**Product sheet**

# CTX TNA2 Cells | 305333

## General information

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| **Description** | CTX TNA2 is a rat astrocyte cell line that was established from primary cultures of cortical astrocytes. It is often used to study central nervous system (CNS) functions, particularly in relation to glial biology, neurotoxicity, and neuroprotection. Astrocytes play a critical role in maintaining CNS homeostasis, providing structural and metabolic support to neurons, and mediating responses to injury and oxidative stress.<br><br>In various studies, CTX TNA2 cells have been employed to model neurotoxicity, especially involving excitotoxicity induced by agents such as glutamate. For instance, exposure to glutamate in CTX TNA2 cells triggers apoptosis and autophagy through mechanisms involving reactive oxygen species (ROS) and the glycogen synthase kinase-3β (GSK-3β) pathway. These pathways are central to the cells' response to oxidative stress and mitochondrial dysfunction, particularly after traumatic brain injury or other neurodegenerative conditions. Additionally, neuroprotective agents like resveratrol and cannabidiol (CBD) have been shown to reduce ROS generation and inhibit glutamate-induced autophagy and apoptosis in these astrocytes.<br><br>The CTX TNA2 cell line has proven to be a valuable in vitro model for studying not only basic astrocyte function but also the therapeutic potential of antioxidant and neuroprotective compounds under conditions of CNS injury and disease. |
| **Organism** | Rat |
| **Tissue** | Brain, frontal lobe |

## Characteristics

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| **Breed/Subspecies** | Sprague Dawley |
| **Age** | 1 day |
| **Morphology** | Fibroblast |
| **Cell type** | Astrocyte |
| **Growth properties** | Adherent |

## Regulatory Data

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| **Citation** | CTX TNA2 (Cytion catalog number 305333) |
| **Biosafety level** | 2 |

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| **NCBI_TaxID** | 10116 |
| **CellosaurusAccession** | CVCL_3670 |

## Biomolecular Data

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| **Viruses** | Transformant: Simian virus 40 (SV40) |

## Handling

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| **Culture Medium** | DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a) |
| **Supplements** | Supplement the medium with 10% FBS |
| **Dissociation Reagent** | Accutase |
| **Subculturing** | Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium. |
| **Freeze medium** | As a cryopreservation medium, we use 50% basal medium + 40% FBS + 10% DMSO, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress. |

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| **Thawing and Culturing Cells** | 1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.<br>2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.<br>3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.<br>4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.<br>5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.<br>6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.<br>7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.<br>8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes. |
| **Incubation Atmosphere** | 37°C, 5% $CO_2$, humidified atmosphere. |
| **Shipping Conditions** | Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage. |
| **Storage Conditions** | For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen. |

## Quality Control & Molecular Analysis

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| **Sterility** | Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.<br><br>To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections. |