November 14, 2011

Re: Modification of section 4.4 of Koropatnick BARF form

To: UWO Biosafety Subcommittee

Dear Sir/Madam,

We have received your request to modify section 4.4 of our BARF form to indicate that we use oncogenes in our lab.

We would like to argue that request. We are not modifying and/or transfecting any known oncogenes. An oncogene must be defined as a gene that, when overexpressed in mammalian cells (by itself, without overexpression of other genes) allows those cells to become malignant and form xenograft tumours in mice. Any gene that is overexpressed in cancer cells and contributes to some aspect of malignancy does not count, or almost all genes, the expression of which is associated with motility, proliferation, survival, etc. would then be "oncogenes", which is not correct. We don't want to check "yes" just to satisfy your request, as this could cause enormous trouble later on.

We have modified section 1.2 as requested to indicate that these bacterial strains are biosafety level 1 (not 2), but have left section 4.4 unchanged.

Please do not hesitate in contacting us if any additional clarification is required.

Best regards,

Rene Figueredo (o.b.o. Dr. James Koropatnick)

Rene Figueredo

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THE UNIVERSITY OF WESTERN ONTARIO
BIOLOGICAL AGENTS REGISTRY FORM
Approved Biohazards Subcommittee: October 14, 2010
Biosafety Website: www.uwo.ca/humanresources/biosafety/

This form must be completed by each Principal Investigator holding a grant administered by the University of Western Ontario (UWO) or in charge of a laboratory/facility where the use of Level 1, 2 or 3 biological agents is described in the laboratory or animal work proposed. The form must also be completed if any work is proposed involving animals carrying zoonotic agents infectious to humans or involving plants, fungi, or insects that require Public Health Agency of Canada (PHAC) or Canadian Food Inspection Agency (CFIA) permits.

This form must be updated at least every 3 years or when there are changes to the biological agents being used.

Containment Levels will be established in accordance with Laboratory Biosafety Guidelines, 3rd edition, 2004, Public Health Agency of Canada (PHAC) or Containment Standards for Veterinary Facilities, 1st edition 1996, Canadian Food Inspection Agency (CFIA).

Completed forms are to be returned to Occupational Health and Safety, (OHS), (Support Services Building, Room 4190) for distribution to the Biohazards Subcommittee. For questions regarding this form, please contact the Biosafety Officer at extension 81135 or biosafety@uwo.ca. If there are changes to the information on this form (excluding grant title and funding agencies), contact Occupational Health and Safety for a modification form. See website: www.uwo.ca/humanresources/biosafety

PRINCIPAL INVESTIGATOR	James Koropatnick
DEPARTMENT	Oncology
ADDRESS	Cancer Research Labs, LRCP-VRL, LHSC-Vic
PHONE NUMBER	58654
EMERGENCY PHONE NUMBER(S)	(H) 519-433-5579; (C) 519-670-6352
EMAIL	jkoropat@uwo.ca

Location of experimental work to be carried out: Building(s) _LRCP, VRL__ Room(s)_A4-114 (Cell culture); A7-146, A7-158, A7-144, A7-144 (animals)___

*For work being performed at Institutions affiliated with the University of Western Ontario, the Safety Officer for the Institution where experiments will take place must sign the form prior to its being sent to the University of Western Ontario Biosafety Officer (See Section 15.0, Approvals).

FUNDING AGENCY/AGENCIES:_Canadian Institutes of Health Research_____
GRANT TITLE(S): _Antisense downregulation of thymidylate synthase as an anticancer therapy.

List all personnel working under Principal Investigator's supervision in this location:

Name	UWO E-mail Address	Date of Biosafety Training
Rene Figueredo	rfiguere@uwo.ca	July 5, 2011
Christine Di Cresce	cdicresc@uwo.ca	July 12, 2011
Saman Maleki Vareki	smalekiv@uwo.ca	July 19, 2011

Please explain the biological agents and/or biohazardous substances used and how they will be stored, used and disposed of. Projects without this description will not be reviewed.

Biological Agent: Human Cancer Cell Lines (list attached)
Usage – live cells are maintained in cell culture incubator, and handled in laminar flow BSC

- Cells may also be inoculated into mice, which will be undertaken in a BSC in a dedicated Level II animal-handling facility in the VRL vivarium.

Storage - Stored in freezer bank (-80°C and -150°C freezers)
Disposal – liquids that contain cells are bleached and flushed down the drain

- Plasticware that has been in contact with cells is disposed into biohazard waste boxes (lined with a yellow bag) and disposed by licensed waste carrier, SteriCycle (autoclaved and/or incinerated before disposing in land-fill)

Biological Agent: Bacterial strains
Usage – Bacteria are handled in designated lab bench, and maintained in a dedicated 37°C incubator. Users must wear PPE, and all material that contacts the bacterial cultures must be thoroughly decontaminated with bleach prior to disposal or transfer to another facility.
Storage – bacterial strains are kept in glycerol stocks in -80°C freezer
Disposal – bacterial cutures are thoroughly bleached prior to flushing down a drain

- Plasticware that has contacted bacteria is bleached prior to disposal in a biohazardous waste container.

Biological Agent: Plasmids (list attached)
Usage – Plasmids are handled in designated lab bench and laminar flow hood.
Storage – plasmid stocks are kept at either -20° or -80°C freezers.
Disposal – plasmids and materials that have come into contact with them are disposed into biohazard waste boxes (lined with a yellow bag

Possible Biological Agent: Mycoplasma
Many cultured cell lines carry mycoplasma, and so it is assumed that any cell line could be carrying this bacterium. The methodology described above for handling of cultured cell lines provides the appropriate methodology for usage, storage, and disposal of this organism should a cell line happen to be contaminated.

Please include a one page research summary or teaching protocol.

Thymidylate synthase (TS) mediates production of thymidylate for DNA replication and repair. Current anticancer drugs targeting TS are limited by toxicity to normal tissues and tumour cell drug resistance (often mediated by increased TS). We developed the first antisense oligodeoxynucleotides (ODNs) to TS. They inhibit tumour growth, improve the effect of anti-TS chemotherapeutic drugs, and overcome *in vitro* TS-mediated tumour drug resistance. We have shown different effects (on cell cycle, apoptosis, TS mRNA and protein level, and TS gene transcription) in response to TS antisense ODNs targeting different TS mRNA regions in the same tumour cell line, and in response to the same ODN in different tumour cell lines. TS antisense ODNs targeting different TS mRNAs had both capacity to reduce TS, but also unexpected capacities to increase TS gene transcription and TS protein levels, to exert greater-than-additive antisense effects in combination with each other (dependent on the TS mRNA regions being targeted), and to affect sensitivity to other TS-targeting drugs in a way not strictly associated with TS mRNA and protein levels. Thus, tumour cell response to antisense treatment is not necessarily predicted by reduction in target mRNA and protein. Furthermore, the physiological effects of inhibition of TS enzyme activity using traditional anti- TS drugs (*i.e.,* without decreasing TS mRNA or protein) differ from effects of antisense downregulation of both TS mRNA and TS protein, suggesting that TS mRNA and/or protein carry out unknown physiological function(s) in addition to directing production of thymidylate. We will exploit antisense to examine these putative novel effects to reveal new TS mRNA and/or protein functions, and to develop tools to optimize antisense reagents for use as anticancer drugs. **Five experimental avenues will be pursued:**

1) "Non-antisense" effects and novel, non-canonical TS mRNA and/or protein function: Different responses to targeting different sequences in TS mRNA may be due to novel functions of TS mRNA regions separate from production of TS protein, and/or 'off-target' effects of antisense ODNs. We will target specific TS mRNA regions with two kinds of antisense reagents (ODNs and siRNA) and assess differences and similarities in *in vitro* and *in vivo* effects on TS mRNA and protein levels, cell proliferation, drug sensitivity, and *in vivo* effects on cell-mediated immune function. Consistent ODN and siRNA effects will be evidence for "on target" consequences: inconsistent effects will be more likely due to "off target", non-antisense activity. "On target" antisense effects, particularly when they do not coincide with antisense-mediated downregulation of TS mRNA and protein, will be evidence for non-canonical TS mRNA and/or protein function(s). Such consequences may be therapeutically desirable and reduce tumour cell growth, or may impede treatment. Knowledge of the molecular basis for both desirable anti-cancer effects and undesirable counterproductive consequences of TS antisense ODNs, dependent on the TS mRNA sequence chosen for targeting, will be valuable in choosing the most appropriate TS mRNA target sequences for cancer therapy.

2) Enhanced antisense effectiveness when combining antisense TS ODNs targeting different TS mRNA regions: Simultaneous treatment of human tumour cells with antisense TS ODNs targeting different regions of TS mRNA enhances antisense effects in a greater-than-additive fashion. The extent and mechanism of the phenomenon is not known but is of potential therapeutic benefit, and will be explored.

3) Antisense "interference" and/or "synergy" when simultaneously targeting different mRNA for potential therapeutic benefit: Simultaneous treatment of human tumour cell lines with siRNAs targeting multiple mRNAs has potential for beneficial synergy. Unexpectedly, combining TS and Bcl-2 siRNAs has unexpected, nonreciprocal antagonistic effects and reduces effectiveness of standard chemotherapeutic drugs targeting TS protein. Such effects would be counterproductive in cancer treatment regimens involving multiple agents. We will explore the extent and mechanism of these phenomena.

4) ODN 83 and mesothelioma: TS-targeting drugs are key to the new treatments to prolong mesothelioma patient survival, and mesothelioma cell lines are more sensitive to TS antisense ODNs than those derived from other cancers. We will optimize TS antisense ODNs alone and in combination with TS-targeting chemotherapeutic drugs in mesothelioma models *in vitro* and *in vivo*. Understanding mesothelioma sensitivity to TS antisense ODNs (which we predict to be due to non-TS-mediated events that affect thymidylate levels and apoptosis) will be useful in sensitizing other tumours to TS antisense.

5) Enhancement of specificity and localization of antisense into solid tumours: hyaluronan (HA)-mediated antisense ODN delivery: We will explore the potential of using antisense ODNs covalently linked to HA to enhance delivery of antisense ODNs to human tumour cells *in vivo*.

1.0 Microorganisms

1.1 Does your work involve the use of biological agents? X YES O NO
(non-pathogenic and pathogenic biological agents including but not limited to bacteria and other microorganisms, viruses, prions, parasites or pathogens of plant or animal origin)? If no, please proceed to Section 2.0

Do you use microorganisms that require a permit from the CFIA? O YES X NO
If YES, please give the name of the species. _____
What is the origin of the microorganism(s)? _____
Please describe the risk (if any) of escape and how this will be mitigated:
_____
_____
_____
Please attach the CFIA permit.
Please describe any CFIA permit conditions:_____
_____
_____
_____

1.2 Please complete the table below:

Name of Biological Agent(s)* (Be specific)	Is it known to be a human pathogen? YES/NO	Is it known to be an animal pathogen? YES/NO	Is it known to be a zoonotic agent? YES/NO	Maximum quantity to be cultured at one time? (in Litres)	Source/ Supplier	PHAC or CFIA Containment Level
DH5A	O Yes X No	O Yes X No	O Yes X No	2	NCI, ATCC	X 1 O 2 O 2+ O 3
DH10B	O Yes X No	O Yes X No	O Yes X No	2	NCI, ATCC	X 1 O 2 O 2+ O 3
						O 1 O 2 O 2+ O 3
						O 1 O 2 O 2+ O 3

E. coli

* alent from the supplier.

2.0 Cell Culture

2.1 Does your work involve the use of cell cultures? X YES O NO
If no, please proceed to Section 3.0

2.2 Please indicate the type of primary cells (i.e. derived from fresh tissue) that will be grown in culture: N/A

Cell Type	Is this cell type used in your work?	Source of Primary Cell Culture Tissue	AUS Protocol Number
Human	O Yes X No		Not applicable
Rodent	O Yes X No		
Non-human primate	O Yes X No		
Other (specify)	O Yes X No		

2.3 Please indicate the type of established cells that will be grown in culture in:

Cell Type	Is this cell type used in your work?	Specific cell line(s)*	Containment Level of each cell line	Supplier / Source of cell line(s)
Human	X Yes O No	List attached	2	ATCC
Rodent	X Yes O No	List attached	2	ATCC
Non-human primate	O Yes X No			
Other (specify)	O Yes X No			

*Please attach a Material Safety Data Sheet or equivalent from the supplier. (For more information, see www.atcc.org)
The information from ATCC does not provide any information that indicates whether the cell lines are considered level I, II or otherwise. ATCC will also not provide any information as to whether the cell lines contain mycoplasma, or if they express virus particles. For these reasons, all cell lines are handled under the assumption that they are Level II and may contain mycoplasma and may express virus particles. The ATCC information sheets do not contain any information that suggests how the cell lines should be handled safely, or what to do should any accidentally be ingested or exposed to skin or eyes. Because the ATCC information sheets are thus considered to be non-informative for the purposes of safe handling, and because this laboratory handles a large number of different cell lines, the ATCC information sheets are not attached to this form.

2.4 For above named cell types(s) indicate PHAC or CFIA containment level required O 1 X 2 O 2+ O 3

3.0 Use of Human Source Materials

3.1 Does your work involve the use of human source materials? X YES O NO
If no, please proceed to Section 4.0

3.2 Indicate in the table below the Human Source Material to be used.

Human Source Material	**Source/Supplier /Company Name**	**Is Human Source Material Infected With An Infectious Agent? YES/UNKNOWN**	**Name of Infectious Agent (If applicable)**	**PHAC or CFIA Containment Level (Select one)**
Human Blood (whole) or other Body Fluid	LHSC collaborators	O Yes X Unknown		O 1 X 2 O 2+ O 3
Human Blood (fraction) or other Body Fluid	not used	O Yes O Unknown		O 1 O 2 O 2+ O 3
Human Organs or Tissues (unpreserved)	LHSC collaborators	O Yes X Unknown		O 1 X 2 O 2+ O 3
Human Organs or Tissues (preserved)	not used	Not used		Not used

4.0 Genetically Modified Organisms and Cell lines

4.1 Will genetic modifications be made to the microorganisms, biological agents, or cells described in Sections 1.0 and 2.0? X YES O NO If no, please proceed to Section 5.0

4.2 Will genetic modification(s) involving plasmids be done? O YES, complete table below O NO

E.coli

r	Plasmid(s) **	Source of Plasmid	Gene Transfected	Describe the change that results from transformation or tranfection
DH5A	*pcDNA3.1(+)*	*Invitrogen*	*MT-I, MT-II*	*Knockout of these genes*

* Please attach a Material Data Sheet or equivalent if available.
** Please attach a plasmid map.

4.3 Will genetic modification(s) of bacteria and/or cells involving viral vectors be made?
O YES, complete table below X NO

Virus Used for Vector Construction	Vector(s) *	Source of Vector	Gene(s) Transduced	Describe the change that results from transduction

* Please attach a Material Safety Data Sheet or equivalent.

4.4 Will genetic sequences from the following be involved?

- HIV O YES, please specify _____ X NO
- HTLV 1 or 2 or genes from any Level 1 or Level 2 pathogens O YES, specify _____ X NO
- SV 40 Large T antigen O YES X NO
- E1A oncogene O YES X NO
- Known oncogenes O YES, please specify _____ X NO
- Other human or animal pathogen and or their toxins O YES, please specify _____ X NO

4.5 Will virus be replication defective? O YES X NO

4.6 Will virus be infectious to humans or animals? O YES X NO

4.7 Will this be expected to increase the containment level required? O YES X NO

5.0 Human Gene Therapy Trials

5.1 Will human clinical trials be conducted involving a biological agent? O YES X NO
(including but not limited to microorganisms, viruses, prions, parasites or pathogens of plant or animal origin)
If no, please proceed to Section 6.0

5.2 If YES, please specify which biological agent will be used: _____
Please attach a full description of the biological agent.

5.2 Will the biological agent be able to replicate in the host? O YES O NO

5.3 How will the biological agent be administered? _____

5.4 Please give the Health Care Facility where the clinical trial will be conducted:_____

5.5 Has human ethics approval been obtained? O YES, number: _____ O NO O PENDING

6.0 Animal Experiments

6.1 Will live animals be used? X YES O NO If no, please proceed to section 7.0

6.2 Name of animal species to be used_____nude mice_____

6.3 AUS protocol # _____2008-022, 2009-069_____

6.4 Will any of the agents listed in section 4.0 be used in live animals O YES, specify: _____ X NO

6.5 Will the agent(s) be shed by the animal: O YES X NO, please justify:

____The agent will not be shed because it will not be administered to the animals.

7.0 Use of Animal species with Zoonotic Hazards

7.1 Will any animals with zoonotic hazards or their organs, tissues, lavages or other body fluids including blood be used (see list below)? O YES X No If no, please proceed to section 8.0

7.2 Will live animals be used? O YES O No

7.3 If yes, please specify the animal(s) used:

- Pound source dogs O YES O NO
- Pound source cats O YES O NO
- Cattle, sheep or goats O YES, please specify species _____ O NO
- Non-human primates O YES, please specify species _____ O NO
- Wild caught animals O YES, please specify species & colony # _____ O NO
- Birds O YES, please specify species _____ O NO
- Others (wild or domestic) O YES, please specify _____ O NO

7.4 If no live animals are used, please specify the source of the specimens:

8.0 Biological Toxins

8.1 Will toxins of biological origin be used? O YES X NO If no, please proceed to Section 9.0

8.2 If YES, please name the toxin(s)_____
Please attach information, such as a Material Safety Data Sheet, for the toxin(s) used.

8.3 What is the LD_{50} (specify species) of the toxin_____

8.4 How much of the toxin is handled at one time*? _____

8.5 How much of the toxin is stored*? _____

8.6 Will any biological toxins be used in live animals? O YES, Please provide details:_____ O NO

*For information on biosecurity requirements, please see:
http://www.uwo.ca/humanresources/docandform/docs/healthandsafety/biosafety/Biosecurity_Requirements.pdf

9.0 Insects

9.1 Do you use insects? O YES X NO If no, please proceed to Section 10.0
9.2 If YES, please give the name of the species. _____
9.3 What is the origin of the insect? _____
9.4 What is the life stage of the insect? _____
9.5 What is your intention? O Initiate and maintain colony, give location: _____
O "One-time" use, give location: _____
9.6 Please describe the risk (if any) of escape and how this will be mitigated:

9.7 Do you use insects that require a permit from the CFIA permit? O YES O NO
If YES, Please attach the CFIA permit & describe any CFIA permit conditions:

10.0 Plants

10.1 Do you use plants? O YES X NO If no, please proceed to Section 11.0

10.2 If YES, please give the name of the species. _____

10.3 What is the origin of the plant? _____

10.4 What is the form of the plant (seed, seedling, plant, tree...)? _____

10.5 What is your intention? O Grow and maintain a crop O "One-time" use

10.6 Do you do any modifications to the plant? O YES O NO
If yes, please describe: _____

10.7 Please describe the risk (if any) of loss of the material from the lab and how this will be mitigated:

10.8 Is the CFIA permit attached? O YES O NO
If YES, Please attach the CFIA permit & describe

See E-mail
(See exemption letters attached)

11.0 Import Requirements

11.1 Will any of the above agents be imported? X YES, please give country of origin_USA__ O NO
If no, please proceed to Section 12.0
11.2 Has an Import Permit been obtained from HC for human pathogens? X YES O NO
11.3 Has an import permit been obtained from CFIA for animal or plant pathogens? O YES X NO

11.4 Has the import permit been sent to OHS? X YES, please provide permit # _BIO-LRCC-0008___ O NO

12.0 Training Requirements for Personnel Named on Form

All personnel named on the above form who will be using any of the above named agents are required to attend the following training courses given by OHS:

- Biosafety
- Laboratory and Environmental/Waste Management Safety
- WHMIS (Western or equivalent)
- Employee Health and Safety Orientation

As the Principal Investigator, I have ensured that all of the personnel named on the form who will be using any of the biological agents in Sections 1.0 to 9.0 have been trained.

SIGNATURE _____

13.0 Containment Levels

13.1 For the work described in sections 1.0 to 9.0, please indicate the highest

HC or CFIA Containment Level required. O 1 X 2 2+ O 3

13.2 Has the facility been certified by OHS for this level of containment?

X YES, date of most recent biosafety inspection: _December 10, 2010
O NO, please certify
O NOT REQUIRED for Level 1 containment

13.3 Please indicate permit number (not applicable for first time applicants): R-06-000599_

14.0 Procedures to be Followed

14.1 Please describe additional risk reduction measures will be taken beyond containment level 1, 2, 2+ or 3 measures, that are unique to this agent.

_____N/A_____
_____
_____

14.2 Please outline what will be done if there is an exposure to the biological agents listed, such as a needlestick injury or an accidental splash:

__Staff have been trained to do the following: get immediate medical attention at either LHSC_ Occupational Health and Safety or Victoria Emergency, visit Occ Health as soon as possible, and file an LHSC incident report. UWO employees are asked to visit UWO Occ Health to file an incident report.

14.3 As the Principal Investigator, I will ensure that this project will follow the Western Biosafety Guidelines and Procedures Manual for Containment Level 1 & 2 Laboratories (and the Level 3 Facilities Manual for Level 3 projects). I will ensure that UWO faculty, staff and students working in my laboratory have an up-to-date Hazard Communication Form, found at http://www.wph.uwo.ca/

SIGNATURE _____ Date: November 16, 2011

15.0 Approvals

1) UWO Biohazards Subcommittee: SIGNATURE: _____
Date: _____

2) Safety Officer for the University of Western Ontario
SIGNATURE:_____
Date:_____

3) Safety Officer for Institution where experiments will take place (if not UWO):
SIGNATURE:_____
Date:_____

Approval Number: _____ Expiry Date (3 years from Approval): _____

Special Conditions of Approval:

Cell Lines Used and/or Stored in the Laboratory

Human:
Anaplastic astrocytoma SF-268
Breast MCF-7, MDA-MB-435, MDA-MB-231, MDA-MB-468, SK-BR-3
Cervical epithelial HeLa
Colon tumour HT-29, CaCo-2, HCT-15, HCT-116, SW620
Epidermoid carcinoma A431
Erythroleukemia K562
Fibrosarcoma HT1080
Foreskin fibroblast NIH3T3
Gastric adenocarcinoma AGS, Hs746T, N87
Glioma U87, A172, SF-295, SNB-19, U373MG
Hepatoma Hep-G2
Kidney, embryonic (non-tumour) 293T (E1A/E1B-transformed; T-antigen-expressing)
Leukemia, promyelocytic HL-60
Lung fibroblast WI-38
Lymphoblastoid W1-L2
Lymphoblastic leukemia U937
Lymphoma, histiocytic U-937
Mammary epithelial line 1001-8 (ATCC)
Melanoma SK-MEL-5
Muscle tumour BC_3H1
Non-small cell lung carcinoma A549, H226, H460, H520
Osteosarcoma SaOS-2
Ovarian carcinoma OV-90
Pancreatic carcinoma PANC-1, Panc 02.03, Panc 03.27, Panc 10.05
Prostate carcinoma DU145, LNCaP; (untransformed prostate epithelial HPEpiC)
Small cell lung carcinoma DMS114, DMS153, H69, SHP-77
Squamous cell carcinoma, gingival HN-5a
Squamous cell carcinoma, head and neck Cal27, Detroit562, FaDu, SCC9
Testicular Leydig cell tumour line MA10
Umbilical vein epithelial cell (HUVEC) (non-tumour)

Rodent:
Mouse kidney primary
Mouse embryonic fibroblast (MEF)
Mouse mammary tumour 2305
Mouse melanoma B16 F10
Chinese hamster ovary

Bacteria:
Escherichia coli DH5-alpha, DH10-beta, DY380

Plasmids:
pΔE1sp1A
p100Dgem-1

p164/7-MT5
p18S
p3'SS
p422 in p-bluescript
pAS6-9, pAS191-1, pAS450
pA8
pB7 & PCR 1.8
pBR322
pcDNA3
pcDNA 3.1/Hygro
pcDRT1 in pcD
pC-hMFT
pC-MFT-1
pC-MFT-1A
pCMV-beta
pCMXmERPH
pCRII
pDR2
pE4 in pcDV 1 (TNFα)
pGEM/Riboprobe
pGem-3Z
pGRneo
pHHCAT
pHRE2TATACAT
pIL2R2 in pBR322
pKJ1Δf and pKJ1Δr
pKO-1 and pNEO
pLTR-Luc
pm-40.3 in pAT 153
pME18S-FL3-SOD
pMO53 in pUC 18
pMSG, -CAT, -LUC
pMT II3
pNGVL3-mII12
pOPRSVICCAT, pOPRMT, pOPRASMT
pPGKPuro
pRC/CMV
pRNH1
pRNH59
pRSVGR
pRSV-Tag
pRSVXP
pSP72
pSP73
pSV2
pSV2-CAT
pSV2-gtp
pSV2-neo
pSV3-neo
pSVK3
pT3T7-1 and pT3T7-2
pT7T3D-heme ox1

pT7T3d-Pac
pT24-C3 in pBR322
pTB-1, pTH-2
pUC (plasmids 7,8,9,12,13)
pXT1 and pSG-5

Info on E. coli

Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

Office of Biohazard Containment and Safety
Science Branch, CFIA
59 Camelot Drive, Ottawa, Ontario K1A 0Y9
Tel: (613) 221-7068 Fax: (613) 228-6129
Email: ImportZoopath@inspection.gc.ca

Bureau du confinement des biorisques et sécurité
Direction générale des sciences, ACIA
59 promenade Camelot, Ottawa, Ontario K1A 0Y9
Tél: (613) 221-7068 Téléc: (613) 228-6129
Courriel: ImportZoopath@inspection.gc.ca

October 20th, 2009

Ms. Shamila Survery / Mr. Michael Decosimo
Cedarlane Laboratories Ltd
4410 Paletta Court
Burlington, Ontario L7L 5R2

By Facsimile: (289) 288-0020

SUBJECT: Importation of *Escherichia coli* strains

Dear Ms. Survery / Mr. Decosimo:

Our office received your query about the importation of *Escherichia coli* from the American Type Culture Collection (ATCC) located in Manassas, Virginia, United States. The following *Escherichia coli* strains are consider to be level 1 animal pathogens:

- 5K
- 58
- 58-161
- 679
- 1532
- AB284
- AB311
- AB1157
- AB1206
- AG1
- B
- BB4
- BD792
- BL21
- BL21 (DE3)
- BM25.8
- C
- C-1a
- C-3000
- C25
- C41 (DE3)
- C43 (DE3)
- C600
- Cavalli Hfr
- CIE85
- DH1
- DH10 GOLD
- DH10B
- DH5
- DH5-alpha
- DP50
- DY145
- DY380
- E11
- EJ183
- EL250
- EMG2
- EPI 300
- EZ10
- FDA Seattle 1946
- Fusion-Blue
- H1443
- HF4714
- HB101
- HS(PFAMP)R
- Hfr3000
- Hfr3000 X74
- HMS174
- J52
- J53
- JC3272
- JC7661
- JC9387
- JF1504
- JF1508
- JF1509
- JJ055
- JM83
- JM101
- JM109
- K12
- KC8
- KA802
- KAM32
- KAM33
- KAM43
- LE450
- LE451
- LE452
- MB408
- MBX1928
- MC1061
- MC4100 (MuLac)
- MG1655
- MM294
- MS101
- NC-7
- Nissle 1917
- One Shot STBL3
- OP50
- P678
- PA309
- PK-5
- PMC103
- PR13
- Rri
- RV308
- S17-1λ -PIR
- SCS1
- SMR10
- SOLR
- SuperchargeEZ10
- SURE
- TOP10
- TG1
- U5/41
- W208
- W945
- W1485
- W3104
- W3110
- WA704
- WP2
- X1854
- X2160T
- X2541
- X2547T
- XL1-BLUE
- XL1-BLUE-MRF
- XLOLR
- Y10
- Y1090 (1090)
- YN2980
- W3110
- WG1
- WG439
- WG443
- WG445

The Office of Biohazard Containment and Safety (BCS) of the Canadian Food Inspection Agency (CFIA) only issues import permits for microorganisms that are pathogenic to animals, or parts of microorganisms that are pathogenic to animals. As the products listed above are not considered pathogenic to animals, the Office of BCS does not have any regulatory requirements for their importation.

Please note that other legislation may apply. You may wish to contact the Public Health Agency of Canada's (PHAC) Office of Laboratory Security at (613) 957-1779.

Note: Microorganisms pathogenic to animals and veterinary biologics require an import permit from the CFIA.

Sincerely,

Cinthia Labrie

Cinthia Labrie
Head, Animal Pathogen Importation Program
Office of Biohazard Containment & Safety

Canada

MATERIAL SAFETY DATA SHEET

Revised 9/04/03
Replaces 6/19/02
Printed 9/04/03

ME DH10B COMP CELLS
INVITROGEN CORPORATION
MSDS ID: 18297

1. PRODUCT AND COMPANY INFORMATION

INVITROGEN CORPORATION
1600 FARADAY AVE.
CARLSBAD, CA 92008
760/603-7200

GIBCO PRODUCTS
INVITROGEN CORPORATION
3175 STALEY ROAD P.O. BOX 68
GRAND ISLAND, NY 14072
716/774-6700

INVITROGEN CORPORATION
3 FOUNTAIN DR.
INCHINNAN BUSINESS PARK
PAISLEY, PA4 9RF
SCOTLAND
44-141 814-6100

INVITROGEN CORPORATION
P.O. BOX 12-502
PENROSE
AUCKLAND 1135
NEW ZEALAND
64-9-579-3024

INVITROGEN CORPORATION
2270 INDUSTRIAL ST.
BURLINGTON, ONT
CANADA L7P 1A1
905/335-2255

EMERGENCY NUMBER (SPILLS, EXPOSURES): 301/431-8585 (24 HOUR)
800/451-8346 (24 HOUR)
NON-EMERGENCY INFORMATION: 800/955-6288

Product Name: ME DH10B COMP CELLS
Stock Number: 18297

NOTE: If this product is a kit or is supplied with more than one material, please refer to the MSDS for each component for hazard information.

Product Use:
These products are for laboratory research use only and are not intended for human or animal diagnostics, therpeutic, or other clinical uses.

Synonyms:
Not available.

2. COMPOSITION, INFORMATION ON INGREDIENTS

The following list shows components of this product classified as hazardous based on physical properties and health effects:

Component	CAS No.	Percent
CALCIUM CHLORIDE	10043-52-4	0.5 - 1.5

3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********
Warning!
Irritant.
Harmful if swallowed.
Harmful by inhalation.
****

Potential Health Effects:
Eye:
Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.

Skin:
Can cause severe irritation, defatting, and dermatitis. Irritation effects may last for hours or days but will not likely result in permanent damage.

Inhalation:
Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.
Harmful! Can cause systemic damage (see "Target Organs).

Ingestion:
Severely irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Harmful if swallowed. May cause systemic poisoning.

Chronic:
No data on cancer.

4. FIRST AID MEASURES

Eye:
Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin:
Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Inhalation:
Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately.

4. FIRST AID MEASURES (CONT.)

Ingestion:
Severely irritating. Do not induce vomiting. Seek medical attention immediately. Drink 2 glasses of water or milk to dilute.

Note To Physician:
Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flashpoint Deg C:
Not available.

Upper Flammable Limit %:
Not available.

Lower Flammable Limit %:
Not available.

Autoignition Temperature Deg C:
Not available.

Extinguishing Media:
Not combustible. Use extinguishing media appropriate for surrounding fire. Use water spray/fog for cooling.

Firefighting Techniques/Equipment:
Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.

Hazardous Combustion Products:
Includes carbon dioxide, carbon monoxide, dense smoke.

6. ACCIDENTAL RELEASE MEASURES

Accidental releases may be subject to special reporting requirements and other regulatory mandates. Refer to Section 8 for personal protection equipment recommendations.

Spill Cleanup:
Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section VIII of this MSDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.
Ventilate the contaminated area.

6. ACCIDENTAL RELEASE MEASURES (CONT.)

Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section VIII at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Storage of some materials is regulated by federal, state, and/or local laws.

Storage Pressure:
Ambient

Handling Procedures:
Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area.
Keep closed or covered when not in use.

Storage Procedures:
Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed.
Suitable for most general chemical storage areas.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Limits:

Component	OSHA PEL (ppm)	AGCIH TWA (ppm)
CALCIUM CHLORIDE	Not established.	Not established.

Engineering Controls:
Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Personal Protective Equipment:

Eye:
Mildly irritating but will not injure eye tissue.
Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.

Skin:
Avoid skin contact by wearing chemically resistant gloves, an apron and

8. EXPOSURE CONTROLS, PERSONAL PROTECTION (CONT.)

other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work. Gloves should be used as minimum hand protection.

Respiratory:
NIOSH approved air purifying respirator with dust/mist filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance/physical state:	Slightly viscous liquid. White or translucent.
Odor:	Like or similar to garlic.
Boiling Point (C):	217.4 102.99
Melting Point (C):	27.86 -2.3
	Not established.
	Not established.
Vapor Pressure:	23.5 @ 25C
Vapor Density:	0.62
Specific Gravity/Density:	1.233 @ 20C
Octanol/water Partition Coeff:	Not established.
Volatiles:	7.55 @ 25C
Evaporation Rate:	0.99
Viscosity:	Not established.

10. STABILITY AND REACTIVITY

Stability:
Stable under normal conditions.

Conditions to Avoid:
Moisture. Metals.

Hazardous Decomposition Products:
Hydrogen chloride. Chlorine containing gases. Carbon monoxide. Carbon dioxide.

Hazardous Polymerization:
Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:

Dermal/Skin:
Not determined.

Inhalation/Respiratory:
Not determined.

Oral/Ingestion:
Calcium Chloride: 1000 MG/KG

Target Organs: Heart.

Carcinogenicity:

NTP:
Not tested.

IARC:
Not listed.

OSHA:
Not regulated.

Other Toxicological Information

12. Ecological Information

Ecotoxicological Information: This material is soluble in water. It's adsorption to soil and sediment should not be significant.

Environmental Fate (Degradation, Transformation, and Persistence):
Bioconcentration is not expected to occur.
Does not biodegrade readily.

13. DISPOSAL CONSIDERATIONS

Regulatory Information:
Not applicable.

Disposal Method:
Clean up and dispose of waste in accordance with all federal, state, and local environmental regulations.
Dispose of by incineration following Federal, State, Local, or Provincial regulations.

14. TRANSPORT INFORMATION

Proper Shipping Name: Not listed in Title 49 of the U.S. Code of Federal Regulations Section 171.8 as a hazardous material. dimethylsulfoxide solution

Subsidiary Hazards:

15. REGULATORY INFORMATION

UNITED STATES:

TSCA:
This product is solely for research and development purposes only and may not be used, processed or distributed for a commercial purpose. It may only be handled by technically qualified individuals.

Prop 65 Listed Chemicals: PROP 65 PERCENT
No Prop 65 Chemicals.

No 313 Chemicals

CANADA:

DSL/NDSL:
Not determined.

COMPONENT	WHMIS Classification
CALCIUM CHLORIDE	D2B

EUROPEAN UNION:

PRODUCT RISK PHRASES:
None assigned.

PRODUCT SAFETY PHRASES:
Not applicable.

PRODUCT CLASSIFICATION:
Xi

Component	EINECS Number
CALCIUM CHLORIDE	233-140-8

16. OTHER INFORMATION

HMIS Rating 0-4:
FIRE: Not determined.
HEALTH: Not determined.
REACTIVITY: Not determined.

Abbreviations
N/A - Data is not applicable or not available
SARA - Superfund and Reauthorization Act
HMIS - Hazard Material Information System
WHMIS - Workplace Hazard Materials Information System
NTP - National Toxicology Program
OSHA - Occupational Health and Safety Administration
IARC - International Agency for Research on Cancer
PROP 65 - California Safe Drinking Water and Toxic Enforcement Act of 1986
EINECS - European Inventory of Existing Commercial Chemical Substances

The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since Invitrogen Corporation cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS MSDS DOES NOT CONSTITUTE A WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

invitrogen™

Material Safety Data Sheet

Revision Date: 28-Aug-2007

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product code 440098
Product name SUBCLONING EFFICIENCY DH5A COMPETENT CELLS

Company/Undertaking Identification

INVITROGEN CORPORATON
1600 FARADAY AVENUE
PO BOX 6482
CARLSBAD, CA 92008
760-603-7200

INVITROGEN CORPORATION
2270 INDUSTRIAL STREET
BURLINGTON, ONT
CANADA L7P 1A1
800-263-6236

GIBCO PRODUCTS
INVITROGEN CORPORATION
3175 STALEY ROAD P.O. BOX 68
GRAND ISLAND, NY 14072
716-774-6700

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous/Non-hazardous Components

Chemical Name	CAS-No	Weight %
Glycerol	56-81-5	7-13
dimethylsulfoxide	67-68-5	3-7

The product contains no substances which at their given concentration, are considered to be hazardous to health

3. HAZARDS IDENTIFICATION

Emergency Overview
Components of the product may be absorbed into the body through the skin

Form
Liquid

3. HAZARDS IDENTIFICATION

Principle Routes of Exposure/ Potential Health effects

Eyes	Mild eye irritation.
Skin	moderate skin irritation. Components of the product may be absorbed into the body through the skin.
Inhalation	No information available
Ingestion	May be harmful if swallowed.

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects No information available

HMIS

Health	1
Flammability	0
Reactivity	0

4. FIRST AID MEASURES

Skin contact	Wash off immediately with plenty of water
Eye contact	Rinse thoroughly with plenty of water, also under the eyelids.
Ingestion	Never give anything by mouth to an unconscious person
Inhalation	Move to fresh air
Notes to physician	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Dry chemical
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Use personal protective equipment.
Methods for cleaning up	Soak up with inert absorbent material.

7. HANDLING AND STORAGE

Handling	No special handling advice required
Storage	Keep in properly labelled containers

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls

Exposure limits

Chemical Name	OSHA PEL (TWA)	OSHA PEL (Ceiling)	ACGIH OEL (TWA)	ACGIH OEL (STEL)
Glycerol	15 mg/m³ total dust 5 mg/m³ respirable fraction	-	10 mg/m³	-
dimethylsulfoxide	-	-	-	-

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Respiratory protection In case of insufficient ventilation wear suitable respiratory equipment.
Hand protection Impervious butyl rubber gloves. Nitrile gloves are not recomended. Some brands of Nitrile gloves have breakthrough times of five minutes. .
Eye protection Safety glasses with side-shields
Skin and body protection Lightweight protective clothing.
Hygiene measures Handle in accordance with good industrial hygiene and safety practice.
Environmental exposure controls Prevent product from entering drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Form Liquid

Important Health Safety and Environmental Information

Boiling point/range	**°C** No data available	**°F** No data available
Melting point/range	**°C** No data available	**°F** No data available
Flash point	**°C** No data available	**°F** No data available
Autoignition temperature	**°C** No data available	**°F** No data available
Oxidizing properties	No information available	
Water solubility	soluble	

10. STABILITY AND REACTIVITY

Stability Stable.
Materials to avoid No information available
Hazardous decomposition products No information available
Polymerization Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	LD50 (oral,rat/mouse)	LD50 (dermal,rat/rabbit)	LC50 (inhalation,rat/mouse)
Glycerol	12600 mg/kg (Rat)	10 g/kg (Rabbit)	570 mg/m³ (Rat)
dimethylsulfoxide	14500 mg/kg (Rat)	No data available	No data available

Principle Routes of Exposure/ Potential Health effects

Eyes Mild eye irritation.
Skin moderate skin irritation. Components of the product may be absorbed into the body through the skin.
Inhalation No information available
Ingestion May be harmful if swallowed.

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	No information available.
Mobility	No information available.
Biodegradation	Inherently biodegradable.
Bioaccumulation	Does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations

14. TRANSPORT INFORMATION

IATA

Proper shipping name	Not classified as dangerous in the meaning of transport regulations
Hazard Class	No information available
Subsidiary Class	No information available
Packing group	No information available
UN-No	No information available

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	PICCS	ENCS	DSL	NDSL	AICS
Glycerol	Listed	Listed	Listed	Listed	-	Listed
dimethylsulfoxide	Listed	Listed	Listed	Listed	-	Listed

U.S. Federal Regulations

SARA 313
This product is not regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contains HAPs.

U.S. State Regulations

Chemical Name	Massachusetts - RTK	New Jersey - RTK	Pennsylvania - RTK	Illinois - RTK	Rhode Island - RTK
Glycerol	Listed	-	Listed	-	Listed
dimethylsulfoxide	-	-	-	-	-

California Proposition 65
This product does not contain chemicals listed under Proposition 65

WHMIS hazard class:
Non-controlled

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. OTHER INFORMATION

This material is sold for research and development purposes only. It is not for any human or animal therapeutic or clinical diagnostic use. It is not intended for food, drug, household, agricultural, or cosmetic use. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material.

The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may be present unknown hazards and should be used with caution. Since Invitrogen Corporation cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS MSDS DOES NOT CONSTITUTE A WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTCULAR PURPOSE.

End of Safety Data Sheet

Cell Lines Used and/or Stored in the Laboratory

Human:
Anaplastic astrocytoma SF-268
Breast MCF-7, MDA-MB-435, MDA-MB-231, MDA-MB-468, SK-BR-3
Cervical epithelial HeLa
Colon tumour HT-29, CaCo-2, HCT-15, HCT-116, SW620
Epidermoid carcinoma A431
Erythroleukemia K562
Fibrosarcoma HT1080
Foreskin fibroblast NIH3T3
Gastric adenocarcinoma AGS, Hs746T, N87
Glioma U87, A172, SF-295, SNB-19, U373MG
Hepatoma Hep-G2
Kidney, embryonic (non-tumour) 293T (E1A/E1B-transformed; T-antigen-expressing)
Leukemia, promyelocytic HL-60
Lung fibroblast WI-38
Lymphoblastoid W1-L2
Lymphoblastic leukemia U937
Lymphoma, histiocytic U-937
Mammary epithelial line 1001-8 (ATCC)
Melanoma SK-MEL-5
Muscle tumour BC_3H1
Non-small cell lung carcinoma A549, H226, H460, H520
Osteosarcoma SaOS-2
Ovarian carcinoma OV-90
Pancreatic carcinoma PANC-1, Panc 02.03, Panc 03.27, Panc 10.05
Prostate carcinoma DU145, LNCaP; (untransformed prostate epithelial HPEpiC)
Small cell lung carcinoma DMS114, DMS153, H69, SHP-77
Squamous cell carcinoma, gingival HN-5a
Squamous cell carcinoma, head and neck Cal27, Detroit562, FaDu, SCC9
Testicular Leydig cell tumour line MA10
Umbilical vein epithelial cell (HUVEC) (non-tumour)

Cell Line Info

Rodent:
Mouse kidney primary
Mouse embryonic fibroblast (MEF)
Mouse mammary tumour 2305
Mouse melanoma B16 F10
Chinese hamster ovary

Bacteria:
Escherichia coli DH5-alpha, DH10-beta, DY380

Plasmids:
pΔE1sp1A
p100Dgem-1

p164/7-MT5
p18S
p3'SS
p422 in p-bluescript
pAS6-9, pAS191-1, pAS450
pA8
pB7 & PCR 1.8
pBR322
pcDNA3
pcDNA 3.1/Hygro
pcDRT1 in pcD
pC-hMFT
pC-MFT-1
pC-MFT-1A
pCMV-beta
pCMXmERPH
pCRII
pDR2
pE4 in pcDV 1 (TNFα)
pGEM/Riboprobe
pGem-3Z
pGRneo
pHHCAT
pHRE2TATACAT
pIL2R2 in pBR322
pKJ1Δf and pKJ1Δr
pKO-1 and pNEO
pLTR-Luc
pm-40.3 in pAT 153
pME18S-FL3-SOD
pMO53 in pUC 18
pMSG, -CAT, -LUC
pMT II3
pNGVL3-mII12
pOPRSVICCAT, pOPRMT, pOPRASMT
pPGKPuro
pRC/CMV
pRNH1
pRNH59
pRSVGR
pRSV-Tag
pRSVXP
pSP72
pSP73
pSV2
pSV2-CAT
pSV2-gtp
pSV2-neo
pSV3-neo
pSVK3
pT3T7-1 and pT3T7-2
pT7T3D-heme ox1

pT7T3d-Pac
pT24-C3 in pBR322
pTB-1, pTH-2
pUC (plasmids 7,8,9,12,13)
pXT1 and pSG-5

Cell Biology

ATCC® Number:	**HTB-22™** Order this Item	Price:	**$279.00**

Designations:	MCF7
Depositors:	CM McGrath
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** mammary gland; breast **Disease:** adenocarcinoma **Derived from metastatic site:** pleural effusion **Cell Type:** epithelial
Cellular Products:	insulin-like growth factor binding proteins (IGFBP) BP-2; BP-4; BP-5
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	estrogen receptor, expressed
Antigen Expression:	Blood Type O; Rh+
DNA Profile (STR):	Amelogenin: X CSF1PO: 10 D13S317: 11 D16S539: 11,12 D5S818: 11,12 D7S820: 8,9 THO1: 6 TPOX: 9,12 vWA: 14,15

modal number = 82; range = 66 to 87.

Related Links

NCBI Entrez Search

Cell Micrograph

Make a Deposit

Frequently Asked Questions

Material Transfer Agreement

Technical Support

Related Cell Culture Products

Login Required

Product Information Sheet

Cell Biology

ATCC® Number:	**HTB-129™** Order this Item	Price:	**$279.00**
Designations:	MDA-MB-435S		
Biosafety Level:	1		
Shipped:	frozen		
Medium & Serum:	See Propagation		
Growth Properties:	adherent		
Organism:	*Homo sapiens* (human)		
Morphology:	spindle shaped 		
Source:	**Organ:** previously described as: mammary gland; breast **Disease:** previously described as ductal carcinoma **Derived from metastatic site:** pleural effusion		
Cellular Products:	tubulin; actin		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		
Isolation:	**Isolation date:** 1976		
Tumorigenic:	No		
DNA Profile (STR):	Amelogenin: X CSF1PO: 11 D13S317: 12 D16S539: 13 D5S818: 12 D7S820: 8,10 THO1: 6,7 TPOX: 8,11 vWA: 16,18		

Related Links

NCBI Entrez Search

Cell Micrograph

Make a Deposit

Frequently Asked Questions

Material Transfer Agreement

Technical Support

Related Cell Culture Products

modal number = 56; range = 55 to 62

Cell Biology

ATCC® Number:	**HTB-132™** Order this Item	Price:	**$279.00**

Designations:	MDA-MB-468
Depositors:	R Cailleau
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** mammary gland; breast **Disease:** adenocarcinoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** 1977
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	epidermal growth factor (EGF) transforming growth factor alpha (TGF alpha)
Tumorigenic:	Yes
Antigen Expression:	Blood Type AB; HLA Aw23, Aw30, B27, Bw35, Cw2, Cw4 (patient)
DNA Profile (STR):	Amelogenin: X CSF1PO: 12 D13S317: 12 D16S539: 9 D5S818: 12 D7S820: 8 THO1: 7 TPOX: 8,9 vWA: 18

Related Links

NCBI Entrez Search

Make a Deposit

Frequently Asked Questions

Material Transfer Agreement

Technical Support

Related Cell Culture Products

Login Required

Product Information Sheet

modal number = 64; range = 60 to 67.

Cell Biology

ATCC® Number:	**HTB-30™**	Order this Item	Price:	**$279.00**

Designations:	SK-BR-3
Depositors:	G Trempe, LJ Old
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** mammary gland; breast **Disease:** adenocarcinoma **Derived from metastatic site:** pleural effusion
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	The cells are distributed for research purposes only. The Memorial Sloan-Kettering Cancer Center releases the line subject to the following: 1.) The cells or their products must not be distributed to third parties. Commercial interests are the exclusive property of Memorial Sloan-Kettering Cancer Center. 2.) Any proposed commercial use of these cells must first be negotiated with The Director, Office of Industrial Affairs, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021; phone (212) 639-6181; FAX (212) 717-3439.
Isolation:	**Isolation date:** 1970
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Tumorigenic:	Yes
Antigen Expression:	Blood Type A; Rh+; HLA A11, Bw22(+/-), B40, B18

Related Links

NCBI Entrez Search

Cell Micrograph

Make a Deposit

Frequently Asked Questions

Material Transfer Agreement

Technical Support

Related Cell Culture Products

Login Required

Product Information Sheet

Amelogenin: X

Cell Biology

ATCC® Number:	**CCL-2™** Order this Item	Price:	**$279.00**

Designations:	HeLa
Depositors:	WF Scherer
Biosafety Level:	2 [Cells contain human papilloma virus]
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** cervix **Disease:** adenocarcinoma **Cell Type:** epithelial
Cellular Products:	keratin Lysophosphatidylcholine (lyso-PC) induces AP-1 activity and c-jun N-terminal kinase activity (JNK1) by a protein kinase C-independent pathway [26623]
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host ([21491] Nucleofection technology from Lonza Roche Transfection Reagents) screening for Escherichia coli strains with invasive potential [21447] [21491]
Virus Susceptibility:	Human adenovirus 3 Encephalomyocarditis virus Human poliovirus 1 Human poliovirus 2 Human poliovirus 3

Related Links

NCBI Entrez Search

Cell Micrograph

Make a Deposit

Frequently Asked Questions

Material Transfer Agreement

Technical Support

Related Cell Culture Products

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Product Information Sheet

Amelogenin: X

Cell Biology

ATCC® Number:	**HTB-38™**	Order this Item	Price:	**$279.00**

Designations:	HT-29
Depositors:	J Fogh
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** colon **Disease:** colorectal adenocarcinoma
Cellular Products:	secretory component of IgA; carcinoembryonic antigen (CEA); transforming growth factor beta binding protein; mucin
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	The cells are distributed for research purposes only. The Memorial Sloan-Kettering Cancer Center releases the line subject to the following: 1.) The cells or their products must not be distributed to third parties. Commercial interests are the exclusive property of Memorial Sloan-Kettering Cancer Center. 2.) Any proposed commercial use of these cells must first be negotiated with The Director, Office of Industrial Affairs, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021; phone (212) 639-6181; FAX (212) 717-3439.
Isolation:	**Isolation date:** 1964
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	human adrenergic alpha2A [23560] urokinase receptor (u-PAR) vitamin D (moderate expression) urokinase receptor (u-PAR); vitamin D (moderate expression)
Tumorigenic:	Yes
Oncogene:	myc +; ras +; myb +; fos +; sis +; p53 +; abl -; ros -; src -
Antigen Expression:	Blood Type A; Rh+; HLA A1, A3, B12, B17, Cw5

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Cell Biology

ATCC® Number:	**HTB-37™** Order this Item	Price:	**$279.00**

Designations:	Caco-2
Depositors:	J Fogh
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** colon **Disease:** colorectal adenocarcinoma
Cellular Products:	keratin retinoic acid binding protein 1 retinol binding protein 2
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	NaviCyte Scientific holds the exclusive commercial distribution rights to the Caco-2 cell line as deposited by the Memorial Sloan-Kettering Cancer Center (SK) with the American Type Culture Collection (ATCC). **Note:** All uses of ATCC ® HTB-37™, other than for research by a non-commercial or academic entity, require a license and use authorization from NaviCyte Scientific under its exclusive arrangement with Memorial Sloan-Kettering.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	heat stable enterotoxin (Sta, E. coli), expressed epidermal growth factor (EGF), expressed
Virus Susceptibility:	Human immunodeficiency virus 1
Tumorigenic:	Yes

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Amelogenin: X

Cell Biology

ATCC® Number:	**CCL-225™**	Order this Item	Price:	**$279.00**

Designations:	HCT-15
Depositors:	DL Dexter
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** colon **Tumor Stage:** Dukes' type C **Disease:** colorectal adenocarcinoma
Cellular Products:	carcinoembryonic antigen (CEA) 5.4 ng/10 exp6 cells/10 days; keratin
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Roche Transfection Reagents)
Tumorigenic:	Yes
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 12 D13S317: 8,11 D16S539: 12,13 D5S818: 13 D7S820: 10,12 THO1: 7,9.3 TPOX: 8,11 vWA: 18,19
Cytogenetic Analysis:	This is a quasidiploid human cell line with the modal number 46 occurring in 76% of cells (range = 41 to 47 for 50 metaphases).The rate of polyploidy was 5.1%. The karyotype of the line 46, XY, -8,-11, -17, t(8:17)(p23:q21), inv(11)(p15.3q13.1). The Y chromosome was slightly longer than N22, and had a large segment of heterochromatic, fluorescent distal q arms.
	ES-D, 2

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Cell Biology

ATCC® Number:	**CCL-247™**	Order this Item	Price:	**$279.00**

Designations:	HCT 116
Depositors:	MG Brattain
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** colon **Disease:** colorectal carcinoma
Cellular Products:	carcinoembryonic antigen (CEA) 1 ng per 10 exp6 cells per 10 days; keratin
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Tumorigenic:	Yes
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 7,10 D13S317: 10,12 D16S539: 11,13 D5S818: 10,11 D7S820: 11,12 THO1: 8,9 TPOX: 8,9 vWA: 17,22

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The stemline chromosome number is near diploid with the modal

Cell Biology

ATCC® Number:	**CCL-227™** Order this Item	Price:	**$279.00**

Designations:	SW620 [SW-620]
Depositors:	A Leibovitz
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** colon **Tumor Stage:** Dukes' type C **Disease:** colorectal adenocarcinoma **Derived from metastatic site:** lymph node
Cellular Products:	carcinoembryonic antigen (CEA) 0.15 ng/10 exp6 cells/10 days; transforming growth factor alpha; keratin; matrilysin
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Roche Transfection Reagents)
Tumorigenic:	Yes
Oncogene:	myc +; myb + ; ras +; fos +; sis +; p53 +; abl -; ros -; src -
Antigen Expression:	blood type A; Rh+
DNA Profile (STR):	Amelogenin: X CSF1PO: 13,14 D13S317: 12 D16S539: 9,13 D5S818: 13 D7S820: 8,9 THO1: 8 TPOX: 11 vWA: 16

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Cytogenetic Analysis: modal number = 50; range = 45 to 53, The stemline chromosome

Cell Biology

ATCC® Number:	**CRL-2592™**	Order this Item	Price:	**$329.00**

Designations:	A431NS
Depositors:	K Hirabayashi
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** skin **Tissue:** epidermis **Disease:** epidermoid carcinoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
DNA Profile (STR):	Amelogenin: X CSF1PO: 11,12 D13S317: 9,13 D16S539: 12,14 D5S818: 12,13 D7S820: 10 THO1: 9 TPOX: 11 vWA: 15,17
Age:	85 yrs
Gender:	female

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Comments: A431NS was derived from the A431 cell line (ATCC CRL-1555)

Cell Biology

ATCC® Number:	**CCL-243™**	Order this Item	Price:	**$279.00**

Designations:	K-562
Depositors:	HT Holden
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	suspension
Organism:	*Homo sapiens* (human)
Morphology:	lymphoblast
Source:	**Organ:** bone marrow **Disease:** chronic myelogenous leukemia (CML)
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza)
Tumorigenic:	Yes
Antigen Expression:	CD7 (25%)
DNA Profile (STR):	Amelogenin: X CSF1PO: 9,10 D13S317: 8 D16S539: 11,12 D5S818: 11,12 D7S820: 9,11 THO1: 9.3 TPOX: 8,9 vWA: 16
Cytogenetic Analysis:	The stemline chromosome number is triploid with the 2S component occurring at 4.2%. Fifteen markers (M1 and M(15)) occurred in nearly all S metaphases. Spontaneous non-specific dicentrics occurred, but rarely. Unstable markers were also rarely seen. The X was disomic, and N9 was nullisomic.

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Cell Biology

ATCC® Number:	**CCL-121™** Order this Item	Price:	**$279.00**

Designations:	HT-1080
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Tissue:** connective tissue **Disease:** fibrosarcoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** July, 1972
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Virus Susceptibility:	Human poliovirus 1 RD-114 Feline Feline leukemia virus Vesicular stomatitis virus
Tumorigenic:	Yes
Oncogene:	ras +
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 12 D13S317: 12,14 D16S539: 9,12 D5S818: 11,13 D7S820: 9,10 THO1: 6 TPOX: 8 vWA: 14,19
Cytogenetic Analysis:	modal number = 46; range = 44 to 48. Pseudodiploidy was frequently noted. About 40% of the cells had rearranged karyotypes with an extra E-group chromosome and a group C chromosome, probably chromosome 11, was missing.
Isoenzymes:	G6PD, B

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Cell Biology

ATCC® Number:	**CRL-1739™**	Order this Item	Price:	**$279.00**

Designations:	AGS
Depositors:	SC Barranco
Biosafety Level:	2
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** stomach **Disease:** gastric adenocarcinoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** 1979
Applications:	transfection host (Nucleofection technology from Lonza)
Tumorigenic:	Yes
Cytogenetic Analysis:	This is a hyperdiploid human cell line. The modal chromosome number was 49, occurring in 60% of cells. The rate of polyploidy was 3.6%. Single copy each for der(8)t(1;8) (q12;p23), der(19)t(19;?) (q13.6;?), minute chromosome M3, and C-group-like M12 was seen in all cells. The origins of both M3 and M12 defied identification presently. The t(13q14q) occurred in some. Generally there were three copies for N20, and single copy for X, N8 and N18. Occasionally there were three copies for N14.
Age:	54 years
Gender:	female
Ethnicity:	Caucasian
Comments:	The AGS cell line was derived from fragments of a tumor resected from a patient who had received no prior therapy. The cells have a plating efficiency of 34% in the medium below. The line was cured at the ATCC of a prior mycoplasma infection .Subsequently, AGS has been determined to be infected with Parainfluenza type 5 (PIV5 formerly known as SV5). [PubMed: 17509637]

ATCC complete growth medium: The base medium for this cell

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Cell Biology

ATCC® Number:	**CRL-5822™**	Order this Item	Price:	**$329.00**

Designations:	NCI-N87 [N87]
Depositors:	J Park
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** stomach **Disease:** gastric carcinoma **Derived from metastatic site:** liver
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** 1976
Receptors:	acetylcholine, muscarinic, expressed [23078]
Tumorigenic:	Yes
Oncogene:	myc +; erb B2 +
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 8,12 D13S317: 8,11 D16S539: 9,13 D5S818: 12,13 D7S820: 10,11 THO1: 9 TPOX: 9,11 vWA: 15,16
Cytogenetic Analysis:	near diploid; DM were present in 64% of cells examined
Gender:	male

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NCI-N87 cells express the surface glycoproteins carcinoembryonic

Cell Biology

ATCC® Number:	**HTB-14™**	Order this Item	Price:	**$279.00**

Designations:	U-87 MG
Depositors:	J Ponten
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** brain **Tumor Stage:** classified as grade IV as of 2007 **Disease:** glioblastoma; astrocytoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Tumorigenic:	Yes
Antigen Expression:	Blood Type A, Rh+
DNA Profile (STR):	Amelogenin: X CSF1PO: 10,11 D13S317: 8,11 D7S820: 8,9 D5S818: 11,12 D16S539: 12 vWA: 15,17 THO1: 9.3 TPOX: 8
Cytogenetic Analysis:	This is a hypodiploid human cell line with the modal chromosome number of 44 occurring in 48% of cells. The rate of higher ploidy was 5.9%., Twelve markers were common to all cells, including der(1)t(1;3) (p22;q21), der(16)t(1;16) (p22;p12), del(9) (p13) and nine others. The marker der(1) had two copies in most cells. There was only one copy of normal X. N1, N6 and N9 were not found.
	AK-1, 1

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Cell Biology

ATCC® Number:	**CRL-1620™**	Order this Item	Price:	**$279.00**

Designations:	A-172 [A172]
Depositors:	DJ Giard
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	
Source:	**Organ:** brain **Disease:** glioblastoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Tumorigenic:	No
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 9,12 D13S317: 11 D16S539: 12 D5S818: 11,12 D7S820: 11 THO1: 6,9.3 TPOX: 8,11 vWA: 20
Age:	53 years
Gender:	male
Propagation:	**ATCC complete growth medium:** The base medium for this cell line is ATCC-formulated Dulbecco's Modified Eagle's Medium, Catalog No. 30-2002. To make the complete growth medium, add the following components to the base medium: fetal bovine serum to a final concentration of 10%. **Temperature:** 37.0°C

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Protocol: Remove medium, and rinse with 0.25% trypsin, 0.03%

Cell Biology

ATCC® Number:	**CCL-240™** Order this Item	Price:	**$279.00**

Designations:	HL-60
Depositors:	RC Gallo
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	suspension
Organism:	*Homo sapiens* (human)
Morphology:	myeloblastic 
Source:	**Organ:** peripheral blood **Disease:** acute promyelocytic leukemia **Cell Type:** promyeloblast;
Cellular Products:	tumor necrosis factor (TNF), also known as tumor necrosis factor alpha (TNF-alpha, TNF alpha), after stimulation with phorbol myristic acid [23403]
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	complement, expressed [1050] Fc, expressed [1050]
Tumorigenic:	Yes
Oncogene:	myc +
DNA Profile (STR):	Amelogenin: X CSF1PO: 13,14 D13S317: 8,11 D16S539: 11 D5S818: 12 D7S820: 11,12 THO1: 7,8 TPOX: 8,11 vWA: 16

The stemline chromosome number is pseudodiploid with the 2S

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ATCC® Number:	**CCL-75™** Order this Item	Price:	**$279.00**

Designations:	WI-38
Depositors:	L Hayflick
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	fibroblast
Source:	**Organ:** lung **Disease:** normal **Cell Type:** fibroblast
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	testing [92346] [92389] transfection host (Nucleofection technology from Lonza Roche Transfection Reagents) viruscide testing
Virus Susceptibility:	Herpes simplex virus Pseudorabies virus Human poliovirus 1 Vesicular stomatitis, Glasgow (Indiana)
DNA Profile (STR):	Amelogenin: X CSF1PO: 10,12 D13S317: 11 D16S539: 11,12 D5S818: 10 D7S820: 9,11 THO1: 8,9.3 TPOX: 8 vWA: 19,20
Cytogenetic Analysis:	normal diploid
Isoenzymes:	G6PD, B
Age:	3 months gestation fetus
Gender:	female

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Cell Biology

ATCC® Number:	**CRL-1593.2™**	Order this Item	Price:	**$279.00**

Designations:	U-937
Depositors:	H Koren
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	suspension
Organism:	*Homo sapiens* (human)
Morphology:	monocyte
Source:	**Disease:** histiocytic lymphoma
Cellular Products:	lysozyme; beta-2-microglobulin (beta 2 microglobulin); tumor necrosis factor (TNF), also known as tumor necrosis factor alpha (TNF-alpha, TNF alpha), after stimulation with phorbol myristic acid (PMA)
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	The original U-937 cell line was established by Dr. K. Nilsson's laboratory in 1974 and he has requested the following: (1) In all papers reporting any use of this cell line or any derivatives thereof a direct reference should be made to Sundstrom and Nilsson (Int. J. Cancer 17: 565-577, 1976). (2) Any proposed commercial use of the cells should be negotiated with Professor Kenneth Nilsson, Rudbeck Laboratory, SE-751 85 Uppsala, Sweden. (3) No distribution of any of the cells or sublines derived therefrom should be made to third parties; (4) The cells should be used for non-clinical, non-commercial research only.
Isolation:	**Isolation date:** 1974
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	complement (C3)

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Amelogenin: X

Cell Biology

ATCC® Number:	**HTB-70™** Order this Item	Price:	**$329.00**
Designations:	SK-MEL-5		
Depositors:	T Takahashi		
Biosafety Level:	1		
Shipped:	frozen		
Medium & Serum:	See Propagation		
Growth Properties:	adherent		
Organism:	*Homo sapiens* (human)		
Morphology:	stellate 		
Source:	**Organ:** skin **Disease:** malignant melanoma **Derived from metastatic site:** axillary node		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		
Restrictions:	The cells are distributed for research purposes only. The Memorial Sloan-Kettering Cancer Center releases the line subject to the following: 1.) The cells or their products must not be distributed to third parties. Commercial interests are the exclusive property of Memorial Sloan-Kettering Cancer Center. 2.) Any proposed commercial use of these cells must first be negotiated with The Director, Office of Industrial Affairs, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021; phone (212) 639-6181; FAX (212) 717-3439.		
Applications:	transfection host (Roche Transfection Reagents)		
Tumorigenic:	Yes		
Antigen Expression:	Blood Type O; Rh+; HLA A2, A11, B40, Bw16		

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DNA Profile (STR): Amelogenin: X

Cell Biology

ATCC® Number:	**CCL-185™**	Order this Item	Price:	**$279.00**

Designations:	A549
Depositors:	M Lieber
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** lung **Disease:** carcinoma
Cellular Products:	keratin
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** 1972
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 10,12 D13S317: 11 D16S539: 11,12 D5S818: 11 D7S820: 8,11 THO1: 8,9.3 TPOX: 8,11 vWA: 14

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This is a hypotriploid human cell line with the modal chromosome

Cell Biology

ATCC® Number:	**CRL-5826™** Order this Item	Price:	**$329.00**

Designations:	NCI-H226 [H226]
Depositors:	AF Gazdar, JD Minna
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	Epithelial
Source:	**Organ:** lung **Disease:** squamous cell carcinoma; mesothelioma [23570] **Derived from metastatic site:** pleural effusion
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	The line is available with the following restrictions: 1. This cell line was deposited at the ATCC by Dr. A. Gazdar and Dr. J. Minna and is provided for research purposes only. Neither the cell line nor products derived from it may be sold or used for commercial purposes. Nor can the cells be distributed to third parties for purposes of sale, or producing for sale, cells or their products. The cells are provided as service to the research community. They are provided without warranty of merchantability or fitness for a particular purpose or any other warranty, expressed or implied. 2. Any proposed commercial use of the these cells, or their products must first be negotiated with the University of Texas Southwestern Medical Center at Dallas, 5323 Harry Hines Blvd., Dallas, Texas 75235. Telephone (214) 699-8056, FAX (214) 688-7233.
Isolation:	**Isolation date:** March, 1980
DNA Profile (STR):	Amelogenin: X,Y

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Cell Biology

ATCC® Number:	**HTB-177™** Order this Item	Price:	**$279.00**
Designations:	NCI-H460 [H460]		
Depositors:	AF Gazdar, JD Minna		
Biosafety Level:	1		
Shipped:	frozen		
Medium & Serum:	See Propagation		
Growth Properties:	adherent		
Organism:	*Homo sapiens* (human)		
Morphology:	epithelial		
Source:	**Organ:** lung **Disease:** carcinoma; large cell lung cancer **Derived from metastatic site:** pleural effusion		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		
Isolation:	**Isolation date:** 1982		
Tumorigenic:	Yes		
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 11,12 D13S317: 13 D16S539: 9 D5S818: 9,10 D7S820: 9,12 THO1: 9.3 TPOX: 8 vWA: 17		

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Cytogenetic Analysis: modal numbr = 57; range = 53 to 65.This is a hypotriploid human

Cell Biology

ATCC® Number:	**HTB-182™**	Order this Item	Price:	**$329.00**

Designations:	NCI-H520 [H520]
Depositors:	AF Gazdar, JD Minna
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** lung **Disease:** squamous cell carcinoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Roche Transfection Reagents)
Tumorigenic:	Yes
DNA Profile (STR):	Amelogenin: X CSF1PO: 10 D13S317: 10,11 D16S539: 8,13 D5S818: 12,13 D7S820: 8,12 THO1: 10 TPOX: 8 vWA: 18,19
Cytogenetic Analysis:	This is a hypotriploid human cell line. The modal chromosome number is 58 occurring at 30%. The frequency of higher ploidies was 3.2%. Over 30 marker chromosomes were common to all cells, and four others were found in some cells. Among the common markers were 1q+, t(1q8q), 2q+, der(16)t(3;16)(q21;q22), der(19)t(13;19)(q21;q13), and der(5)t(5;5)(p15pq13). Generally, there were two copies of der(5) in each cell. Normal Y and D group chromosomes were absent, and the X chromosome was single.
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Cell Biology

ATCC® Number:	**HTB-85™**	Order this Item	Price:	**$279.00**

Designations:	Saos-2
Depositors:	J Fogh, G Trempe
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** bone **Disease:** osteosarcoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	The cells are distributed for research purposes only. The Memorial Sloan-Kettering Cancer Center releases the line subject to the following: 1.) The cells or their products must not be distributed to third parties. Commercial interests are the exclusive property of Memorial Sloan-Kettering Cancer Center. 2.) Any proposed commercial use of these cells must first be negotiated with The Director, Office of Industrial Affairs, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021; phone (212) 639-6181; FAX (212) 717-3439.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Receptors:	epidermal growth factor (EGF); transforming growth factor beta (type 1 and type 2)
Tumorigenic:	No
Antigen Expression:	Blood Type B, Rh+; HLA A2, A3, Bw16, Bw47

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Amelogenin: X

Cell Biology

ATCC® Number:	**CRL-11732™**	Order this Item	Price:	**$329.00**

Designations:	OV-90
Depositors:	University of Montreal
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** ovary **Tumor Stage:** grade 3, stage IIIC **Disease:** malignant papillary serous adenocarcinoma **Derived from metastatic site:** ascites
Cellular Products:	keratin [49408]
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** August, 1992
Tumorigenic:	Yes
Oncogene:	her2/neu +, p53 (mutated, Ser --> Arg mutation at exon 6, codon 215)
DNA Profile (STR):	Amelogenin: X CSF1PO: 12,13 D13S317: 11,12 D16S539: 11 D5S818: 11,15 D7S820: 10,10.1 THO1: 9.3 TPOX: 8,10 vWA: 16,17
Cytogenetic Analysis:	46, XX, der(1)t(1;10)(p36;p15), hsr(3)(p11), der(9;17)(q10;q10), der(10)t(10;17)(p15;p12p13), der(13)t(13;13)(p11;q14) [49408]
Age:	64 years
Gender:	female

This cell line was initiated in August of 1992 from a patient of

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Cell Biology

ATCC® Number:	**CRL-1469™**	Order this Item	Price:	**$279.00**

Designations:	PANC-1
Depositors:	M Lieber
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** pancreas **Tissue:** duct **Disease:** epithelioid carcinoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
DNA Profile (STR):	Amelogenin: X CSF1PO: 10,12 D13S317: 11 D16S539: 11 D5S818: 11,13 D7S820: 8,10 THO1: 7,8 TPOX: 8,11 vWA: 15
Cytogenetic Analysis:	Chromosome studies indicate a modal number of 63 with 3 distinct marker chromosomes and a small ring chromosome. This is a hypertriploid human cell line. The modal chromosome number was 61, occurring in 32% of cells., However, cells with 63 chromosomes also occurred at a high frequency (22%). The rate of cells with higher ploidies was 8.5%.
Isoenzymes:	G6PD, B
Age:	56 years
Gender:	male
Ethnicity:	Caucasian

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Cell Biology

ATCC® Number:	**CRL-2553™**	Order this Item	Price:	**$429.00**

Designations:	Panc 02.03
Depositors:	EM Jaffee
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** pancreas **Disease:** adenocarcinoma
Cellular Products:	cytokeratins 7 and 18 [50655]
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Tumorigenic:	Yes
Oncogene:	K-ras +
Antigen Expression:	MHC class I +; MHC class II - [50655]
DNA Profile (STR):	Amelogenin: X CSF1PO: 11,12 D13S317: 12 D16S539: 11 D5S818: 12,13 D7S820: 9,10 THO1: 6 TPOX: 9,12 vWA: 17
Age:	70 years
Gender:	female
Ethnicity:	White

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Comments: Panc 02.03 is a pancreatic adenocarcinoma epithelial cell line

Cell Biology

ATCC® Number:	**CRL-2549™**	Order this Item	Price:	**$429.00**

Designations:	Panc 03.27
Depositors:	EM Jaffee
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** pancreas **Disease:** adenocarcinoma
Cellular Products:	cytokeratins 7 and 18
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Tumorigenic:	Yes
Oncogene:	K-ras + (wild-type)
Antigen Expression:	MHC class I +; MHC class II - [50655] Blood type A; Rh+
DNA Profile (STR):	Amelogenin: X CSF1PO: 10,11 D13S317: 11,12 D16S539: 12 D5S818: 12,13 D7S820: 8,13 THO1: 6 TPOX: 8,9 vWA: 16,17
Age:	65 years
Gender:	female
Ethnicity:	White

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Comments: Panc 03.27 is a pancreatic adenocarcinoma epithelial cell line

Cell Biology

ATCC® Number:	**CRL-2547™** Order this Item	Price:	**$329.00**

Designations:	Panc 10.05
Depositors:	EM Jaffee
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** pancreas **Disease:** adenocarcinoma
Cellular Products:	cytokeratins 7 and 18 [50655]
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Isolation:	**Isolation date:** 1992
Tumorigenic:	Yes
Oncogene:	K-ras +
Antigen Expression:	MHC class I +; MHC class II -
DNA Profile (STR):	Amelogenin: X CSF1PO: 12 D13S317: 12 D16S539: 9,12 D5S818: 13 D7S820: 8,9 THO1: 6,9.3 TPOX: 11 vWA: 16
Age:	adult
Gender:	male
Ethnicity:	White

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Panc 10.05 is a pancreatic adenocarcinoma epithelial cell line

Cell Biology

ATCC® Number:	**HTB-81™** Order this Item	Price:	**$279.00**

Designations:	DU 145
Depositors:	KR Stone
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** prostate **Disease:** carcinoma **Derived from metastatic site:** brain
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)
Tumorigenic:	Yes
Antigen Expression:	Blood Type O; Rh+
DNA Profile (STR):	D7S820: 7, 10, 11 D13S317: 12, 13, 14 D5S818: 10, 13 vWA: 17, 18, 19 THO1: 7 CSF1PO: 10, 11 TPOX: 11 D16S539: 11, 13 Amelogenin: X, Y

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Cytogenetic Analysis: This is a hypotriploid human cell line. Both 61 and 62 chromosome

Cell Biology

ATCC® Number:	**CRL-1740™** Order this Item	Price:	**$279.00**
Designations:	LNCaP clone FGC		
Depositors:	JS Horoszewicz		
Biosafety Level:	1		
Shipped:	frozen		
Medium & Serum:	See Propagation		
Growth Properties:	adherent, single cells and loosely attached clusters		
Organism:	*Homo sapiens* (human)		
Morphology:	epithelial 		
Source:	**Organ:** prostate **Disease:** carcinoma **Derived from metastatic site:** left supraclavicular lymph node		
Cellular Products:	human prostatic acid phosphatase; prostate specific antigen [21889]		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		
Restrictions:	Distribution of this material for commercial purposes will require execution of a Non-exclusive License Agreement. At the time of placing an order, customers must send a request to licensing@ATCC .org. Orders will be shipped when Customer Service receives confirmation from our Licensing officer.		
Isolation:	**Isolation date:** 1977		
Applications:	transfection host (Nucleofection technology from Lonza Roche Transfection Reagents)		
Receptors:	androgen receptor, positive; estrogen receptor, positive [23045]		
Tumorigenic:	Yes		

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DNA Profile (STR): Amelogenin: X,Y

Cell Biology

ATCC® Number:	**HTB-119™**	Order this Item	Price:	**$279.00**

Designations:	NCI-H69 [H69]
Depositors:	AF Gazdar
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	suspension, multicell aggregates
Organism:	*Homo sapiens* (human)
Morphology:	floating aggregates
Source:	**Organ:** lung **Disease:** carcinoma; small cell lung cancer
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Receptors:	insulin-like growth factor II (IGF II)
Tumorigenic:	Yes
Oncogene:	myc +; myb +; fes +; fms +; raf +; ras +
DNA Profile (STR):	CSF1PO: 10, 12 D13S317: 12 D16S539: 11 D5S818: 11, 13 D7S820: 9 THO1: 8, 9 TPOX: 10 vWA: 16, 17 Amelogenin: XY
Cytogenetic Analysis:	modal number = 76 to 78; range = 40 to 87 This is an aneuploid human male cell line. Monosomy of many of the normal chromosomes is noted as well as bisomy in this subtetraploid cell line; however, translocations and deletions involving many of the missing chromosomes are noted, and these chromosomal rearrangements appear to be stable and generally paired. Twelve marker chromosomes were identified including: der(16)t(1;16)(q21;q23), der(22)t(4;22)(q12;q13), der(12)t(11;12)(q23;p12), del(17)(p11), der(19)t(5;19)(?q21;q13) and others.
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Cell Biology

ATCC® Number:	**HTB-43™**	Order this Item	Price:	**$329.00**

Designations:	FaDu
Depositors:	SR Rangan
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial
Source:	**Organ:** pharynx **Disease:** squamous cell carcinoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Roche Transfection Reagents)
Tumorigenic:	Yes
DNA Profile (STR):	Amelogenin: None detected CSF1PO: 12 D13S317: 8, 9 D16S539: 11 D5S818: 12 D7S820: 11, 12 THO1: 8 TPOX: 11 vWA: 15, 17, 18
Cytogenetic Analysis:	(P16) hypodiploid to hypertriploid with modal number = 64
Isoenzymes:	AK-1, 1 ES-D, 1 G6PD, B GLO-I, 2 Me-2, 2 PGM1, 2 PGM3, 1
Age:	56 years
Gender:	male
Ethnicity:	Caucasian

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Cell Biology

ATCC® Number:	**CRL-1730™**	Order this Item	Price:	**$279.00**

Designations:	HUV-EC-C
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	endothelial 
Source:	**Organ:** umbilical vein **Tissue:** vascular endothelium **Disease:** normal **Cell Type:** endothelial
Cellular Products:	factor VIII [23284]
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (technology from amaxa)
Tumorigenic:	No
DNA Profile (STR):	Amelogenin: X CSF1PO: 11,12 D13S317: 9,11 D16S539: 11,12 D5S818: 11,12 D7S820: 8,12 THO1: 6,9.3 TPOX: 8,11 vWA: 16

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Karyology performed for one batch of CRL-1730 in 1996 reflected

Cell Biology

ATCC® Number:	**CRL-2214™**	Order this Item	Price:	**$429.00**

Designations:	MEF-1
Depositors:	TE Willnow
Biosafety Level:	2 [CELLS CONTAIN PAPOVAVIRUS]
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Mus musculus* (mouse)
Morphology:	fibroblast
Source:	**Cell Type:** fibroblastSV40 transformed
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Age:	embryo
Comments:	The MEF-1 cell line was initiated in 1993 by transfection of mouse embryo fibroblasts with an SV40 coding plasmid. The cells are wild-type for the low density lipoprotein receptor related protein (LRP). This cell line along with the PEA 10 (see ATCC CRL-2215) and PEA 13 (see ATCC CRL-2216) cell lines constitute a genetically defined system to study the endocytosis of ligands by the LRP. The above cell lines are the only available experimental system to study the effect of LRP deficiency because LRP deficient mouse embryos die in utero.
Propagation:	**ATCC complete growth medium:** The base medium for this cell line is ATCC-formulated Dulbecco's Modified Eagle's Medium, Catalog No. 30-2002. To make the complete growth medium, add the following components to the base medium: fetal bovine serum to a final concentration of 10%. **Temperature:** 37.0°C
Subculturing:	**Protocol:** Remove medium, rinse flask with fresh 0.25% trypsin,

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Cell Biology

ATCC® Number:	**CRL-6475™** Order this Item	Price:	**$279.00**

Designations:	B16-F10
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Mus musculus* (mouse)
Morphology:	mixture of spindle-shaped and epithelial-like cells 
Source:	**Organ:** skin **Strain:** C57BL/6J **Disease:** melanoma
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (technology from amaxa)
Propagation:	**ATCC complete growth medium:** The base medium for this cell line is ATCC-formulated Dulbecco's Modified Eagle's Medium, Catalog No. 30-2002. To make the complete growth medium, add the following components to the base medium: fetal bovine serum to a final concentration of 10%. **Temperature:** 37.0°C **Atmosphere:** air, 95%; carbon dioxide (CO2), 5%

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Protocol:

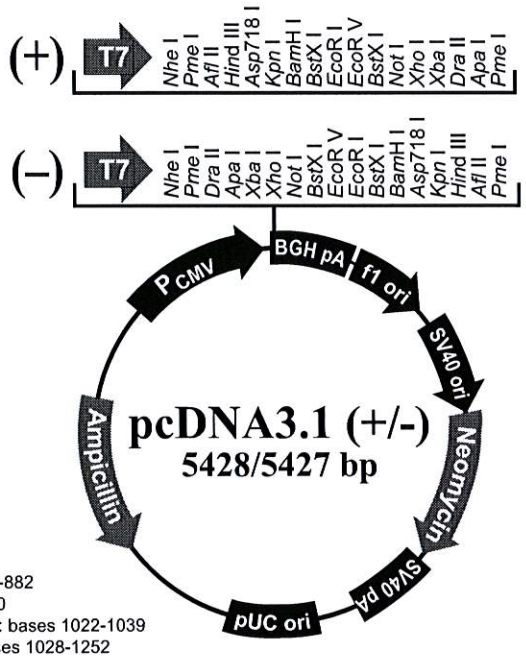
Appendix

pcDNA™3.1 Vectors

Plasmid(s)

Map

The figure below summarizes the features of the pcDNA™3.1(+) and pcDNA™3.1(–) vectors. **The complete sequences for pcDNA™3.1(+) and pcDNA™3.1(–) are available for down-loading from our World Wide Web site (www.invitrogen.com) or from Technical Support (see page 13).** Details of the multiple cloning sites are shown on page 3 for pcDNA™3.1(+) and page 4 for pcDNA™3.1(–).



Comments for pcDNA3.1 (+)
5428 nucleotides

CMV promoter: bases 232-819
T7 promoter/priming site: bases 863-882
Multiple cloning site: bases 895-1010
pcDNA3.1/BGH reverse priming site: bases 1022-1039
BGH polyadenylation sequence: bases 1028-1252
f1 origin: bases 1298-1726
SV40 early promoter and origin: bases 1731-2074
Neomycin resistance gene (ORF): bases 2136-2930
SV40 early polyadenylation signal: bases 3104-3234
pUC origin: bases 3617-4287 (complementary strand)
Ampicillin resistance gene (*bla*): bases 4432-5428 (complementary strand)
ORF: bases 4432-5292 (complementary strand)
Ribosome binding site: bases 5300-5304 (complementary strand)
bla promoter (P3): bases 5327-5333 (complementary strand)

continued on next page

invitrogen™ **Material Safety Data Sheet** **Revision Date:** 29-Apr-2010

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product code 350484
Product name pcDNA3.1/(+)

Company/Undertaking Identification

INVITROGEN CORPORATON
5791 VAN ALLEN WAY
PO BOX 6482
CARLSBAD, CA 92008
760-603-7200

INVITROGEN CORPORATION
5250 MAINWAY DRIVE
BURLINGTON, ONT
CANADA L7L 6A4
800-263-6236

GIBCO PRODUCTS
INVITROGEN CORPORATION
3175 STALEY ROAD P.O. BOX 68
GRAND ISLAND, NY 14072
716-774-6700

24 hour Emergency Response (Transport): 866-536-0631
301-431-8585
Outside of the U.S. ++1-301-431-8585

For research use only

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous/Non-hazardous Components
The product contains no substances which at their given concentration, are considered to be hazardous to health. We recommend handling all chemicals with caution.

3. HAZARDS IDENTIFICATION

Emergency Overview
The product contains no substances which at their given concentration, are considered to be hazardous to health

3. HAZARDS IDENTIFICATION

Form
Liquid

Principle Routes of Exposure/ Potential Health effects

Eyes	No information available
Skin	No information available
Inhalation	No information available
Ingestion	May be harmful if swallowed.

Specific effects

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects No information available

HMIS

Health	0
Flammability	0
Reactivity	0

4. FIRST AID MEASURES

Skin contact	Wash off immediately with plenty of water. If symptoms persist, call a physician.
Eye contact	Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.
Ingestion	Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Inhalation	Move to fresh air. If symptoms persist, call a physician.
Notes to physician	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Dry chemical
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Use personal protective equipment
Methods for cleaning up	Soak up with inert absorbent material.

7. HANDLING AND STORAGE

Handling	No special handling advice required
Storage	Keep in properly labelled containers

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls

Exposure limits

Engineering measures	Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Respiratory Protection	In case of insufficient ventilation wear suitable respiratory equipment
Hand protection	Protective gloves
Eye protection	Safety glasses with side-shields
Skin and body protection	Lightweight protective clothing.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice
Environmental exposure controls	Prevent product from entering drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Form	Liquid

Important Health Safety and Environmental Information

Boiling point/range	**°C** No data available	**°F** No data available
Melting point/range	**°C** No data available	**°F** No data available
Flash point	**°C** No data available	**°F** No data available
Autoignition temperature	**°C** No data available	**°F** No data available
Oxidizing properties	No information available	
Water solubility	No data available	

10. STABILITY AND REACTIVITY

Stability	Stable.
Materials to avoid	No information available
Hazardous decomposition products	No information available
Polymerization	Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Principle Routes of Exposure/ Potential Health effects

Eyes	No information available
Skin	No information available
Inhalation	No information available

Ingestion	May be harmful if swallowed.

Specific effects **(Long Term Effects)**

Carcinogenic effects	No information available
Mutagenic effects	No information available
Reproductive toxicity	No information available
Sensitization	No information available

Target Organ Effects No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	No information available.
Mobility	No information available.
Biodegradation	Inherently biodegradable.
Bioaccumulation	Does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations

14. TRANSPORT INFORMATION

IATA

Proper shipping name	Not classified as dangerous in the meaning of transport regulations
Hazard Class	No information available
Subsidiary Class	No information available
Packing group	No information available
UN-No	No information available

15. REGULATORY INFORMATION

International Inventories

U.S. Federal Regulations

SARA 313
This product is not regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contains HAPs.

U.S. State Regulations

California Proposition 65
This product does not contain chemicals listed under Proposition 65

WHMIS hazard class:
Non-controlled

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. OTHER INFORMATION

For research use only

The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since the Company cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS MSDS DOES NOT CONSTITUTE A WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

End of Safety Data Sheet

Subject: Fwd: Biological Agents Registry Form (Koropatnick)
From: Jennifer Stanley <jstanle2@uwo.ca>
Date: Wed, 17 Aug 2011 15:27:47 -0400
To: rfiguere@uwo.ca
CC: D Koropatnick <jkoropat@uwo.ca>

E-mail

Hi there

I got your fax this afternoon.
Thanks for sending the exemption letters (ie no permits required).

Regards
Jennifer

-------- Original Message --------
Subject: Biological Agents Registry Form (Koropatnick)
Date: Mon, 15 Aug 2011 15:06:55 -0400
From: Jennifer Stanley <jstanle2@uwo.ca>
To:D Koropatnick <jkoropat@uwo.ca>

Hi there Dr. Koropatnick -

Thank you for your recent submission.

I have a couple of questions about importation (Section 11).

What do you import from the U.S.?
Can you send (or fax 661-3420) the import permit from Health Canada/the Public Agency of Canada? (By the way the permt # listed in 11.4, BIO-LRCC-0008, is an internal permit number issued by UWO, not an import permit #).

Regards,
Jennifer

800 Commissioners Rd. East
London, Ontario N6A 4L6
Phone: (519)685-8500 ext.53276
Fax: (519)685-8616

London Regional Cancer Program

Fax

To:	Jennifer Stanley	**From:**	Rene Figueredo
Fax:	519-661-3420	**Date:**	August 17, 2011
Phone:		**Pages:**	3, including cover
Re:	Health Canada notification about importing cell lines from USA		

•**Comments:** If this fax does not transmit properly, please contact Rene at 519-685-8500 ext.53276.

Hi Jennifer,

Here is a copy of our latest communication from Health Canada regarding the importation of cell lines from the US. This is the kind of document we get every time that we apply for such a permit.

Please let me know if this is sufficient.

Thanks,

Rene Figueredo

Research Technician
Victoria Research Labs, Rm A4-150
790 Commissioners Rd East
London ON Canada. N6A 4L6
Phone: 519-685 8500 x53276
Fax: 519-685 8616
Email: rfiguere@uwo.ca

Office of Laboratory Security
Bureau de la sécurité des laboratoires
Centre for Emergency Preparedness and Response
Centre de mesures et d'interventions d'urgence
100 chemin Colonnade Road, Loc.: 6201A
Ottawa, Ontario, Canada K1A 0K9

Tel: (613) 957-1779 Fax: (613) 941-0596

Public Health Agency of Canada / Agence de la santé publique du Canada

WHO Collaborating Centre for Biosafety

Centre collaborateur OMS pour les techniques de biosécurité

TO/À: Dr. James Koropatnick

London Regional Cancer Program
London Health Sciences Centre

FAX: 519-685-8616 **TEL:** 519-685-8500 ext. 58654

DATE: JANUARY 19, 2010

PAGES TO FOLLOW / PAGES À SUIVRE: 1

* COMMENTS - COMMENTAIRES *

Please find attached a copy of your **"Notice"** concerning the importation of biological material that does NOT require a Public Health Agency of Canada import permit under the *Human Pathogens Importation Regulations (SOR/94-558)*. The original "Notice" is being sent to you through regular mail.

Be advised, however, that if these products contain matter of animal origin (such as bovine serum, etc.), you will need to contact the Canadian Food Inspection Agency (CFIA) at (613) 221-7068 for their consideration.

If you have not already done so, we would appreciate receiving your original application for a permit to import human pathogen(s) so our files may be kept up to date.

Vous trouverez sous pli une copie de votre **"Avis"** concernant l'importation de matières biologiques qui ne requiert PAS de permis d'importation de l'Agence de santé publique du Canada, selon le *Règlement sur l'importation des agents anthropopathogènes (DORS/94-558)*. La copie originale de votre "Avis" vous parviendra par la poste.

Veuillez noter, cependant, que si ces produits contiennent des substances d'origine animale (par exemple du serum bovin), vous devez contacter l'Agence canadienne d'inspection des aliments (ACIA) au (613) 221-7068 afin d'obtenir leur approbation.

Si ce n'est déjà fait, prière de nous faire parvenir votre demande originale de permis d'importation (d')agent(s) anthropopathogène(s) afin de tenir nos

Public Health Agency of Canada / Agence de santé publique du Canada

Your file / Votre référence

Our file / Notre référence

Name and/or Organization: **London Regional Cancer Program**
London Health Sciences Centre
Attn: Dr. James Koropatnick

Address: 790 Commissioners Road East
London, ON
N6A 4L6

The following biological material does not require a Public Health Agency of Canada import permit under the HPIR*:

Human ovarian carcinoma cell lines; OVCAR-3, OVCAR-5 and OVCAR-8, as provided by National Cancer Institute, Frederick Cancer Research and Development Centre, Fairview Center, Suite 205, 1003 West 7th Street, Frederick, MD, 21701-8527, USA.

JANUARY 19 2010

for Marianne Heisz
Chief, Importation and Regulatory Affairs

Date

NOTICE

***HPIR (HUMAN PATHOGENS IMPORTATION REGULATIONS)**

- We are in receipt of your application for an importation permit for biological materials. The **HPIR** apply **only** to the importation of infectious substances which cause human disease and their subsequent distribution or transfer. Other materials, which are deemed by the importer to be non-infectious for humans, **do not** require a permit under these regulations. It should be noted that the importation of biological materials may also be subject to other federal, provincial and municipal laws.
- For animal or plant pathogens one **must** apply to The Canadian Food Inspection Agency (CFIA) for a permit to import. If this material is of animal or plant origin it may also require a permit from the CFIA. Please contact the CFIA for their consideration. CFIA contact numbers are as follows:
  (613) 221-7068 for information concerning animal pathogens/material
  (613) 221-4195 for information concerning plant pathogens/material
- Importation of this material may also be subject to the requirements of the *New Substances Notification Regulations (Organisms)* of the *Canadian Environmental Protection Act, 1999*, administered by Environment Canada and Health Canada. Please contact the New Substances Information Line at 1-800-567-1999 or nsn-infoline@ec.gc.ca.
- You may be required to provide the Canada Border Services Agency (CBSA) customs officers with a declaration that the imported material is non-infectious and non-hazardous.

Should you require further information, please contact:
Office of Laboratory Security
Centre for Emergency Preparedness and Response
(613) 957-1779