

## Data Sheet

<b>BCRJ Code:</b>	0429
<b>Cell Line:</b>	Ca Ski
<b>Species:</b>	Homo sapiens
<b>Vulgar Name:</b>	Human
<b>Tissue:</b>	Uterus; Cervix
<b>Morphology:</b>	Epithelial
<b>Disease:</b>	Epidermoid Carcinoma
<b>Growth Properties:</b>	Adherent
<b>Sex:</b>	Female
<b>Age/Ethnicity:</b>	40 Year / White
<b>Derivation:</b>	Derived from an epidermoid carcinoma of the cervix metastatic to the small bowel mesentery of a 40 year old Caucasian. Ca Ski cells secrete the $\beta$ subunit of human chorionic gonadotropin ( $\beta$ -hCG), express tumour-associated antigen and G6PD type B. Ca Ski cells have been reported to contain an integrated human papilloma virus 16 genome (HPV-16 about 600 copies per cell) and HPV-18 related sequences.
<b>Applications:</b>	3D cell culture Cancer research Infectious disease research Sexually transmitted disease research
<b>Products:</b>	Beta Human chorionic gonadotropin (beta-hCG) Genes expressed: beta subunit of human chorionic gonadotropin (hCG); tumor associated antigen Isoenzymes: G6PD, B
<b>Biosafety:</b>	2
<b>Culture Medium:</b>	RPMI-1640 medium modified to contain 2 mM L-glutamine, 4500 mg/L glucose and fetal bovine serum to a final concentration of 10%.
<b>Subculturing:</b>	Volumes used in this protocol are for 75 cm <sup>2</sup> flask; proportionally reduce or increase amount of dissociation medium for culture vessels of other sizes. Remove and discard culture medium. Briefly rinse the cell layer with PBS without calcium and magnesium to remove all traces of serum that contains trypsin inhibitor. Add 1.0 to 3.0 mL of Trypsin-EDTA solution to flask and observe cells under an inverted microscope until the cell layer is dispersed (usually within 5 to 15 minutes). Note: To avoid clumping do not agitate the cells by hitting or shaking the flask while waiting for the cells to detach. Cells that are difficult to detach may be placed at 37°C to facilitate dispersal. Add 6.0 to 8.0 mL of complete growth medium and aspirate cells by gently pipetting. Transfer cell suspension to centrifuge tube and spin at approximately 125 x g for 5 to 10 minutes. Discard supernatant and resuspend cells in fresh growth medium. Add appropriate aliquots of cell suspension to new culture vessels. Place culture vessels in incubators at 37°C. NOTE: For more information on enzymatic dissociation and subculturing of cell lines consult Chapter 12 in Culture of Animal Cells, a manual of Basic Technique by R. Ian Freshney, 6th edition, published by Alan R. Liss, N.Y., 2010.
<b>Subculturing Medium Renewal:</b>	Every 2 to 3 days
<b>Subculturing Subcultivation Ratio:</b>	1:3 to 1:8 is recommended
<b>Culture Conditions:</b>	Atmosphere: air, 95%; carbon dioxide (CO <sub>2</sub> ), 5% Temperature: 37°C
<b>Cryopreservation:</b>	95% FBS + 5% DMSO (Dimethyl sulfoxide)

**Thawing Frozen Cells:**

**SAFETY PRECAUTION:** It is highly recommended that protective gloves and clothing always be used and a full face mask always be worn when handling frozen vials. It is important to note that some vials leak when submerged in liquid nitrogen and will slowly fill with liquid nitrogen. Upon thawing, the conversion of the liquid nitrogen back to its gas phase may result in the vessel exploding or blowing off its cap with dangerous force creating flying debris. 1. Thaw the vial by gentle agitation in a 37°C water bath. To reduce the possibility of contamination, keep the O-ring and cap out of the water. Thawing should be rapid (approximately 2 minutes). 2. Remove the vial from the water bath as soon as the contents are thawed, and decontaminate by dipping in or spraying with 70% ethanol. All of the operations from this point on should be carried out under strict aseptic conditions. 3. For cells that are sensitive to DMSO it is recommended that the cryoprotective agent be removed immediately. Transfer the vial contents to a centrifuge tube containing 9.0 mL complete culture medium and spin at approximately 125 x g for 5 to 7 minutes. 4. Discard the supernatant and Resuspend cell pellet with the recommended complete medium (see the specific batch information for the culture recommended dilution ratio). 5. Incubate the culture in an appropriate atmosphere and temperature (see "Culture Conditions" for this cell line). **NOTE:** It is important to avoid excessive alkalinity of the medium during recovery of the cells. It is suggested that, prior to the addition of the vial contents, the culture vessel containing the growth medium be placed into the incubator for at least 15 minutes to allow the medium to reach its normal pH (7.0 to 7.6).

PubMed=867042; DOI=10.1126/science.867042 Pattillo R.A., Hussa R.O., Story M.T., Ruckert A.C.F., Shalaby M.R., Mattingly R.F. Tumor antigen and human chorionic gonadotropin in CaSki cells: a new epidermoid cervical cancer cell line. *Science* 196:1456-1458(1977) PubMed=2990217; PMCID=PMC1888002 Yee C., Krishnan-Hewlett I., Baker C.C., Schlegel R., Howley P.M. Presence and expression of human papillomavirus sequences in human cervical carcinoma cell lines. *Am. J. Pathol.* 119:361-366(1985) PubMed=3029430; DOI=10.1128/JVI.61.4.962-971.1987; PMCID=PMC254051 Baker C.C., Phelps W.C., Lindgren V., Braun M.J., Gonda M.A., Howley P.M. Structural and transcriptional analysis of human papillomavirus type 16 sequences in cervical carcinoma cell lines. *J. Virol.* 61:962-971(1987) PubMed=3371749; DOI=10.1016/0090-8258(88)90029-7 Grenman S.E., Shapira A., Carey T.E. In vitro response of cervical cancer cell lines CaSki, HeLa, and ME-180 to the antiestrogen tamoxifen. *Gynecol. Oncol.* 30:228-238(1988) PubMed=7751322; DOI=10.1007/BF01366967 Rantanen V., Grenman S.E., Kulmala J., Grenman R. The intrinsic radiosensitivity and sublethal damage repair capacity of five cervical carcinoma cell lines tested with the 96-well-plate assay. *J. Cancer Res. Clin. Oncol.* 121:230-234(1995) CLPUB00481 Kuno H., Yoshida T. Detection of human papillomavirus types 16, 18, and 33 in cell lines derived from human genital organs by polymerase chain reaction. *Res. Commun. Inst. Ferment.* 18:6-12(1997) PubMed=9887230; DOI=10.1006/gyno.1998.5194 Rantanen V., Grenman S.E., Kurvinen K., Hietanen S.H., Raitanen M., Syrjanen S.M. p53 mutations and presence of HPV DNA do not correlate with radiosensitivity of gynecological cancer cell lines. *Gynecol. Oncol.* 71:352-358(1998) PubMed=10423141; DOI=10.1099/0022-1317-80-7-1725 Meissner J.D. Nucleotide sequences and further characterization of human papillomavirus DNA present in the CaSki, SiHa and HeLa cervical carcinoma cell lines. *J. Gen. Virol.* 80:1725-1733(1999) PubMed=15531914; DOI=10.1038/sj.onc.1208235 Baldus S.E., Schwarz E., Lohrey C., Zaplatka M., Landsberg S., Hahn S.A., Schmidt D., Dienes H.-P., Schmiegel W.H., Schwarte-Waldhoff I. Smad4 deficiency in cervical carcinoma cells. *Oncogene* 24:810-819(2005) PubMed=17311676; DOI=10.1186/1471-2164-8-53; PMCID=PMC1805756 Kloth J.N., Oosting J., van Wezel T., Suzhai K., Knijnenburg J., Gorter A., Kenter G.G., Fleuren G.J., Jordanova E.S. Combined array-comparative genomic hybridization and single-nucleotide polymorphism-loss of heterozygosity analysis reveals complex genetic alterations in cervical cancer. *BMC Genomics* 8:53.1-53.13(2007) PubMed=17611311 Yang C., Li G.-C., Li Y.-H., Hu J.-Y., Xiao Y., Zhang Z.-J. Biological properties of Caski cell lines induced by exposure to the space environment. *Zhong Nan Da Xue Xue Bao Yi Xue Ban* 32:380-386(2007) PubMed=20164919; DOI=10.1038/nature08768; PMCID=PMC3145113 Bignell G.R., Greenman C.D., Davies H.R., Butler A.P., Edkins S., Andrews J.M., Buck G., Chen L., Beare D., Latimer C., Widaa S., Hinton J., Fahey C., Fu B.-Y., Swamy S., Dalgliesh G.L., Teh B.T., Deloukas P., Yang F.-T., Campbell P.J., Futreal P.A., Stratton M.R. Signatures of mutation and selection in the cancer genome. *Nature* 463:893-898(2010) PubMed=20215515; DOI=10.1158/0008-5472.CAN-09-3458; PMCID=PMC2881662 Rothenberg S.M., Mohapatra G., Rivera M.N., Winokur D., Greninger P., Nitta M., Sadow P.M., Sooriyakumar G., Brannigan B.W., Ulman M.J., Perera R.M., Wang R., Tam A., Ma X.-J., Erlander M., Sgroi D.C., Rocco J.W., Lingen M.W., Cohen E.E.W., Louis D.N., Settleman J., Haber D.A. A genome-wide screen for microdeletions reveals disruption of polarity complex genes in diverse human cancers. *Cancer Res.* 70:2158-2164(2010) PubMed=21439369; DOI=10.1016/j.mcp.2011.03.003 Schmitt M., Pawlita M. The HPV transcriptome in HPV16 positive cell lines. *Mol. Cell. Probes* 25:108-113(2011) PubMed=22412903; DOI=10.1371/journal.pone.0032667; PMCID=PMC3296745 Vazquez-Mena O., Medina-Martinez I., Juarez-Torres E., Barron V., Espinosa A., Villegas-Sepulveda N., Gomez-Laguna L., Nieto-Martinez K., Orozco L., Roman-Bassaure E., Munoz Cortez S., Borges Ibanez M., Venegas-Vega C.A., Guardado-Estrada M., Rangel-Lopez A., Kofman S., Berumen J. Amplified genes may be overexpressed, unchanged, or downregulated in cervical cancer cell lines. *PLoS ONE* 7:E32667-E32667(2012) PubMed=24134916; DOI=10.1186/1755-8166-6-44; PMCID=PMC3879223 McCormack A., Fan J.-L., Duesberg M., Bloomfield M., Fiala C., Duesberg P.H. Individual karyotypes at the origins of cervical carcinomas. *Mol. Cytogenet.* 6:44.1-44.23(2013) PubMed=24201445; DOI=10.1101/gr.164806.113; PMCID=PMC3912410 Akagi K., Li J.-F., Broutian T.R., Padilla-Nash H.M., Xiao W.-H., Jiang B., Rocco J.W., Teknos T.N., Kumar B., Wangsa D., He D., Ried T., Symer D.E., Gillison M.L. Genome-wide analysis of HPV integration in human cancers reveals recurrent, focal genomic instability. *Genome Res.* 24:185-199(2014) PubMed=25485619; DOI=10.1038/nbt.3080 Klijn C., Durinck S., Stawiski E.W., Haverty P.M., Jiang Z.-S., Liu H.-B., Degenhardt J., Mayba O., Gnad F., Liu J.-F., Pau G., Reeder J., Cao Y., Mukhyala K., Selvaraj S.K., Yu M.-M., Zynda G.J., Brauer M.J., Wu T.D., Gentleman R.C., Manning G., Yauch R.L., Bourgon R., Stokoe D., Modrusan Z., Neve R.M., de Sauvage F.J., Settleman J., Seshagiri S., Zhang Z.-M. A comprehensive transcriptional portrait of human cancer cell lines. *Nat. Biotechnol.* 33:306-312(2015) PubMed=25877200; DOI=10.1038/nature14397 Yu M., Selvaraj S.K., Liang-Chu M.M.Y., Aghajani S., Busse M., Yuan J., Lee G., Peale F.V., Klijn C., Bourgon R., Kaminker J.S., Neve R.M. A resource for cell line authentication, annotation and quality control. *Nature* 520:307-311(2015) PubMed=26589293; DOI=10.1186/s13073-015-0240-5; PMCID=PMC4653878 Scholtalbers J., Boegel S., Bukur T., Byl M., Goerges S., Sorn P., Loewer M., Sahin U., Castle J.C. TCLP: an online cancer cell line catalogue integrating HLA type, predicted neo-epitopes, virus and gene expression. *Genome Med.* 7:118.1-118.7(2015) PubMed=27397505; DOI=10.1016/j.cell.2016.06.017; PMCID=PMC4967469 Iorio F., Knijnenburg T.A., Vis D.J., Bignell G.R., Menden M.P., Schubert M., Aben N., Goncalves E., Barthorpe S., Lightfoot H., Cokelaer T., Greninger P., van Dyk E., Chang H., de Silva H., Heyn H., Deng X.-M., Egan R.K., Liu Q.-S., Mironenko T., Mitropoulos X., Richardson L., Wang J.-H., Zhang T.-H., Moran S., Sayols S., Soleimani M., Tamborero D., Lopez-Bigas N., Ross-Macdonald P., Esteller M., Gray N.S., Haber D.A., Stratton M.R., Benes C.H., Wessels L.F.A., Saez-Rodriguez J., McDermott U., Garnett M.J. A landscape of pharmacogenomic interactions in cancer. *Cell* 166:740-754(2016) PubMed=29156801; DOI=10.1016/j.ccr.2016.06.017; PMCID=PMC5689691 Kalu N.N., Mazumdar T., Peng S.-H., Shen L., Sambandam V., Rao X.-Y., Xi Y.-X., Li L.-R., Qi Y., Gleber-Netto F.O., Patel A., Wang J., Frederick M.J., Myers J.N., Pickering C.R., Johnson F.M. Genomic characterization of human papillomavirus-positive and -negative human squamous cell cancer cell lines. *Oncotarget* 8:86369-86383(2017) PubMed=30894373; DOI=10.1158/0008-5472.CAN-18-2747; PMCID=PMC6445675 Dutil J., Chen Z.-H., Monteiro A.N.A., Teer J.K., Eschrich S.A. An interactive resource to probe genetic diversity and estimated ancestry in cancer cell lines. *Cancer Res.* 79:1263-1273(2019) PubMed=35839778; DOI=10.1016/j.ccell.2022.06.010; PMCID=PMC9387775 Goncalves E., Poulos R.C., Cai Z.-X., Barthorpe S., Manda S.S., Lucas N., Beck A., Bucio-Noble D., Dausmann M., Hall C., Hecker M., Koh J., Lightfoot H., Mahboob S., Mali I., Morris J., Richardson L., Seneviratne A.J., Shepherd R., Sykes E., Thomas F., Valentini S., Williams S.G., Wu Y.-X., Xavier D., MacKenzie K.L., Hains P.G., Tully B., Robinson P.J., Zhong Q., Garnett M.J., Reddel R.R. Pan-cancer proteomic map of 949 human cell lines. *Cancer Cell* 40:835-849.e8(2022)

**Depositors:**

Banco de Células do Rio de Janeiro

**ATCC:**

CRL-1550

