Product sheet

FRTL Cells | 500202

General information

Description	FRTL (Fischer Rat Thyroid Low Serum) cells are a continuous line of rat thyroid follicular cells that have been cultured to study various aspects of thyroid physiology and pathology. These cells are particularly notable for their ability to accumulate iodide intracellularly, a key characteristic reflective of thyroid function in vivo. This unique feature makes them suitable for research focused on thyroid hormone biosynthesis, the mechanism of iodide transport, and the effects of various substances on thyroid function. The culture conditions for FRTL cells are quite specific, requiring a specialized medium to maintain their physiological properties. Supplements such as FBS, insulin, hydrocortisone, thyrotropin, transferrin, somatostatin, and glycyl-1-histidyl-lysine acetate are necessary to replicate the hormonal environment of the thyroid gland. This precise combination of conditions supports the cells' typical growth pattern, where they tend to stack upon one another and form three-dimensional structures rather than spreading as a monolayer. This clustering behavior is significant as it mimics the follicular arrangement found in natural thyroid tissue, thus providing a more accurate model for studying thyroid cell interactions and dynamics in a controlled setting.
Organism	Rat
Tissue	Thyroidea
Synonyms	FRT-L, FR-TL, Fischer Rat Thyroid in Low-serum

Characteristics

Breed/Subspecies	Fischer
Age	6 weeks
Gender	Unspecified
Growth properties	Adherent

Regulatory Data

Citation	FRTL (Cytion catalog number 500202)
Biosafety level	1
NCBI_TaxID	10116
CellosaurusAccession	CVCL_5753

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Biomolecular Data

Tumorigenic	No
Products	Thyroglobulin
Karyotype	Diploid

Handling

Culture Medium	Ham's F12, w: 1.0 mM stable Glutamine, w: 1.0 mM Sodium pyruvate, w: 1.1 g/L NaHCO3 (Cytion article number 820600a)
Supplements	Supplement the medium with 0.5% FBS, 10 mg/L Insulin, 5 mg/L Transferrin, 50 microgram/L Hydrocortison, 10 microgram/L Somatostatin, 10 microgram/L Gly-His-Lsy-acetate, 0.0165 microgram/mL bovine TSH (catalog number T1614 from Scripps Laboratories) - Add the required TSH just before use and sterile filter into the medium.
Dissociation Reagent	Accutase
Doubling time	5-7 days
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.
Fluid renewal	3 times per week
Post-Thaw Recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 48 hours.
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.

Quality Control & Molecular Analysis

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.