Human Smooth Muscle Cell Lines

The Smooth Muscle cell lines (clones HITB5, HITC6 and HITD5) were generated from primary cultures of human smooth muscle cells prepared from internal thoracic artery. These cells assume a proliferative, motile phenotype when cultured in M199 media in the presence of 10% FBS. When serum deprived the cells no longer proliferate but assume an elongated spindle-shaped morphology with suppressed motility. The serum deprived cells are also seen to contract in vitro in response to the vasoactive hormones histamine and angiotensin II.

These cell lines may be valuable for clarifying our understanding of SMC phenotype switching and restructuring of the vessel wall. Additionally, these cell lines are ideal for studies involving angiogenesis and vasculogenesis, drug development, toxicity, cell-cell interactions, wound healing and cancer therapy.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat.#</th>
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<tbody>
<tr>
<td>Human Smooth Muscle Cell Lines</td>
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<tr>
<td>CLU305</td>
<td>HITB5</td>
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<tr>
<td>CLU306</td>
<td>HITC6</td>
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<tr>
<td>CLU307</td>
<td>HITD5</td>
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Phase-contrast images of HITB5 smooth muscle cells cloned from adult internal thoracic artery.

A-B. HITB5 cells grown in M199 media with 10% FBS.
C-D. HITB5 cells 3 days after serum withdrawal showing an elongated and spindle-shaped morphology.

Phase-contrast images of HITC6 smooth muscle cells.
A. before…
B. and after the application of Angiotensin II (1 μmol/L) showing contraction.

For more information, please contact...

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Neuronal Cell Lines
from CELLutions Biosystems
(a Cedarlane company)

Easy to Culture/Stable Mouse and Rat Cell Lines:
- Hypothalamic
- Hippocampal
- Pituitary
- Motor Neuron-Like
- Oligodendrocytic (Glial) (Human)

Other Cell lines:
- Erythroblastic
- Ovarian Cancer (Human)
- Cardiac Endothelial
- Smooth Muscle (Human)

Also Available:
- Microarrays
- Lysates
- Dip-N-Blots™ Western Blot strips of the cell lines.

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Hypothalamic Cell Lines

CELLutions Biosystems offers a unique line of phenotypically different clones generated from:

- **Adult Mouse Hypothalamic cells**
  - 23 cell lines designated mHypoA-xx (Cat. # CLU172 - CLU194)

- **Embryonic Mouse Hypothalamic cells**
  - 38 cell lines designated mHypoE-xx (Cat. # CLU101 - CLU139)

- **Embryonic Rat Hypothalamic cells**
  - 22 cell lines designated rHypoE-xx (Cat. # CLU201 - CLU222)

*(See website for expression profiles for each panel of cell lines)*

Based on a proprietary platform technology, these hypothalamic neuronal cell lines have been created by immortalizing hypothalamic primary cultures using retroviral transfer of SV40 T-Ag. These cell lines have been found to express an ever expanding array of neuropeptides, enzymatic markers and biologically active receptors including: Neuropeptide Y, Oxytocin, POMC, Ghrelin, Metastatin/Kisspeptin, Arg Vasopressin, Leptin Receptor (ObRb), GHS-R, Estrogen alpha and beta Receptors, Serotonin Receptor and Neurotensin.

As such, these cell lines enable accurate *in-vitro* assays for use in the discovery, development and validation of new therapeutics targeted to central-nervous system diseases and disorders, including obesity, stress, and metabolic disorders, amongst others.

**Examples of technologies possible with *in vitro* models**

- **A.** Electrophoretic mobility shift assay (EMSA) was performed using nuclear extract from mHypoE-39 cells and CREB, ATF-1, c-fos and JunD antibodies.

- **B.** Chromatin immunoprecipitation (ChIP) was performed in mHypoE-39 cells.

- **C.** Calcium mobilization was measured in mHypoE-38 cells using the Fluo-4 AM reagent. Fluorescence indicates increased calcium levels.

- **D.** Time dependant analysis of intracellular calcium concentrations.

- **E.** MAPPIT technology was used to analyze protein interactions with the leptin receptor (LR) in mHypoE-38 cells. For this novel technology, mHypoE-38 cells were transfected with plasmids encoding a mutant LR-YFF (acting as bait), different IRS protein expressing constructs that contained part of the gp130 chain carrying four STAT3 binding sites (acting as prey) and a STAT3 responsive luciferase reporter construct. The Western blot indicates the expression of the FLAG-tagged prey proteins.

- **F.** siRNA technology was used to silence estrogen receptor alpha and beta in mHypoE-38 cells.
Imaging of embryonic and adult hypothalamic cell lines

A to D. The embryonic mHypoE-46, -29/2, -38 and -43/5 were imaged using phase contrast microscopy.

E to I. The adult mHypoA-2/22, -2/1, -2/3 and -2/5 were imaged using confocal differential interference contrast microscopy.

J. The embryonic mHypoE-38 neurons were imaged using fluorescent confocal microscopy after immunocytochemical analysis with anti-ghrelin sera (green); nuclei were counterstained with propidium iodide (red).

K. The adult mHypoA-2/12 neurons were imaged using fluorescent microscopy after immunocytochemical analysis with an antibody against NPY (green); nuclei were counterstained with DAPI (blue).

L and M. The mHypoE-36/1 neurons were imaged using DAB staining during immunocytochemical analysis with antibodies against neurofilament (NF) and neurotensin (NT).

REFERENCES


SomaPlex™ Reverse Phase Protein Microarray for the Embryonic and Adult Mouse Hypothalamic Cell Lines

Embryonic and Adult Mouse Hypothalamic Cell Lines Plus 7 Control Lysates; Single Protein Concentration Qualitative Assays

SomaPlex™ Protein Microarrays are designed for rapidly profiling protein expression in lysates obtained from a collection of mouse cell lines. Protein expression can be determined using an antibody directed against the specific protein target, but the use of other protein-specific probes is possible under the proper assay conditions for the probe. Visualization of antibody binding may be accomplished using a number of detection systems including color development, enhanced chemiluminescence (ECL) and fluorescence. The image is subsequently captured, processed and manipulated using commercially available high-resolution scanners or CCD-equipped instruments and software. Each lysate is spotted in triplicate at a single protein concentration, in RIPA buffer that permits most soluble proteins to retain their native, or non-denatured, structure and activity in many cases.

There is an increasing demand for technologies that enable the high throughput screening of multiple protein targets from multiple specimens. The ability to identify multiple proteins in multiple lysates has broad applications in biological and biomedical research. The protein microarray platform is ideally suited to discovering and screening known and novel protein biomarkers. SomaPlex™ Embryonic and Adult Mouse Hypothalamic Cell Line Protein Microarray will ultimately prove to be valuable tools in the field of neurobiology proteomics and biomarker research.

### Embryonic Hypothalamic cell line Microarray:
(Cat. # CLU-PMA-MEH-L)

### Adult Hypothalamic cell line Microarray:
(Cat. # CLU-PMA-MAH-L)

Lysates from Adult and Embryonic Mouse Hypothalamic Cell Lines

Cultured cell lines are homogenized in modified RIPA buffer to obtain the soluble proteins, and centrifuged to clarify. These lysates are ideal for biomarker identification and screening, antibody detection and characterization, protein expression and interaction studies, ligand binding. ELISA, immunoprecipitation, 1D and 2D gel electrophoresis and blotting.

Dip-N-Blots™ Western Blot Dipsticks Embryonic and Adult Hypothalamic Cell Line Whole Cell Lysates

Dip-N-Blots™ are an innovative solution to the pre-made Western blot sample content conundrum - not getting all or exactly the right samples for your analysis at an affordable price.

Dip-N-Blots™ are prepared using 4-20% pre-cast 1D-PAGE gradient gels for maximum protein separation and resolution. Gel to gel loading and running are constantly monitored for consistency and reproducibility to maintain high quality standards. Dip-N-Blots™ are made using supported PVDF membranes for high protein binding capacity and are extra strong to resist tearing and permit easy handling. Simply align the strip to the marker key provided on the product data sheet to determine the molecular weight of your target. Each strip comes individually packaged in a convenient 2 ml incubation chamber, ready to use and minimizing the amount of reagents and antibodies required.

Microarrays, Lysates and Dip-N-Blots™ were co-developed in collaboration with Protein Biotechnologies, Inc.

www.proteinbiotechnologies.com
Pituitary Cell Lines

This line of adult mouse pituitary cell lines is based on a proprietary platform technology which has enabled the creation of 19 mixed cell cultures that contain cells from particular pituitary cell lineages, as determined by RT-PCR analysis and immunocytochemistry for specific hormones. Pituitary cell cultures have been immortalized from fully differentiated adult mouse pituitary cell culture (C57Bl/6; female) by retroviral transfer of SV40 T-Ag.

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Mouse Motor Neuron-Like Cell Line (NSC-34)

NSC-34 is a hybrid cell line, produced by fusion of motor neuron enriched, embryonic mouse spinal cord cells with mouse neuroblastoma. Cultures contain two populations of cells: small, undifferentiated cells that have the capacity to undergo cell division and larger, multinucleate cells. These cells express many properties of motor neurons, including choline acetyltransferase, acetylcholine synthesis, storage and release and neurofilament triplet proteins.

Applications: NSC-34 cells have been evaluated following exposure of cultures to a selection of chemicals known to be neurotoxic to motor neurons. NSC-34 cells respond to agents that affect voltage-gated ion channels, cytoskeletal organization and axonal transport. The sensitivity of action potential production to various ion channel blockers is similar to that in primary motor neurons in culture. Therefore, these immortalized motor neuron-like cells have the utility as a model for the investigation of neurotoxicity.
Erythroblastic Cell Lines (HB60 and other HB cell lines)

This product line is based on a proprietary platform technology which has enabled the creation of a series of immortalized erythroblastic cell lines. These cell lines have significant utility in a variety of drug discovery and therapeutic development programs, for example the discovery and identification of Epo-like compounds and Epo antagonists.

Human Oligodendrocytic (Glial) (MO3.13) Cell Line

This is an immortal human-human hybrid cell line that express phenotypic characteristics of primary oligodendrocytes, and was created by fusing a 6-thioguanine-resistant mutant of the human rhabdomyosarcoma RD (cancer of skeletal muscle) with adult human oligodendrocytes by a lectin-enhanced polyethylene glycol procedure. In contrast to the tumor parent, MO3.13 expressed surface immunoreactivity for galactosyl cerebroside (GS) and intracellular immunoreactivity for myelin basic protein (MBP), proteolipid protein (PLP), and glial fibrillary acidic protein (GFAP).

Other articles have reported that the MO3.13 also exhibits the markers of immature oligodendrocytes GalC (galactosylceramidase) and CNPase. Upon differentiation, the MO3.13 cells have been also shown to express the mature oligodendrocyte markers MBP and MOG (myelin oligodendrocyte glycoprotein). MO3.13

References

From Hiroi et al. Acta Histochem Cytochem 44(2) 91-101. 2011

A. NSC-34
NSC-34 contains small cells derived from mouse motor neurons and larger multinucleated cells derived from mouse neuroblasatoma cells.

B. Differentiated NSC-34
Small cells extend neuronal processes.

A. NSC-34
B. Differentiated NSC-34

References


Human Glial (Oligodendrocytic) Hybrid Cell Line

MO3.13 CLU301

References


Ovarian Cancer Cell Line (HEY)

The HEY human ovarian carcinoma cell line was derived from a human ovarian cancer xenograft (HX-62) originally grown from a peritoneal deposit of a patient with moderately differentiated papillary cystadenocarcinoma of the ovary. The cell line has demonstrated differential ability to grow in semisolid culture and as a xenograft in immunologically deprived CBA/CJ mice. The HEY cell line shows a degree of resistance to the alkylating agent cis-diaminedichloroplatinum (cis-platinum).

Immortalized Mouse Cardiac Endothelial Cell (MCEC) Line

The mouse cardiac endothelial cell (MCEC) line was prepared from microvascular neonatal mouse cardiac endothelial cells by transfection with lentiviral vectors carrying SV40 T antigen and human telomerase. This cell line grows indefinitely, exhibits contact inhibition, displays normal endothelial characteristics and cellular markers, and possesses tight intercellular junctions.

The MCEC line is unusually receptive to both transient and stable transfection and thus provides an excellent in vitro model for evaluation of effects on endothelial physiology of specific genetic additions or deletions. It is very unusual for endothelial cells to grow indefinitely while maintaining stable, normal endothelial characteristics, and furthermore, to be easily transfectable at high efficiency with simple transfection techniques.

The MCEC line is ideal for studies of endothelial cell physiology, drug development, investigation of mechanisms of endothelial injury and protection therefrom, studies of vascular permeability, toxicity, cell-cell interactions, inflammation, wound healing, cancer therapy, and angiogenesis.