Product sheet

F9 growing culture | 440174

General information

Description	Explore the remarkable potential of F9 cells, an epithelial-like cell line derived from the testis of Mus musculus (mouse) with embryonal testicular teratoma. With their unique characteristics and diverse applications, F9 cells have become invaluable tools in cancer research and 3D cell culture studies. Let us delve into these cells' magnetic properties and applications, shedding light on their differentiation capabilities and molecular mechanisms. F9 cells exhibit an epithelial morphology resembling the cell structure in epithelial tissues. They have been widely employed as a model system to investigate the intricate molecular mechanisms associated with cellular differentiation. Traditionally considered nullipotent, F9 cells can be stimulated to differentiate into parietal endoderm by retinoic acid and di butyryl cyclic AMP (cAMP) in the culture medium. Remarkably, these differentiating cells synthesize plasminogen activator, laminin, and type IV collagen, which indicates their maturation process. Notably, cAMP exhibits its activity exclusively on cells treated with retinoic acid, further highlighting the importance of this combination in inducing differentiation. One intriguing characteristic of F9 cells is their maintenance of three copies of the beta one integrin gene, providing researchers with unique insights into cellular adhesion and signalling pathways. These cells encapsulate the genetic information necessary for the appearance of the differentiated phenotype, making them ideal for somatic cell genetic experiments. The potential applications of F9 cells extend beyond cancer research. They have proven to be valuable in 3D cell culture, providing researchers with a three-dimensional platform to mimic the complex cellular interactions observed in vivo. Their ability to differentiate into derivatives of all three germ layers, not only endodermal-like results, under specific culture conditions is fascinating. This versatility enables scientists to explore various biological phenomena, including early mouse embryogenesis and the molecular events associated with cellular differentiation. F9 cells possess a doubling time of approximately 24 hours, ensuring an ample supply for experimental needs. This rapid proliferation rate allows for efficient cell culture expansion and enables researchers to perform time-sensitive experiments efficiently. Initially deposited by S. Strickland, the F9 cell line holds immense promise for advancing biological research. Its wide range of applications, including cancer research and 3D cell culture studies, makes it an indispensable tool for scientists seeking to unravel the mysteries of cellular differentiation and embryogenesis. By leveraging the unique characteristics and capabilities of F9 cells, researchers can pave the way for groundbreaking discoveries and novel therapeutic interventions. Unlock the potential of F9 cells and embark on a transformative journey in biological science. Experience their versatility, reliability, and significance in many research applications. Join the scientific community in harnessing the power of F9 cells to uncover the secrets of cellular differentiation and shape the future of biomedical research.
Organism	Mouse
Tissue	Testis
Disease	Teratocarcinoma

Characteristics

Age	Embryo
Gender	Male
Morphology	Epithelial-like

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Growth properties	Adherent

Identifiers / Biosafety / Citation

Citation	F9 (Cytion catalog number 400174)
Biosafety level	1

Expression / Mutation

Viruses	MAP-test negative: Sendai, Ektromelie, Polyoma, K-Virus, Kilham, Reo 3, PVM, LCM, M.pulmonis, MVM, Theiler's GD VII, Toolan's H-1, MHV, LDV, RCV/SDA, M-Adenovirus, B.piliformis.
Products	Plasminogen activator, laminin, type IV collagen

Handling

Culture Medium	DMEM
Medium supplements	10% FBS, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 1.5 g/L NaHCO3, w: 1.0 mM Sodium pyruvate
Passaging solution	Accutase
Subculturing	Remove medium and rinse the adherent cells using PBS without calcium and magnesium (3-5 ml PBS for T25, 5-10ml for T75 cell culture flasks). Add Accutase (1-2ml per T25, 2.5ml per T75 cell culture flask), the cell sheet must be covered completely. Incubate at ambient temperature for 8-10 minutes. Carefully resuspend the cells with medium (10 ml), centrifuge for 3 min at 300xg, resuspend cells in fresh medium and dispense into new flasks which contain fresh medium.
Split ratio	A ratio of 1:2 is recommended
Seeding density	Coat cell culture flasks with Gelatine. 1 x 10^4 cells/cm^2 will yield in a confluent layer in about 4 days.
Fluid renewal	2 to 3 times per week
Freezing 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 24 hours.

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Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)
Handling of cryopreserved cultures	The cells come deep-frozen shipped on dry ice. Please make sure that the vial is still frozen. If immediate culturing is not intended, the cryovial must be stored below -150 degree Celsius after arrival. If immediate culturing is intended, please follow the below instructions: Quickly thaw by rapid agitation in a 37 degree Celsius water bath within 40-60 seconds. The water bath should have clean water containing an antimicrobial agent. As soon as the sample has thawed, remove the cryovial from the water bath. A small ice clump should still remain and the vial should still be cold. From now on, all operations should be carried out under aseptic conditions. Transfer the cryovial to a sterile flow cabinet and wipe with 70% alcohol. Carefully open the vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of culture medium (room temperature). Resuspend the cells carefully. Centrifuge at 300 x g for 3 min and discard the supernatant. The centrifugation step may be omitted, but in this case the remains of the freeze medium have to be removed 24 hours later. Resuspend the cells carefully in 10 ml fresh cell culture medium and transfer them into two T25 cell culture flasks. All further steps are described in the subculture section.
Handling of proliferating cultures	One or two cell culture flasks come filled with cell culture medium. Collect the entire medium in 1 or 2 x 50 ml centrifuge tubes, respectively. Carefully add 5 ml of cell culture medium to each T25 cell culture flask. Control the cell morphology and confluency under the microscope. Incubate at 37 degree Celsius for a minimum of 24 hours. Spin down the collected medium at 300 x g for 3 minutes to collect the cells which may have detached during transit. If a cell pellet is visible, resuspend the cells in 5 ml of cell culture medium and transfer to a T25 cell culture flask. Incubate at 37 degree Celsius for a minimum of 24 hours.

Quality control / Genetic profile / HLA

Sterility	Mycoplasma contaminations are ruled out through PCR-based and luminescence-based mycoplasma assays. The absence of bacterial, fungal or yeast contamination is controlled through daily visual cell monitoring.