

Isolation and characterization products

Primary antibodies

Invitrogen offers a comprehensive library of primary antibodies for neural stem cells. We also offer custom conjugation of any antibody to the fluorophore of your choice (see custom services). [Click here](#) to view the list of antibodies for neural stem cells.

Product	Cat. no.
CD56 (N-CAM, SCLC, NKH1) (Clone: 123C3)	07-5603
GFAP (Glial Fibrillary Acidic Protein) (Clone: ZCG29)	18-0021
MAP2 (Clone: M13)	13-1500
Myelin Basic Protein, Concentrate	18-0038
NeuN (Clone: A60)	18-7373
NG2 (Clone: D120.43/D4.11/N143.8/N109.6)	37-2700
SOX-9 [pS181]	44-440
Tau (Clone: TAU-5), Pan	AH80042
Tyrosine Hydroxylase	32-2100

For more information on Invitrogen antibodies, visit www.invitrogen.com/antibodies.

Bead-based isolation

Dynabeads® provide a way to obtain high yields of pure cells. They are precoated either with secondary antibodies (directed against primary antibodies from various species) or with biotin. Either way, you can easily construct a system to isolate cells using your primary antibody of choice. [Click here](#) to view the list of bead-based cell separation systems for stem cells.

Product	Cat. no.
Dynabeads® Biotin Binder	110-47
Dynabeads® Rat Anti-Mouse IgG1	110-37
Dynabeads® Rat Anti-Mouse IgM	110-39D
Dynal® CELLlection™ Biotin Binder Kit	115-33D
Dynal® CELLlection™ Pan Mouse IgG Kit	115-31D

For more information and to see an extended listing of bead-based cell separation systems, visit www.invitrogen.com/dynal.

Labeling and detection/Secondary antibodies

Zenon® Alexa Fluor® Labeling Kits

Zenon® technology eliminates the need for secondary antibodies by directly conjugating a fluorophore to a primary IgG antibody. [Click here](#) to view the list of Zenon® Alexa Fluor® Labeling Kits for stem cells. For general information on Zenon® technology, visit probes.invitrogen.com/products/zenon.

Alexa Fluor® secondary antibodies

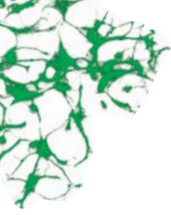
Alexa Fluor® dyes are widely used in stem cell research due to their brightness and photostability. Alexa Fluor® dye-labeled secondary antibody conjugates are available against primary antibodies from a variety of species. [Click here](#) to view the list of Alexa Fluor® secondary antibodies for stem cell research. For general information on Alexa Fluor® dyes, visit probes.invitrogen.com.

Qdot® nanocrystal antibody labeling reagents

Qdot® technology provides intense brightness and superior photostability for quantitative analysis. It enables effective detection of nonabundant targets and unprecedented flexibility and ease of use in multicolor labeling experiments. [Click here](#) to see the complete list of Qdot® nanocrystal antibody labeling reagents for stem cells. For more information on Qdot® technology, visit probes.invitrogen.com.

ELISA kits, TSA kits, and anti-GFP antibodies

We offer substrates and assay kits for developing very sensitive colorimetric and fluorometric ELISAs. Tyramide signal amplification (TSA) is an enzyme-mediated detection method that uses the catalytic activity of horseradish peroxidase (HRP) to generate high-density labeling of a target protein or nucleic acid sequence *in situ*. [Click here](#) to see the complete list of substrates and assay kits for stem cell research.



Isolation and characterization products, cont.

FluoroMyelin™ fluorescent myelin stains

FluoroMyelin™ Red and Green Fluorescent Myelin Stains enable quick and selective labeling of myelin in brain cryosections. For additional information on FluoroMyelin™ stains, visit probes.invitrogen.com.

Product	Cat. no.
FluoroMyelin™ Green Fluorescent Myelin Stain	F34651
FluoroMyelin™ Red Fluorescent Myelin Stain	F34652

Protein purification and analysis

Invitrogen's simple and effective purification products are ideal for isolating pure and concentrated peptides, proteins, or protein complexes. [Click here](#) to view the complete list of protein purification and analysis tools.

SILAC products

SILAC (Stable Isotope Labeled Amino Acids in Cell Culture) is a method that allows metabolic incorporation of nonradioactive isotope–labeled amino acids for the purpose of mass spectrometry–based protein expression quantitation. [Click here](#) to view the complete list of SILAC products.

DNA- and RNA-based characterization

miRNA arrays

NCode™ miRNA analysis products have been optimized to purify and label miRNA, and detect miRNA expression on a microarray. This optimization enables simple and efficient profiling of miRNA expression patterns in stem cells (from several different species) at various stages of differentiation. For more information on NCode™ technology, visit www.invitrogen.com/ncode.

Certified LUX™ qPCR primers

Certified LUX™ primers are sensitive, specific, and cost-effective tools for characterizing stem cells using real-time qPCR. Each premade primer set has been functionally validated and optimized for quantitating the target gene of interest. [Click here](#) to view the complete list of LUX™ primers.

Karyotyping

KaryoMAX® Colcemid™ Solution is functionally tested as a blocking agent that arrests cells in metaphase by disrupting the cytoskeleton. It provides an easy way to karyotypically characterize stem cells and monitor karyotypic stability.

Product	Cat. no.
KaryoMAX® Colcemid™ Solution	15212-012

Nucleic acid extraction and purification

Invitrogen provides a full suite of superior and reliable products to enable nucleic acid–based stem cell characterization. [Click here](#) to view the complete list of nucleic acid purification products.

Isolation and characterization services

Invitrogen Custom Services

Invitrogen offers a wide variety of custom services to aid in your discovery research, including lentivirus and adenovirus production, protein production, purification and characterization, cDNA library construction, Gateway® and TOPO® cloning, mutagenesis, and BAC screening. For more information on Custom Services, visit www.invitrogen.com/customservices.

Custom antibodies

Invitrogen offers full custom antibody services to produce highly specific, high-affinity antibodies for all your stem cell research needs. [Click here](#) to learn more about isolation and characterization services.



Expansion and differentiation products

Stem cell culture media and reagents

GIBCO® brand media provide the broadest selection of specialty products optimized for stem cell populations, many of which are free of animal-derived components. [Click here](#) to view the complete list of stem cell culture media and reagents.

Product	Cat. no.
Antibiotic-Antimycotic (100X), liquid	15240-062
B-27	17504-044
β-Mercaptoethanol (2-Mercaptoethanol) (1,000X), liquid	21985-023
Dulbecco's Modified Eagle Medium (DMEM) (1X), liquid (4.5 g/L D-glucose) Contains 4,500 mg/L D-glucose. Without L-glutamine and sodium pyruvate.	11960-044
Dulbecco's Phosphate Buffered Saline (D-PBS) (1X), liquid. Without calcium, magnesium, or phenol red.	14190-144
Dulbecco's Phosphate Buffered Saline (D-PBS) (1X), liquid. Contains calcium and magnesium, but no phenol red.	14040-133
Fetal Bovine Serum, ES Cell-Qualified FBS	16141-079
GlutaMAX™-I Supplement	35050-061
HEPES Buffer Solution (1 M)	15630-080
Insulin-Transferrin-Selenium-G Supplement (100X), liquid	41400-045
KnockOut™ Serum Replacement (KSR)	10828-028
L-Glutamine-200 mM (100X), liquid	25030-081
MEM Non-Essential Amino Acids Solution 10 mM (100X), liquid	11140-050
N-2 Supplement (100X), liquid	17502-048
Neurobasal™ Medium (1X), liquid	21103-049
Penicillin-Streptomycin	15070-063
TrypLE™ Select (1X), liquid	12563-029
Trypsin-EDTA (0.25% Trypsin with EDTA•4Na) 1X	25200-072

For more information on Invitrogen culture media and reagents, visit www.invitrogen.com/gibco.

Cytokines and growth factors for stem cell culture

Invitrogen offers an extensive selection of high-quality growth factors and cytokines for stem cell expansion and differentiation. These products are extensively tested to ensure high biological activity, high purity, freeze/thaw stability, and structural homogeneity. [Click here](#) to view the complete list of cytokines and growth factors for stem cell culture.

Product	Cat. no.
Basic Fibroblast Growth Factor (bFGF) REC HU	PHG0021
Bone Morphogenic Protein-2 (BMP-2) REC HU	PHC7094
Bone Morphogenic Protein-7 (BMP-7) REC HU	PHC7104
Brain-Derived Neurotrophic Factor (BDNF), REC HU	10908-010
Glial-Derived Neurotrophic Factor (GDNF), REC HU	10907-012
Insulin REC HU	12585-014
Insulin-Like Growth Factor-I (IGF-I) REC HU	PHG0075
Insulin-Like Growth Factor-II (IGF-II) REC HU	PHG0085
NAT HU FIBRONECTIN hu	PHE0023
Nerve Growth Factor 2.5S (NGF 2.5S), Murine, Natural	13257-019
Neurotrophic Factor-3 (NT-3) REC HU	PHC7034
Neurotrophic Factor-4 (NT-4) REC HU	PHC7024
PDGF REC HU	PHG0045

For more information on growth factors, cytokines, and recombinant proteins, visit www.invitrogen.com/cytokinesandgrowthfactors.



Expansion and differentiation products, cont.

Gene regulation and pathway analysis

RNAi reagents

Invitrogen's BLOCK-iT™ RNAi portfolio includes powerful tools to perform loss-of-gene-function experiments. These products make it easy to decrease the expression of a specific protein in a cell in order to elucidate its function. BLOCK-iT™ RNAi technologies provide three basic approaches to induce RNAi: synthetic Stealth™ RNAi and siRNA duplexes, vectors carrying an RNAi cassette expressing shRNA or artificial miRNAs, and *in vitro* transcription and dicing of dsRNA to generate pools of siRNA. [Click here](#) to view the list of RNAi products for stem cell research.

Transfection and expression reagents

Lipofectamine™ 2000 Transfection Reagent enables you to achieve the highest transfection efficiencies and protein expression levels in a wide variety of mammalian cell types, including stem cells. Virus-mediated gene delivery using the ViraPower™ Lentiviral Expression System offers highly efficient transfection, stable integration, and expression in stem cells to permit the study of long-term effects of gene expression. [Click here](#) to view the list of transfection and expression reagents for stem cells.

Bead-based Luminex® assays

Use singleplex and multiplex bead-based Luminex® assays to characterize signaling pathways in stem cells. [Click here](#) for more information on gene regulation and pathway analysis for stem cells. For more information on Luminex® assays, visit www.invitrogen.com/biosource.

In vitro and *in vivo* cell tracking

CellTracker™ reagents

CellTracker™ reagents freely diffuse through the membranes of live cells. Once inside the cell, these mildly thiol-reactive probes react with intracellular components to produce fluorescence, with the cells staying viable for at least 24 hr after loading.

Qtracker® products

Qtracker® Cell Labeling Kits deliver fluorescent Qdot® nanocrystals into the cytoplasm of live cells using a custom targeting peptide. Once inside the cells, Qtracker® labels provide intense, stable fluorescence that can be traced through several generations and are not transferred to adjacent cells in a population. [Click here](#) to view the list of products for *in vitro* and *in vivo* cell tracking.

Expansion and differentiation services

Media services

Invitrogen's R&D scientists will create the optimal nutritional environment, developing media formulations specifically suited to your working cell lines. We can formulate nutrient supplements to your specifications for bioreactor feed strategies. All final manufacturing is performed in our ISO 9001–certified, QSR/cGMP-compliant facilities and held to the same high standards as our GIBCO® catalog products, ensuring scalability, robustness, and compliance. For more information on media services, visit www.invitrogen.com/customservices.

Cell banking and testing

BioReliance® Bioservices provides biologics safety testing, development, and GMP manufacturing, in addition to preclinical testing services for biologically based drugs. Furthermore, our services team offers production of a wide range of cell banks, both Master Cell Banks and Working Cell Banks. For more information on cell banking and testing, visit www.bioreliance.com.

RNAi services

Invitrogen offers RNAi services for each and every step of an RNAi experimental workflow. From custom design, cloning, and synthesis to functional validation and custom readout assays, Invitrogen has the knowledge, experience, and technologies to aid in any RNAi experiment. [Click here](#) for more information on expansion and differentiation services.