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	Donglin Bai
DEPARTMENT	Physiology and Pharmacology
ADDRESS	DSB 00073
PHONE NUMBER	82569
EMERGENCY PHONE NUMBER(S)	
EMAIL	donglin.bai@schulich.uwo.ca

Location of experimental work to be carried out: Building(s) DSB Room(s) 00070

*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 and NSERC
GRANT TITLE(S): Cx43 mutations linked to human disease (CIHR)
The role of connexin43 in cardiac function (CIHR)
Molecular domains determining gap junction channel properties (NSERC)

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

Name	UWO E-mail Address	Date of Biosafety Training
Xiang-Qun (Gregory) Gong	Xiang-qun.gong@schulich.uwo.ca	April, 2003
Lin Xin	Lxin6@uwo.ca	Nov 20, 2007
Andrew MacDonald	Andrew.macdonald@schulich.uwo.ca	July02, 2009
Weixiong Huang	Whuang42@uwo.ca	June 6, 2005
Yiguo Sun	bmesyg@gmail.com	
Mi Seong Kim	Mkim282@uwo.ca	Oct 17, 2009

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

Biological materials (including cells, bacteria and other materials) used in the lab and cell culture room are bleached immediately after use, and temporarily stored in autoclavable biohazardous waste bags in the lab/culture room, which are autoclaved in every 1~2 weeks by designated, well trained personnel. After animal related experiments, animal bodies and dissected tissues (rats and mice) are temporarily stored in designated lab freezer, and transferred to the cold room in the animal facility (DSB 6th floor) at end of each day.

Toxins are stored in locked cabinet/box for controlled access.

No oncogenes are being used.

Please include a one page research summary or teaching protocol.

Project description (Donglin Bai)

My research works are currently supported by 2 CIHR grants and a NSERC grant. Here is a list of grant title, source and my role for each grant:
The role of connexin43 in cardiac function (CIHR, PI)
Cx43 mutations linked to human disease (CIHR, co-PI)
Molecular domains determining gap junction channel properties (NSERC, PI)

Our research goals are to understand how gap junction channels work and why mutations in gap junction proteins, connexins (Cxs), leading to human diseases. We have engineered or plan to engineer fluorescent protein tags, such as GFP and RFP, onto several Cxs (Cx43, Cx40, Cx50, Cx36, Cx26, Cx32, Cx47) to facilitate visual identification in live cells for Cx expression. We also engineered several disease-linked Cx mutants and artificial chimeras to reveal their function. These genetically engineered Cxs are expressed in gap junction deficient cell lines and in primary cultured cells to identify the functional alteration.

Here are some commonly used expression vector constructs are listed here with the URL-link for your information.

pcDNA3.1
https://www.lablife.org/g?a=vdb_view&old_id=24

pEGFP-N1
http://www.liv.ac.uk/physiology/ncs/catalogue/Cloning/pEGFP-N1.htm

RFP
http://www.lablife.org/p?a=vdb_view&id=g2%2eQL%5faGT2t1aghGKk1eSmYzQuUhkQ%2d

pLenti-Easy
http://www.abmgood.com/viralexp/LentiHis.php?csn=14&ssn=3884&dsn=4021

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
E. coli DH5-alpha	• Yes O No	• Yes O No	• Yes O No	2 litres		• 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	O Yes • No		Not applicable
Rodent	• Yes O No	brain and heart	
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	HeLa, HEK	ATCC
Rodent	• Yes O No	N2A, RIN, NRK, HL1	ATCC, Dr. Laird
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? 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 Unknown		O 1 O 2 O 2+ O 3
Human Blood (fraction) or other Body Fluid		O Yes O Unknown		O 1 O 2 O 2+ O 3
Human Organs or Tissues (unpreserved)		O Yes 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? • YES O NO If no, please proceed to Section 5.0

4.2 Will genetic modification(s) involving plasmids be done? • 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
E. coli DH5-alpha	pcDNA3, pGFP, RFP	Clontech	Cx43, Cx40, Cx50, Cx47, Cx26, Cx32	Gap junction coupling

* 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? • 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
Adeno	*pLP-Adeno*	*ABM Inc.*	*CX43 and mutants*	*Coupling level*

* 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 O YES • 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? • YES O NO

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

4.7 Will this be expected to increase the containment level required? O YES • 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:

_____

_____

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

8.0 Biological Toxins

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

8.2 If YES, please name the toxin(s) tetrodotoxin (with citrate) from Alomone labs
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 mouse 8-10 ug/kg

8.4 How much of the toxin is handled at one time*? ~ 200ml of 300nM (19 ug)

8.5 How much of the toxin is stored*? maximum allowed is 1.5 mg

8.6 Will any biological toxins be used in live animals? O YES, Please provide details:_____ • 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? 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

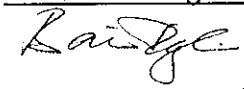
12.0 Training Requirements for Personnel Named on Form

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 biological agents in Sections 1.0 to 9.0 have been trained.

SIGNATURE Note: Dr. Yiguo Sun is newly arrived and will do all the trainings as soon as possible. Thanks,



_____ _____

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 BIO-UWO-0084

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  Date: Oct. 6, 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.

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

Worker: 1. wash the exposed site immediately; 2. inform supervisor/PI; 3.seek medical attention/treatment; 4. fill in an Accident/Incident Report. **Supervisor/PI:** 1. complete and sign the Univ. Accident/incident report; 2. report the incident within 24 hours to Human Resources Fax 519-661-2079. 3. refer the worker to the nearest hospital emergency dept.

15.0 Approvals

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

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

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

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

Special Conditions of Approval:

Bai

Western

Toxin Info

TOXIN USE RISK ASSESSMENT

TOXIN: Tetrodotoxin

PROPOSED USE (DOSE): 19 µg (stray 1.5 mg)

LD_{50} (species): 8-10 µg/kg (mouse)

CALCULATION: (LD_{50})

1.0 ug/kg X 70 kg/person = 70 ug per person

Divide by safety factor(s) of 10 (as applicable): 70 ug per person

(1 factor)

COMMENTS/RECOMMENDATION:

use amount < LD_{50} (70 µg/person)
(19 µg)

on hand amount (stored) 1.5 mg > LD_{50} (70 µg / person)

Canadian Centre for Occupational Health and Safety

CCOHS

RTECS Registry of Toxic Effects of Chemical Substances®

Data source: Symyx Software Inc.

Record Contents

Format: All Sections

- [x] Chemical Identification
- [x] Acute Toxicity Data
- [x] Reviews
- [x] Status in U.S.

REFRESH RECORD

CHEMICAL IDENTIFICATION

RTECS Number	IO1450000
Chemical Name	5,9:7,10a-Dimethano-10aH-(1,3)dioxocino(6,5-d)pyrimidine-4,7,10,11,12-pentol, octahydro-12-(hydroxymethyl)-2-imino-
CAS Registry Number	4368-28-9
Other CAS Registry Nos.	11005-69-9 12626-86-7
Beilstein Reference No.	0049176
Reference	4-27-00-08206
Last Updated	200905
Data Items Cited	43
Molecular Formula	C11-H17-N3-O8
Molecular Weight	319.31
Wiswesser Line Notation	T66 B6 D6/B-H/DM A B- C 2BD M AO B-O DX EMYMTJ CQ EQ GQ G1Q JQ LUM
Compound Descriptor	Drug Natural Product

Synonyms/Trade Names

Fugu poison
Maculotoxin
Spheroidine
Tarichatoxin
Tetrodontoxin
Tetrodotoxin

Tetrodoxin
TTX

HEALTH HAZARD DATA

ACUTE TOXICITY DATA

Type of Test	Route of Exposure	Species Observed	Dose Data	Toxic Effects	Reference
LDLo - Lowest published lethal dose	Unreported	Rodent - rat	15 ug/kg	Details of toxic effects not reported other than lethal dose value	SCIEAS Science. (American Assoc. for the Advancement of Science, 1333 H St., NW, Washington, DC 20005) V.1- 1895- Volume (issue)/page/year: 144,1100,1964
LD50 - Lethal dose, 50 percent kill	Oral	Rodent - mouse	334 ug/kg	Details of toxic effects not reported other than lethal dose value	SKEZAP Shokuhin Eiseigaku Zasshi. Food Hygiene Journal. (Nippon Shokuhin Eisei Gakkai c/o Shokuhin Eisei Senta, 2-6-1 Jingumae, Shibuya-ku, Tokyo 150, Japan) V.1- 1960- Volume (issue)/page/year: 14,186,1973
LD50 - Lethal dose, 50 percent kill	Intraperitoneal	Rodent - mouse	8 ug/kg	Details of toxic effects not reported other than lethal dose value	SCIEAS Science. (American Assoc. for the Advancement of Science, 1333 H St., NW, Washington, DC 20005) V.1- 1895- Volume (issue)/page/year: 144,1100,1964
LD50 - Lethal dose, 50 percent kill	Subcutaneous	Rodent - mouse	8 ug/kg	Details of toxic effects not reported other than lethal dose value	CTOXAO Clinical Toxicology. (New York, NY) V.1-18, 1968-81. For publisher information, see JTCTDW. Volume (issue)/page/year: 4,331,1971
LD50 - Lethal dose, 50 percent kill	Intravenous	Rodent - mouse	7300 ng/kg	Behavioral - convulsions or effect on seizure threshold	SKEZAP Shokuhin Eiseigaku Zasshi. Food Hygiene Journal. (Nippon Shokuhin Eisei Gakkai c/o Shokuhin Eisei Senta, 2-6-1 Jingumae, Shibuya-ku, Tokyo 150, Japan) V.1- 1960- Volume (issue)/page/year: 14,186,1973
LD50 - Lethal dose, 50 percent	Intracerebral	Rodent - mouse	600 ng/kg	Behavioral - convulsions or effect on seizure threshold	SKEZAP Shokuhin Eiseigaku Zasshi. Food Hygiene Journal. (Nippon Shokuhin Eisei Gakkai c/o

kill				Behavioral - ataxia	Shokuhin Eisei Senta, 2-6-1 Jingumae, Shibuya-ku, Tokyo 150, Japan) V.1- 1960- Volume (issue)/page/year: 14,186,1973
LD50 - Lethal dose, 50 percent kill	Unreported	Rodent - mouse	8700 pg/kg	Details of toxic effects not reported other than lethal dose value	IGAYAY Igaku No Ayumi. Progress in Medicine. (Ishiyaku Shuppan K.K., 1-7-10, Honkomagom, Bunkyo-ku, Tokyo, Japan) V.1- 1946- Volume (issue)/page/year: 112,861,1980
LDLo - Lowest published lethal dose	Oral	Rodent - rabbit	7500 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year: 6,63,1938
LDLo - Lowest published lethal dose	Subcutaneous	Rodent - rabbit	650 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year: 6,63,1938
LDLo - Lowest published lethal dose	Intravenous	Rodent - rabbit	400 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year: 6,63,1938
LDLo - Lowest published lethal dose	Intramuscular	Rodent - rabbit	400 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year: 6,63,1938
LDLo - Lowest published lethal dose	Intracerebral	Rodent - rabbit	25 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year:

					6,63,1938
LDLo - Lowest published lethal dose	Parenteral	Rodent - rabbit	4 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year: 6,63,1938
LDLo - Lowest published lethal dose	Intraspinal	Rodent - rabbit	80 ug/kg	Details of toxic effects not reported other than lethal dose value	HXPHAU Handbuch der Experimentellen Pharmakologie. (Berlin, Ger.) New series: V.1-49, 1935-78. For publisher information, see HEPHD2. Volume (issue)/page/year: 6,63,1938
LD50 - Lethal dose, 50 percent kill	Intraperitoneal	Amphibian - frog	14 ug/kg	Peripheral Nerve and Sensation - spastic paralysis with or without sensory change	TOXIA6 Toxicon. (Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 OBW, UK) V.1- 1962- Volume (issue)/page/year: 5,25,1967
LDLo - Lowest published lethal dose	Unreported	Amphibian - frog	15 ug/kg	Details of toxic effects not reported other than lethal dose value	SCIEAS Science. (American Assoc. for the Advancement of Science, 1333 H St., NW, Washington, DC 20005) V.1- 1895- Volume (issue)/page/year: 144,1100,1964
TDLo - Lowest published toxic dose	Intracerebral	Rodent - mouse	411.5 mg/kg	Biochemical - Metabolism (Intermediary) - other	JPETAB Journal of Pharmacology and Experimental Therapeutics. (Williams & Wilkins Co., 428 E. Preston St., Baltimore, MD 21202) V.1- 1909/10- Volume (issue)/page/year: 299,960,2001
TDLo - Lowest published toxic dose	Intravenous	Rodent - rat	10 ug/kg	Cardiac - pulse rate Vascular - BP lowering not characterized in autonomic section Biochemical - Metabolism (Intermediary) - effect on Sodium-Potassium pump	JCPCDT Journal of Cardiovascular Pharmacology. (Raven Press, 1140 Ave. of the Americas, New York, NY 10036) V.1- 1979- Volume (issue)/page/year: 35,630,2000
TDLo - Lowest published toxic dose	Intravenous	Rodent - rabbit	5 ug/kg	Lungs, Thorax, or Respiration - respiratory obstruction Peripheral Nerve	VCVPS* "Vrednie chemichescie veshestva. Prirodnie organicheskie soedinenia" (Hazardous substances. Nature

				and Sensation - flaccid paralysis without anesthesia (usually neuromuscular blockage)	products.) Volkova N.V. et al., Sankt-Peterburg, 1998. Volume (issue)/page/year: -,280,1998
TDLo - Lowest published toxic dose	Intracerebral	Rodent - rat	13.3 ng/kg	Behavioral - alteration of operant conditioning	PSCHDL Psychopharmacology (Berlin). (Springer-Verlag New York, Inc., Service Center, 44 Hartz Way, Secaucus, NJ 07094) V.47- 1976- Volume (issue)/page/year: 168,66,2003
TDLo - Lowest published toxic dose	Subcutaneous	Rodent - rat	104 mg/kg	Peripheral Nerve and Sensation - sensory change involving peripheral nerve	AANEAB Acta Anaesthesiologica Scandinavica. (Munksgaard International Pub., POB 2148, DK-1016 Copenhagen K, Denmark) V.1- 1957- Volume (issue)/page/year: 45,899,2001
TDLo - Lowest published toxic dose	Intracerebral	Rodent - rat	6131 ng/kg	Biochemical - Metabolism (Intermediary) - other Biochemical - Neurotransmitters or modulators (putative) - dopamine in striatum	ARTODN Archives of Toxicology. (Springer-Verlag, Heidelberger Pl. 3, D-1000 Berlin 33, Fed. Rep. Ger.) V.32- 1974- Volume (issue)/page/year: 76,596,2002
LD50 - Lethal dose, 50 percent kill	Intraperitoneal	Rodent - rabbit	8 ug/kg	Details of toxic effects not reported other than lethal dose value	JAPTO* Journal of Applied Toxicology (John Wiley & Sons, Ltd., Oldlands Way Bognor Regis West Sussex, PO22 9SA England) V.1- 1981- Volume (issue)/page/year: 23,139,2003
LD50 - Lethal dose, 50 percent kill	Intravenous	Rodent - mouse	8 ug/kg	Details of toxic effects not reported other than lethal dose value	JAPTO* Journal of Applied Toxicology (John Wiley & Sons, Ltd., Oldlands Way Bognor Regis West Sussex, PO22 9SA England) V.1- 1981- Volume (issue)/page/year: 23,139,2003
LDLo - Lowest published lethal dose	Intraperitoneal	Rodent - mouse	8 ug/kg	Details of toxic effects not reported other than lethal dose value	TXCYAC Toxicology. (Elsevier Scientific Pub. Ireland, Ltd., POB 85, Limerick, Ireland) V.1- 1973- Volume (issue)/page/year: 214,268,2005

LDLo - Lowest published lethal dose	Intraperitoneal	Rodent - mouse	10 ug/kg	Behavioral - muscle contraction or spasticity Behavioral - alteration of classical conditioning	TOXIA6 Toxicon. (Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 OBW, UK) V.1- 1962- Volume (issue)/page/year: 50,553,2007
TDLo - Lowest published toxic dose	Intravenous	Rodent - rat	50 ug/kg	Sense Organs and Special Senses (Eye) - changes in circulation Cardiac - change in rate Vascular - BP lowering not characterized in autonomic section	JPHSC* Journal of pharmacological sciences (Kyoto, Japan : Japanese Pharmacological Society) V.91- 2003- Volume (issue)/page/year: 103,103,2007

REVIEWS

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TOXICOLOGY REVIEW	EMCNA* Emergency medicine clinics of North America (Philadelphia : Elsevier Health Sciences Division) V.1- 1983- Volume(issue)/page/year: 15,157,1997
TOXICOLOGY REVIEW	HTOPA* Handbook of Toxicologic Pathology (Second Edition) Edited by: Wanda M. Haschek, Colin G. Rousseaux and Matthew A. Wallig, Elsevier Inc, 2002 Volume(issue)/page/year: 1,631,2002
TOXICOLOGY REVIEW	HUTOX* Human Toxicology, Edited by: Jacques Descotes, Elsevier B.V., 1996 Volume(issue)/page/year: -,803,1996
TOXICOLOGY REVIEW	SIMEJ* Singapore medical journal(Singapore, Singapore Medical Assn.) V.1- 1960- Volume(issue)/page/year: 48,830,2007

STATUS IN U.S.

EPA TSCA Section 8(d) unpublished health/safety studies

EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 2001

END OF RECORD

RTECS® is provided quarterly by Symyx Software, Inc., and was last updated: **April, 2010**.

Cell Line Info

Cell Biology

ATCC® Number:	CCL-2™ Order this Item	Price:	$256.00

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

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ATCC® Number:	**CRL-1573™** Order this Item	Price:	**$256.00**

Designations:	293 [HEK-293]
Depositors:	FL Graham
Biosafety Level:	2 [CELLS CONTAIN ADENOVIRUS]
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Homo sapiens* (human)
Morphology:	epithelial 
Source:	**Organ:** embryonic kidney **Cell Type:** transformed with adenovirus 5 DNA
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Restrictions:	These cells are distributed for research purposes only. 293 cells, their products, or their derivatives may not be distributed to third parties.
Applications:	efficacy testing [92587] transfection host (Nucleofection technology from Lonza Roche FuGENE® Transfection Reagents) viruscide testing [92579]
Receptors:	vitronectin, expressed
Tumorigenic:	YES
DNA Profile (STR):	Amelogenin: X CSF1PO: 11,12 D13S317: 12,14 D16S539: 9,13 D5S818: 8,9 D7S820: 11,12 THO1: 7,9.3 TPOX: 11 vWA: 16,19

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ATCC® Number:	**CCL-131™** Order this Item	Price:	**$256.00**

Designations:	Neuro-2a
Depositors:	RJ Klebe
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	*Mus musculus* (mouse)
Morphology:	neuronal and amoeboid stem cells 
Source:	**Strain:** A **Organ:** brain **Disease:** neuroblastoma **Cell Type:** neuroblast;
Cellular Products:	acetylcholinesterase tubulin
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche FuGENE® Transfection Reagents)
Virus Susceptibility:	Herpes simplex virus Vesicular stomatitis virus Human poliovirus 1
Antigen Expression:	H-2, a haplotype; Mus musculus, expressed
Cytogenetic Analysis:	modal number = 95; range = 59 to 193. Karyotype unstable within a stemline range of 94 to 98 chromosomes. All the cells contain 6 to 10 large chromosomes with median or submedian centromeres and 2 to 4 minute chromosomes.
GenoType:	albino

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Cell Biology

ATCC® Number:	**CRL-2057™**	Order this Item	Price:	**$329.00**

Designations:	RIN-m
Depositors:	AF Gazdar, H Oie
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	Rattus norvegicus (rat)
Morphology:	epithelial
Source:	**Strain:** NEDH **Organ:** pancreas **Tissue:** islet cell tumor **Disease:** insulinoma **Cell Type:** beta cell;
Cellular Products:	insulin; somatostatin; glucagon (possibly)
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Tumorigenic:	Yes
Gender:	male
Comments:	The RIN-m cell line was derived from a radiation induced transplantable rat islet cell tumor. The line was established from a nude mouse xenograft of the tumor.The cells produce and secrete islet polypeptide hormones, and produce L-dopa-decarboxylase (a marker for cells having amine precursor uptake and decarboxylation, or APUD, activity). This line was cloned into two other lines: RIN-5F (ATCCCRL-2058) and RIN-14B ((ATCCCRL-2059). RIN-5F produces only insulin and RIN-14B produces only somatostatin. These offer models for the study of the biology of pancreatic islet cells, specifically the mechanisms controlling the synthesis, storage and secretion of insulin and somatostatin. The cells produce and secrete islet polypeptide hormones, and produce L-dopa-decarboxylase (a marker for cells having amine precursor uptake and decarboxylation, or APUD, activity).

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Cell Biology

ATCC® Number: **CRL-6509™** Order this Item Price: **$355.00**

Designations:	NRK
Biosafety Level:	1
Shipped:	frozen
Medium & Serum:	See Propagation
Growth Properties:	adherent
Organism:	Rattus norvegicus (rat)
Morphology:	epithelial
Source:	**Organ:** kidney **Strain:** Osborne-Mendel **Disease:** normal
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.
Applications:	transfection host (Nucleofection technology from Lonza Roche FuGENE® Transfection Reagents)
Cytogenetic Analysis:	modal number = 44; range = 39 to 44
Age:	adult
Propagation:	**ATCC complete growth medium:** The base medium for this cell line is ATCC-formulated Dulbecco's Modified Eagle's Medium, Catalog No. 30-2002. To make the complete growth medium, add the following components to the base medium: fetal bovine serum to a final concentration of 10%. **Atmosphere:** air, 95%; carbon dioxide (CO2), 5% **Temperature:** 37.0°C
Subculturing:	**Protocol:** Remove medium, and rinse with 0.25% trypsin, 0.53 mM EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks. **Subcultivation Ratio:** A subcultivation ratio of 1:4 to 1:12 is recommended **Medium Renewal:** Every 2 to 3 days

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Biological Reference Material and Consensus Standards for