Modification Form for Permit BIO-UWO-0176

Permit Holder: Subrata Chakrabarti

PLEASE ATTACH A MATERIAL SAFETY DATA SHEET OR EQUIVALENT FOR NEW BIOLOGICAL AGENTS.
PLEASE ATTACH A BRIEF DESCRIPTION OF THE WORK THAT EXPLAINS THE BIOLOGICAL AGENTS USED AND HOW THEY WILL BE STORED, USED AND DISPOSED OF.

Approved Personnel
(Please stroke out any personnel to be removed)

Rokhsana Mortuza

Biao Feng

Shali Chen

Additional Personnel
(Please list additional personnel here)

	Please stroke out any approved Biological Agent(s) to be removed	Write additional Biological Agent(s) for approval below. Give the full name
Approved Microorganisms		SIRT1 adenovirus (Ad-hSIRT1) (pAdenoGi)
Approved Primary and Established Cells	Rodent [primary]: Rat cardiomyocyte. Human [established]: HUVEC/293AH	HMEC
Approved Use of Human Source Material		
Approved Genetic Modifications (Plasmids/Vectors)	MEK 5 recombinant Adenovirus [plasmids]: pDC316	
Approved Use of Animals	rats/mice	
Approved Biological Toxin(s)		
Approved Gene Therapy		

Approved Plants and Insects		

As the Principal Investigator, I have ensured 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.shs.uwo.ca/workplace/newposition.htm

Signature of Permit Holder: Sulsata Chalmabanti.

Current Classification: 2+ **Containment Level for Added Biohazards:**

Date of Last Biohazardous Agents Registry Form: Feb 15, 2011

Date of Last Modification (if applicable):

BioSafety Officer(s)*:

***For work being performed at Institutions affiliated with Western University, the Safety Officer for the Institution where experiments will take place must sign the form prior to its being sent to Western University Biosafety Officer.**

Chair, Biohazards Subcommittee: **Date:**

Virus to be used from com company as received. No further modification to be done on virus genome. Will be used for *in vitro* purpose to infect HMEC, HUVEC and 293A.

Western University
BIOLOGICAL AGENTS REGISTRY FORM
Approved Biohazards Subcommittee: April 13, 2012
Biosafety Website: www.uwo.ca/humanresources/biosafety/

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? ☐ YES ☒ NO If **NO**, please proceed to Section 5.0

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

Bacteria Used for Cloning *	Plasmid(s) **	Source of Plasmid	Gene Transformed or Transfected	Will there be a change due to transformation of the bacteria?	Will there be a change in the pathogenicity of the bacteria after the genetic modification?	What are the consequences due to the transformation of the bacteria?	If plasmids are being used to transfect cells what is the consequence on the eukaryotic cells?

**** Please attach a Material Safety Data Sheet or equivalent if available.***
***** Please attach a plasmid map.***
******No Material Safety Data Sheet is required for the following strains of E. coli:***
http://www.uwo.ca/humanresources/docandform/docs/ohs/CFIA_Ecoli_list.pdf

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

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

**** Please attach a Material Safety Data Sheet or equivalent.***

4.3.1 Will virus be replication defective? ☐ YES ☐ NO

4.3.2 Will virus be infectious to humans or animals? ☐ YES ☐ NO

4.3.3 Will this be expected to increase the containment level required? ☐ YES ☐ NO

5.0 Will genetic sequences from the following be involved?

- HIV ☒ NO ☐ YES, specify
- HTLV 1 or 2 or genes ☒ NO ☐ YES, specify
- SV 40 Large T antigen ☒ NO ☐ YES
- E1A oncogene ☐ NO ☒ YES
- Known oncogenes ☒ NO ☐ YES, specify
- Other human or animal pathogen and or their toxins ☒ NO ☐ YES, specify

5.1 Is any work being conducted with prions or prion sequences? ☒ NO ☐ YES

Additional Comments: _____

8.0 Animal Experiments

8.1 Will live animals be used? ☒ YES ☐ NO If **NO**, please proceed to section 9.0

8.2 List animal species to be used: rat

8.3 AUS protocol number(s): 2010-001

8.4 List the location(s) for the animal experimentation and housing: ACVS

8.5 Will any of the agents listed in Sections 1-7 be used in live animals
☒ NO ☐ YES, specify:

8.6 Will the agent(s) be shed by the animal:
☐ YES ☒ NO, please justify:

8.7 Indicate the PHAC or CFIA containment level used: ☒ 1 ☐ 2 ☐ 2+ ☐ 3

9.0 Use of Animal species with Zoonotic Hazards

9.1 Will any animals with zoonotic hazards or their organs, tissues, lavages or other body fluids including blood be used (see list below)? ☐ YES ☒ NO - If **NO**, please proceed to section 10.0

9.2 Will live animals be used? ☐ YES ☐ NO

9.3 If **YES**, please specify the animal(s) used:

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

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

Print

Chemical Material Safety Data Sheet

Product: Ad-hSIRT1
Cat. #: 131079A

Date Updated: June 24th, 2010
Date Printed: July 3rd, 2012

Section 1: Product and Company Information

Product Name:	Ad-hSIRT1
Cat. No.:	131079A
Company:	ABM Inc.
Address:	#8-13520 Crestwood Place Richmond, BC V6V2G2
Phone:	604-247-2416
Fax:	604-247-2414
Emerg. Phone:	866-757-2414

Section 2: Composition and Information on Ingredients

Substance Name:	Adenovirus Product
CAS Number:	None
SARA 313:	No
Ingredient Name:	Ad-hSIRT1
CAS Number:	None
SARA 313:	No
Percent:	0.0001
Ingredient Name:	Dulbecco's Modified Eagle's Medium (Solution)
CAS Number:	None
SARA 313:	No
Percent:	89.9999
Ingredient Name:	Fetal Bovine Serum, Manufacturing Use
CAS Number:	None
SARA 313:	No
Percent:	10.0

Section 3: Hazard Identification

Emergency Overview

HMIS Classification

Health Hazard:	0
Reactivity:	0
Flammability:	0

NFPA Classification

Health Hazard:	0
Reactivity:	0
Flammability:	0

For additional information on toxicity, please refer to Section 11.

Section 4: First Aid Measures

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes. Assure adequate flushing by seperating the eyelids with fingers. Consult a physician.

Skin Contact
Wash off with soap and plenty of water. Consult a physician.

Inhalation
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

Ingestion
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special Protective Equipment for Fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Section 6: Accidental Release Measures

Personal Precautious
Exercise appropriate precautions to minimize direct contact with skin or eyes, and prevent inhalation of dust.

Methods for Cleaning up
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7: Handling and Storage

Handling
User Exposure: Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonger or repeated exposure.

Storage
Suitable: Keep tightly closed.
Store at -70C

Section 8: Exposure Controls and PPE

Engineering Controls
Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment
Resiratory:
Use respirators and components tested and approved uder appropriate government standards, such as NIOSH (USA) or CEN (EU). Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (USA) or Type P1 (EN143) dust masks.
Hand:
Protective gloves.
Eye:
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9: Physical and Chemical Properties

N/A

Section 10: Stability and Reactivity

Stability
Stable.

Materials to Avoid:

Strong oxidizing agents.

Hazardous Decomposition Products
Nature of decomposition products not known.

Hazardous Polymerization
Will not occur.

Section 11: Toxicological Information

Route of Exposure

Skin Contact:	May cuase irritation.
Skin Absorption:	May be harmful if absorbed through skin.
Eye Contact:	May cause eye irritation.
Ingestion:	May be harmful if swallowed.
Inhalation:	Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Section 12: Ecological Information

N/A

Section 13: Disposal Considerations

Contact a licensed, professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state/provincial, and local environment regulations.

Section 14: Transport Information

DOT
Proper Shipping Name: None
This substance is considered to be non-hazardous for transport.

IATA
This substance is considered to be non-hazardous for air transport.

Section 15: Regulatory Information

United States Regulatory Information
SARA LISTED: No

Canada Regulatory Information
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: No
NDSL: No

Section 16: Other Information

The information contained in this Material Safety Data Sheet is believed to be accurate, but it is the responsibility of the user or supplier to determine the applicability of these data to the formulation of necessary safety precautions.

Applied Biological Materials Inc. shall not be held responsible for any damage resulting from the use of the above product or the information contained in this Material Safety Data Sheet.

For Research Use Only

Subject: Re: Fwd: Chakrabarti Modification Form
From: Subrata Chakrabarti <Subrata.Chakrabarti@schulich.uwo.ca>
Date: 9/18/2012 5:12 PM
To: jstanle2@uwo.ca

We will transfect SIRT1 gene.
We believe that these transfection will prevent glucose induced changes.
Containment level required 2+

Thanks,
SC

New Info

Dr. Subrata Chakrabarti
Professor and Chair of Pathology, The University of Western Ontario.
Chief of Pathology and Laboratory Medicine, LHSC/SJHC.
339 Winderemere Rd.
London, ON, Canada N6A 5A5
Ph: (519)685-8500, X 36350
fax: (519)663-2930
http://publish.uwo.ca/~schakrab/

>>> Jennifer Stanley 09/18/12 5:08 PM >>>
Hi there
Please respond
Regards
Jennifer

-------- Original Message --------
Subject: Chakrabarti Modification Form
Date: Fri, 24 Aug 2012 17:11:17 -0400
From: Jennifer Stanley <jstanle2@uwo.ca>
To: Subrata Chakrabarti <subrata.chakrabarti@schulich.uwo.ca>

Hi there

Your form was recently reviewed by the Biohazards Subcommittee. Please address these comments and re-send:

> **Tabled:** A description is required indicating which genes the researcher will be transducing. Why are these genes transduced? The containment level also needs to be stated on the form.

Regards
Jennifer

THE UNIVERSITY OF WESTERN ONTARIO
BIOLOGICAL AGENTS REGISTRY FORM
Approved Biohazards Subcommittee: July 9, 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	SUBRATA CHAKRABARTI
DEPARTMENT	PATHOLOGY
ADDRESS	DSB 4033
PHONE NUMBER	86397
EMERGENCY PHONE NUMBER(S)	519-850-7643
EMAIL	SCHAKRAB@UWO.CA

Location of experimental work to be carried out: Building(s) DSB Room(s) 4033/4030/421

*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: CIHR, CDA, HSFO, ORF
GRANT TITLE(S): Pathology of Diabetic Retinopathy, Oncofetal fibronectin in diabetic heart disease, Vasoactive and cardioactive factors in diabetic heart disease, Ginseng in chronic diabetic complications.

List all personnel working under Principal Investigators supervision in this location:

Name	UWO E-mail Address	Date of Biosafety Training
Dr. Shali Chen	Schen4@uwo.ca	Sept 15, 2010 (renewal)
Dr. Biao Feng	Bfeng3@uwo.ca	June 15, 2010
Dr. Sen	Ssen8@uwo.ca	Sept 15, 2010 (to be taken
Ms. Yuexiu Wu	Ywu73@uwo.ca	May 2008
Ms. Roksana Mortuza	rmortuza@uwo.ca	Sept. 15, 2010 (to be completed)

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.

Adenovirus, vector and competent cells will be stored in the freezer under lock and key

Only Dr. Feng and Chen will use the virus

Adenovirus will be used in a ~~fume hood~~ biological safety cabinet 9L and mostly be used for cell culture experiments (We have already performed MEK5 experiments. We will use mostly p300 experiments).

Blood body fluid and animal tissue and carcasses will be disposed by incineration using UWO SOP .

We believe for these experiments level 2 containment is sufficient

Please include a one page research summary or teaching protocol.

Diabetic cardiomyopathy, a significant clinical problem, structurally demonstrates hypertrophy of cardiomyocytes, followed by cell death and focal myocardial fibrosis. Oxidative stress is a key event in the pathogenesis of chronic diabetic complications. We have previously demonstrated that in diabetes, oxidative stress causes activation of redox sensitive transcription factors. Transcription factors, such as NFκB and AP-1, are regulated by transcriptional co-activators with histone acetyl transferase (HAT) activity such as p300. Oxidative stress-induced activated poly(ADP)-ribose polymerase 1 (PARP) may interact directly with p300, enhancing interaction of NFκB to p300. Furthermore activities of p300 are balanced by inactivation of histone deacetylases (HDAC). We have demonstrated that p300 and PARP are upregulated in the hearts of diabetic animals. Such epigenetic mechanisms may influence microRNA (miRNA) production and vice versa. miRNAs are endogenous, ~20-25 nucleotides, which cause translational arrest or degradation of transcript through imperfect base pairing with 3' UTR of the target transcript. Several specific miRNAs have been identified in the heart. In other disease processes it has been demonstrated that HDAC inhibition may further act by altering miRNA levels. We propose, such interactions may be critical in the generation of downstream mediators causing cardiomyocyte hypertrophy in diabetes.

Hence we developed the following hypothesis: ***Diabetes-induced of alteration of specific miRNAs and p300 upregulation lead to activation of downstream mediators causing myocardial hypertrophy.*** The proposed experiments are based on the following specific aims:

Specific aim 1: To investigate whether glucose-induced cardiomyocyte hypertrophy is associated with alteration of specific miRNAs and whether such alterations are dependent on p300

Specific aim 2: To investigate whether the hearts of diabetic animals mimic in vitro situation (as in aim 1) and whether blocking such pathways leads to prevention of cardiac structural and functional deficit in the animals with type 1 and type 2 diabetes.

Specific aim 3: To investigate whether a novel nanotechnology based therapy can be used to deliver miRNA mimics into the cells and the heart.

We will examine specific aim 1, in neonatal and in adult rat cardiomyocytes exposed to various levels of glucose and insulin. We will further use siRNA, 'antagomirs' (miRNA blockers), miRNA mimics and specific chemical inhibitors to block various signaling pathways. The cells will be analysed morphometrically. Gene and protein expression of various molecules and examination of transcription factors will be performed.

In specific aim 2, we will use clinically relevant animal models of type 1 and type 2 diabetes. They will be investigated with respect to downstream signaling molecules and cellular damage in the heart. The animals will be subjected to various treatment modalities including miRNA mimics. In parallel, we will also generate transgenic mice with cardiac specific over expression of specific miRNA. We will investigate effects of such treatment on biochemical, functional and structural changes in the heart.

In aim 3, we will investigate novel nanotechnology based techniques to deliver miRNAmimics.

This proposal represents a comprehensive set of studies to investigate a specific pathologic process, i.e, cardiac hypertrophy in diabetes. Specifically, this proposal will elucidate the role of miRNA in diabetic cardiomyopathy and whether such alterations are controlled epigenetically through p300. We will determine whether blocking such pathways will prevent structural and functional changes in models of type 1 and type 2 diabetes. Understanding such mechanisms will help to develop preventive treatment for diabetic cardiomyopathy using a RNA-based approach.

1.0 Microorganisms

1.1 Does your work involve the use of biological agents? •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? •YES O 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:
ATTACHED

_____

_____

_____

1.2 Please complete the table below:

Name of Biological agent(s)*	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
Adenovirus	O Yes O No	O Yes O No	O Yes O No	1L	Microbix	O 1 • 2 O 2+ O 3
	O Yes O No	O Yes O No	O Yes O No			O 1 O 2 O 2+ O 3
	O Yes O No	O Yes O No	O Yes O No			O 1 O 2 O 2+ O 3
	O Yes O No	O Yes O No	O Yes O No			O 1 O 2 O 2+ O 3

*Please attach a Material Safety Data Sheet or equivalent from the supplier.

2.0 Cell Culture

2.1 Does your work involve the use of cell cultures? •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:

Cell Type	Is this cell type used in your work?	Source of Primary Cell Culture Tissue	AUS Protocol Number
Human	O Yes •No		Not applicable
Rodent	• Yes O No	Rat cardiomyocytes	2007-055
Non-human primate	O Yes • No		
Other (specify)	O Yes • 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)*	Supplier / Source
Human	• Yes O No	HUVEC/293A	ATCC/CLONETICS
Rodent	O Yes • No		
Non-human primate	O Yes • No		
Other (specify)	O Yes • No		

*Please attach a Material Safety Data Sheet or equivalent from the supplier. (For more information, see www.atcc.org)

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

3.0 Use of Human Source Materials

3.1 Does your work involve the use of human source materials? • 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?**	**Name of Infectious Agent (If applicable)**	**PHAC or CFIA Containment Level (Select one)**
Human Blood (whole) or other Body Fluid	LHSC	O Yes • Unknown		O 1 • 2 O 2+ O 3
Human Blood (fraction) or other Body Fluid	LHSC	O Yes • Unknown		O 1 • 2 O 2+ O 3
Human Organs or Tissues (unpreserved)	N/A	O Yes O Unknown		O 1 O 2 O 2+ O 3
Human Organs or Tissues (preserved)	N/A	Not Applicable		Not Applicable

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? • 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

Bacteria Used for Cloning *	Plasmid(s) **	Source of Plasmid	Gene Transfected	Describe the change that results from transformation or tranfection
Competent cell (E.coli DH5alpha)	pDC316	Invitrogen	P300	Change in expression

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

4.3 Will genetic modification(s) involving viral vectors be made? O YES, complete table below O NO

Virus Used for Vector Construction	Vector(s) *	Source of Vector	Gene(s) Transduced	Describe the change that results from transduction
Adenovirus	pDC316	Cell biolabs	MEK5	Increased production of MEK5

* Please attach a Material Safety Data Sheet or equivalent.

4.4 Will genetic sequences from the following be involved?

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

4.5 Will virus be replication defective? O YES •NO

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

4.7 Will this be expected to increase the containment level required? O YES •NO Level 2 plus JF

5.0 Human Gene Therapy Trials

5.1 Will human clinical trials be conducted involving a biological agent? O YES •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? •YES O NO If no, please proceed to section 7.0

6.2 Name of animal species to be used Rats/Mice

6.3 AUS protocol # 2007-055/2010-001

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

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

_____

_____

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 •No If no, please proceed to section 8.0

7.2 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

8.0 Biological Toxins

8.1 Will toxins of biological origin be used? O YES • 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 • 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 • 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? YES ● NO
If YES, Please attach the CFIA permit & describe any CFIA permit conditions:
_____
_____

11.0 Import Requirements

11.1 Will any of the above agents be imported? O YES, please give country of origin_____
If no, please proceed to Section 12.0

11.2 Has an Import Permit been obtained from HC for human pathogens? O YES • NO

11.3 Has an import permit been obtained from CFIA for animal or plant pathogens? O YES • NO

11.4 Has the import permit been sent to OHS? ● YES, please provide permit # _____ • 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 Subrata Chakrabarti.

13.0 Containment Levels

Level 2 plus inspection Feb 10, 2011 JS.

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 ◉ 2 (O 2+) O 3

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

◉ YES, permit # if on-campus B1O-UWO-0176

O NO, please certify

O NOT REQUIRED for Level 1 containment

14.0 Procedures to be Followed

14.1 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 Subrata Chakrabarti Date: 09/09/2010

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

See E-mail

14.3 Please outline what will be done if there is an exposure to such as a needlestick injury:

UWO guidelines will be followed.
UWO Biosafety Manual will be followed.

15.0 Approvals

1) UWO Biohazards Subcommittee: SIGNATURE: [signature] Date: 15 Feb 2011

2) Safety Officer for the University of Western Ontario
SIGNATURE: JStrunley Date: Feb 14, 2011

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

Approval Number: B1O-UWO-0176 Expiry Date (3 years from Approval): Feb 14, 2014

Special Conditions of Approval:

level 2+ work can only be done after items from level 2+ inspection (Feb 10, 2011) are in place. JS.

E-mail - 14.3

14.3 Details

The following emergency response procedures shall be followed when a worker has been potentially exposed to a biohazardous agents via a needlestick, cut, animal bite or scratch, via mucous membrane contact, or via non-intact skin contact.

Worker

1. The exposed site must be washed immediately.
a) In case of a needlestick, cut, animal bite or scratch, wash with soap and water after allowing the wound to bleed freely.
b) If mucous (eyes, nose, mouth) membrane or non-intact (cuts, rash, eczema or dermatitis) skin contact, flush with water at the nearest faucet or eye wash station for a minimum of ten minutes.
2. The worker must immediately inform the Supervisor/Principal Investigator of the exposure incident.
3. The worker must seek prompt medical attention at Workplace Health (during the hours of operation), the nearest hospital emergency department or emergency clinic, or a Medical Practitioner of their choosing. Any information including the Material Safety Data Sheet or equivalent for the biohazardous agent must also be taken to the care provider.
4. The worker must provide information for a Accident/Incident Report (obtained from her/his Supervisor/Principal Investigator), describing the incident in detail, including the route of exposure and the emergency actions taken, and a description of the worker's duties as they relate to the exposure incident.

Supervisor / Principal Investigator

1. Supervisors/Principal Investigators must complete and sign the University Accident/Incident Report.
2. The supervisor must ensure that exposure incidents are reported within 24 hours to Human Resources, fax (519) 661-2079. The form can be found at: http://www.uwo.ca/humanresources/facultystaff/h_and_s/acc_inc/accident_inc_index.htm
3. The supervisor must refer the affected worker(s) to the nearest hospital emergency department or emergency clinic, or preferably, to Workplace Health during hours of operation.

4. The worker and/or supervisor will also contact Workplace Health: ext. 82047
University of Western Ontario Police: 911 from any campus phone or 519-661-3300 from a cellular or off-campus phone

-------- Original Message --------
Subject: Re: Biological Agents Registry Form: Chakrabarti
Date: Wed, 10 Nov 2010 17:06:34 -0500
From: Subrata Chakrabarti <subrata.chakrabarti@schulich.uwo.ca>
To:jstanle2@uwo.ca

There will be an over expression.
Please see attached.
thank you for all your help.
Sc

Dr. Subrata Chakrabarti
Professor, Dept. of Pathology
The University of Western Ontario
Pathologist, London Health Sc. Ctr
London, Ontario
Ph: (519)685-8500, X36350
Fax: (519)663-2930
Website: http://publish.uwo.ca/%7Eschakrab/

>>> Jennifer Stanley 11/10/10 11:25 AM >>>
Thanks Dr. Chakrabarti

I think the only outstanding question is the last column of Table 4.3 - "Describe the change that results from transduction". This is particularly important to know since MEK5 is an oncogene. Is there over-expression? suppression?

Regards
Jennifer

invitrogen

Material Safety Data Sheet

Revision Date: 20-Sep-2005

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

Product code 18258
Product name ME DH5A COMPETENT CELLS

Contact manufacturer
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 %
dimethylsulfoxide	67-68-5	3-7

3. HAZARDS IDENTIFICATION

Emergency Overview
Irritating to eyes. Irritating to skin. Components of the product may be absorbed into the body through the skin.

Form
Liquid

Principle Routes of Exposure/ Potential Health effects

Eyes	Irritating to eyes.
Skin	Irritating to skin. Components of the product may be absorbed into the body through the skin.
Inhalation	May cause irritation of respiratory tract.
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 — Eyes. Skin.

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	Avoid contact with skin and eyes.
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)
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	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 189	°F No data available
Melting point/range	°C 18.4	°F No data available
Flash point	°C 94	°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 under normal conditions.
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)
dimethylsulfoxide	14500 mg/kg (Rat)	No data available	No data available

Principle Routes of Exposure/ Potential Health effects

Eyes	Irritating to eyes.
Skin	Irritating to skin. Components of the product may be absorbed into the body through the skin.
Inhalation	May cause irritation of respiratory tract.
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 — Eyes. Skin.

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

Proper shipping name Not classified as dangerous within the meaning of transport regulations

15. REGULATORY INFORMATION

International Inventories

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

U.S. Federal Regulations

SARA 313
Not regulated

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product contains the following HAPs:

U.S. State Regulations

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

California Proposition 65
This product contains the following Proposition 65 chemicals:

WHMIS hazard class:
D2B Toxic materials

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

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

Product code 460700
Product name SOC Media

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.

3. HAZARDS IDENTIFICATION

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

Form
Liquid

3. HAZARDS IDENTIFICATION

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	No Information Available
Flammability	No Information Available
Reactivity	No Information Available

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

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	Extremely soluble in water.	

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

16. OTHER INFORMATION

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

Cell line info

ATCC

MATERIAL SAFETY DATA SHEET

MSDS FOR ANIMAL CELL CULTURES (Biosafety Level 1 or 2)

ATCC cultures are not hazardous as defined by OSHA 1910.1200. However, as live cells they are potential biohazards.

ATCC Emergency Telephone: (703) 365-2710 (24 hours)
Chemtrec: (800) 424-9300
To be used only in the event of an emergency involving a spill, leak, fire, exposure or accident.

Description

Either frozen or growing cells shipped in liquid cell culture medium (a mixture of components that may include, but is not limited to: inorganic salts, vitamins, amino acids, carbohydrates and other nutrients dissolved in water).

SECTION I

Hazardous Ingredients

Frozen cultures may contain 5 to 10% Dimethyl sulfoxide (DMSO)

SECTION II

Physical data

Pink or red aqueous liquid

SECTION III

Health hazards

For Biosafety Level 1 Cell Lines

This cell line is not known to harbor an agent known to cause disease in healthy adult humans. This cell line has **NOT** been screened for Hepatitis B, human immunodeficiency viruses or other adventitious agents. Handle as a potentially biohazardous material under at least Biosafety Level 1 containment.

For Biosafety Level 2 Cell Lines

This cell line is known to contain an agent that requires handling at Biosafety Level 2 containment [U.S. Government Publication **Biosafety in Microbiological and Biomedical Laboratories** (CDC, 1999)]. These agents have been associated with human disease. This cell line has **NOT** been screened for Hepatitis B, human immunodeficiency viruses or other adventitious agents. Cell lines derived from primate lymphoid tissue may fall under the regulations of 29 CFR 1910.1030 Bloodborne Pathogens.

SECTION IV

Fire and explosion

Not applicable

SECTION V

Reactivity data

Stable. Hazardous polymerization will not occur.

SECTION VI

Method of disposal

Spill: Contain the spill and decontaminate using suitable disinfectants such as chlorine bleach or 70% ethyl or isopropyl alcohol.

Waste disposal: Dispose of cultures and exposed materials by autoclaving at 121°C for 20 minutes. Follow all Federal, State and local regulations.

SECTION VII

Special protection information

For Biosafety Level 1 Cell Lines

Handle as a potentially biohazardous material under at least Biosafety Level 1 containment. Cell lines derived from primate lymphoid tissue may fall under the regulations of 29 CFR 1910.1030 Bloodborne Pathogens.

For Biosafety Level 2 Cell Lines

Handle as a potentially biohazardous material under at least Biosafety Level 2 containment. Cell lines derived from primate lymphoid tissue may fall under the regulations of 29 CFR 1910.1030 Bloodborne Pathogens.

SECTION VIII

Special precautions or comments

ATCC recommends that appropriate safety procedures be used when handling all cell lines, especially those derived from human or other primate material. Detailed discussions of laboratory safety procedures are provided in **Laboratory Safety: Principles and Practice** (Fleming, et al., 1995) the ATCC manual on quality control (Hay, et al., 1992), the Journal of Tissue Culture Methods (Caputo, 1988), and in the U.S. Government Publication, **Biosafety in Microbiological and Biomedical Laboratories** (CDC, 1999). This publication is available in its entirety in the Center for Disease Control Office of Health and Safety's web site at http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm.

THE ABOVE INFORMATION IS CORRECT TO THE BEST OF OUR KNOWLEDGE. ALL MATERIALS AND MIXTURES MAY PRESENT UNKNOWN HAZARDS AND SHOULD BE USED WITH CAUTION. THE USER SHOULD MAKE INDEPENDENT DECISIONS REGARDING THE COMPLETENESS OF THE INFORMATION BASED ON ALL SOURCES AVAILABLE. ATCC SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR CONTACT WITH THE ABOVE PRODUCT.

February 2002

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

Product code 460700
Product name SOC Media

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.

3. HAZARDS IDENTIFICATION

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

Form
Liquid

3. HAZARDS IDENTIFICATION

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	No Information Available
Flammability	No Information Available
Reactivity	No Information Available

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

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	Extremely soluble in water.	

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

16. OTHER INFORMATION

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

Cell Biology

ATCC® Number:	**CRL-1730™** Order this Item	Price:	**$280.00**

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
Cytogenetic Analysis:	This is a hypodiploid human cell line. The modal chromosome number was 45 occurring in 72% of cells counted. The rate of polyploid cells was 15.8%. All cells had monosomic N13 and the subclone with additional monosomic N15 predominates. Other coexisting subclones include those with 46,XX,-11,-13,i(11p),i(11q) and 46,XX,+11,-13 karyotypes. Both X chromosomes appear normal.

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

BioProducts

Cell, microbial and molecular genomics products for the life sciences

BioServices

Bio-materials management; basic repository to complex partnership-level services

invitrogen

Material Safety Data Sheet

Revision Date: 16-Dec-2005

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

Product code R70507
Product name 293A Cell Line

Contact manufacturer
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 %
Dimethyl Sulfoxide	67-68-5	5-10

3. HAZARDS IDENTIFICATION

Emergency Overview

Irritating to eyes. Irritating to skin. Components of the product may be absorbed into the body through the skin.

Form
Liquid

Principle Routes of Exposure/ Potential Health effects

Eyes Irritating to eyes.
Skin Irritating to skin. Components of the product may be absorbed into the body through the skin.
Inhalation May cause irritation of respiratory tract.
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 Eyes. Skin.

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	Avoid contact with skin and eyes.
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)
Dimethyl Sulfoxide	-	-	-	-

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 under normal conditions.
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)
Dimethyl Sulfoxide	14500 mg/kg (Rat)	No data available	No data available

Principle Routes of Exposure/ Potential Health effects

Eyes	Irritating to eyes.
Skin	Irritating to skin. Components of the product may be absorbed into the body through the skin.
Inhalation	May cause irritation of respiratory tract.
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 — Eyes. Skin.

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
Dimethyl Sulfoxide	Listed	Listed	Listed	Listed	-	Listed

U.S. Federal Regulations

SARA 313
Not regulated

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product contains the following HAPs:

U.S. State Regulations

Chemical Name	Massachusetts - RTK	New Jersey - RTK	Pennsylvania - RTK	Illinois - RTK	Rhode Island - RTK
Dimethyl Sulfoxide	-	-	-	-	-

California Proposition 65
This product contains the following Proposition 65 chemicals:

WHMIS hazard class:
Not determined

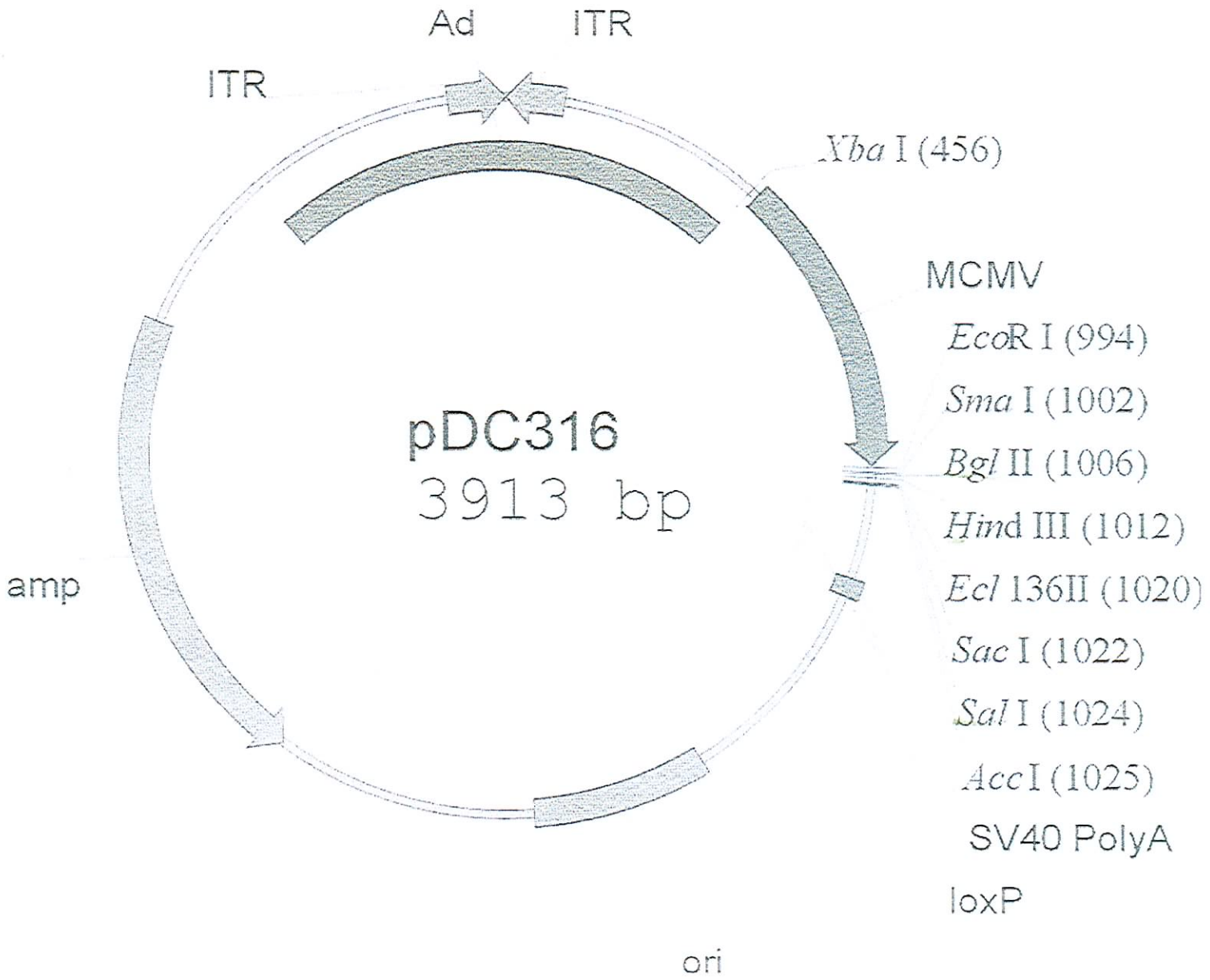
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

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


Ad
ITR
ITR
Xba I (456)
MCMV
EcoR I (994)
Sma I (1002)
Bgl II (1006)
Hind III (1012)
Ecl 136II (1020)
Sac I (1022)
Sal I (1024)
Acc I (1025)
SV40 PolyA
loxP
pDC316
3913 bp
amp
ori

Vector Info

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

Import Permit(s)

University of Western Ontario
Room 4033 DSB
1151 Richmond Street
London, Ontario
N6A 5B8

Your file *Votre référence*

Our file *Notre référence*

Dear Ms. Yuexiu Wu,

Enclosed you will find your Public Health Agency of Canada permit to import human pathogen(s), **P-14905**.

Due to the nature of the material requested for import, some additional conditions apply. Please review and note the conditions of import, in particular conditions #8, #9, #10 and #11. Condition #8 states that "Primary isolation, identification and/or manipulation may be done in level 2 containment (physical requirements) using containment level 3 operational requirements. Condition #9 states that "No imported material may be removed to another location, or transferred into the possession of a person other than the importer, without the permission of the director [of the Office of Laboratory Security, Public Health Agency of Canada]". Condition #10 states that "The Director [of the Office of Laboratory Security, Public Health Agency of Canada] must approve all new work with the imported material involving construction of recombinants that require an increase of containment from level 2". Condition #11 states that "No culturing of Risk Group 3 pathogens shall be done." Please refer to the Public Health Agency of Canada's Laboratory Biosafety Guidelines, 3rd edition, 2004, pages 23-26, for a complete description of containment level 3 operational practices. These can be found on our website at the following address:
http://www.phac-aspc.gc.ca/ols-bsl/lbg-ldmbl/index.html.

If you have any questions or comments regarding this matter, please do not hesitate to contact our office.

Sincerely,

for Stacey Mantha
A/Chief, Importation and Regulatory Affairs
Office of Laboratory Security
Centre for Emergency Preparedness and Response
100 Colonnade Road, Loc.: 6201A
Ottawa, Ontario, Canada K1A 0K9
Phone: (613) 957-1779
Fax: (613) 941-0596

JANUARY 03, 2008
Date

Enclosure.

Canada

Public Health Agency of Canada

Centre for Emergency Preparedness and Response

Permit to import human pathogen(s)

Under the authority of the Human Pathogens Importation Regulations

Agence de santé publique du Canada
Centre de mesures et d'interventions d'urgence

Permis d'importation d'agent(s) anthropopathogène(s)

Sous le régime du Règlement sur l'importation des agents anthropopathogènes

Permit no.-Permis no.

P- 14926

Importer-Name, address and postal code - Importateur-Nom, adresse et code postal	Facsimile-Télécopieur	Telephone no.- No. de téléphone
University of Western Ontario Room 4033 DSB 1151 Richmond Street London, ON N6A 5B8	(519) 661-3370	(519) 685-8500 ext. 86397

Attn.: Yuexiu Wu

Supplier-Name and address - Fournisseur-Nom et adresse

Cell Biolabs Inc.
10225 Baumes Canyon Road, Suite A103
San Diego, CA 92121, USA

Name(s) of Port(s) of Entry- To Clear Customs at Port(s) of entry
Nom(s) de(s) point(s) d'entrée -Dédouanement au(x) point(s) d'entrée

Various ports

Description of Pathogen(s)-For the importation of- Description de(s) agent(s) anthropopathogène(s)-Pour l'importation de

GFP Human Recombinant Adenovirus.

On the following terms and conditions as marked:-Selon les conditions indiquées:

1.	Work involving any of the imported material shall be limited to *in vitro* laboratory studies.	■ Les travaux auxquels la matière importée est destinée doivent se limiter à des études de laboratoire *in vitro*.
2.	Domestic animals, including poultry, cattle, sheep, swine and horses, shall not be directly or indirectly exposed to infection by any of the imported material.	■ Les animaux domestiques, y compris les volailles, bovins, ovins, porcins et chevaux, ne doivent pas être exposés, directement ou indirectement, à l'infection par la matière importée.
3.	All animals exposed to infection by any of the imported material shall be so exposed and held only in isolated insect-and rodent-proof facilities	☐ Les animaux exposés à l'infection par la matière importée doivent y être exposés et être gardés uniquement dans des installations isolées à l'abri des insectes et des rongeurs
4.	All equipment, animal pens, cages, bedding, waste and other articles under the importer's control, that come in direct or indirect contact with any of the imported material, shall be sterilized by autoclaving or incinerated	■ L'équipement, les enclos pour animaux, les cages, les litières, les déchets et tout autre article sous la responsabilité de l'importateur qui viennent en contact direct ou indirect avec la matière importée doivent être stérilisés par autoclavage ou incinérés
5.	Packaging materials, containers and all unused portions of the imported material shall be sterilized by autoclaving or incinerated.	☐ Le matériel d'emballage, les récipients et toute partie inutilisée de la matière importée doivent être stérilisés par autoclavage ou incinérés.
6.	No work on the imported material shall be done, except work conducted or directed by the importer in the facilities described in the application for this permit. NO HUMAN PATHOGEN BELONGING TO RISK GROUP 3 OR 4 MAY BE REMOVED TO ANOTHER LOCATION, OR TRANSFERRED INTO THE POSSESSION OF A PERSON OTHER THAN THE IMPORTER, WITHOUT THE PERMISSION OF THE DIRECTOR	■ La matière importée ne peut servir qu'aux travaux effectués ou dirigés par l'importateur dans les installations décrites dans la demande de permis. AUCUNE AGENT ANTHROPOPATHOGÈNE OU GROUPE DE RISQUE 3 OU 4 NE PEUT ÊTRE TRANSPORTÉ, SANS LA PERMISSION DU DIRECTEUR, VERS UN AUTRE LIEU OU ÊTRE MIS EN LA POSSESSION D'UNE AUTRE PERSONNE QUE L'IMPORTATEUR.
7.	On completion of the importer's work involving the imported human pathogen, the pathogen and all its derivatives shall be destroyed	■ Au terme des travaux de l'importateur auxquels a servi l'agent anthropopathogène importé, celui-ci et tous ses dérivés doivent être détruits
8.	Primary isolation, identification and/or manipulation may be done in level 2 containment (physical requirements) using containment level 3 operational requirements	☐ On peut accomplir l'isolation, l'identification primaire, et/ou la manipulation au niveau de confinement 2 (exigences physiques) en utilisant les exigences opérationnelles de niveau de confinement 3
9.	NO IMPORTED MATERIAL MAY BE REMOVED TO ANOTHER LOCATION, OR TRANSFERRED INTO THE POSSESSION OF A PERSON OTHER THAN THE IMPORTER, WITHOUT THE PERMISSION OF THE DIRECTOR	■ AUCUNE MATIÈRE IMPORTÉE NE PEUT ÊTRE TRANSPORTÉE, SANS LA PERMISSION DU DIRECTEUR, VERS UN AUTRE LIEU OU ÊTRE MISE EN LA POSSESSION D'UNE AUTRE PERSONNE QUE L'IMPORTATEUR
10.	The Director must approve all new work with the imported material involving construction of recombinants that requires an increase of containment from level 2	■ Tous nouveaux travaux de manipulation génétique (recombiné) avec la matière importée qui demandera que le niveau 2 de confinement soit augmenté exigera l'approbation du Directeur
11.	No culturing of Risk Group 3 or 4 pathogens shall be done	☐ Aucune culture d'agent anthropopathogène du Groupe de risque 3 ou 4 ne sera entreprise.

12. **This permit is valid only for:**
Le présent permis n'est valide que pour:

☐ a) a single entry into Canada or
une seule entrée au Canada ou

■ b) importations at intervals of
les importations effectuées à intervalles de

during the period beginning on
au cours de la période commençant le
JANUARY 3, 2008

and ending on
et se terminant le
JANUARY 31 [illegible]

Authorization-Signature of Director
Autorisation-Signature du Directeur

for Stacey Martha

Date JANUARY [illegible], 2008

Note: Transporting and otherwise dealing with imported material are subject to federal, provincial and municipal laws (if any), to the extent that those laws apply in respect of that material.

Nota : Les opérations relatives à la matière importée, y compris le transport, sont assujetties aux lois fédérales, provinciales et aux règlements municipaux applicables.

Canada

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

Your file Votre référence

Our file Notre référence

University of Western Ontario
Room 4033 DSB
1151 Richmond Street
London, Ontario
N6A 5B8

Dear Ms. Yuexiu Wu,

Enclosed you will find your Public Health Agency of Canada permit to import human pathogen(s), **P-14926**.

As the material listed for import contains recombinant components, some additional conditions apply. Please review and note the conditions of import, in particular conditions #9 and #10. Condition #9 states that "No imported material may be removed to another location, or transferred into the possession of a person other than the importer, without the permission of the director [of the Office of Laboratory Security, Public Health Agency of Canada]". Additionally, condition #10 states that "The Director [of the Office of Laboratory Security, Public Health Agency of Canada] must approve all new work with the imported material involving construction of recombinants that require an increase of containment from level 2".

If you have any questions or comments regarding this matter, please do not hesitate to contact our office.

Sincerely,

JANUARY 03 2008
Date

for Stacey Mantha
A/Chief, Importation and Regulatory Affairs
Office of Laboratory Security
Centre for Emergency Preparedness and Response
100 Colonnade Road, Loc.: 6201A
Ottawa, Ontario, Canada K1A 0K9
Phone: (613) 957-1779
Fax: (613) 941-0596

Enclosure.

Canada

Public Health Agency of Canada

Centre for Emergency Preparedness and Response

Permit to Import human pathogen(s)

Under the authority of the Human Pathogens Importation Regulations

Agence de santé publique du Canada
Centre de mesures et d'interventions d'urgence

Permis d'importation d'agent(s) anthropopathogène(s)

Sous le régime du Règlement sur l'importation des agents anthropopathogènes

Permit no.-Permis no

P. 14905

Importer-Name, address and postal code - Importateur-Nom, adresse et code postal

University of Western Ontario
Room 4033 DSB
1151 Richmond Street
London, ON N6A 5B8

Attn.: Yuexiu Wu

Facsimile-Télécopieur: (519) 661-3370

Telephone no.- No. de téléphone: (519) 685-8500 ext. 86397

Supplier-Name and address - Fournisseur-Nom et adresse

Cell Biolabs Inc.
10225 Baumes Canyon Road, Suite A103
San Diego, CA 92121, USA

Name(s) of Port(s) of Entry- To Clear Customs at Port(s) of entry
Nom(s) de(s) point(s) d'entrée -Dédouanement au(x) point(s) d'entrée

Various ports

Description of Pathogen(s)-For the importation of- Description de(s) agent(s) anthropopathogène(s)-Pour l'importation de

MEK5 Human Recombinant Adenovirus (Dominant Negative) and
MEK5 Human Recombinant Adenovirus (Constitutively Active).

On the following terms and conditions as marked:-Selon les conditions indiquées:

1	Work involving any of the imported material shall be limited to *in vitro* laboratory studies	■	Les travaux auxquels la matière importée est destinée doivent se limiter à des études de laboratoire *in vitro*
2	Domestic animals, including poultry, cattle, sheep, swine and horses, shall not be directly or indirectly exposed to infection by any of the imported material	■	Les animaux domestiques, y compris les volailles, bovins, ovins, porcins et chevaux, ne doivent pas être exposés, directement ou indirectement, à l'infection par la matière importée
3	All animals exposed to infection by any of the imported material shall be so exposed and held only in isolated insect-and rodent-proof facilities	☐	Les animaux exposés à l'infection par la matière importée doivent y être exposés et être gardés uniquement dans des installations isolées à l'abri des insectes et des rongeurs
4	All equipment, animal pens, cages, bedding, waste and other articles under the importer's control, that come in direct or indirect contact with any of the imported material, shall be sterilized by autoclaving or incinerated	■	L'équipement, les enclos pour animaux, les cages, les literes, les déchets et tout autre article sous la responsabilité de l'importateur qui viennent en contact direct ou indirect avec la matière importée doivent être stérilisés par autoclavage ou incinérés
5	Packaging materials, containers and all unused portions of the imported material shall be sterilized by autoclaving or incinerated	☐	Le matériel d'emballage, les récipients et toute partie inutilisée de la matière importée doivent être stérilisés par autoclavage ou incinérés.
6	No work on the imported material shall be done, except work conducted or directed by the importer in the facilities described in the application for this permit. NO HUMAN PATHOGEN BELONGING TO RISK GROUP 3 OR 4 MAY BE REMOVED TO ANOTHER LOCATION, OR TRANSFERRED INTO THE POSSESSION OF A PERSON OTHER THAN THE IMPORTER, WITHOUT THE PERMISSION OF THE DIRECTOR	■	La matière importée ne peut servir qu'aux travaux effectués ou dirigés par l'importateur dans les installations décrites dans la demande de permis. AUCUNE AGENT ANTHROPOPATHOGÈNE DU GROUPE DE RISQUE 3 OU 4 NE PEUT ÊTRE TRANSPORTÉ, SANS LA PERMISSION DU DIRECTEUR, VERS UN AUTRE LIEU OU ÊTRE MIS EN LA POSSESSION D'UNE AUTRE PERSONNE QUE L'IMPORTATEUR.
7	On completion of the importer's work involving the imported human pathogen, the pathogen and all its derivatives shall be destroyed	■	Au terme des travaux de l'importateur auxquels a servi l'agent anthropopathogène importé, celui-ci et tous ses dérivés doivent être détruits.
8	Primary isolation, identification and/or manipulation may be done in level 2 containment (physical requirements) using containment level 3 operational requirements	■	On peut accomplir l'isolation, l'identification primaire, et/ou la manipulation au niveau de confinement 2 (exigences physiques) en utilisant les exigences opérationnelles de niveau de confinement 3
9	NO IMPORTED MATERIAL MAY BE REMOVED TO ANOTHER LOCATION, OR TRANSFERRED INTO THE POSSESSION OF A PERSON OTHER THAN THE IMPORTER, WITHOUT THE PERMISSION OF THE DIRECTOR	■	AUCUNE MATIÈRE IMPORTÉE NE PEUT ÊTRE TRANSPORTÉE, SANS LA PERMISSION DU DIRECTEUR, VERS UN AUTRE LIEU OU ÊTRE MISE EN LA POSSESSION D'UNE AUTRE PERSONNE QUE L'IMPORTATEUR
10	The Director must approve all new work with the imported material involving construction of recombinants that requires an increase of containment from level 2	■	Tous nouveaux travaux de manipulation génétique (recombiné) avec la matière importée qui demandera que le niveau 2 de confinement soit augmenté exigera l'approbation du Directeur
11	No culturing of Risk Group 3 or 4 pathogens shall be done	■	Aucune culture d'agent anthropopathogène du Groupe de risque 3 ou 4 ne sera entreprise

12. This permit is valid only for:
Le présent permis n'est valide que pour:

☐ a) a single entry into Canada or
une seule entrée au Canada ou

■ b) importations at intervals of
les importations effectuées à intervalles de

during the period beginning on
au cours de la période commençant le JANUARY 3 1, 2008

and ending on
et se terminant le JANUARY 3 1, 2009

Authorization-Signature of Director
Autorisation-Signature du Directeur

for Stacey Martha

Date JANUARY 3 1, 2008

Note: Transporting and otherwise dealing with imported material are subject to federal, provincial and municipal laws (if any), to the extent that those laws apply in respect of that material

Nota : Les opérations relatives à la matière importée, y compris le transport, sont assujetties aux lois fédérales, provinciales et aux règlements municipaux applicables

Canada

Public Health Agency of Canada

Centre for Emergency Preparedness and Response

Agence de santé publique du Canada
Centre de mesures et d'interventions d'urgence

Permit no.-Permis no

P- 14970

Permit to Import human pathogen(s)

Permis d'importation d'agent(s) anthropopathogène(s)

Under the authority of the Human Pathogens Importation Regulations

Sous le régime du Règlement sur l'importation des agents anthropopathogènes.

Importer-Name, address and postal code - Importateur-Nom, adresse et code postal	Facsimile-Télécopieur	Telephone no.- No de téléphone
University of Western Ontario 1155 Richmond Street, Rm 4033 DSB London, ON N6A 5B8 Attn.: Yuexin Wu	(519) 661-3370	(519) 685-8500 Ext. 86397

Supplier-Name and address - Fournisseur-Nom et adresse	Name(s) of Port(s) of Entry- To Clear Customs at Port(s) of entry Nom(s) de(s) point(s) d'entrée -Dédouanement au(x) point(s) d'entrée
Cell Biolabs Inc. 10225 Barnes Canyon Road Suite A 103 San Diego, CA 92121, USA	Various ports

Description of Pathogen(s)-For the importation of- Description de(s) agent(s) anthropopathogène(s)-Pour l'importation de

QuickTiter™ Adenovirus Titer Immunoassay kit containing recombinant adenovirus (Ad-Bgal).

On the following terms and conditions as marked:-Selon les conditions indiquées:

1.	Work involving any of the imported material shall be limited to *in vitro* laboratory studies.	■ Les travaux auxquels la matière importée est destinée doivent se limiter à des études de laboratoire *in vitro*.
2.	Domestic animals, including poultry, cattle, sheep, swine and horses, shall not be directly or indirectly exposed to infection by any of the imported material	■ Les animaux domestiques, y compris les volailles, bovins, ovins, porcins et chevaux, ne doivent pas être exposés, directement ou indirectement, à l'infection par la matière importée.
3.	All animals exposed to infection by any of the imported material shall be so exposed and held only in isolated insect-and rodent-proof facilities.	☐ Les animaux exposés à l'infection par la matière importée doivent y être exposés et être gardés uniquement dans des installations isolées à l'abri des insectes et des rongeurs
4.	All equipment, animal pens, cages, bedding, waste and other articles under the importer's control, that come in direct or indirect contact with any of the imported material, shall be sterilized by autoclaving or incinerated	■ L'équipement, les enclos pour animaux, les cages, les litières, les déchets et tout autre article sous la responsabilité de l'importateur qui viennent en contact direct ou indirect avec la matière importée doivent être stérilisés par autoclavage ou incinérés.
5.	Packaging materials, containers and all unused portions of the imported material shall be sterilized by autoclaving or incinerated	☐ Le matériel d'emballage, les récipients et toute partie inutilisée de la matière importée doivent être stérilisés par autoclavage ou incinérés.
6.	No work on the imported material shall be done, except work conducted or directed by the importer in the facilities described in the application for this permit. NO HUMAN PATHOGEN BELONGING TO RISK GROUP 3 OR 4 MAY BE REMOVED TO ANOTHER LOCATION, OR TRANSFERRED INTO THE POSSESSION OF A PERSON OTHER THAN THE IMPORTER, WITHOUT THE PERMISSION OF THE DIRECTOR	■ La matière importée ne peut servir qu'aux travaux effectués ou dirigés par l'importateur dans les installations décrites dans la demande de permis AUCUNE AGENT ANTHROPOPATHOGÈNE DU GROUPE DE RISQUE 3 OU 4 NE PEUT ÊTRE TRANSPORTÉ, SANS LA PERMISSION DU DIRECTEUR, VERS UN AUTRE LIEU OU ÊTRE MIS EN LA POSSESSION D'UNE AUTRE PERSONNE QUE L'IMPORTATEUR.
7.	On completion of the importer's work involving the imported human pathogen, the pathogen and all its derivatives shall be destroyed	■ Au terme des travaux de l'importateur auxquels a servi l'agent anthropopathogène importé, celui-ci et tous ses dérivés doivent être détruits
8.	Primary isolation, identification and/or manipulation may be done in level 2 containment (physical requirements) using containment level 3 operational requirements.	☐ On peut accomplir l'isolation, l'identification primaire, et/ou la manipulation au niveau de confinement 2 (exigences physiques) en utilisant les exigences opérationnelles de niveau de confinement 3.
9.	NO IMPORTED MATERIAL MAY BE REMOVED TO ANOTHER LOCATION, OR TRANSFERRED INTO THE POSSESSION OF A PERSON OTHER THAN THE IMPORTER, WITHOUT THE PERMISSION OF THE DIRECTOR.	■ AUCUNE MATIÈRE IMPORTÉE NE PEUT ÊTRE TRANSPORTÉE, SANS LA PERMISSION DU DIRECTEUR, VERS UN AUTRE LIEU OU ÊTRE MISE EN LA POSSESSION D'UNE AUTRE PERSONNE QUE L'IMPORTATEUR
10.	The Director must approve all new work with the imported material involving construction of recombinants that requires an increase of containment from level 2	■ Tous nouveaux travaux de manipulation génétique (recombiné) avec la matière importée qui demandera que le niveau 2 de confinement soit augmenté exigera l'approbation du Directeur
11.	No culturing of Risk Group 3 or 4 pathogens shall be done	☐ Aucune culture d'agent anthropopathogène du Groupe de risque 3 ou 4 ne sera entreprise.

12. This permit is valid only for:
Le présent permis n'est valide que pour:

☐ a) a single entry into Canada or
une seule entrée au Canada ou

■ b) importations at intervals of
les importations effectuées à intervalles de

during the period beginning on
au cours de la période commençant le
JANUARY 28, 2008

and ending on
et se terminant le
JANUARY 31, 2009

Authorization-Signature of Director
Autorisation-Signature du Directeur

Marianne Heisz

Marianne Heisz

Date JANUARY 25, 2008

Note: Transporting and otherwise dealing with imported material are subject to federal, provincial and municipal laws (if any), to the extent that those laws apply in respect of that material

Nota : Les opérations relatives à la matière importée, y compris le transport, sont assujetties aux lois fédérales, provinciales et aux règlements municipaux applicables.

Canada

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

✻ IMPORTANT NOTICE ✻

Your file Votre référence

Our file Notre référence

1) **ZOONOTIC IMPORTS:** Please check the **"Description of Pathogen(s)"** section of your attached permit, and if the following message (in red print) has been included: " ***Pathogen(s) indicated on this permit also require an accompanying valid CFIA permit for importation.**", then the material is of a **zoonotic** nature and a valid permit from the Canadian Food Inspection Agency (CFIA) is required for this importation in addition to your attached human pathogens import permit. If you do not have a valid permit from the Canadian Food Inspectin Agency, please contact them directly for assistance at: **(613) 221-7068.**

2) **INSTRUCTIONS FOR USE OF YOUR PERMIT:**
[as per the *Human Pathogen(s) Importation Regulations (SOR/94-558)*]

Prior to shipment of the human pathogen described in the Import Permit the importer **must:**

a) provide a copy of the importation permit to the supplier and notify the supplier that **a copy of the importation permit must be attached to each shipment;**

b) **notify the supplier** that the outer shipping container in which the human pathogen is transported must display clearly, on the outside surface of the container, the importation permit number and the following statement immediately preceeding that number:

"Human Pathogen – Importation Permit Number:/Agent anthropopathogène – Numéro du permis d'importation:"

If the permit holder who arranges to import a human pathogen that belongs to Risk Group 3 or 4, does not receive the human pathogen on, or within three (3) days after, such date of receipt as may reasonably be expected in the circumstances, he shall forthwith give to the Director, Office of Laboratory Security a notice that the human pathogen has not been received and provide the Director with the importation permit number.

To facilitate Customs clearance, a copy of the importation permit should be kept by the importer and presented to Customs or sent to the importer's customs broker.

3) Please note that 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 for assistance.

Direct inquiries to:
Office of Laboratory Security
Public Health Agency Canada
Centre for Emergency Preparedness and Response
100 Colonnade Road, Loc.: 6201A
Ottawa, Ontario K1A 0K9

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

Canada

PHAC Info

------- Original Message --------
Subject: Re: Containment Level Request - Adenovirus project
Date: Mon, 29 Nov 2010 08:40:57 -0500
From: Permit-Permis <permitpermis@phac-aspc.gc.ca>
To: Jennifer Stanley <jstanle2@uwo.ca>

Dear Jennifer Stanley
Thank you for contacting our Directorate with your questions.
I regret that the PRD does not undertaking risk assessments of the human pathogens in facility's inventories, as many of the factors that come into play are specific to a particular location and application. The determination of what risk group and containment level to which your pathogens belong is your responsibility as regards to question Q.107 in your checklist.
You may want to consult the schedules for Risk Groups 2, 3, and 4 that are appended to The Human Pathogens and Toxins Act. Schedules 2 to 4 of the Act provide, respectively, non-exhaustive lists or examples of the kinds of human pathogens that are included in each of risk groups 2, 3, and 4.
See link below:
http://www2.parl.gc.ca/HousePublications/Publication.aspx?Docid=4015133&file=4
If you possess human pathogens that are not included in these schedules, then you would have to determine the risk groups and containment levels of those pathogens yourself. First, you could consult the definitions of the Risk Groups that are provided in section 3 of the Act. Further, there is greater detail on the criteria for determining the risk group of a pathogen in sections 2.1, 2.3 and 7.2 of the Laboratory Biosafety Guidelines . See attachment below:

For more information you can visit our website;
http://www.phac-aspc.gc.ca/ols-bsl/pathogen/index-eng.php

Regards
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