THE UNIVERSITY OF WESTERN ONTARIO
BIOLOGICAL AGENTS REGISTRY FORM
Approved Biohazards Subcommittee: April 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 biohazardous 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 biohazards 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 Biohazard 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	Jin Zhang
DEPARTMENT	Chemical and Biochemical Engineering
ADDRESS	Thompson Engineering
PHONE NUMBER	519-661-2111 ext.88322
EMERGENCY PHONE NUMBER(S)	226-448-9754 (cellular)
EMAIL	jzhang@eng.uwo.ca

Location of experimental work to be carried out: Building(s) __SEB_____ Room(s)__2021_

*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 12.0, Approvals).

FUNDING AGENCY/AGENCIES:___NSERC DG _____
GRANT TITLE(S): __1.__NSERC DG; "Development of Biocompatible Nanocomposites"_____
_____

PLEASE ATTACH A BRIEF DESCRIPTION OF YOUR WORK THAT EXPLAINS THE BIOHAZARDS USED AND HOW THEY WILL BE STORED, USED AND DISPOSED OF. PROJECTS SUBMITTED WITHOUT A SUMMARY WILL NOT BE REVIEWED.

Names of all personnel working under Principal Investigators supervision in this location:

Longyan Chen	
(Robert) Bi	
Hyung Lip Kim	
Pei Yin	

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

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? O YES ● 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)*	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
Non-pathogenic E. Coli strain W3110	O Yes ● No	O Yes ● No	O Yes ● No	10^8 cells/L	ATCC/ Cedarlane Laboratories	● 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
	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	● Yes O No	Human umbilical vein endothelial cells	Not applicable
Rodent	O Yes O No		
Non-human primate	O Yes O No		

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

Other (specify)	● Yes O No	Pig eyes	Not applicable

No rodent / NHP cells → verified May 25

2.3 Please indicate the type of established cells that w

Cell Type	Is this cell type used in your work?	Spec	
Human	● Yes O No	Human umbilical vein endothelial cells	Cedarlane Laboratories (*a LoI of CHRP was submitted)
Rodent	O Yes O No		
Non-human primate	O Yes O No		
Other (specify)	● Yes O No	Pig eyes	Ralph Bos Meats (*a LoI of CHRP was submitted)

*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 ● 1 O 2 O 2+ O 3

3.0 Use of Human Source Materials

3.1 Does your work involve the use of human source materials? O YES ● 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/NO**	**Name of Infectious Agent (If applicable)**	**PHAC or CFIA Containment Level (Select one)**
Human Blood (whole) or other Body Fluid		O Yes O No O Unknown		O 1 O 2 O 2+ O 3
Human Blood (fraction) or other Body Fluid		O Yes O No O Unknown		O 1 O 2 O 2+ O 3
Human Organs or Tissues (unpreserved)		O Yes O No O Unknown		O 1 O 2 O 2+ O 3
Human Organs or Tissues (preserved)		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? O YES ● 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

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

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

* Please attach a Material Safety Data Sheet or equivalent.

4.4 Will genetic sequences from the following be involved?

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

4.5 Will virus be replication defective? O YES O NO

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

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

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? O YES ● NO If no, please proceed to section 7.0

6.2 Name of animal species to be used_____

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

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

_____

_____

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

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 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 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:
_____
_____

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

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? O YES O 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_____ ● NO
If no, please proceed to Section 12.0

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

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

11.4 Has the import permit been sent to OHS? O YES, please provide permit # _____ 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 biohazardous agents in Sections 1.0 to 9.0 have been trained.

SIGNATURE _____ _____

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

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 ● 2 O 2+ O 3

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

O YES, permit # if on-campus_____

● 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 _____ Jin Zhang _____Date:_____April 25, 2011_____

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.

_____No specific measures is required_____

_____

_____

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

1. All exposures and concerns (needlestick injury) will be reported on the incident, accident occupational illness reporting.
2. Suitable disinfectants such as chlorine bleach or 70% ethyl or isopropyl alcohol can be used to decontaminate. Autoclaving at 121 ^{0}C for 20 min, or dry heat at 170 ^{0}C for 4 hrs can be used for the exposed materials.__

_____

15.0 Approvals

#2 refers to waste?

1) UWO Biohazard 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:

*** DESCRIPTION MUST BE ATTACHED TO THIS FORM OR PROJECT WILL NOT BE REVIEWED***

Jin Zhang (jzhang@eng.uwo.ca)

Project 1 "development of magnetic nanocomposite-based device for detect and capture of microbial"

Project Description: Non-pathogenic *E. coli* cells used in this project to demonstrate the multifunctional nanocomposites films are able to capture the microbial in short period.
Use: The non-pathogentic E.Coli will be grown for 24 hours in broth media at room temperature to obtain an approximately 10^7 *cfu*/mL. The cells are harvested by centrifugation (8000 rpm, 5 min) and further re-suspended in Phosphate Buffered Saline (PBS, 0.01 M, pH 7.4) buffer containing magnetic nanocomposites (1 mg/mL). After 10 times serially diluted into 10^4 cfu/mL, the solution of cells mixed with nanocomposites will be incubated in 20 min and 60 min, respectively. Samples will be separated from the solution by utilizing the magnetic confinement.
Storage: Store in original container in a cool, dry place. Use before expiration date printed on package.

The non-pathogenic E. coli is purchased from ATCC through the sale representative in Canada, Cedarlanelabs (www.cedarlanelabs.com)
The information of the product can be find as follows;
Link-
http://www.atcc.org/ATCCAdvancedCatalogSearch/ProductDetails/tabid/452/Default.aspx?ATCCNum=35339&Template=bacteria)

ATCC® THE ESSENTIALS OF LIFE SCIENCE RESEARCH GLOBALLY DELIVERED™

ATCC Advanced Catalog Search » Product Details

Product Description

Before submitting an order you will be asked to read and accept the terms and conditions of ATCC's Material Transfer Agreement or, in certain cases, an MTA specified by the depositing institution.

Customers in Europe, Australia, Canada, China, Hong Kong, India, Israel, Japan, Korea, Macau, Mexico, New Zealand, Singapore, and Taiwan, R.O.C. must contact a local distributor for pricing information and to place an order for ATCC cultures and products.

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Bacteria

ATCC® Number:	35339™ Order this Item	Price:	$255.00
Organism:	*Escherichia coli* (Migula) Castellani and Chalmers		
Designations:	ECOR 20		
Isolation:	Steer, Bali		
Depositor:	H Ochman		
History:	ATCC<<--H Ochman<<--R. Milkman RM213I(e)		
Biosafety Level:	1		
Shipped:	freeze-dried		
Growth Conditions:	ATCC medium3: Nutrient agar or nutrient broth Temperature: 37.0°C		
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.		
Comments:	reference strain [9410]		
References:	9410: Ochman H, Selander RK. Standard reference strains of Escherichia coli from natural populations. J. Bacteriol. 157: 690-693, 1984. PubMed: 6363394		

Related Links

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The standard process is followed to storage and use of the product (standard process cited from www.qiagen.com)

Jin Zhang (jzhang@eng.uwo.ca)

It is noted that E. coli strains can be stored for up to 1 year as stabs in soft agar. Stab cultures can be used to transport or send bacterial strains to other labs.

1. Prepare and autoclave 0.7% LB agar (standard LB medium containing 7 g/liter agar).

2. Cool the LB agar to below 50 °C (when you can hold it comfortably) and add the appropriate antibiotic(s). While still liquid, add 1 ml agar to a 2 ml screw-cap vial under sterile conditions, then leave to solidify. Vials of agar can be prepared in batches and stored at room temperature until required.

3. Using a sterile straight wire, pick a single colony from a freshly grown plate and stab it deep down into the soft agar several times.

4. Incubate the vial at 37 °C for 8-12 h leaving the cap slightly loose.

5. Seal the vial tightly and store in the dark, preferably at 4 °C.

Stab cultures will keep for approximately 12-18 months.

Handling and Disposal Precautions: The following standard precautions should be employed:

A. Access to the laboratory is limited at the discretion of the laboratory director.
B. Lab personnel must wash their hands after they handle viable materials and animals, after removing gloves, and before leaving the laboratory or animal facility.
C. NO eating, drinking, smoking, handling contact lenses, applying cosmetics, etc. in the lab.
D. Do not store food in lab.
E. Never mouth pipette.
F. Sharps should be handled with extreme caution to avoid cuts or autoinoculation during use and disposal. Needles should not be bent, sheared, or recapped. The needle and syringe should be promptly placed in a puncture-resistant container and decontaminated, by autoclaving or incineration.
G. Minimize splashes and aerosols.
H. Dispose of solid wastes in orange bags, which are autoclaved and placed in a red biohazard bag for final disposal.
I. Materials to be decontaminated outside the lab must be placed in a durable leak proof container and secured for transport
J. Infectious or biohazardous materials must be transported in sealed primary container inside a sealed durable and leak proof secondary containment labeled with a biohazard sticker.
K. Decontaminate surfaces with 70% ethanol or 10% bleach (made fresh every two weeks) after a spill or when work is completed for the day.
L. Decontaminate cultures and liquid waste using a final concentration of 10% bleach or 70% ethanol for a minimum of 20 minutes.
If working with a flame, be sure to keep any ethanol solutions away from the flame at all times.
M. Ensure that laboratory personnel are trained, with signed copies of the safety protocol in the lab's safety manual.

3. Safety equipment.
A. Wear lab coats and gloves when working with bacterial cultures.
B. Wear safety glasses when splashes sprays or aerosols can be expected.
C. Dispose of contaminated gloves in Red biohazard bags/containers.
E. No personal protective equipment (PPE) is to be worn outside of the lab.

Jin Zhang (jzhang@eng.uwo.ca)

Project 2. " Development of non-invasive lens sensor"

Description: An optical nanocomposite-based transducer incorporated with biopolymer lens materials is developed for monitoring glucose invasively.
Use: (1) The pig eye provided Ralph Bos Meats Inc. will be used as a tissue model to test the signal of the lens sensor. (2) HUVEC cell is going to be used to study the lens sensor's biocompatibility, HUVEC are human umbilical vein endothelial cells. Each vial of this product contains >5 x 10^5 cells that have been cryopreserved at the end of the primary culture stage in a medium containing 10% DMSO. During the culture period, no contamination by bacteria, yeast, or fungi was detected. Upon thawing, the cells are guaranteed to be >70% viable (trypan blue), and to have a potential of >16 population doublings when handled according to the directions provided in this document.
Storage: "Cryopreserved HUVEC should arrive frozen on dry ice. If the cells are not to be used immediately, the user should prepare a space for storage of the vial in the vapor phase of a liquid nitrogen freezer. While wearing protective eyewear, gloves, and a laboratory coat, remove the vial from its shipping container and place immediately in the liquid nitrogen freezer. Although the viability of cryopreserved cells decreases with time in storage, useful cultures can usually be established even after 2 years of storage at liquid nitrogen temperatures" –based on the information provided by the supplier.

Procedure for Cell culturing and maintenance:

- The cell line samples can be purchased from ATCC, through Cederlane Labs.

Starting Cell culturing:

- T-75cm flask are coated with 0.1% gelatine and left to coat for more than 1hr at 37°C .
- The gelatine is sucked out and 12mL of M-131 or similar endothelial media containing adequate Growth factors is added to the flasks.
- The frozen cell sample is thawed slightly in water bath and as quickly transferred into the T-75 flask containing the media and kept at 37°C incubator.
- The cells are observed for growth, and media is changed every two days. Old media is discarded and the cells are ideally washed with 10mL of Dulbecco`s PBS solution and new media added to replace the removed old media.
- The procedure of changing media is continued till the cells have reached 80-85% confluency (where the cells cover almost the entire surface of the flask`s inner surface).
- Once confluent, the cells have 3 options:

a) Use the cells for experiment.
b) Split the cells and maintain the cell culture.
c) Freeze the cells (especially earlier passages) for future use.

Splitting cells:

- T- 75cm flasks that are confluent can be split to two or more T 75 flasks depending upon the speed of growth in cells required(faster growth requires more cells /flask), whereas T150cm flasks of confluent cells can be split to three T-75cm flasks.
- The required T flask are coated with Gelatin (0.1%) and kept for incubation at 37°C for atleast 1 hour.
- Add media to the flasks after incubation and removal of gelatine.
- The 80%conflunet plates are washed with PBS, and 3ml of Trypsin added to the flasks for detaching the cells. (T-150cm requires 4mL).Leave the plates in hood for 2-5 mints.
- Add 4mL of Trypsin Neutralizing solution and 7mL of Media.
- Scrap the cells from the flask using a cell scraper and as the cells+media volume is about 14ml, Divide the volume into the the flasks of the required number of coated flasks.
- The flasks are then observed under microscope and left to grown in the 37°C incubator.

Disposal: According to standard biohazard waste disposal procedures; autoclaving (steam sterilization) is generally the surest method of inactivating biological agents and should be used whenever possible. Liquid

waste containers designed to withstand autoclaving temperatures must be used. Containers of liquid waste must be placed into a tray or pan of sufficient capacity to contain all liquid in the event of vessel failure or breakage inside the autoclave chamber.

Other information

All students and researchers in Dr. Zhang's lab are demanded to obtain the Biosafety Certificate.

↑ training ?

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

E-coli

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

Canada

Info on Cell(s)

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
Cytogenetic Analysis:	

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