

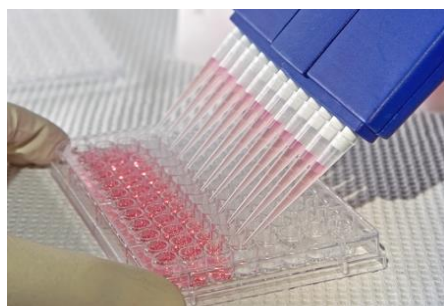


## Cell-Based Assays 2019

Axxam S.p.A. (Italy) offers **functional cell-based assays** for protein targets of relevance to drug discovery research, including challenging targets such as multi subunit ion channels and current “hot” targets of interest. All assays are thoroughly QCed and validated for high throughput screening (HTS) applications using 96- and 384-well titer plates. We are continually developing new assays. If your target of interest is not listed in this catalogue please inquire for availability.

### Key Features

- Reliable, high quality assays
  - ▶ optimal cell lines and detection systems
  - ▶ stable expression over time
  - ▶ validated using reference compounds
  - ▶ ion channel assays validated for patch clamp
- Available as off-the-shelf products or as part of contract research projects at Axxam
- Expert technical support
- Assays details can be provided upon request



Assay Portfolio		
Protein class	No. Assays	Page
GPCRs	57	2-3
Ion Channels	34	4-5
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Exchangers	3	7
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### Custom Assay Development

Axxam undertakes custom assay development projects. Our highly experienced team has developed numerous cell-based assays using cutting-edge technologies, including difficult targets that other groups have found intractable. Axxam’s proprietary technologies may help you to circumvent IP restrictions on your target of interest. Delivery time of a new assay in a 384-well plate-adapted format can be as little as 4 months.

## Assay List

Target Class: GPCRs			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Adenosine receptors	ADORA1	Adenosine A1 receptor	134
	Adora1 <b>NEW!</b>	Mouse adenosine A1 receptor	11539
	Adora1 <b>NEW!</b>	Rat adenosine A1 receptor	29290
	ADORA2A	Adenosine A2a receptor	135
	Adora2a <b>NEW!</b>	Mouse adenosine A2a receptor	11540
	Adora2a <b>NEW!</b>	Rat adenosine A2a receptor	25369
	ADORA2B <b>NEW!</b>	Adenosine A2b receptor	136
	Adora2b <b>NEW!</b>	Mouse adenosine A2b receptor	11541
	Adora2b <b>NEW!</b>	Rat adenosine A2b receptor	29316
	ADORA3 <b>NEW!</b>	Adenosine A3 receptor	140
	Adora3 <b>NEW!</b>	Mouse adenosine A3 receptor	11542
Adrenergic receptors	ADRA2A	Adrenergic, alpha-2A-, receptor	150
	ADRA2C	Adrenergic, alpha-2C-, receptor	152
Bile acids receptors	GPBAR1	G protein coupled bile acid receptor 1 -TGR5	151306
Bradykinin receptors	BDKRB1	Bradykinin receptor B1	623
	Bdkrb1 (rat)	Rat bradykinin receptor 1	81509
	BDKRB2	Bradykinin receptor B2	624
Cannabinoid receptors	CNR1	Cannabinoid receptor 1	1268
	CNR2	Cannabinoid receptor 2	1269
Chemokine (CXC) receptors	CCR2	Chemokine (C-C motif) receptor 2	1231
	CCR3	Chemokine (C-C motif) receptor 3	1232
	CCRL1 <b>NEW!</b>	Chemokine (C-C motif) receptor-like 1	51554
	CCR5 <b>NEW!</b>	Chemokine (C-C motif) receptor 5	1234
	Cx3cr1 (mouse)	Mouse chemokine (C-X3-C motif) receptor 1	13051
	Cx3cr1 (rat)	Rat chemokine (C-X3-C motif) receptor 1	171056
	CXCR1	Interleukin 8 receptor, alpha	3577
	CXCR2	Interleukin 8 receptor, beta	3579
Chemokine (CXC) receptors	CXCR3	CXC chemokine receptor 3	2833
	CMKLR1	Chemokine-Like Receptor 1 - ChemR23	1240

Please be aware that provision of the above listed assays may require third party licenses. All products are for research use only.

## Assay List

Target Class: <b>GPCRs</b> (continued)			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Cholinergic receptors	<b>CHRM2</b>	Cholinergic receptor, muscarinic 2	1129
Class Frizzled GPCRs	<b>Smo</b> ( <i>endogenous - mouse</i> ) <b>NEW!</b>	Mouse smoothed homolog (Drosophila)	319757
Cholecystokinin receptors	<b>CCKAR</b>	Cholecystokinin A receptor	886
Complement component receptors	<b>C5aR1</b>	Complement component 5a receptor 1	728
Dopamine receptors	<b>DRD1</b>	Dopamine receptor D1	1812
	<b>DRD2</b>	Dopamine receptor D2	1813
	<b>DRD3</b>	Dopamine receptor D3	1814
Fatty acid receptors	<b>GPR119</b>	G protein-coupled receptor 119	139760
	<b>FFAR1</b>	Free fatty acid receptor 1, GPR40	2864
	<b>FFAR2</b>	Free fatty acid receptor 2, GPR43	2867
Formyl peptide receptors	<b>FPRL1</b>	FPRL1, formyl peptide receptor-like 1	2358
	<b>FPR1</b>	Formyl peptide receptor-1	2357
Galanin receptors	<b>GALR2</b>	Galanin Receptor 2	8811
Ghrelin	<b>GHSR</b>	Growth hormone secretagogue receptor	2693
Glucagon receptors	<b>GCGR</b>	Glucagon receptor	2642
	<b>GLP1R</b>	Glucagon-like peptide 1 receptor	2740
	<b>Glp1r</b> ( <i>rat</i> )	Rat glucagon-like peptide 1 receptor	25051
Glutamate receptor	<b>GRM1</b> <b>NEW!</b>	Glutamate receptor metabotropic 1	2911
Kynurenic acid receptor	<b>GPR35</b>	G protein-coupled receptor 35	2859
Leukotriene receptors	<b>LTB4R</b>	Leukotriene B4 receptor	1241
Lysophosphatidic acid receptors	<b>LPAR5</b>	Lysophosphatidic acid receptor 5, GPR93	57121
Neuropeptides receptor	<b>NPY2R</b>	Neuropeptide Y receptor 2	4887
Prokineticin receptors	<b>PROKR1</b> (GPR73)	Prokineticin receptor 1	10887
	<b>PROKR2</b> (GPR73L1)	Prokineticin receptor 2	128674
Prostanoid receptors	<b>PTGDR2</b>	GPR44, CRTH2, DP2, Prostaglandin D2 receptor	11251
Protease activated receptors	<b>F2RL3</b>	PAR4, Coagulation factor II (thrombin) receptor-like 3	9002
Serotonin receptor	<b>HTR2A</b>	Serotonin 5-HT-2A receptor	3356
Sphingosine-1 phosphate	<b>S1pr3</b> ( <i>mouse</i> )	<i>Mus musculus</i> Sphingosine-1-phosphate receptor 3	13610

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## Assay List

Target Class: <b>Ligand Gated Ion Channels</b>			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Ligand gated cationic channels	<b>P2RX1</b>	Purinergic receptor P2X, ligand-gated ion channel, 1	5023
	<b>P2rx1</b> ( <i>mouse</i> )	Mouse purinergic receptor P2X, ligand-gated ion channel, 1	18436
	<b>P2RX2/P2RX3</b>	Heteromeric P2X2/P2X3 receptor	22953 - 5024
	<b>P2RX3</b>	Purinergic receptor P2X, ligand-gated ion channel, 3	5024
	<b>P2rx3</b> ( <i>rat</i> )	Rat purinergic receptor P2X, ligand-gated ion channel, 3	81739
	<b>P2RX4</b>	Purinergic receptor P2X, ligand-gated ion channel, 4	5025
	<b>P2rx4</b> ( <i>mouse</i> )	Mouse purinergic receptor P2x ligand-gated ion channel, 4	18438
Chloride channels	<b>GABRA1-GABRB1-GABRG2</b>	Gamma-aminobutyric acid (GABA) A receptor, alpha 1, beta 1, gamma 2	2554 - 2560 - 2566
	<b>GLRA1</b>	Glycine receptor, alpha 1	2741
Transient receptor potential channels	<b>TRPA1</b>	ANKTM1, Transient receptor potential cation channel subfamily A member 1	8989
	<b>TRPC3</b>	Transient receptor potential cation channel, subfamily C, member 3	7222
	<b>TRPC5</b>	Transient receptor potential cation channel, subfamily C, member 5	7224
	<b>TRPC6</b>	Transient receptor potential cation channel, subfamily C, member 6	7225
	<b>TRPC7</b>	Transient receptor potential cation channel, subfamily C, member 7	57113
	<b>TRPM2</b>	Transient receptor potential cation channel, subfamily M, member 2	7226
	<b>TRPM5</b>	Transient receptor potential cation channel, subfamily M, member 5	29850
	<b>TRPM7</b>	Transient receptor potential cation channel, subfamily M, member 7	54822
	<b>TRPM8</b>	Transient receptor potential cation channel, subfamily M, member 8	79054
	<b>TRPV1</b>	Transient receptor potential cation channel, subfamily V, member 1	7442

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Target Class: Voltage-Gated Ion Channels			
Sub-family	Symbol	Aliases / Other Designations	GenelD
Voltage gated Na <sup>+</sup> channels	<b>SCN5A</b> (Nav 1.5) <b>NEW!</b>	Na <sup>+</sup> channel, voltage-gated, type V, alpha subunit	6331
	<b>SCN9A</b> (Nav1.7)	Na <sup>+</sup> channel, voltage-gated, type IX, alpha subunit	6335
Voltage gated K <sup>+</sup> channels	<b>KCNA5</b> (Kv1.5)	K <sup>+</sup> voltage-gated channel, Shaker-related subfamily A, member 5	3741
	<b>KCNB1</b> (Kv2.1)	K <sup>+</sup> voltage-gated channel, Shab-related subfamily B, member 1	3745
	<b>KCNQ2/KCNQ3</b> (Kv7.2/Kv7.3) <b>NEW!</b>	Heteromeric Potassium voltage-gated channel subfamily Q member 2; potassium voltage-gated channel subfamily Q member 3	3785 - 3786
Inwardly rectifying K <sup>+</sup> channels	<b>KCNJ4</b> (Kir 2.3)	K <sup>+</sup> inwardly-rectifying channel, subfamilyJ, member 4	3761
Voltage gated Ca <sup>2+</sup> channels	<b>CACNA1C</b> (Cav 1.2)	Ca <sup>2+</sup> channel, voltage-dependent, L type, alpha 1C subunit	775
	<b>CACNA1D</b> (Cav1.3)	Ca <sup>2+</sup> channel, voltage-dependent, L type, alpha 1D subunit	776
	<b>CACNA1B</b> (Cav 2.2) <i>endogenous</i> <b>NEW!</b>	Ca <sup>2+</sup> channel, voltage-dependent, N type, alpha 1B subunit	774
	<b>CACNA1I</b> (Cav 3.3) <b>NEW!</b>	Ca <sup>2+</sup> channel, voltage-dependent, T type, alpha 1I subunit	8911
Store-operated Ca <sup>2+</sup> channels	<b>CRAC</b>	ORAI1( calcium release-activated calcium modulator 1) + STIM-1 (stromal interaction molecule 1)	84876 - 6786
Calcium activated Cl <sup>-</sup> channels	<b>TMEM16A</b>	Trans-membrane protein 16A (Cl channel)	55107
Calcium activated K <sup>+</sup> channels	<b>KCNN3</b>	Potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3	3782
K <sup>+</sup> /Na <sup>+</sup> hyperpolarization-activated CNG channels	<b>HCN2</b>	Hyperpolarization activated cyclic nucleotide-gated potassium channel 2	610
	<b>HCN4</b>	Hyperpolarization activated cyclic nucleotide-gated potassium channel 4	10021

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## Assay List

Target Class: <b>Transporters</b>			
Sub-family	Symbol	Aliases / Other Designations	GeneID
ATP binding cassette	<b>MRP4</b> (ABCC4)	ATP-binding cassette, sub-family C (CFTR/MRP), member 4	10257
Glucose transporters	<b>Slc2a1</b> (GLUT1-rat)	Slc2a1 solute carrier family 2 (facilitated glucose transporter), member 1	24778
	<b>Slc2a2</b> (GLUT2-rat)	Slc2a2 solute carrier family 2 (facilitated glucose transporter), member 2	25351
	<b>Slc2a3</b> (GLUT3-rat)	Slc2a3 solute carrier family 2 (facilitated glucose transporter), member 3	25551
	<b>SLC2A1</b> (GLUT1-canine)	SLC2A1 solute carrier family 2 (facilitated glucose transporter), member 1	482437
	<b>SLC2A2</b> (GLUT2-canine)	SLC2A2 solute carrier family 2 (facilitated glucose transporter), member 2	488165
	<b>SLC2A3</b> (GLUT3-canine)	SLC2A2 solute carrier family 2 (facilitated glucose transporter), member 3	403997
Neurotransmitter transporters	<b>SLC6A3</b>	DAT, Dopamine transporter	6531
	<b>SLC6A1</b>	GAT1, GABA transporter 1	6529
	<b>SLC6A11</b>	GAT3, GABA transporter 3	6538
	<b>SLC6A9</b>	GLYT1, Glycin transporter 1	6536
	<b>SLC6A5</b>	GLYT2, Glycin transporter 2	9152
	<b>SLC6A2</b>	NET, Norepinephrine transporter	6530
Sodium phosphate cotransporters	<b>SLC34A1</b> (NPT2a)	Solute carrier family 34 (sodium phosphate), member 1	6569
	<b>Slc34a1</b> (NPT2a rat)	Solute carrier family 34 (sodium phosphate), member 1	25548
	<b>SLC34A1</b> (NPT2a dog)	Solute carrier family 34 (sodium phosphate), member 1	479275
	<b>SLC34A2</b> (NPT2b)	Solute carrier family 34 (sodium phosphate), member 2	10568
	<b>SLC34A3</b> (NPT2c mutant)	Solute carrier family 34 (sodium phosphate), member 3	142680
-----	<b>SLC40A1</b> (FPN1) <small>NEW!</small>	Solute carrier family 40	30061

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## Assay List

Target Class: Nuclear Hormone Receptors			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Nuclear hormone receptors	<b>NR3C1</b>	GR, Glucocorticoid receptor, nuclear receptor subfamily 3, group C, member 1	2908
Nuclear hormone receptors	<b>NR3C2</b>	MR, mineralcorticoid receptor, nuclear receptor subfamily 3, group C, member 2	4306
	<b>PPARA</b>	PPAR-alpha, Peroxisome proliferator-activated receptor alpha	5465
	<b>PPARD</b>	PPAR-delta, Peroxisome proliferator-activated receptor delta	5467
	<b>PGR</b>	Progesteron receptor	5241

Target Class: Enzymes			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Adenylate cyclase	<b>ADCY5</b> <small>NEW!</small>	Adenylate cyclase 5	111
	<b>ADCY6</b> <small>NEW!</small>	Adenylate cyclase 6	112
Nitric oxide synthase	<b>NOS3</b> <small>NEW!</small>	Nitric oxide synthase 3 (endothelial cell)	4846
	<b>NOS2</b> <small>NEW!</small>	Inducible nitric oxide synthase (type II)	4843
Cysteine protease	<b>MALT1</b> <small>NEW!</small>	Mucosa associated lymphoid tissue Lymphoma Translocation gene 1	10892
Synthase kinase	<b>GSK3β</b> <small>NEW!</small>	Human glycogen synthase kinase 3 beta	2932
	<b>GSK3β</b> ( <i>endogenous</i> ) <small>NEW!</small>	Human glycogen synthase kinase 3 beta	2932

Target Class: Cytokine Receptors			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Cytokine receptort	<b>TNFR</b> ( <i>endogenous</i> ) <small>NEW!</small>	Tumor necrosis factor alpha receptor	7132

Target Class: Exchangers			
Sub-family	Symbol	Aliases / Other Designations	GeneID
Na <sup>+</sup> /K <sup>+</sup> /Ca <sup>2+</sup> exchangers	<b>SLC24A3</b> (NCKX3)	Solute carrier family 24 (sodium/potassium/calcium exchanger), member 3	57419
Na <sup>+</sup> /Ca <sup>2+</sup> exchangers	<b>SLC8A1</b> (NCX1)	Solute carrier family 8 (sodium/calcium exchanger), member 1	6546
	<b>SLC8A2</b> (NCX2)	Solute carrier family 8 (sodium/calcium exchanger), member 2	6543

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## Assay List

### Target Class: Toll-Like Receptors

Sub-family	Symbol	Aliases / Other Designations	GeneID
Toll-like receptor 4	TLR4 (endogenous)	TOLL; CD284; hToll; ARMD10	7099
	<i>Tlr4</i> (mouse-endogenous)	Mouse toll-like receptor 4	21898
Toll-like receptor 9	TLR9	CD289	54106

### Target Class: mRNA Post-Transcriptional Regulation

Sub-family	Symbol	Aliases / Other Designations	GeneID
mRNA post-transcriptional regulation	<b>NOS3</b> <small>NEW!</small>	Nitric oxide synthase 3 (endothelial cell)	4846

### Target Class: Tyrosine Kinase Receptors

Sub-family	Symbol	Aliases / Other Designations	GeneID
Tyrosine kinase receptor	<b>Ntrk1</b> ( <i>endogenous - rat</i> ) <small>NEW!</small>	Ntrk1 neurotrophic tyrosine kinase, receptor, type 1 ( <i>Rattus norvegicus</i> )	59109
	<b>NTRK2</b> <small>NEW!</small>	Neurotrophic tyrosine kinase, receptor, type 2	4915

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