

Christer Höög

List of publications ()

Original articles:

1. **Höög, C.** and Wieslander, L. (1984) Different evolutionary behaviour of structurally related repetitive sequences occurring in the same Balbiani ring gene in *Chironomus tentans*. Proc. Natl. Acad. Sci., USA, 81, 5165-5169. (part of thesis)
2. Wieslander, L., **Höög, C.**, Höög, J-O., Jörnvall, H., Lendahl, U. and Daneholt, B. (1984) Conserved and non-conserved structures in the secretory proteins encoded in the Balbiani ring genes of *Chironomus tentans*. Journal of Molecular Evolution, 20, 304-313. (part of thesis)
3. **Höög, C.**, Engberg, C. and Wieslander, L. (1986) A BR1 gene in *Chironomus tentans* has a composite structure: A large repetitive core block is separated from a short unrelated 3'-terminal domain by a small intron. Nucleic Acids Research, 14, 703-719. (part of thesis).
4. Lendahl, U., Edström, J-E., **Höög, C.**, Saiga, I. and Wieslander, L. (1987) Rapid and concerted evolution of repeats units in a Balbiani ring gene. Genetics, 117, 43-49.
5. **Höög, C.**, Daneholt, B. and Wieslander, L. (1988) Tandem repeats in long repeat arrays are likely to reflect the early evolution of Balbiani ring genes. J. Mol. Biol., 200, 655-664.
6. Cutting, A.E., **Höög, C.**, Calzone, F.C. and Davidson, E.H.D. (1990) Rare maternal mRNAs code for regulatory proteins that control lineage-specific gene expression in the sea urchin embryo. Proc. Natl. Acad. Sci. USA 87, 7953-7957.
7. **Höög, C.**, Calzone, F.J., Cutting, A.E., Britten, R.J. and Davidson, E.H.D. (1991) Gene regulatory factors of the sea urchin embryo. II. Two dissimilar proteins, P3A1 and P3A2, bind to the same target sites that are required for early territorial gene expression. Development 112, 335-350.
8. Calzone, F.J., **Höög, C.**, Teplow, D.P., Cutting, A.E., Zeller, R.W., Britten, R.J. and Davidson, E.H.D. (1991) Gene regulatory factors of the sea urchin embryo. I.

Purification by affinity chromatography and cloning of P3A2, a novel DNA-binding protein. *Development* 112, 351-364.

9. **Höög, C.**, Schalling, M., Grunder-Brundell, E. and Daneholt, B. (1991) Analysis of a murine male germ cell-specific transcript that encodes a putative zinc finger protein. *Molecular Reproduction and Development* 30, 173-181.

10. **Höög, C.** (1991) Isolation of a large number of novel mammalian genes by a differential cDNA library screening strategy. *Nucleic Acids Research* 19, no. 22, 6123-6127.

11. Paulsson, G., **Höög, C.**, Bernholm, K. and Wieslander, L. (1992) Balbiani ring 1 gene in *Chironomus tentans* - Sequence organization and dynamics of a coding minisatellite. *Journal of Molecular Biology* 225, 349-361.

12. Starborg, M., Brundell, E. and **Höög, C.** (1992) Analysis of the expression of a large number of novel genes isolated from mouse prepubertal testis. *Molecular Reproduction and Development* 33, 243-252.

13. Starborg, M., Brundell, E., Gell, K. and **Höög, C.** (1994) A novel murine gene encoding a 214 kD protein is related to a mitotic checkpoint regulator previously identified in *Aspergillus nidulans*. *Journal of Biological Chemistry* 269, 24133-24137.

14. **Höög, C.** (1995). Expression of a large number of novel testis-specific genes during spermatogenesis coincides with the functional reorganization of the male germ cell. *International Journal of Developmental Biology* 39, 719-726.

15. Yuan, L., Liu, J. G. and **Höög, C.** (1995) Rapid cDNA sequencing in combination with RNA expression studies identifies a large number of male germ cell specific sequence tags. *Biology of Reproduction* 52, 131-138.

16. Starborg, M., Brundell, E., Gell, K. Larsson, C., White, I., Daneholt, B. and **Höög, C.** (1995). A murine replication protein accumulates temporarily in the heterochromatic regions of nuclei prior to initiation of DNA replication. *Journal of Cell Science* 108, 927-934.

17. Penttilä, T.-L., Yuan, L., Mali, P., **Höög, C.** and Parvinen, M. (1995) Haploid gene expression: temporal onset and storage patterns of 13 novel transcripts during rat and mouse spermatogenesis. *Biology of Reproduction*, 52, 131-138.
18. Starborg, M. and **Höög, C.** (1995) The murine replication protein P1 is differentially expressed during spermatogenesis. *European Journal of Cell Biology*, 68, 206-210.
19. Sundqvist, K., lotsova, V., Ziaie, S., Wiman, K, **Höög, C.** and Grafström, R. (1995) Identification of genes overexpressed in SqCC/Y1 human buccal epithelial cells using the differential display method. *International Journal of Oncology*, 7, 1123-1128.
20. **Höög, C.** (1996) Gene expression in male germ cells. In: *Gonadal function-genetics to physiology*. Frontiers in Endocrinology. Eds; T. Hillensjö and K. Ahren. Ares Serono Symposia Publications 18, 5-11. (Review)
21. Starborg, M. Gell, K., Brundell, E. and **Höög, C.** (1996) The murine homologue of the human Ki-67 cell proliferation antigen associates to the chromosomes of interphase and mitotic cells in a process essential for cell cycle progression. *Journal of Cell Science*, 109, 143-153.
22. Liu, J. G., Yuan, L., Björkroth, B., Brundell, E., Daneholt, B. and **Höög, C.** (1996) Localization of the N-terminus of SCP1 to the central element of the synaptonemal complex and evidence for direct interactions between the N-termini of SCP1 molecules organized head-to-head. *Experimental Cell Research*, 226, 11-19.
23. Larsson, M., Brundell, E., Nordfors, L., **Höög, C.**, Uhlen, M. and Ståhl, S. (1996). A general bacterial expression system for functional analysis of cDNA encoded proteins. *Protein Expression and Purification*, 7, 447-457.
24. Peters, J.M., King, R. W., **Höög, C.** and Kirschner, M. W. (1996). Identification of BIME as a subunit of the anaphase promoting complex. *Science*, 274, 1199-1201.
25. Yuan, L., Brundell, E. and **Höög, C.** (1996). Expression of the meiosis-specific synaptonemal complex protein 1 in a heterologous system results in the formation of large protein structures. *Exp. Cell Res.* 229, 272-275.
26. Kolmer, M., Pelto-Huikko, M., Parvinen, M., **Höög, C.** and Alho, H. (1997). The transcriptional and the translational control of diazepam binding inhibitor (DBI)

expression in rat male germ-line cells: the biological function of DBI in spermatozoa may be related to sperm motility. *DNA and Cell Biol.* 16, 59-72.

27. Sage, J., Liu, J-G., Martin, L., Mattei, M-G., Guenet, J-L., Li, Yuan., **Höög, C.**, Cuzin, F. and Rassoulzadegan, M. (1997). The SCP1 loci of the mouse genome: the progressive spread of a meiotic retroposon. *Genomics* 44, 118-126.

28. Pousette, Å., Leijonhufvud, P., Arver, S., Kvist, S., Pelttari, J. and **Höög, C.** (1997). Presence of SCP1 transversal filament like protein in biopsies from human testis. *Hum. Reproduction.* 12, 2414-2417.

29. Jörgensen, P., Brundell, E., Starborg, M. and **Höög, C.** (1998). A subunit of the anaphase-promoting complex is a centromere-associated protein in mammalian cells. *Mol. Cell. Biol.* 18, 468-476, 1998.

30. Kotani, S., Tugendreich, S., Fuji, M., Jörgensen, P. M., Watanabe, N., **Höög, C.**, Hieter, P. and Todokoro, K. (1998). PKA and MPF-activated Polo-like kinase regulate anaphase-promoting complex activity and mitosis progression. *Molecular Cell*, 1, 371-380.

31. Yuan, L., Pelttari, J. Brundell, E., Björkroth, B., Liu, J. G., Brismar, H. and Daneholt, B. and **Höög, C.** (1998). The synaptonemal complex protein SCP3 can form multi-stranded, cross-striated fiber *in vivo*. *J. Cell Biol.* 142, 331-339.

32. Jarrous, N., Eder, P. S., Guerrier-Takada, C., **Höög, C.** and Altman, S. (1998). Autoantigenic properties of some protein subunits of catalytically active complexes of human ribonuclease P. *RNA*, 4, 407-417.

33. Norrander, J. M., Larsson, M., Ståhl, S., **Höög, C.** and Linck, R. W. (1998). Expression of ciliary tektins in brain and sensory development. *J. Neuroscience* 18, 8912-8918.

34. Larsson, M., Brundell, E., Jörgensen, P. M., Ståhl, S. and **Höög, C.** (1999). Characterization of a novel nucleolar protein that associates with the condensed chromosomes in mitotic cells. *Eur. J. Cell Biol.* 78, 382-390.

35. Gräslund, S., Larsson, M., Sterky, F., Uhlen, M., Lundeberg, J., **Höög, C.** and Ståhl, S. (1999) Recovery of upstream cDNA sequences by a PCR-based biotin - capture method. *Biotechniques* 27, 488-498.
36. Yuan, L., Liu, J. G., Zhao, J., Brundell, E., Daneholt, B. and **Höög, C.** (2000) The murine SCP3 gene is required for synaptonemal complex assembly, chromosome synapsis and male fertility. *Molecular Cell* 5, 73-83.
37. Larsson, M., Gräslund, S., Yuan, L., Brundell, E., Uhlen, M., **Höög, C.** and Ståhl, S. (2000) High-throughput protein expression of cDNA products as a tool in functional genomics. *J. Biotechnology* 80, 143-157.
38. Larsson, M., Norrander, J., Brundell, E., Linck, R. W., Ståhl, S. and **Höög, C.** (2000). The spatial and temporal expression of Tekt 1, a mouse tektin C homologue, during spermatogenesis suggests that it is involved in the development of the sperm tail basal body and axoneme. *Eur. J. Cell Biol* 79, 718-725.
39. Hoja, M. R., Wahlestedt, C. and **Höög, C.** (2000). A visual intracellular classification strategy for uncharacterized human proteins. *Exp. Cell Res.* 259, 239-246.
40. Daum, J. R., Tugendreich, S., Topper, L. M., Jörgensen, P. M., **Höög, C.**, Hieter, P. and Gorbsky, G. J. (2000) The 3F3/2 anti-phosphoepitope antibody binds the mitotically phosphorylated anaphase-promoting complex/cyclosome. *Curr Biol.* 10, 850-2.
41. Jörgensen, P. M., Gräslund, S., Betz, R., Larsson, C., Ståhl, S. and **Höög, C.** (2001). Characterization of the human APC1 protein, a component of the anaphase promoting complex. *Gene* 262, 51-59..
42. Yuan, L., Liu, J. G., Hoja, M. R., Lightfoot, D. A. and **Höög, C.** (2001). A p53-independent checkpoint that monitors chromosomal pairing in meiotic cells. *Cell Death and Diff.* 8, 316-317.
43. Pelttari, J. Hoja, M. R., Yuan, L., Liu, J. G., Brundell, E. Moens, P., Santucci-Darmanin, S., Jessberger, R., Barbero, J. L., Heyting, C., and **Höög, C.** (2001). A meiotic chromosomal core consisting of cohesin complex proteins recruits DNA

recombination proteins and promotes synapsis in the absence of an axial element in mammalian meiotic cells. *Mol. Cell. Biol.* 21, 5667-5677.

44. Forsberg, L., Zablewska, B., Piehl, F., Weber, G., Lagercrantz, S., Gaudray, P., **Höög, C.** and Larsson, C. (2001) Differential expression of multiple alternative splice forms of the Men1 tumour suppressor gene in mouse. *Int. J. Mol. Med.* 8, 681-689.

45. Yuan, L., Liu, J. G., Hoja, M. R., Wilbertz, J. Nordqvist, K. and **Höög, C.** (2002) Female germ cell aneuploidy and embryo death in mice lacking the meiosis-specific protein SCP3. *Science*, 296, 1115-1118.

46. Gräslund, S., Falk, R., Brundell, E., **Höög, C.** and Ståhl, S. (2002) A high-stringency proteomics concept aimed for generation of antibodies specific for cDNA-encoded proteins. *Biotech. Appl. Biochem.* 35, 75-82.

47. Gräslund, S., Larsson, M., Falk, R., Uhlen, M., **Höög, C.** and Ståhl, S. (2002) Single vector three-frame expression system for affinity-tagged proteins. *FEMS Microbiol. Letters* 215, 139-147

48. Agaton et al....**Höög, C.**, Lundeberg, J., Ståhl, S., Ponten, F. and Uhlen, M. (2003) Affinity proteomics for systematic protein profiling of chromosome 21 gene products in human tissues. *Mol Cell Prot* 2.6:405-413.

49. Liebe, B., Alsheimer, M., **Höög, C.**, Benavente, R. and Scherthan, H. (2004) Telomere attachment, meiotic chromosome condensation, pairing and bouquet stage duration are modified in spermatocytes lacking axial elements. *Mol. Biol. Cell* 15, 827-837.

50. Kolas, N. K., Yuan, L., **Höög, C.**, Heng, H. H. Q., Marcon, E. and Moens, P. B. (2004) Male mouse meiotic chromosome cores deficient in structural proteins SCP2 and SCP3 align by homology but fail to synapse and have possible impaired specificity of chromatin loop attachment. *Cytogenet. Genome Res.*, 105, 182-188.

51. Wu, W., Hodges, E., Redelius, J and **Höög, C.** (2004) A novel approach for evaluating the efficacy of siRNAs in cultured cells. *Nucleic Acids Research* 32 (2) e17 p. 1-6.

52. Lightfoot, D and **Höög, C.** (2004) Low-level chromosomal instability in embryonic cells of primary aneuploid mice. *Cytogenet. Genome Res.* 107, 95-98.
53. Kemmer D.,**Höög, C.**, Agarwal P. and Wasserman W. W (2004) Exploring the foundation of genomics: a Northern blot reference set for the comparative analysis of transcript profiling technologies. *Comparative and Functional Genomics* 5, 284-289.
54. Kouznetsova, A. Novak, I. Jessberger, R. and **Höög, C.** (2005) SYCP2 and SYCP3 are required for cohesin core integrity at diplotene but not for centromere cohesion at the first meiotic division. *J Cell Science* 118, 2271-2279..
55. Costa, Y., Speed, R., Ollinger, R., Alsheimer, M., Semple, C., Gautier, P., Maratou, K., Novak, I., **Höög, C.**, Benavente, R. and Cooke, R. (2005) Two novel proteins recruited by synaptonemal complex protein 1 (SYCP1) are at the centre of meiosis. *J. Cell Science* 118, 2755-2762.
56. Hodges, E., Redelius, J., Wu, W, and **Höög, C.** (2005) Accelerated discovery of novel protein functions in cultured human cells. *Mol Cell Proteomics* 4.9, 1319-1327.
57. Kolas, N. K., Marcon, E., Crackower, M. A., **Höög, C.**, Penninger, J. M., Spyropoulos, B. and Moens, P. (2005) Mutant meiotic chromosome core components in mice can cause apparent sexual dimorphic endpoints at prophase or X-Y defective male-specific sterility. *Chromosoma* 114, 92-102.
58. Lightfoot, D., Kouznetsova, A., Mahdy, E., Wilbertz, J. and **Höög, C.** (2006) The fate of mosaic aneuploid embryos during mouse development. *Dev. Biol.* 289, 384-394.
59. Wu, W., Hodges, E. and **Höög, C.** (2006) Thorough validation of siRNA-induced cell death phenotypes defines new anti-apoptotic protein. *Nucleic Acids Research* 34 (2) e13 p. 1-5.
60. Kemmer, D., Podowski, R., Lim, L., Arenillas, D., Hodges, E., Roth, P, Sonnhammer, E. L. L., **Höög, C.** and Wasserman, W. (2006) NovelFam3000 – Uncharacterized Protein Domains Conserved Across Model Organisms. *BMC Genomics* 7, 48-49.

61. Wang, H and **Höög, C.** (2006) Structural damage to meiotic chromosomes impairs DNA recombination and checkpoint control in mammalian oocytes. *J. Cell Biol.* 173, 485-495.
62. Novak, I., Lightfoot, D., Wang, H., Eriksson, A., Mahdy, E and **Höög, C.** (2006) Mouse embryonic stem cells form follicle-like ovarian structures but do not progress through meiosis. *Stem Cells* 24:1931-1936.
63. Hamer, G., Gell, K., Kouznetsova, A., Novak, I., Benavente, R. and **Höög, C.** (2006) Characterization of a novel meiosis-specific protein within the central element of the synaptonemal complex. *J. Cell Science* 119, 4025-4032.
64. Kimmins, S., Crosio, C., Kotaja, N., Hirayama, J., Monaco, L., **Höög, C.**, van Duin, M., Gossen, J. A., and Sassone-Corsi, P. (2007) Differential functions of the Aurora-B and Aurora-C kinases in mammalian spermatogenesis. *Mol. Endocrinology.* 21, 726-739.
65. Schmitt, J., Benavente, R., Hodzic, D., **Höög, C.**, Stewart, C. L. and Alsheimer M. (2007) Transmembrane protein Sun2 is involved in tethering meiotic telomeres to the nuclear envelope. *PNAS (USA)* 104, 7426-7431.
66. de Boer E., Dietrich A. J. J., **Höög, C.**, Stam, P. and Heyting, C. (2007) Meiotic interference among MLH1 foci requires neither an intact axial element structure nor full synapsis. *J. Cell Science* 120, 731-736.
67. Reynard LN, Turner JM, Cocquet J, Mahadevaiah SK, Toure A, **Höög, C.**, Burgoyne PS. (2007) Expression Analysis of the Mouse Multi-Copy X-Linked Gene Xlr-Related, Meiosis-Regulated (Xmr), Reveals That Xmr Encodes a Spermatid-Expressed Cytoplasmic Protein, SLX/XMR. *Biol Reprod.*, 77, 329-335.
68. Kouznetsova, A., Lister, L., Nordenskjöld, M., Herbert, M. and **Höög, C** (2007) Bi-orientation of achiasmatic chromosomes in meiosis I oocytes contributes to aneuploidy. *Nature Genetics* 39, 966-968.
69. Novak, I., Wang, H., Revenkova, E., Jessberger, R., Scherthan, H. and **Höög, C.** (2008) Cohesin SMC1b determines meiotic chromatin axis loop organization. *J. Cell Biol.* 180, 83-90.

70. Yang, F., Gell, K., van der Heijden, G., Eckardt, S., Leu, N. A., Page, D. C., Benavente, R., **Höög, C.**, McLaughlin, K. J. and Wang, P. J. (2008) Meiotic failure in male mice lacking an X-linked factor. *Genes & Development* 22, 682-691.

71. Hamer, G., Wang, H., Bolcun-Filas, E., Cooke, H. J., Benavente, R. and **Höög, C.** (2008) Progression of meiotic recombination requires structural maturation of the central element of the synaptonemal complex. *J. Cell Science* 121, 2445-2451.

72. McGuinness B. E., Anger, M., Kouznetsova, A., Gil-Bernabé, A. M., Helmhart, W., Kudo, N. R., Wuensche, A., Taylor, S., **Höög, C.**, Novak, B. and Nasmyth, K. (2009) Regulation of APC/C activity in oocytes by a Bub1-dependent spindle assembly checkpoint. *Current Biology* 19, 369-380.

73. Kouznetsova, A., Wang, H., Bellani, M., Camerini-Ottero, D., Jessberger, R. and **Höög, C.** (2009) BRCA1-mediated chromatin silencing is limited to oocytes with a small number of asynapsed chromosomes. *J. Cell Sci.*, 122, 2446-2452

74. Adelfalk, C., Janaschek, J., Revenkova, E., Scherthan, H., Göb, E., Alsheimer, M., Benavente, R., de Boer, E., Schröck, E., Eichenlaub-Ritter, U., Novak, I., **Höög, C.** and Jessberger, R. (2009) Cohesin Smc1beta protects telomeres in meiocytes. *J. Cell Biol.* 187, 185-199.

75. Fukuda, T., Daniel, K., Wojtasz, L., Toth, A. and Höög, C. (2010) A novel mammalian HORMA domain-containing protein, HORMAD1, preferentially associates with unsynapsed meiotic chromosomes. *Exp. Cell Research* 316, 158-171.

76. Hyslop, L., Kouznetsova, A., Pace, S., Barel, S., Lister, L., Floros, V., Kirkwood, T., **Höög, C.** and Herbert, M. (2010) Asynchronous segregation of homologous chromosomes in association with spindle checkpoint independent cohesin deficiency underlies maternal age related meiotic defects (submitted).

Reviews:

1. Wieslander, L., Lendahl, U. och **Höög, C.** (1986) Att spåra genernas förfäder. *Forskning och Framsteg*, 3, 48-54. (Review).

2. Wieslander, L., **Höög, C.**, Lendahl, U., and Daneholt, B. (1986) The Balbiani ring gene family - An example of satellite-like evolution of coding sequences. *Chemica Scripta*, 26B, 159-163.

3. **Höög, C.** (1987) Evolution of interior and terminal sequences in Balbiani ring genes - a study of the behaviour of coding tandem repeats in eucaryotic genes. PhD thesis, Karolinska Institutet, Stockholm, Sweden. ISBN 91-7900-200-5. (Thesis).

4. **Höög, C.**, Calzone, F.J., Cutting, A.E., Britten, R.J. and Davidson, E.H. (1990) Isolation of two non-homologous proteins recognizing an overlapping sequence motif controlling lineage specific gene expression. In "Molecular approaches to developmental biology" Wiley-Liss, Inc. 135-142.

5. **Höög, C.** (1996) Gene expression in male germ cells. In: Gonadal function-genetics to physiology. Frontiers in Endocrinology. Eds; T. Hillensjö and K. Ahren. Ares Serono Symposia Publications 18, 5-11. (Review)