SW480-Luc

305698

GENERAL INFORMATION

Description

SW480-Luc is a bioluminescent derivative of the human SW480 colon adenocarcinoma cell line, engineered to stably express a firefly luciferase reporter gene. The parental SW480 cell line was established from a primary colon adenocarcinoma of a 51-year-old Caucasian male patient and is widely used as a model of primary colorectal cancer. SW480 cells exhibit epithelial-like morphology and harbor key oncogenic mutations including KRAS G12V, TP53 R273H and P309S, and APC truncation, making this line a relevant model for studying the role of Wnt/β-catenin and KRAS signaling in colorectal cancer. Importantly, SW480 was derived from the same patient as SW620 but represents the primary tumor, allowing comparative studies of primary versus metastatic colorectal cancer biology.
The stable luciferase integration in SW480-Luc enables sensitive, quantitative bioluminescence imaging (BLI) of tumor burden in subcutaneous and orthotopic xenograft models using immunocompromised hosts. The emitted luminescent signal correlates with viable tumor cell number, supporting noninvasive longitudinal monitoring of tumor engraftment, growth kinetics, and therapeutic response. SW480-Luc is widely used for in vivo evaluation of KRAS-targeted agents, Wnt pathway inhibitors, and chemotherapeutic regimens in colorectal cancer, as well as for comparative studies with the matched metastatic SW620 line.
SW480-Luc retains the established molecular characteristics of the parental SW480 line, including KRAS, TP53, and APC mutations. The luciferase modification substantially enhances experimental throughput and sensitivity for in vivo pharmacodynamic studies. Researchers should verify luciferase activity, mutational profile, and growth kinetics under their specific experimental conditions prior to large-scale preclinical use.

Tissue	Colon
Disease	Colon adenocarcinoma

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This cell line contains a stably integrated firefly luciferase reporter cassette (Luc2, codon-optimized) introduced via replication-incompetent lentiviral transduction. The resulting polyclonal cell population was maintained under puromycin selection (1–5 µg/mL). S1 containment is required. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice

IDENTIFIERS

Citation

SW480-Luc (Cytion catalog number 305698)

Cytion GmbH
Nikola-Tesla-Str. 3
69124 Heidelberg
Tel: +49 (0)6221 405780
info@cytion.com
cytion.com

Registered office Heidelberg
VAT ID: DE283292917
Local court Mannheim - HRB 714394
CEO / Geschäftsführer: Jonathan Steubing

Banking information
Sparkasse Heidelberg
IBAN: DE35 6725 0020 0009 2076 86
BIC: SOLADES1HDB

NCBI TaxID	9606
Cellosaurus	CVCL_C8Y1

EXPRESSION AND SUSCEPTIBILITY

Receptors expressed

Epidermal growth factor (EGF), keratin (immunoperoxidase staining). Matrilysin, a metalloproteinase associated with tumor invasiveness, is not expressed.

Protein expression

P53 protein; Luc2 (firefly, codon-optimized)

Antigen expression

HLA A2, B8, B17, blood type A, Rh+. Luc2 (firefly, codon-optimized)

Isoenzymes

G6PD, B, PGM1, 2, PGM3, 1, 6PGD, A, PEP-D, 1, ES-D, 1

Mutational profile

Mutation: p.Gln1338Ter, Homozygous; Mutation: p.Gly12Val, Homozygous; Mutation: p.Arg273His, Heterozygous; Mutation: p.Pro309Ser, Heterozygous

Viruses

Reverse transcriptase negative

Virus susceptibility

Human immunodeficiency virus (HIV, LAV)

Products

Carcinoembryonic antigen (CEA) 0.7 ng/106 cells/10 days, keratin, TGF-β. The cells have been reported to produce GM-CSF.

HANDLING AND CULTURE

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)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

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.

Split ratio	1 to 3
Seeding density	1-3*10^4/cm²
Fluid renewal	2 to 3 times per week

Thawing and culturing

Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
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.
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.
Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
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.
Centrifuge the mixture at 200 x g for 5 minutes, carefully discard the supernatant containing freezing medium.
Follow the procedure described under Post-Thaw Recovery

QUALITY CONTROL AND CRYOPRESERVATION

Freeze medium	As a cryopreservation medium, we use complete growth medium + 10% DMSO for adequate post-thaw viability.

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.

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.

DONOR

Donor age	51 years
Ethnicity	Caucasian

LEGAL AND SAFETY

Safety precautions

When planning to store a cryovial in liquid nitrogen for future thawing, it is mandatory to adhere to stringent safety measures. Appropriate protective gloves and clothing are essential, and the use of a face mask or safety goggles is required during the transfer of frozen samples to or from the liquid nitrogen tank. This is to mitigate the risk of injury from potential cryovial explosions upon removal, which can result in the projection of sharp fragments.

Warranty

At Cytion, we stand behind the quality and viability of our products.
We guarantee that our cells will be viable at the start of culture for
60 days after shipment from our facilities.
We assure that all materials conform to the specifications described in the
Certificate of Analysis and/or Product Sheet.
For full details, please refer to our
Warranty Statement.

Material Transfer Agreement required	Yes

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