BIOZOL

FIT FOR SCIENCE

BRINGING QUALITY & EFFICIENCY TO RESEARCH

NEUROSCIENCE

www.biozol.de

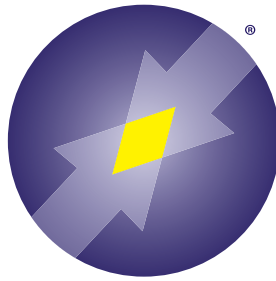# BIOZOL
FIT FOR SCIENCE
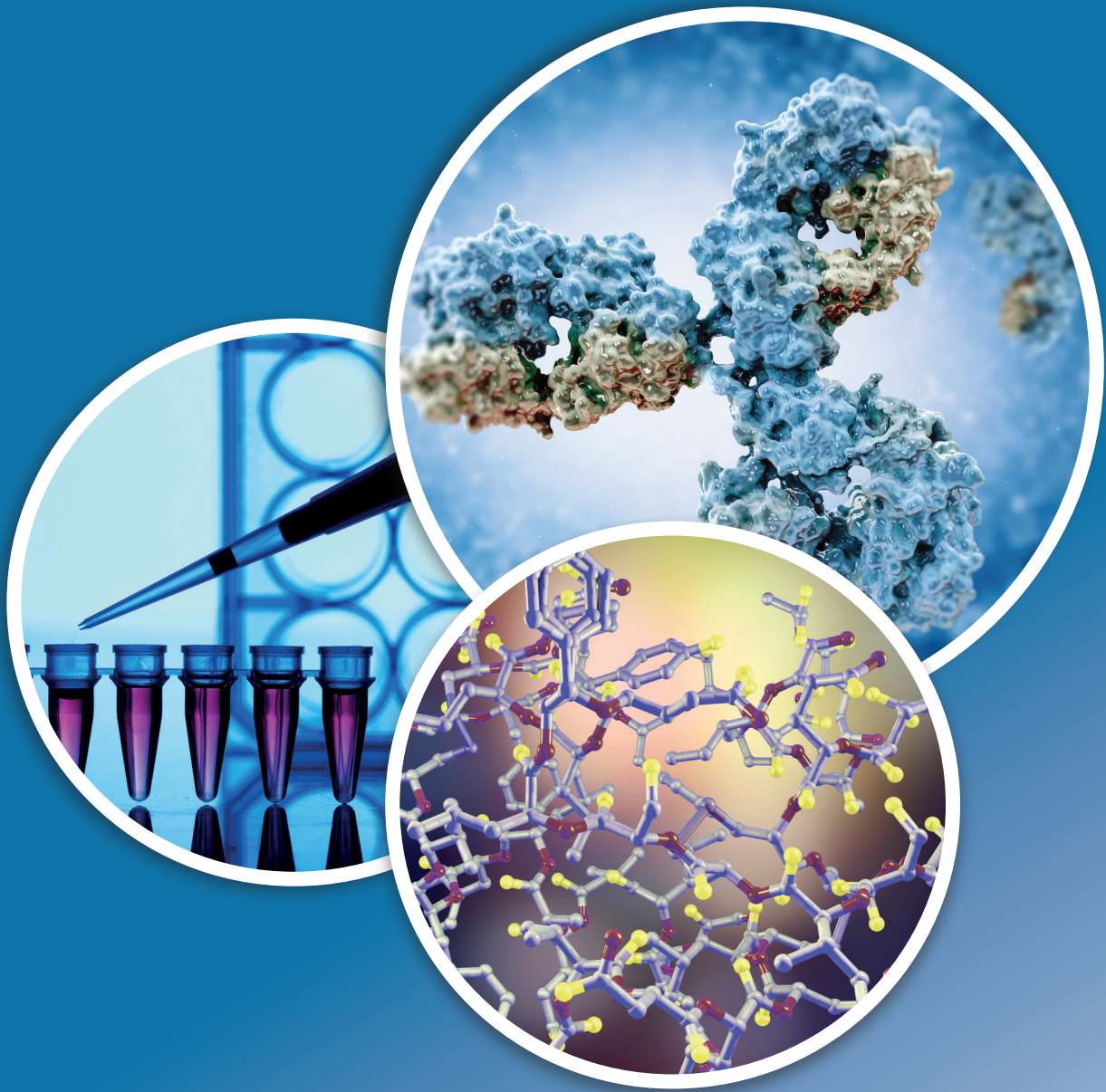
Your Partner for Neuroscience

Biozol Diagnostica Vertrieb GmbH are proud to have been providing products and services within the life science arena since 1989. We always aspire to give our customers the fastest response times and high standards of customer service.

Neuroscience is the study of the structure and function of the brain and nervous system. Research into this field is especially important due to our aging population, with neuro-degenerative disorders such as Alzheimer's disease, Parkinson's disease, Huntington's disease and Amyotrophic Lateral Sclerosis (ALS) being of particular interest to scientists.

BIOZOL offers a wide range of quality reagents to support your neuroscience research, including ELISA kits, control tissues and lysates, native and recombinant proteins and antibodies against neural markers.

The world's first employee-owned life sciences company, Arbor Assays' philosophy is to build the highest quality detection and immunoassay products for clinically important biomolecules. Delivering a robust portfolio designed to accurately quantitate these substances within a variety of biological matrices, the company offers:

• DetectX® kits
• AbX® antibodies and affinity resins
• Inhibitors and activators
• Detection systems including GFP, Obelin photoprotein and ThioStar®
• Components and ancillary reagents

With a strong focus on novel detection and immunoassay kit development and manufacturing, the Arbor Assays team draws upon many years combined experience in designing, developing, building and manufacturing assays for research. By sharing this knowledge via online protocols, training videos and expert technical support, the company empowers researchers to achieve robust, reproducible scientific data.

DetectX® kits for neuroscience research

Many of the DetectX® kits within Arbor Assays' diverse product portfolio have been carefully designed to support neuroscience research. Encompassing colorimetric, fluorometric and chemiluminescent detection, target antigens include:

• Corticosterone	• Nitric Oxide	• Arg8-Vasopressin (AVP)
• Estriol	• Oxytocin	• Butyrylcholinesterase
• Glutathione	• Acetylcholinesterase	• Ceruloplasmin
• Glucose	• Allopregnanolone	• Cortisol

To aid neuroscience researchers in their choice of product, Arbor Assays' DetectX® kits are assigned various classifications. These include:

Most sensitive – to indicate that the kit will achieve a supersensitive result

Multi-species – to indicate that the kit will measure the molecule from multiple species

N-CAL™ – to indicate that the kit includes a standard calibrated to WHO or US National Institute of Standards and Technology (NIST) reference materials, providing an additional level of confidence in experimental results

Highly-validated products

In addition to being classified as most sensitive, multi-species, or N-CAL™, all Arbor Assays DetectX® kits are provided with detailed information regarding use. This includes a list of suitable sample types, the suggested number of samples that can be run per kit, and information regarding assay duration, calibration and kit stability. Each DetectX® kit also includes a comprehensive protocol, an overview of the antigenic target, and links to publications citing the use of the product.
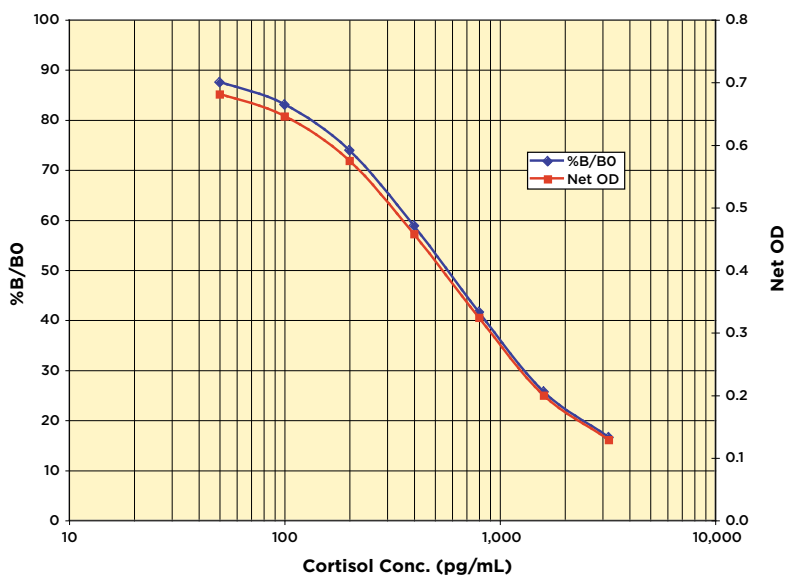
Typical standard curves generated with Arbor Assays' DetectX® Cortisol EIA Kit

Widely-cited assays

The trust placed by neuroscience researchers in Arbor Assays' DetectX® kits is reflected in the ever-growing number of publications which cite the use of these products. Recent examples include:

• Use of the DetectX® Cortisol EIA Kit to measure cortisol levels in blood and urine samples of healthy human volunteers following exposure to concentrated ambient particulate matter. Results suggested that metal components and oxidative potential within particulate matter may influence biomarker levels associated with perturbations of neural function.
Liu et al, Metals and oxidative potential in urban particulate matter influence systemic inflammatory and neural biomarkers: A controlled exposure study; Environ Int, 2018;121:1331-1340

• Use of the DetectX® Corticosterone EIA Kit to determine whether infection of pregnant mice with Zika virus might lead to long-term health impairments in the resulting offspring. Results indicated that, with male offspring presenting more severe neuropathological alterations in the hippocampus as compared to their female littermates, increased sex-specific vigilance is required in countries with high ZIKV prevalence, where impaired neurodevelopment may be camouflaged by a healthy appearance at birth.
Stanelle-Bertram et al, Male offspring born to mildly ZIKV-infected mice are at risk of developing neurocognitive disorders in adulthood; Nat Microbiol, 2018 Oct;3(10):1161-1174

• Use of the DetectX® Glutathione (GSH) Fluorescent Detection Kit in a study designed to investigate the role of D-512 in protecting dopaminergic PC12 cells following treatment with buthionine sulfoximine (BSO), a widely-used neurotoxin. Results demonstrated the neuroprotective effects of D-512, indicating its potential as a disease-modifying drug candidate for the treatment of Parkinson's Disease.
Voshavar et al, Assessment of Protective Role of Multifunctional Dopamine Agonist D-512 Against Oxidative Stress Produced by Depletion of Glutathione in PC12 Cells: Implication in Neuroprotective Therapy for Parkinson's Disease; Neurotox Res, 2015 Nov;28(4):302-18

ATLAS ANTIBODIES

Atlas Antibodies was founded in 2006 by researchers from the prestigious Human Protein Atlas project, a unique world-leading effort to create a complete immunohistochemistry-based map of human protein expression and localization in normal tissues, cancers and cell lines. Following demand that the antibodies used in the project be made available to researchers worldwide, the company was established to commercialise these products. Atlas Antibodies has since achieved considerable success, receiving the Swedish LabTech Award in 2014 for contributions to the antibody-based exploration of the human proteome using Triple A Polyclonals.

Produced according to a standardised manufacturing process, with rigorous quality control, Triple A Polyclonals are designed to achieve the very highest level of specificity, reproducibility and versatility. Backed by extensive characterisation and validation data, expert technical support and comprehensive protocols, these products are complemented by PrecisA mouse monoclonal antibodies against a selected number of targets. Also manufactured under stringent conditions, PrecisA Monoclonals are guaranteed to secure continuity and stable supply. For all antibodies, the corresponding antigen (known as the PrEST antigen) is also available for purchase.

PrecisA Monoclonals as neuroscience markers

Antibody-based immunohistochemistry is widely used in neuroscience research to detect and characterize various cell types in the nervous system. To facilitate this work, Atlas Antibodies offers a novel panel of PrecisA Monoclonals designed to recognize the main anatomical and neurochemical cell types in human and rodent samples.

Atlas Antibodies' PrecisA neural lineage markers target cells which include:

- Neurons
- Astrocytes
- Oligodendrocytes/Schwann cells
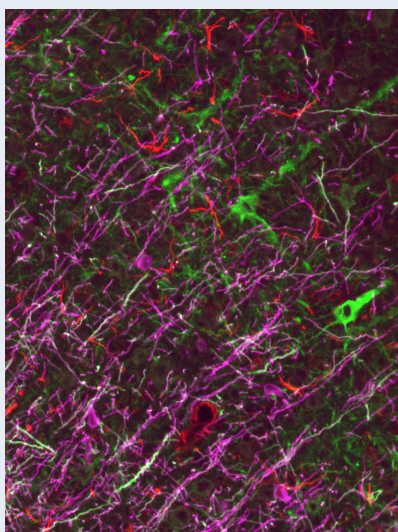
Multiplexed IHC-IF staining of a coronal section of rat brain using PrecisA Monoclonals. Neurons are detected with anti-NEFM (AMAb91030, green), oligodendrocytes with anti-CNP (AMAb91068, magenta) and astrocytes with anti-GFAP (AMAb91033, red).
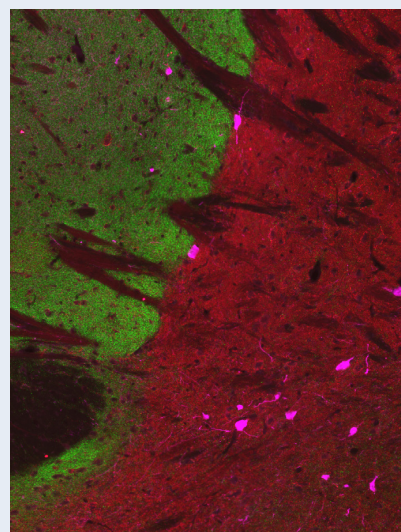
Multiplexed IHC-IF staining of a section of mouse caudate putamen / globus pallidus using PrecisA Monoclonals. The GABAergic system is detected with anti-GAD1 (AMAb91076, red), the glutamatergic system with anti-VGLUT1 (AMAb91041, green) and the acetylcholine system with anti-CHAT (AMAb91129, magenta).

Atlas Antibodies also offers PrecisA signaling markers which target the following systems:

- Glutamate
- GABA
- Acetylcholine
- Noradrenaline
- Dopamine
- Serotonin systems

In offering these markers as tools for mapping the structures and cell types in the central and peripheral nervous system, Atlas Antibodies has taken great care to ensure:

- Selected target proteins are expressed only by a single cell type
- IHC validation in rat, mouse and human tissues
- Western blot validation in mouse and human tissue lysates for the majority of markers
- Antibodies are available with different isotypes, allowing for multiplexing experiments
- Information regarding the antigen used for immunisation and epitope information are provided (when available)

High specificity and interspecies reactivity

The complexity of the nervous system is augmented by the fact that since different neurons utilise different chemical neurotransmitters to transmit information, multiple receptor subtypes are present. This makes the need for highly-characterised antibodies of paramount importance. PrecisA Neuroscience Markers demonstrate high specificity and selectivity for target antigens, providing neuroscience researchers with confidence in immunostaining results.
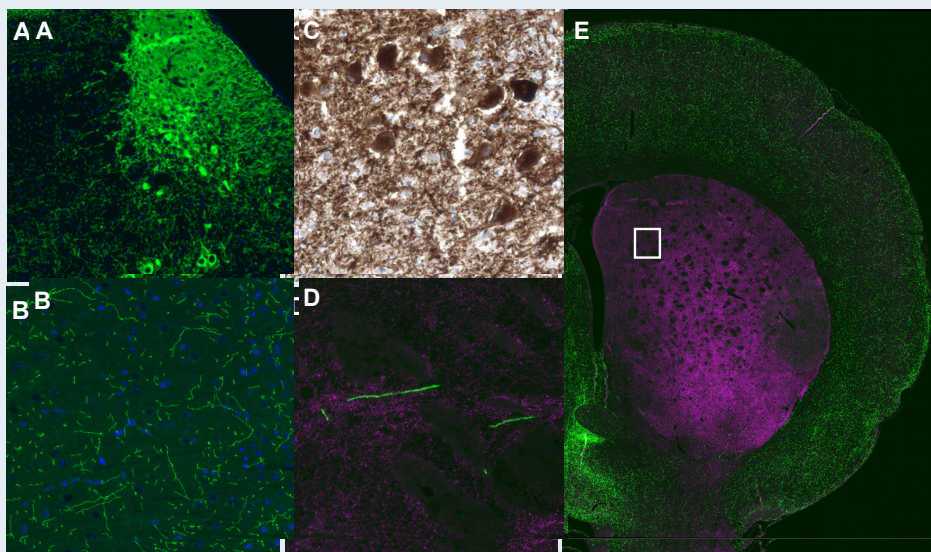
IHC-IF and bright-field IHC staining demonstrating specificity and selectivity of anti-NET antibody (AMAb91116). Staining with AMAb91116 is shown in green (A, B, D, E) and in brown (C). A) noradrenergic cell bodies and fibres in rat locus coeruleus, B) noradrenergic fibres in mouse cerebral cortex, C) noradrenergic cell bodies and fibres in human locus coeruleus, D) and E) coronal section of rat brain at the level of caudate putamen, which is virtually devoid of noradrenaline fibres; a dense network of thin dopamine fibres (anti-DAT, AMAb91125, magenta) is present in striatum, where single noradrenaline fibres can sometimes be observed.

Aviva Systems Biology:

An Original Manufacturer

Aviva Systems Biology Corporation is a growing proteomic biotech company with a specialization in antibodies, recombinant proteins, and ELISA Kits. Unlike other companies, we design, manufacture, and validate our own products.

Our head office is in San Diego, CA. We also have an office in Beijing, China. Both locations work together to provide scientific support to researchers globally.
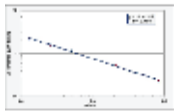
All Aviva products have been through vigorous validations. We guarantee their use on verified applications as indicated on our website and publications.

AVIVA SYSTEMS BIOLOGY

Products and Services:

- 130,000+ Antibodies
- 18,000+ Proteins
- 17,000+ ELISA Kits
- Custom Services
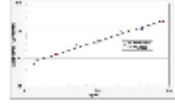- Accessory Reagents

BIOCHEMICAL ELISA KITS

5-Hydroxyindoleacetic acid ELISA Kit (OKEH02580)
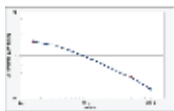Range: 0.625 - 40 ng/mL
Sensitivity: < 0.156 ng/mL
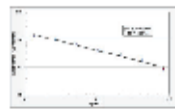
Metanephrine ELISA Kit (OKWB10529)
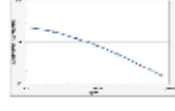Range: 0.156 - 10 ng/mL
Sensitivity: < 0.094 ng/mL
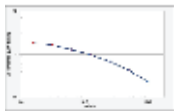
Dopamine ELISA Kit (OKEH02560)
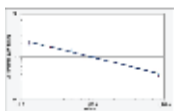Range: 1.56 - 100 ng/mL
Sensitivity: < 0.23 ng/mL

Neopterin ELISA Kit (OKWB10530)
Range: 0.156 - 10 ng/mL
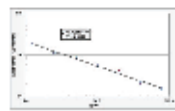Sensitivity: < 0.094 ng/mL

Histamine ELISA Kit (OKEH02576)
Range: 7.8 - 500 ng/mL
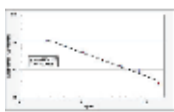Sensitivity: < 3.4 ng/mL

Noradrenaline ELISA Kit (OKEH02565)
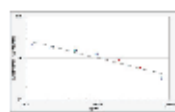Range: 31.2 - 2,000 pg/mL
Sensitivity: < 7.5 pg/mL

Melatonin ELISA Kit (OKEH02566)
Range: 15.6 - 1,000 pg/mL
Sensitivity: < 10 pg/mL

Normetanephrine ELISA Kit (OKWB10533)
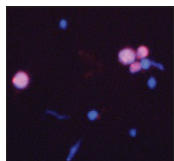Range: 6.25 - 400 pg/mL
Sensitivity: < 3.75 pg/mL

Melatonin-Sulfate ELISA Kit (OKWB10532)
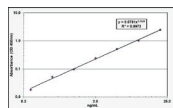Range: 7.813 - 500 pg/mL
Sensitivity: < 4.688 pg/mL

Epinephrine ELISA Kit (OKEH02561)
Range: 31.2 - 2,000 pg/mL
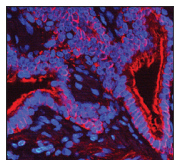Sensitivity: < 9.9 pg/mL

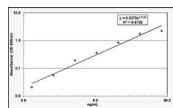# AVIVA'S TOP ANTIBODIES AND ELISA KITS FOR NEUROSCIENCE RESEARCH

CASP3 Antibody (AVARP00021_T100)
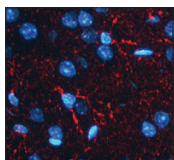Reactivity: Human
Application: WB, IHC
Sample Type: HeLa

CASP3 ELISA Kit (Human) (OKEH02670)
Range: 0.312 - 20 ng/mL
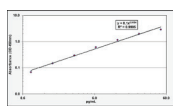Sensitivity: < 0.078 ng/mL

AKT1 Antibody (AVARP06008_P050)
Reactivity: Human, Xenopus laevis, Baboon
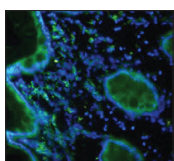Application: WB, IHC
Sample Type: Human Lung

AKT1 ELISA Kit (Human) (OKEH00407)
Range: 0.78 - 50.0 ng/mL
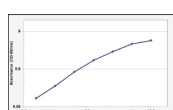Sensitivity: < 0.195 ng/mL

BACE1 Antibody (ARP46851_P050)
Reactivity: Human, Mouse, Rat
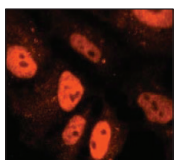Application: WB, IHC, IF
Sample Type: Mouse Astrocytes

BACE1 ELISA Kit (Human) (OKEH00554)
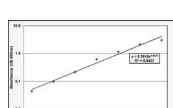Range: 0.78 - 50.0 ng/mL
Sensitivity: < 0.31 ng/mL

CXCR4 Antibody (ARP30799_P050)
Reactivity: Human, Mouse
Application: WB, IHC, FC
Sample Type: HMEC-1 and A549

CXCR4 ELISA Kit (Human) (OKEH01535)
Range: 0.156 - 10 ng/mL
Sensitivity: < 0.052 ng/mL

CRMP1 Antibody (ARP41933_P050)
Reactivity: Human, Mouse, Rat
Application: WB, ICC, IP
Sample Type: NT2 Cells

CRMP1 ELISA Kit (OKWB06249)
Range: 0.156 - 10 ng/mL
Sensitivity: < 0.094 ng/mL
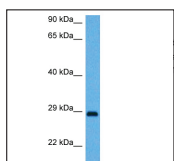
BDNF Antibody (ARP41970_P050)
Reactivity: Human, Mouse, Monkey
Application: WB, IHC
Sample Type: Mouse Brain Lysate
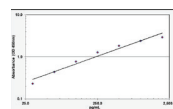
BDNF ELISA Kit (Human) (OKBB00127)
Range: 31.2 - 2,000 pg/ml
Sensitivity: < 2 pg/ml
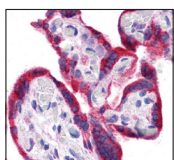
LEP Antibody (ARP41697_P050)
Reactivity: Human
Application: WB, IHC
Sample Type: Human Placenta
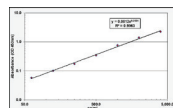
Leptin ELISA Kit (Human) (OKBB00206)
Range: 62.5 - 4,000 pg/mL
Sensitivity: < 10 pg/mL
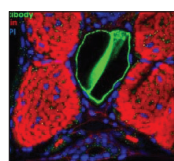
RAB5A Antibody (ARP56563_P050)
Reactivity: Human, Mouse, Zebrafish
Application: WB, IHC
Sample Type: Zebrafish Gut
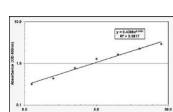
RAB5A ELISA Kit (Human) (OKCD01064)
Range: 0.312 - 20 ng/mL
Sensitivity: < 0.122 ng/mL
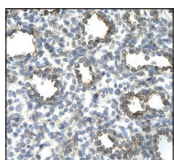
JUN Antibody (P100911_P050)
Reactivity: Human
Application: WB, IHC, ChIP
Sample Type: Human Lung Tissue
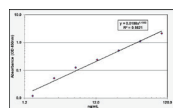
JUN ELISA Kit (Human) (OKEH02809)
Range: 1.56 - 100 ng/mL
Sensitivity: < 0.98 ng/mL
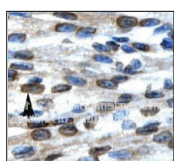
BAX Antibody (AVARP02020_T100)
Reactivity: Human, Mouse
Application: WB, IHC
Sample Type: Human Heart
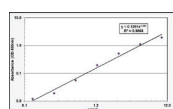
BAX ELISA Kit (Human) (OKEH04111)
Range: 0.31 - 20 ng/mL
Sensitivity: < 0.15 ng/mL

![Biorbyt logo](Explore. Bioreagents.)

Neuroscience

Introduction

The importance of research in the Neuroscience area cannot be overstated. According to the World Health Organisation's last estimate, more than one billion people are affected with neurological disease globally. Of these, over 50 million suffer with epilepsy and 24 million with Alzheimer's and other dementias. This number is only set to rise with an aging global population.

Research into this key area is therefore essential, so it is also a core focus for Biorbyt to provide quality reagents to meet researcher's needs. Offering high quality antibodies, proteins, ELISA kits and small molecules, we supply products across the board to move your vital research forward.

Neurodegeneration

The progressive structural and functional loss of structures and/or death of neurons. Research is helping decipher the causes of neurodegenerative diseases like ALS (MND), Alzheimer's, Parkinson's and Huntingdon's at a subcellular level.

Immunohistochemical analysis of formalin fixed and paraffin embedded rat brain tissue using Tau antibody - orb11453
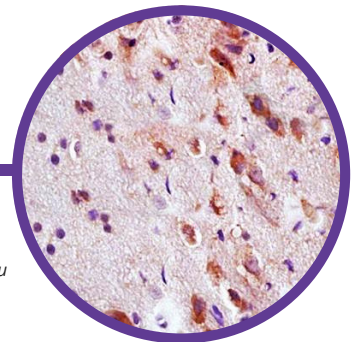
orb11453	Tau antibody
orb69429	Apolipoprotein E antibody
orb86005	beta Amyloid (1-28) protein
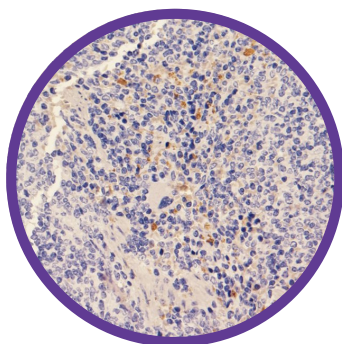
IHC-P staining of rat spleen tissue using SOX2 antibody (2.5 ug/ml) - orb33646

Neurogenesis

This encompasses the development of neurons from undifferentiated progenitor cells into all mature neurons in the CNS. The process is most prolific during embryonic development, but it is now also known that it occurs in the adult brain. This gives plasticity to the circuitry and increasing evidence shows there is a role for adult neurogenesis in specific brain functions.

orb33646	SOX2 antibody
orb95443	Calbindin antibody
orb405174	Human WNT3 ELISA Kit

biorbyt
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Neural Stem Cells

Neuroepithelial cells that are the main cell type in the neural plate constitute the major initial class of neural stem cells. They can go through asymmetric and symmetric division and give rise to radial glial cells, which later generate neurons, astrocytes and oligodendrocytes. It is also well established that the adult brain contains a large number of stem cells. Human Embryonic stem cells (hESC) and induced pluripotent stem cells (IPS) have provided a potentially unlimited source of neural stem cells for clinical use.
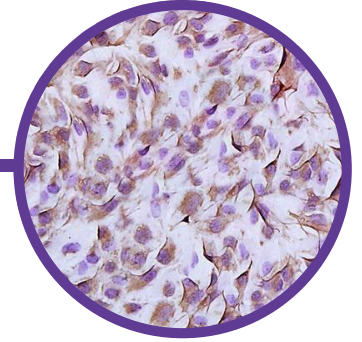
IHC-P of mouse mesenchymal stem cells (Vimentin antibody at 1:300) - orb11559

orb11109	Nestin antibody
orb11559	Vimentin antibody
orb80806	Human FGFR4 protein
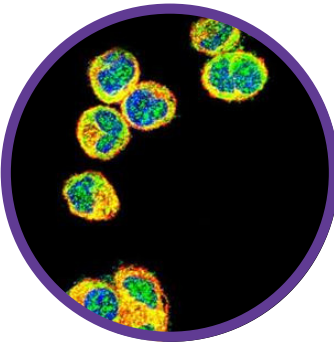
Immunofluorescense analysis of MDA-MB435 cell using AKT1 antibody (primary antibody dilution at: 1:10-50) - orb37491

Neuronal Growth and Development

Neurons and their precursors undergo prolific differentiation and migration from their original position in the ventricular zone of the neural tube. They need to migrate outwards to reach their final locations. This is known as radial migration. Radial glial guidance is a key contributory factor in this process.

orb38809	BDNF antibody
orb37491	AKT antibody
orb429500	Human VCAM1 protein

Neurotransmitter Receptors

Neurotransmitter receptors are integral membrane proteins that bind chemical mediators known as neurotransmitters. Binding of neurotransmitters forms the basis for neuronal communication through synaptic junctions between adjacent neurons. Neurotransmitter receptors are critical targets in clinical intervention and the loss or misregulation of these pathways often underpins the symptoms of neurological disease.
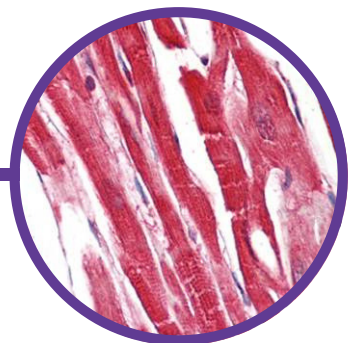
Immunohistochemical staining of paraffin embedded human heart tissue using S100A1 antibody (primary antibody at 1:200) - orb95982

orb38809	5HT1A Receptor antibody
orb95982	S100A1 antibody
orb245579	Human GRIN2A protein

Bioss, Inc. is a leading Boston-area antibody developer with over 11,000 primary and secondary antibodies currently in production. Our products cover relevant targets for a broad range of research areas, including neuroscience, immunology, cancer, and epigenetics. To date, Bioss products have been cited in more than 7,000 peer-reviewed journal articles. Our integrated data review process ensures all products meet the highest level of quality and consistency standards. As an original manufacturer, Bioss prides itself on scientific transparency and responsiveness. We commit to this process by offering an industry-leading twelve-month, replacement or money back, satisfaction guarantee on all purchases. This neuroscience research area highlight showcases some of our most tested and trusted items for the study of Alzheimer's disease, Parkinson's disease, and other neurological disorders.

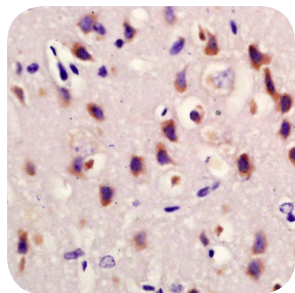| TARGET		APPLICATION	SPECIES	CATALOG
5-HT		IHC-P	5-HT	bs-1126R
5HT3B receptor		IHC-P	Hu, Ms, Rt	bs-4289R
5-HTR1A		WB, IHC-P	Hu, Ms, Rt	bs-1124R
5-HTR2A	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-1056R
5-HTR2B/HTR2B		IHC-P	Hu, Ms, Rt	bs-1892R
5-HTR3/HTR3A		IHC-P	Hu, Ms, Rt	bs-2126R
ADAM17	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-4236R
ADM		IHC-P	Hu, Rt	bs-0007R
ADM2	PubMed	IHC-P	Hu, Ms, Rt	bs-2985R
Alpha-Synuclein		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0968R
Amphiregulin		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-3847R
APAF1		IHC-P	Hu, Ms, Rt	bs-0058R
APH1a		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-4259R
APOE	PubMed	WB, IHC-P	Ms, Rt	bs-0167R
APP/Amyloid Precursor Protein	PubMed	IHC-P	Hu, Ms, Rt	bs-0112R
Artemin		IHC-P	Hu, Ms, Rt	bs-0055R
ATX2		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-7974R
BDNF	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-4989R
beta Actin	PubMed	WB	Hu, Ms, Rt, Bv, Pg	bs-0061R
beta Amyloid 1-42	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-0107R
beta-Amyloid 1-42		IHC-P	Hu, Rt	bs-0076M
bFGF	PubMed	WB, IHC-P, ICC, FCM	Hu, Ms, Rt, Gp	bs-0217R
BNP	PubMed	WB, IHC-P, IF(IHC-P)	Ms, Rt	bs-2207R
Calpain 1	PubMed	IHC-P	Hu, Ms, Rt	bs-1099R
CAP1/PARK7		WB, IHC-P	Hu, Ms, Rt	bs-1306R
Caspase 3	PubMed	WB, IHC-P, IF(IHC-P), ICC, FCM	Hu, Ms, Rt, Gt	bs-0081R
Caspase 8	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-0052R
Caspase 9	PubMed	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt, Dg	bs-0049R
CD200		IHC-P	Hu, Ms, Rt	bs-6030R
CD200R		IHC-P	Hu, Ms, Rt	bs-10521R
CD40L/CD154	PubMed	FCM	Hu, Ms, Rt	bs-1286R
CDK5	PubMed	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0559R
CHIP		IHC-P	Hu, Ms, Rt	bs-15405R

TARGET		APPLICATION	SPECIES	CATALOG
CNR1/CB1		IHC-P	Hu, Ms, Rt	bs-1683R
CNTF	PubMed	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1272R
CNTF Receptor alpha		IHC-P	Hu, Ms, Rt	bs-1516R
CRF		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0382R
CRHR2		IHC-P	Hu, Ms, Rt	bs-2792R
CRLR/CGRPR1	PubMed	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1860R
Cyclin E	PubMed	WB, IHC-P, IF(IHC-P), FCM	Ms, Rt	bs-0573R
Cytochrome C	PubMed	WB, IHC-P, IF(IHC-P), ICC	Hu, Ms, Rt	bs-0013R
DOPA Decarboxylase	PubMed	IHC-P, IHC-fr	Hu, Ms, Rt	bs-0180R
DRD1	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-1007R
DRD2	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-1008R
EAAT1	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-1003R
EAAT2		IHC-P	Hu, Ms, Rt	bs-1751R
FADD		WB	Hu, Ms, Rt	bs-0511R
FRS2(Tyr436)		IHC-P	Hu, Ms, Rt	bs-7902R
GABA		IHC-P	(GABA)	bs-2252R
GABA A Receptor gamma 2		WB, IHC-P	Hu, Ms, Rt	bs-4112R
GABABR1		IHC-P	Hu, Ms, Rt	bs-0533R
GALR2		WB, IHC-P, FCM	Hu, Ms, Rt	bs-11527R
gamma Synuclein		IHC-P	Hu, Ms, Rt	bs-0622R
GAP43		WB, IHC-P	Hu, Ms, Rt	bs-0154R
GARB1		IHC-P	Hu, Ms, Rt	bs-3766R
Gastrin receptor/CCKBR		IHC-P	Hu, Ms, Rt	bs-1777R
GDNF	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-1024R
GDNF Receptor alpha 2		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0054R
GFAP(Ser8)		WB, IHC-P	Hu, Ms, Rt	bs-5355R
GLUR3		IHC-P	Hu, Ms, Rt	bs-1799R
GPRIN1		IHC-P	Hu	bs-8275R
Group I mGLUR	PubMed	WB, IHC-P, FCM	Hu, Ms, Rt	bs-1803R
GSK-3 Beta	PubMed	WB, IHC-P, ICC	Hu, Ms, Rt	bs-0028R
HSP70		IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0126R
LGI1		IHC-P	Hu, Ms, Rt	bs-6719R
LRRK2	PubMed	WB, IHC-P	Hu, Ms, Rt	bs-0683R

WB - Western Blot | IHC-P - Immunohistochemistry Parrafin | IHC-fr - Immunohistochemistry Frozen | ICC - Immunocytochemistry | IF - Immunofluorescence | FCM - Flow Cytometry | Hu - Human | Ms - Mouse | Rt - Rat | Gp - Guinea pig | Gt - Goat | Dg - Dog | Bv - Bovine | Pg - Pig

DRD5 | bs-1747R
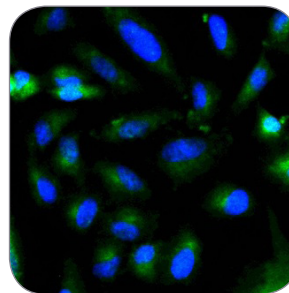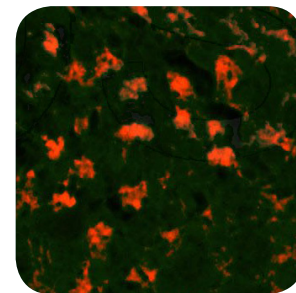IHC-P | Mouse brain
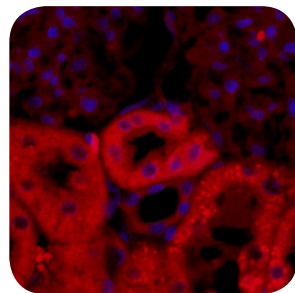
CRF | bs-0382R
IF (IHC-P) | Rat kidney

GSK-3 beta | bs-0028R
ICC | A549 cells

mTOR | bs-1992R
IF (IHC-P) | Rat testis

TARGET	APPLICATION	SPECIES	CATALOG
MAG	WB	Hu, Ms, Rt	bs-0257R
MBP _PubMed_	IHC-P, IF(IHC-P), IHC-fr	Hu, Ms, Rt	bs-0380R
MBP(Thr232)	IHC-P	Hu, Ms, Rt	bs-5474R
Merlin(Ser518)	IHC-P	Hu, Ms, Rt	bs-3291R
Metabotropic glutamate receptor 2	IHC-P	Hu, Ms, Rt	bs-1161R
Metallothionein 3	IHC-P	Hu, Ms, Rt	bs-4940R
mGluR5	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1247R
MOBP	IHC-P	Hu, Ms, Rt	bs-11184R
MOG	WB, IHC-P	Ms, Rt	bs-0426R
MRF/C11orf9	WB, IHC-P	Hu, Ms, Rt	bs-11191R
mTOR _PubMed_	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1992R
mTOR (Ser2448) _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-3494R
Myelin PLP	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-11093R
Myelin Protein Zero _PubMed_	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0337R
Neurokinin B receptor	IHC-P	Hu, Ms, Rt	bs-0166R
Neurokinin 1 Receptor	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0064R
Neurokinin A	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0069R
Neurokinin A Receptor	WB, IHC-P	Hu, Ms, Rt	bs-0123R
Neurotrophin 3	IHC-P	Hu, Ms, Rt	bs-0160R
Neurotrophin 4	WB, IHC-P	Hu, Ms, Rt	bs-0158R
NF2/Neurofibromin 2	IHC-P	Hu, Ms, Rt	bs-1366R
NF-H _PubMed_	IHC-P	Hu, Ms, Rt	bs-10680R
NGFR	IHC-P	Hu, Ms, Rt	bs-7122R
Nicastrin	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-6058R
NKB	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0070R
NMDAR1(Ser890)	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-3301R
NMDAR2A _PubMed_	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-3507R
NMDAR2B _PubMed_	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-3307R
NMDAR2B(Tyr1252)	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-5380R
nNos	IHC-P	Hu, Ms, Rt	bs-0156R
Nociceptin	WB, IHC-P	Hu, Ms, Rt	bs-0075R
Nociceptin receptor	WB,IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-0181R
NPY1R	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1070R

TARGET	APPLICATION	SPECIES	CATALOG
NPY2R	IHC-P	Hu, Ms, Rt	bs-0937R
Nur77	IHC-P	Hu, Ms, Rt	bs-3513R
Orexin receptor 1+2	IHC-P	Hu, Ms, Rt	bs-1095R
Oxytocin R _PubMed_	IHC-P	Hu, Ms, Rt	bs-1314R
p75 NGF Receptor _PubMed_	WB, IHC-P, IF(IHC-P), ICC, FCM	Hu, Ms, Rt	bs-0161R
Parkin protein/PARK2 _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-1865R
PEN2	IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-6456R
PMP22	IHC-P	Hu, Ms, Rt	bs-0235R
Post-synaptic density protein 95 _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-0179R
ProSAPiP1	IHC-P	Hu, Ms, Rt	bs-11198R
Prostaglandin E Receptor EP2	WB, IHC-P	Hu, Ms, Rt	bs-4196R
Slc22A17 _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-0444R
SLC6A4/5-HTT _PubMed_	WB, IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1893R
SNAP25 _PubMed_	WB , IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-1131R
SSTR2/Somatostatin Receptor 2 _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-1138R
Substance P _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-0065R
SV2A	IHC-P	Hu, Ms, Rt	bs-2407R
Synapsin 1	IHC-P	Hu, Ms, Rt	bs-3501R
Synaptotagmin 1	WB, IHC-P	Hu, Ms, Rt	bs-4172R
Synphilin-1	WB, IHC-P	Hu, Ms, Rt	bs-1905R
Tau protein	IHC-P	Hu, Ms, Rt	bs-0419R
TNF alpha _PubMed_	WB,IHC-P, IF(IHC-P)	Hu, Rt	bs-2081R
TNF-alpha1F6 _PubMed_	IHC-P, IF(IHC-P)	Hu	bsm-0387M
TNFR1	WB, IHC-P	Hu, Ms, Rt	bs-2941R
TNFRSF5	WB , IHC-P, IF(IHC-P)	Hu, Ms, Rt	bs-2929R
TrkB _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-0175R
Tyrosine Hydroxylase _PubMed_	WB, IHC-P	Hu, Ms, Rt	bs-0016R
Tyrosine Kinase	IHC-P	Hu, Ms, Rt	bs-0192R
UCHL1/PGP9.5	IHC-P	Hu, Ms, Rt	bs-3806R
Versican	IHC-P	Hu, Ms, Rt	bs-2533R
Vimentin _PubMed_	WB, IHC-P, ICC	Hu, Ms, Rt, Pg	bs-0756R
Wnt8b	WB, IHC-P	Hu, Ms, Rt	bs-6245R
ZNF231	IHC-P	Hu, Ms, Rt	bs-0275R

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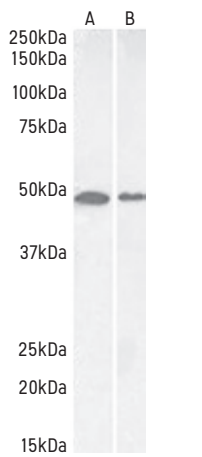
Anti-Melanocortin receptor 4 (CL8835AP) staining 3 Mouse (A) and Rat (B) Brain lysates (35µg protein in RIPA buffer) at a dilution of 0.01 µg/ml. Primary incubation was 1 hour. Detected by chemiluminescence.
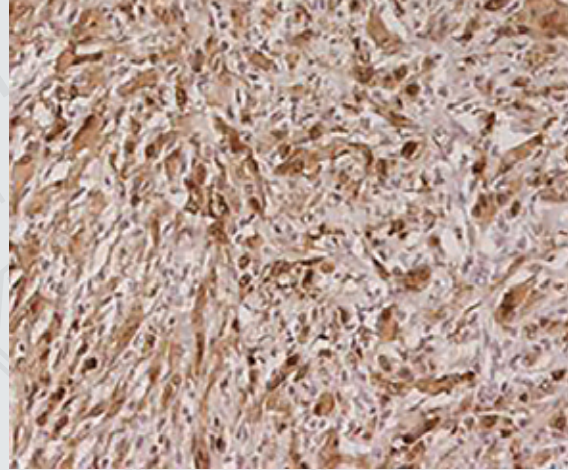
Anti-Human PGP 9.5 (CL7756AP) staining (10 µg/ml) of a human cerebral cortex formalin-fixed, paraffin-embedded tissue section; seen at 20x magnification. Staining on normal brain cortex is negative. High grade tumor (glioma) shows sharp nuclear and cytoplasmic staining in more than 70% of the lesion.
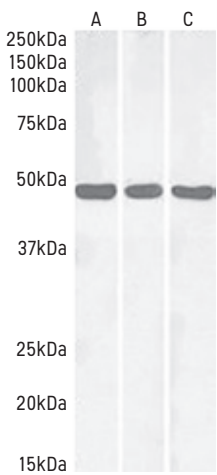
Anti-Mouse Neuropeptide Y receptor 1 (CL8839AP) staining of Human Cerebellum (A), Mouse Brain (B) and Rat Brain (C) lysates (35µg protein in RIPA buffer) at a dilution of 0.3µg/ml. Primary incubation was 1 hour. Detected by chemiluminescence.
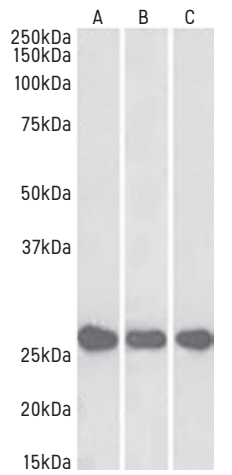
Anti-Human PGP 9.5 (CL7756AP) staining of Human Cerebellum (A), Mouse Brain (B) and Rat Brain (C) lysates (35µg protein in RIPA buffer) at a dilution of 0.01µg/ml. Primary incubation was 1 hour. Detected by chemiluminescence.
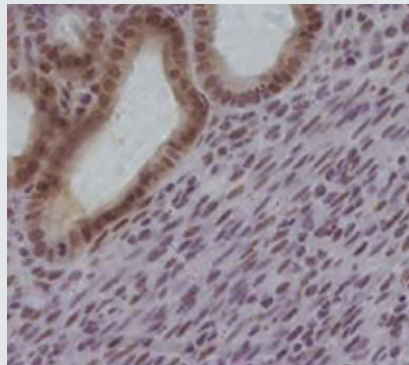
Anti-Mouse Progesterone Receptor (CL8832AP) staining (10µg/ml) of a mouse uterus formalin-fixed, paraffin-embedded tissue section; seen at 40x magnification. Nuclear staining of ~25-30% of stromal cells and glandular epithelium is observed.
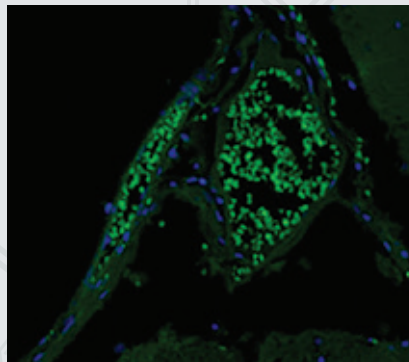
Purified anti-Human Syntaxin-1A (CL2707AP) staining of paraformaldehyde-fixed paraffin-embedded human cerebellum sections at 400x magnification with DAPI counterstain. (Mouse anti-Human Syntaxin-1A (CL2707AP) 1:500; Alexa Fluor 488 goat anti-mouse 1:500 (Molecular Probes) and normal goat serum (blocking))

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Looking for antibodies that have been tested on neural tissues? GeneTex offers a comprehensive selection of antibodies and other reagents to support biomedical research. Many of these reagents are validated through IHC and ICC/IF staining on neural/glial cells or tissues to demonstrate expected expression patterns and by Western blot to show target specificity.

✔ Tested on neural/glial samples

✔ Citations available

✔ Validated for multiple applications

✔ Stringent validation

C Citation Support   **K** KO/KD Validation   **A** Comparative Abs   **O** Orthogonal Validation   **P** Protein Overexpression

Neural Markers
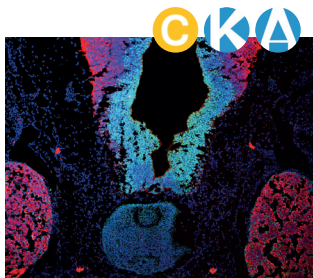
SOX2 antibody
(GTX101507)
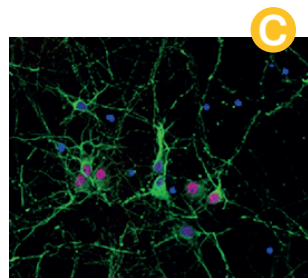
NeuN antibody
(GTX132974)
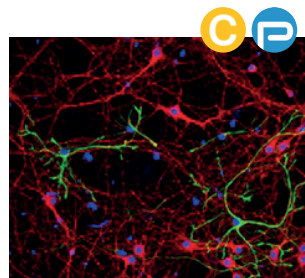
GFAP antibody
(GTX108711)
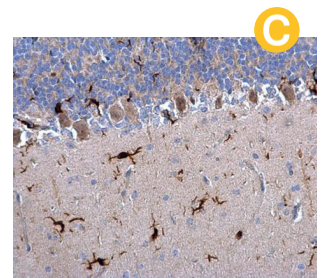
Iba1 antibody
(GTX100042)

Neurites and Synapses
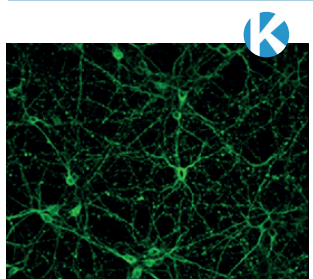
beta Tubulin 3/ Tuj1 antibody [GT886]
(GTX631830)
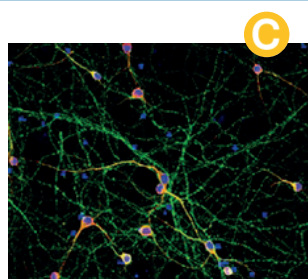
Tau antibody
(GTX112981)
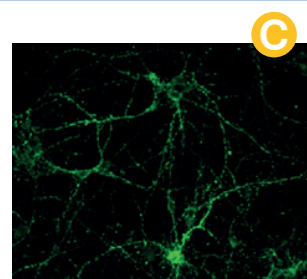
Synaptophysin antibody
(GTX100865)
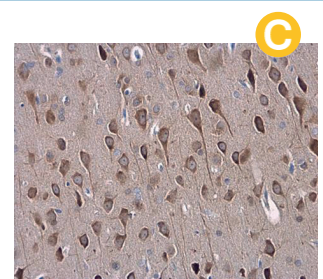
SAP102 antibody
(GTX110289)

Neurotransmission

GAD67 antibody
(GTX101881)
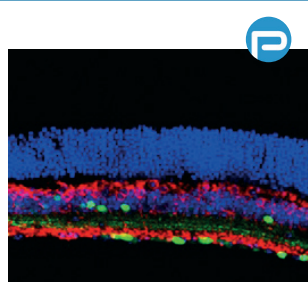
Choline Acetyltransferase antibody (GTX113164)
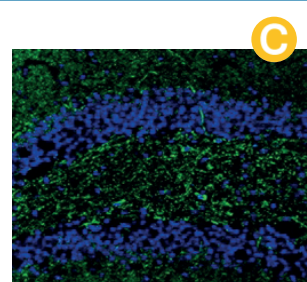
5-HT1A receptor antibody (GTX104703)
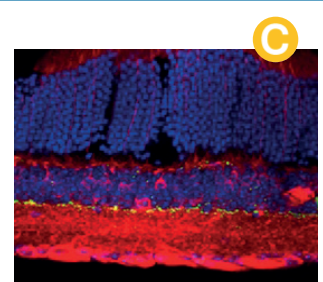
Tyrosine Hydroxylase antibody (GTX113016)

Vision and Retina
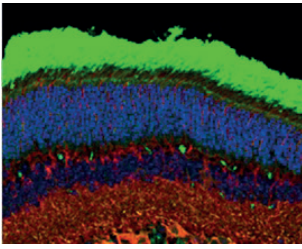
Rhodopsin antibody
(GTX129910)
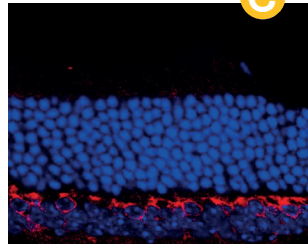
PKC alpha antibody
(GTX130453)
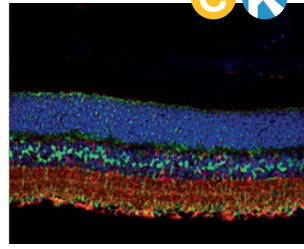
Glutamine synthetase
antibody (GTX109121)
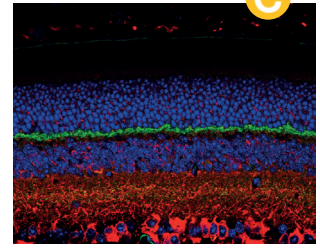
PSD95 antibody
(GTX133091)

Parkinson disease (PD)
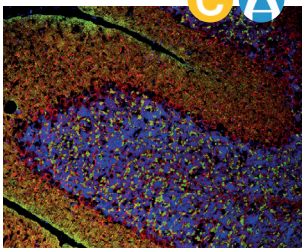
alpha Synuclein antibody
(GTX112799)
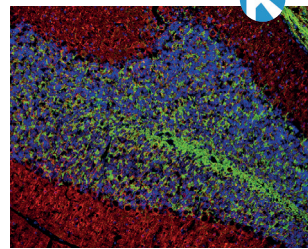
PGP9.5 antibody
(GTX109646)

Amyotrophic Lateral Sclerosis (ALS)
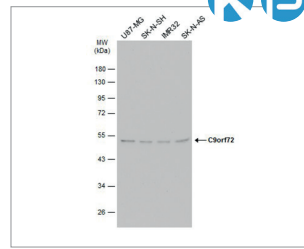
C9orf72 antibody
[GT1553] (GTX634482)
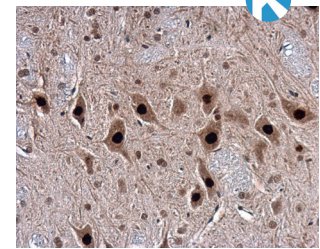
TDP43 antibody
(GTX100579)

Alzheimer's disease (AD)

Shape is important! Conformation-specific beta-Amyloid antibody, GTX134510!

✓ Human Aβ (1–42) oligomer immunogen

✓ High affinity and specificity

✓ Detects beta-amyloid aggregates in human Alzheimer's disease brain by IHC-P

Alzheimer's Disease
brain
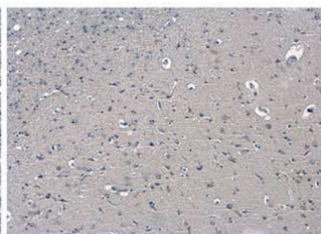
Normal brain
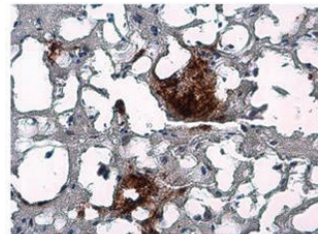
GTX134510
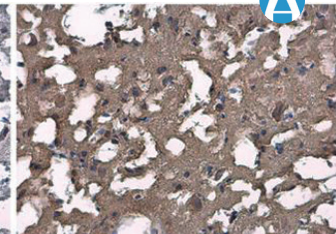
Competitor A

Quality Antibodies • Quality Results

Established in 1993, MBL International Corporation (MBLI) is a subsidiary of Medical and Biological Laboratories Co, Ltd (MBL), one of the leading biotechnology companies in Japan. Focused on providing high-quality, innovative, solutions-based products for both life science research and clinical diagnostics, MBLI supports research related to allergy, apoptosis, autophagy, cancer, epigenetics, immunology and neuroscience. The company's wide-ranging portfolio includes:

- Monoclonal and polyclonal antibodies
- MHC tetramers
- Fluorescent and recombinant proteins
- ELISA kits
- Flow cytometry products
- Exosome research products
- 3D cell culture products

High-quality products for neuroscience research

With over 7000 antibodies, proteins and kits, MBLI offers many products designed to advance neuroscience research. Major antigen targets for the company's antibodies include:

Antigen Target	Application					
	WB	ELISA	IHC	ICC	IP	FCM
Amphiphysin-1	✔				✔	
ApoA1	✔					
ApoE	✔		✔		✔	
CAF-1	✔		✔	✔	✔	
Drebin	✔		✔	✔	✔	
Dynamin	✔				✔	
GFAP	✔			✔		
Phospho-GFAP	✔		✔	✔		
GFRa1	✔				✔	✔
Nectin-3 (CD113)	✔			✔	✔	✔
Nestin	✔		✔			✔
Neuropsin	✔		✔	✔	✔	
Pax6	✔		✔			
Synaptotagmin 1	✔					
Syntaxin-1	✔		✔		✔	
TrkA	✔					
Phospho-TrkA	✔		✔		✔	

All MBLI antibodies are provided with detailed product information regarding species reactivity, tested applications (including in-house characterisation data) and recommended antibody dilutions. In many cases, a list of known citations and testing data generated by end-users of MBLI's products is also available, demonstrating the trust placed in MBLI antibodies by the scientific research community.

Popular neuroscience research areas

Alzheimer's Disease and Parkinson's Disease represent key areas of interest among MBLI customers. To support essential research into these debilitating neurodegenerative disorders, MBLI offers a range of high-quality antibodies, proteins and kits.

• Alzheimer's Disease
Alzheimer's Disease is a form of dementia that causes problems with memory, thinking and behaviour. It is the most common neurodegenerative disease, affecting over 5 million people in the United States alone, and there is currently no cure.

Products offered by MBLI to facilitate the study of Alzheimer's Disease include antibodies against targets such as ApoE4, amyloid beta and reelin; recombinant proteins including 14-3-3 Tau, Cathepsin S and various apolipoproteins; and ELISA kits for analysing different S100 proteins.
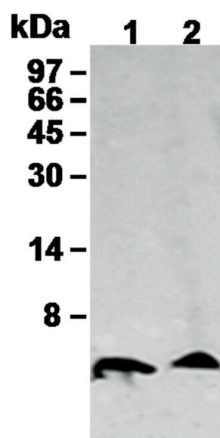
Western blot analysis of amyloid beta using M046-3. 1) Aβ 1-40, 2) Aβ 1-42.
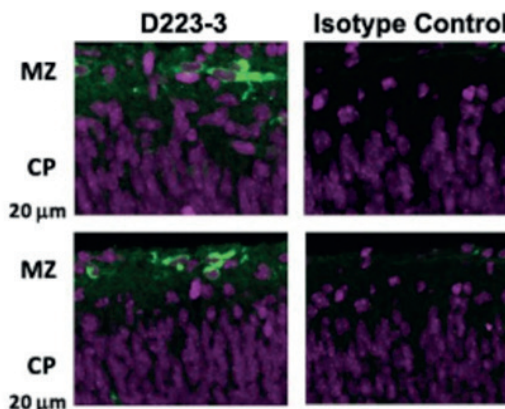
Immunohistochemical detection of Reelin on frozen section of mouse foetal brain using D223-3. Data kindly provided by Professor Kazunori Nakajima and Dr. Ken-ijiro Kubo, Department of Anatomy, Keio University School of Medicine, Tokyo.

• Parkinson's Disease
Parkinson's disease is a neurodegenerative condition that affects movement and coordination. It is the second most common neurodegenerative disease and currently has no cure.

MBLI products designed to facilitate the study of Parkinson's Disease include well-cited antibodies against alpha synuclein and DJ-1 (PARK7).

Western blot analysis of DJ-1 expression using M043-3.

1) Jurkat   6) NIH3T3
2) U937   7) WR19L12a
3) Raji   8) BaF/3
4) HeLa   9) P19
5) HL60

Founded in 2003 by three internationally recognized experts in molecular delivery systems, gene therapy and vaccines, OZ Biosciences' mission is to provide cutting-edge transfection and transduction reagents to enable life sciences researchers to achieve outstanding success. With a strong focus on technologies to deliver biomolecules for *in vitro* and *in vivo* applications, the company has established a strong position in the field.

Included in Oz Biosciences' comprehensive portfolio are various product lines designed to facilitate specific molecular delivery applications:

- **Magnetofection™** - a unique gene delivery method for *in vitro* and *in vivo* applications

- **Lipofection** - proprietary biodegradable lipid-based transfection reagents

- **Transduction tools** - for producing, concentrating, storing and enhancing virus efficiency

- **3D transfection** - allowing nucleic acid delivery directly into 3D matrix

- **Protein delivery systems** - including antibody and based on biodegradable lipid nanoparticles

- **Cell-specific reagents** - for specific cells such as neurons and stem cells

- **Vaccine adjuvants** - standard and novel adjuvants for antigenic and genetic immunization

A broad range of solutions for neuroscience applications

OZ Biosciences offers various enabling products for neuroscience research. Based on the company's Magnetofection™ technology, which exploits magnetic force to drive nucleic acids associated with magnetic nanoparticles into targeted cells within minutes, NeuroMag and Glial-Mag are designed for transfecting primary neurons and glial cells respectively. For *in vivo* gene delivery, BrainFectIN™ is an efficient transfection reagent to deliver nucleic acids into the central nervous system (CNS).

• NeuroMag

Specifically developed to transfect primary neurons and neural cells with reproducibility and no toxicity, NeuroMag is a unique reagent which affords:

- Superior transfection efficiency and high cell viability
- Efficient from DIV 1 – DIV 21
- Long-lasting transgene expression (up to 7 days)
- Ready-to-use reagent, straightforward protocol
- Suitable for all types of nucleic acids
- Suitable for all kinds of neural cells (primary neurons, neural stem cells, neural cell lines)
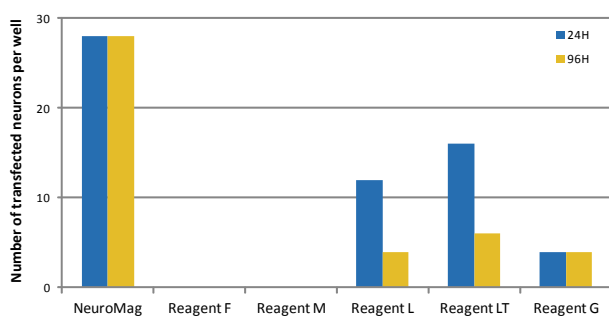
Transfection efficiency of several commercial reagents on primary rat hippocampal neurons.
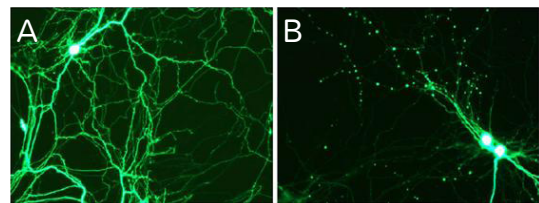
Primary rat hippocampal neurons 3 days after transfection with A) NeuroMag and B) Lipofectamine 2000.

• Glial-Mag

A powerful formulation for delivery of nucleic acids into microglial cell lines and primary microglia, Glial-Mag benefits from Magneto-fection™ technology in combination with a specific formulation (Glial-Boost) designed to enhance efficiency. With utility for both transient and stable transfection, Glial-Mag has been used successfully with a wide range of microglial cells.

BV2 cells transfected with pVectOZ-GFP using Glial-Mag

• BrainFectIN™

Designed to overcome the difficulty of gene delivery in the CNS, BrainFectIN™ is a non-viral formulation for safe, easy and efficient delivery of nucleic acids into the CNS of small animals. With proven utility in transfecting neural cells in a specific brain area following stereotaxic injection, BrainFectIN™ has also been used to achieve GFP expression in the hippocampus of young rats three weeks after injection with BrainFectIN™/pGFP complexes.

Quantitative analysis of GFP expression in hippocampus of rat transfected with BrainFectIN™/ pGFP, 3 weeks after surgery.

Founded in 2007 and located in Beijing, Sino Biological Inc. is a leading manufacturer of high-quality biological research reagents, all of which are developed and produced in-house. Benefiting from an extensive technology platform, multiple validation platforms, and the capacity for high throughput and rapid manufacture, the company releases over 2000 new products annually to keep up with researchers' varied demands. Products within Sino Biological's portfolio include:

- Recombinant proteins
- Antibodies
- cDNA clones and qPCR primers
- ELISA kits
- Purification resins
- Transfection reagents
- Culture media
- Enzyme tools
- Magnetic separators

High-quality tools for neuroscience research

Offering a wide variety of products for studying many different aspects of nervous system function - including axon guidance, synaptic transmission, neurodegeneration, neural stem cell research and more - Sino Biological has developed an extensive range of reagents designed to drive neuroscience research.

• Neurodegenerative diseases

With a strong focus on three of the major neurodegenerative diseases – Parkinson's Disease, Huntington's Disease and Alzheimer's Disease – Sino Biological is helping researchers gain a better understanding of these debilitating, life-limiting conditions. Included within the company's product portfolio are recombinant versions of proteins known to be implicated in these diseases; antibodies targeting these and other disease-relevant biomolecules; and various genes, lysates, kits and qPCR reagents.

Molecule	Recombinant Protein		Antibody	
	Species	Expression Host	Antibody Type	Antibody Application
MAPT	Human	E. coli	Rabbit PAb	ELISA
APOE	Human		Rabbit PAb	ELISA, IHC-P
HSP90AA1	Human	E. coli		
HSP90AB1			Rabbit PAb	WB, ICC/IF, IF
HDAC1			Rabbit PAb	IHC-P, ICC/IF, IF
HDAC3	Human	Insect	Rabbit PAb	ICC/IF, IF
HSPA1A	Human	Insect	Rabbit PAb/MAb, Mouse MAb	WB, ELISA, IHC-P, FCM, ICC/IF, IF, IP
UCHL1	Human	E. coli	Rabbit PAb/MAb	WB, ELISA, IP
UCHL1	Mouse	E. coli	Rabbit PAb/MAb	WB, ELISA, IP
UCHL1	Rat	E. coli	Rabbit PAb/MAb	WB, ELISA, IP
SNCA	Human	E. coli	Rabbit PAb/MAb	WB, ELISA, IP
PARK7	Human	E. coli	Rabbit PAb/MAb	WB, ELISA, IHC-P, FCM, ICC/IF, IF, IP
DNAJC30	Human	E. coli	Rabbit PAb	ELISA, IHC-P

Key protein and antibody products relevant to Parkinson's Disease and Huntington's Disease.

• Neurotrophic factors and receptors

Supporting the growth, survival and differentiation of both developing and mature neurons, neurotrophic factors (NTFs) are grouped into three main families – glial cell-derived neurotrophic factors (GDNFs), neurotrophin, and ciliary neurotrophic factors (CNTFs). Offering recombinant ligands and receptors from all these families, Sino Biological has developed products with proven efficacy in neuroscience research.
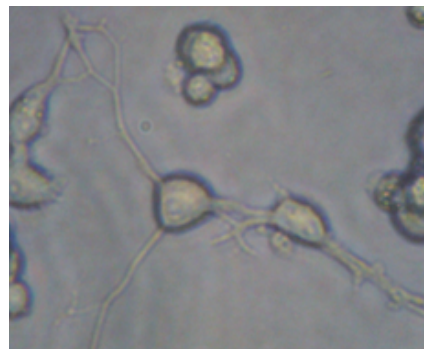
NGF stimulates neurite outgrowth of PC12 cells.

• Cytokines

Cytokines are essential cell signaling molecules, involved in many aspects of nervous system function. Offering a diverse range of recombinant cytokines, many of which are available from multiple species and several expression hosts, Sino Biological empowers researchers to investigate the effects of these important molecules on a wide variety of neurocellular processes.

• Cell adhesion proteins

Playing key roles in intercellular binding and attachment of cells to the extracellular matrix, cell adhesion proteins are widely-studied in the context of neuronal tissue architecture and function. In developing recombinant versions of many of these molecules, Sino Biological aids researchers in unravelling the complex processes in which different cell adhesion proteins are involved.
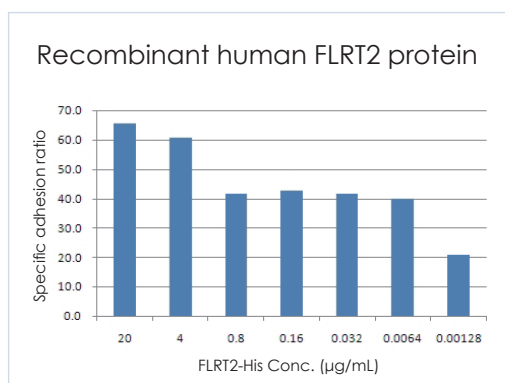
Ability of recombinant FLRT2 to support the adhesion of Neuro-2A mouse neuroblastoma cells.

• Antibodies

The applications of Sino Biological's antibodies within neuroscience research are many and varied. Antibody products include:

• Neural stem cell markers

• Neuronal cell markers

• Glial cell markers

• Antibodies to study neurodegeneration

• Antibodies to study neurotransmission

All these have been thoroughly characterised and validated in-house, allowing researchers to benefit from a wealth of testing data, suggested protocols for various applications, and recommended dilutions to ensure optimal signal in the chosen downstream assay.
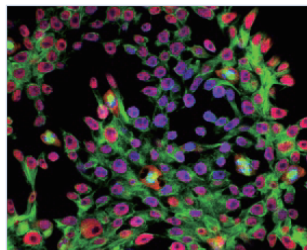
Immunofluorescence staining of SOX2, a neural stem cell marker, in HESS9 cells using 101284-T42. (SOX2 – red, tubulin – green, nuclei – blue).
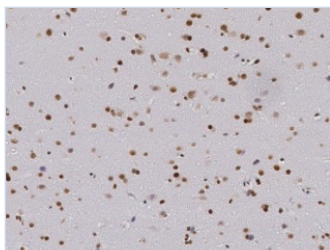
Immunohistochemical staining of PARP1, a key protein involved in neurodegeneration, in human brain using 100984-T46.
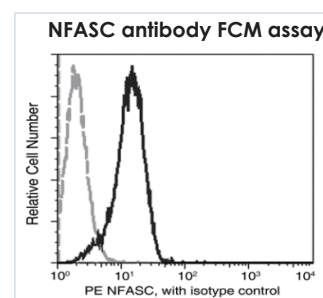
Flow cytometric analysis of human NFASC, a glial cell marker, on SH-SY5Y cells using 15694-MM02-P.

Toronto Research Chemicals (TRC) was founded in 1982 to manufacture and supply researchers in the biomedical fields with specialized complex organic small molecules not otherwise commercially available. Today employing more than 300 staff, TRC offers a catalogue in excess of 200,000 high-quality products with an extensive inventory available for immediate shipment.

Supporting neuroscience research

Research within the area of neuroscience can take many directions, ranging from the study of key enzymes and neurotransmitters to advancing understanding of various protein effectors. To accommodate researchers' diverse needs, TRC offers a comprehensive portfolio of innovative products to enable modulation, detection, and visualization of neurological pathways. These include selective, non-selective and labeled inhibitors, agonists, antagonists, and modulators, as well as high-quality ELISA kits that have been fully validated in neuro-specific tissues.

Neuroscientific research areas supported by TRC's products include:

Research area	Examples of key targets
Addiction	5-HT receptors Acetylcholine nicotinic receptors Cannabinoid receptors Dopamine receptors GABA receptors Glutamate receptors Opioid receptors
Alzheimer's Disease	Acetylcholine nicotinic receptors Cholinesterase Cyclooxygenases DYRK Glutamate receptors
Blood Brain Barrier research	Cell adhesion molecules Cytokines Kinesin inhibitors Nitric Oxide Synthase (NOS)
Depression	5-HT receptors Adrenergic receptors CRF receptors Dopamine receptors Glutamate receptors Monoamine Oxidase Tachykinin Receptors
Epilepsy	Calcium channel modulators GABA receptors Glutamate receptors Potassium channels
Multiple Sclerosis	Cannabinoid receptors Chemokine receptors Ionotropic glutamate receptors
Parkinson's Disease	5-HT receptors Acetylcholine nicotinic receptors Calcium channel modulators Glutamate receptors Heat shock proteins Monoamine oxidase Muscarinic acetylcholine

Neuronal signaling research

Neuronal signaling is involved in regulating the mechanics of the central nervous system, including its structure, function, genetics and physiology. Using small molecules to influence specific targets, researchers can better understand neuronal signaling and the role it plays during development, or within various neurological disorders.

One method of investigating neuronal signaling is to modulate the function of target biomolecules using specific inhibitors. For example, 5-HT receptors (which belong to the GPCR superfamily) can be inhibited with citalopram hydrobromide, while COX2 (an enzyme which produces prostaglandins that promote inflammation) can be inhibited with celecoxib.
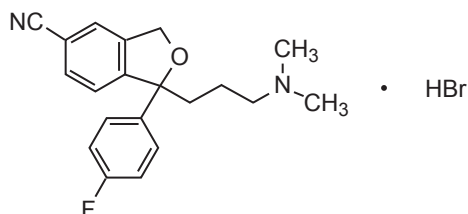
Citalopram hydrobromide salt (catalogue number C505000) is a 5-HT receptor inhibitor. This potent selective serotonin reuptake inhibitor (SSRI) is used to treat depression.
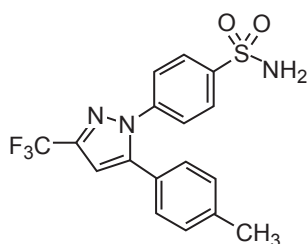
Celecoxib (catalogue number C251000) is a COX2 inhibitor. This nonsteroidal anti-inflammatory drug (NSAID) is used to treat pain or inflammation caused by conditions such as arthritis.

Neurodegeneration research

Neurodegenerative diseases are characterised by progressive degeneration of the structure and function of the central nervous system or peripheral nervous system. To aid research into these conditions, TRC offers products including β-amyloid inhibitors, DYRK inhibitors and a range of optimised ELISA kits.

Ion channel research

Ion channels are specialised proteins that facilitate the movement of ions across cell membranes. Playing essential roles in the physiology of all cells, they are implicated in numerous diseases. Ion channel dysfunction or mutation has been linked to neurological/neuromuscular conditions which include Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, multiple sclerosis, amyotrophic lateral sclerosis, and various age-related disorders.

To facilitate ion channel research, TRC offers products including:

- GABA and glycine receptor modulators
- Ionotropic glutamate receptor modulators
- Nicotinic acetylcholine receptor modulators
- P2X receptor modulators
- Chloride channel modulators
- ELISA kits
- Antibodies
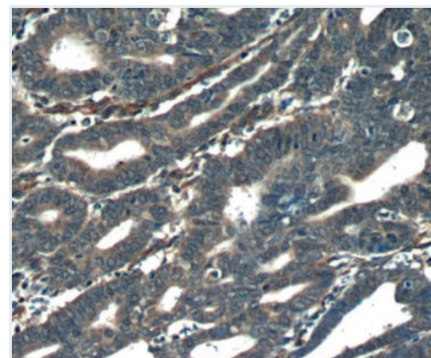
Immunohistochemistry of paraffin-embedded human endometrial cancer tissue slide using ORAI3 Antibody at dilution of 1:50

Vector Laboratories offers a wide variety of products for neurobiology. Our fluorochrome and enzyme-based detection systems and our proprietary substrates are staples of neurobiological research because of their high sensitivity and low background. We also provide biotinylated neuronal tracers and intracellular labeling reagents such as biotinylated dextran amines and NEUROBIOTIN™ Tracer. Our expertise in lectin isolation and purification led to the development of a range of lectin neuronal tracers and neural glycobiology reagents that are used to study neuroanatomical connections and structure. In addition, we offer several primary antibodies specific for brain and neural antigens.
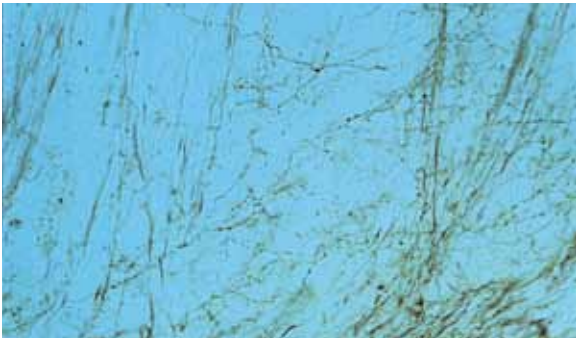
Rat brain: Biotinylated Dextran Amine – Texas Red® labeled fibers and terminals stained with VECTASTAIN® Elite® ABC (brown, DAB).
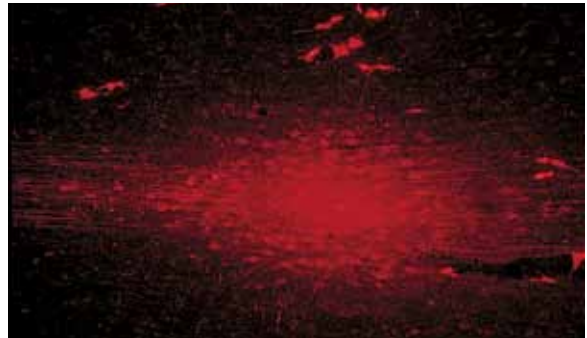
Rat frontal cortex: Biotinylated Dextran Amine – Texas Red® at injection site (red fluorescence filter).

Neuronal Tracers

Anterograde/Retrograde Tracing

NEUROBIOTIN™ Tracer

NEUROBIOTIN™ Tracer (SP-1120) is an amino derivative of biotin that can be used as an intracellular label for cells, particularly neurons. It is used for visualizing neural architecture and for the identification of gap junction coupling.

Key advantages of NEUROBIOTIN™ Tracer over biocytin and other neuronal labels:

• Better solubility
• More efficiently iontophoresed
• Remains in cell longer
• Non-toxic
• Can be fixed with formalin or glutaraldehyde

NEUROBIOTIN™ Tracer can be used in many types of preparations including *in vivo*, whole mounts, slice preparations, or cultured cells. It can be delivered by many routes such as intracellular electrodes, microinjection, cut- loading, or scrape-loading. NEUROBIOTIN™ Tracer can be detected using avidin or streptavidin systems with either chromogenic or fluorescence visualization methods.

Wheat Germ Agglutinin (WGA)

Wheat Germ Agglutinin (WGA) is used for both antero-grade and retrograde tracing. Vector Laboratories provides this lectin in several formats. **Peroxidase Wheat Germ Agglutinin (PL-1026)** is specially prepared for neuronal transport studies. This product is supplied at 40 mg/ml of protein in a 2 mg package ready for injection. After tissue preparation, detection can be readily achieved with a peroxidase substrate. **Unconjugated Wheat Germ Agglutinin (L-1020)** is available as a salt-free, lyophilized powder. This lectin can be detected with an unconjugated or biotinylated antibody to the lectin. The antibody can be detected with an avidin or streptavidin system with either a chromogenic or fluorescence visualization method. Alternatively, our non-biotin, one-step ImmPRESS™ polymer detection reagent can be used followed by a peroxidase substrate. **Biotinylated Wheat Germ Agglutinin (B-1025)** is provided as a solution and can be detected with an avidin or streptavidin system and either a chromogenic or fluorescence visualization method. **Fluorescein Wheat Germ Agglutinin (FL-1021)** and **Rhodamine Wheat Germ Agglutinin (RL-1022)** are provided in solution and can be visualized directly by fluorescence microscopy or with antibodies to fluorescein or rhodamine.

Neuronal Tracers (continued)

Anterograde Tracing

Biotinylated Dextran Amines

Biotinylated Dextran Amine – Fluorescein (SP-1130)
Biotinylated Dextran Amine – Texas Red® (SP-1140).
Used as anterograde tracers, our Biotinylated Dextran
Amines are approximately 10,000 MW and are con-
jugated with either fluorescein (BDA-F) or Texas Red®
(BDA-TR). These tracers can be effectively introduced
by iontophoretic or pressure injection methods. The
fluorochrome label allows easy location of the injection
site using a fluorescence microscope. Details of labeled
fibers and fibrillar termini can be observed after detec-
tion with an avidin or streptavidin system such as a
VECTASTAIN® *Elite*® ABC kit and a peroxidase substrate.

Phaseolus Vulgaris Leucoagglutinin (PHA-L)

The lectin *Phaseolus vulgaris* leucoaggutinin (L-1110) is
an excellent, specific marker for tracing efferent neuronal
projections. After iontophoretic injection of PHA-L, the
approximate rate of anterograde transport is about 4-6
mm/ day, and survival periods of over 18 days have been
observed. Once transported, the PHA-L is visualized with
an antibody to the lectin. The antibody can be detected
with an avidin or streptavidin system with either a chro-
mogenic or fluorescence visualization method. Alter-
natively, a non-biotin, one-step ImmPRESS™ polymer
detection reagent can be used followed by a peroxidase
substrate.

Neuronal Tracing and Associated Reagents

Product	Conjugate	Catalog Number	Direction of Transport	Molecular Weight	Fixable	Means of Detection	Unit Size
NEUROBIOTIN® Tracer		SP-1120	Anterograde, Retrograde	288	Yes	Fluorochrome or enzyme labeled avidin/streptavidin	50 mg
Wheat Germ Agglutinin (WGA)	Unconjugated	L-1020	Anterograde, Retrograde	36,000	Yes	Anti-WGA antibody (unconjugated or biotinylated)	10 mg
							25 mg
	Peroxidase	PL-1026	Anterograde, Retrograde	>76,000	Yes	Peroxidase substrate	2 mg
	Biotin	B-1025	Anterograde, Retrograde	36,000	Yes	Fluorochrome or enzyme labeled avidin/streptavidin	5 mg
	Fluorescein	FL-1021	Anterograde, Retrograde	36,000	Yes	Direct fluorescence	5 mg
							10 mg
	Rhodamine	RL-1022	Anterograde, Retrograde	36,000	Yes	Direct fluorescence	5 mg
							10 mg
Biotinylated Dextran Amine (BDA)	Fluorescein (BDA-F)	SP-1130	Anterograde	10,000	Yes	Direct fluorescence; enzyme labeled avidin/streptavidin	10 mg
	Texas Red® (BDA-TR)	SP-1140	Anterograde	10,000	Yes	Direct fluorescence; enzyme labeled avidin/streptavidin	10 mg
Phaseolus vulgaris leucoagglutinin (PHA-L)	Unconjugated	L-1110	Anterograde	126,000	Yes	Anti-PHA (E+L) antibody (unconjugated or biotinylated)	5 mg
Anti-*Phaseolus vulgaris* Agglutinin Antibodies							
Anti-*Phaseolus vulgaris* Agglutinin (E+L), made in goat,	Unconjugated	AS-2224	For detection of *Phaseolus vulgaris* leucoagglutinin (PHA-L)				1 mg
Anti-*Phaseolus vulgaris* Agglutinin (E+L), made in rabbit	Unconjugated	AS-2300	For detection of *Phaseolus vulgaris* leucoagglutinin (PHA-L)				1 mg
Anti-*Phaseolus vulgaris* Agglutinin (E+L), made in goat	Biotin	BA-0224	For detection of *Phaseolus vulgaris* leucoagglutinin (PHA-L)				0.5 mg

BIOZOL
FIT FOR SCIENCE

Offering over 6 million products sourced from manufacturers worldwide, BIOZOL Diagnostica Vertrieb GmbH has been supporting scientific research since 1989. From a constantly evolving portfolio, the company delivers:

- Antibodies
- Proteins
- ELISA
- Detection kits
- Biochemicals

- Small molecules
- Reagents for protein analysis
- Products for human and veterinary diagnostics
- And much more…

Recognised as one of the most efficient life sciences providers in Germany, BIOZOL's fast response times are just one of the company's strengths. By choosing BIOZOL, customers also benefit from expert technical support provided by scientifically-trained field staff. This is backed by a strong, customer-focused team to promote long-term, successful cooperation.

To further support our customers we are introducing our own product line, BIOZOL Basics, a range of everyday products providing guaranteed quality at the lowest prices:

JB ELITE Pre-Stained Protein Ladder

An essential product for researchers wishing to analyze protein expression levels by Western blot, BIOZOL's JB ELITE Pre-Stained Protein Ladder is a high-quality, cost-effective solution. Designed for monitoring protein separation during SDS-PAGE and verifying Western blot transfer effciency, the JB ELITE Pre-Stained Protein Ladder can be used to approximate the size of proteins following transfer to a suitable membrane.

Composed of ten pre-stained proteins, carefully selected to provide the breadth of molecular weight coverage researchers require, the JB ELITE Pre-Stained Protein Ladder offers many advantages:

- High-intensity, three-colour molecular weight determination
- Ultra-clear and expanded molecular weight range (6.5 - 270kDa)
- Clear separation for high molecular weight proteins
- Up to 100% electroblot transfer efficiency (Qamar S, CIMR, Cambridge)

Tris-Glycine 4-20%

Bis-Tris 4-12% MES buffer
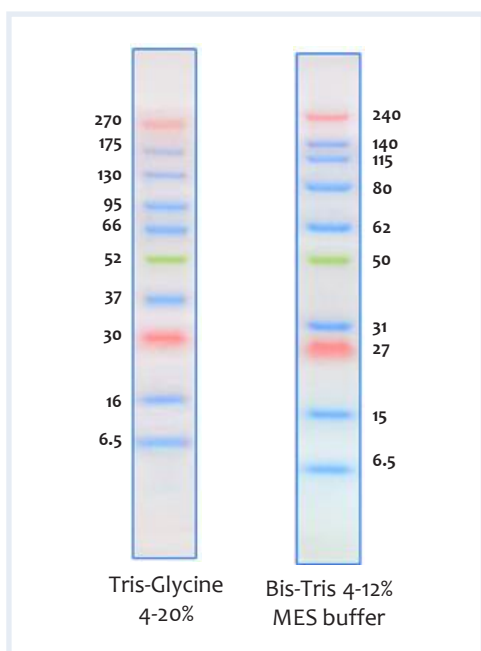
The JB ELITE Pre-Stained Protein Ladder demonstrates superior performance. Samples were run on a 4-12% Bis-Tris gel with MES buffer and stained with Coomassie. Following transfer, the JB ELITE Pre-Stained Protein Ladder demonstrated ultra-clear bands and an expanded molecular weight range. (Data provided by Qamar S, Cambridge Institute for Medical Research, Cambridge, UK.)

Supplied ready for use, the JB ELITE Pre-Stained Protein Ladder is suitable for both Tris-Glycine and Bis-Tris conditions. Using as little as 2.5µL per well for general Western blot transfer, researchers can enjoy clear resolution of ten major bands, colour-coded for easy orientation. Just 3µL or 5µL per well is required for visualization during electrophoresis on 15-well or 10-well mini-gels respectively.
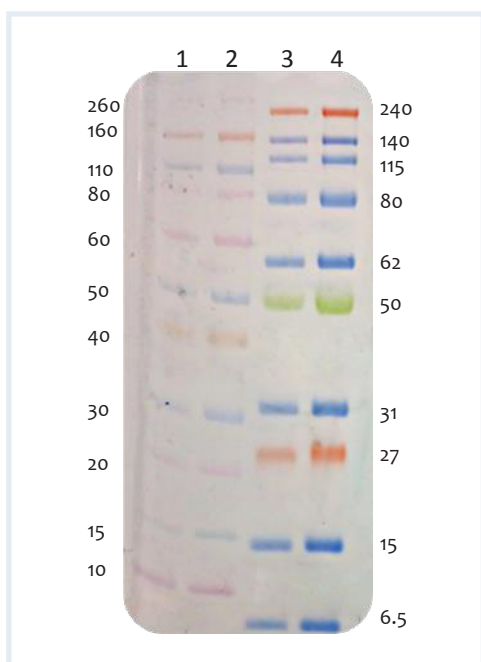
*Performance Data: 4-12% Bis-Tris MES SDS

• Lane 1: Novex Sharp (ThermoFisher) 5µl

• Lane 2: Novex Sharp (ThermoFisher) 10µl

• Lane 3: JB ELITE Protein Ladder 5µl

• Lane 4: JB ELITE Protein Ladder 10µl

*Qamar S, Cambridge Institute for Medical Research, Cambridge, UK, October 2018.

The JB ELITE Pre-Stained Protein Ladder resolves as ten major bands under both Tris-Glycine and Bis-Tris conditions.

Name	Product Code
0.5 ml JB ELITE Pre-stained Protein Ladder (2 x 0.25 ml)	JB-EPL-500
2.5 ml JB ELITE Pre-stained Protein Ladder (10 x 0.25 ml)	JB-EPL-2500

abm

The mission of our Canadian Partner, Applied Biological Materials, is to help scientists leap to their next research milestone with game-changing products and services. Their all-encompassing continuum of products span everything from CRISPR gene editing tools and viral vectors/viruses to the world's largest collection of unique cell lines and the most advanced PCR and Next Generation Sequencing technologies.

For Neurosciences, ABM provides growth factors, cytokines and cell lines.

BACHEM

With more than 45 years of experience in peptide research, the Swiss company Bachem is specialized in the development and manufacturing of peptides and complex organic molecules, as well as innovative biochemicals for research purposes.

For Neurosciences, Bachem provides more than 260 Alzheimer's Disease related products.

BioVision
BioVision Incorporated

The Californian Life Science company BioVision develops and offers a wide variety of products including assay kits, antibodies, recombinant proteins & enzymes, and other innovative research tools for studying Apoptosis, Metabolism, Cell Proliferation, Cellular Stress, Cell Damage and Repair, Diabetes, Obesity and Metabolic Syndrome, Stem Cell Biology, Gene Regulation, Signal Transduction, etc.

BioVision´s neuroscience products range from quantitative enzyme activity assays for key enzymes like Monoamine oxidase (MAO), N-Nicotinamide Methyltransferase (NNMT), β-secretase, etc., inhibitor screening assays for plausible drug targets like Sirtuins, ELISA kits, agonists and antagonists to various neurotransmitter receptors, antibodies to receptors, ion channels and transporters, specific tools for degenerative disease research (Alzheimer's), ion channel modulators, protein/enzyme effectors, neurotoxins, neuropeptides, and CNS (Central Nervous System) drugs.

Overall, BioVision's neuroscience research port-folio offers a comprehensive collection of tools for studying neural signaling networks and all aspects of neurological disease and age-related pathophysiological conditions.

BioLegend®
Enabling Legendary Discovery™

BioLegend develops world-class, cutting-edge antibodies and reagents for biomedical research, manufactured in our state-of-the-art facility in San Diego, CA. Our product expertise covers a diverse set of research areas including Immunology, Neuroscience, Cancer, Stem cells, and Cell Biology. BioLegend's reagents are supported by superior customer service and a quality management system that is certified for ISO 13485:2003. With the acquisition of the Covance antibody product portfolio, BioLegend signaled its commitment to enabling legendary discovery within the neuroscience research community. BioLegend is making further investments in the portfolio, becoming a leading provider of reagents known for quality and innovation, and helping scientists advance the understanding of brain biology, interrogate their pathways, and identify potential biomarkers that may improve the success of clinical programs for neurode-generative diseases.

BioVendor
Research and Diagnostic Products

BioVendor Group is an international diagnostics company with its headquarters in Brno, Czech Republic. Since its establishment in 1992, BioVendor has placed high importance on innovation and value brought to custom-ers via providing diagnostics solutions. Recent examples include, fully automated ELISA platform, proprietary microarray solution, Next Generation Sequencing kits, and proprietary miRNA immunoassays.

BioVendor offers a broad range of neural tissue markers such as Immunoassays, Proteins, Antibodies and Planar Arrays for neuroscience research.

Cytoskeleton, Inc.

Cytoskeleton, Inc. is specialized in the production of purified proteins and easy-to-use kits to study biochemical and cellular processes. The Company offers a wide range of kits and products for drug screening, signal transduction and cytoskeletal research.

For Neuroscience, Cytoskeleton provides a variety of antibodies and assay kits including those for the detection of motor proteins and investigation of post translational modifications.

Fitzgerald

Fitzgerald Industries International is the premier provider of over 45,000 highly purified Monoclonal and Polyclonal Antibodies, Purified Proteins, ELISA Kits and Specialty Research Products. For more than 20 years our customers have known that they can depend on Fitzgerald Industries to supply them with high quality products for research and further manufacture.

We recognize that neuroscience research is a rapidly growing area. We understand that the needs of today's neurobiologists are constantly changing. We aim to provide high quality tools to study existing and emerging targets using a broad spectrum of different approaches of molecular, cellular, developmental, structural, functional, evolutionary, and medical aspects of the nervous system. During 2012, we have hugely expanded our neuroscience product base, and our current product range encompasses over 1,000 antibodies and proteins spanning a vast range of targets including, neurotransmitters, signaling molecules, cellular markers, cell death pathways, neurological disease related pathways, such as Alzheimer's disease, Parkinson's disease, ALS, and physiological disorders.

LSBio
LifeSpan BioSciences, Inc.

LSBio provides high quality antibodies for immunohistochemistry, including >200,000 primary antibodies against >20,000 targets, among these many of the most investigated proteins in Neuroscience.

MCE® MedChemExpress

MedChemExpress (MCE) offers a wide range of high quality research chemicals and biochemicals including novel life-science reagents, reference compounds, APIs and natural compounds of the highest grade for laboratory and scientific use. Thorough analytical testing is performed on MedChem's products, including HNMR, LC-MS and HPLC - stability testing and activity assays, and the results from these tests are available to clients.

For Neurosciences, MedChemExpress provides a wide range of Inhibitors & Modulators.

ProSci ™

ProSci Inc., located in San Diego, CA, specializes in custom polyclonal, monoclonal, and single domain antibody development and production.

With over 20,000 antibody catalog products, ProSci develops antibodies with your research needs in mind. Their neurobiology antibodies are quality controlled and tested in applications such as western blotting, ELISA, IF, IHC, and ICC. Join the many satisfied customers that have made ProSci their preferred partner in antibody research.

StressMarq Biosciences INC.

Established in 2007, StressMarq Biosciences Inc. is a supplier of life science products that operates out of Victoria, Canada with a small, but dedicated group of scientists. The diverse portfolio of primary antibodies, antibody conjugates, proteins, immunoassay kits and small molecules bridges across the life sciences, including products for cancer research, cardiovascular disease, cell signaling and neuroscience.

For Neuroscience, StressMarq provides antibodies against ion channels, proteins involved in neurodegenerative disorders (e.g ALS, Alzheimer, Hereditary Spastic Paraplegia, Parkinson´s Disease), neurotransmitter receptors, pumps and transporters as well as cell structure markers. StressMarq is also the first company to offer active tau preformed fibrils (PFFs) for neuroscience research.

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