

**The University of Western Ontario**  
**BIOLOGICAL AGENTS REGISTRY FORM**  
 Approved Biohazards Subcommittee: October 14, 2011  
 Biosafety Website: [www.uwo.ca/humanresources/biosafety/](http://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, 1<sup>st</sup> edition 1996, Canadian Food Inspection Agency (CFIA).

Electronically completed forms are to be submitted to Occupational Health and Safety, (OHS), (Support Services Building, Room 4190 or to [jstanle2@uwo.ca](mailto:jstanle2@uwo.ca)) for distribution to the Biohazards Subcommittee. For questions regarding this form, please contact the Biosafety Officer at extension 81135 or [biosafety@uwo.ca](mailto: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/](http://www.uwo.ca/humanresources/biosafety/).

Please ensure that all questions are fully and clearly answered. Failure to do so will lead to the form being returned, which will cause delays in your approval and frustration for you and your colleagues on the Committee.

**If you are re-submitting this form as requested by the Biohazards Subcommittee, please make modifications to the form in bold print, highlighted in yellow. Please re-submit forms electronically.**

PRINCIPAL INVESTIGATOR:	<b>Dr. Jeff Carson</b>
DEPARTMENT:	<b>Lawson Health Research Inst. - Medical Biophysics</b>
ADDRESS:	<b>268 Grosvenor St</b>
PHONE NUMBER:	<b>519-646-6100 ext 64767</b>
EMERGENCY PHONE NUMBER(S):	<b>519-488-1696</b>
EMAIL:	<b><a href="mailto:jcarson@lawsonimaging.ca">jcarson@lawsonimaging.ca</a></b>

Location of experimental work to be carried out :

Building : <b>LHRI - St Joseph's</b>	Room(s): <b>F5-131, F5-133, F5-127</b>
Building : _____	Room(s): _____
Building : _____	Room(s): _____

**\*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: **1. ORF, 2. CIHR, 3. NSERC**

GRANT TITLE(S): **1. Ontario Preclinical Imaging Consortium, 2. Development of a photoacoustic imaging system for lesion characterization during breast cancer diagnostics, 3. Real-time 3D photoacoustic imaging system for biomedical research**

UNDERGRADUATE COURSE NAME(IF APPLICABLE): \_\_\_\_\_

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

<u>Name</u>	<u>UWO E-mail Address</u>	<u>Date of Biosafety Training</u>
<b>Astrid Chamson-Reig</b>	<b><a href="mailto:achamson@uwo.ca">achamson@uwo.ca</a></b>	<b>June 05, 2012</b>
<b>Ivan Kosik</b>	<b><a href="mailto:ivalus@uwo.ca">ivalus@uwo.ca</a></b>	<b>Sep 19, 2012 inclass</b>
<b>Mohamadreza Najiminaini</b>	<b><a href="mailto:mrnajimi@gmail.com">mrnajimi@gmail.com</a></b>	<b>Sep 19, 2012 inclass</b>
<b>Philip Wong</b>	<b><a href="mailto:pwong85@uwo.ca">pwong85@uwo.ca</a></b>	<b>Aug 21, 2012</b>

Pantea Tavakolian	ptavakol@uwo.ca	Sep 24, 2012 inclass
Avery Raess	araess@uwo.ca	Sep 19, 2012 inclass
Esther Kim	esther.kim@live.ca	Sep 24, 2012 inclass

**Please explain how the biological agents are used in your project and how they are stored and disposed of. The BARF without this description will not be reviewed.**

**Human blood will be drawn by a qualified venipuncturist from healthy volunteers. Blood will be used to prepare gel phantoms at various concentrations in a homogeneous mixture of agarose with Intralipid and optical contrast agents (e.g. indocyanine green) to mimic the optical properties of human breast tissue. Blood will also be used to flow through tubing for photoacoustic imaging. Gel phantoms and disposable items that become contaminated with blood will be disposed of at the end of the procedures as biohazard waste for incineration. Reusable items will be decontaminated by use of 10% bleach as disinfectant.**

**Human breast tissue samples will be obtained from OR fresh or fixed in formalin. Samples will be used for development of equipment based on photoacoustic imaging, optical imaging and spectroscopy. Samples will be disposed of in the biohazard/biomedical waste according to clinical protocol.**

**Cell lines are stored in liquid N2 tank at Lawson. They are handled in a BSC and cultured in T25 or T75 flasks and 10cm cell culture dishes with a maximum of 20-30x10<sup>6</sup> cells at any time. NIH3T3 cells are used for bioluminescence experiments in a controlled environment. Flasks and cell suspension are bleached before disposing liquids to the sewer, and disposable items are discarded in biohazard waste. SCCVII will be used in the future to grow in culture and inject mice subcutaneously to develop a tumour for testing imaging devices (pending approval of animal protocol when submitted).**

**Please include a ONE page research summary or teaching protocol in lay terms.  
Forms with summaries more than one page will not be reviewed.**

**1. The goal of the research project is to develop a method for breast cancer detection using laser light and ultrasound, called photoacoustic imaging. The technology has great potential for characterizing suspicious breast lumps that are unidentifiable by mammography and ultrasound. Photoacoustic technology could benefit a large fraction of women who have a diagnostic breast imaging procedure and receive an uncertain result. These women are often sent home with uncertainty out the identity of the lump. Some will return for follow-up only to discover that they had no disease or that they in fact had malignancies that have progressed. Also, photoacoustic imaging may provide a rapid and sensitive way to examine lumpectomy specimens removed during breast conserving surgery. Detection of cancer at the edges of the specimens could guide the surgeon to remove tissue that has potential to result in a reoccurrence and additional surgical treatment. Photoacoustic imaging could potentially offer the clinician and surgeon additional information to help identify cancer and potentially lead to improvements in patient care and patient survival.**

**Toward the goal of developing better diagnostic and intraoperative tools for breast cancer care, our group has been focussed on developing 3D photoacoustic imaging technology. We were the first in the world to demonstrate 3D photoacoustic imaging using a single laser pulse (J. Biomedical Optics, 2008) and 4D photoacoustic imaging by capturing a 3D image every laser pulse (Optics Express, 2008). We have since continued to improve our methods and better understand the imaging process. Prior to 2012, we performed image reconstruction off-line and images took many minutes to process. Currently, with a newly developed approach we can produce a 3D image every 1.4s. And with further work we predict 20-3D frames per second is achievable. Therefore, our research plan is to accelerate development of video frame rate 3D photoacoustic imaging technology. We are incorporating hardware improvements into our imaging systems to increase the imaging frame rate to 20-3D frames per second. Testing of these system improvements requires the use of human tissue, human blood, and optical contrast media, such as indocyanine green. These materials are also evaluated with complimentary analytical methods, such as optical spectroscopy and optical imaging (e.g. fluorescence, transmission, hyperspectral, and multispectral) to estimate optical properties independent of the 3D photoacoustic systems.**

**2. Cellular stressors, such as hyperthermia, are capable of inducing gene expression of heat shock proteins (HSPs). Beetle luciferase (luc) is a phenotypic marker that has been used extensively in studies involving gene expression due to its bioluminescent properties. The luc gene is typically transfected into a cell in a construct following the promoter of a gene of interest (Hsp70 promoter in this case). Through the Hsp70/luc reporter system, the real-time measurement of hsp70 gene expression can be detected by plotting bioluminescence levels against time under conditions of thermal stress. The cells in use are a stable transfection of NIH3T3 cells with hsp/luc reporter system obtained from Dr Contag at Stanford University.**

**Although many studies have examined changes in hsp70 gene expression due to a variety of cellular stressors, our goal is to study hsp70 expression in real-time during exposure to subtle cellular stressors such as small changes in environmental temperature. To reach this goal, we developed a dual chamber apparatus capable of minimizing variation within and between samples to ensure that any subtle change in data collected was due to hsp70 expression alone. The overall design of the dual system is to monitor the luminescence of NIH3T3 hsp/luc cells exposed to small changes in temperature, and other stressors.**

**1.0 Microorganisms**

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

Full Scientific Name of Biological Agent(s)* (Be specific)	Is it known to be a human pathogen? YES/NO	Is it known to be an animal pathogen? YES/NO	Is it known to be a zoonotic agent? YES/NO	Maximum quantity to be cultured at one time? (in Litres)	Source/Supplier	PHAC or CFIA Containment Level
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3

\*Please attach a Material Safety Data Sheet or equivalent from the supplier if the bacterium used is not on this link:  
[http://www.uwo.ca/humanresources/docandform/docs/ohs/CFIA\\_Ecoli\\_list.pdf](http://www.uwo.ca/humanresources/docandform/docs/ohs/CFIA_Ecoli_list.pdf)

Additional Comments: \_\_\_\_\_

## 2.0 Cell Culture

2.1 Does your work involve the use of cell cultures?  YES  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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Not applicable
Rodent	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Non-human primate	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Other (specify)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

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

Cell Type	Is this cell type used in your work?	Specific cell line(s)*	Containment Level of each cell line	Supplier / Source of cell line(s)
Human	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	HL60	1	ATCC
Rodent	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	NIH3T3 hsp/luc, SCCVII, HL60	1, 1, 1	Dr. Contag, ATCC, ATCC
Non-human primate	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Other (specify)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			

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

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

Additional Comments: NIH3T3 hsp/luc kindly provided by Dr Contag - Stanford University

## 3.0 Use of Human Source Materials

3.1 Does your work involve the use of human source materials?  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/UNKNOWN	Name of Infectious Agent (If applicable)	PHAC or CFIA Containment Level (Select one)
Human Blood (whole) or other Body Fluid	healthy volunteer	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Unknown		<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
Human Blood (fraction) or other Body Fluid		<input type="checkbox"/> Yes <input type="checkbox"/> Unknown		<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
Human Organs or Tissues (unpreserved)	breast tissue samples from OR	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Unknown		<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 2+ <input type="checkbox"/> 3
Human Organs or Tissues (preserved)	breast tissue samples from OR	Not Applicable		Not Applicable

Additional Comments: preserved tissues: fixed in formalin

**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?

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

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

4.3.1 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 from any Level 1 or Level 2 pathogens  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: \_\_\_\_\_

HTLV 1 or 2 - No ?

## 6.0 Human Gene Therapy Trials

6.1 Will human clinical trials be conducted involving a biological agent?  YES  NO  
(including but not limited to microorganisms, viruses, prions, parasites or pathogens of plant or animal origin)  
If no, please proceed to Section 7.0

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

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

6.4 How will the biological agent be administered?

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

6.6 Has human ethics approval been obtained?  YES, number:  NO  PENDING

## 7.0 Animal Experiments

7.1 Will live animals be used?  YES  NO If NO, please proceed to section 8.0

7.2 Name of animal species to be used

7.3 AUS protocol #

7.4 List the location(s) for the animal experimentation and housing.

7.5 Will any of the agents listed in section 4.0 be used in live animals  
 NO  YES, specify:

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

## 8.0 Use of Animal species with Zoonotic Hazards

8.1 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 9.0

8.2 Will live animals be used?  YES  NO

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

- |                             |  |                             |
|-----------------------------|--|-----------------------------|
| ◆ Pound source dogs         | <input type="checkbox"/> YES                     | <input type="checkbox"/> NO |
| ◆ Pound source cats         | <input type="checkbox"/> YES                     | <input type="checkbox"/> NO |
| ◆ Cattle, sheep or goats    | <input type="checkbox"/> YES, species            | <input type="checkbox"/> NO |
| ◆ Non-human primates        | <input type="checkbox"/> YES, species            | <input type="checkbox"/> NO |
| ◆ Wild caught animals       | <input type="checkbox"/> YES, species & colony # | <input type="checkbox"/> NO |
| ◆ Birds                     | <input type="checkbox"/> YES, species            | <input type="checkbox"/> NO |
| ◆ Others (wild or domestic) | <input type="checkbox"/> YES, specify            | <input type="checkbox"/> NO |

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

## 9.0 Biological Toxins and Hormones

9.1 Will toxins or hormones of biological origin be used?  YES  NO If **NO**, please proceed to Section 10.0

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

9.3 What is the LD<sub>50</sub> (specify species) of the toxin or hormone

9.4 How much of the toxin or hormone is handled at one time\*?

9.5 How much of the toxin or hormone is stored\*?

9.6 Will any biological toxins or hormones be used in live animals?  YES  NO  
If **YES**, Please provide details:

\*For information on biosecurity requirements, please see:  
[http://www.uwo.ca/humanresources/docandform/docs/healthandsafety/biosafety/Biosecurity\\_Requirements.pdf](http://www.uwo.ca/humanresources/docandform/docs/healthandsafety/biosafety/Biosecurity_Requirements.pdf)

Additional Comments: \_\_\_\_\_

## 10.0 Insects

10.1 Do you use insects?  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 insect?

10.4 What is the life stage of the insect?

10.5 What is your intention?  Initiate and maintain colony, give location:  
 "One-time" use, give location:

10.6 Please describe the risk (if any) of escape and how this will be mitigated:

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

### 11.0 Plants

- 11.1 Do you use plants?  YES  NO - If NO, please proceed to Section 12.0
- 11.2 If YES, please give the name of the species.
- 11.3 What is the origin of the plant?
- 11.4 What is the form of the plant (seed, seedling, plant, tree...)?
- 11.5 What is your intention?  Grow and maintain a crop  "One-time" use
- 11.6 Do you do any modifications to the plant?  YES  NO  
If yes, please describe:
- 11.7 Please describe the risk (if any) of loss of the material from the lab and how this will be mitigated:
- 11.8 Is the CFIA permit attached?  YES  NO  
If YES, Please attach the CFIA permit & describe any CFIA permit conditions:

### 12.0 Import Requirements

- 12.1 Will any of the above agents be imported?  YES, country of origin  NO  
If NO, please proceed to Section 13.0
- 12.2 Has an Import Permit been obtained from HC for human pathogens?  YES  NO
- 12.3 Has an import permit been obtained from CFIA for animal or plant pathogens?  YES  NO
- 12.4 Has the import permit been sent to OHS?  YES, please provide permit #  NO

### 13.0 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.

**An X in the check box indicates you agree with the above statement...**   
Enter Your Name \_\_\_\_\_ Date: \_\_\_\_\_

Jeffrey Carson Sept 20, 2012

**14.0 Containment Levels**

14.1 For the work described in sections 1.0 to 9.0, please indicate the highest HC or CFIA Containment Level required.  1  2  2+  3

14.2 Has the facility been certified by OHS for this level of containment?  
 YES, location and date of most recent biosafety inspection: **September 19, 2012**  
 NO, please certify  
 NOT REQUIRED for Level 1 containment

14.3 Please indicate permit number (not applicable for first time applicants):

**15.0 Procedures to be Followed**

15.1 Are additional risk reduction measures necessary beyond containment level 1, 2, 2+ or 3 measures that are unique to these agents?  YES  NO  
If YES please describe:

15.2 Please outline what will be done if there is an exposure to the biological agents listed such as a needlestick injury or an accidental splash:  
• **Ensure the employee receives appropriate first aid as per bloodborne pathogen exposure protocol.**  
• **Ensure the occurrence is reported to the leader/supervisor.**  
• **Report the occurrence using a Workplace Occurrence Form and follow-up**

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

**An X in the check box indicates you agree with the above statement...**

**Enter Your Name** Jeffrey Carson **Date:** Sept 20, 2012

15.4 Additional Comments: \_\_\_\_\_

**16.0 Approvals**

1) UWO Biohazards Subcommittee: SIGNATURE: \_\_\_\_\_  
Date: \_\_\_\_\_

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

3) Safety Officer for Institution where experiments will take place (if not UWO): JUR  
SIGNATURE: \_\_\_\_\_  
Date: Sept 18, 2012

Approval Number: \_\_\_\_\_ Expiry Date (3 years from Approval): \_\_\_\_\_

Special Conditions of Approval:

Cell Biology

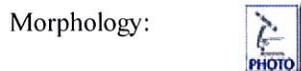
ATCC® Number: **CCL-240™** [Order this Item](#)

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Designations: **HL-60**  
 Depositors: RC Gallo  
 Biosafety Level: 1  
 Shipped: frozen  
 Medium & Serum: [See Propagation](#)  
 Growth Properties: suspension  
 Organism: *Homo sapiens*  
 myeloblastic



Source: **Organ:** peripheral blood  
**Disease:** acute promyelocytic leukemia  
**Cell Type:** promyeloblast;

Cellular Products: tumor necrosis factor (TNF), also known as tumor necrosis factor alpha (TNF-alpha, TNF alpha), after stimulation with phorbol myristic acid

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  
 Receptors: complement, expressed [[1050](#)]  
 Fc, expressed [[1050](#)]

Tumorigenic: Yes  
 Oncogene: myc +  
 Amelogenin: X  
 CSF1PO: 13,14  
 D13S317: 8,11  
 D16S539: 11

DNA Profile (STR): D5S818: 12  
 D7S820: 11,12  
 TH01: 7,8  
 TPOX: 8,11  
 vWA: 16

Cytogenetic Analysis: The stemline chromosome number is pseudodiploid with the 2S component occurring at 6.2%. Five markers (M2 through M6) were common to most S metaphases. DM's, which varied in numbers per cell, occurred in all metaphases karyotyped. HSR chromosomes were not detected.

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Designations: NIH/3T3  
 Biosafety Level: 1  
 Shipped: frozen  
 Medium & Serum: [See Propagation](#)  
 Growth Properties: adherent  
 Organism: *Mus musculus*  
 fibroblast

Morphology: 

Source: **Organ:** embryo  
**Strain:** NIH/Swiss  
**Cell Type:** fibroblast

Permits/Forms: In addition to the [MTA](#) mentioned above, other [ATCC and/or regulatory permits](#) may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please [click here](#) for information regarding the specific requirements for shipment to your location.

Applications: transfection host  
 Virus Susceptibility: Murine leukemia virus  
 Age: embryo

Comments: The NIH/3T3 is highly sensitive to sarcoma virus focus formation and leukemia virus propagation and has proven to be very useful in DNA transfection studies [PubMed ID: 222457]. Tested and found negative for ectromelia virus (mousepox).

Propagation: **ATCC complete growth medium:** The base medium for this cell line is ATCC-formulated Dulbecco's Modified Eagle's Medium, Catalog No. 30-2002. To make the complete growth medium, add the following components to the base medium: bovine calf serum to a final concentration of 10%.

**Atmosphere:** air, 95%; carbon dioxide (CO<sub>2</sub>), 5%  
**Temperature:** 37.0°C

**Growth Conditions:** The serum used is important in culturing this line. Calf serum is recommended and not fetal bovine serum. The calf serum initially employed and found to be satisfactory was from the Colorado Serum Co. Denver.

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