

REFERENCES

1. Shibuya K, Obayashi I, Asakawa S, Minoshima S, Kudoh J, et al. (2004) A cluster of 21 keratin-associated protein genes within introns of another gene on human chromosome 21q22.3. *Genomics* 83: 679-693.
2. Veeramachaneni V, Makalowski W, Galdzicki M, Sood R, Makalowska I (2004) Mammalian overlapping genes: the comparative perspective. *Genome Res* 14: 280-286.
3. Quere R, Manchon L, Lejeune M, Clement O, Pierrat F, et al. (2004) Mining SAGE data allows large-scale, sensitive screening of antisense transcript expression. *Nucleic Acids Res* 32: e163.
4. Viskochil D, Cawthon R, O'Connell P, Xu GF, Stevens J, et al. (1991) The gene encoding the oligodendrocyte-myelin glycoprotein is embedded within the neurofibromatosis 1 gene. *Mol Cell Biol* 11: 906-912.
5. Yu P, Ma D, Xu M (2005) Nested genes in the human genome. *Genomics* 86: 414-422.
6. Kasper G, Taudien S, Staub E, Mennerich D, Rieder M, et al. (2002) Different structural organization of the encephalopsin gene in man and mouse. *Gene* 295: 27-32.
7. Halford S, Freedman MS, Bellingham J, Inglis SL, Poopalasundaram S, et al. (2001) Characterization of a novel human opsin gene with wide tissue expression and identification of embedded and flanking genes on chromosome 1q43. *Genomics* 72: 203-208.
8. Chen J, Sun M, Kent WJ, Huang X, Xie H, et al. (2004) Over 20% of human transcripts might form sense-antisense pairs. *Nucleic Acids Res* 32: 4812-4820.
9. Trinklein ND, Aldred SF, Hartman SJ, Schroeder DI, O'tillar RP, et al. (2004) An abundance of bidirectional promoters in the human genome. *Genome Res* 14: 62-66.
10. Li B, Zhuang L, Trueb B (2004) Zyxin interacts with the SH3 domains of the cytoskeletal proteins LIM-nebulette and Lasp-1. *J Biol Chem* 279: 20401-20410.
11. Fahey ME, Moore TF, Higgins DG (2002) Overlapping antisense transcription in the human genome. *Comp Funct Genomics* 3: 244-253.
12. Lehner B, Williams G, Campbell RD, Sanderson CM (2002) Antisense transcripts in the human genome. *Trends Genet* 18: 63-65.
13. Scherer SW, Cheung J, MacDonald JR, Osborne LR, Nakabayashi K, et al. (2003) Human chromosome 7: DNA sequence and biology. *Science* 300: 767-772.
14. Holm SJ, Carlen LM, Mallbris L, Stahle-Backdahl M, O'Brien KP (2003) Polymorphisms in the SEEK1 and SPR1 genes on 6p21.3 associate with psoriasis in the Swedish population. *Exp Dermatol* 12: 435-444.
15. Tanaka H, Kohroki J, Iguchi N, Onishi M, Nishimune Y (2002) Cloning and characterization of a human orthologue of testis-specific succinyl CoA: 3-oxo acid CoA transferase (Scot-t) cDNA. *Mol Hum Reprod* 8: 16-23.
16. Ubeda M, Schmitt-Ney M, Ferrer J, Habener JF (1999) CHOP/GADD153 and methionyl-tRNA synthetase (MetRS) genes overlap in a conserved region that controls mRNA stability. *Biochem Biophys Res Commun* 262: 31-38.

17. Levinson B, Kenwrick S, Lakich D, Hammonds G, Jr., Gitschier J (1990) A transcribed gene in an intron of the human factor VIII gene. *Genomics* 7: 1-11.
18. Levinson B, Kenwrick S, Gamel P, Fisher K, Gitschier J (1992) Evidence for a third transcript from the human factor VIII gene. *Genomics* 14: 585-589.
19. Dent AL, Yewdell J, Puvion-Dutilleul F, Koken MH, de The H, et al. (1996) LYSP100-associated nuclear domains (LANDs): description of a new class of subnuclear structures and their relationship to PML nuclear bodies. *Blood* 88: 1423-1426.
20. Herzog H, Darby K, Hort YJ, Shine J (1996) Intron 17 of the human retinoblastoma susceptibility gene encodes an actively transcribed G protein-coupled receptor gene. *Genome Res* 6: 858-861.
21. Ralph SJ, Thomas ML, Morton CC, Trowbridge IS (1987) Structural variants of human T200 glycoprotein (leukocyte-common antigen). *Embo J* 6: 1251-1257.
22. Yu WP, Brenner S, Venkatesh B (2003) Duplication, degeneration and subfunctionalization of the nested synapsin-Timp genes in Fugu. *Trends Genet* 19: 180-183.
23. Strausberg RL, Feingold EA, Grouse LH, Derge JG, Klausner RD, et al. (2002) Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences. *Proc Natl Acad Sci U S A* 99: 16899-16903.
24. Svaren J, Apel ED, Simburger KS, Jenkins NA, Gilbert DJ, et al. (1997) The Nab2 and Stat6 genes share a common transcription termination region. *Genomics* 41: 33-39.
25. Larsen F, Solheim J, Kristensen T, Kolsto AB, Prydz H (1993) A tight cluster of five unrelated human genes on chromosome 16q22.1. *Hum Mol Genet* 2: 1589-1595.
26. Lauren J, Airaksinen MS, Saarma M, Timmusk T (2003) A novel gene family encoding leucine-rich repeat transmembrane proteins differentially expressed in the nervous system. *Genomics* 81: 411-421.
27. Conrad C, Vianna C, Freeman M, Davies P (2002) A polymorphic gene nested within an intron of the tau gene: implications for Alzheimer's disease. *Proc Natl Acad Sci U S A* 99: 7751-7756.
28. Yelin R, Dahary D, Sorek R, Levanon EY, Goldstein O, et al. (2003) Widespread occurrence of antisense transcription in the human genome. *Nat Biotechnol* 21: 379-386.
29. Ohinata Y, Sutou S, Kondo M, Takahashi T, Mitsui Y (2002) Male-enhanced antigen-1 gene flanked by two overlapping genes is expressed in late spermatogenesis. *Biol Reprod* 67: 1824-1831.
30. van Duin M, van Den Tol J, Hoeijmakers JH, Bootsma D, Rupp IP, et al. (1989) Conserved pattern of antisense overlapping transcription in the homologous human ERCC-1 and yeast RAD10 DNA repair gene regions. *Mol Cell Biol* 9: 1794-1798.
31. Whitehead CM, Winkfein RJ, Fritzler MJ, Rattner JB (1997) ASE-1: a novel protein of the fibrillar centres of the nucleolus and nucleolus organizer region of mitotic chromosomes. *Chromosoma* 106: 493-502.
32. Shimmoto M, Nakahori Y, Matsushita I, Shinka T, Kuroki Y, et al. (1996) A human protective protein gene partially overlaps the gene encoding phospholipid

transfer protein on the complementary strand of DNA. *Biochem Biophys Res Commun* 220: 802-806.

33. Stover C, Gradl G, Jentsch I, Speicher MR, Wieser R, et al. (2001) cDNA cloning, chromosome assignment, and genomic structure of a human gene encoding a novel member of the RBM family. *Cytogenet Cell Genet* 92: 225-230.

34. Bejanin S, Cervini R, Mallet J, Berrard S (1994) A unique gene organization for two cholinergic markers, choline acetyltransferase and a putative vesicular transporter of acetylcholine. *J Biol Chem* 269: 21944-21947.

35. Dear TN, Meier NT, Hunn M, Boehm T (2000) Gene structure, chromosomal localization, and expression pattern of Capn12, a new member of the calpain large subunit gene family. *Genomics* 68: 152-160.

36. Kawabata Y, Hata S, Ono Y, Ito Y, Suzuki K, et al. (2003) Newly identified exons encoding novel variants of p94/calpain 3 are expressed ubiquitously and overlap the alpha-glucosidase C gene. *FEBS Lett* 555: 623-630.

37. Wong JC, Alon N, Norga K, Krut FA, Yousoufian H, et al. (2000) Cloning and analysis of the mouse Fanconi anemia group A cDNA and an overlapping penta zinc finger cDNA. *Genomics* 67: 273-283.

38. Gallagher PG, Forget BG (1998) An alternate promoter directs expression of a truncated, muscle-specific isoform of the human ankyrin 1 gene. *J Biol Chem* 273: 1339-1348.

39. Higgins JM (2001) The Haspin gene: location in an intron of the integrin alphaE gene, associated transcription of an integrin alphaE-derived RNA and expression in diploid as well as haploid cells. *Gene* 267: 55-69.

40. Faurholm B, Millar RP, Katz AA (2001) The genes encoding the type II gonadotropin-releasing hormone receptor and the ribonucleoprotein RBM8A in humans overlap in two genomic loci. *Genomics* 78: 15-18.

41. Okubo K, Mitani H, Naruse K, Kondo M, Shima A, et al. (2002) Conserved physical linkage of GnRH-R and RBM8 in the medaka and human genomes. *Biochem Biophys Res Commun* 293: 327-331.

42. Fujii H, Shimada T (1989) Isolation and characterization of cDNA clones derived from the divergently transcribed gene in the region upstream from the human dihydrofolate reductase gene. *J Biol Chem* 264: 10057-10064.

43. Travers MT, Cambot M, Kennedy HT, Lenoir GM, Barber MC, et al. (2005) Asymmetric expression of transcripts derived from the shared promoter between the divergently oriented ACACA and TADA2L genes. *Genomics* 85: 71-84.

44. Bera TK, Das S, Maeda H, Beers R, Wolfgang CD, et al. (2004) NGEP, a gene encoding a membrane protein detected only in prostate cancer and normal prostate. *Proc Natl Acad Sci U S A* 101: 3059-3064.

45. Robb GB, Carson AR, Tai SC, Fish JE, Singh S, et al. (2004) Post-transcriptional regulation of endothelial nitric-oxide synthase by an overlapping antisense mRNA transcript. *J Biol Chem* 279: 37982-37996.

46. Lafreniere RG, MacDonald ML, Dube MP, MacFarlane J, O'Driscoll M, et al. (2004) Identification of a novel gene (HSN2) causing hereditary sensory and

autonomic neuropathy type II through the Study of Canadian Genetic Isolates. *Am J Hum Genet* 74: 1064-1073.

47. Chatterjee TK, Fisher RA (2000) Novel alternative splicing and nuclear localization of human RGS12 gene products. *J Biol Chem* 275: 29660-29671.

48. Cheng J, Kapranov P, Drenkow J, Dike S, Brubaker S, et al. (2005) Transcriptional maps of 10 human chromosomes at 5-nucleotide resolution. *Science* 308: 1149-1154.

49. Le Poole IC, Sarangarajan R, Zhao Y, Stennett LS, Brown TL, et al. (2001) 'VIT1', a novel gene associated with vitiligo. *Pigment Cell Res* 14: 475-484.

50. Katoh M, Yazaki Y, Sugimura T, Terada M (1993) c-erbB3 gene encodes secreted as well as transmembrane receptor tyrosine kinase. *Biochem Biophys Res Commun* 192: 1189-1197.

51. Lee H, Maihle NJ (1998) Isolation and characterization of four alternate c-erbB3 transcripts expressed in ovarian carcinoma-derived cell lines and normal human tissues. *Oncogene* 16: 3243-3252.

52. Adachi N, Lieber MR (2002) Bidirectional gene organization: a common architectural feature of the human genome. *Cell* 109: 807-809.

53. Fujiwara N, Matsuo T, Ohtsuki H (2003) Protein expression, genomic structure, and polymorphisms of oculomedin. *Ophthalmic Genet* 24: 141-151.

54. West AB, Lockhart PJ, O'Farrell C, Farrer MJ (2003) Identification of a novel gene linked to parkin via a bi-directional promoter. *J Mol Biol* 326: 11-19.

55. Funke B, Pandita RK, Morrow BE (2001) Isolation and characterization of a novel gene containing WD40 repeats from the region deleted in velo-cardio-facial/DiGeorge syndrome on chromosome 22q11. *Genomics* 73: 264-271.

56. Bates EE, Kissenpfennig A, Peronne C, Mattei MG, Fossiez F, et al. (2000) The mouse and human IGSF6 (DORA) genes map to the inflammatory bowel disease 1 locus and are embedded in an intron of a gene of unknown function. *Immunogenetics* 52: 112-120.

57. Gardiner K, Slavov D, Bechtel L, Davisson M (2002) Annotation of human chromosome 21 for relevance to Down syndrome: gene structure and expression analysis. *Genomics* 79: 833-843.

58. Dan I, Watanabe NM, Kajikawa E, Ishida T, Pandey A, et al. (2002) Overlapping of MINK and CHRNE gene loci in the course of mammalian evolution. *Nucleic Acids Res* 30: 2906-2910.

59. Gray TA, Azama K, Whitmore K, Min A, Abe S, et al. (2001) Phylogenetic conservation of the makorin-2 gene, encoding a multiple zinc-finger protein, antisense to the RAF1 proto-oncogene. *Genomics* 77: 119-126.

60. Kiss H, Darai E, Kiss C, Kost-Alimova M, Klein G, et al. (2002) Comparative human/murine sequence analysis of the common eliminated region 1 from human 3p21.3. *Mamm Genome* 13: 646-655.

61. Roginski RS, Mohan Raj BK, Birditt B, Rowen L (2004) The human GRINL1A gene defines a complex transcription unit, an unusual form of gene organization in eukaryotes. *Genomics* 84: 265-276.

62. Prakash SK, Paylor R, Jenna S, Lamarche-Vane N, Armstrong DL, et al. (2000) Functional analysis of ARHGAP6, a novel GTPase-activating protein for RhoA. *Hum Mol Genet* 9: 477-488.
63. Petrukhin K, Koisti MJ, Bakall B, Li W, Xie G, et al. (1998) Identification of the gene responsible for Best macular dystrophy. *Nat Genet* 19: 241-247.
64. Bai C, Connolly B, Metzker ML, Hilliard CA, Liu X, et al. (2000) Overexpression of M68/DcR3 in human gastrointestinal tract tumors independent of gene amplification and its location in a four-gene cluster. *Proc Natl Acad Sci U S A* 97: 1230-1235.
65. Semple JI, Ribas G, Hillyard G, Brown SE, Sanderson CM, et al. (2003) A novel gene encoding a coiled-coil mitochondrial protein located at the telomeric end of the human MHC Class III region. *Gene* 314: 41-54.
66. Melchior C, Kreis S, Janji B, Kieffer N (2002) Promoter characterization and genomic organization of the gene encoding integrin-linked kinase 1. *Biochim Biophys Acta* 1575: 117-122.
67. Simeone A, Pannese M, Acampora D, D'Esposito M, Boncinelli E (1988) At least three human homeoboxes on chromosome 12 belong to the same transcription unit. *Nucleic Acids Res* 16: 5379-5390.
68. Hastings ML, Ingle HA, Lazar MA, Munroe SH (2000) Post-transcriptional regulation of thyroid hormone receptor expression by cis-acting sequences and a naturally occurring antisense RNA. *J Biol Chem* 275: 11507-11513.
69. Laudet V, Begue A, Henry-Duthoit C, Joubel A, Martin P, et al. (1991) Genomic organization of the human thyroid hormone receptor alpha (c-erbA-1) gene. *Nucleic Acids Res* 19: 1105-1112.
70. Weisenberger DJ, Velicescu M, Preciado-Lopez MA, Gonzales FA, Tsai YC, et al. (2002) Identification and characterization of alternatively spliced variants of DNA methyltransferase 3a in mammalian cells. *Gene* 298: 91-99.
71. Castermans D, Wilquet V, Parthoens E, Huysmans C, Steyaert J, et al. (2003) The neurobeachin gene is disrupted by a translocation in a patient with idiopathic autism. *J Med Genet* 40: 352-356.
72. Poulin F, Brueschke A, Sonenberg N (2003) Gene fusion and overlapping reading frames in the mammalian genes for 4E-BP3 and MASK. *J Biol Chem* 278: 52290-52297.
73. Shintani S, O'HUigin C, Toyosawa S, Michalova V, Klein J (1999) Origin of gene overlap: the case of TCP1 and ACAT2. *Genetics* 152: 743-754.
74. Bailleul B, Akerblom I, Strosberg AD (1997) The leptin receptor promoter controls expression of a second distinct protein. *Nucleic Acids Res* 25: 2752-2758.
75. Rampersad V, Elliott CE, Nutt SL, Foldes RL, Kamboj RK (1994) Human glutamate receptor hGluR3 flip and flop isoforms: cloning and sequencing of the cDNAs and primary structure of the proteins. *Biochim Biophys Acta* 1219: 563-566.
76. Watterson DM, Schavocky JP, Guo L, Weiss C, Chlenski A, et al. (1999) Analysis of the kinase-related protein gene found at human chromosome 3q21 in a multi-gene cluster: organization, expression, alternative splicing, and polymorphic marker. *J Cell Biochem* 75: 481-491.

77. Dunham I, Shimizu N, Roe BA, Chissole S, Hunt AR, et al. (1999) The DNA sequence of human chromosome 22. *Nature* 402: 489-495.
78. Whitmore SA, Settassian C, Crawford J, Lower KM, McCallum B, et al. (1998) Characterization and screening for mutations of the growth arrest-specific 11 (GAS11) and C16orf3 genes at 16q24.3 in breast cancer. *Genomics* 52: 325-331.
79. Rollinger-Holzinger I, Eibl B, Pauly M, Griesser U, Hentges F, et al. (2000) LST1: a gene with extensive alternative splicing and immunomodulatory function. *J Immunol* 164: 3169-3176.
80. Vuoristo JT, Berrettini WH, Ala-Kokko L (2001) C18orf2, a novel, highly conserved intronless gene within intron 5 of the GNAL gene on chromosome 18p11. *Cytogenet Cell Genet* 93: 19-22.
81. Plougastel B, Trowsdale J (1998) Sequence analysis of a 62-kb region overlapping the human KLRC cluster of genes. *Genomics* 49: 193-199.
82. Glienke J, Sobanov Y, Brostjan C, Steffens C, Nguyen C, et al. (1998) The genomic organization of NKG2C, E, F, and D receptor genes in the human natural killer gene complex. *Immunogenetics* 48: 163-173.
83. Lobley A, Pierron V, Reynolds L, Allen L, Michalovich D (2003) Identification of human and mouse CatSper3 and CatSper4 genes: characterisation of a common interaction domain and evidence for expression in testis. *Reprod Biol Endocrinol* 1: 53.
84. Meng X, Liu J, Shen Z (2003) Genomic structure of the human BCCIP gene and its expression in cancer. *Gene* 302: 139-146.
85. Daniels RJ, Peden JF, Lloyd C, Horsley SW, Clark K, et al. (2001) Sequence, structure and pathology of the fully annotated terminal 2 Mb of the short arm of human chromosome 16. *Hum Mol Genet* 10: 339-352.
86. Meijerink PH, Yanakiev P, Zorn I, Grierson AJ, Bikker H, et al. (1998) The gene for the human Src-like adaptor protein (hSLAP) is located within the 64-kb intron of the thyroglobulin gene. *Eur J Biochem* 254: 297-303.
87. Van Eynde A, Perez-Callejon E, Schoenmakers E, Jacquemin M, Stalmans W, et al. (1999) Organization and alternate splice products of the gene encoding nuclear inhibitor of protein phosphatase-1 (NIPP-1). *Eur J Biochem* 261: 291-300.
88. Laitinen T, Polvi A, Rydman P, Vendelin J, Pulkkinen V, et al. (2004) Characterization of a common susceptibility locus for asthma-related traits. *Science* 304: 300-304.
89. Bohren KM, Nadkarni V, Song JH, Gabbay KH, Owerbach D (2004) A M55V polymorphism in a novel SUMO gene (SUMO-4) differentially activates heat shock transcription factors and is associated with susceptibility to type I diabetes mellitus. *J Biol Chem* 279: 27233-27238.
90. Guo D, Li M, Zhang Y, Yang P, Eckenrode S, et al. (2004) A functional variant of SUMO4, a new I kappa B alpha modifier, is associated with type 1 diabetes. *Nat Genet* 36: 837-841.
91. Sharpless NE, DePinho RA (1999) The INK4A/ARF locus and its two gene products. *Curr Opin Genet Dev* 9: 22-30.

92. Kim J, Bergmann A, Stubbs L (2000) Exon sharing of a novel human zinc-finger gene, ZIM2, and paternally expressed gene 3 (PEG3). *Genomics* 64: 114-118.
93. Duga S, Solda G, Asselta R, Bonati MT, Dalpra L, et al. (2001) Characterization of the genomic structure of the human neuronal nicotinic acetylcholine receptor CHRNA5/A3/B4 gene cluster and identification of novel intragenic polymorphisms. *J Hum Genet* 46: 640-648.
94. Herzog H, Darby K, Ball H, Hort Y, Beck-Sickinger A, et al. (1997) Overlapping gene structure of the human neuropeptide Y receptor subtypes Y1 and Y5 suggests coordinate transcriptional regulation. *Genomics* 41: 315-319.
95. Wende H, Volz A, Ziegler A (2000) Extensive gene duplications and a large inversion characterize the human leukocyte receptor cluster. *Immunogenetics* 51: 703-713.
96. Verde I, Pahlke G, Salanova M, Zhang G, Wang S, et al. (2001) Myomegalin is a novel protein of the golgi/centrosome that interacts with a cyclic nucleotide phosphodiesterase. *J Biol Chem* 276: 11189-11198.
97. Martin AM, Freitas EM, Witt CS, Christiansen FT. (2000) The genomic organization and evolution of the natural killer immunoglobulin-like receptor (KIR) gene cluster. *Immunogenetics*. 51:268-80.
98. Gonzalez A, Saez ME, Aragon MJ, Galan JJ, Vettori P, et al. (2006) Specific haplotypes of the CALPAIN-5 gene are associated with polycystic ovary syndrome. *Hum Reprod*. 21:943-51.
99. Seemann S, Hainaut P. (2005) Roles of thioredoxin reductase 1 and APE/Ref-1 in the control of basal p53 stability and activity. *Oncogene*. 24:3853-63.
100. Bavner A, Matthews J, Sanyal S, Gustafsson JA, Treuter E. (2005) EID3 is a novel EID family member and an inhibitor of CBP-dependent co-activation. *Nucleic Acids Res*. 33:3561-9.
101. Hirano M, Marti R, Spinazzola A, Nishino I, Nishigaki Y. (2004) Thymidine phosphorylase deficiency causes MNGIE: an autosomal recessive mitochondrial disorder. *Nucleosides Nucleotides Nucleic Acids*. 23:1217-25.
102. Adham, IM, Sallam MA, Steding G, Korabiowska M, Brinck U et al. (2003) Disruption of the pelota gene causes early embryonic lethality and defects in cell cycle progression. *Mol Cell Biol*. 23:1470-76.
103. Giebel J, Loster K, Rune GM. (1997) Localization of integrin beta 1, alpha 1, alpha 5 and alpha 9 subunits in the rat testis. *Int J Androl*. 20:3-9.
104. Chow KL, Hall DH, Emmons SW. (1995) The mab-21 gene of *Caenorhabditis elegans* encodes a novel protein required for choice of alternate cell fates. *Development* 121:3615-3626.
105. Castermans D, Wilquet V, Parthoens E, Huysmans C, Steyaert J, Swinnen L, Fryns JP, Van de Ven W, Devriendt K. (2003) The neurobeachin gene is disrupted by a translocation in a patient with idiopathic autism. *J Med Genet*. 40:352-356.
106. Edgar RC. (2004) MUSCLE: multiple sequence alignment with high accuracy and high throughput. *Nucleic Acids Res*. 32:1792-1797.
107. Castresana J. (2000) Selection of conserved blocks from multiple alignments for their use in phylogenetic analysis. *Mol Biol Evol*. 17:540-552.

108. Guindon S, Gascuel O. (2003) A simple, fast, and accurate algorithm to estimate large phylogenies by maximum likelihood. *Syst Biol.* 52:696-704.
109. Altschul SF, Gish W, Miller W, Myers EW, Lipman DJ. (1990) Basic local alignment search tool. *J Mol Biol.* 215:403-410.
110. Birney E, Thompson JD, Gibson TJ. (1996) PairWise and SearchWise: finding the optimal alignment in a simultaneous comparison of a protein profile against all DNA translation frames. *Nucleic Acids Res.* 24:2730-2739.