

CTX Cells | 305358

General information

Description

CTX (also designated CTX0E03) is a conditionally immortalized human neural stem cell line derived from first-trimester human fetal cortical neuroepithelium. The line was generated by retroviral integration of a c-mycERTAM fusion transgene, which drives cell proliferation only in the presence of 4-hydroxytamoxifen (4-OHT). In the absence of 4-OHT and in mitogen-free medium, CTX0E03 cells undergo growth arrest and differentiate into neurons and astrocytes, retaining multipotent differentiation capacity. The line is clonal, has a normal human karyotype (46,XY), and was developed under GMP-compatible conditions for potential clinical application.

CTX0E03 has been evaluated in preclinical models of ischemic stroke (MCAo rat model), where implanted cells promoted significant recovery in sensorimotor function. The line has entered clinical trials for stroke therapy. It is also used as an in vitro model for neural stem cell biology, cortical neuron differentiation, Alzheimer’s disease research (Abeta toxicity studies), and neuropharmacological screening. The conditional immortalization system makes CTX0E03 particularly suitable for safety and efficacy studies, as proliferation can be switched off by removal of 4-OHT prior to transplantation.

CTX0E03 is expanded in DMEM/F12 supplemented with N2 supplement, EGF (20 ng/ml), and FGF-2 (20 ng/ml) with 4-OHT (1 µM) on laminin-coated surfaces at 37°C in 5% CO₂. For differentiation, growth factors and 4-OHT are withdrawn. The line is classified at biosafety level 1 (GMO-S1 in Germany due to the integrated c-mycERTAM transgene). Users should comply with applicable GMO regulations in their jurisdiction.

Organism

Human

Tissue

Brain (cerebral cortex)

Disease

Normal fetal cortical neuroepithelium; conditionally immortalized neural stem cell line

Applications

Neural stem cell biology; cortical neuron differentiation; stroke research; neurodegenerative disease modeling; Alzheimer’s disease research; neuropharmacological screening; cell therapy research

Characteristics

Morphology

Neural stem cell-like (bipolar, elongated)

Cell type

Neural stem cells

Growth properties

Adherent (on laminin-coated surfaces)

Regulatory Data

Citation

CTX (Cytion catalog number 305358)

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Biosafety level	1
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NCBI_TaxID	9606
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CellosaurusAccession	CVCL_C2BI
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GMO Status	GMO-S1: Contains a single-copy retroviral c-mycERTAM conditional immortalization transgene. Proliferation is 4-OHT-dependent. Not tumorigenic in vivo. This classification applies within Germany; regulations may differ in other jurisdictions.
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Biomolecular Data

Handling

Culture Medium	DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO ₃ , w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)
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Supplements	Supplement the medium with 10% FBS
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Dissociation Reagent	Accutase, 5 min., 37°C
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Doubling time	50 to 60 hours
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Subculturing	When 70–80% confluent, aspirate medium, wash with PBS (Ca ²⁺ /Mg ²⁺ -free), add Accutase and incubate 5–10 min at 37°C. Neutralize with complete medium, centrifuge at 300 × g for 5 min, resuspend in fresh medium with 4-OHT, and replat on pre-coated flasks. Coat flasks with laminin (10 µg/ml in PBS) 1 h at 37°C prior to plating.
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Split ratio	1 to 3
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Seeding density	1 to 3 × 10 ⁴ cells/cm ²
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Fluid renewal	Every 3 to 5 days (depending on confluency)
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Incubation Atmosphere	37°C, 5% CO ₂ , humidified atmosphere.
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Quality Control & Molecular Analysis