Product sheet

MMQ Cells | 300498

General information

Description	The MMQ cell line is a clonal, prolactin-secreting cell line derived from the 7315a rat pituitary tumor. It exclusively secretes prolactin and expresses functional dopamine receptors, specifically of the D2 subtype. Dopamine inhibits prolactin (PRL) release by reducing intracellular cyclic AMP (cAMP) levels and calcium uptake, as demonstrated in various experiments. This inhibition is reversed by haloperidol and pertussis toxin, confirming the role of GTP-binding proteins in dopamine's action. MMQ cells are also responsive to somatostatin (SRIF) and vasoactive intestinal polypeptide (VIP), but not to TRH, angiotensin II, or neurotensin. MMQ cells proliferate rapidly, doubling in less than 24 hours under optimal conditions. When transplanted into rats, MMQ cells form tumors that increase serum prolactin levels without altering other hormones such as ACTH. This cell line is an important model for studying prolactin regulation, particularly in relation to dopamine and its inhibitory mechanisms on prolactin secretion.
Organism	Rat
Tissue	Brain
Disease	Rat pituitary gland neoplasm
Applications	3D cell culture

Characteristics

Age	5 days
Gender	Unspecified
Morphology	Spheroidal cells
Growth properties	Clusters in Suspension

Regulatory Data

Citation	MMQ (Cytion catalog number 300498)
Biosafety level	1
NCBI_TaxID	10116

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CellosaurusAccession	CVCL_2117

Biomolecular Data

Receptors expressed	Dopamine
Viruses	SMRV-
Products	Prolactin
Karyotype	Rat hyperdiploid karyotype with 6% polyploidy - 49-522n> - high level of spontaneous breakage

Handling

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 7.5% horse serum, 2.5% heat-inactivated FBS
Subculturing	Maintain cultures by periodically adding or replacing the medium. Initiate cultures with a density of 5 x 10^5 cells/ml and keep the cell concentration within the range of 3 x 10^5 to 1 x 10^6 cells/ml for optimal growth.
Seeding density	> 2 x 10^5 cells/ml
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.