References

Akihisa, T., Mafune, S., Ukiya, M., Kimura, Y., Yasukawa, K., Suzuki, T., Tokuda, H., Tanabe, N., and Fukuoka, T., 2004. (+)- and (-)-Syn-2-isobutyl-4-methylazetidine-2,4-dicarboxylic acids from the extract of *Monascus pilosus* fermented rice (red-mold rice). J. Nat. Prod. 67: 479–480.

Arai, T. 1975. *Culture Media for Actinomycetes*. Tokyo: The Society for Actinomycetes.

Asano, K., Masunaga, I., and Kawamoto, I. 1989. *Catellatospora matsumotoense* sp. nov. and *C. tsunoense* sp. nov., actinomycetes found in woodland soils. Int. J. Syst. Bacteriol. 39: 309-313.

Blanc, P. J., Loret, M. O., Santerre, A. L., Pareilleux, D., Prome, D., Prome, J. C., Laussac, J. P., and Goma, G. 1994. Pigments of *Monascus*. J. Food Sci. 59: 862–865.

Brock, T. D., Madigan, M. T., Martinko, J. M., and Parker, J. 1993. Biology of microorganisms. 7th ed. New Jersy: Prentice Hall.

Carles, M and Shepherd, D. 1977. The effect of different nitrogen source of pigment production and sporulation of *Monascus* species in submerged, shaken culture. Can. J. Microbiol. 23: 1360-1372.

Changling, Li. C., Zhu, Y., Wang, Y., Zhu, J., Chang, J., and Kritchersky, D. 1998. *Monascus purpureus* fermented red yeast rice: a natural food product that lowers blood cholesterol in animal models of hypercholesterolemia. Nutr. Res. 18: 71–81.

Chen, F. C., Manchand, P. S., and Whalley, W.B. 1971. The chemistry of fungi. LXIV. The structure of monascin: the relative stereochemistry of the azaphilones. J. Chem. Soc. (C) 21: 3577–3579.

Chung, Y. R., Sung, K. C., Mo, H. K., Son, D. Y., Nam, J, S., Chun, J. and Bae, K. S. 1999. *Kitasatospora cheerisanensis* sp. nov., a new species of the genus *Kitasatospora* that produces an antifungal agent. Int. J. Syst. Bacteriol. 49: 753 – 758.

Collins, L., and Franzblau, S. G. 1997. Microplate alamar blue assay versus BACTEC 460 system for high-throughput screening of compounds against *Mycobacterium tuberculosis* and *Mycobacterium avium*. Antimicrob. Agents Chemother. 41: 1004–1009.

Collins, M. D., Pirouz, T., Goodfellow, M., and Minnikin, D. E. 1977. Distribution of menaquinones in actinomycetes and corynebacteria. J. Gen Microbiol. 100: 221-230.

Corbett, L. E., Steketee, W. R., Kuile, O. F., Latif, A. S., Kamali, A., Hayes, J. R. 2002. HIV-1/ AIDS and the control of other infectious diseases in Africa. The Lancet. 39: 2177-2187.

Coyne, M. S. 1999. Soil microbiology: An Exploratory Approach Delmar: An International Thomson.

Dale, J. A., and Mosher, H. S. 1973. Nuclear magnetic resonance enantiomer reagents. Configurational correlations via nuclear magnetic resonance chemical shifts of diastereomeric mandelate, *O*-methylmandelate, and α-methoxy-α trifluoromethylphenylacetate (MTPA) esters. J. Am. Chem. Soc. 95: 512–519.

Desjardins, R. E., Canfield, C. J., Haynes, J. D., and Chulay, J.D. 1979. Quantitative assessment of antimalarial activity in vitro by a semiautomated microdilution technique. Antimicrob. Agents Chemother. 16: 710–718.

Eckers, C., Wolff, J.C., Haskins, N. J., Sage, A. B., Giles, K., and Bateman, R., 2000. Accurate mass liquid chromatography/mass spectrometry on orthogonal acceleration time-of-flight mass analyzers using switching between separate sample and reference sprays. 1. Proof of concepts. Anal. Chem. 72: 3683–3688.

Endo, A. 1979. Monacolin K, a new hypocholesterolemic agent produced by a *Monascus* species. J. Antibiot. 32: 852–854.

Endo, A. 1981. Biochemical and pharmacological activity of inhibitors of 3-hydroxy-3 methylglutaryl coenzyme A reductase. Trends Biochim. Sci 6: 10-13

Endo, A. 1985. Microbial phosphorylation of compactin (ML-236B) and related compounds J. Antibiot. 38: 328–332.

Endo, A., Hasumi, K., and Negishi, S. 1985. Monacolin J and L, new inhibitors of cholesterol biosynthesis produced by *Monascus rubber* J. Antibiot. 38: 420–422.

Endo, A., Komagata, D., and Shimada, H. 1986. Monakolin M, a new inhibitor of cholesterol biosynthesis. J. Antibiot. 39: 1670–1673.

Ezaki, T., Hashimoto, Y., and Yabuuchi, E. 1989. Fluorometric deoxyribonucleic acid-deoxyriboncleic acid hybridization in microdilution wells as an alternative to membrane filter hybridization in which radioisotopes are used to determine genetic relatedness among bacterial strains. Int. J. Syst. Bacteriol. 39: 224-229.

Felsenstein, J. 1985. Confidence limits on phylogenies: an approach using the bootstrap. Evolution 39: 783-791.

Glasby, J. S. 1993. Encyclopedia of Antibiotics 3rd ed. Chichester: John Wiley and sons Inc.

Goodfellow, M. 1988. Actinomycetes in Biotechnology San Diego: Academic Press Inc., pp. 1-30.

Goodfellow, M., Stanton, L. J., Simpson, K. E., and Minnikin, D. E. 1990. Numerical and chemical classification of *Actinoplanes* and some related actinomycetes. J. Gen. Microbiol. 136: 19-36.

Gordon, R. E., Barnett, D. A., Handerhan, J. E., and Pang, C. H. N. 1974. *Nocardia coeliaca, Nocardia autotrophica*, and the *nocardin* strain. Int. J. Syst. Bacteriol. 24: 54-63.

Hajjaj, H., Klaebe, A., Goma, G., Blanc, P.J., Barbier, E., and Francois, J. 2000. Medium-chain fatty acids affect citrinin production in the filamentous fungus *Monascus ruber*. Appl. Environ. Microbiol. 66: 1120–1125.

Hawksworth, D. L., and Pitt. J. I. 1983. A new taxonomy for *Monascus* species based on cultural and microscopical characters. Australian Journal of Botany 31: 51-61.

Haws, E. J., Holker, J. S., Kelly, A., Powell A. D., and Robertson, A. 1959. The chemistry of fungi. Part xxxvii. The structure of rubropunctatin. J. Chem. Soc. 70: 3598-3610

Hawser, S. P., Norris, H., Jessup, C. J., Ghannoum, M. A., 1998. Comparison of a 2,3-bis(2-methoxy-4-nitro-5-sulfophenyl)-5-[(phenylamino) carbonyl]-2H-tetrazolium hydroxide (XTT) colorimetric method with the standardized national committee for clinical laboratory standards method of testing clinical yeast isolates for susceptibility to antifungal agents. J. Clin. Microbiol. 36: 1450–1452.

Hiroi, T., Sima, T., Suzuki, M., Tsukioka, M., Ogasawara, N., 1979. Hyperpigment productive mutant of *Monascus anka* for solid culture. Agr. Biol. Chem. 43:1975–1976.

Hirsch, P., Hoffmann, B., Meves, U., Kroppenstedt , R. M., and Stackebrandt, E. 2004. Cryptoendolithic actinomycetes from antaractic sandstone rock samples: *Micromonospora endolithica* sp. nov. and two isolates related to *Micromonospora coerulea* Jensen 1932. System. Appl. Microbiol. 27: 166-174.

Holt, J. G.1989. Filamentous Actionomycetes and Related Bacteria. In S. T. Williams, M. E. Sharpe, and J. G. Holt (eds.), Bergey's Manual of Systematic Bacteriology, vol. 4, pp. 2333-2450. Baltimore: Williams & Wilkins.

Horan, A. C., and Brodsky, B. C. 1986. *Micromonospora rosaria* sp. nov., Rev., the rosaramicin producer. Int. J. Syst. Bacteriol. 36: 478-480.

Hossain, C. F., Okuyama, E., and Yamazaki, M., 1996. A new series of coumarin derivatives having monoamine oxidase inhibitory activity from *Monascus anka*. Chem. Pharm. Bull. 44: 1535–1539.

Hsieh, P. S., Tai, Y. H., 2003. Aqueous extract of *Monascus purpureus* M 9011 prevents and reverses fructose-induced hypertension in rats. J. Agr. Food Chem. 51: 3945–3950.

Iizuka, H., and Lin, C.F., 1981. On The Genus *Monascus* of Asia And Its Specific Characteristics. In: Moo-Young, M., Robinson, C.W., Vezina, C. (Eds). Advances in Biotechnology. Vol. 2. Pergamon Press, Toronto, pp. 555-561.

Inouye, Y., Nakanishi, K., Nishikawa, H., Ohashi, M., Terahara, A., and Yamamura, S. 1962. Structure of monascofavin. Tetrahedron 18: 1195-1203.

Itoh, T., Kudo, T., Parenti, F., and Seino, A. 1989. Amended description of the genus *Kineosporia*, based on chemotazonomic and morphological studies. Int. J. Syst. Bacteriol. 39: 168-173.

Izawa, S., Harada, N., Watanabe, T., Kotakawa, N., Yamamoto, A., Hayatsu, H., and Arimoto, S. 1997. Inhibitory effects of food coloring agents desired from Monascus on the mutagenicity of heterocyclic amines. J. Agric. Food Chem. 45: 3980-3984.

Journoud, M., and Jones, J. H. 2004. Red yeast rice a new hypolipidemic drug. Life Sciences 74: 2675-2683.

Juzlova, P., Martinkova, L. and Kren, V. 1996. Secondary metabolites of the fungus *Monascus* a review. J. Ind. Microbial. 16: 163-170.

Kampfer, P., and Kroppenstedt, R. M. 1996. Numerical analysis of fatty acid patterns of coryneform bacterial and related taxa. Can. J. Microbiol. 42: 989-1005.

Kasai, H., Tamura, T., and Harayama, S. 2000. Intrageneric relationships amont *Micromonospora* species deduced from gyrB-based phylogeny and DNA relatedness. Int. J. Syst. Evol. Microbiol. 50: 127-134.

Kawamoto, I. 1989. Genus *Micromonospora* In S. T. Williams, M. E. Sharpe, and J. G. Holt (eds), Bergey's Manual of Systematic Bacteriology, vol. 4, pp. 2442-2450. Baltimore: William & Wilkins.

Kawamoto, I., Oka, T., and Nara, T. 1981. Cell wall composition of *Micromonospora olivoasterospora, Micromonospora saganiensis,* and related organisms. J. Bacteriol. 146: 527-534.

Kawamoto, I., Okachi, R., Kato, H., Yamamoto, S., Takahashi, I., Takasawa, S., and Nara, T. 1974. The antibiotic XK-41 complex. I. Production, isolation and characterization. J. Bacteriol. 27: 493-501.

Kawamoto, I., Yamamoto, M., and Nara, T. 1983. *Micromonospora olivoasterospora* sp. nov. Int. J. Syst. Bacteriol. 33: 107-112.

Kimura, K., Komagata, D., Murakawa, S and Endo, A 1989. Biosynthesis of monacolins: conversion of monacolin J to monacolin K. J Antibiot. 43: 1621-1622.

Kluge, A. G., and Farris, F.S. 1969. Quantitative phyletics and the evolution of anurans. Syst. Zool. 18: 1-32.

Koch, C., Kroppenstedt, R. M., Rainey, F. A., and Stackebrandt, E. 1996a. 16S ribosomal DNA analysis of the genera *Micromonospora. Actinoplane, Catellatospora, Catenuloplanes, Couchioplanes, Dactylosporangium,* and *Pilimelia* and emendation of the family *Micromonosporaceae*. Int. J. Syst. Bacteriol. 46: 765-768.

Koch, C., Kroppenstedt, R. M., and Stackebrandt, E. 1996b. Intrageneric relationships of the actinomycete genus *Micromonospora*. Int. J. Syst. Bacteriol. 46: 383-387.

Komagata, K., and Suzuki, K. 1987. Lipid and cell-wall analysis in bacterial systematics. Methods In Microbiology 19: 161-207.

Kroppenstedt, R. M. 1985. Fatty acid and menaquinone analysis of actinomycetes and related organisms. In M. Goodfellow, and D. E. Minnikin (eds.), *Chemical Methods in Bacterial Systematics*, pp. 173-199. London : Academic Press.

Kumar, S., Tamura, K., Jakobsen, I. B., and Nei, M. 2001. MEGA2 : molecular evolutionary genetics analysis software. Bioinformatics 17: 1244-1245.

Lechevalier, M. P., DeBievre, C, and Lechevalier, H. A. 1977. Chemotaxonomy of aerobic actinomycetes : phospholipids composition. Biochem. Syst. Ecol. 5: 249-260.

Lechevalier, M. P., and Lechevalier, H. A. 1970. Chemical composition as a criterion in the classification of aerobic actinomycetes. Int. J. Syst. Bacteriol. 20: 435-443.

Lee, S. D., Goodfellow, M., and Hah, Y.C. 1999. A phylogenetic analysis of the genus *Catellatospora* based on 16S ribosomal DNA sequence, including transfer of *Catellatospora matsumotoense* to the genus *Micromonospora* as *Micromonospora matsumotoense* comb. nov. FEMS Microbiol. Lett. 178: 349-354.

Lorain, V. 1980. Antibiotics in laboratory medicine. Baltimore : The Williams & Wilkins Co.

Luedemann, G. M. 1971a. Designation of neotype strains for *Micromonospora coerulea* Jensen 1932 and *Micromonospora chalcea* (Foulerton 1905) Ørskov 1923. Int. J. Syst. Bacteriol. 21: 248-253.

Luedemann, G. M. 1971b. *Micromonospora coerulea purpureochromogenes* (Waksman and Crutis 1916) comb. nov. (subjective synonym : *Micromonospora chalcea* fusca *Jensen* 1932.). Int. J. Syst. Bacteriol. 21: 240-247.

Luedemann, G. M. and Brodsky, B. C. 1964. Taxonomy of gentamicin-producing *Micromonospora*. Antimicrob. Agents Chemother. 1963: 116-124.

Luedemann, G. M. and Brodsky, B. C. 1965. *Micromonospora carboncea* sp. nov., an everninomicin-producing organism. Antimicrob. Agents Chemother. 196: 47-65.

Ma, J., Li, Y., Ye, Q., Li, J., Hua, Y., Ju, D., Zhang, D., Cooper, R., and Chang, M. 2000. Constituents of red yeast rice, a traditional Chinese food and medicine. J. Agr. Food Chem. 48: 5220–5225.

Marmur, J., and Doty, P. 1962. Determination of the base composition of deoxyribonucleic acid from its thermal denaturation temperature. J. Mol. Biol. 5: 109-118.

Martinkova, L., Patakova-Juzlova, P., Krent, V., Kucerova, Z., Havlicek, V., Olsovsky, P., Hovorka, O., Rihova, B., Vesely, D., Vesela, D., Ulrichova, J., and Prikrylova, V. 1999. Biological activities of oligoketide pigments of *Monascus purpureus*. Food Addit. Contam. 16: 15–24.

Matsumoto, A., Takahashi, Y., Shinose, A., Seino, hashi, Y., Shinose, A., Seino, Y. I., and Omura, S. 2003. *Longispora lbida* gen. nov., sp. nov., novel genus of the family *Micromonospora*. Int. J. Syst. Evol. Microbiol. 53: 1533-1559.

Mikami, H., and Ishida, Y. 1983. Post-column fluorometric detection of reducing sugar in high-performance liquid chromatography using arginine. Bunseki. Kagaku. 32: E207-E210.

Minnikin, D. E., O'Donnell, A. G., Goodfellow, M., Alderson, G., Athalye, M., Schal, A., and Parlett, J. H. 1984. An integrated procedure for the extraction of bacterial isoprenoid quinones and polar lipids. J. Microbiol. Methods 2: 233-241.

Nakamura, Y., Ono, E., Kohda, T., and Shihai, H. 1989. Two new carbapenem antibiotic-producing actinomycetes *Kitasatospora papulasa* sp. nov. and *Kitasatospora grisea*. sp. nov. J Antibiot. 52: 18-29.

Nishikawa, J. and Lizuka. H. 1993. Taxonomical studies of *Monascus* species J. Basic Microbiol. 33 : 331-342.

Nozaki H, Date, H., Kondo, H., Kiyohara, H., Takaoda, D., Tada and Nakayama, M. 1991. Ankalactone, a new α,ß- unsaturated γ-lactone from *M. anka*. Agric Biol Chem 55: 899-900

Okami, K. and Hotta, Y. 1988. Search and discovery of new antibiotics. In M. Goodfellow, S. T. Williams, and M. Mordaski (eds.), Actinomycetes in Biotechnology, pp. 33-67. London: Academic Press Ltd.

Oki, T. 1994. Recent progress of antibiotics research, S4-8. In K. Komagata et al. (eds)., Appliction Control of Microorganisms in Asia. pp. 258-294. Science and Technology Agency, The Institute of Physical and Chemical Research, Japan International Science and Technology Exchange Center.

Omura, S., Takahashi, Y., Iwai, Y. and Tanaka, H, (1982). *Kitasatosporia*, a new genus of the order Actinomycetales. J. Antibiot. 35: 1013-1019.

Ørskov, J. 1923. Investigations into the morphology of the ray fungi. Copenhgen : Levin and Munksgaard.

Rheims, H., Schumnn, P., Rohde, M., and Stackebrandt, E. 1998. *Verrucosispora gifhornensis* gen. nov., sp. nov., a new member of the actinobacterial family *Micromonosporaceae*. Int. J. Syst. Bacteriol. 48: 1119-1127.

Rinehart, K. L. Jr., Maheshwari, M. L., Antosz,, F. J., Mathur, H. H., Sasaki, K., and Schacht, R. J. 1971. Chemistry of the streptovaricins. VIII. Structures of Streptovaricins A, B, C, D, E, F, and G. J. Am. Chem. Soc. 93(23): 6273-6274.

Sabater-Vilar, M., Maas, R. F., Fink-Gremmels, J., 1999. Mutagenicity of commercial *Monascus* fermentation products and the role of citrinin contamination. Mutat. Res. 444: 7–16.

Sasser, M. 1990. Identification of bacteria by gas chromatography of cellular fatty acids (MIDI Technical Note 101). Newark, DE : MIDI.

Saitou, N., and Nei, M. 1987. The neighbor-joining method: a new method for reconstructing phylogenetic trees. Mol Biol. Evol. 4: 406-425.

Sato, K., Goda, Y., Sakamoto, S. S., Shibata, H., Maitani, T., Yamada, T., 1997. Identification of major pigments containing D-amino acid units in commercial *Monascus* pigments. Chem. Pharm. Bull. 45: 227–229.

Sato, K., Iwakami, S., Goda, Y., Okuyama, E., Yoshihira, K., Ichi, T., Odake, Y., Noguchi, H., and Sankawa, U. 1992. Novel natural colorants from *Monascus anka* U-1. Heterocycles 34: 2057-2060.

Schleifer, K. H., and Kandler, O. 1972. Peptidoglycan types of bacterial cell walls and their taxonomic implications. Bacteriol. Rev. 36: 407-477.

Shirling, E. B., and Gottlieb, D. 1966. Methods for Characterization of *Streptomyces* species. Int. J. Syst. Bacteriol. 16: 313-340.

Skehan, P., Storeng, R., Scudiero, D., Monks, A., McMahon, J., Vistica, D., Warren, J. T., Bokesch, H., Kenney, S., Boyd, M.R., 1990. New colorimetric cytotoxicity assay for anticancer-drug screening. J. Natl. Cancer Inst. 82: 1107–1112.

Skerman, V. B. D., McGowan, V., and Sneath, P. H. A. 1980. Approved lists of bacterial names. Int. J. Syst. Bacteriol. 30: 225-420.

Speijers, G. J., and Speijers, M. H. 2004 Combined toxic effects of mycotoxins. Toxicology Letters 153: 91-98.

Stackebrandt, E., Frederiksen, W., Garrity, G. M., Grimont, P. A. D., Kapmfer, P., Maiden, M. C. J., Nesme, X., Mora, R. R., Swings, J., Truper, H. G., Vauterin, L., Ward, a. C., and Whitman, W.

B. 2002. Report of the ad hoc committee for the re-evaluation of the species definition in bacteriology. Int. J. Syst. Evol. Microbiol. 52: 1043-1047.

Stackebrandt, E., Rainey, F. A., and Ward-Rainey, N. L. 1997. Proposal for a new hierarchic classification system, *Actinobacteria* classic. nov. Int. J. Syst. Bacteriol. 47: 479-491.

Staneck, J. L., and Roberts, G. D. 1974. Simplified approach to identification of aerobic actinomycetes by thin-layer chromatography. Appl. Microbiol. 28: 266-231.

Su, B. N., Park, E. J., Mbwambo, Z. H., Santarsiero, B. D., Mesecar, A. D., Fong, H. H., Pezzuto, J. M., and Kinghorn, A. D., 2002. New chemical constituents of *Euphorbia quinquecostata* and absolute configuration assignment by a convenient Mosher ester procedure carried out in NMR tubes. J. Nat. Prod. 65: 1278–1282.

Su, Y. C., Wang, J. J., Lin, T. T., 2003. Production of the secondary metabolites γ-aminobutyric acid and monakolin K by *Monascus*. J. Ind. Microbiol. Biotechnol. 30: 41–46.

Sullivan, G. R., Dale, J. A., Mosher, H. S., 1973. Correlation of configuration and 19 F chemical shifts of α-methoxy-α trifluoromethylphenylacetate derivatives. J. Org. Chem. 38: 2143–2147. 2574

Szabo, Z., and Fernandez, C. 1984. *Micromonospora brunnea* Sveshnikov, Maksimov, and Kudrin 1969 is a junior subjective synonym of *Micromonospora purpureochromogenes* (Waksman and Curtis 1916) Luedemann 1971. Int J. Syst Bacteriol. 34: 463-464.

Takayuki, A., Hiroshi, S., 1994. Novel UV-absorbing compounds FK17-P2a, FK-17-P2b1, FK17-P2b2, and FK17-P3 and manufacture of the compounds with *Aspergillus* sp., Patent No. JP 6329576.

Tamaoka, J. 1994. Determination of DNA Base Composition. In M. Goodfellow, and A. G. O'Donnell (eds.), Chemical Methods in Prokryotic Systematics, pp. 463-470. Chichester: John Wiley and Sons.

Tamaoka, J., and Komagata, K. 1984. Determination of DNA base composition by reversed-phase high-performnce liquid chromatography. FEMS Microbiol. Lett. 25: 25-128.

Tamura, T., Hayakawa, M., and Hatano, K. 1997. A new genus of the order *Actinomycetales*, *Spirilliplanes* gen. nov., with description of *Spirilliplanes yamanashiensis* sp. nov. Int. J. Syst. Bacteriol. 47: 97-102.

Tamura, T., Hayakawa, M., and Hatano, K. 2001. A new genus of the order *Actinomycetales*, *Virgosporangium* gen. nov., with description of *Virgosporangium ochraceum* sp. nov. and *Virgosporangium aurantiacum* sp. nov. Int. J. Syst. Evol. Microbiol. 51: 1809-1816.

Thaiwai, C., Tanasupawat, S., Itoh, T., Suwanborirux, K., Suzuki, K., and Kudo, T. 2004a. *Micromonospora eburnea* sp. nov., isolated from a Thai peat swamp forest. Int. J. Syst. Evol. Microbiol., 55: 417-422.

Thaiwai, C., Tanasupawat, S., Itoh , T., Suwanborirux, K., and Kudo, T. 2004b. *Micromonospora aurantinigra* sp. nov., isolated from a peat swamp forest in Thailand. Actinomycetologica, 18: 8-14.

Thompson, J. D., Gibson, T. J., Plewniak, F., Jeanmougin, F., and Higgins, D. G. 1997. The CLUSTAL_X windows interface: flexible strategies for multiple sequence alignment aided by quality analysis tools. Nucleic Acids Res. 25: 4876-4882

Tomita, K., Hoshino, Y., Ohkusa, N., Tsuno, T., and Miyaki, T. 1992. *Micromonospora chersina* sp. nov. Actinomycetologica 6: 21-28.

Tortora, G. J., Funke, B. R. and Case, C. L. 1995. *Microbiology, an introduction* 5th ed. Bridge Parkway: The Benjamin/ Cummings Publishing Company.

Trager, W., and Jensen, J. B. 1976. Human malarial parasites in continuous culture. Science 193: 673-675.

Uchida, K., and Aida, K. 1984. An improved method for the glycolate test for simple identify-cation of the acyl type of bacterial cell walls. J. Gen. Appl. Microbiol. 30: 131-134.

Umezawa, H. 1978. Index of Actinomycetes Antibiotics. Tokyo: USACO Corporation.

Verlander, C. P. 1992. Detection of horseradish peroxidase by colorimetry. In L. J. Hricka (ed.), Nonisotopic DNA Probe Technique , pp. 185-201. New York: Academic Press.

Vobis, G. 1989. Actinoplanetes. In S. T. Williams, M. E. Sharpe, and J. G. Holt (eds.), Bergey's Manual of Systematic Bacteriology, vol. 4, pp. 2418-2450. Baltimore : Williams and Wilkins.

Wagman, G. H., Waitz, J. A., Marquez, J., Murawki, A., Oden, E. M., Testa, R. T., and Weinstein, M. J. 1972. A new *Micromonospora*-produce macrolide antibiotics, rosamicin, J. Antibiotics 25: 641-646.

Wayne, L. G., Brenner, D. J., Colwell, R. R., Grimont, A. D., Kandler, O., Hrichevsky, M. I., Moore, L. H., Moore, W. E. C., Murray, R. G. E., Stackebrandt, E., Starr, M. P., and Truper, H. G. 1987. Report of the Ad Hoc Committee on Reconciliation of Approaches to Bacterial Systemtics. Int. J. Syst. Bacteriol. 37: 463-464.

Weinstein, M, J., Luedemann, G. M., Oden, E. M., and Wagman, G. H. 1968. Halomicin, a new *Micromonospora*-produce antibiotic. Antimicrob. Agents Chemother. 1967: 435-441.

Wellington, E. H., Stackebrandt, E., Sanders, D., Wolstrup, J. and Jorgensen, N. O. G. (1992). Taxonomic status of *Kitasatosporia*, and proposed unification with *Streptomyces*. On the basis of phenotypic and 16S rRNA analysis and emendation of *Streptomyces* Waksman and Henrici 1943, 339 [AL]. Int. J. Syst. Bacteriol. 42, 156-160.

Wild, D., Toth, G. and Humps, H. 2002. New *Monascus* metabolite isolated from red yeast rice. J. Agric. Food Chem. 50: 3999-4002.

Wild, D., Toth, G. and Humps, H. 2003. New M*onascus* metabolites with a pyridine structure in red fermented rice. J. Agric. Food Chem. 51: 5493-5496.

Williams, S. T., and Cross, T. 1971. Actinomycetes. In C. Booth (ed.), Methods in Microbiology, vol. 4., pp. 295-334. London : Academic Press.

Wong, H. C., and Kochler, P. E. 1981. Production and isolation of antibiotic from *Monascus purpureus* and its relationship to pigment production. J. Food Sci. 46: 589-592

Yongsmith, B., Krairak, S., and Bavavoda, R. 1994. Production of yellow pigments in submerged culture of a mutant of *Monascus* spp. J. Ferment. Bioeng. 78: 223–228.

Yongsmith, B., Kitprechavanich, V., Chitradon, L., Chaisrisook, C., and Budda, N. 2000. Color mutants of *Monascus* sp. KB9 and their comparative glucoamylases on rice solid culture. J. Mol. Catal. B: Enzymatic 10: 263–272.

Zhang, Z., Wang, Y. and Ruan, J. 1997. A proposal to revise the genus *Kitasatospora* (Omura, Takahashi, Iwai, and Tanaka 1982). Int. J. Syst. Bacteriol. 47, 1048-1054.

APPENDIX

APPENDIX I

Culture media

* All media were dispended and sterilized in autoclave for 15 min at 15 pounds pressure (121 °C) for media except for carbon utilization test which was sterilized at 110 pounds for 110 °C for 10 min. All media were prepared in 100 mL of distilled water.

1. **Sodium-caseinate agar (SCN)**

Sodium caseinate	0.2	g
Glucose	0.1	g
K_2HPO_4	0.02	g
$MgSO_4$	0.02	g
FeSO4	trace amount	
Agar	1.5	g

2. **Yeast extract-malt extract agar (YMA), ISP medium no.2**

Yeast extract	0.4	g
Malt-extract	1.0	g
Glucose	0.4	g
Agar	1.5	g

pH 7.3

3. **Oatmeal agar, (OMA), ISP medium no. 3**

Oatmeal	20.0	g
Agar	18.0	g

Cook or steam 20 g of oatmeal in 1,000 mL distilled water for 20 minutes. Filter through cheese cloth and add distilled water to restore volume of filtrate to 1,000 mL. Add 1 mL of trace salts solution (A) and adjust to pH 7.2 with NaOH and finally, add 18 g of agar, liquefy by steaming at 100°C for 15-20 minutes.

4. **Inorganic salts-starch agar, (IS), ISP medium no. 4**

Soluble starch	1.0	g
K_2HPO_4	0.1	g
$MgSO_4.7H_2O$	0.1	g
NaCl	0.1	g
$(NH_4)_2SO_4$	0.2	g
$CaCO_3$	0.2	g
Trace salts solution (A)	0.1	mL

pH 7.0-7.4

5. Glycerol-asparagine agar, (GlyA), ISP medium no.5

Glycerol	1.0	g
L-Asparagine	0.1	g
K_2HPO_4	0.1	g
Trace salts solution (A)	0.1	mL
Agar	2.0	g

6. Tyrosine agar, (TA), ISP medium no. 7

Glycerol	1.5	g
L-tyrosine (Difco)	0.05	g
L-Asparagin (Difco)	0.1	g
K_2HPO_4	0.05	g
$MgSO_4.7H_2O$	0.05	g
NaCl	0.05	g
$FeSO_4.7H_2O$	0.01	g
Trace salts solution (A)	0.1	mL
Agar	2.0	g

pH 7.2-7.4

Trace salt solution (A)

$FeSO_4.7H_2O$	0.1	g
$MnCl_2.4H_2O$	0.1	g

$ZnSO_4.7H_2O$	0.1	g
Distilled water	100	mL

7. Peptone KNO_3 broth

Peptone	1.0	g
KNO_3	0.1	g
NaCl	0.5	g
pH 7.0		

8. Carbon utilization medium, ISP medium no.9

Carbohydrate	1.0	g
$(NH_4)_2SO_4$	0.264	g
$K_2HPO_4.3H_2O$	0.565	g
KH_2PO_4 anhydrous	0.238	g
$MgSO_4.7H_2O$	0.1	g
Pridham and Gottlieb trace salts (B)	0.1	mL
pH 6.8-7.0		

Trace salts solution (B)

$CuSO_4.5H_2O$	0.64	g
$Fe_4.7H_2O$	0.11	g
$MnCl_2.4H_2O$	0.79	g
$ZnSO_4.7H_2O$	15.0	g

9. Boullion gelatin broth

Peptone	1.0	g
Meat extract	0.5	g
NaCl	0.5	g
Gelatin	15.0	g
pH 7.0-7.2		

10. Peptonization and Coagulation test medium

Skim milk (Difco)	10.0	g

11. Mueller-Hinton agar (Difco)

Beef infusion from	30	g
Casamino acid, Technical	1.75	g
Starch	0.15	g
Agar	1.7	g
pH 7.3		

12. Sabouraud's dextrose agar (Difco)

Neopeptone	1.0	g
Dextrose	4.0	g
Agar	1.5	g

13. Seed medium

Yeast extract	0.4	g
Glucose	0.4	g
Malt extract	1.0	g
pH 7.3		

14. Production medium

Yeast extract	0.4	g
Glucose	0.4	g
Malt extract	1.0	g
$CaCO_3$	0.1	g
pH 7.3		

15. Peptone-yeast extract iron agar, (PIA)

Bacto-Peptone Iron, dehydrated (Difco)	3.6	g
Bacto-Yeast Extract (Difco)	0.1	g
pH 7.0-7.2		

16. Glucose asparagines agar, (GluA)

Glucose	1	g
Asparagine	0.05	g
K_2HPO_4	0.05	g
Bacto-agar	1.5	g

17. Nutrient agar(NA)

Meat extract	1	g
Peptone	1	g
NaCl	0.1-0.2	g
Agar	1.5	g

18. Czapek's sucrose agar

Sucrose	3	g
K_2HPO_4	0.1	g
$MgSO_4$	0.05	g
KCl	0.05	g
$FeSo_4$	0.001	g
Agar	1.5-1.7	g

pH 7.0-7.2

Appendix II

Reagents and Buffers

1. DON Reagent

2,7-Dihydroxynapthalene	10	mg
Conc. H_2SO_4	50	mL

Add conc. H_2SO_4 in 2,7-dihydroxynapthalene (DON) wait until the yellow solution become colorless (24 h). Keep this solution in refrigerator.

2. 6N HCl

Conc. HCl	60	mL
Distiller water	60	mL

Add. conc. HCl into the distilled water.

3. 2N H_2SO_4

Conc. H_2SO_4	2	mL
Distilled water	34	mL

Add conc. HCl into the distilled water

4. Ninhydrin solution

Ninhydrin	0.3	g
1-Butanol	100	mL
Glacial acetic acid	3	mL

5. 5% trichloro-acetic acid

Trichloro acetic acid	5	g
Distilled water	100	mL

Add conc. HCl into the distilled water

6. Reagent 1 for fatty acid analysis (Saponification reagent)

Sodium hydroxide	15	g
MeOH (HPLC grade)	50	mL

Mili-Q water	50	mL

Dissolve NaOH pellets in Mili-Q water and add MeOH.

7. Reagent 2 for fatty acid analysis (Methylation reagent)

6N HCl	65	mL
MeOH (HPLC grade)	55	

pH must be below 1.5

8. Reagent 3 for fatty acid analysis (Extraction solvent)

n-Hexane (HPLC grade or n-Hexane 1000)	50	mL
Methyl-tert-Butyl Ether (HPLC grade)	50	mL

9. Reagent 4 for fatty acid analysis (base wash reagent)

Sodium hydroxide	1.2	g
Mili-Q water	100	mL

10. Reagent 5 for fatty acid analysis (Saturated sodium chloride)

11. Dittmer & Lester reagent

Solution A

MoO_3	4.011	g
25 N H_2SO_4	100	mL

Dissolve 4.011 g of MoO_3 in 100 mL of 25 N H_2SO_4 by heating.

Solution B

Molybdenum powder	0.178	g
Solution A	50	mL

Add 0.178 g of Molybdenum powder to 50 mL of solution A, and boil it for 15 minutes. After cooling, remove the precipitate by decantation, Before spraying, mix solution A (50 mL) plus solution B (50 mL) plus water (100 mL)

12. Anisaldehyde reagent

Ethanol	90.0	mL
H_2SO_4	5.0	mL
p-Anisaldehyde	5.0	mL
Acetic acid	1.0	mL

13. Dragendroff's reagent

Solution A

Basic bismuth nitrate	1.7	g
Acetic acid	20	mL
Distilled water	80	mL

Solution B

KI	40	g
Distilled water	100	mL

Before spraying, mix solution A (10 mL) plus solution B (10 mL) plus acetic acid (10 mL).

14. Nitrate reduction test reagent

Sulphanilic acid solution

Sulphanilic acid	0.8	g
5 N Acetic acid	100	mL

Dissolve by gentle heating in a fume hood.

***N,N*-dimethyl-1-naphthylamine solution**

N,N-dimethyl-1-naphthylamine	0.5	g
5 N Acetic acid	100	mL

Dissolve by gentle heating in a fume hood

Two drops of sulphanilic acid solution and three drops of *N,N*-dimethyl-1-naphthylamine into peptone nitrate broth inoculing with the test microorgnisms.

15. Phenol : Chloroform (1 : 1 v/v)

Crystalline phenol was liquidified in water bath at 65 ^{o}C and mixed with chloroform in the ratio of 1 : 1 (v/v). the solution was stored in a light tight bottle.

16. 100xDenhardt solution

Bovine serum albumin	2%
Polyvinylpyrrolidone	2%
Ficoll 400	2%

17. 0.5M EDTA (pH 8.0)

800 mL of distilled water, 186.1 g of disodium ethylenediaminetetraacetate.$2H_2O$ was added and stirred vigorously on a magnetic stirrer. The pH was adjusted to 8.0 with NaOH (20 g of NaOH pellets). The volume was adjusted to 1 litre. The solution was dispensed into aliquots and sterilized by autoclaving for 15 minutes at 15 lb/in^2.

18. 5M NaCl

To 800 mL of distilled water, 292.2 g of sodium chloride was added and adjusted the volume to 1 litre with distilled water. The solution was sterilized by autoclaving for 15 minutes at 15 lb/in^2

19. 2xPBS

8mM Na_2HPO_4

1.5mM KH_2PO_4

137 mM NaCl

2.7 mM KCl

The 2xPBS was adjusted the pH to 7.0 with 1N NaOH or 1N HCl. The solution was sterilized by autoclaving for 15 minutes at 15lb/in^2.

20. 10 mg/mL Salmon sperm DNA

A 10 mg of Salmon sperm DNA was dissolved in 1 mL of 10 mM TE buffer pH 7.6. Boiling for 10 minutes, immediately cooling in ice and sonication for 3 minutes.

21. 3M Sodium acetate pH 5.2

To 800 mL of distilled water, 408.1 g of sodium acetate was added and adjusted the pH to 5.2 with glacial acetic acid. The volume was adjusted to 1 litre. The solution was sterilized by autoclaving for 15 minutes at 15lb/in^2.

22. 10% Sodium dodecyl sulphate (SDS)

The stock solution of 10% SDS was prepared by dissolved 10 g of sodium dodecyl sulphate in 100 mL sterilized distilled water. Sterilization is not required for the preparation of this stock solution.

23. 20xSSC

3M NaCl

0.1 M Tri-sodiumcitrate

The 20xSSC was adjusted the pH to 7.0 with 1N NaOH. The solution was sterilized by autoclaving for 15 minutes at 15lb/in^2.

24. 1M Tris-HCl pH 8.0

The 1M Tris was prepared by dissolving 121.1 g of Tris base in 800 mL of distilled water. The pH was adjusted to the desired value by adding conc. HCl (pH 8.0, 42 mL of HCl). The solution was cooled to room temperature before making final adjustment to the desired pH. The volume of the solution was adjusted to 1 litter with distilled water and sterilized by autoclving.

25. Rnase A solution

Rnase A	20	mg
0.15 M NaCl	10	mL

Dissolve 20 mg of Rnase A in 10 mL 0.15 M NaCl and heat at 95 ^{o}C for 5-10 minutes. Keep Rnase A solution in –20 ^{o}C.

26. Rnase T_1 solution

Rnase T_1	80	µL
0.1 M Tris-HCl (pH 7.5)	10	mL

Mix 80 μL of Rnase T_1 in 10 mL of 0.1 M Tris-HCl (pH 7.5) and heat at 95 °C for 5 minutes. Keep Rnase T_1 solution in –20 °C.

27. Proteinase K

Proteinase K (Sigma)	4	mg
50 mM Tris-HCl (pH 7.5)	1	mL

Use freshly prepared solution

28. Nuclease P1 solution

Nuclease P1	0.1	mg
40 mM CH_3COONa+12mM $ZnSO_4$(pH 5.3)	1	mL

Store at 4 °C

29. Alkaline phosphatase solution

Alkaline phosphatase	2.4	units
0.1 M Tris-HCl (pH 8.1)	1	mL

30. 0.1 M Tris-HCl buffer, pH 9

Tris	1.21	mg
Distilled water	100	mL

Adjust the pH to 9 with HCl

31. TE buffer

10 mM Tris HCl (pH 8.0)

1 m M Na_2-EDTA (pH 8.0)

32. TE buffer + RNase

TE buffer	960	mL
Rnase A (2 mg/mL)	100	μL

33. Saline-Na_2 EDTA

0.1 M NaCl

50 mM EDTA.2Na (pH 8.0)

34. Reagent and buffer for DNA-DNA hybridization

34.1 Prehybridizatio solution

100xDenhardt solution	5	mL
10 mg/ml Salmon sperm DNA	1	mL
20xSSC	10	mL
Formamide	50	mL
Distilled water	34	m L

34.2 Hybridization solution

Prehybridization solution	100	mL
Dextran-sulfate	5	g

34.3 Solution I

Bovine serum albumin (Fraction V)	0.25	g
Titron X-100	50	µL
PBS	50	mL

34.4 Solution II

Streptavidin-POD	1	µL
Solution I	4	mL

34.5 Solution III

3,3',5,5'-Tetramethylbenzidine (TMB) (10 mg/mL in DMSO)	100	µL
0.3% H_2O_2	100	µL
0.4 M Citric acid + 0.2 M NA\a2HPO4 buffer pH 6.2 in 10% DMSO	100	µL

34.6 2M H_2SO_4

H_2SO_4	22	mL
Distilled water	178	mL

The solution was sterilized by autoclaving.

35. Ethidium bromide solution (10 mg/mL)

The ethidium bromide solution was prepared by dissolved 1 g of ethidium bromide in 100 mL of distilled water. The solution was stored in light-tight container at room temperature.

36. Gel loading buffer

0.025 g of bromophenol blue was dissolved in 20 mL of 15% glycerol.

37. Tris-acetate EDTA (TAE) buffer

1xTBE buffer was used an electrophoresis buffer throughout the study. The working solution of 1xTBE buffer was prepared from stock solution of 5xTAE buffer, as followed.

Tris-base	5.4	g
Boric acid	2.75	g
Na_2-EDTA	0.47	g
Distilled water	100	mL

38. Agarose gel

Agarose	1.6	g
1xTBE buffer	200	mL

Appendix III

Primers and Nucleotide sequences of the PCR amplifed 16S rDNA

1. **List of primers for 16S rDNA PCR amplification and Sequencing**

20F	5′-AGTTTGATCCTGGCTC-3′
1541R	5′-AAGGAGGTGATCCAGCC-3′
27F	5′-GTTTGATCCTGGCTCAG-3′
350F	5′-TACGGGAGGCGCAG-3′
350R	5′-CTGCTGCCTCCCGTAG-3′
780F	5′-GATTAGATACCCTGGTAG-3′
780R	5′-CTACCAGGGTATCTAATCC-3′
1100F	5′-GCAACGAGCGCAACCC-3′
1100R	5′-AGGGTTGCGCTCGTTG-3′
1492R	5′-GGTTACCTTGTTACGACTT-3′

2. Nucleotide sequences of the PCR amplified 16S rDNA

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGATGAACCGGTTTCGGCCGGGGATTAGTGGCGAACG
GGTGAGTAACACGTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACT
GCCGACCGCATGGTCTGGTGGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTTGTTGGTGGGG
TGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCA
GACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCGTGAGGGAT
GACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAGAAGCGnnAGTGACGGTACCTGCAGAAGAAGCGCCGGCT
AACTACGTGCCAGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAG
GCGGCTTGTCGCGTCGGATGTGAAAGCCCGGGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCG
GTAGGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGAT
CTCTGGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCG
TAAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCAGCTAACGCATTAAGTTCCCCGCCTGG
GGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAATTC
GACGCAACGCGAAGAACCTTACCAAGGCTTGACATACATCGGAAACCTCTGGAGACAGGGGCCCCCTTGTGGTCGG
TGTACAGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTT
GTCCTGTGTTGCCAGCATGCCCTTTGGGGTGATGGGGACTCACAGGAGACTGCCGGGGTCAACTCGGAAGGAAGGT
GGGGACGACGTCAAGTCATCATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTGC
GAAGCCGTGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAGT
CGGAGTCGCTAGTAATCGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACG
TCACGAAAGTCGGTAACACCCGAAGCCGGTGGCCCAACCCTTGTGGGGGGAGCCGTCGAAGGTGGGACTGGCGATT
GGGACG

Figure 8 The PCR amplified 16S rDNA Nucleotide sequences of PNK1-3

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGATGAACCGGTTTCGGCCGGGGATTTAGTGGCGAAC
GGGTGAGTAACACGTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGAC
TGCCGACCGCATGGTCTGGTGGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTTGTTGGTGGG
GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCC
AGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCGTGAGGGA
TGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAGAAGCGnnAGTGACGGTACCTGCAGAAGAAGCGCCGGC
TAACTACGTGCCAGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTA
GGCGGCTTGTCGCGTCGGATGTGAAAGCCCGGGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTC
GGTAGGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGA
TCTCTGGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCCACGC
CGTAAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCAGCTAACGCATTAAGTTCCCCGCCT
GGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACATCGGAAACCTCTGGAGACAGGGGCCCCCTTGTGGTC
GGTGTACAGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCC
TTGTCCTGTGTTGCCAGCATGCCCTTTGGGGTGATGGGGACTCACAGGAGACTGCCGGGGTCAACTCGGAGGAAGG
TGGGGACGACGTCAAGTCATCATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTG
CGAAGCCGTGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAG
TCGGAGTCGCTAGTAATCGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAC
GTCACGAAAGTCGGTAACACCCGAAGCCGGTGGCCCAACCCTTGTGGGGGGAGCCGTCGAAGGTGGGACTGGCGAT
TGGGACG

Figure 9 The PCR amplified 16S rDNA Nucleotide sequences of PNK1-5

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGATGAACCACTTCGGTGGGGATTAGTGGCGAACGGG
TGAGTAACACGTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGAGGCG
GGACCGCATGGTCCTGGCTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTTGTTGGTGAGGTAA
CGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGAC
TCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCGCGTGAGGGATGAC
GGCCTTCGGGTTGTAAACCTCCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAA
CTACGTGCCAGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGC
GGCTTGTCGCGTCGGTTGTGAAAGCCCGGGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGT
AGGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCT
CTGGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGTA
AACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCAGCTAACGCATTAAGTGCCCCGCCTGGGG
AGTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAATTCGA
CGCAACGCGAAGAACCTTACCAAGGCTTGACATACGCCGGAAAACCCTGGAGACAGGGTCCCCCTTGTGGTCGGTG
TACAGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGT
CCCGTGTTGCCAGCAGGCCCTTGTGGTGCTGGGGACTCACGGGAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGG
ACGACGTCAAGTCATCATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTGCGATA
CCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAG
TCGCTAGTAATCGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACG
AAAGTCGGTACACCCGAAGCCGGTGGCCCAACCCCTTGTGGGAGGGAGCTGTCGAAGGTGGGACTGGCGATTGGGA
CG

Figure 10 The PCR amplified 16S rDNA Nucleotide sequences of TT2-9

GACGAACGCTGGCGGCGTGCTTACACATGCAAGTCGAACGATGAAGCCCTTCGGGGTGGATTAGTGGCGAACGGGT
GAGTAACACGTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATACTGACCAT
CTTGGGCATCCTTGATGGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTAGTTGGTGAGGTAA
TGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGAC
TCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCGCGTGAGGGATGAC
GGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAGAAGCGAAAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAAC
TACGTGCCAGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCG
GCTTGTCGCGTCGGTTGTGAAAGCCCGGGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTA
GGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTC
TGGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGTAA
ACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCAGCTAACGCATTAAGTGCCCCGCCTGGGGA
GTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAATTCGAC
GCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACGTCCAGAGATGGGCGCCCCCTTGTGGTCGGTGT
ACAGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTC
CCGTGTTGCCAGCAGGCCCTTGTGGTGCTGGGGACTCACGGGAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGA
CGACGTCAAGTCATCATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTGCGATAC
CGCGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAG
TCGCTAGTAATCGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACG
AAAGTCGGTAACACCCGAAGCCGGTGGCCCAACCCCTTGTGGGAGGGAGCTGTCGAAGGTGGGACTGGCGATTGGG
ACG

Figure 11 The PCR amplified 16S rDNA Nucleotide sequences of KN-6

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGGTGAAGCCCTTCGGGGTGGATCAGTGGCGAACGGG
TGAGTAACACGTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACCTT
CCTCCGCATGGGGGTTGGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTTGTTGGTGGGGTAA
TGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGAC
TCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGAACGCCGCGTGAGGGATGA
CGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCACCCGGCTA
ACTACGTGCCAGCAGCCGCGGTAAATACGTAGGGTGCGAGCGTTGTCCGGAATTATTGGGCGTAAAAGAGCTCGT
AGGCGGCCTGTCGCGTCGGATGTGAAAAGCCCGGGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAG
TGTGGTAGGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGC
GGATCTCTGGGCCATTACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCCA
CGCCGTAAACGTTGGGAACTAGGTGTTGGCGACATTCCACGTCGTTCGGTGCCGCAGCTAACGCATTAAGTTCCCC
GCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCT
TAATTCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATATGCCGGAAAACCGTGGAGACACGGTCCCCCTTGT
GGTCGGTATACAGGTGGTGCATGGTTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCA
ACCCTTGTTCTGTGTTGCCAGCATGCCTTTCGGGGTGATGGGGACTCACAGGAGACTGCCGGGGTCAACTCGGAGG
AAGGTGGGGACGACGTCAAATCATCATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAAGG
GCTGCGATGCCGTGAGGCGGAGCGAATCCCAAAAAGCCGGCCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCAT
GAAGTTGGAGTTGCTAGTAATCGCAGATCAGCATGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGT
CACGTCACGAAAGTCGGTAACACCCGAAGCCGGTGGCCTAACCCGTAAGGGGAGGAGCCGTCCAAGGTGGGACCAn
CGATTGGGACG

Figure 12 The PCR amplified 16S rDNA Nucleotide sequences of FLM-2

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCCTTCGGGGTACTCGAGCGGCGAACGGG
TGAGTAACACGTGAGCAACCTGCCCTAGGCTTTGGGATAACCCTCGGAAACGGGGGCTAATACCGGATAGGACCTT
CGGACGCATGTCTGGGGGTGGAAAGTTTTTCGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGAT
GGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACT
CCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACG
GCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACT
ACGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAGCTCGTAGGCGG
CTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCAAGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAG
GGGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTTC
TGGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTTAGATACCCTGGTAGTCCACGCTGTA
AACGTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGG
AGTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGA
TGCAACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTGGGGTCCTTTCGGGGGCGGT
CACAGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGT
TCGATGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACG
TCAAGTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGA
GGTGGAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCT
AGTAATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGT
CGGCAACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCGAAGGTGGGGCTGGCGATTGGGACG

Figure 13 The PCR amplified 16S rDNA Nucleotide sequences of MA-1

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCCTTCGGGGTACTCGAGCGGCGAACGGG
TGAGTAACACGTGAGCAACCTGCCCTAGGCTTTGGGATAACCCTCGGAAACGGGGCTAATACCGGATAGGACCTT
CGGACGCATGTCTGGGGGTGGAAAGTTTTTCGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGAT
GGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACT
CCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACG
GCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACT
ACGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAGCTCGTAGGCGG
CTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCAAGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAG
GGGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCT
GGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAA
CGTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGGGT
ACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGC
AACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTGGGGTCCTTCGGGGGCGGTCACA
GGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGA
TGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTCAA
GTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTA
ATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGGC
AACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCCAAGGTGGGGCTGGCCGATTGGGACA

Figure 14 The PCR amplified 16S rDNA Nucleotide sequences of MA-2

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCCTTCGGGGTACTCGAGCGGCGAACGGG
TGAGTAACACGTGAGCAACCTGCCCCAGGCTTTGGGATAACCCCGGGAAACCGGGGCTAATACCGAATATTACCTC
TGATCGCATGGTTGGTGGTGGAAAGTTTTTCGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGAT
GGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACT
CCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACG
GCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACT
ACGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAGCTCGTAGGCGG
CTTGTCGCGTCGACCGTGAAAACCTGGGGCTCAACTCCAGGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAG
GGGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCT
GGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAA
CGTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGGAG
TACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATG
CAACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCAGGTCCTTCGGGGGCGGTCAC
AGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCG
ATGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTCA
AGTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGT
GGAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCTAGT
AATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGG
CAACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCGAAGGTGGGGCTGGCGATTGGGACG

Figure 15 The PCR amplified 16S rDNA Nucleotide sequences of JSM1-1

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCCTTCGGGGTACTCGAGCGGCGAACGGG
TGAGTAACACGTGAGCAACCTGCCCCAGGCTTTGGGATAACCCCGGGAAACCGGGGCTAATACCGAATATTACCTC
TGATCGCATGGTTGGTGGTGGAAAGTTTTTCGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGAT
GGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACT
CCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACG
GCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACT
ACGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAGCTCGTAGGCGG
CTTGTCGCGTCGACCGTGAAAACCTGGGGCTCAACTCCAGGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAG
GGGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCT
GGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAA
CGTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGGAG
TACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATG
CAACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCAGGTCCTTCGGGGGCGGTCAC
AGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCG
ATGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTCA
AGTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGT
GGAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCTAGT
AATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGG
CAACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCAAGTGGGGCTGGCGATTGGGACG

Figure 16 The PCR amplified 16S rDNA Nucleotide sequences of JSM1-3

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCTTCGGGGTACTCGAGCGGCGAACGGGT
GAGTAACACGTGAGCAACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACCGGGGCTAATACCGAATAGGACTCCT
GACCGCATGGTTGGGGGTGGAAAGTTTTTCGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGATG
GCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTC
CTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACGG
CCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTA
CGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAGCTCGTAGGCGGC
TTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCGGGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGG
GGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCTG
GGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAAC
GTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGGAGT
ACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGC
AACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGAGGTCCTTCGGGGGCGGTCACA
GGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGA
TGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTCAA
GTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTA
ATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGGC
AACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCGAAGGTGGGGCTGGCGATTGGGACG

Figure 17 The PCR amplified 16S rDNA Nucleotide sequences of MC5-1

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCCTTCGGGGTACTCGAGCGGCGAACGGG
TGAGTAACACGTGAGCAACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACCGGGGCTAATACCGAATAGGACTCC
TGACCGCATGGTTGGGGGTGGAAAGTTTTTCGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGAT
GGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACT
CCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACG
GCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACT
ACGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAGCTCGTAGGCGG
CTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCGGGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
GGGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCT
GGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAA
CGTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGGAG
TACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATG
CAACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGAGGTCCTTCGGGGGCGGTCAC
AGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCG
ATGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTCA
AGTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGT
GGAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCTAGT
AATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGG
CAACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCGAAGGTGGGGCTGGCGATTGGGACG

Figure 18 The PCR amplified 16S rDNA Nucleotide sequences of MC7-1

GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAGCGGAAAGGCCCTTCGGGGTACTCGAGCGGCGAACGGG
TGAGTAACACGTGAGCAACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACCGGGGCTAATACCGAATAGGACTCC
TGACCGCATGGTTGGGGGTGGAAAGTTTTTCGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGGGTGAT
GGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCCAGACT
CCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACG
GCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAAGTGACGGTACCTGCAGAAGAAGCGCCGGCCAACT
ACGTGCCAGCAGCCGCGGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGGCGTAAAGAGCTCGTAGGCG
GCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCGGGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTA
GGGGAGACTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTC
TGGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAA
ACGTTGGGCGCTAGGTGTGGGGGGCCTCTCCGGTTCCCTGTGCCGCAGCTAACGCATTAAGCGCCCCGCCTGGGGA
GTACGGCCGCAAGGCTAAAACTCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGAT
GCAACGCGAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGAGGTCCTTCGGGGGCGGTCA
CAGGTGGTGCATGGCTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTC
GATGTTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTC
AAGTCATCATGCCCCTTATGTCCAGGGCTTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGG
TGGAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCGACCCCGTGAAGTCGGAGTCGCTAG
TAATCGCAGATCAGCAACGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
GCAACACCCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCGAAGTGGGGCTGGCGATTGGGACG

Figure 19 The PCR amplified 16S rDNA Nucleotide sequences of R1-1

CLUSTAL X(1.83) multiple sequence alignment

```
TT2-9         ---------------------------GACGAACGCTGGCGGCGTGCTT
AB045859      ---------------------GCTCAGGACGAACGCTGGCGGCGTGCTT
KN-6          ---------------------------GACGAACGCTGGCGGCGTGCTT
U99490        ---------------------------GACGAACGCTGGCGGCGTGCTT
AB018095      ---------------------------GACGAACGCTGGCGGCGTGCTT
AF00518       ---------------------------GACGAACGCTGGCGGCGTGCTT
AJ399473      -------------------------------------------------
Z76676        -------------------------------AACGCTGGCGGCGTGCTT
Z76682        -------------------------------AACGCTGGCGGCGTGCTT
Z76679        -------------------------------AACGCTGGCGGCGTGCTT
Z76678        -------------------------------AACGCTGGCGGCGTGCTT
AJ399480      -------------------------------------------------
AJ399482      -------------------------------------------------
AJ399466      -------------------------------------------------
AJ399489      -------------------------------------------------
AJ399476      -------------------------------------------------
AJ399462      -------------------------------------------------
AB045889      ----------------------CTCAGGACGAACGCTGGCGGCGTGCTT
AJ399485      -------------------------------------------------
AJ399477      -------------------------------------------------
AF503493      -------------------------------------------------
PNK1-5        ---------------------------GACGAACGCTGGCGGCGTGCTT
PNK1-3        ---------------------------GACGAACGCTGGCGGCGTGCTT
AY589505      ----------------------------------------GGCGTGCTT
AJ391822      -------------------------------------------------
AJ391820      --------------------------------------------TGCTT
AJ391837      ---------------------------------------------GCTT
AB024440      -------------------------------AACGCTGGCGGCGTGCTT
AJ621609      -------------------------------AACGCTGGCGGCGTGCTT
AJ621610      -------------------------------AACGCTGGCGGCGTGCTT
AJ621607      -------------------------------AACGCTGGCGGCGTGCTT
AJ621606      -------------------------------AACGCTGGCGGCGTGCTT
AJ621605      -------------------------------AACGCTGGCGGCGTGCTT
AJ621604      -------------------------------AACGCTGGCGGCGTGCTT
AJ621603      -------------------------------AACGCTGGCGGCGTGCTT
AB045883      ---------------------GCTCAGGACGAACGCTGGCGGCGTGCTT
Y15507        ---------------------------GACGAACGCTGGCGGCGTGCTT
AJ621611      -------------------------------AACGCTGGCGGCGTGCTT
AF074415      ---------------------GCTCAGGACGAACGCTGGCGGCGTGCTT
AJ621612      -------------------------------AACGCTGGCGGCGTGCTT
AJ621613      -------------------------------AACGCTGGCGGCGTGCTT
AB045882      ---------------------GCTCAGGACGAACGCTGGCGGCGTGCTT
AJ621604      -------------------------------------------------
AB022874      -------AGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTT
AB022872      ATTACGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTT
AB022868      ATTACGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTT
FLM-2         ---------------------------GACGAACGCTGGCGGCGTGCTT
X84850        ---------------------------GACGAACGCTGGCGGCGTGCTT
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Figure 20 Comparison of 16S rDNA nucleotide sequences between PNK1-3, PNK1-5, TT2-9, KN-6, FLM-2 strains, some validily described *Streptomyces* and *Kitasatospora* species.

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TT2-9        AACACATGCGATACCCTTGGGGGATTAGTGGC
AB045859     AACACATGCGATACCCTTGGGGGATTAGTGGC
KN-6         A-CACATGCGATAGCCTTGGTGGATTAGTGGC
U99490       AACACATGCGATAGCCTTGGTGGATTAGTGGC
AB018095     AACACATGCGATAGCCCTGGTGGATTAGTGGC
AF00518      AACACATGCGATACCGCTGGGGGATTAGTGGC
AJ399473     --------CGATACCCTTGGGGGATTAGTGGC
Z76676       AACACATGCGATACCCTTGGGGGATTAGTGGC
Z76682       AACACATGCGATACCCTTGGGGGATTAGTGGC
Z76679       AACACATGCGATACCCTTGGGGGATTAGTGGC
Z76678       AACACATGCGATACCCTTGGGGGATTAGTGGC
AJ399480     --------CGATACCCTTGGGGGATTAGTGGC
AJ399482     --------CGATACCCTTGGGGGATTAGTGGC
AJ399466     --------CGATACCCTTGGGGGATTAGTGGC
AJ399489     --------CGATACCCTTGGGGGATTAGTGGC
AJ399476     --------CGATACCCTTGGGGGATTAGTGGC
AJ399462     --------CGATACCCTTGGGGGATTAGTGGC
AB045889     AACACATGCGATACCCTTGGGGGATTAGTGGC
AJ399485     --------CGATACCCTTGGGGGATTAGTGGC
AJ399477     --------CGATACCCTTGGGGGATTAGTGGC
AF503493     ---------GATACCCTTGGGGGATTAGTGGC
PNK1-5       AACACATGCGATACCGTTGGGGGATTAGTGGC
PNK1-3       AACACATGCGATACCGTTGGGGGATTAGTGGC
AY589505     AACACATGCGATAGCGCTGGTGGATTAGTGGC
AJ391822     AACACATGCGATACCGTTGGGGGATTAGTGGC
AJ391820     AACACATGCGATACCGTTGGGGGATTAGTGGC
AJ391837     AACACATGCGATACCGTTGGGGGATTAGTGGC
AB024440     AACACATGCGATACCGCTGGTGGATTAGTGGC
AJ621609     AACACATGCGATACCCCTGGGGGATTAGTGGC
AJ621610     AACACATGCGATACCCCTGGGGGATTAGTGGC
AJ621607     AACACATGCGATAGCGCTGGTGGATTAGTGGC
AJ621606     AACACATGCGATAGCGCTGGTGGATTAGTGGC
AJ621605     AACACATGCGATACCCCTGGGGGATTAGTGGC
AJ621604     AACACATGCGATACCCCTGGGGGATTAGTGGC
AJ621603     AACACATGCGATACCCCTGGGGGATTAGTGGC
AB045883     AACACATGCGATAGCCTTGGTGGATTAGTGGC
Y15507       AACACATGCGATACCCTTGGGGGATTAGTGGC
AJ621611     AACACATGCGATACCCCTGGGGGATTAGTGGC
AF074415     AACACATGCGATACCGCTGGGGGATTAGTGGC
AJ621612     AACACATGCGATACCCCTGGGGGATTAGTGGC
AJ621613     AACACATGCGATACCCCTGGGGGATTAGTGGC
AB045882     AACACATGCGATACCCCTGGGGGATTAGTGGC
AJ621604     --------CGATAGCTTTGGTGGATTAGTGGC
AB022874     AACACATGCGATAGCCTTGGTGGATTAGTGGC
AB022872     AACACATGCGGTAGCCTTGGTGGATCAGTGGC
AB022868     AACACATGCGGTAGCCTTGGTGGATCAGTGGC
FLM-2        AACACATGCGGTAGCCTTGGTGGATCAGTGGC
X84850       AACACATGCGATACCGTTGGGGGATTAGTGGC
                     * ** *  *** **** ******
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Figure 20 (Continued)

TT2-9	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AB045859	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
KN-6	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
U99490	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AB018095	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AF00518	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399473	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
Z76676	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
Z76682	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
Z76679	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
Z76678	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399480	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399482	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399466	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399489	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399476	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399462	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AB045889	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ399485	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AJ399477	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AF503493	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
PNK1-5	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
PNK1-3	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AY589505	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ391822	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ391820	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ391837	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AB024440	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621609	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621610	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621607	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621606	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621605	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621604	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AJ621603	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
AB045883	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
Y15507	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AJ621611	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AF074415	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AJ621612	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AJ621613	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AB045882	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AJ621604	GAACGGGTGAGTAACACTGGGCAATCTGCCCTTCACTCTGGGACAAGCC
AB022874	GAACGGGTGAGTAACACTGGGAAATCTGCCCTGCACTCTGGGACAAGCC
AB022872	GAACGGGTGAGTAACACTGGGAAATCTGCCCTGCACTCTGGGACAAGCC
AB022868	GAACGGGTGAGTAACACTGGGGAATCTGCCCTGAACTCTGGGACAAGCC
FLM-2	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
X84850	GAACGGGTGAGTAACACTGGGCAATCTGCCCTGCACTCTGGGACAAGCC
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Figure 20 (Continued)

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TT2-9        CTGGAAACGGGCTAATACCGGATATAGGCACCGCATGG
AB045859     CTGGAAACGGGCTAATACCGGATATAGCCATCGCATGG
KN-6         CTGGAAACGGGCTAATACCGGATACACCATGGGCATCC
U99490       CTGGAAACGGGCTAATACCGGATACATCGTGGGCATCC
AB018Q95     CTGGAAACGGGCTAATACCGGATACACCAGAGGCATCT
AF00518      CTGGAAACGGGCTAATACCGGATACACCCTGGGCATCC
AJ399473     CTGGAAACGGGCTAATACCGGATATAGCCATCGCATGG
Z76676       CTGGAAACGGGCTAATACCGGATATACTGATCGCATGG
Z76682       CTGGAAACGGGCTAATACCGGATATACTGATCGCATGG
Z76679       CTGGAAACGGGCTAATACCGGATATACTGATCGCATGG
Z76678       CTGGAAACGGGCTAATACCGGATATACTGATCGCATGG
AJ399480     CTGGAAACGGGCTAATACCGGATACACCAGGGGCATCC
AJ399482     CTGGAAACGGGCTAATACCGGATACACCAGGGGCATCC
AJ399466     CTGGAAACGGGCTAATACCGGATACACCAGGGGCATCC
AJ399489     CTGGAAACGGGCTAATACCGGATACATCCTGGGCATCC
AJ399476     CTGGAAACGGGCTAATACCGGATACACCATGGGCATCA
AJ399462     CTGGAAACGGGCTAATACCGGATACACCATGGGCATCC
AB045889     CTGGAAACGGGCTAATACCGGATACACCACAGGCATCT
AJ399485     CTGGAAACGGGCTAATACCGGATAAACTTCTCTCCTGG
AJ399477     CTGGAAACGGGCTAATACCGGATAAACTTCTCTCCTGG
AF503493     CTGGAAACGGGCTAATACCGGATACACCACAGGCATCT
PNK1-5       CTGGAAACGGGCTAATACCGGATATACTGACCGCATGG
PNK1-3       CTGGAAACGGGCTAATACCGGATATACTGACCGCATGG
AY589505     CTGGAAACGGGCTAATACCGGATATACCTGAGGCATCT
AJ391822     CTGGAAACGGGCTAATACCGGATATACTGACCGCATGG
AJ391820     CTGGAAACGGGCTAATACCGGATATACTGACCGCATGG
AJ391837     CTGGAAACGGGCTAATACCGGATATACACCCCGCATGG
AB024440     CTGGAAACGGGCTAATACCGGATATACACATCGCATGG
AJ621609     CTGGAAACGGGCTAATACCGGATACACACATCGCATGA
AJ621610     CTGGAAACGGGCTAATACCGGATACACACATCGCATGA
AJ621607     CTGGAAACGGGCTAATACCGGATACACACACCGCATGG
AJ621606     CTGGAAACGGGCTAATACCGGATACACACACCGCATGG
AJ621605     CTGGAAACGGGCTAATACCGGATATACACACCGCATGG
AJ621604     CTGGAAACGGGCTAATACCGGATACACACACCGCATGG
AJ621603     CTGGAAACGGGCTAATACCGGATATACACACCGCATGG
AB045883     CTGGAAACGGGCTAATACCGGATATACACACCGCATGG
Y15507       CTGGAAACGGGCTAATACCGGATACACACGTCGCATGA
AJ621611     CTGGAAACGGGCTAATACCGGATACACACGTCGCATGA
AF074415     CTGGAAACGGGCTAATACCGGATATACACGTCGCATGA
AJ621612     CTGGAAACGGGCTAATACCGGATACACTAACCGCATGG
AJ621613     CTGGAAACGGGCTAATACCGGATACACCAACCGCATGG
AB045882     CTGGAAACGGGCTAATACCGGATACACTAACCGCATGG
AJ621604     CTGGAAACGGGCTAATACCGGATAAACTCCCCGCATGG
AB022874     TTGGAAACGAGCTAATACCGGATATACCTTCCGCATGG
AB022872     TTGGAAACGAGCTAATACCGGATATACCTTCTGCATGG
AB022868     TTGGAAACGAGCTAATACCGGATACACCGCCCGCATGG
FLM-2        CTGGAAACGGGCTAATACCGGATATACCTTCCGCATGG
X84850       CTGGAAACGGGCTAATACCGGATACACGCCCCGCATGG
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Figure 20 (Continued)

```
TT2-9        GGCTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AB045859     GGCTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
KN-6         TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
U99490       TGATAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AB018095     TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AF00518      GGTTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399473     GGCTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
Z76676       TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
Z76682       TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
Z76679       TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
Z76678       TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399480     TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399482     TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399466     TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399489     GGTTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399476     GGTTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399462     TGTTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AB045889     TGTTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399485     AGGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AJ399477     AGGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AF503493     GGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
PNK1-5       TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
PNK1-3       TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AY589505     GGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ391822     TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ391820     TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ391837     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AB024440     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621609     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621610     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621607     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621606     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621605     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621604     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621603     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
AB045883     GTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
Y15507       GTGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621611     GTGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AF074415     GTGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621612     TGGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621613     TGGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AB045882     TGGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AJ621604     GGGTAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCCTATCAGCTGT
AB022874     GGGTAAAGCTCCGGCGGTGCAGGATGATCCCGCGGCCTATCAGCTGT
AB022872     TGGTAAAGCTCCGGCGGTGCAGGATGATCCCGCGGCCTATCAGCTGT
AB022868     TGGTAAAGCTCCGGCGGTTCAGGATGATCCCGCGGCCTATCAGCTGT
FLM-2        TGGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
X84850       GCGTAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCCTATCAGCTGT
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Figure 20 (Continued)

```
TT2-9        TGGTGAGGTAACGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB045859     TGGTGAGGTAACGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
KN-6         TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
U99490       TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB018095     TGGTGAGGTAACGGCTCACCGAGGCGACGACGGGTAGCCGGCCTGAGAGG
AF00518      TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399473     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
Z76676       TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
Z76682       TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
Z76679       TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
Z76678       TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399480     TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399482     TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399466     TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399489     TGGTGAGGTAGTGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399476     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399462     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB045889     TGGTGAGGTAACGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399485     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ399477     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AF503493     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
PNK1-5       TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
PNK1-3       TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AY589505     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ391822     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ391820     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ391837     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB024440     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621609     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621610     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621607     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621606     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621605     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621604     TGGTGGGGTAATGGCCCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621603     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB045883     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
Y15507       TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621611     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AF074415     TGGTGAGGTAATGGCTCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621612     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621613     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB045882     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AJ621604     TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB022874     TGGTGGGGTAACGGCCCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB022872     TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
AB022868     TGGTGGGGTAACGGCCCACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
FLM-2        TGGTGGGGTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
X84850       TGGTGGGGTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGG
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Figure 20 (Continued)

TT2-9	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB045859	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
KN-6	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
U99490	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB018095	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AF00518	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399473	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
Z76676	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
Z76682	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
Z76679	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
Z76678	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399480	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399482	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399466	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399489	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399476	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399462	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB045889	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399485	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ399477	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AF503493	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
PNK1-5	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
PNK1-3	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AY589505	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ391822	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ391820	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ391837	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB024440	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621609	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621610	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621607	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621606	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621605	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621604	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621603	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB045883	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
Y15507	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621611	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AF074415	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621612	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621613	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB045882	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AJ621604	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB022874	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB022872	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
AB022868	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
FLM-2	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
X84850	GCGACCGGCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGC
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Figure 20 (Continued)

```
TT2-9       AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB045859    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
KN-6        AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
U99490      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB018095    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AF00518     AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399473    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
Z76676      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
Z76682      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
Z76679      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
Z76678      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399480    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399482    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399466    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399489    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399476    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399462    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB045889    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ399485    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ399477    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AF503493    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
PNK1-5      AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
PNK1-3      AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AY589505    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ391822    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ391820    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ391837    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB024440    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ621609    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ621610    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AJ621607    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621606    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621605    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621604    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621603    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
AB045883    AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCC
Y15507      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621611    AGCAGTGGGGAATATTGCACAATGGTCGAAAGCCTGATGCAGCGACGCC
AF074415    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621612    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621613    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB045882    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AJ621604    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB022874    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB022872    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
AB022868    AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
FLM-2       AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
X84850      AGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCC
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Figure 20 (Continued)

TT2-9	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB045859	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
KN-6	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
U99490	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB018095	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AF00518	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399473	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
Z76676	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
Z76682	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
Z76679	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
Z76678	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399480	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399482	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399466	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399489	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399476	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399462	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB045889	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399485	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ399477	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AF503493	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
PNK1-5	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
PNK1-3	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AY589505	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ391822	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ391820	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ391837	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB024440	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621609	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621610	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621607	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621606	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621605	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621604	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621603	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB045883	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
Y15507	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621611	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGAGAAG
AF074415	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621612	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621613	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB045882	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AJ621604	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB022874	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB022872	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
AB022868	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
FLM-2	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
X84850	GCGTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGAAG
	** ****

Figure 20 (Continued)

```
TT2-9        AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB045859     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
KN-6         AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
U99490       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB018095     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AF00518      AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399473     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
Z76676       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
Z76682       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
Z76679       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
Z76678       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399480     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399482     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399466     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399489     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399476     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399462     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB045889     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399485     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ399477     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AF503493     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
PNK1-5       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
PNK1-3       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AY589505     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ391822     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ391820     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ391837     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB024440     AAGCGAGTGACGGTACCTGCAGAAGAAGCACCGGCTAACTACGTGCC
AJ621609     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621610     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621607     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621606     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621605     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621604     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621603     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB045883     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
Y15507       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621611     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AF074415     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621612     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621613     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB045882     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AJ621604     AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
AB022874     AAGCGAGTGACGGTACCTGCAGAAGAAGCACCGGCTAACTACGTGCC
AB022872     AAGCGAGTGACGGTACCTGCAGAAGAAGCACCGGCTAACTACGTGCC
AB022868     AAGCGAGTGACGGTACCTGCAGAAGAAGCACCGGCTAACTACGTGCC
FLM-2        AAGCGAGTGACGGTACCTGCAGAAGAAGCACCGGCTAACTACGTGCC
X84850       AAGCGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCC
             ***************************** *****************
```

Figure 20 (Continued)

```
TT2-9          AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AB045859       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
KN-6           AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
U99490         AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AB018095       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AF00518        AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ399473       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
Z76676         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
Z76682         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
Z76679         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
Z76678         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ399480       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399482       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399466       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399489       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399476       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399462       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AB045889       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399485       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ399477       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AF503493       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
PNK1-5         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
PNK1-3         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AY589505       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ391822       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ391820       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ391837       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AB024440       AGCAGCCGCGGTAATACGTAGGGTGCGAGCGTTGTCCGGAATTATTGG
AJ621609       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621610       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621607       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621606       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621605       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621604       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621603       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AB045883       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
Y15507         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621611       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AF074415       AGCAGCCGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGG
AJ621612       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AJ621613       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AB045882       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTACTGG
AJ621604       AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
AB022874       AGCAGCCGCGGTAATATGTAGGGTGCGAGCGTTGTCCGGAATTATTGG
AB022872       AGCAGCCGCGGTAATACGTAGGGTGCGAGCGTTGTCCGGAATTATTGG
AB022868       AGCAGCCGCGGTAATACGTAGGGTGCGAGCGTTGTCCGGAATTATTGG
FLM-2          AGCAGCCGCGGGAATACGTAGGGTGCGAGCGTTGTCCGGAATTATTGG
X84850         AGCAGCCGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGG
               *********** **** ****** ** ***************** ***
```

Figure 20 (Continued)

```
TT2-9        GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AB045859     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
KN-6         GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
U99490       GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AB018095     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AF00518      GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AJ399473     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
Z76676       GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
Z76682       GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
Z76679       GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
Z76678       GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AJ399480     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AJ399482     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AJ399466     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AJ399489     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AJ399476     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AJ399462     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AB045889     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGTTGTGAAAGCCCG
AJ399485     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AJ399477     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
AF503493     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGTTGTGAAAGCCCG
PNK1-5       GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
PNK1-3       GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AY589505     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ391822     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ391820     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ391837     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AB024440     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ621609     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AJ621610     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AJ621607     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ621606     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ621605     GCGTAAAGAGCTCGTAGGCGGCCTGTCGCGTCGGATGTGAAAGCCCG
AJ621604     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ621603     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AB045883     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
Y15507       GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AJ621611     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AF074415     GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
AJ621612     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AJ621613     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AB045882     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AJ621604     GCGTAAAGAGCTCGTAGGCGGCTTGTCACGTCGGATGTGAAAGCCCG
AB022874     GCGTAAAGAGCTCGTAGGCGGCCTGTCGCGTCGGATGTGAAAGCCCG
AB022872     GCGTAAAGAGCTCGTAGGCGGCCTGTCGCGTCGGATGTGAAAGCCCG
AB022868     GCGTAAAGAGCTCGTAGGCGGCCTGTCGCGTCGGATGTGAAAGCCCG
FLM-2        GCGTAAAGAGCTCGTAGGCGGCCTGTCGCGTCGGATGTGAAAAGCCG
X84850       GCGTAAAGAGCTCGTAGGCGGCTTGTCGCGTCGGATGTGAAAGCCCG
             ********************** **** ****** *******  ***
```

Figure 20 (Continued)

```
TT2-9       GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AB045859    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
KN-6        GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
U99490      GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCCGTAG
AB018095    GGGCTTAACTCCGGCTCTGCAGTCGATACGGACAGTCTAGAGTCCGGTAG
AF00518     GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399473    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
Z76676      GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
Z76682      GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
Z76679      GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
Z76678      GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399480    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399482    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399466    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399489    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399476    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399462    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AB045889    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399485    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ399477    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
AF503493    GGGCTTAACCCCGGGTCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAG
PNK1-5      GGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
PNK1-3      GGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AY589505    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ391822    GGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ391820    GGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ391837    GGGCTTAACTCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AB024440    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGCAG
AJ621609    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621610    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621607    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621606    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621605    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621604    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621603    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AB045883    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
Y15507      GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621611    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AF074415    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621612    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621613    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AB045882    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
AJ621604    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCTAGCTAGAGTGTGGTAG
AB022874    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTGGAGTGTGGTAG
AB022872    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTGTGGTAG
AB022868    GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTGTGGTAG
FLM-2       GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTGTGGTAG
X84850      GGGCTTAACCCCGGGTCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAG
            ********* **** ****** ********* *    ** ****    * **
```

Figure 20 (Continued)

```
TT2-9          GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB045859       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
KN-6           GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
U99490         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB018095       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AF00518        GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399473       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
Z76676         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
Z76682         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
Z76679         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
Z76678         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399480       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399482       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399466       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399489       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399476       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399462       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB045889       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399485       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ399477       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AF503493       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
PNK1-5         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
PNK1-3         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AY589505       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ391822       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ391820       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ391837       GGGAGATCGGAATTCCTGGTGTACCGGTGAAATGCGCAGATATCAGGAGG
AB024440       GGGAGATTGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621609       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621610       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621607       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621606       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621605       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621604       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621603       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB045883       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
Y15507         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621611       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AF074415       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621612       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621613       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB045882       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AJ621604       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB022874       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB022872       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
AB022868       GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
FLM-2          GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
X84850         GGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGG
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Figure 20 (Continued)

```
TT2-9          AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB045859       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
KN-6           AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
U99490         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB018095       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AF00518        AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399473       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
Z76676         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
Z76682         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
Z76679         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
Z76678         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399480       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399482       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399466       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399489       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399476       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399462       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB045889       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399485       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ399477       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AF503493       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
PNK1-5         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
PNK1-3         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AY589505       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ391822       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ391820       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ391837       AACACCCGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB024440       AACACCGGTGGCGAAAGGCGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621609       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621610       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621607       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621606       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621605       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621604       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621603       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB045883       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
Y15507         AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621611       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AF074415       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621612       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621613       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB045882       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AJ621604       AACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGC
AB022874       AACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGACGCTGAGGAGC
AB022872       AACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGACGCTGAGGAGC
AB022868       AACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGACGCTGAGGAGC
FLM-2          AACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGACGCTGAGGAGC
X84850         AACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGACGCTGAGGAGC
               ****** ******** *  ************  *****************
```

Figure 20 (Continued)

```
TT2-9        GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB045859     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
KN-6         GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
U99490       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB018095     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AF00518      GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399473     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
Z76676       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
Z76682       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
Z76679       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
Z76678       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399480     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399482     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399466     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399489     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399476     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399462     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB045889     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399485     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ399477     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AF503493     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
PNK1-5       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
PNK1-3       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AY589505     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ391822     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ391820     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ391837     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB024440     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621609     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621610     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621607     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621606     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621605     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621604     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621603     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB045883     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
Y15507       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621611     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AF074415     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621612     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621613     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB045882     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AJ621604     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB022874     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB022872     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
AB022868     GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
FLM-2        GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
X84850       GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGT
             *************************************************
```

Figure 20 (Continued)

```
TT2-9        AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AB045859     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
KN-6         AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
U99490       AAACGGTGGGCACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AB018095     AAACGGTGGGCACTAGGTGTGGGCAGCATTCCACGTTGTCCGTGCCGTA
AF00518      AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399473     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
Z76676       AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
Z76682       AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
Z76679       AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
Z76678       AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399480     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399482     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399466     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399489     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399476     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399462     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AB045889     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399485     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AJ399477     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
AF503493     AAACGGTGGGCACTAGGTGTGGGCAACATTCCACGTTGTCCGTGCCGCA
PNK1-5       AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCA
PNK1-3       AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCA
AY589505     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCA
AJ391822     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCA
AJ391820     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCA
AJ391837     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGCGCCGCA
AB024440     AAACGTTGGGCACTAGGTGTGGGCGGCATTCCACGTCGTCCGTGCCGCA
AJ621609     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621610     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621607     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621606     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621605     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621604     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621603     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AB045883     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
Y15507       AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621611     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AF074415     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621612     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621613     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AB045882     AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTCGTCCGTGCCGCA
AJ621604     AAACGTTGGGAACTAGGTGTTGGCGACATTCCACGTCGTCGGTGCCGCA
AB022874     AAACGTTGGGAACTAGGTGTTGGCGACATTCCACGTCGTCGGTGCCGCA
AB022872     AAACGTTGGGAACTAGGTGTTGGCGACATTCCACGTCGTCGGTGCCGCA
AB022868     AAACGTTGGGAACTAGGTGTTGGCGACATTCCACGTCGTCGGTGCCGCA
FLM-2        AAACGTTGGGAACTAGGTGTTGGCGACATTCCACGTCGTCGGTGCCGCA
X84850       AAACGTTGGGAACTAGGTGTGGGCGACATTCCACGTTGTCCGTGCCGCA
             ***** **** ********* ***  ********** *** * **** *
```

Figure 20 (Continued)

```
TT2-9       GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB045859    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
KN-6        GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
U99490      GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB018095    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AF00518     GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399473    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
Z76676      GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
Z76682      GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
Z76679      GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
Z76678      GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399480    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399482    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399466    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399489    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399476    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399462    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB045889    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399485    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ399477    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AF503493    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
PNK1-5      GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
PNK1-3      GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AY589505    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ391822    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ391820    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ391837    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB024440    GTAACGCATTAAGTGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621609    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621610    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621607    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621606    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621605    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621604    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621603    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB045883    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
Y15507      GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621611    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AF074415    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621612    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621613    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB045882    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AJ621604    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB022874    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB022872    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
AB022868    GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
FLM-2       GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
X84850      GTAACGCATTAAGTTCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAAC
            ************** **********************************
```

Figure 20 (Continued)

TT2-9	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AB045859	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
KN-6	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
U99490	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AB018095	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AF00518	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399473	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
Z76676	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
Z76682	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
Z76679	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
Z76678	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399480	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399482	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399466	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399489	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399476	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399462	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AB045889	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399485	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ399477	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AF503493	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
PNK1-5	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
PNK1-3	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AY589505	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ391822	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ391820	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ391837	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AB024440	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ621609	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ621610	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AJ621607	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621606	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621605	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621604	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621603	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AB045883	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
Y15507	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621611	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AF074415	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621612	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621613	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
AB045882	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AJ621604	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AB022874	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AB022872	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
AB022868	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
FLM-2	TCAAAGGAATTGACGGGGGCCCGCACAAGCAGCGGAGCATGTGGCTTAAT
X84850	TCAAAGGAATTGACGGGGGCCCGCACAAGCGGCGGAGCATGTGGCTTAAT
	****************************** *******************

Figure 20 (Continued)

```
TT2-9         TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACGCCGGAAACC
AB045859      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
KN-6          TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
U99490        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AB018095      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAAT
AF00518       TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAAT
AJ399473      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAAC
Z76676        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
Z76682        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
Z76679        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
Z76678        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399480      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399482      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399466      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399489      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399476      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399462      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACT
AB045889      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ399485      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ399477      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AF503493      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
PNK1-5        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACATCGGAAACT
PNK1-3        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACATCGGAAACT
AY589505      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACATCGGAAAAT
AJ391822      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ391820      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACT
AJ391837      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACT
AB024440      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ621609      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ621610      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ621607      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ621606      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ621605      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACA
AJ621604      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACA
AJ621603      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACT
AB045883      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACT
Y15507        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ621611      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AF074415      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACA
AJ621612      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
AJ621613      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACA
AB045882      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAAGT
AJ621604      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATATACCGGAAACA
AB022874      TCGACGCAACGCGAAGGACCTTACCAAGGCTTGACATATACCGGAAAGG
AB022872      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAATG
AB022868      TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAATG
FLM-2         TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATATGCCGGAAACC
X84850        TCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAAACC
              **************** *********************    ******
```

Figure 20 (Continued)

```
TT2-9       CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AB045859    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
KN-6        CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
U99490      CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AB018095    CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AF00518     CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399473    TAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
Z76676      CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
Z76682      CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
Z76679      CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
Z76678      CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399480    CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399482    CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399466    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399489    CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399476    CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399462    CAGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AB045889    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399485    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ399477    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AF503493    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
PNK1-5      CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
PNK1-3      CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AY589505    CAGAGAGGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ391822    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ391820    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ391837    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AB024440    GAGAGAACGCCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621609    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621610    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621607    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621606    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621605    CGGAGAAGTCCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621604    CGGAGAAGTCCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621603    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AB045883    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
Y15507      CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621611    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AF074415    TAGAGAAGTCCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621612    CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621613    CGGAGAAGTTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AB045882    CGGAGAAGGGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
AJ621604    TAGAGAGGTCCCCCCTTGTGGTCGGTATACAGGTGGTGCATGGCTGT
AB022874    CAGAGAAGTGCCCCCTTGTGGTCGGTATACAGGTGGTGCATGGTTGT
AB022872    GAGAGAGTCGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGTTGT
AB022868    GAGAGAATCGCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGTTGT
FLM-2       GGGAGAACGTCCCCCTTGTGGTCGGTATACAGGTGGTGCATGGTTGT
X84850      CGGAGAAGGTCCCCCTTGTGGTCGGTGTACAGGTGGTGCATGGCTGT
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Figure 20 (Continued)

TT2-9	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB045859	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
KN-6	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
U99490	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB018095	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AF00518	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399473	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
Z76676	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
Z76682	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
Z76679	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
Z76678	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399480	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399482	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399466	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399489	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399476	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399462	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB045889	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399485	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ399477	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AF503493	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
PNK1-5	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
PNK1-3	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AY589505	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ391822	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ391820	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ391837	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB024440	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621609	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621610	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621607	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621606	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621605	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621604	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621603	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB045883	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
Y15507	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621611	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AF074415	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621612	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621613	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB045882	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AJ621604	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB022874	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB022872	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
AB022868	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
FLM-2	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
X84850	CGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAAC
	**

Figure 20 (Continued)

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TT2-9       CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AB045859    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
KN-6        CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
U99490      CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AB018095    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AF00518     CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399473    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
Z76676      CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
Z76682      CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
Z76679      CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
Z76678      CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399480    CCTTGTCCCGTGTTGCCAGCATGCCCTTGGGTGCTGGGGACTCACGG
AJ399482    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399466    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399489    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399476    CCTTGTCCCGTGTTGCCAGCAAGCCCTTCGGTGTTGGGGACTCACGG
AJ399462    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AB045889    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399485    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AJ399477    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
AF503493    CCTTGTCCCGTGTTGCCAGCAGGCCCTTGGGTGCTGGGGACTCACGG
PNK1-5      CCTTGTCCTGTGTTGCCAGCATGCCCTTTGGTGATGGGGACTCACAG
PNK1-3      CCTTGTCCTGTGTTGCCAGCATGCCCTTTGGTGATGGGGACTCACAG
AY589505    CCTTGTCCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ391822    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
AJ391820    CCTTGTCCTGTGTTGCCAGCATGCCCTTTGGTGATGGGGACTCACAG
AJ391837    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
AB024440    CCTTGTCCTGTGTTGCCAGCACTCCTTTCGGAGGTTGGGACTCACGG
AJ621609    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621610    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621607    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621606    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621605    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621604    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621603    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AB045883    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
Y15507      CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621611    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AF074415    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
AJ621612    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621613    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AB045882    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AJ621604    CCTTGTTCTGTGTTGCCAGCATGCCCTTCGGTGATGGGGACTCACAG
AB022874    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
AB022872    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
AB022868    CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
FLM-2       CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
X84850      CCTTGTTCTGTGTTGCCAGCATGCCTTTCGGTGATGGGGACTCACAG
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Figure 20 (Continued)

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TT2-9        GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB045859     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
KN-6         GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
U99490       GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB018095     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AF00518      GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399473     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
Z76676       GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
Z76682       GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
Z76679       GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
Z76678       GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399480     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399482     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399466     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399489     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399476     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399462     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB045889     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399485     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ399477     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AF503493     GAGACCGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
PNK1-5       GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
PNK1-3       GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AY589505     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ391822     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ391820     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ391837     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB024440     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621609     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621610     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621607     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621606     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621605     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621604     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621603     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB045883     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
Y15507       GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621611     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AF074415     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621612     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621613     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB045882     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AJ621604     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB022874     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB022872     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
AB022868     GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGATGACGTCAATAT
FLM-2        GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
X84850       GAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAATAT
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Figure 20 (Continued)

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TT2-9        CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB045859     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
KN-6         CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
U99490       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB018095     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAA
AF00518      CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399473     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
Z76676       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
Z76682       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
Z76679       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
Z76678       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399480     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399482     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399466     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399489     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399476     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399462     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB045889     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399485     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ399477     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AF503493     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
PNK1-5       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
PNK1-3       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AY589505     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ391822     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ391820     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ391837     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB024440     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621609     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621610     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621607     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAT
AJ621606     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAT
AJ621605     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAT
AJ621604     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAT
AJ621603     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB045883     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
Y15507       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621611     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AF074415     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621612     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621613     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB045882     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AJ621604     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
AB022874     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAA
AB022872     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAA
AB022868     CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAA
FLM-2        CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCGGTACAAA
X84850       CATGCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAT
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Figure 20 (Continued)

```
TT2-9       GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AB045859    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
KN-6        GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
U99490      GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AB018095    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AF00518     GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399473    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
Z76676      GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
Z76682      GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
Z76679      GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
Z76678      GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399480    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399482    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399466    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399489    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399476    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399462    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AB045889    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399485    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ399477    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AF503493    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
PNK1-5      GAGCTGCGAACGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
PNK1-3      GAGCTGCGAACGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AY589505    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ391822    GAGCTGCGAACGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ391820    GAGCTGCGAACGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ391837    GAGCTGCGAACGGAGGTGGAGCGAATCTCAAAAAGCCCGTCTCAGTT
AB024440    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ621609    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ621610    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ621607    GAGCTGCGATCGAAGGTGGAGCGAATCTCAAAAAGCCGATCTCAGTT
AJ621606    GAGCTGCGATCGAAGGTGGAGCGAATCTCAAAAAGCCGATCTCAGTT
AJ621605    GAGCTGCGATCGAAGGTGGAGCGAATCTCAAAAAGCCGATCTCAGTG
AJ621604    GAGCTGCGATCGAAGGTGGAGCGAATCTCAAAAAGCCGATCTCAGTT
AJ621603    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AB045883    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
Y15507      GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ621611    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AF074415    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ621612    GAGCTGCGATCGGAGGTGGAGCGAATATCAAAAAGCCGGTCTCAGTT
AJ621613    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AB045882    GAGCTGCGATCGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AJ621604    GAGCTGCGATTGAAGGCGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
AB022874    GGGCTGCGATCGGAGGCGGAGCGAATCCCAAAAAGCCGGCCTCAGTT
AB022872    GGGCTGCGATCGGAGGCGGAGCGAATCCCAAAAAGCCGGCCTCAGTT
AB022868    GGGCTGCGATCGGAGGCGGAGCGAATCCCAAAAAGCCGGTCTCAGTT
FLM-2       GGGCTGCGATCGGAGGCGGAGCGAATCCCAAAAAGCCGGCCTCAGTT
X84850      GAGCTGCGAACGGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTT
            * *******  * *** *********  *********   ******
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Figure 20 (Continued)

TT2-9	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AB045859	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
KN-6	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
U99490	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AB018095	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AF00518	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399473	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
Z76676	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
Z76682	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
Z76679	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
Z76678	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399480	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399482	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399466	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399489	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399476	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399462	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AB045889	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399485	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ399477	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AF503493	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
PNK1-5	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
PNK1-3	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AY589505	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ391822	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ391820	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ391837	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AB024440	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ621609	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ621610	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AJ621607	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
AJ621606	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
AJ621605	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
AJ621604	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
AJ621603	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AB045883	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
Y15507	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATC
AJ621611	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATC
AF074415	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATC
AJ621612	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATC
AJ621613	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
AB045882	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATC
AJ621604	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATC
AB022874	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
AB022872	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
AB022868	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
FLM-2	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATC
X84850	CGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATC
	********************************* ***** **********

Figure 20 (Continued)

```
TT2-9         GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB045859      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
KN-6          GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
U99490        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB018095      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AF00518       GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399473      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
Z76676        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
Z76682        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
Z76679        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
Z76678        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399480      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399482      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399466      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399489      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399476      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399462      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB045889      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399485      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ399477      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AF503493      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
PNK1-5        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
PNK1-3        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AY589505      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ391822      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ391820      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ391837      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB024440      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621609      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621610      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621607      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621606      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621605      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621604      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621603      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB045883      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
Y15507        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621611      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AF074415      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621612      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621613      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB045882      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AJ621604      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB022874      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB022872      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
AB022868      GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
FLM-2         GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
X84850        GCAGATCAGCATGCTGCGGTGAATACGTCCCGGGCCTTGTACACACCG
              ************************************************
```

Figure 20 (Continued)

```
TT2-9       CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB045859    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
KN-6        CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
U99490      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB018095    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AF00518     CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399473    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
Z76676      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
Z76682      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
Z76679      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
Z76678      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399480    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399482    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399466    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399489    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399476    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399462    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB045889    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399485    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ399477    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AF503493    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
PNK1-5      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
PNK1-3      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AY589505    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ391822    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ391820    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ391837    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB024440    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621609    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621610    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621607    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621606    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621605    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621604    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621603    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB045883    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
Y15507      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621611    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AF074415    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621612    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621613    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB045882    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AJ621604    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
AB022874    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCTAACCC
AB022872    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCTAACCC
AB022868    CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCTAACCC
FLM-2       CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCTAACCC
X84850      CCCGTCACGTCACGAAAGTCGGTACACCCGAAGCCGGTGGCCCAACCC
            ****************************************** *****
```

Figure 20 (Continued)

```
TT2-9        TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACG-----
AB045859     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
KN-6         TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACG-----
U99490       TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB018095     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AF00518      TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399473     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
Z76676       TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
Z76682       TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
Z76679       TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
Z76678       TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399480     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399482     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399466     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399489     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399476     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399462     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB045889     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399485     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ399477     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AF503493     TGGGGGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
PNK1-5       TGGGGGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACG-----
PNK1-3       TGGGGGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACG-----
AY589505     TGGGAGGGAGC---------------------------------
AJ391822     TGGGAGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ391820     TGGGAGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ391837     TGGGGGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB024440     TGGGGGGGAGCCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621609     TGGGGGGGAGTCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621610     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621607     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621606     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621605     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621604     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621603     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB045883     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
Y15507       TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621611     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AF074415     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621612     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621613     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB045882     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AJ621604     TGGGGGGGAATCGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB022874     TGGGGGGGAGCTGTCGAAGGTGGGACTGCGATTGGGACGAAGTC
AB022872     TAGGGAGGAGCCGTCGAAGGTGGGACCACGATTGGGACGAAGTC
AB022868     TAGGGTGGAGCCGTCGAAGGTGGGACCACGATTGGGACGAAGTC
FLM-2        TGGGGAGGAGCCGTCGAAGGTGGGACCACGATTGGGACGAAGTC
X84850       TAGGGAGGAGCCGTCCAAGGTGGGACCACGATTGGGACG-----
             ****** ******** *  ************  ***********
```

Figure 20 (Continued)

```
TT2-9        ------------------------------------------------
AB045859     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
KN-6         ------------------------------------------------
U99490       GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTT---
AB018095     GTAACAAGGTAGCCGTACCGGAAGGTGC--------------------
AF00518      GTAACAAGGTAGCCGTACCGGAAGGTGC--------------------
AJ399473     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
Z76676       GTAACAAGGTAGCCGTACCGGAAGGT----------------------
Z76682       GTAACAAGGTAGCCGTACCGGAAGGT----------------------
Z76679       GTAACAAGGTAGCCGTACCGGAAGGT----------------------
Z76678       GTAACAAGGTAGCCGTACCGGAAGGT----------------------
AJ399480     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399482     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399466     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399489     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399476     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399462     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AB045889     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399485     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ399477     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AF503493     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTC------
PNK1-5       ------------------------------------------------
PNK1-3       ------------------------------------------------
AY589505     ------------------------------------------------
AJ391822     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTAAA
AJ391820     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTAAA
AJ391837     GTAACAAGGTAGCCGTACCGGAAGGTGC--------------------
AB024440     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTAG-
AJ621609     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AJ621610     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTT---
AJ621607     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCT----
AJ621606     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AJ621605     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AJ621604     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AJ621603     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AB045883     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTT---
Y15507       GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AJ621611     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AF074415     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCT----------------
AJ621612     GTAACAAGGTAGCCGTACCGGAAGGT----------------------
AJ621613     GTAACAAGGTACGGCTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AB045882     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTT--
AJ621604     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AB022874     GTAACAAGGTAGCCGTACCGGAAGG-----------------------
AB022872     GTAACAAGGTA-------------------------------------
AB022868     GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTTCT
FLM-2        GTAACAAGGTAGCCGTACCGGAAGGTGCGGCTGGATCACCTCCTTTCT
X84850       GTAACAAGGTAGCCGTACCGGAAGGTGCGGCGGGATCACCTCCTTTCT
             ****** ******** *  ************   ***************
```

Figure 20 (Continued)

CLUXTRAL X (1.83) multiple sequence alignment.

```
MA-1          --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
MA-2          --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
X92599        ------TGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTTAACACATG
AF152109      AGAGTTTGATCATGGCTCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92611        ------TGATCCTGGCGCAGGACGAACGCTGGCGGCGTGCTTAACACATG
JSM1-3        --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
JSM1-1        --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
X92604        ------TGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92601        ------TGATCCTGGCTCAGGCCGAACGCTGGCGGCGTGCTTAACACATG
X92594        ------TGATCCTGGCTCAGGCCGAACGCTGGCGGCGTGCTTAACACATG
X92607        ------TGATCCTGGCGCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92610        ------TGATCCTGGCGCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92608        ------TGATCCTGGCGCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92631        ------TGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92628        ------TGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTTAACACATG
X92609        ------TGATCCTGGCGCAGGACGAACGCTGGCGGCGTGCTTAACACATG
AB107231      --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
X92598        ------TGATCCTGGCTCAGGCCGAACGCTGGCGGCGTGCTTAACACATG
MC5-1         --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
MC7-1         --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
R1-1          --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
TT1-11        --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
X92613        ------TGATCCTGGCTCAGGACGAACGCTGGCGGCGTGCTTAACACATG
AB037012      --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
AB037011      --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
D85474        --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
AB037000      --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
AB037008      --------------------GACGAACGCTGGCGGCGTGCTTAACACATG
                                  * ****************************
```

Figure 21 Comparison of 16S rDNA nucleotide sequences between the representative *Micromonospora* strains and the validily described *Micromonospora* species.

```
MA-1        CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
MA-2        CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92599      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
AF152109    CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92611      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
JSM1-3      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
JSM1-1      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92604      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92601      CAATCGAACGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92594      CAATCGAACGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92607      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92610      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92608      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92631      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92628      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92609      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
AB107231    CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92598      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
MC5-1       CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
MC7-1       CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
R1-1        CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
TT1-11      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
X92613      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
AB037012    CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
AB037011    CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
D85474      CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
AB037000    CAATCGAGCGGAAAGGCTGGGTACTCGAGCGGCGAACGGGTGA
AB037008    CAATCGAGCGGAAAGGCCGGGTACTCGAGCGGCGAACGGGTGA
            ******* ******   * *************************
```

Figure 21 (Continued)

```
MA-1        GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCTCGGAAACG
MA-2        GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCTCGGAAACG
X92599      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCTCGGAAACG
AF152109    GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCTCGGAAACG
X92611.     GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCCGGGAAACC
JSM1-3      GTACACGTGAGCACCTGCCCCAGGCTTTGGGATAACCCCGGGAAACC
JSM1-1      GTACACGTGAGCACCTGCCCCAGGCTTTGGGATAACCCCGGGAAACC
X92604      GTACACGTGAGCACCTCCCCCAGGCTTTGGGATAACCCCGGGAAACC
X92601      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92594      GTACACGTGAGCACCTGCCCCAGGCTTTGGGATAACCCCGGGAAACC
X92607      GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92610      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92608      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92631      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92628      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92609      GTACACGTGAGCACCTCCCCCAGGCTTTGGGATAACCCCGGGAAACC
AB107231    GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACC
X92598      GTACACGTGAGCACCTCCCCTAGCCTTTGGGATAACCCCGGGAAACC
MC5¬1       GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACC
MC7-1       GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACC
R1-1        GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCCGGGAAACC
TT1-11      GTACACGTGAGCACCTGCCCTAGGCTTTGGGATAACCCTCGGAAACG
X92613      GTACACGTGAGCACCTCCCCTAGGCTTTGGGATAACCCTCGGAAACG
AB037012    GTACACGTGAGTACCTGCCCCAGACTTTGGGATAACCCTCGGAAACG
AB037011    GTACACGTGAGTACCTGCCCCAGACTTTGGGATAACCCTCGGAAACG
D85474      GTACACGTGAGTACCTGCCCTGGACTTTGGGATAACCCTCGGAAACG
AB037000    GTACACGTGAGTACCTGCCCTGGACTTTGGGATAACCCTCGGAAACG
AB037008    GTACACGTGAGGACCTGCCCTGGACTTTGGGATAACCCTCGGAAACG
            *********** **** ***     **************  ******
```

Figure 21 (Continued)

```
MA-1        GGGGCTAATACCGGATAGACCTTCGACGCATGTCTGGGGTGGA
MA-2        GGGGCTAATACCGGATAGACCTTCGACGCATGTCTGGGGTGGA
X92599      GGGGCTAATACCGGATAAACCTTTGTCGCATGACTGGGGTGGA
AF152109    GGGGCTAATACCGAATATACTTGACTCGCATGGGGTTGGTGGA
X92611      GGGGCTAATACCGAATAGACTTCTGCCGCATGGGTGGTGTGGA
JSM1-3      GGGGCTAATACCGAATATACCTCTGTCGCATGGTTGGTGTGGA
JSM1-1      GGGGCTAATACCGAATATACCTCTGTCGCATGGTTGGTGTGGA
X92604      GGGGCTAATACCGAATAGACCTCTGCCGCATGGTTGGTGTGGA
X92601      GGGGCTAATACCGAATAGACCTCCGTCGCATGGTTGGTGTGGA
X92594      GGGGCTAATACCGAATAGACCTTGCCCGCATGGTGTTTGTGGA
X92607      GGGCCTAATACCGAATAGACCTTCGTCGCATGACTGTTGTGGA
X92610      GGGGCTAATACCGAATAAACCTGGCTCGCATGAGTCTGGTGGA
X92608      GGGGCTAATACCGAATAGACCTGCGTCGCATGACTGTTGTGGA
X92631      GGGGCTAATACCGAATAGACCTGACCCGCATGGGGTTGGTGGA
X92628      GGGGCTAATACCGAATAGACCTGGCTCGCATGAGGTTGGTGGA
X92609      GGGGCTAATACCGAATAGACCTCTGCCGCATGGTGGAGGTGGA
AB107231    GGGGCTAATACCGAATAGACCTCTGTCGCATGGTGGGGGTGGA
X92598      GGGGCTAATACCGAATAGGACTCTGTCGCATGGCTGGTGTGGA
MC5-1       GGGGCTAATACCGAATAGGACTCTGCCGCATGGTTGGGGTGGA
MC7-1       GGGGCTAATACCGAATAGGACTCTGCCGCATGGTTGGGGTGGA
R1-1        GGGGCTAATACCGAATAGGACTCTGCCGCATGGTTGGGGTGGA
TT1-11      GGGGCTAATACCGAATATGACTCTGTCGCATGGTTGGTGTGGA
X92613      GGGGCTAATACCGAATATTACTCTGCCGCATGGCTGGTGTGGA
AB037012    GGGGCTAATACCGAATATGACTGGCTCGCATGAGCTTGGTGGA
AB037011    GGGGCTAATACCGAATATGACANCNTTGCANTGGTGCGGTGGA
D85474      GGGGCTAATACCGAATACGACAGAGTCGCATGTCTTCGGTGGA
AB037000    GGGGCTAATACCGGATATGACTTTCTCGCATGGGTTTGTGGAA
AB037008    GGGGCTAATACCGAATACGACATTCCCGCATGTGTGGGGTGGA
            *** ********* ***          ***          * *
```

Figure 21 (Continued)

```
MA-1        AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
MA-2        AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92599      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
AF152109    AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92611      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
JSM1-3      AAGTTTTTGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
JSM1-1      AAGTTTTTGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92604      AAGTTTTTGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92601      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92594      AAGTTTTTGGCTTGGGATGGGCTCGCGCCCTATCAGCTTGTTGGTGGG
X92607      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92610      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92608      AAGTTTTTGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92631      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92628      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92609      AAGTTCTTGGCTTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
AB107231    AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92598      AAGTTTTTGGCCTGGGATGGGCTCGCGCCCTATCAGCTTGTTGGTGGG
MC5-1       AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
MC7-1       AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
R1-1        AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
TT1-11      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
X92613      AAGTTTTTGGCCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
AB037012    AAGTTTTTGGTTTGGGATGGACTCGCGGCCTATCAGCTTGTTGGTGGG
AB037011    AAGTTTTTGGTTTGGGATGGACTCGCGGCCTATCAGCTTGTTGGTGGG
D85474      AAGTTTTTGGTTTGGGATGGACTCGCGGCCTATCAGCTTGTTGGTGGG
AB037000    AGTTTTCGGTCTGGGATGGGCTCGCGGCCTATCAGCTTGTTGGTGGG
AB037008    AAGTTTTCGGTCTGGGATGGTCTCGCGGCCTATCAGCTTGTTGGTGGG
            *  ** * **  ******** ****** ** *****************
```

Figure 21 (Continued)

```
MA-1         GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
MA-2         GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92599       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
AF152109     GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92611       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
JSM1-3       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
JSM1-1       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92604       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92601       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92594       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92607       GTGATGGCCTACCAAGCCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92610       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92608       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92631       GTGATGGCCTACCAAGCCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92628       GTGATGGCCTACCAAGCCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92609       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
AB107231     GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92598       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
MC5-1        GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
MC7-1        GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
R1-1         GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
TT1-11       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
X92613       GTGATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
AB037012     GTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
AB037011     GTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
D85474       GTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
AB037000     GTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
AB037008     GTAATGGCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCG
             ** ************* *********** **************** ***
```

Figure 21 (Continued)

```
MA-1        GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
MA-2        GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92599      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
AF152109    GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92611      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
JSM1-3      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
JSM1-1      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92604      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92601      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92594      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92607      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92610      GCCACACTGGGACTGAGANACGACCCAGACTCTACGGGAGGCAGCAGTG
X92608      GCCACACTGGGACTGAGAGACGACCCAGACTCTACGGGAGGCAGCAGTG
X92631      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92628      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92609      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
AB107231    GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92598      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
MC5-1       GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
MC7-1       GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
R1-1        GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
TT1-11      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
X92613      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
AB037012    GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
AB037011    GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
D85474      GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
AB037000    GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
AB037008    GCCACACTGGGACTGAGACACGGCCCAGACTCTACGGGAGGCAGCAGTG
              ***************** *** ***************** ********
```

Figure 21 (Continued)

```
MA-1        GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
MA-2        GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92599      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
AF152109    GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92611      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
JSM1-3      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
JSM1-1      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92604      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92601      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92594      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92607      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92610      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92608      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92631      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92628      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92609      GGGAATATTGCACAATGGGCGGAAGCCTGATTCAGCGACGCCGCGTGAGG
AB107231    GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92598      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
MC5-1       GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
MC7-1       GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
R1-1        GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
TT1-11      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
X92613      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
AB037012    GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
AB037011    GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
D85474      GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
AB037000    GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
AB037008    GGGAATATTGCACAATGGGCGGAAGCCTGATGCAGCGACGCCGCGTGAGG
            ******************************* ** ***************
```

Figure 21 (Continued)

```
MA-1        GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
MA-2        GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
X92599      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
AF152109    GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92611      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
JSM1-3      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
JSM1-1      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92604      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92601      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92594      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92607      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92610      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92608      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
X92631      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
X92628      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92609      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
AB107231    GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
X92598      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGAAA
MC5-1       GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
MC7-1       GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
R1-1        GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGTAA
TT1-11      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGAAA
X92613      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
AB037012    GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
AB037011    GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGNGTAA
D85474      GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
AB037000    GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGCAA
AB037008    GATGACGGCCTTCGGGTTGTAAACCTCTTTCAGCAGGGACGAAGCGNAA
            ******************************************** *  *
```

Figure 21 (Continued)

```
MA-1        GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
MA-2        GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92599      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
AF152109    GTGACGGTACCTGCAGAAGAAGCACCGGCCAACTACGTGCCAGCAGCCGC
X92611      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
JSM1-3      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
JSM1-1      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92604      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92601      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92594      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92607      GTGACGGTACCTGCAGAAGAAGCGCCAGCCAACTACGTGCCAGCAGCCGC
X92610      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92608      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92631      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92628      GTGACGGTACCTGCAGAAGAAGCGCCGGNCAACTACGTGCCAGCAGCCGC
X92609      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
AB107231    GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92598      GTGACGGTACCTGCAGAAGAAGCACCGGCCAACTACGTGCCAGCAGCCGC
MC5-1       GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
MC7-1       GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
R1-1        GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
TT1-11      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
X92613      GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
AB037012    GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
AB037011    GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
D85474      GTGACGGTACCTGCAGAAGAAGCGCCGGCNAACTACGTGCCAGCAGCCGC
AB037000    GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
AB037008    GTGACGGTACCTGCAGAAGAAGCGCCGGCCAACTACGTGCCAGCAGCCGC
            *********************** ** *  **************** ***
```

Figure 21 (Continued)

```
MA-1        GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
MA-2        GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92599      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
AF152109    GGTAAGACGTAGGGTGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92611      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
JSM1-3      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
JSM1-1      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92604      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92601      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92594      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92607      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92610      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92608      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92631      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92628      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92609      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
AB107231    GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92598      GGTAAGACGTAGGGTGCGAGCGTTGTCCGGAATTATTGGGCGTAAAGAG
MC5-1       GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
MC7-1       GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
R1-1        GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
TT1-11      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
X92613      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
AB037012    GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
AB037011    GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
D85474      GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
AB037000    GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
AB037008    GGTAAGACGTAGGGCGCGAGCGTTGTCCGGATTTATTGGGCGTAAAGAG
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```

Figure 21 (Continued)

```
MA-1        CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
MA-2        CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
X92599      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
AF152109    CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
X92611      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
JSM1-3      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACCTGGGGCTCAACTCCA
JSM1-1      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACCTGGGGCTCAACTCCA
X92604      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
X92601      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACTTGGGGCTCAACCCCA
X92594      CTCGTAGGCGGCTTGTCGCGTCGACCGTGAAAACCTGGGGCTCAACCCCA
X92607      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
X92610      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
X92608      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCGGCTCAACTGCG
X92631      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCGGCTCAACTGCG
X92628      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
X92609      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
AB107231    CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCGGCTCAACCGCG
X92598      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
MC5-1       CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
MC7-1       CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
R1-1        CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
TT1-11      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCAGCTCAACTGCG
X92613      CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCGGCTCAACTGCG
AB037012    CTCGTAGGCGGCTTGTCGCGTCGAATGTGAAAACCCGAGGCTCAACCTCG
AB037011    CTCGTAGGCGGCTTGTCGCGTCGAATGTGAAATCTCGGGGCTCAACTCCG
D85474      CTCGTAGGCGGCTTGTCGCGTCGAATGTGAAAACTTGGGGCTCAACCCCA
AB037000    CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCGGCTCAACCGCG
AB037008    CTCGTAGGCGGCTTGTCGCGTCGACTGTGAAAACCCGCGGCTCAACTGCG
            ************************  ****** *  *  *******  * 
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Figure 21 (Continued)

```
MA-1        AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
MA-2        AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92599      AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
AF152109    AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCAGTAGGGGAGACTGGAAT
X92611      AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
JSM1-3      GGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
JSM1-1      GGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92604      AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92601      AGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92594      GGCCTGCGGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92607      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92610      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92608      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92631      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92628      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92609      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
AB107231    GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92598      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
MC5-1       GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
MC7-1       GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
R1-1        GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
TT1-11      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
X92613      GGCCTGCAGTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
AB037012    GGCTTGCATTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
AB037011    AGCTTGCATTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
D85474      AGCTTGCATTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
AB037000    GGCCTGCATTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
AB037008    GGCCTGCAGCCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGACTGGAAT
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Figure 21 (Continued)

```
MA-1        TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
MA-2        TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92599      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
AF152109    TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92611      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
JSM1-3      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
JSM1-1      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92604      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92601      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92594      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92607      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92610      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACAACGGTGGCG
X92608      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92631      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92628      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92609      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
AB107231    TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
X92598      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGATGGCG
MC5-1       TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
MC7-1       TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
R1-1        TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
TT1-11      TCCTGGTGTAGCGGTGAAATGCGCAGATATNAGGAGGAACACCGGTGGCG
X92613      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
AB037012    TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
AB037011    TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
D85474      TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
AB037000    TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGATGGCG
AB037008    TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCG
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Figure 21 (Continued)

```
MA-1        AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
MA-2        AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92599      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
AF152109    AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92611      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
JSM1-3      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
JSM1-1      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92604      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92601      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92594      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92607      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92610      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92608      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92631      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92628      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92609      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
AB107231    AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92598      AAGGCAGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
MC5-1       AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
MC7-1       AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
R1-1        AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
TT1-11      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
X92613      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
AB037012    AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
AB037011    AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
D85474      AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
AB037000    AAGGCAGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
AB037008    AAGGCGGGTCTCTGGCCGATACTGACGCTGAGGAGCGAAAGCGTGGGG
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Figure 21 (Continued)

```
MA-1        AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
MA-2        AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92599      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
AF152109    AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92611      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
JSM1-3      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
JSM1-1      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92604      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92601      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92594      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92607      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92610      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92608      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92631      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92628      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92609      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGCGC
AB107231    AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92598      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
MC5-1       AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
MC7-1       AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
R1-1        AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
TT1-11      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
X92613      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
AB037012    AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
AB037011    AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
D85474      AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
AB037000    AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
AB037008    AGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGGC
            ********* *************** * ******** ** *****  *
```

Figure 21 (Continued)

MA-1	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
MA-2	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92599	GCTAGGTGTGGGGGCCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
AF152109	GCTAGGTGTGGGGGCCTCTCCGGTTTCTGTGCCGCACTAACGCATTA
X92611	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
JSM1-3	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
JSM1-1	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92604	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92601	GCTAGGTGTGGGGGCCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
X92594	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92607	GCTAGGTGTGGGGGCCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
X92610	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92608	GCTAGGTGTGGGGGCCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
X92631	GCTAGGTGTGGGGGCCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
X92628	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92609	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
AB107231	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92598	GCTAGGTGTGGGGACCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
MC5-1	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
MC7-1	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
R1-1	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
TT1-11	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
X92613	GCTAGGTGTGGGGGCCTCTCCGGTTCCTGTGCCGCACTAACGCATTA
AB037012	GCTAGGTGTGGGGCCCTCTCCGGGTTTTGCGCCGCACTAACGCATTA
AB037011	GCTAGGTGTGGGGACCTCTCCGGTCTTTGCGCCGCACTAACGCATTA
D85474	GCTAGGTGTGGGGCCCTCTCCGGGTTTTGCGCCGCACTAACGCATTA
AB037000	GCTAGGTGTGGGGACCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
AB037008	GCTAGGTGTGGGGACCTCTCCGGTTCTTGTGCCGCACTAACGCATTA
	************* *** ***** ** *****************

Figure 21 (Continued)

```
MA-1         AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
MA-2         AGCGCCCCGCCTGGGG-GTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92599       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
AF152109     AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92611       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
JSM1-3       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
JSM1-1       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92604       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92601       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92594       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92607       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92610       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92608       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92631       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92628       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92609       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
AB107231     GGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92598       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
MC5-1        AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
MC7-1        AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
R1-1         AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
TT1-11       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
X92613       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
AB037012     AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
AB037011     AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
D85474       AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
AB037000     AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
AB037008     AGCGCCCCGCCTGGGGAGTACGGCCGCAAGGCTAAAACTCAAAGGAATTG
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Figure 21 (Continued)

MA-1	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
MA-2	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92599	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
AF152109	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92611	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
JSM1-3	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
JSM1-1	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92604	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92601	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92594	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92607	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92610	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92608	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92631	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92628	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92609	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
AB107231	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92598	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
MC5-1	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
MC7-1	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
R1-1	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
TT1-11	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
X92613	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
AB037012	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
AB037011	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
D85474	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
AB037000	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
AB037008	ACGGGGGCCCGCACAAGCGGCGGAGCATGCGGATTAATTCGATGCAACGC
	**

Figure 21 (Continued)

```
MA-1        GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTGG
MA-2        GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTGG
X92599      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTCCAGAGATGGGG
AF152109    GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTTGCAGAGATGTAA
X92611      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCACAGAGATGTGA
JSM1-3      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCA
JSM1-1      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCA
X92604      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCA
X92601      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCGGCAGAGATGTCG
X92594      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCA
X92607      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCGGCAGAGATGTCG
X92610      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCGGCAGAGATGTCG
X92608      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTAG
X92631      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTGTCAGAGATGGCA
X92628      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGA
X92609      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTGG
AB107231    GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACCTGCAGAGATGTGG
X92598      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCACAGAGATGTGA
MC5-1       GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGA
MC7-1       GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGA
R1-1        GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGA
TT1-11      GAAGAACCTTACCTGGGTTTGACATGGCCGCAAAACTCGCAGAGATGTGA
X92613      GAAGAACCTTACCTGGGTTTGACATCGCCGGAAATCCTCCAGAGATGGGG
AB037012    GAAGAACCTTACCTGGGTTTGACATCGCCGGAAAACTCGCAGAGATGCGG
AB037011    GAAGAACCTTACCTGGGTTTGACATCGCCGGAAATCTCGCAGAGATGCGG
D85474      GAAGAACCTTACCTGGGTTTGACATGCACGGAAATCCCACAGAGATGTGG
AB037000    GAAGAACCTTACCTGGGTTTGACATCGCCGGAAAACTCGCAGAGATGCGG
AB037008    GAAGAACCTTACCTGGGTTTGACATCGCCGGAAAACTCGTAGAGATACGG
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Figure 21 (Continued)

```
MA-1        GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
MA-2        GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92599      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
AF152109    GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92611      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
JSM1-3      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
JSM1-1      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92604      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92601      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92594      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92607      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92610      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92608      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92631      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92628      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92609      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
AB107231    GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92598      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
MC5-1       GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
MC7-1       GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
R1-1        GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
TT1-11      GGTCTTCGGGGGCGGTCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
X92613      GGTCTTCGGGGCCGGTGACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
AB037012    GGTCTTCGGGGCCGGTGACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
AB037011    GGTCTTCGGGGCCGGTGACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
D85474      GGTCTTCGGGGTGGTGCACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
AB037000    GGTCTTCGGGGCCGGTGACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
AB037008    GGTCTTCGGGGCCGGTGACAGGTGGTGCATGGCTGTCGTCAGCTCGTG
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Figure 21 (Continued)

```
MA-1          TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
MA-2          TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92599        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
AF152109      TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92611        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
JSM1-3        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
JSM1-1        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92604        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92601        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92594        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92607        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92610        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92608        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92631        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92628        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92609        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
AB107231      TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92598        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
MC5-1         TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
MC7-1         TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
R1-1          TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
TT1-11        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
X92613        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
AB037012      TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
AB037011      TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
D85474        TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
AB037000      TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
AB037008      TCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTTCGATG
              *** ** *******************************************
```

Figure 21 (Continued)

```
MA-1        TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
MA-2        TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92599      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
AF152109    TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92611      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
JSM1-3      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
JSM1-1      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92604      TTGCCAGCGGGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92601      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92594      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92607      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92610      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92608      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92631      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92628      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92609      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
AB107231    TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92598      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
MC5-1       TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
MC7-1       TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
R1-1        TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
TT1-11      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
X92613      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
AB037012    TTGCCAGCGCGTCATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
AB037011    TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
D85474      TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
AB037000    TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
AB037008    TTGCCAGCGCGTTATGGCGGGGACTCATCGAAGACTGCCGGGGTCAACTC
            ********* ** *************************************
```

Figure 21 (Continued)

```
MA-1        GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
MA-2        GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92599      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
AF152109    GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92611      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
JSM1-3      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
JSM1-1      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92604      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92601      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92594      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92607      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92610      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92608      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92631      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92628      GGAGGAAGGTGGGGATGAGGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92609      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
AB107231    GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92598      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
MC5-1       GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
MC7-1       GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
R1-1        GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
TT1-11      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
X92613      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
AB037012    GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
AB037011    GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
D85474      GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
AB037000    GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
AB037008    GGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCCTTATGTCCAGGGC
            ****************** *******************************
```

Figure 21 (Continued)

```
MA-1        TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
MA-2        TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92599      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
AF152109    TTCACGCATGCTACAATGGCCGGTACAATGGGTTGCGATACCGTGAGGTG
X92611      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
JSM1-3      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
JSM1-1      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92604      TTCACGCATGCTACAATGGTCGGTACAATGGGCTGCGATACCGTGAGGTG
X92601      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92594      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCCTCACCTC
X92607      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92610      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92608      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTAAGGTG
X92631      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92628      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92609      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
AB107231    TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92598      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
MC5-1       TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
MC7-1       TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
R1-1        TTCACCCATCCTACAATCCCCCCTACAATGGGCTGCGATACCGTGAGGTG
TT1-11      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
X92613      TTCACGCATGCTACAATGGCCGGTACAATGGGCTGCGATACCGTGAGGTG
AB037012    TTCACGCATGCTACAATGGCCGGTACAAAGGGCTGCGAGACCGTGAGGTT
AB037011    TTCACGCATGCTACAATGGCCGGTACAAAGGGCTGCGATACCGTGAGGTG
D85474      TTCACGCATGCTACAATGGCCGGTACAAAGGGCTGCGAGACCGTGAGGTT
AB037000    TTCACCCATGCTACAATGCCCCGTACAAAGGGTTGCGATACCGTAAGGTG
AB037008    TTCACGCATGCTACAATGGCCGGTACAAAGGGTTGCGATGCCGTGAGGTG
            ******************* ******** *** *****   ***  ****
```

Figure 21 (Continued)

```
MA-1          GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
MA-2          GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92599        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
AF152109      GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92611        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
JSM1-3        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
JSM1-1        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92604        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92601        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92594        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92607        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92610        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92608        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92631        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92628        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92609        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
AB107231      GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92598        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
MC5-1         GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
MC7-1         GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
R1-1          GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
TT1-11        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
X92613        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
AB037012      GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
AB037011      GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
D85474        GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
AB037000      GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
AB037008      GAGCGAATCCCAAAAAGCCGGTCTCAGTTCGGATCGGGGTCTGCAACTCG
              **************************************************
```

Figure 21 (Continued)

MA-1	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
MA-2	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92599	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
AF152109	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92611	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
JSM1-3	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
JSM1-1	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92604	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92601	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92594	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92607	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92610	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92608	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92631	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92628	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92609	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
AB107231	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92598	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
MC5-1	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
MC7-1	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
R1-1	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
TT1-11	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
X92613	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
AB037012	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
AB037011	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
D85474	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
AB037000	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
AB037008	ACCCCGTGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCAACGCTGCGGT
	**

Figure 21 (Continued)

```
MA-1        GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
MA-2        GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92599      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
AF152109    GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92611      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
JSM1-3      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
JSM1-1      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92604      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
X92601      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
X92594      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
X92607      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92610      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
X92608      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
X92631      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92628      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92609      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
AB107231    GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92598      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
MC5-1       GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
MC7-1       GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
R1-1        GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
TT1-11      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
X92613      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCAGGTCACGAAAGTCG
AB037012    GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
AB037011    GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
D85474      GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
AB037000    GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
AB037008    GAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCG
            ************************************ *************
```

Figure 21 (Continued)

```
MA-1        GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
MA-2        GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCCA
X92599      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
AF152109    GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92611      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
JSM1-3      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCAA
JSM1-1      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92604      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92601      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92594      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92607      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92610      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92608      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92631      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92628      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92609      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCTGTCGA
AB107231    GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92598      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
MC5-1       GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
MC7-1       GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
R1-1        GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
TT1-11      GCAACACCCGAAGCCGGTGGCCCAACCCTGGGAGGAGCCGTCGA
X92613      GCAACACCCGAAGCCGGTGGCCCAACCCGAGGAGGAGCCGTCGA
AB037012    GCAACACCCGAAGCCGGTGGCCTAACCCGAGGAGGAGCCGTCGA
AB037011    GCAACACCCGAAGCCGGTGGCCTAACCCCTGGAGGAGCCGTCGA
D85474      GCAACACCCGAAGCCGGTGGCCTAACCCCTGGAGGAGCCGTCGA
AB037000    GCAACACCCGAAGCCCATGGCCTAACCCGTGGAGGAGTGGTCGA
AB037008    GCAACACCCGAAGCCCATGGCCTAACCCGTGGAGGAGTGGTCNA
            ***************   ***** * ***   *******   *** *
```

Figure 21 (Continued)

```
MA-1          TGGGGCTGGCGATTGGGACG
MA-2          TGGGGCTGGCGATTGGGACA
X92599        TGGGGCTGGCGATTGGGACG
AF152109      TGGGGCTGGCGATTGGGACG
X92611        TGGGGCTGGCGATTGGGACG
JSM1-3        TGGGGCTGGCGATTGGGACG
JSM1-1        TGGGGCTGGCGATTGGGACG
X92604        TGGGGCTGGCGATTGGGACG
X92601        TGGGGCTGGCGATTGGAACG
X92594        TGGGGCTGGCGATTGGGACG
X92607        TGGTGCTGGCGATTGGGACG
X92610        TGGGGCTGGCGATTGGGACG
X92608        TGGGGCTGGCGATTGGGACG
X92631        TGGGGCTGGCGATTGGGACG
X92628        TGGGGCTGGCGATTGGGACG
X92609        TGGGGCTGGCGATTGGGACG
AB107231      TGGGGCTGGCGATTGGGACG
X92598        TGGGGCTGGCGATTGGNACG
MC5-1         TGGGGCTGGCGATTGGGACG
MC7-1         TGGGGCTGGCGATTGGGACG
R1-1          TGGGGCTGGCGATTGGGACG
TT1-11        TGGGGCTGGCGATTGGGACG
X92613        TGGGGCTGGCGATTGGGACG
AB037012      TGGGGCTGGCGATTGGGACG
AB037011      TGGGGCTGGCGATTGGGACG
D85474        TGGGGCTGGCGATTGGGACG
AB037000      TGGGGCTGGCGATTGGGACG
AB037008      TGGGGCTNGCGATTGGGACG
              *** *** ******** **
```

Figure 21 (Continued)

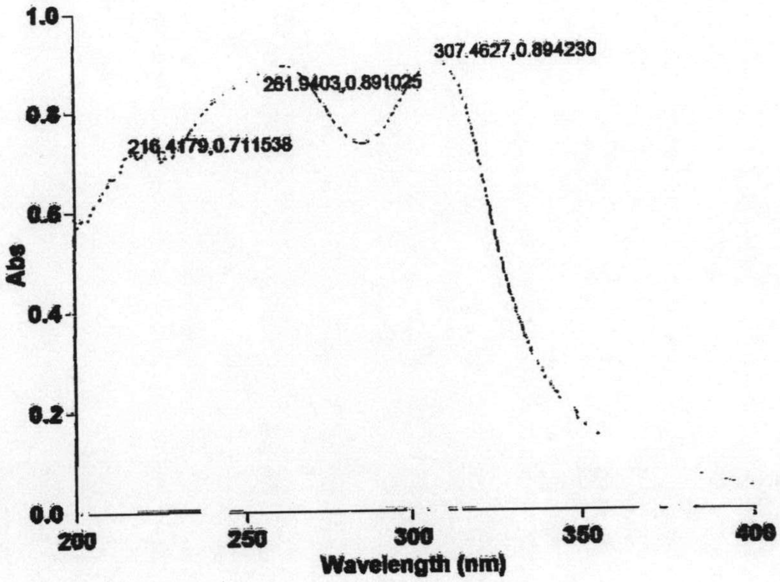

Figure22 UV spectrum of PNK01

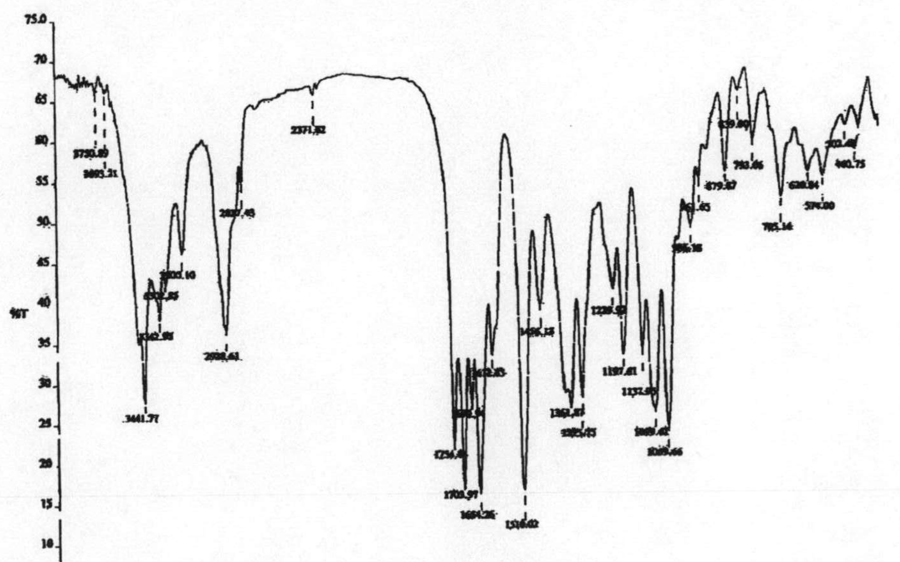

Figure 23 IR spectrum of PNK01

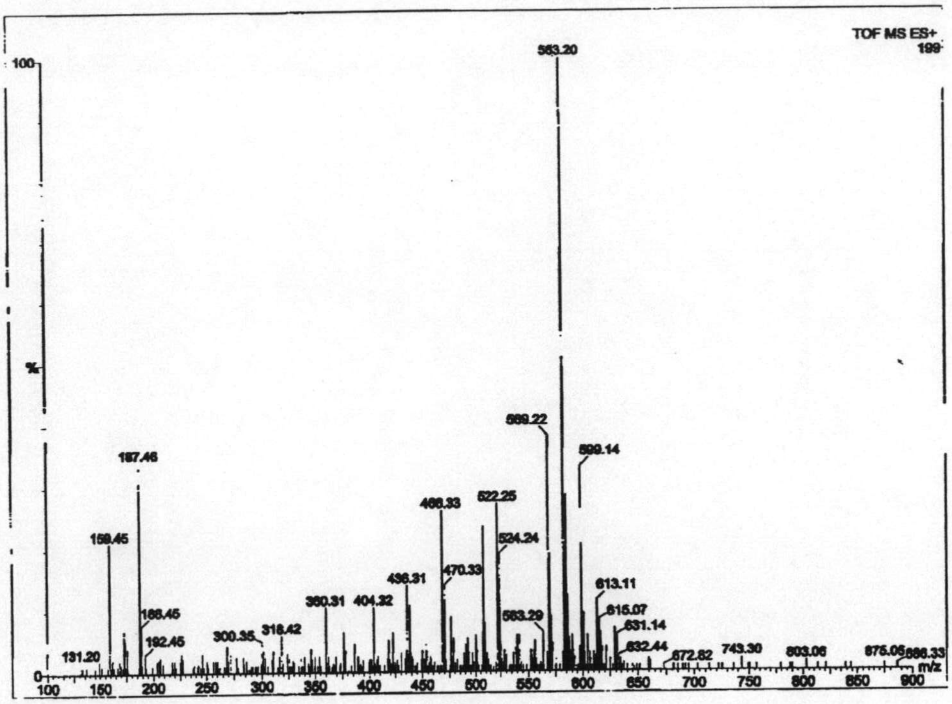

Figure24 Mass spectrum of PNK01

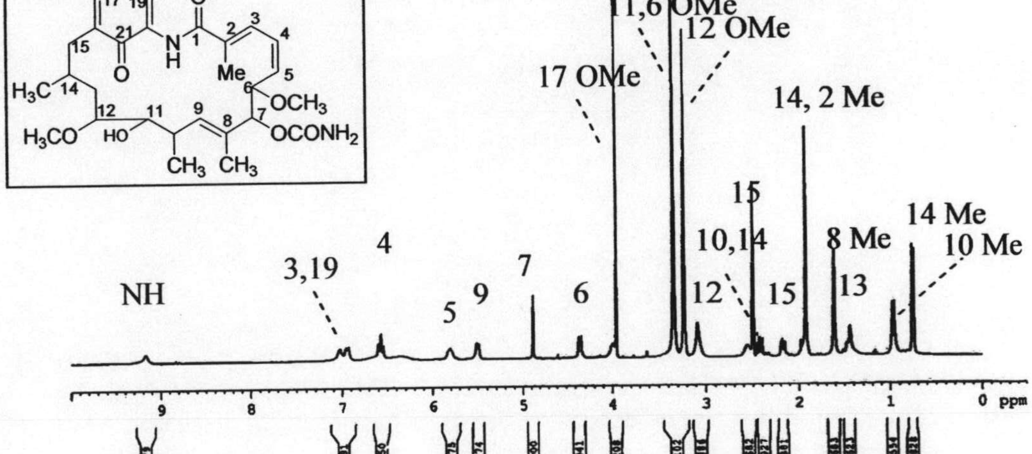

Figure 25 500 MHz [1]H NMR (DMSO-d_6) spectrum of PNK01

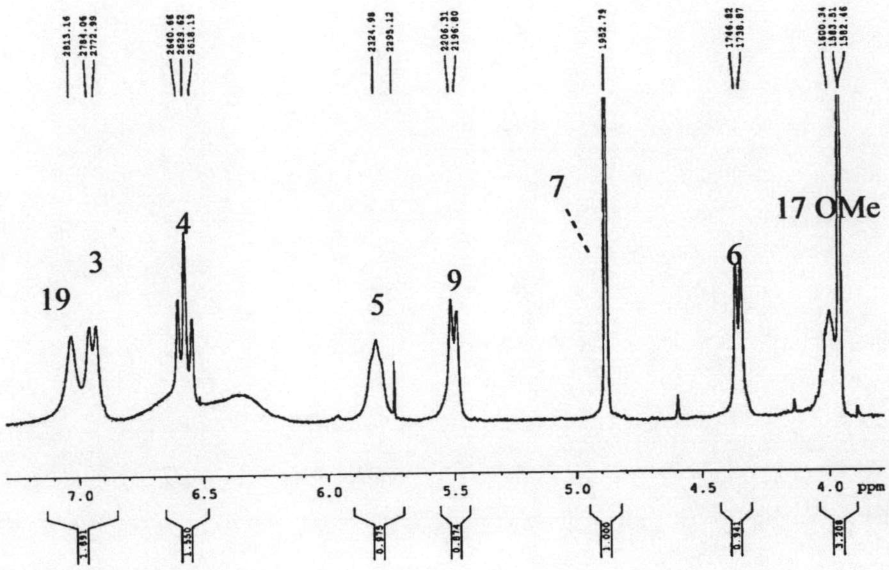

Figure 26 Expansion of Fig. 25

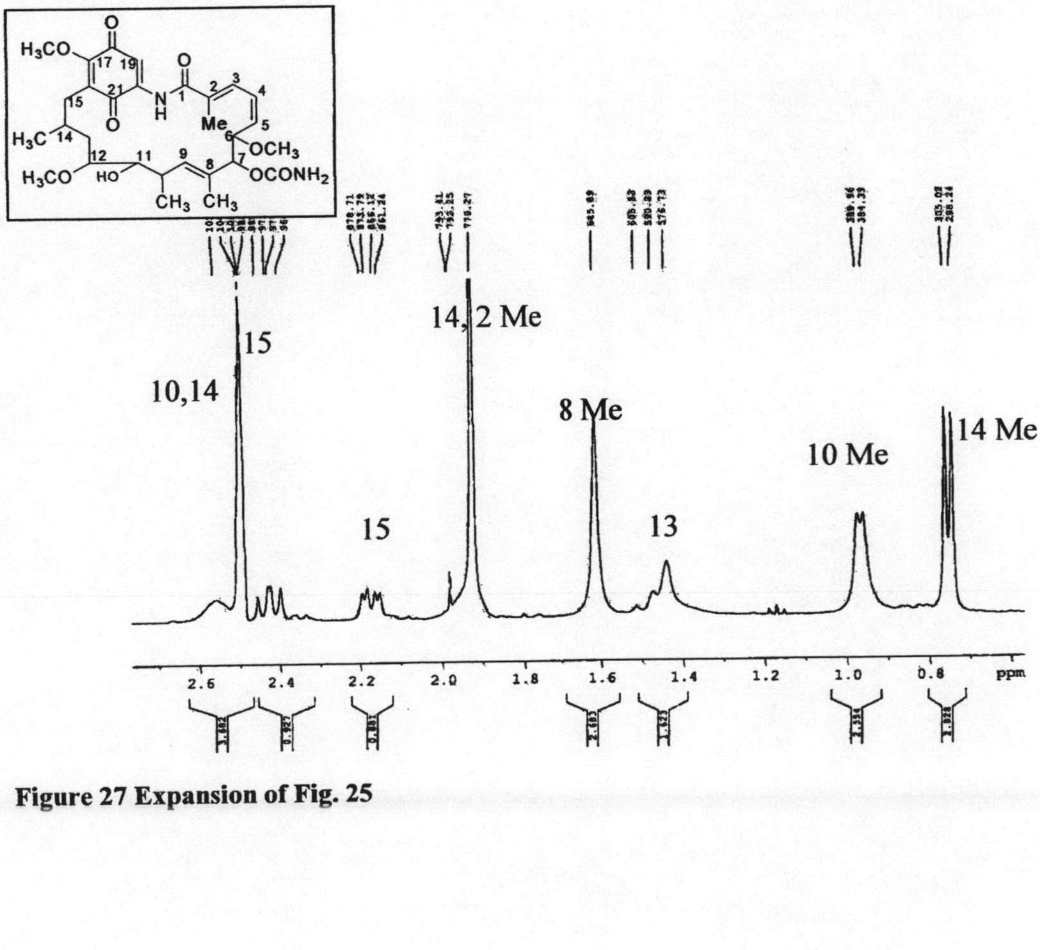

Figure 27 Expansion of Fig. 25

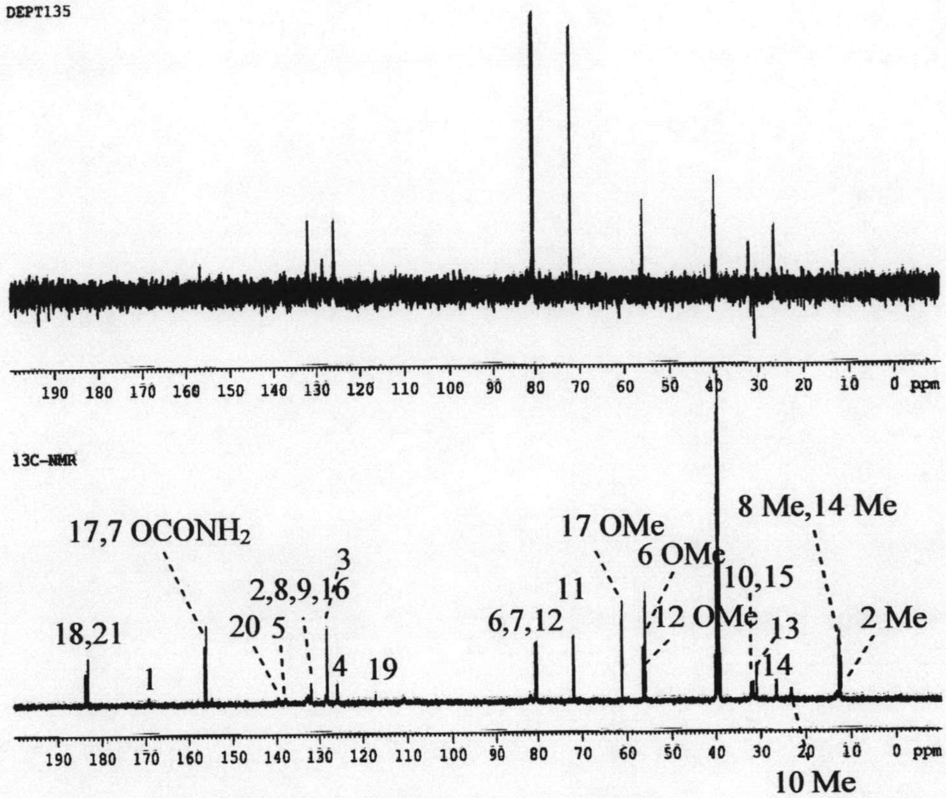

Figure 28 ^{13}**C NMR (DMSO-**d_6**) and DEPT spectra of PNK01**

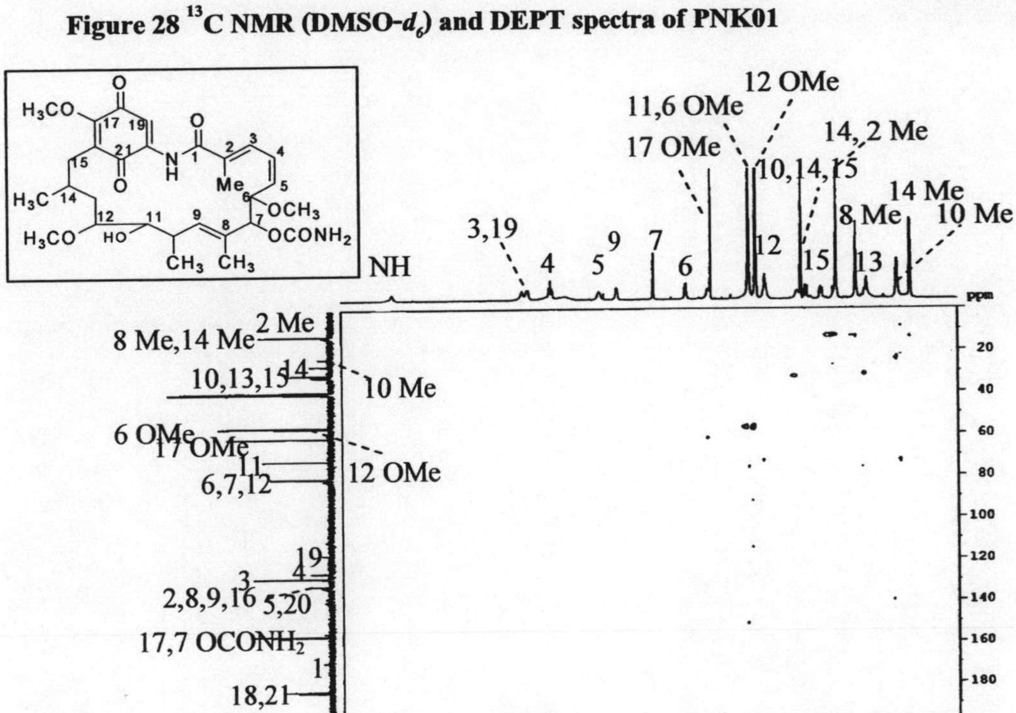

Figure 29 HMQC spectrum of PNK01

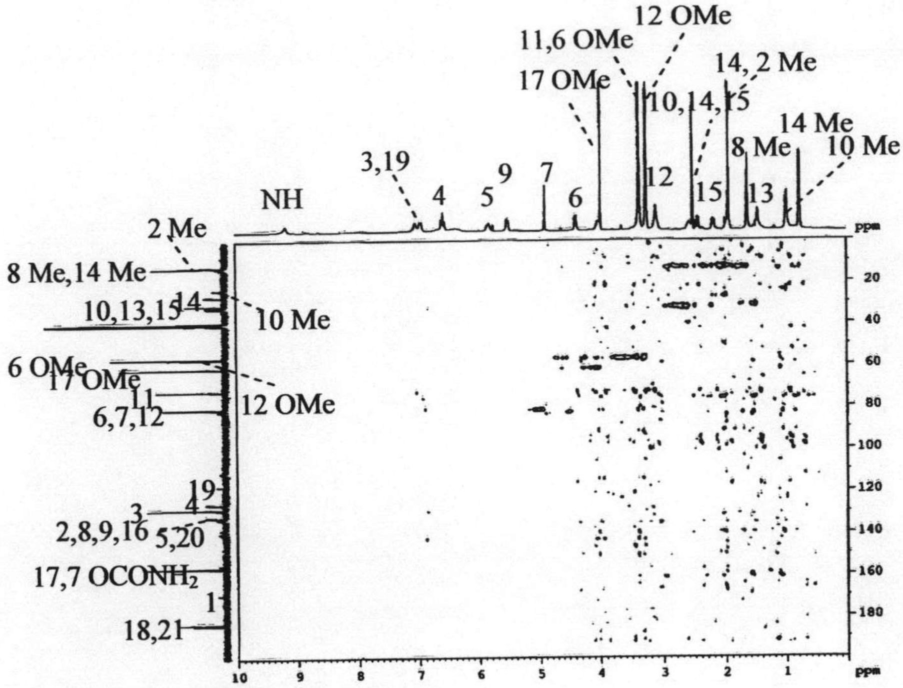

Figure 30 HMQC spectrum of PNK01

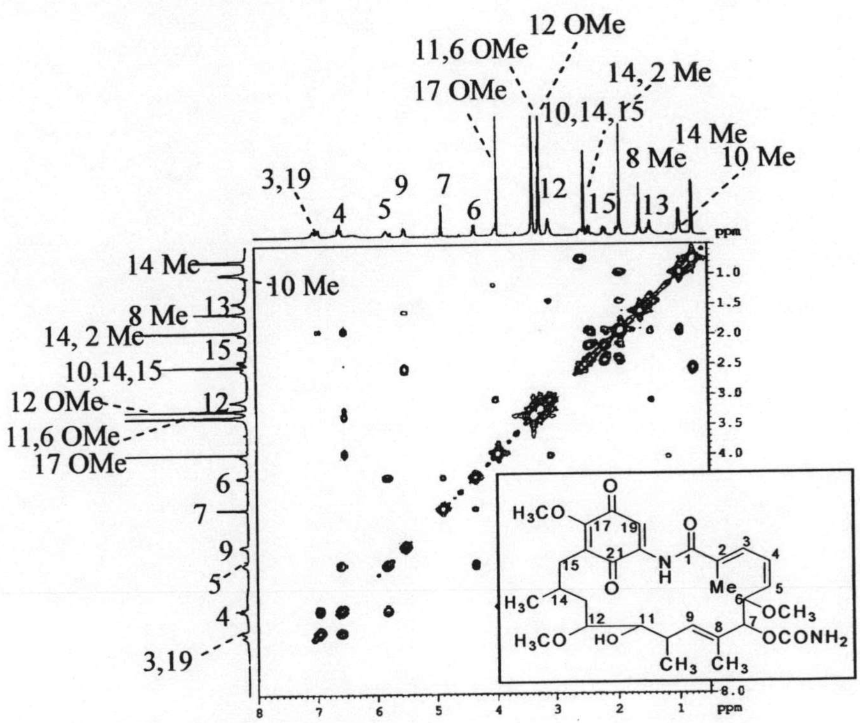

Figure 31 ^{1}H-^{1}H COSY spectrum of PNK01

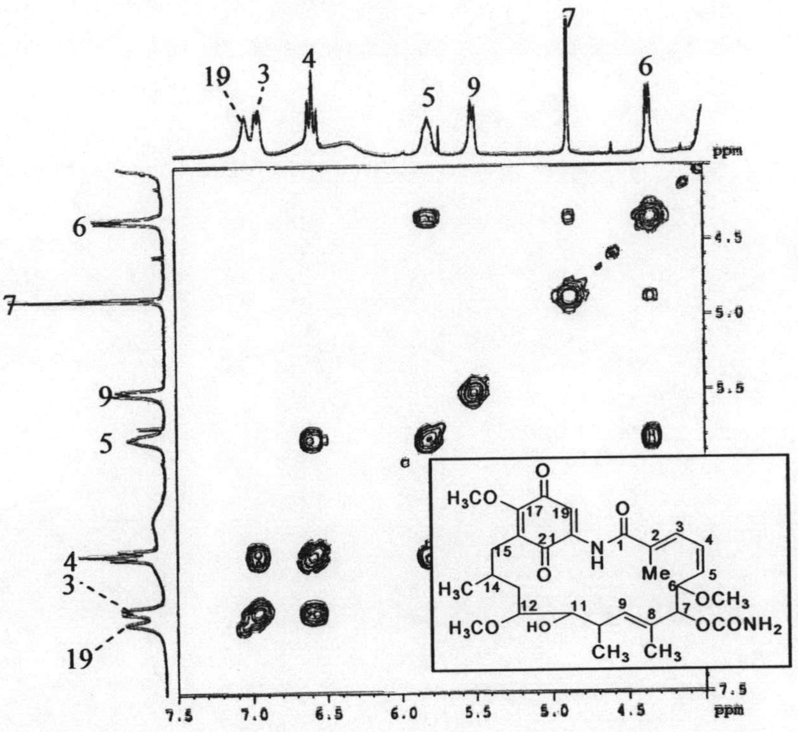

Figure 32 Expansion of PNK01

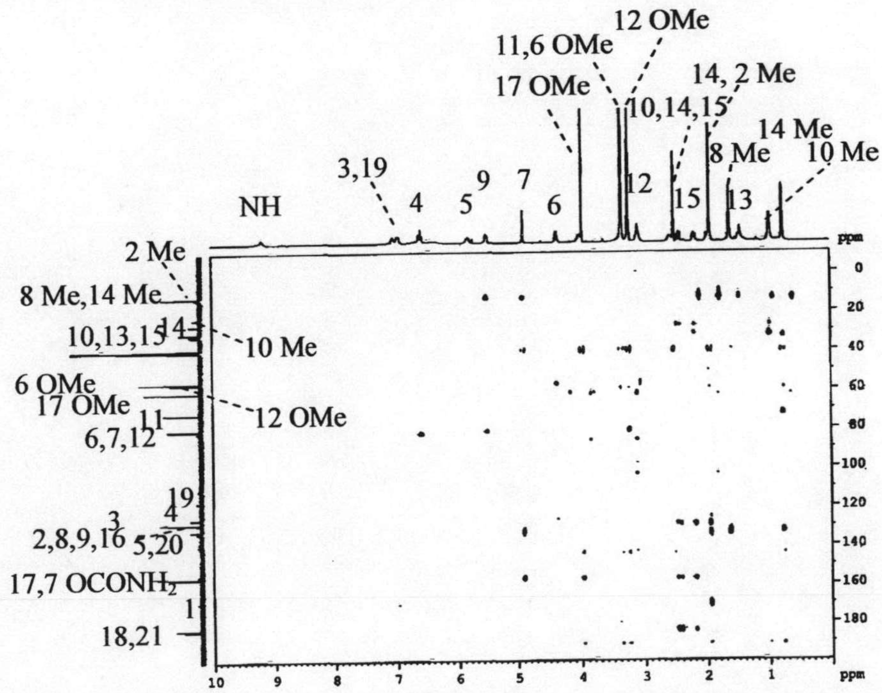

Figure33 Long range ^1H-^{13}C correlations (HMBC) spectrum of PNK01

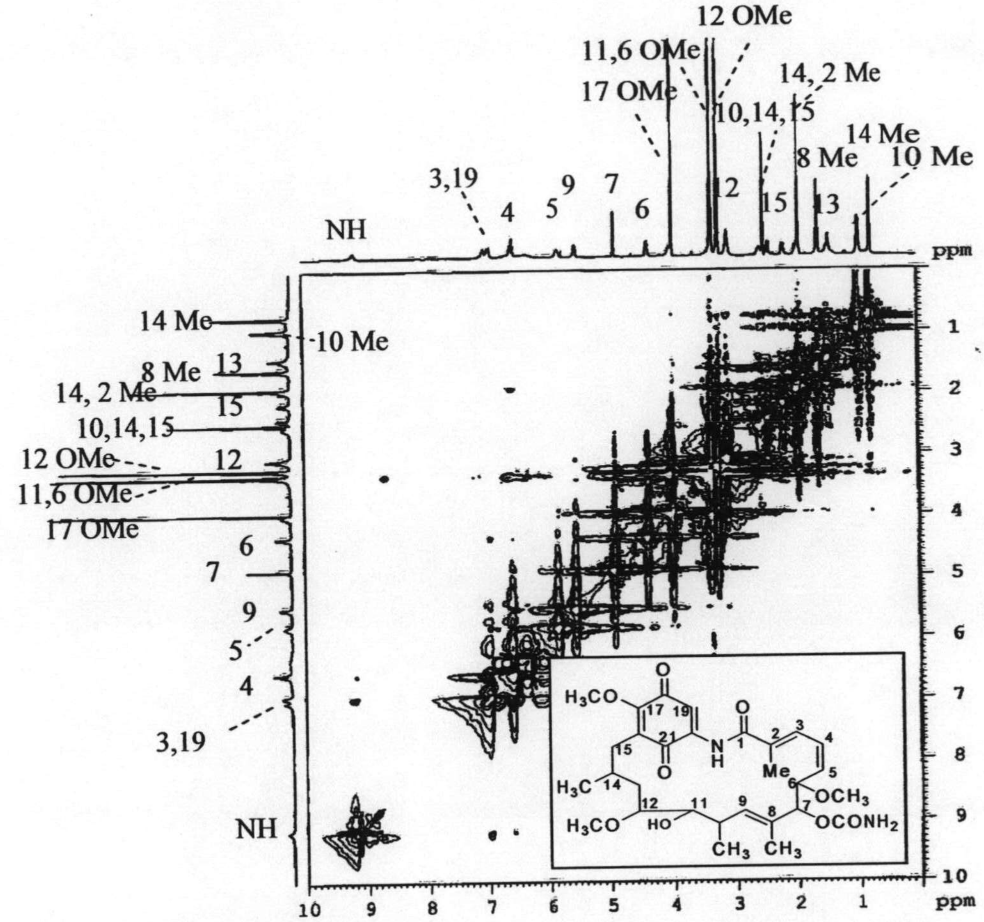

Figure34 NOESY spectrum of PNK01

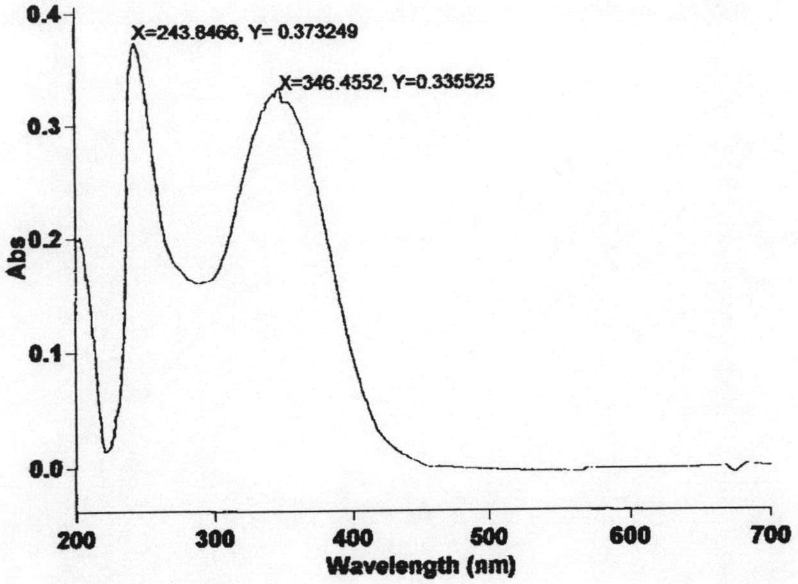

Figure 35 UV spectrum of Ang01

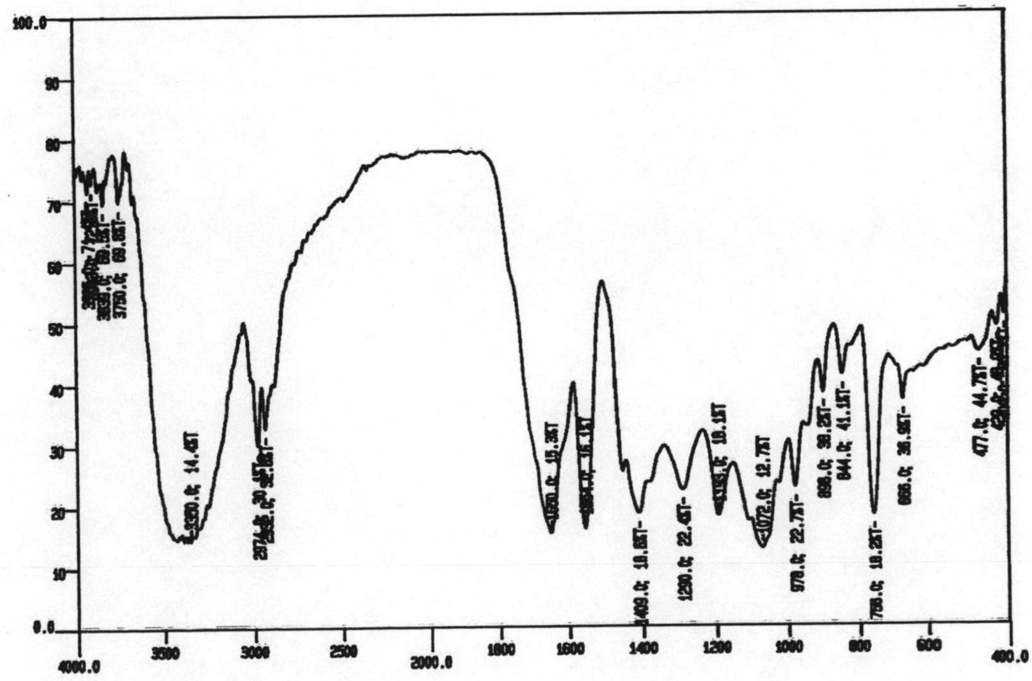

Figure 36 IR spectrum of Ang01

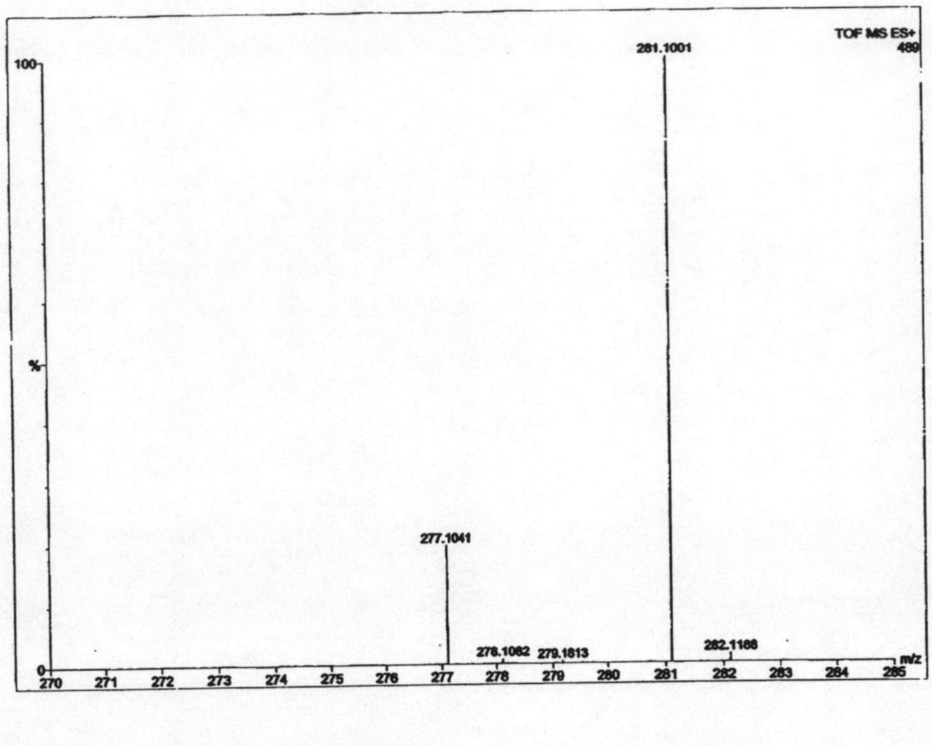

Figure 37 Masss pectrum of Ang01

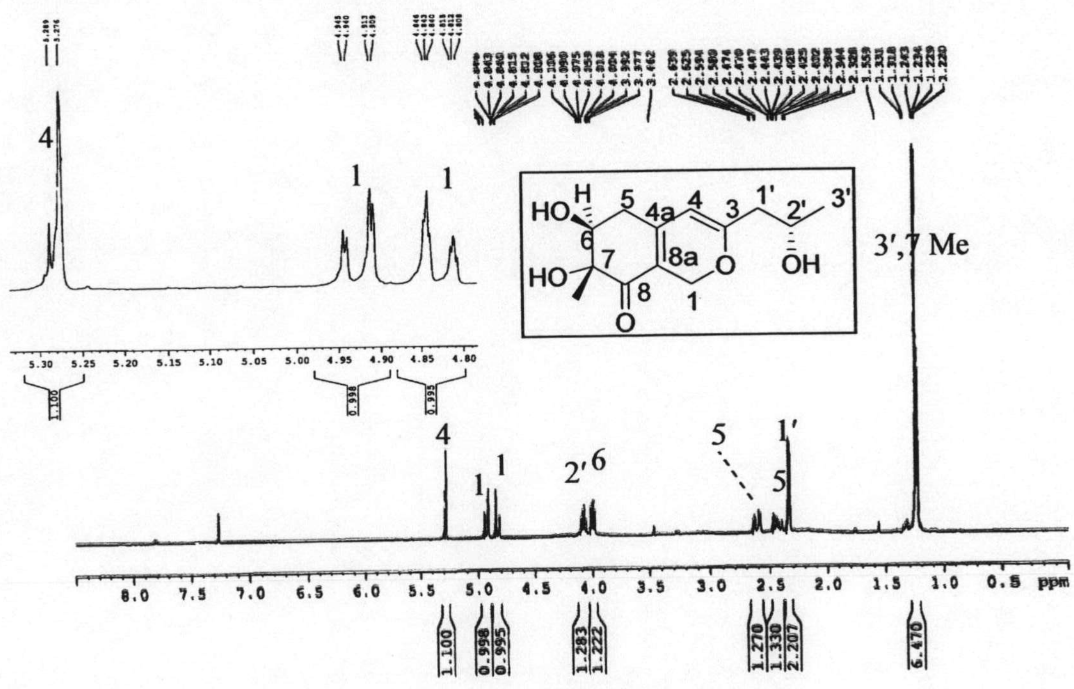

Figure 38 500 MHz ^{1}H NMR ($CDCl_3$) spectrum of Ang01

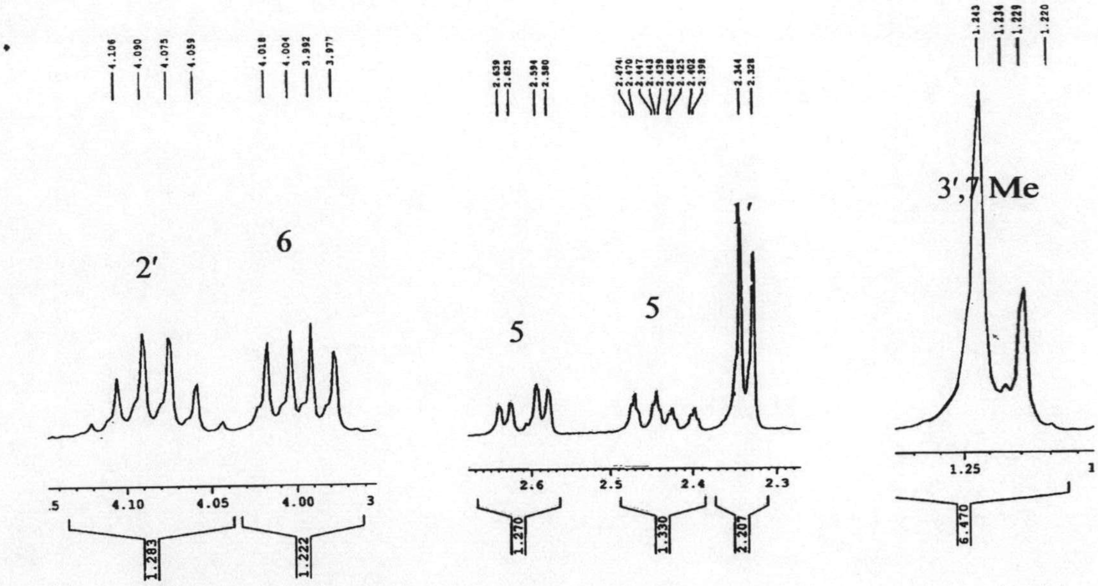

Figure39 Expansion of Fig. 38

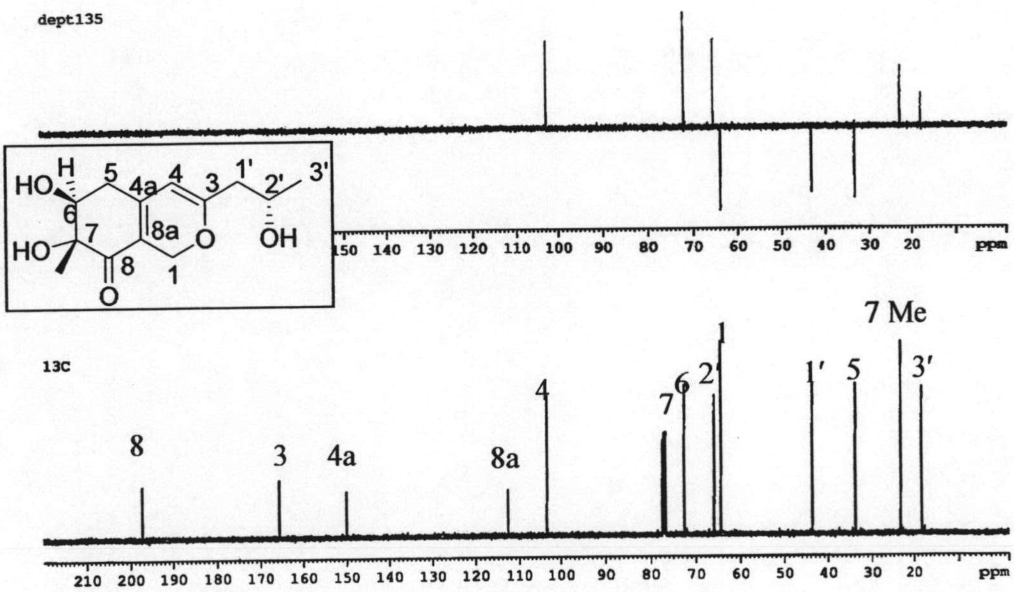

Figure 40 ^{13}C NMR ($CDCl_3$) and DEPT spectra of Ang01

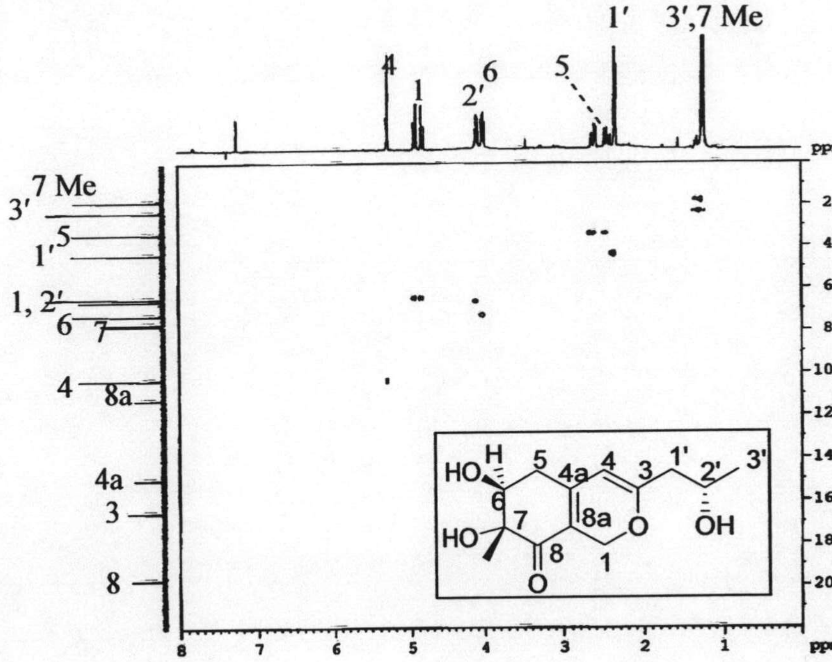

Figure41 HMQC spectrum of Ang01

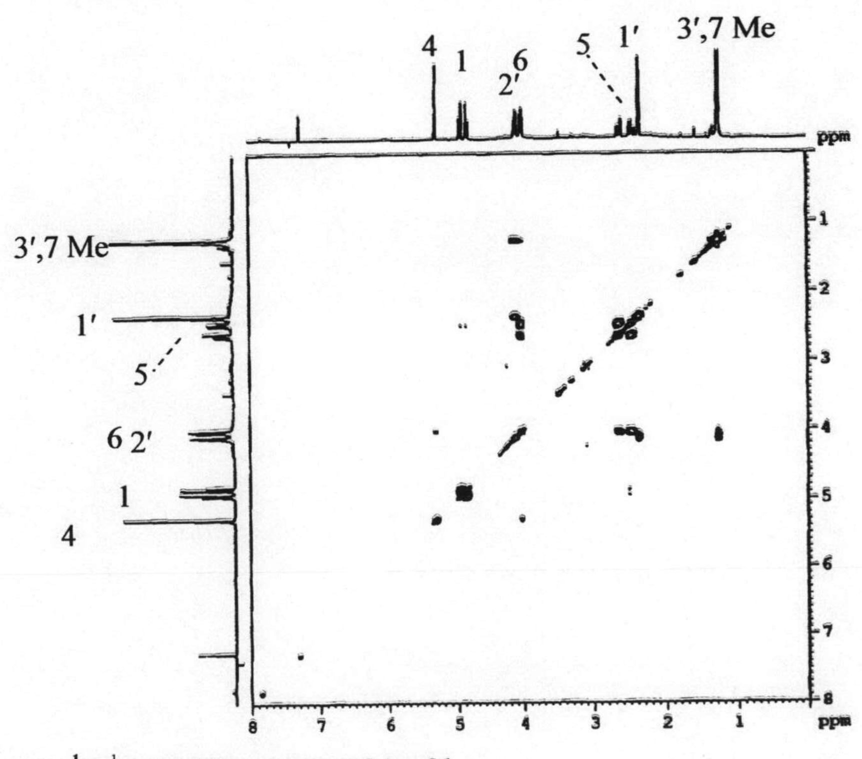

Figure 42 ^{1}H-^{1}H COSY spectrum of Ang01

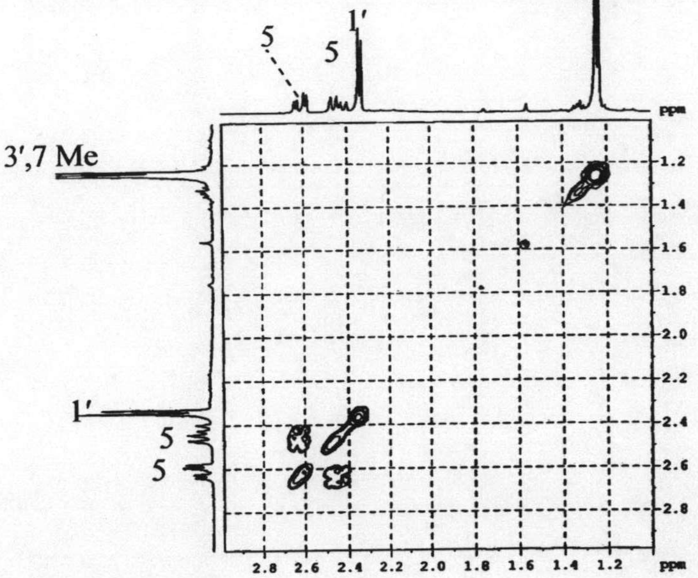

Figure43 Expansion of Fig. 42

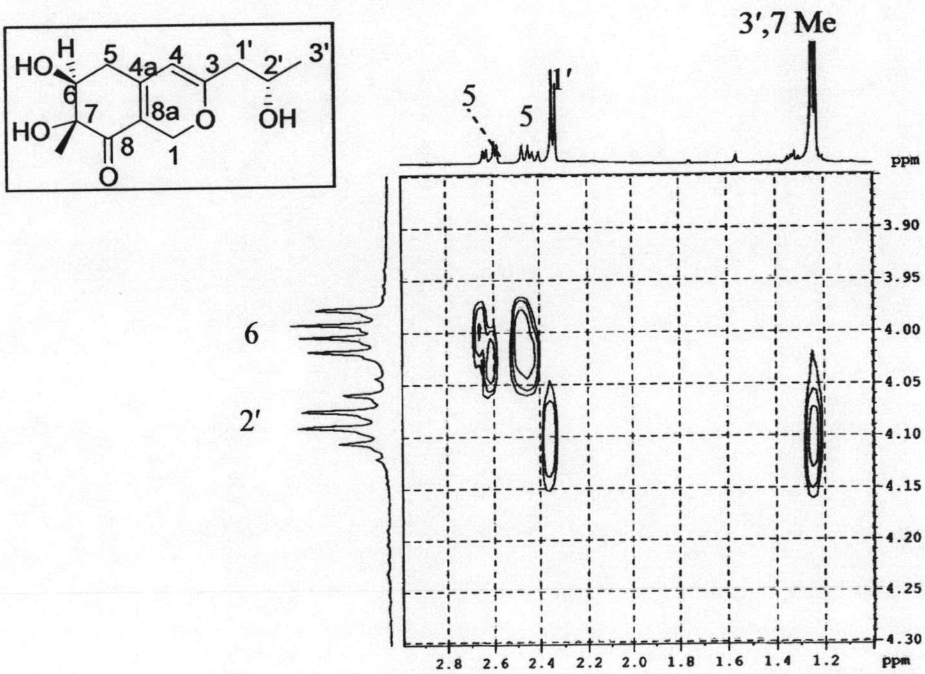

Figure 44 Expansion of Fig. 42

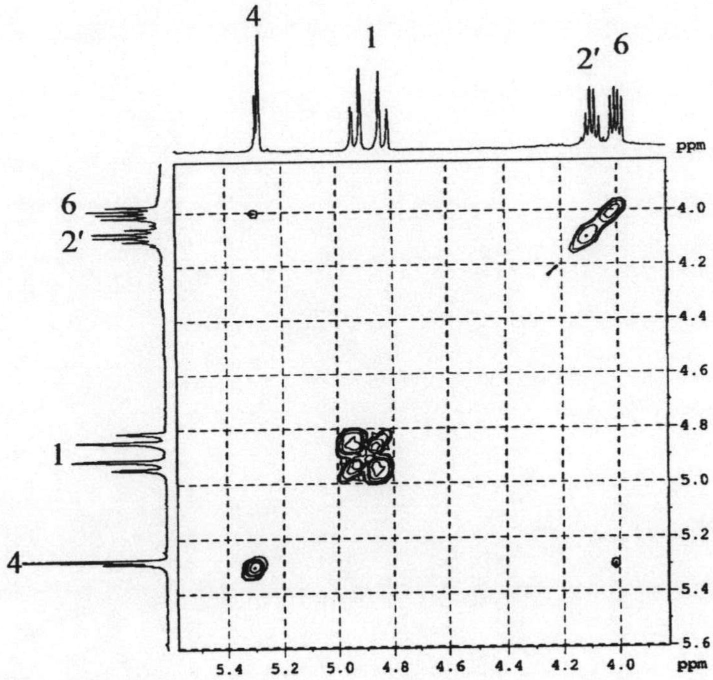

Figure 45 Expansion of Fig. 42

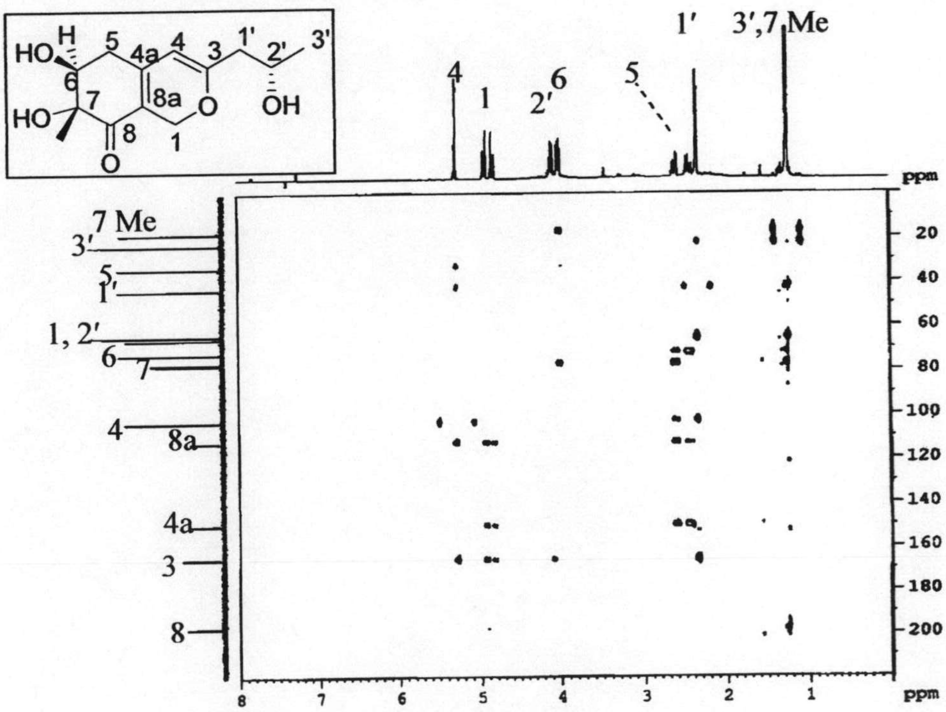

Figure46 Long range ^{1}H-^{13}C correlations (HMBC) spectrum of Ang01

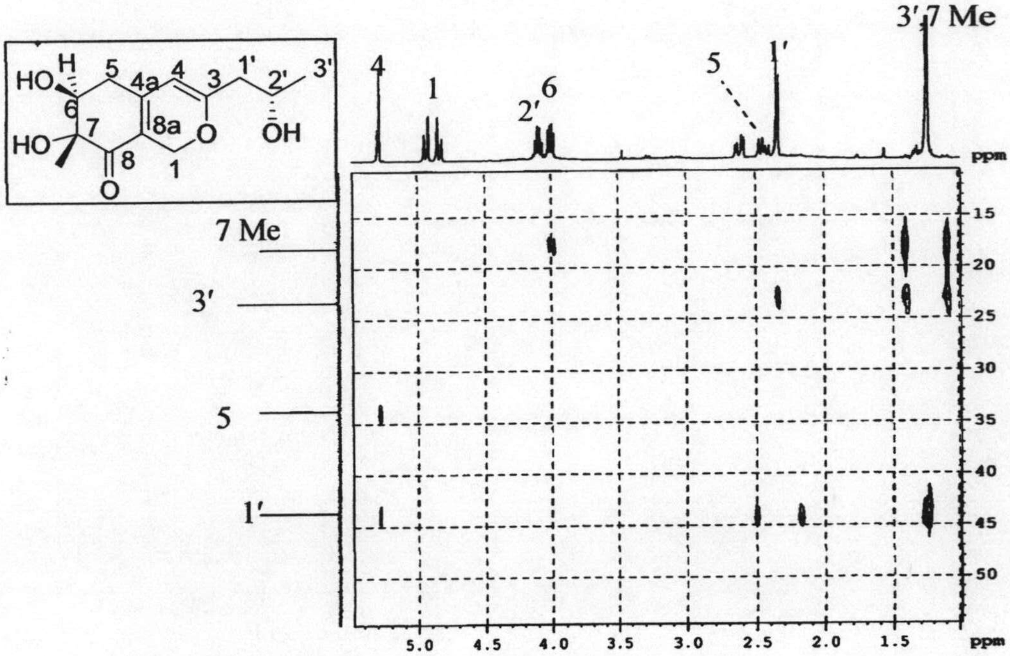

Figure49 Expansion of Fig. 46

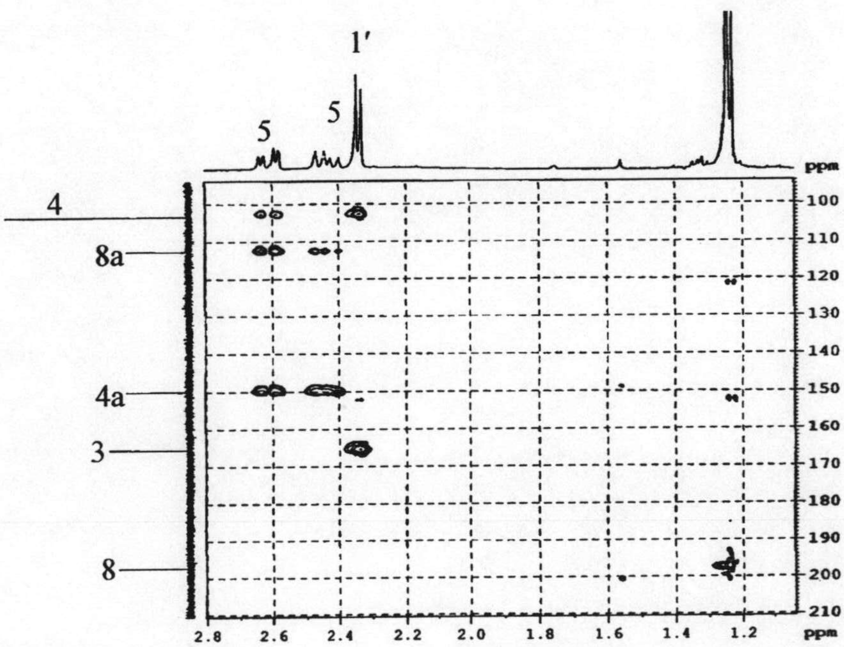

Figure50 Expansion of Fig. 46

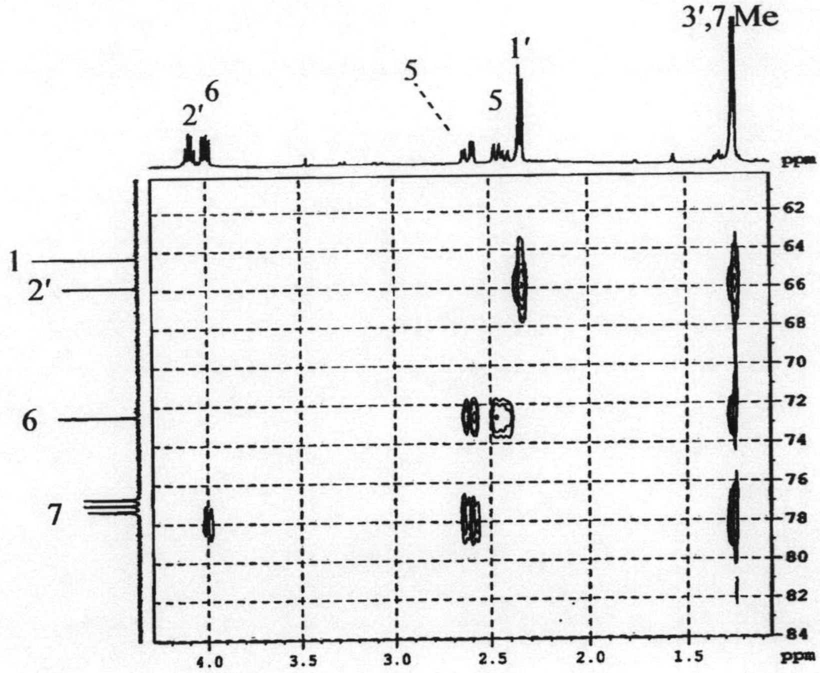

Figure 51 Expansion of Fig. 46

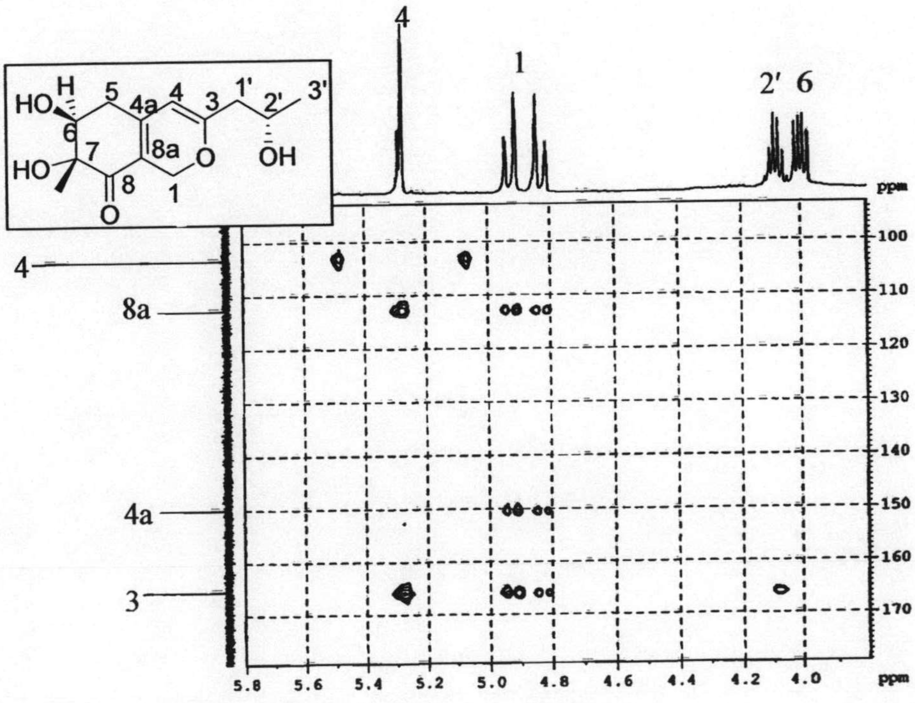

Figure 52 Expansion of Fig. 46

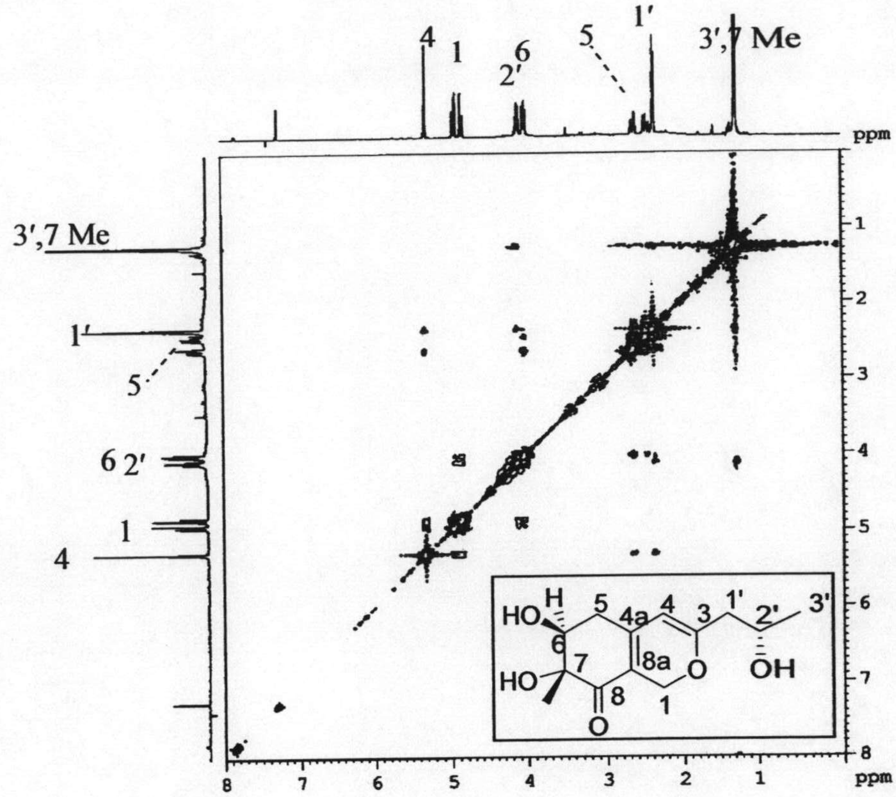

Figure 53 NOESY spectrum of Ang01

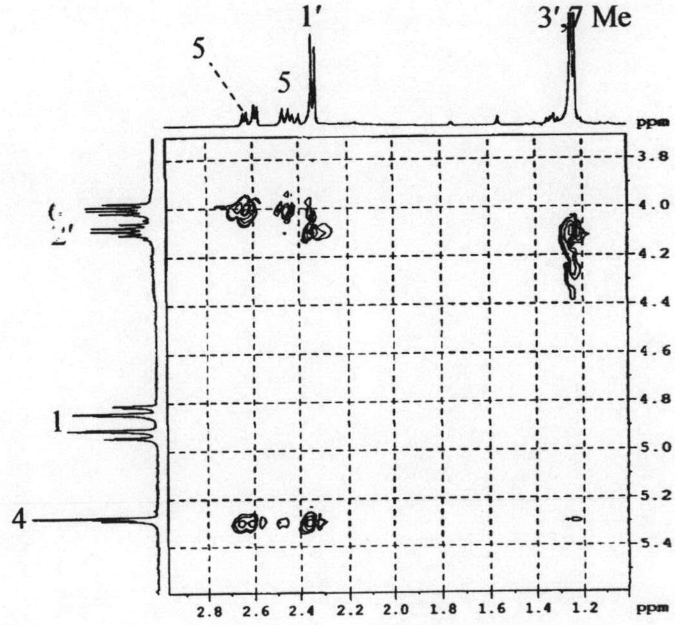

Figure54 Expansion of Fig.53

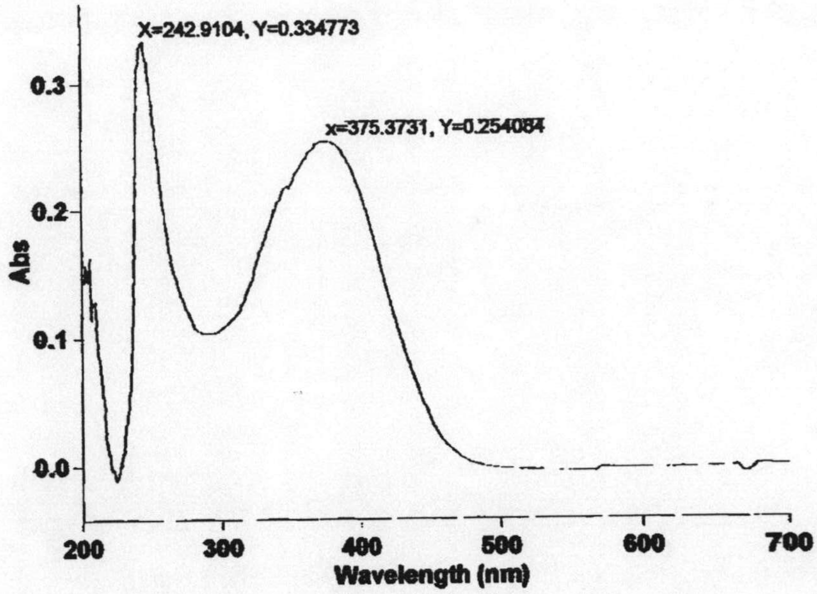

Figure 55 UV spectrum of Ang 02

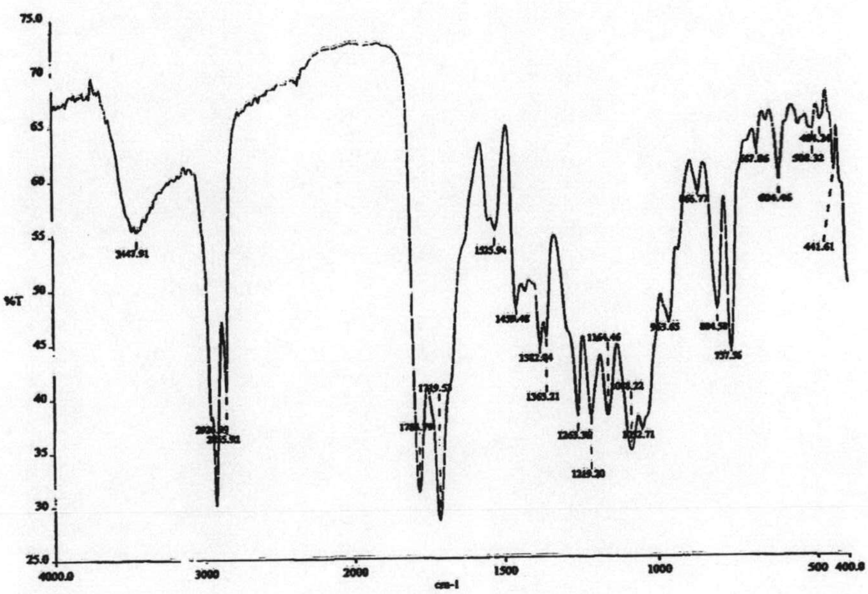

Figure 56 IR spectrum of Ang 02

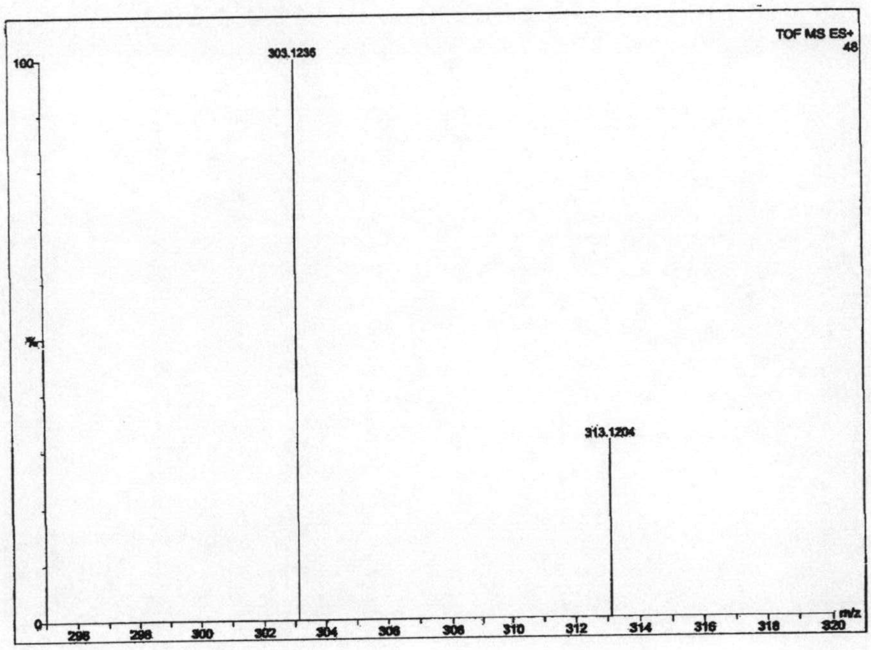

Figure 57 Mass spectrum of Ang02

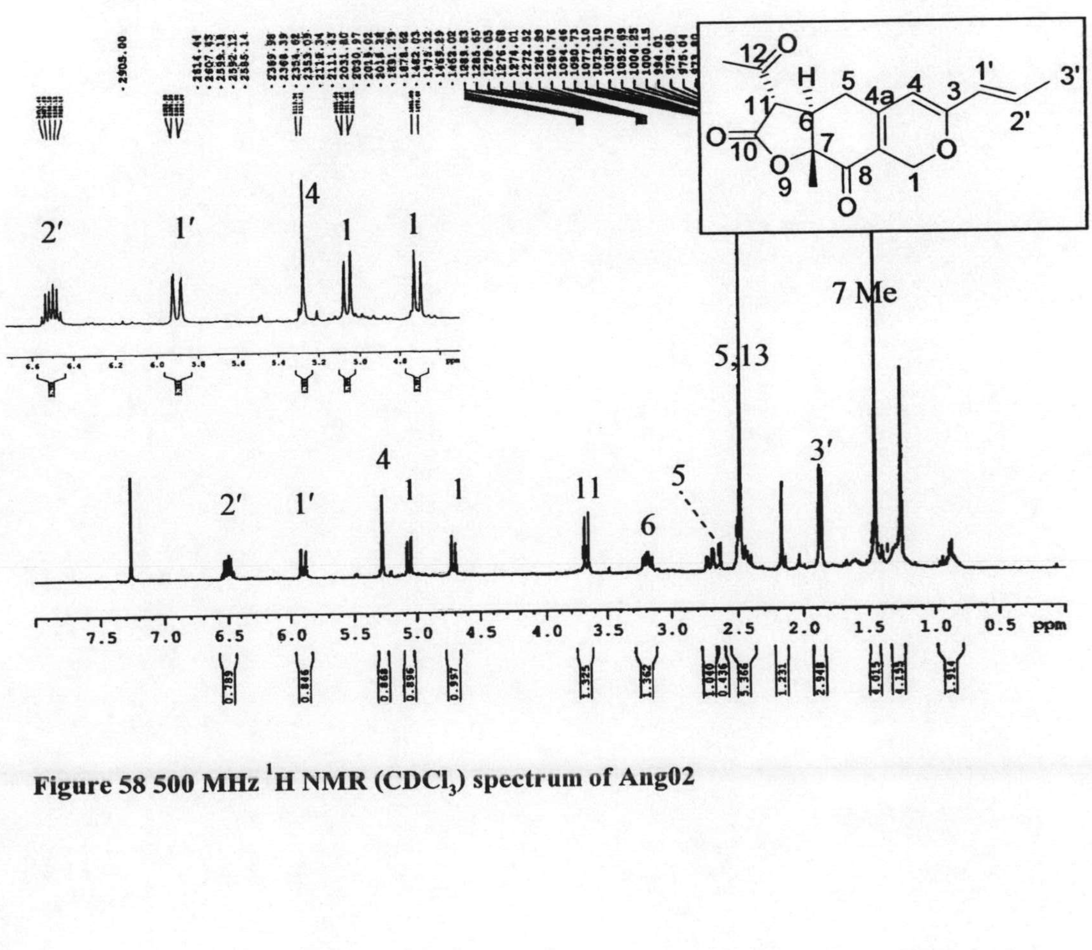

Figure 58 500 MHz ^{1}H NMR ($CDCl_3$) spectrum of Ang02

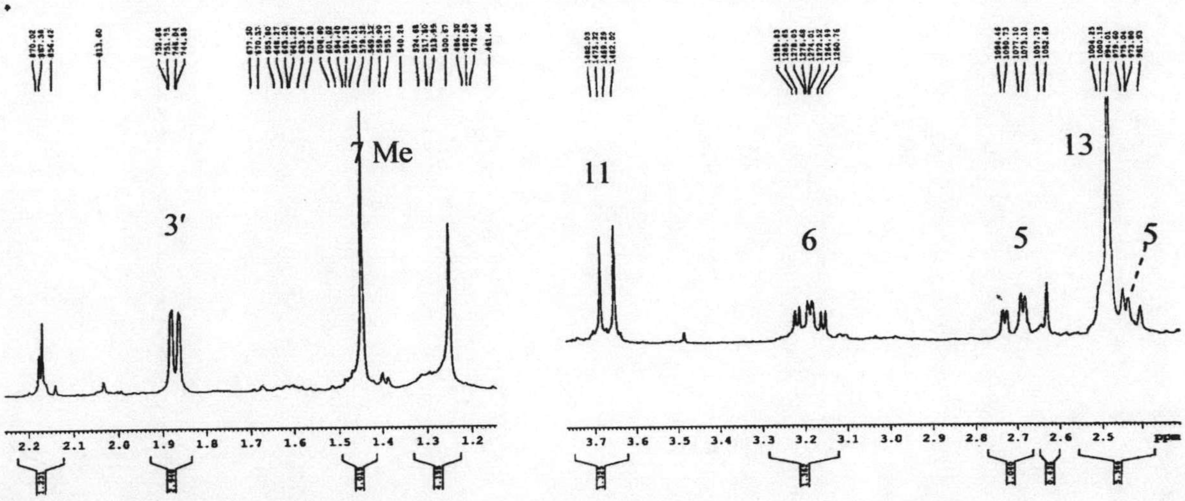

Figure 59 Expansion of Fig 58

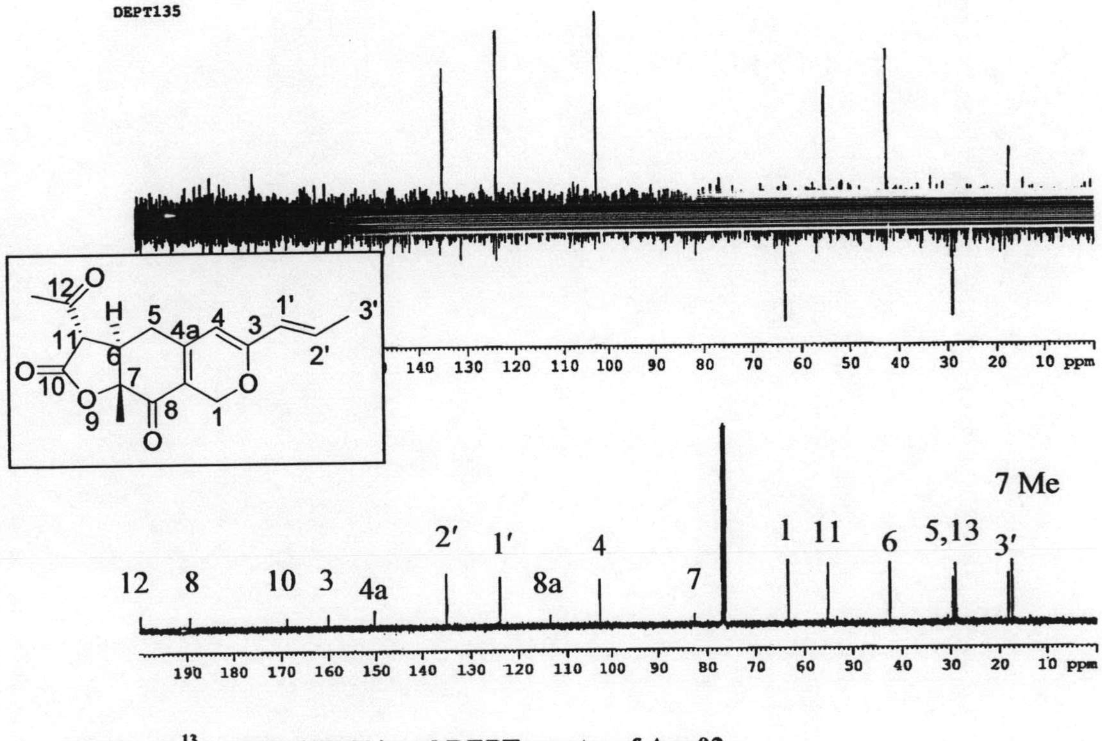

Figure 60 ^{13}C NMR ($CDCl_3$) and DEPT spectra of Ang02

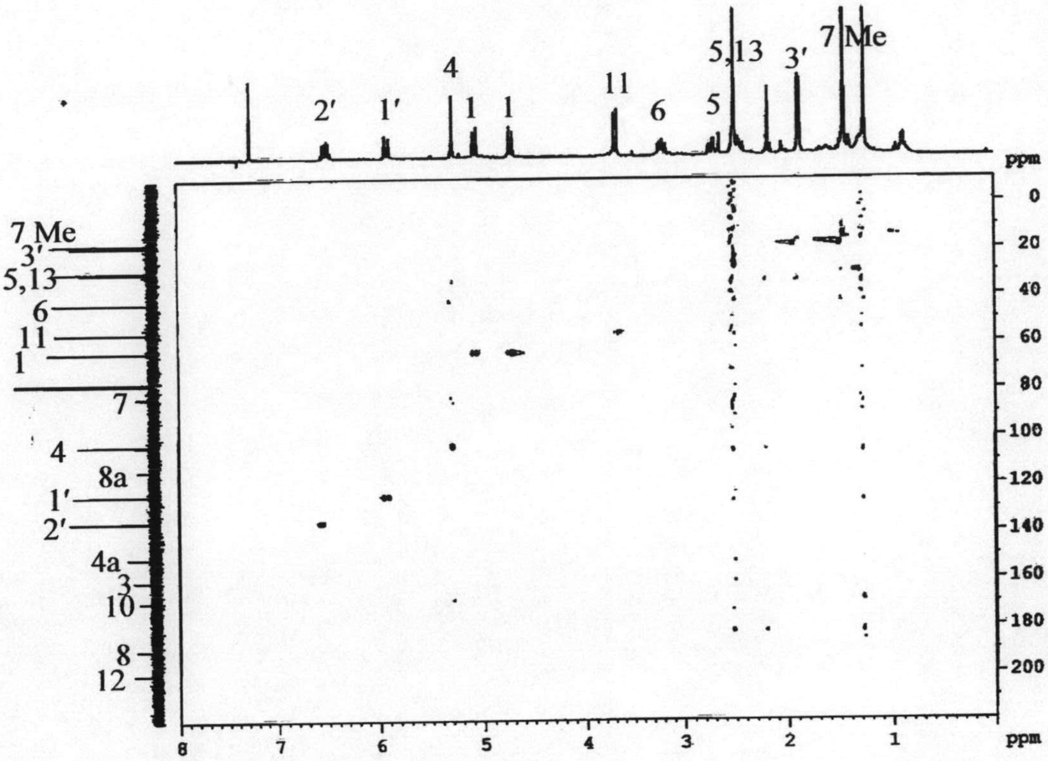

Figure 61 HMQC spectrum of Ang02

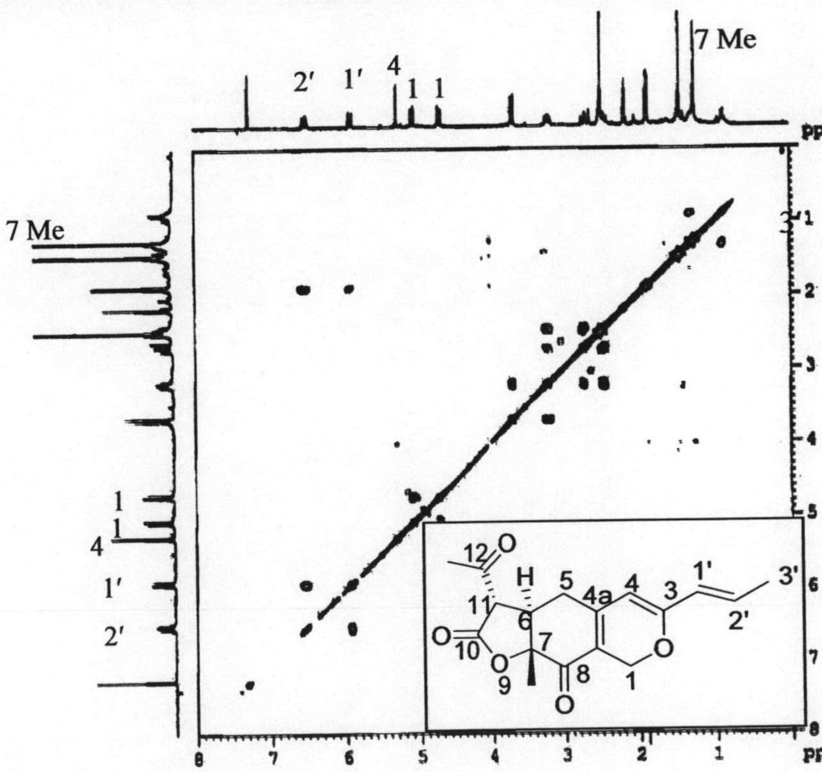

Figure 62 ^{1}H-^{1}H COSY spectrum of Ang02

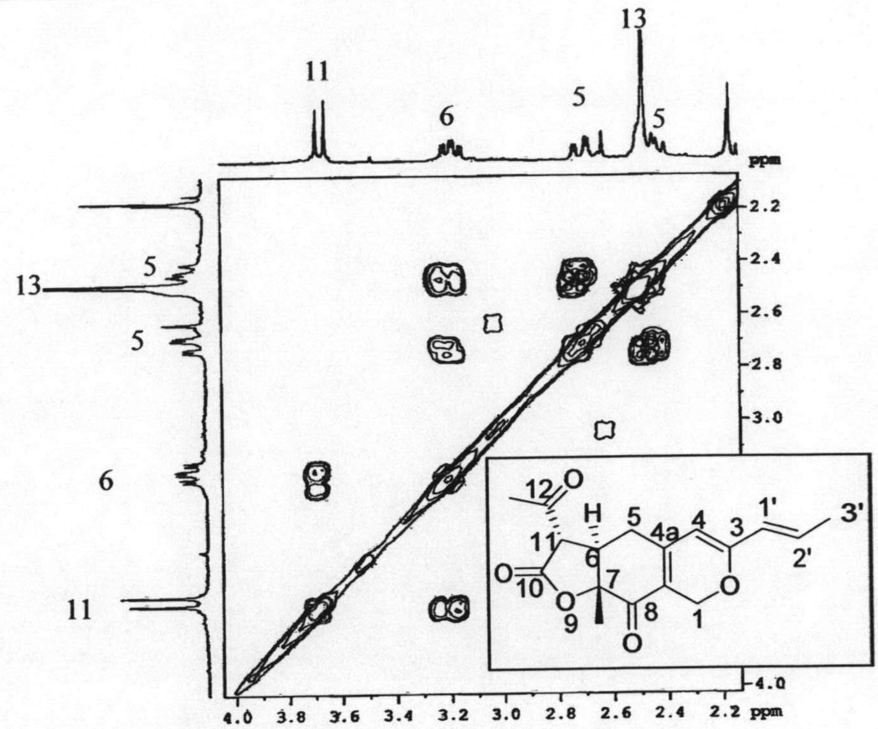

Figure 63 Expansion of Fig. 62

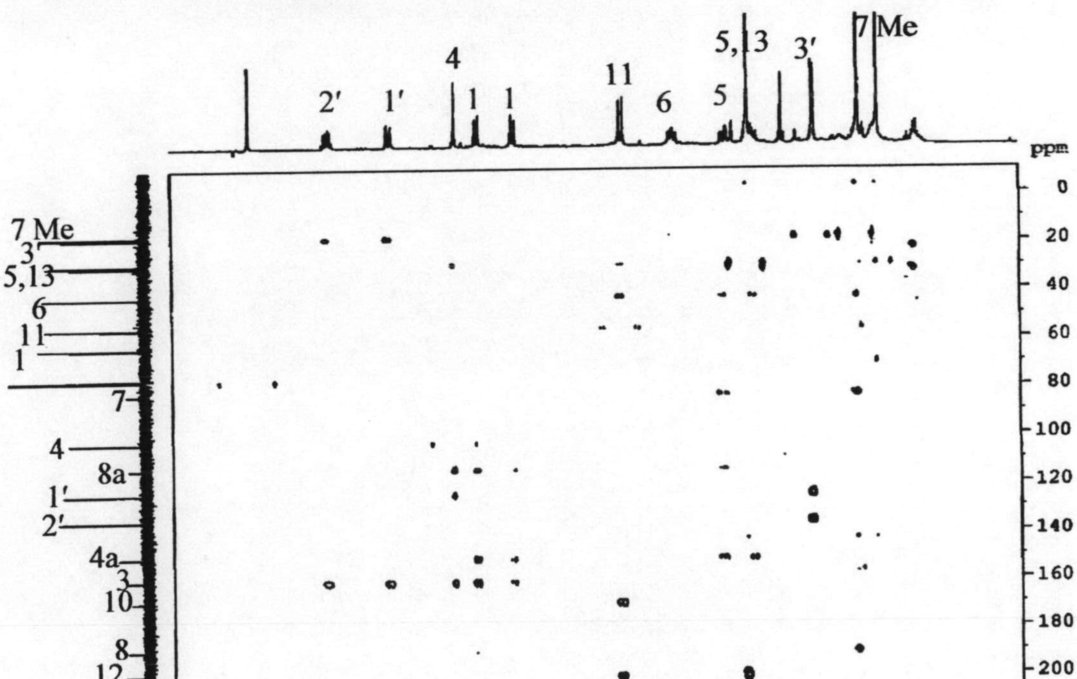

Figure 64 Long range ^{1}H-^{13}C correlations (HMBC) spectrum of Ang02

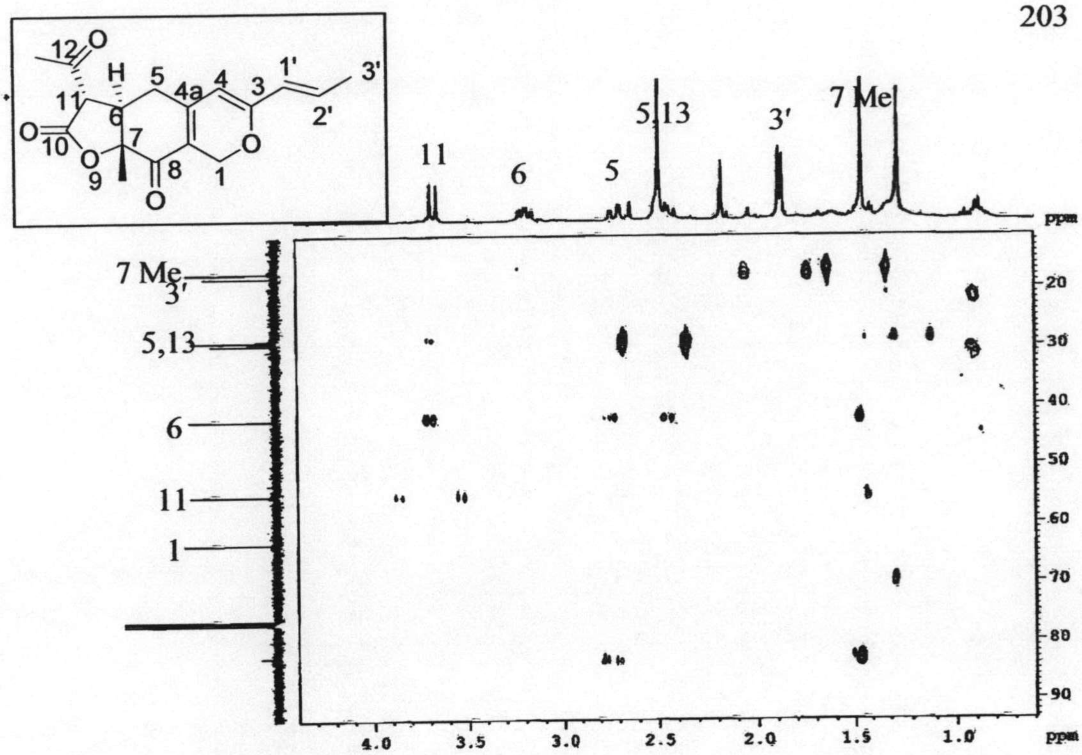

Figure 65 Expansion of Fig. 64

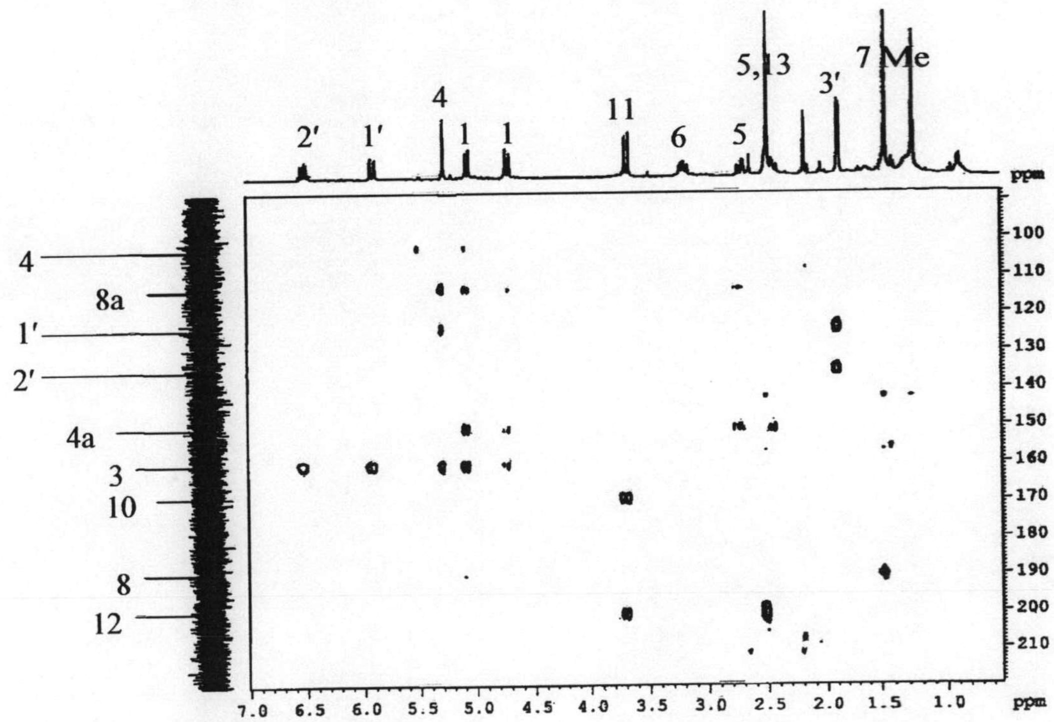

Figure 66 Expansion of Fig. 64

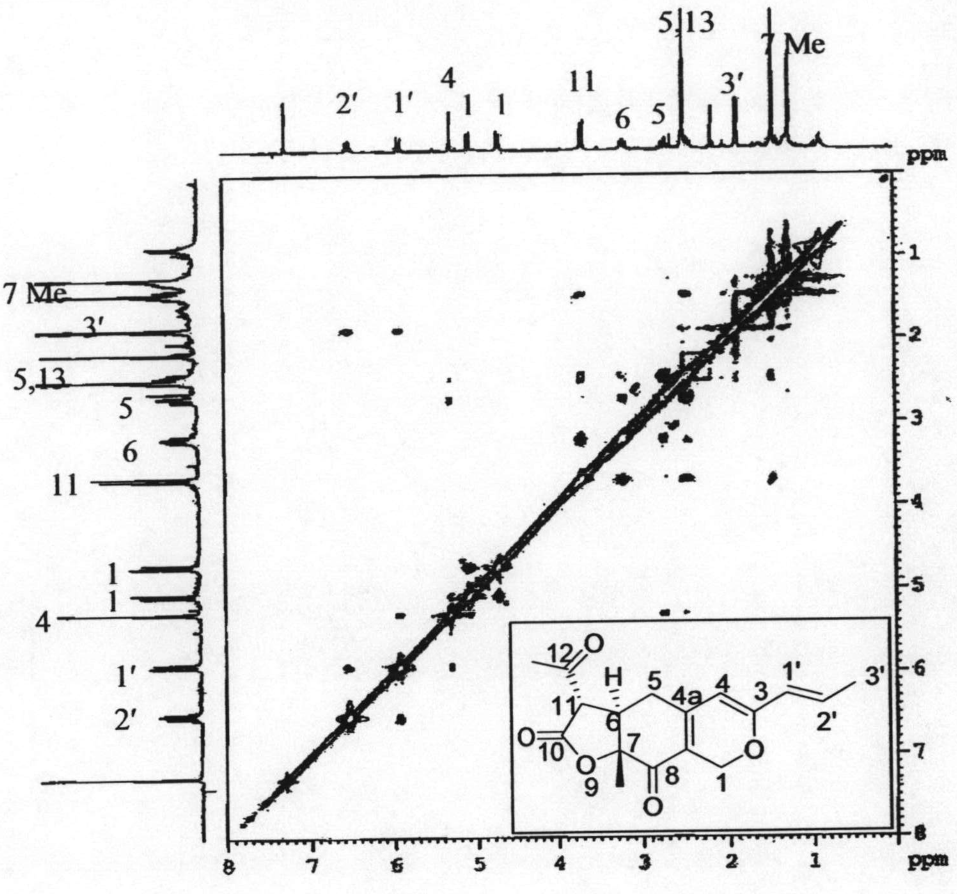

Figure 67 NOESY spectrum of Ang02

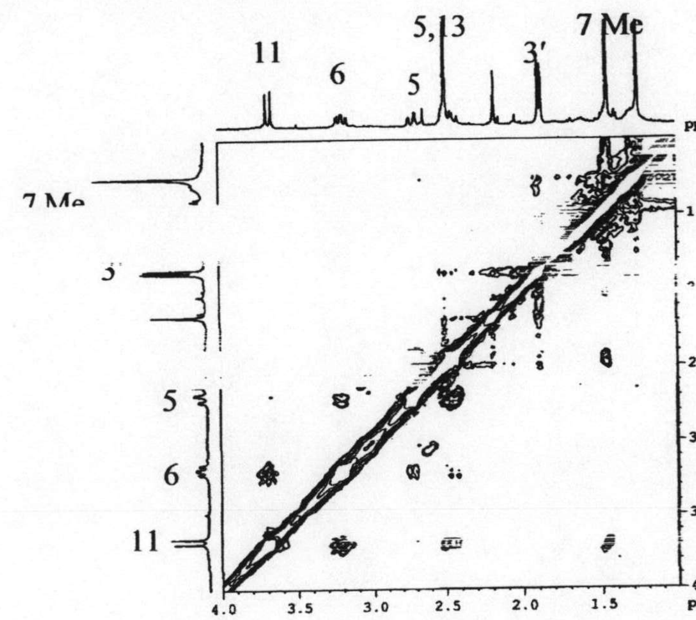

Figure 68 Expansion of Fig.67

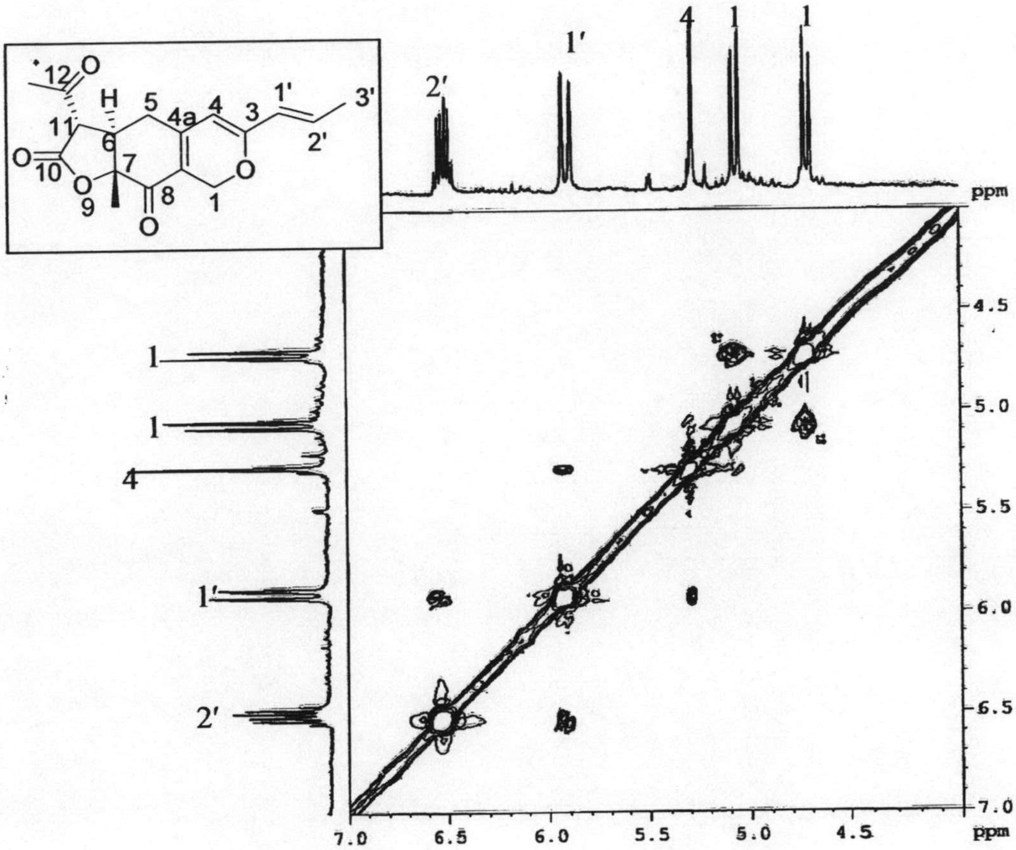

Figure 69 Expansion of Fig. 67

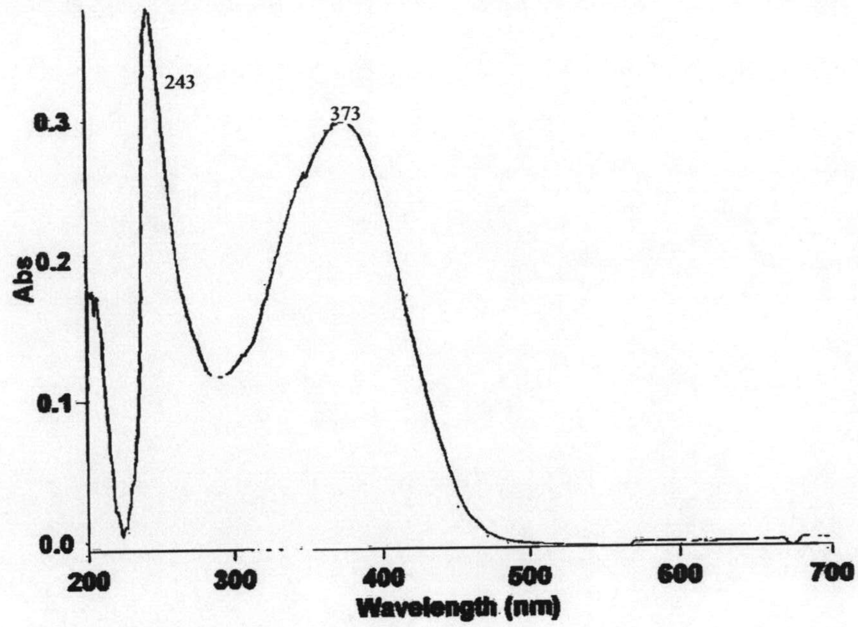

Figure 70 UV spectrum of Ang03

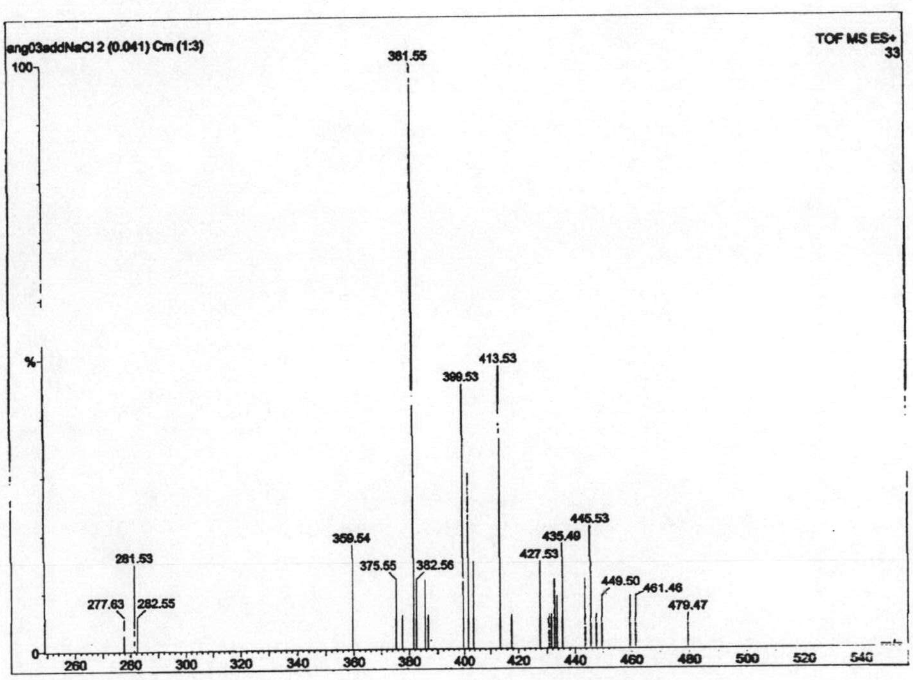

Figure 71 Mass spectrum of Ang03

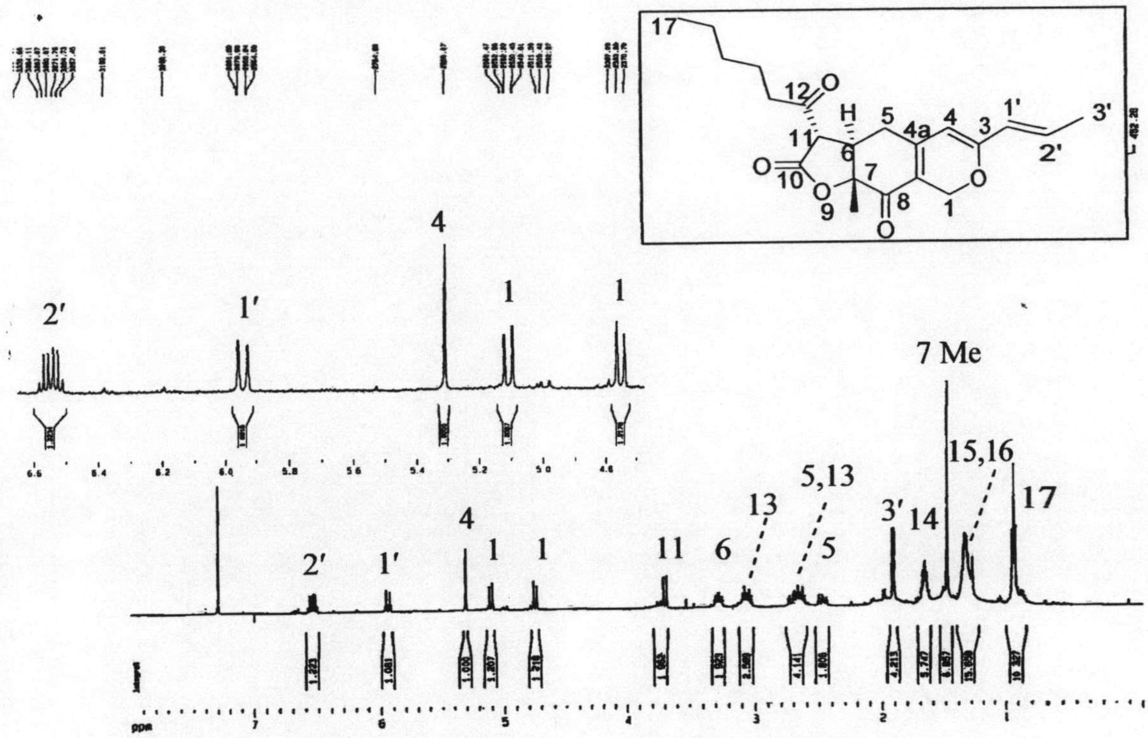

Figure72 500 MHz ^{1}H NMR ($CDCl_3$) spectrum of Ang03

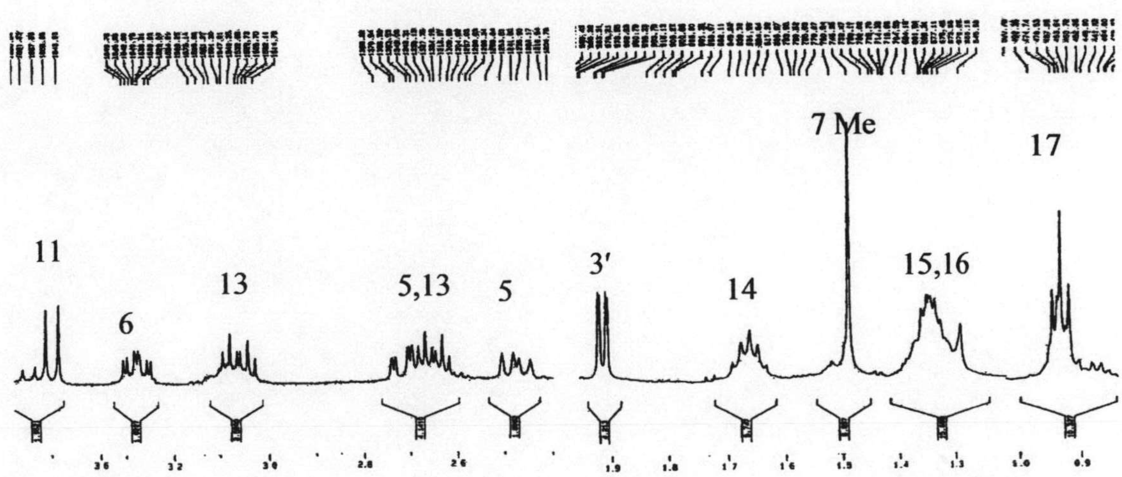

Figure 73 Expansion of Fig. 72

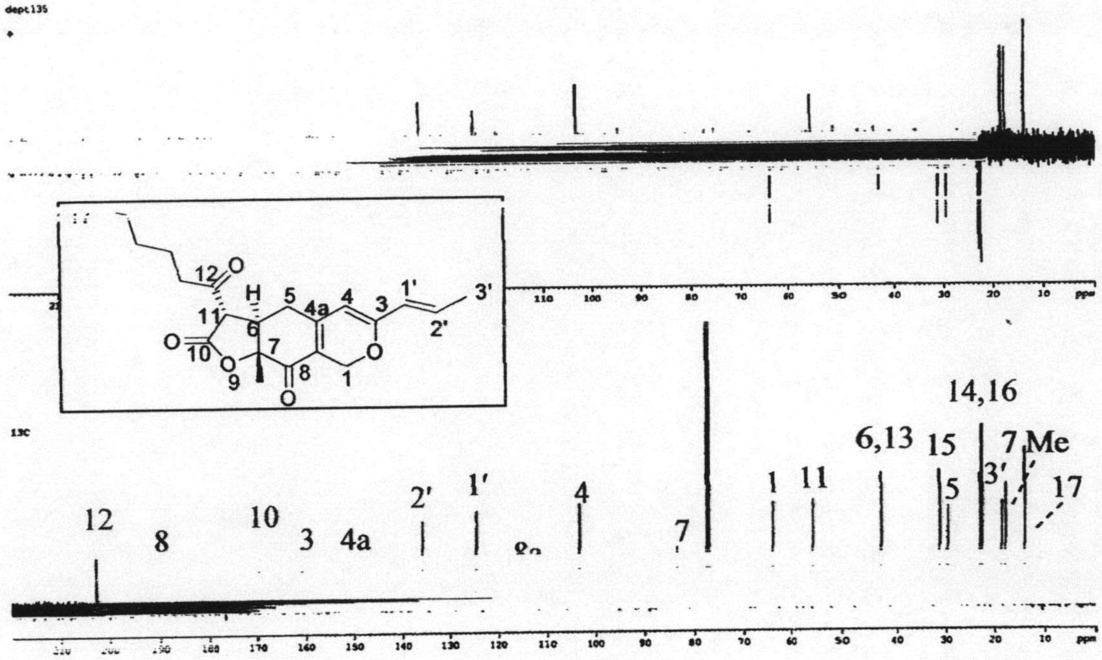

Figure74 ^{13}C NMR (CDCl$_3$) and DEPT spectra of Ang03

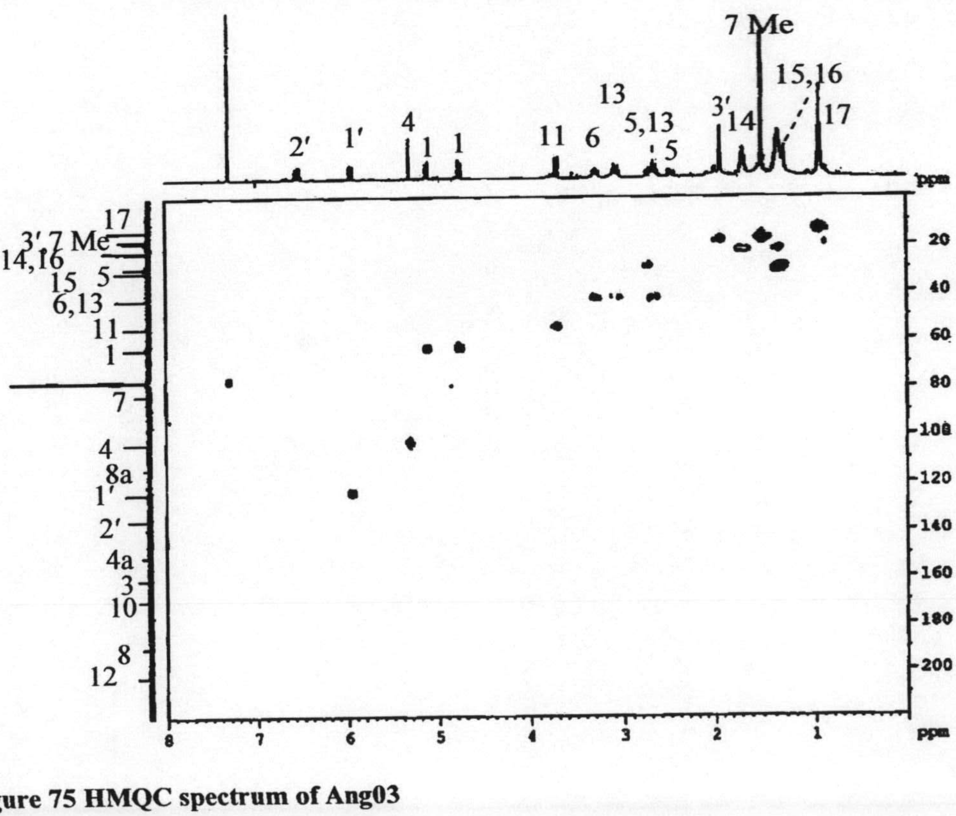

Figure 75 HMQC spectrum of Ang03

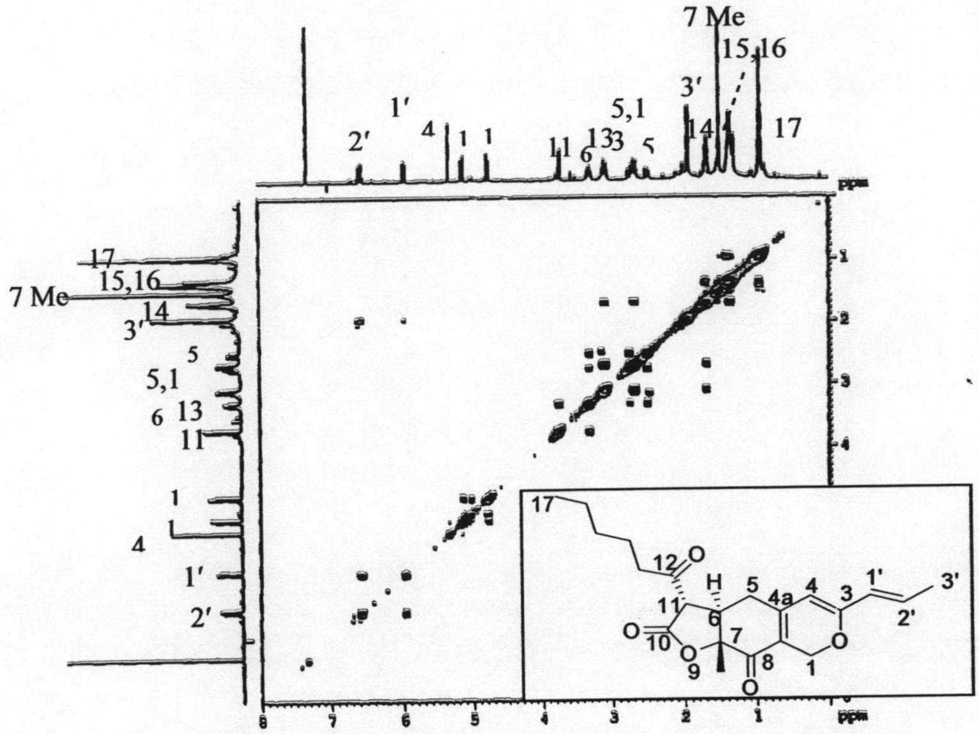

Figure76 ^{1}H-^{1}H COSY spectrum of Ang03

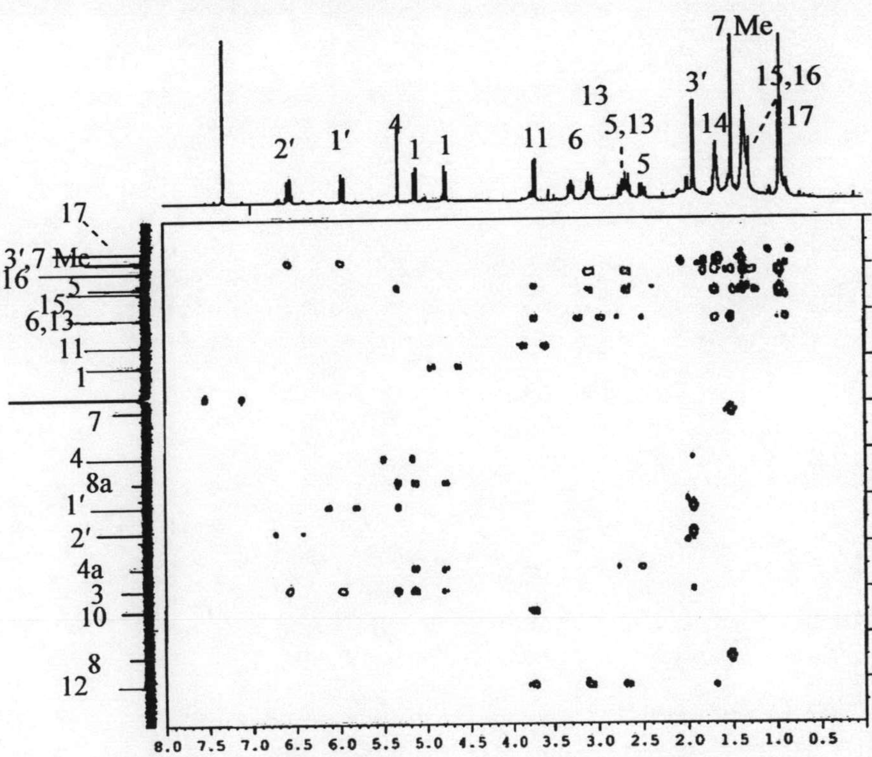

Figure 77 Long range ^{1}H-^{13}C correlations (HMBC) spectrum of Ang03

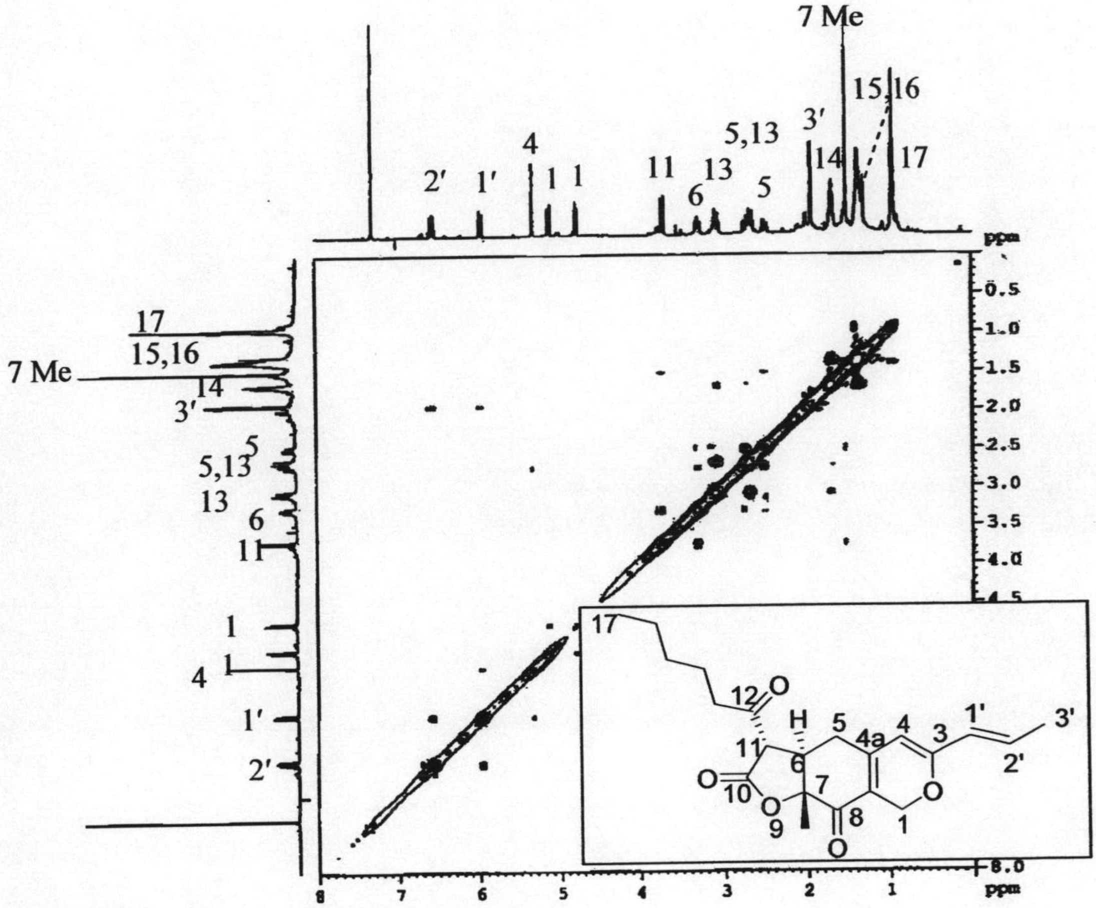

Figure78 NOESY spectrum of Ang03

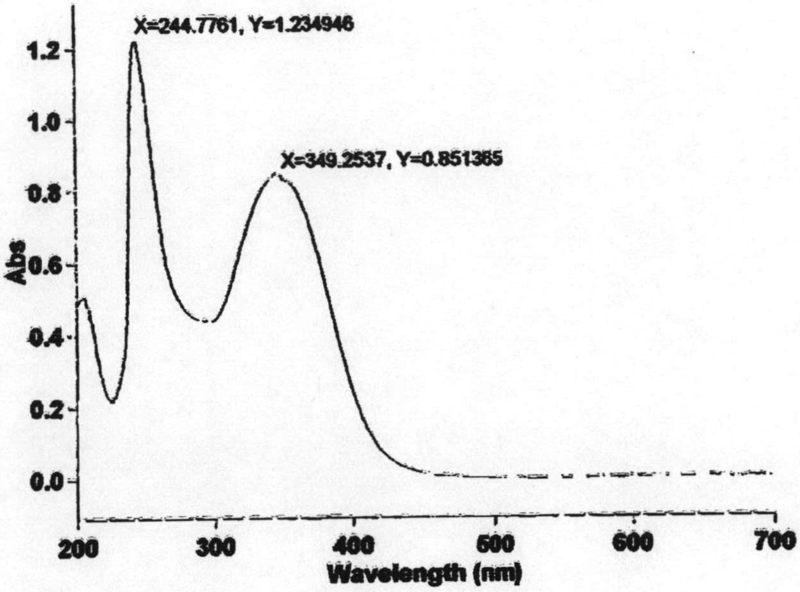

Figure79 UV spectrum of Ang04

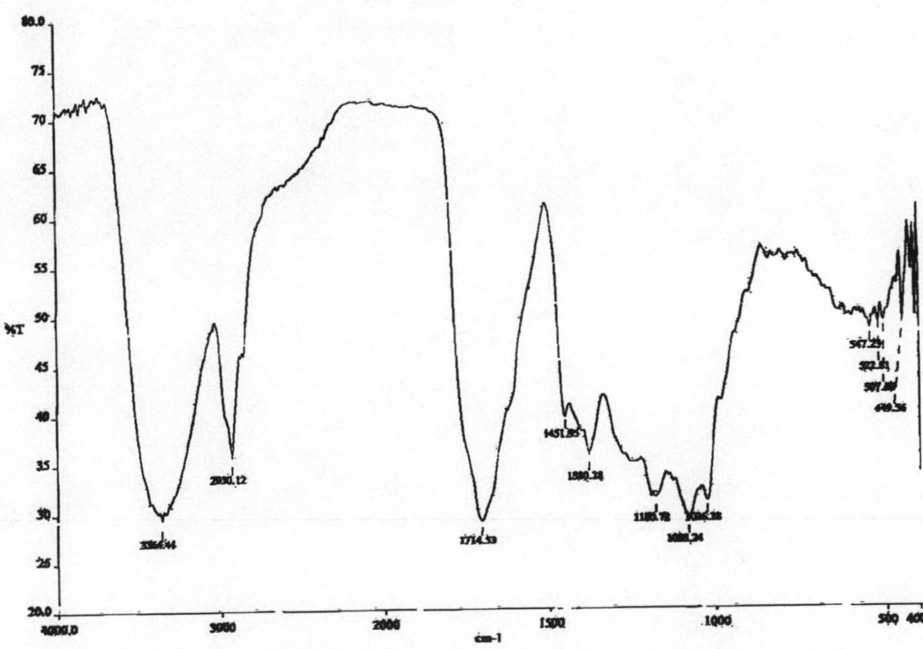

Figure80 IR spectrum of Ang04

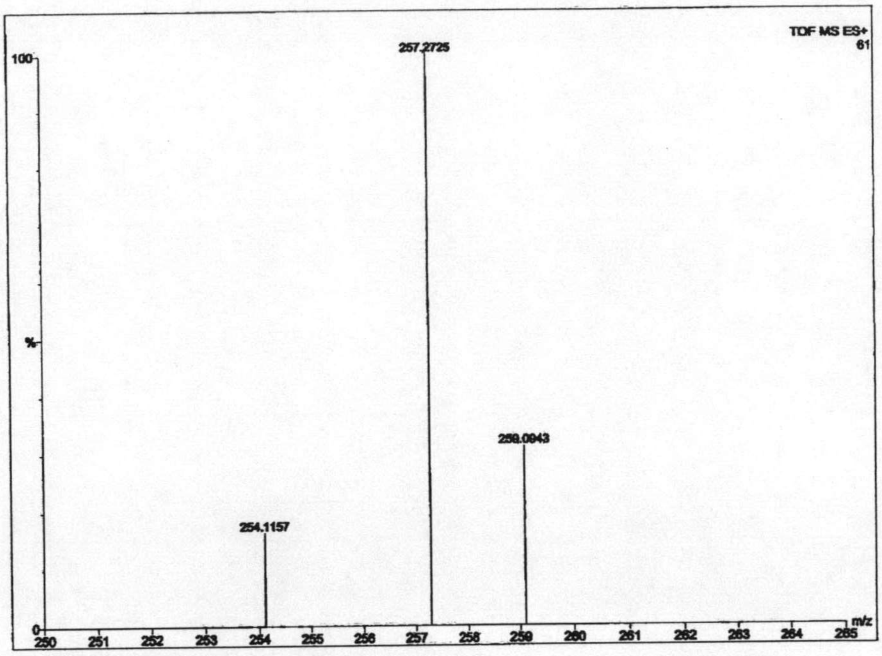

Figure 81 Mass spectrum of Ang04

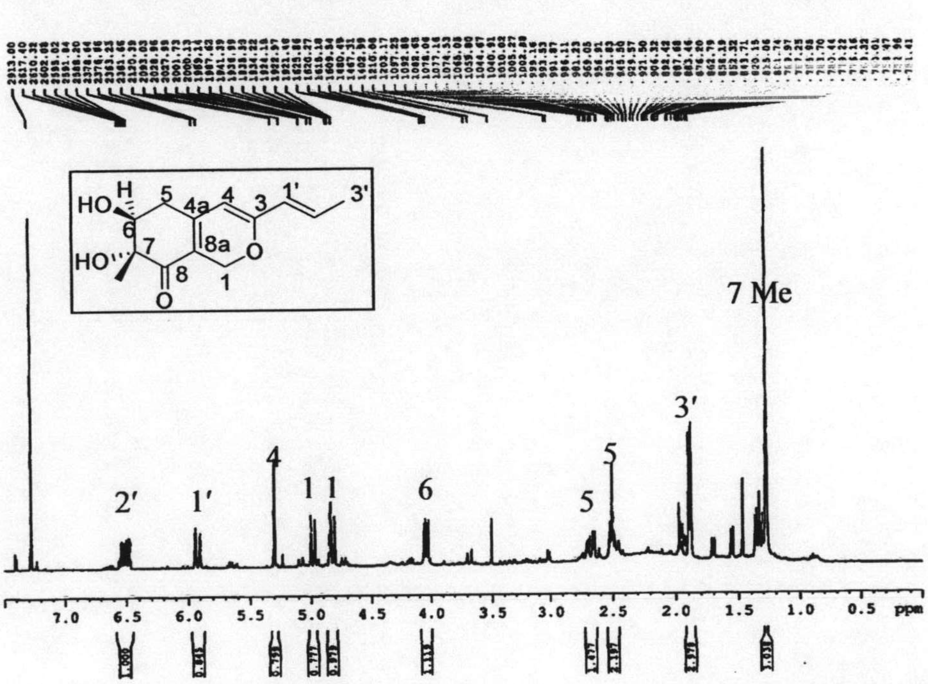

Figure 82 500 MHz ^{1}H NMR ($CDCl_3$) spectrum of Ang04

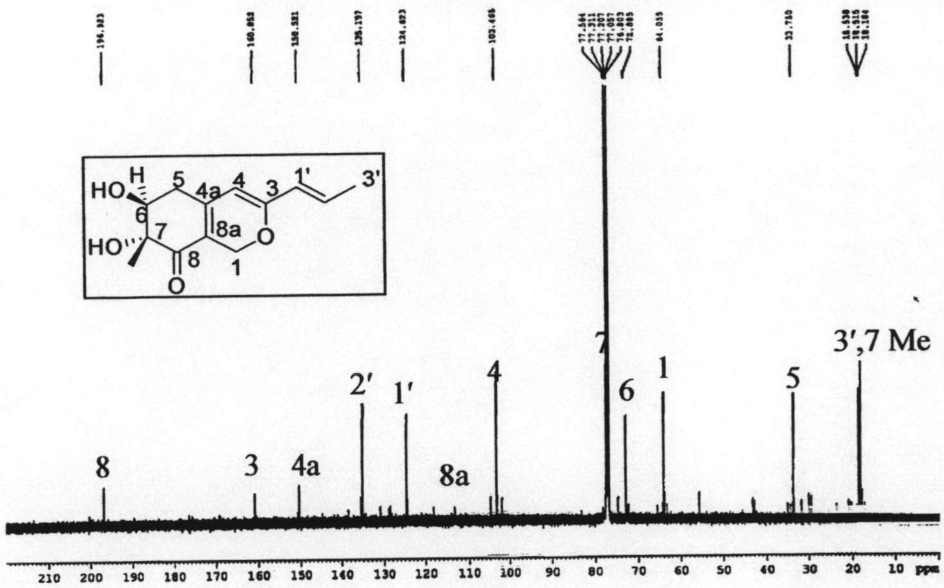

Figure 83 ^{13}C NMR ($CDCl_3$) spectrum of Ang04

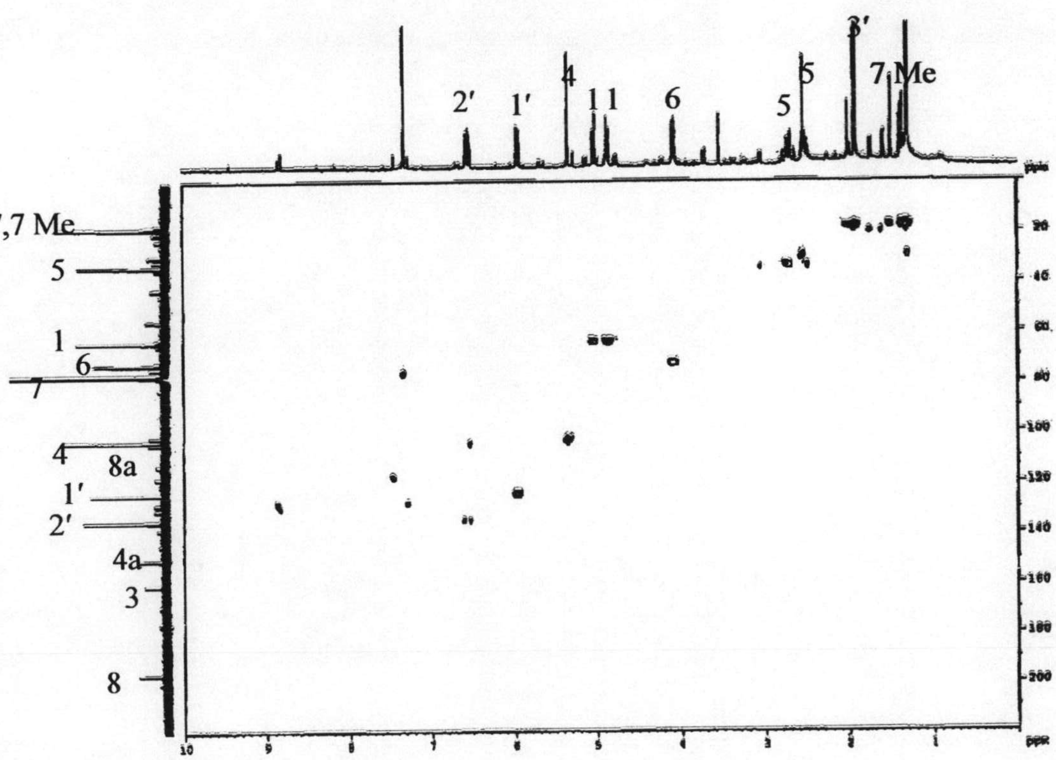

Figure 84 HMQC spectrum of Ang04

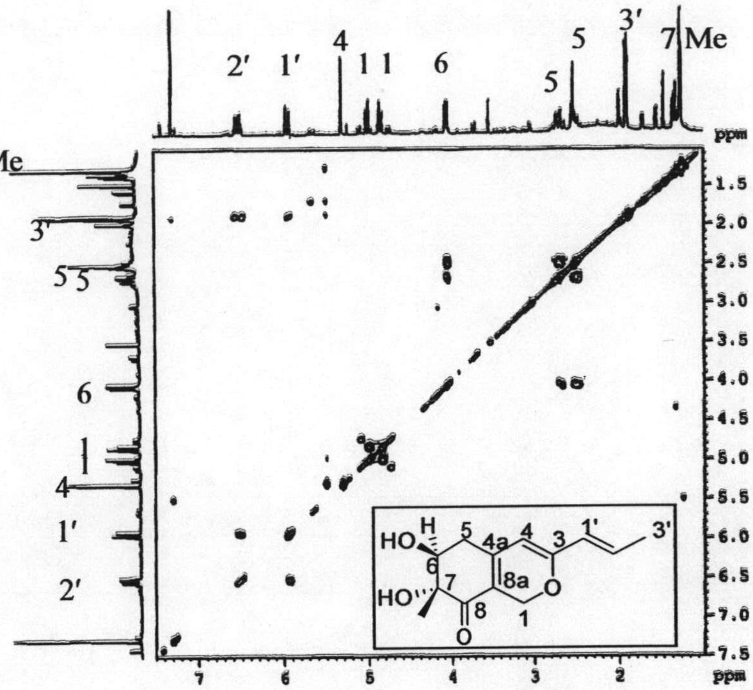

Figure85 ¹H-¹H COSY spectrum of Ang04

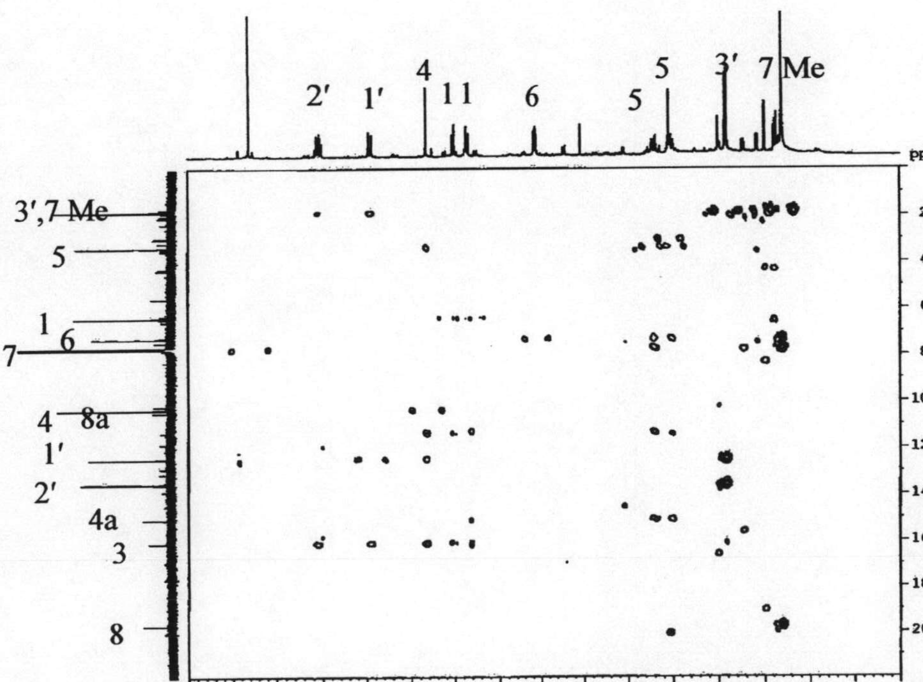

Figure 86 Long range ¹H-¹³C correlations (HMBC) spectrum of Ang04

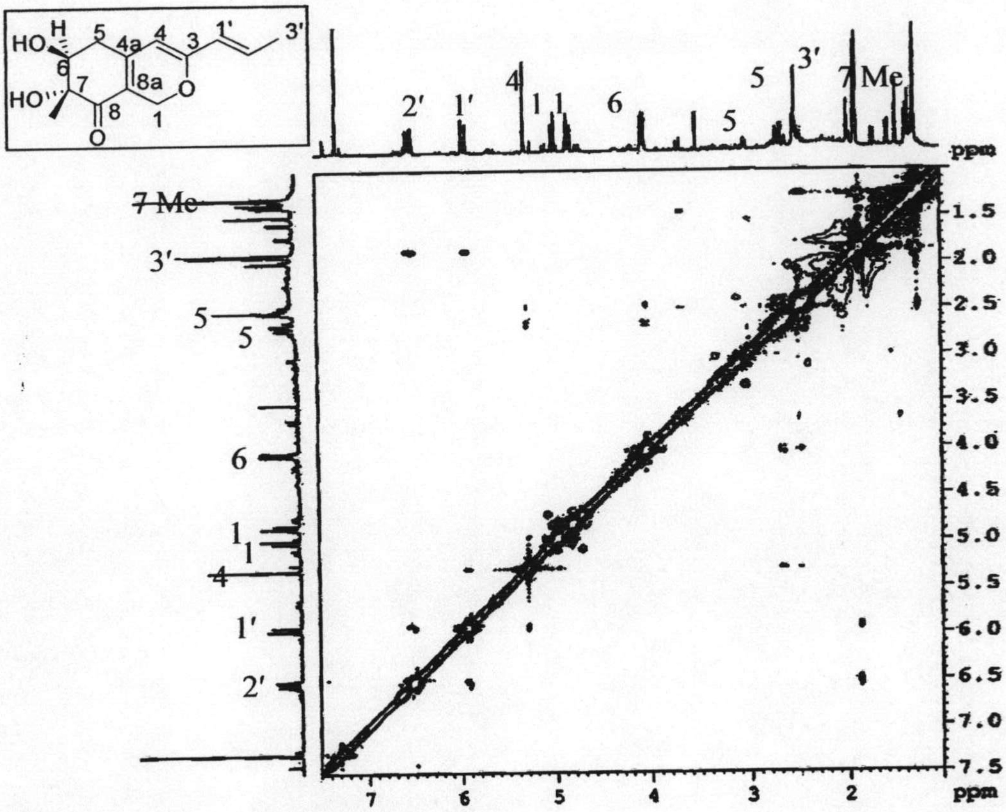

Figure87 NOESY spectrum of Ang04

VITA

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Publication

Jongrungruangchok, S., Kitakoop, P., Yongsmith, B., Bavovada, R., Tanasupawat, S., Lartpornmatulee, N., and Thebtaranonth, Y. 2004. Azaphilone pigments from a yellow mutant of the fungus *Monascus kaoliang*. Phytochemistry, 65: 2569-2575.

Poster Presentation

1. Jongrungruangchok, S., Tanasupawat, S., Bavovada, R., and Kitakoop, P. 2004. Bioactive compounds from *Streptomyces* sp. PNK2-3. RGJ-Ph.D. Congress V. 23-25 Apr. 2547, Pattaya, Thailand.
2. Jongrungruangchok, S., Tanasupawat, S., Kudo, T. 2005. *Micromonospora chaiyaphumensis, M. krabiensis* , and *M. marinus* sp.nov., isolated from Thai soil. RGJ-Ph.D. Congress VI. 28-30 Apr. 2548, Pattaya, Thailand.