

Monoclonal Antibody to Aromatase (376-390) - Supernatant

Alternate names:	ARO1, CYAR, CYP19, CYP19A1, CYPXIX, Cytochrome P450 19A1, Estrogen synthetase, P450AROM
Catalog No.:	SM2222P
Quantity:	1 ml
Background:	Aromatase is a key enzyme in steroidogenesis and plays an important role in sexual differentiation, oestrogen biosynthesis, fertility and carcinogenesis. It is highly conserved amongst mammals, and is highly expressed in placental tissue. Many environmental chemicals may influence aromatase activity and thereby disrupt endocrine function.
Uniprot ID:	P11511
NCBI:	NP_000094.2
GeneID:	1588
Host / Isotype:	Mouse / IgG2a
Clone:	H4
Immunogen:	Synthetic peptide corresponding to amino acids 376-390 of Human Aromatase.
Format:	State: Liquid 10 x Concentrated Tissue Culture Supernatant Preservatives: 0.09% Sodium Azide
Applications:	Immunocytochemistry (See Ref. 15; Oki 2012). Immunohistochemistry on Paraffin Sections: 1/100. Heat induced antigen retrieval with citrat buffer, pH 6.2 using a pressure cooker was preformed. Sections were blocking using a commercially available casein solution. Signal was generated using a commercially available polymer HRP detection system and DAB. This antibody has been described to work on paraffin sections without antigen retrieval using heat treatment. Recommended Positive Control Tissue: Human placenta (See Ref. 11; Jeong 2010). Western Blot: 1/250. Detects a band of approximately 55 kD in human placental extracts (See Ref. 4; Sirianni 2009). P450 aromatase is highly expressed in placental tissue. For tissues where there may be low expression of P450 aromatase, the use of microsomal extracts may improve the staining for Western blots using this antibody (See Ref. 1; Turner 2002). Other applications not tested. Optimal dilutions are dependent on conditions and should be determined by the user.

- Specificity:** This antibody SM2222P (Clone H4) recognizes a conserved epitope within Cytochrome P450 Aromatase (P450 arom).
Negative Species: Giraffe.
Species: Human, Rat, Marmoset, Chicken, Mouse, Pig, Baboon, Bovine, Horse, Great fruit eating bat, Rabbit, Sheep, Collared peccary and Goat.
Other species not tested.
- Storage:** Store undiluted at 2-8°C for one month or (in aliquots) at -20°C for longer.
Avoid repeated freezing and thawing.
Shelf life: one year from despatch.
- Product Citations:** **Purchased from Acris:**
1. Colette S, Lousse JC, Defrère S, Curaba M, Heilier JF, Van Langendonck A, et al. Absence of aromatase protein and mRNA expression in endometriosis. *Hum Reprod.* 2009 Sep;24(9):2133-41. doi: 10.1093/humrep/dep199. Epub 2009 Jun 2. PubMed PMID: 19493871.
 2. Bender RA, Zhou L, Wilkars W, Fester L, Lanowski JS, Paysen D, et al. Roles of 17β-estradiol involve regulation of reelin expression and synaptogenesis in the dentate gyrus. *Cereb Cortex.* 2010 Dec;20(12):2985-95. doi: 10.1093/cercor/bhq047. Epub 2010 Apr 26. PubMed PMID: 20421250.
 3. Horling K, Santos AN, Fischer B. The AhR is constitutively activated and affects granulosa cell features in the human cell line KGN. *Mol Hum Reprod.* 2011 Feb;17(2):104-14. doi: 10.1093/molehr/gaq074. Epub 2010 Sep 7. PubMed PMID: 20823264.
 4. Schicht M, Ernst J, Nielitz A, Fester L, Tsokos M, Guddat SS, et al. Articular cartilage chondrocytes express aromatase and use enzymes involved in estrogen metabolism. *Arthritis Res Ther.* 2014 Apr 11;16(2):R93. doi: 10.1186/ar4539. PubMed PMID: 24725461.
- General Readings:**
1. Turner KJ, Macpherson S, Millar MR, McNeilly AS, Williams K, Cranfield M, et al. Development and validation of a new monoclonal antibody to mammalian aromatase. *J Endocrinol.* 2002 Jan;172(1):21-30. PubMed PMID: 11786371.
 2. Lu Y, Amleh A, Sun J, Jin X, McCullough SD, Baer R, et al. Ubiquitination and proteasome-mediated degradation of BRCA1 and BARD1 during steroidogenesis in human ovarian granulosa cells. *Mol Endocrinol.* 2007 Mar;21(3):651-63. Epub 2006 Dec 21. PubMed PMID: 17185394.
 3. Zhao D, McBride D, Nandi S, McQueen HA, McGrew MJ, Hocking PM, et al. Somatic sex identity is cell autonomous in the chicken. *Nature.* 2010 Mar 11;464(7286):237-42. doi: 10.1038/nature08852. PubMed PMID: 20220842.
 4. Sirianni R, Chimento A, De Luca A, Zolea F, Carpino A, Rago V, et al. Inhibition of cyclooxygenase-2 down-regulates aromatase activity and decreases proliferation of Leydig tumor cells. *J Biol Chem.* 2009 Oct 16;284(42):28905-16. doi: 10.1074/jbc.M109.041020. Epub 2009 Aug 13. PubMed PMID: 19679653.
 5. Carpino A, Rago V, Pezzi V, Carani C, Andò S. Detection of aromatase and estrogen receptors (ERalpha, ERbeta1, ERbeta2) in human Leydig cell tumor. *Eur J Endocrinol.* 2007 Aug;157(2):239-44. PubMed PMID: 17656605.
 6. Catalano S, Malivindi R, Giordano C, Gu G, Panza S, Bonofiglio D, et al. Farnesoid X receptor, through the binding with steroidogenic factor 1-responsive element, inhibits aromatase expression in tumor Leydig cells. *J Biol Chem.* 2010 Feb 19;285(8):5581-93. doi: 10.1074/jbc.M109.052670. Epub 2009 Dec 21. PubMed PMID: 20026603.
 7. Wu YG, Bennett J, Talla D, Stocco C. Testosterone, not 5α-dihydrotestosterone, stimulates LRH-1 leading to FSH-independent expression of Cyp19 and P450scc in granulosa cells. *Mol Endocrinol.* 2011 Apr;25(4):656-68. doi: 10.1210/me.2010-0367. Epub 2011 Jan 27. PubMed PMID: 21273442.
 8. Lu Y, Kang T, Hu Y. BRCA1/BARD1 complex interacts with steroidogenic factor 1--A potential mechanism for regulation of aromatase expression by BRCA1. *J Steroid Biochem Mol Biol.* 2011 Jan;123(1-2):71-8. doi: 10.1016/j.jsbmb.2010.11.006. Epub 2010 Nov 16.

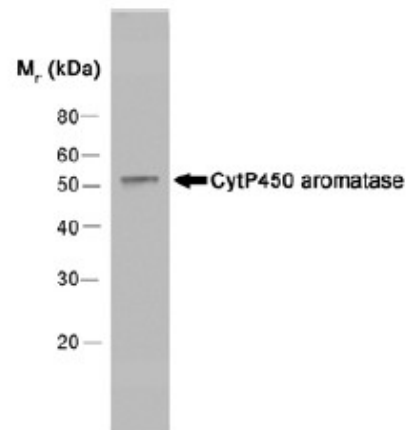
PubMed PMID: 21087664.

9. Barone I, Cui Y, Herynk MH, Corona-Rodriguez A, Giordano C, Selever J, et al. Expression of the K303R estrogen receptor-alpha breast cancer mutation induces resistance to an aromatase inhibitor via addiction to the PI3K/Akt kinase pathway. *Cancer Res.* 2009 Jun 1;69(11):4724-32. doi: 10.1158/0008-5472.CAN-08-4194. PubMed PMID: 19487288.
10. Ghosh S, Lu Y, Hu Y. A Role of CREB in BRCA1 Constitutive Promoter Activity and Aromatase Basal Expression. *Int J Biomed Sci.* 2008 Dec 15;4(4):260-265. PubMed PMID: 19568323.
11. Jeong JH, Jung YK, Kim HJ, Jin JS, Kim HN, Kang SM, et al. The gene for aromatase, a rate-limiting enzyme for local estrogen biosynthesis, is a downstream target gene of Runx2 in skeletal tissues. *Mol Cell Biol.* 2010 May;30(10):2365-75. doi: 10.1128/MCB.00672-09. Epub 2010 Mar 15. PubMed PMID: 20231365.
12. Rago V, Romeo F, Aquila S, Montanaro D, Andò S, Carpino A. Cytochrome P450 aromatase expression in human seminoma. *Reprod Biol Endocrinol.* 2005 Dec 22;3:72. PubMed PMID: 16372909.
13. Schmidt M, Weidler C, Naumann H, Anders S, Schölmerich J, Straub RH. Androgen conversion in osteoarthritis and rheumatoid arthritis synoviocytes--androstenedione and testosterone inhibit estrogen formation and favor production of more potent 5alpha-reduced androgens. *Arthritis Res Ther.* 2005;7(5):R938-48. Epub 2005 Jun 10. PubMed PMID: 16207335.
14. Stabile, L.P. et al. (2012) Prevention of Tobacco Carcinogen-Induced Lung Cancer in Female Mice Using Anti-Estrogens. *Carcinogenesis.* Aug 2. [Epub ahead of print]
15. Oki Y, Ono H, Motohashi T, Sugiura N, Nobusue H, Kano K. Dedifferentiated follicular granulosa cells derived from pig ovary can transdifferentiate into osteoblasts. *Biochem J.* 2012 Oct 15;447(2):239-48. PubMed PMID: 22839299.
16. Campbell BK, Clinton M, Webb R. The role of anti-Müllerian hormone (AMH) during follicle development in a monovulatory species (sheep). *Endocrinology.* 2012 Sep;153(9):4533-43. doi: 10.1210/en.2012-1158. Epub 2012 Jul 9. PubMed PMID: 22778215.
17. Wilsher S, Stansfield F, Greenwood RE, Trethowan PD, Anderson RA, Wooding FB, et al. Ovarian and placental morphology and endocrine functions in the pregnant giraffe (*Giraffa camelopardalis*). *Reproduction.* 2013 May 21;145(6):541-54. doi: 10.1530/REP-13-0060. Print 2013 Jun. PubMed PMID: 23550169.
18. Beyer C, Green SJ, Hutchison JB. Androgens influence sexual differentiation of embryonic mouse hypothalamic aromatase neurons in vitro. *Endocrinology.* 1994 Sep;135(3):1220-6. PubMed PMID: 8070366.
19. Grzesiak M, Knapczyk-Stwora K, Duda M, Slomczynska M. Elevated level of 17 β -estradiol is associated with overexpression of FSHR, CYP19A1, and CTNNB1 genes in porcine ovarian follicles after prenatal and neonatal flutamide exposure. *Theriogenology.* 2012 Dec;78(9):2050-60. doi: 10.1016/j.theriogenology.2012.07.026. Epub 2012 Oct 5. PubMed PMID: 23043943.
20. Pakarainen T, Zhang FP, Nurmi L, Poutanen M, Huhtaniemi I. Knockout of luteinizing hormone receptor abolishes the effects of follicle-stimulating hormone on preovulatory maturation and ovulation of mouse graafian follicles. *Mol Endocrinol.* 2005 Oct;19(10):2591-602. Epub 2005 Jun 7. PubMed PMID: 15941853.
21. Rago V, Aquila S, Panza R, Carpino A. Cytochrome P450arom, androgen and estrogen receptors in pig sperm. *Reprod Biol Endocrinol.* 2007 Jun 6;5:23. PubMed PMID: 17553131.
22. Pannetier M, Fabre S, Batista F, Kocer A, Renault L, Jolivet G, et al. FOXL2 activates P450 aromatase gene transcription: towards a better characterization of the early steps of mammalian ovarian development. *J Mol Endocrinol.* 2006 Jun;36(3):399-413. PubMed PMID: 16720712.
23. Mann GE, Scholey DV, Robinson RS. Identification of elevated concentrations of estradiol in bovine uterine endometrium. *Domest Anim Endocrinol.* 2007 Nov;33(4):437-41. Epub 2006 Sep 25. PubMed PMID: 17049801.

24. Fazleabas AT, Brudney A, Chai D, Langoi D, Bulun SE. Steroid receptor and aromatase expression in baboon endometriotic lesions. *Fertil Steril.* 2003 Sep;80 Suppl 2:820-7. PubMed PMID: 14505759.
25. Mlodawska W, Slomczynska M. Immunohistochemical localization of aromatase during the development and atresia of ovarian follicles in prepubertal horses. *Theriogenology.* 2010 Dec;74(9):1707-12. doi: 10.1016/j.theriogenology.2010.04.019. Epub 2010 Oct 6. PubMed PMID: 20932560.
26. Castro B, Sánchez P, Torres JM, Preda O, del Moral RG, Ortega E. Bisphenol A exposure during adulthood alters expression of aromatase and 5 α -reductase isozymes in rat prostate. *PLoS One.* 2013;8(2):e55905. doi: 10.1371/journal.pone.0055905. Epub 2013 Feb 6. PubMed PMID: 23405234.
27. Oliveira RL, Nogueira JC, Mahecha GA, Oliveira CA. Seasonal variation in estrogen receptor ER α , but not ER β , androgen receptor and aromatase, in the efferent ductules and epididymis of the big fruit-eating bat *Artibeus lituratus*. *Gen Comp Endocrinol.* 2012 Oct 1;179(1):1-13. doi: 10.1016/j.ygcen.2012.06.028. Epub 2012 Jul 26. PubMed PMID: 22841763.
28. Hanoux V, Bouraima H, Mittre H, Féral C, Benhaim A. Differential regulation of two 3' end variants of P450 aromatase transcripts and of a new truncated aromatase protein in rabbit preovulatory granulosa cells. *Endocrinology.* 2003 Nov;144(11):4790-8. Epub 2003 Jul 31. PubMed PMID: 12960046.
29. Mayor P, Fenech M, Bodmer RE, Lopez-Bejar M. Ovarian features of the wild collared peccary (*Tayassu tajacu*) from the northeastern Peruvian Amazon. *Gen Comp Endocrinol.* 2006 Jul;147(3):268-75. Epub 2006 Mar 3. PubMed PMID: 16516212.
30. Gallet C, Dupont J, Campbell BK, Monniaux D, Guillaume D, Scaramuzzi RJ. The infusion of glucose in ewes during the luteal phase increases the number of follicles but reduces oestradiol production and some correlates of metabolic function in the large follicles. *Anim Reprod Sci.* 2011 Sep;127(3-4):154-63. doi: 10.1016/j.anireprosci.2011.07.017. Epub 2011 Aug 16. PubMed PMID: 21943503.

Pictures:

Western blot analysis of Human placenta extract probed with anti Human Cytochrome P450 Aromatase Antibody Cat.-No SM2222P/PS (Clone H4) followed by F(ab')₂ Rabbit anti Mouse IgG-HRP (Cat.-No SP1012HRP).



Staining of FFPE Human placenta with Aromatase (10x and 40x) Antibody Cat.-No SM2222PS (Clone H4) at 1/100 dilution. Antibody positive in the cell membrane of epithelial cells.

