

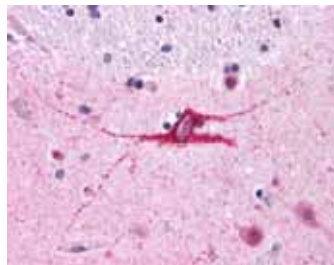
Antibodies to Adenosine Receptors

Introduction

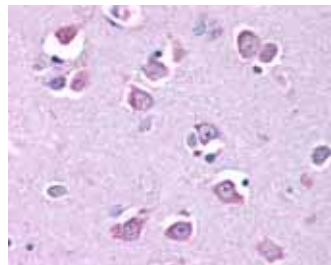
The purine nucleoside adenosine modulates diverse physiological functions including induction of sedation, vasodilatation, suppression of cardiac rate and contractility, neurotransmitter release, inhibition of platelet aggregation and lipolysis. Adenosine released from cells interacts with membrane receptors (adenosine receptors, ARs). Based upon, biochemical and pharmacological criteria, ARs have been classified into A1, A2a, A2b, and A3. The high affinity receptor A1 inhibits adenylyl cyclase, whereas low affinity receptor A2a stimulates the cyclase via G proteins. A2a receptor is believed to cause vasorelaxation in coronary artery. Various, ARs and their subtypes have recently been cloned from several species. ARs belong to the superfamily of G-protein coupled receptors and predicted to contain 7 transmembrane domains. The N-termini are predicted to be extracellular and the C-termini cytoplasmic. There is an overall 30% homology among the four ARs. ARs are distributed throughout the body. Gene location of various ARs: A1 (Chromosome 1; q.31.3-32.2); A2a (Chromosome 22); A2b (Chromosome 17; p.11.2-12); A3 (Chromos.1).

Antibody Tools for Detection of Adenosine Receptor Subtypes

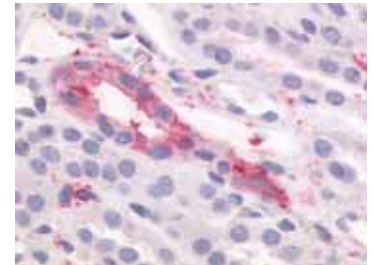
A panel of rabbit polyclonal antibodies specific for the different Adenosine Receptor subtypes was released recently by Acris Antibodies. Antibodies were specifically selected for use in immunohistochemistry on paraffin sections (see pictures below). This range is completed by an antibody panel manufactured by Alpha Diagnostics, San Antonio, distributed by Acris Antibodies. These antibodies are useful for different applications and were described in many publications (see Alpha reference list on the backside).



Staining of neurons in human Brain for AA1R using SP4053



Staining of neurons and glia in hu brain for AA2AR using SP4054



Staining of human kidney for AA3R using SP4055P

Host	Reactivity	Application	Quantity	Cat. No.
Antibody Panel to Adenosine A1 Receptor				
Rabbit	Hu, Ms, Rt	P(m)	0.05 mg	SP4053P
Rabbit	Hu, Rt, Bov	P, IP, WB	0.1 ml	SP5020P
Rabbit	Hu, Rt, Bov, Por, Can, Sh, Rb	C, P, WB	0.1 mg	A1R11-A
Antibody Panel to Adenosine A2a Receptor				
Rabbit	Hu, Rt	P(m)	0.05 mg	SP4054P
Rabbit	Hu, Can	P, IP, WB	0.1 ml	SP5021P
Rabbit	Hu, Rt, Bov, Por, Can	C, IF, P, WB	0.1 mg	A2AR21-A
Polyclonal Antibody to Adenosine A2b Receptor				
Rabbit	Hu, Ms, Rt	C, IF, P, WB	0.1 mg	A2BR23-A
Antibody Panel to Adenosine A3 Receptor				
Rabbit	Hu	P(m)	0.05 mg	SP4056P
Rabbit	Hu	P(m)	0.05 mg	SP4055P
Rabbit	Rt	WB	0.1 mg	A3R31-A
Rabbit	Hu	C, IF, WB	0.1 mg	A3R32-A

Bov: Cow, Can: Dog, Hu: Human, Ms: Mouse, Por: Pig, Rb: Rabbit, Rt: Rat, Sh: Sheep IF: Immunofluorescence, IP: Immunoprecipitation
C: Immunohistochemistry on frozen sections, P(m): Immunohistochemistry on paraffin sections (microwave), WB: Western Blot

See Backside for Alpha Diagnostics reference list!!

Reference List for Alpha Diagnostics Antibodies

Adenosine A1 Receptor

- Diniz C 2003 Regional differences in the adenosine A2 receptor-mediated modulation of contractions in rat vas deferens *European Journal of Pharmacology*, 460, Pages 191-199 IHC: rat PF/Paraffin.
- Nayeem MA 2002 Protein kinase C isoforms and A1 adenosine receptors in porcine coronary smooth muscle cells *Vascular Pharmacology*, Volume 39, Issues 1-2, 47-54 WB:porcine heart.
- Blum D 2002 The Adenosine A1 Receptor Agonist Adenosine Amine Congener Exerts a Neuroprotective Effect against the Development of Striatal Lesions and Motor Impairments in the 3-Nitropropionic Acid Model of Neurotoxicity *J Neurosci.* 22, 9122-9133 WB: rat brain/79 kda.
- Rees DA 2002 Adenosine-Regulated Cell Proliferation in Pituitary Folliculostellate and Endocrine Cells: Differential Roles for the A1 and A2B Adenosine Receptors *Endocrinology* Vol. 143, No. 6 2427-2436 IHC: ethal fixed, AtT-20 pituitary cells.
- Jane A. Smith et al 2001 Immunolocalisation of adenosine A1 receptors in the rat kidney *Biochemical Pharmacology*, 61, 15 January 2001, 237-244 , WB IHC formalin-fixed paraffin embedded.
- Christofi FL 2001 Differential gene expression of adenosine A1, A2a, A2b, and A3 receptors in the human enteric nervous system, *J Comp. Neurol.* 439, 46-64 IHC/IF human ileum jejunum.
- Lasley, Robert D. 2000 Activated Cardiac Adenosine A1 Receptors Translocate Out of Caveolae *J. Biol. Chem* 275: 4417-4421, WB IHC rat cardiomyocytes.
- Cooke, Helen J 1999 Activation of neuronal adenosine A1 receptors suppresses secretory reflexes in the guinea pig colon , *Am J Physiol Gastrointest Liver Physiol* 276: 451G-462G ; IHC guinea pig/immunofluorescence
- Mayne, M. et al 1999 Dysregulation of Adenosine A1 Receptor-Mediated Cytokine Expression in Peripheral Blood Mononuclear Cells from Multiple Sclerosis Patients. *Annals of Neurology.* 45(5):633-639, May 1999.
- Bhat, SG 1999 Cisplatin up-regulates Adenosine A1 receptors in rat testes *Eur J. Pharmacol.* 382, 35-43: WB IHC rat testicular membranes.
- Nie Zhongzhen 1998 Oxidative Stress Increases A1 Adenosine Receptor Expression by Activating Nuclear Factor B *Mol. Pharmacol.* 53: 663-669 , WB human DDT1MF2 smooth muscle cells.

Adenosine A2a Receptor

- Diniz C 2003 Regional differences in the adenosine A2 receptor-mediated modulation of contractions in rat vas deferens *European Journal of Pharmacology*, 460, 191-199, rat PF/Paraffin IHC.
- Kamiya T 2003 Oligomerization of adenosine A2A and dopamine D2 receptors in living cells. *Biophysical Research Communications*, Volume 306, Issue 2, 27 June 2003, Pages 544-549, WB, IHC/IF IP. Human cells cDNA.
- Christofi FL 2001 Differential gene expression of adenosine A1, A2a, A2b, and A3 receptors in the human enteric nervous system, *J Comp. Neurol.* 439, 46-64 IHC/IF human ileum jejunum.
- Nie Zhongzhen 1999 A Role of p75 in NGF-Mediated Down-Regulation of the A2A Adenosine Receptors in PC12 Cells *Mol. Pharmacol.* 56: 947-954, WB rat pc12 cells.
- Clancy, John P 1999 Adenosine and its nucleotides activate wild-type and R117H CFTR through an A2B receptor-coupled pathway, *Am J Physiol Cell Physiol* 276: 361C-369C WB IHC IP hu airway cells.
- Marala, Ravi B 1998 Immunological Characterization of Adenosine A2A Receptors in Human and Porcine Cardiovascular Tissues, *J. Pharmacol. Exp. Ther.* 286: 1051-1057 WB human, porcine.

Adenosine A2b Receptor

- Meade CJ et al 2002 Induction of interleukin 8 release from the HMC-1 mast cell line: Synergy between stem cell factor and activators of the adenosine A2b receptor *Biochemical Pharmacology* 64, 317-325 HMC-1 cells.
- Rees DA 2002 Adenosine-Regulated Cell Proliferation in Pituitary Folliculostellate and Endocrine Cells: Differential Roles for the A1 and A2B Adenosine Receptors, *Endocrinology* 143, 2427-2436, ethanol fixed, AT-20 pituitary cells IHC.
- Clancy, John P 1999 Adenosine and its nucleotides activate wild-type and R117H CFTR through an A2B receptor-coupled pathway, *Am J Physiol Cell Physiol* 276: 361C-369C , WB IHC IP human air3way cells.

Adenosine A3 Receptor

- Trincavelli, M Letizia et al 2002 A3 Adenosine Receptors in Human Astrocytoma Cells: Agonist-Mediated Desensitization, Internalization, and Down-Regulation , *Mol. Pharmacol.* 62: 1373-1384, immunogold EM, human cells EM.
- Trincavelli, M Letizia et al 2002 Involvement of mitogen protein kinase cascade in agonist-mediated human A3 adenosine receptor regulation, *BBA (Mol Cell Res.)* 1591, 55-62 cho cells/human A3/Phosphorylated A3R WB.
- Trincavelli, Maria Letizia et al 2000 Agonist-Induced Internalization and Recycling of the Human A3 Adenosine Receptors: Role in Receptor Desensitization and Resensitization *J. Neurochem.* 2000 75: 1493-1501, IHC human A3 in CHO-transfected