**Human Cell Lines:**

SH-SY5Y cells:

SH-SY5Y cells are often used as *in vitro* models of neuronal function and differentiation, and also have been used to study Parkinson's Disease. SH-SY5Y cells can form mounds of undifferentiated cells, which then spread differentiated cells into the surrounding area. The dividing cells can form clusters of cells which are reminders of their cancerous nature, but certain treatments such as [retinoic acid](http://en.wikipedia.org/wiki/Retinoic_acid), [BDNF](http://en.wikipedia.org/wiki/BDNF), or TPA can force the cells to [dendrify](http://en.wikipedia.org/w/index.php?title=Dendrify&action=edit&redlink=1) and differentiate. Moreover, induction by retinoic acid results in inhibition of cell growth and enhanced production of noradrenaline from SH-SY5Y cells.

Medium: (EMEM:F12=50:50) with 10% FBS, 2mM L-Glutamine, 1% Pen/Strep

Ntera-2 cells:

Embryonal carcinoma cells (NTERA-2) are pluripotent stem cells derived from teratocarcinoma and are considered to be the malignant counterparts of human embryonic cells. It has been used as a model for studying cancer stem cells.

Medium: DMEM (GIBCO #11960) with 10% FBS, 2mM L-Glutamine, 1% Pen/Strep

NTERA-2 cl.D1 [NT2/D1] is a pluripotent human testicular embryonic carcinoma cell line.

Ntera-2 cells differentiate along neuroectodermal lineages after exposure to retinoic acid

(RA). The RA-induced differentiation is characterized by glycolipid changes, appearance

of neurons, and induction of homeobox (HOX) gene clusters. The undifferentiated cells

have gene expression profiles and chromatin patterns similar to embryonic stem cells.

HEK293 cells:

Human Embryonic Kidney 293 cells, referred to as HEK 293, HEK-293, 293 cells, are a specific cell line originally derived from human embryonic kidney cells grown in tissue culture. They are used by the [biotechnology](http://en.wikipedia.org/wiki/Biotechnology) industry to produce therapeutic proteins and [viruses](http://en.wikipedia.org/wiki/Viruses) for [gene therapy](http://en.wikipedia.org/wiki/Gene_therapy).

Medium: DMEM (GIBCO #11960) with 10% FBS, 2mM L-Glutamine, 1% Pen/Strep

HCT116 cells:

HCT116 colon cancer cells is a suitable transfection host. This line has a mutation in codon 13 of the ras proto-oncogene and wt p53 gene, and can be used as a positive control for PCR assays of mutation in this codon.

Medium: McCoy’s 5A with 10% FBS, 2mM L-Glutamine, 1% Pen/Strep

U2OS cells:

human osteosarcoma cell line expressing wild type p53 and Rb, but lacking p16. U2OS cells exhibit epithelial adherent morphology and viruses were not detected in the line during co-cultivation with WI-38 cells or in CF tests against SV40, RSV, or adenoviruses. Spectral karyotyping analysis and cytogenetic analysis has revealed chromosomal instability, structural rearrangements and alterations and high incidence of aneuploidy (6). Spectral analysis indicated the near-triploidy state of U2OS cells which appeared to be a combination of tetraploidization and chromosomal losses. Other rearrangements mainly involved chromosomes 20 and 8, from simple translocations to highly complex rearrangements. U2OS cells have the lowest level of chromosomal numerical variations and only 2% of the cells have multipolar mitoses, similar to normal control fibroblasts, probably due to functional p53 and pRb.

Medium: DMEM (GIBCO #11960) with 10% FBS, 2mM L-Glutamine, 1% Pen/Strep

<http://cgp.iiarjournals.org/content/5/1/63.full.pdf>

# SK-BR-3

The base medium for this cell line is ATCC-formulated McCoy's 5a Medium Modified,

# MCF-7

# MDA-MB-231

The base medium for this cell line is grown in DMEM Medium

**Human IMR-32 neuroblastoma cells as a model cell line in Alzheimer's disease research**

Journal of Neuroscience Research

[Volume 39, Issue 4,](http://onlinelibrary.wiley.com/doi/10.1002/jnr.v39%3A4/issuetoc) pages 482–493, 1 November 1994

Concept for establish cell line model for Alzheimer study:

<http://www.cirm.ca.gov/our-progress/awards/development-human-es-cell-lines-model-system-alzheimer-disease-drug-discovery>