M.C. Roberts. 1995. Mobility of rRNA methylase genes in *Campylobacter (Wolinella) rectus*. *J. Antimicrob. Chemother.* 36:738-740.
- Roe D.E., A. Weinberg and M.C. Roberts. 1996. Mobile rRNA methylase genes in *Actinobacillus actinomycetemcomitans*. *J. Antimicrob. Chemother.* 37:457-464.
- Ross, J.I., E.A. Eady, J.H. Cove and S. Baumberg. 1996. Gene. Minimal functional system required for expression of erythromycin resistance by *msrA* in *Staphylococcus aureus* RN4220. 183:143-148.
- Ross, J.I., A.M. Farrell, E.A. Eady, J.H. Cove and W.J. Cunliffe. 1989. Clinical resistance to erythromycin and clindamycin in cutaneous *Propionibacteria* isolated from patients is associated with mutations in 23S rRNA. *Antimicrob Agents Chemoth.* 41:1162-1165.
- Rosteck, P.R., Jr., P.A. Reynolds, and C.L. Hershberger. 1991. Homology between proteins controlling *Streptomyces fradiae* tylosin resistance and ATP-binding transport. *Gene* 102:27-32.

- Rudolph, K.M, A.J. Parkinson, and M.C. Roberts. 2001. Mechanisms of erythromycin and trimethoprim resistance in the Alaska *Streptococcus pneumoniae* serotype 6B clone. *J. Antimicrob. Chemoth.* 48:317-318.
- Salyers, A.A., N.B. Shoemaker, A.M. Stevens, and L. Li. 1995. Conjugative transposons: an unusual and diverse set of integrated gene transfer elements. *Microb Rev.* 59:579-590.
- Santagatim, F. Iannelli, .R. Oggioni, S. Stefani, and G. Pozzi. 2000. Characterization of a genetic element carrying the macrolide efflux gene *mef(A)* in *Streptococcus pneumoniae*. *Antimicrob Agents Chemoth.* 44:2585-2587.
- Savoia, D., C. Avanzini, K. Bosio, G. Volpe, D. Carpi, G. Dotti, and M. Zucca. 2000. Macrolide resistance in group A streptococci. *J. Antimicrob Chemoth.* 45:41-47.
- Schoner, B., M. Geistlich, Pl. Rosteck Jr., R. N. Rao, E. Seno, P. Reynolds, K. Cox, S. Burgett, and C. Hershberger. 1992. Sequence similarity between macrolide-resistance determinants and ATP-binding transport proteins. *Gene.* 115:93-96.
- Seoane, A., and J.M.G. Lobo. 2000. Identification of a streptogramin A acetyltransferase gene in the chromosome of *Yersinia enterocolitica*. *Antimicrob Agents Chemoth.* 44:905-909.
- Seppala, H., M. Skurnik, H. Soini, M.C. Roberts, and P. Huovinen. 1998. A novel erythromycin resistance methylase gene (*ermTR*) in *Streptococcus pyogenes*. *Antimicrob. Agents Chemother.* 42:257-262.
- Shoemaker, N.B., R.D. Barber, and A.A. Salyers. 1989. Cloning and characterization of a *Bacteroides* conjugal tetracycline-erythromycin resistance element using a shuttle cosmid vector. *J. Bacteriol.* 171:1294-1302.
- Shortridge, V.D., R.K., Flamm, N. Ramer, J. Beyer and S.K. Tanaka. 1996. Novel mechanism of macrolide resistance in *Streptococcus pneumoniae*. *Diagn Microbiol Infect Dis.* 26:73-78.
- Simjee, S P.F. McDermott, D.D. Wagner, and D.G. White. 2000. Variation within the *vat(E)* allele of *enterococcus faecium* isolates from retail poultry samples. *Antimicrob. Agents Chemother.* 45:2931-2932.
- Singh, K.V., K. Malathum, and B.E. Murray. 2001. Disruption of an *Enterococcus faecium* species-specific gene, a homologue of acquired macrolide resistance genes of staphylococci, is associated with an increase in macrolide susceptibility. *Antimicrob. Agents Chemother.* 45:263-266.
- Smith, C.J. 1987. Nucleotide sequence analysis of Tn4551: use of *ermFS* operon fusions to detect promoter activity in *Bacteroides fragilis*. *J. Bacteriol.* 169:4589-4596.
- Soltani , M., D. Beighton, J. Philpott-Howard, and N. Woodford. 2001. Identification of *vat(E-3)*, a novel gene encoding resistance to quinupristin-dalfopristin in a strain of *Enterococcus faecium* from a hospital patient in the United Kingdom. *Antimicrob. Agents Chemother.* 45:645-6456.

- Sutcliffe J., T. Grebe, A. Tait-Kamradt, and L. Wondrack. 1996. Detection of erythromycin-resistant determinants by PCR. *Antimicrob. Agents Chemother.* 40:2562-1566.
- Sutcliffe J., A. Tait-Kamradt, and L. Wondrack. 1996. *Streptococcus pneumoniae* and *Streptococcus pyogenes* resistant to macrolides but sensitive to clindamycin: a common resistance pattern mediated by an efflux system. *Antimicrob Agents Chemoth.* 40:1817-1824.
- Tait-Kamradt, A., J. Clancy, M. Cronan, F. Dib-hajj, L. Wondrack, W. Yuan, and J. Sutcliffe. 1997. *mefE* is necessary for the erythromycin-resistant M phenotype in *Streptococcus pneumoniae*. *Antimicrob. Agents Chemother.* 41: 2251-2255.
- Teng L-J, P-R. Hsueh, S-W. Ho and K-T. Luk. 2001. High prevalence of inducible erythromycin resistance among *Streptococcus bovis* isolates in Taiwan. *Antimicrob. Agents Chemother.* 45:3362-3365
- Trieu-Cuot, P., C. Poyart-Salmeron, C. Carlier, and P. Courvalin. 1990. Nucleotide sequence of the erythromycin resistance gene of the conjugative transposon Tn1545. *Nucleic Acids Res.* 18:3660.
- Vergis E.N., and V.L. Yu. 1997. Macrolides are ideal for empiric therapy of community-acquired pneumonia in the immunocompetent host. *Sem Respir Infect.* 12:322-328.
- Vergis E.N., and V.L. Yu. 1998. New macrolides or new quinolones as monotherapy for patients with community-acquired pneumonia; our cup runneth over?. *Chest.* 113:1158-1159.
- Wasteson, Y., D.E. Robe, K. Falk, and M.C. Roberts. 1996. Characterization of tetracycline and erythromycin resistance in *Actinobacillus pleuropneumoniae*. *Vet Microbiol.* 48:41-50.
- Weber, J.M., J.O. Leung, G.T. Main, R.H.B. Potenz, T.J. Paulus, and J.P. E. D. Witt. 1990. Organization of a cluster of erythromycin genes in *Saccharopolyspora erythraea*. *J. Bacteriol.* 172:2372-2383.
- Weisblum B. 1995. Erythromycin resistance by ribosomal modification. *Antimicrob. Agents Chemoth.* 39:5775-85.
- Weisblum B. 1995. Insights into erythromycin action from studies of its activity as inducer of resistance. *Antimicrob. Agents Chemoth.* 39:797-805.
- Weisblum B. 1998. Macrolide resistance. *Drug Resist Update.* 1:29-41.
- Werner, G., B. Hildebrandt, and W. Witte. 2001. The newly described *msrC* gene is not equally distributed among all isolates of *Enterococcus faecium*. *Antimicrob. Agents Chemoth.* 45:3672-3673.
- Whitehead, T.R. and M.A. Cotta. 2001. Sequence analyses of a broad host-range plasmid containing *ermT* from a tylosin-resistant *Lactobacillus* sp. Isolated from swine feces. *Curr Micro.* 43:17-20.

- Widdowson, C.A. and K.P Klugman. 1998. Emergence of the M phenotype of erythromycin-resistant pneumococci in South Africa. *Emerg. Infec. Dis.* 4:277-281.
- Xue, Y., L. Zhao, H-W. Liu, and D.H. Sherman. 1998. A gene cluster for macrolide antibiotic biosynthesis in *Streptomyces venezuelae*: Architecture of metabolic diversity. *PNAS.* 95:12111-12116
- Young H., A. Moyes, and A. McMillan. 1997. Azithromycin and erythromycin resistant *Neisseria gonorrhoeae* following treatment with azithromycin. *Internat. J STD & AIDS.* 8:299-302.
- Zalacain, M., and E. Cundliffe. 1991. Cloning of *tlrD*, a fourth resistance gene, from the tylosin producer, *Streptomyces fradiae*. *Gene* 97:137-142.
- Zhang, H-Z, H. Schmidt and W. Piepersberg. 1992. Molecular cloning and characterization of two lincomycin-resistance genes *lmrA* and *lmrB*, from *Streptomyces lincolnensis* 78-11. *Mol Microbiol.* 6:2147-2157.