Product sheet

GIST-T1 Cells | 305777

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Description	The GIST-T1 cell line is a well-established human gastrointestinal stromal tumor (GIST) model derived from a metastatic pleural lesion secondary to a primary gastric GIST in an adult Japanese woman. Immunohistochemical analyses confirmed strong positivity for c-KIT (CD117) and CD34, two hallmark markers of GIST, while the line was negative for desmin, S-100, and α-smooth muscle actin, confirming its non-muscle and non-neural origin. Cytogenetic studies revealed a hypodiploid karyotype with complex chromosomal abnormalities, including a ring chromosome and several unbalanced translocations. Comparative genomic hybridization (CGH) and FISH analyses showed high-level amplifications at 3q26.1-27, 5p12-15.1, and 7q21.3-36-regions often associated with oncogene amplification in GIST. GIST-T1 harbors a clinically relevant 57-nucleotide in-frame deletion in exon 11 of the *KIT* gene (V570-Y578), one of the most common mutations in GIST patients and a critical target of tyrosine kinase inhibitors such as imatinib. This has made GIST-T1 an essential model for studying KIT-driven oncogenesis and therapeutic response. In long-term culture, GIST-T1 cells show stable proliferation and retain sensitivity to imatinib unless specifically selected for resistance. Derivative resistant sublines of GIST-T1 have been generated for research purposes and exhibit secondary KIT mutations (e.g., D820V or D820Y), enabling the study of resistance mechanisms and adaptive transcriptional changes. These resistant models show alterations in genes related to detoxification, cell cycle regulation, and apoptosis evasion. GIST-T1 has also contributed to the discovery of novel oncogenic drivers in GIST, including fusion genes such as EXOC2-AK7, identified in imatinib-resistant sublines. Functional studies demonstrated that these fusion genes enhance proliferative and migratory capacities of GIST cells and sensitize them to imatinib, pointing toward new therapeutic avenues. The presence of GIST-associated super-enhancers and transcription factor networks (e.g., HAND1 in metastatic progression) further reinforces the model's utility in deciphering the epigenetic and transcriptional architecture of GIST. Altogether, GIST-T1 provides a robust, genetically and phenotypically validated system for studying the biology, drug response, and resistance mechanisms of gastrointestinal stromal tumors.
Organism	Human
Tissue	Metastatic
Disease	Gastrointestinal stromal tumor
Metastatic site	Pleural effusion
Synonyms	GIST-T-1, GISTT1, T1

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Age	47 years
Gender	Female

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Ethnicity	Japanese
Cell type	Interstitial cell of Cajal
Growth properties	Adherent

[redacted]

Citation	GIST-T1 (Cytion catalog number 305777)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_4976

[redacted]

Mutational profile	Mutation: KIT, Simple, p.Val560_Tyr578del (c.1679_1735del), Heterozygous

[redacted]

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
Doubling time	48 hours
Seeding density	1 to 4 x 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week

Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

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.
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.
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.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
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.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
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.
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.

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