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

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

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

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

Completed forms are to be returned to Occupational Health and Safety, (OHS), (Support Services Building, Room 4190) for distribution to the Biohazards Subcommittee. For questions regarding this form, please contact the Biosafety Officer at extension 81135 or biosafety@uwo.ca.

PRINCIPAL INVESTIGATOR	Shiva Singh
DEPARTMENT	Biology
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EMERGENCY PHONE NUMBER(S)	
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Location of experimental work to be carried out: Building(s) __WSC _____ Room(s)_313___

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

FUNDING AGENCY/AGENCIES: Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Ontario Mental Health Foundation

GRANT TITLE(S): Copy Number Variations in Schizophrenia
Gene-environment interplay and developmental psychopathology of internalizing disorders

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

Name	UWO E-mail Address	Date of Biosafety Training
INDIVIDUALS WORKING WITH BIOLOGICAL AGENTS		
Christina Castellani	ccastel3@uwo.ca	Nov 2007
Haroon Sheikh	hsheikh6@uwo.ca	Sept 2007
Alex Laliberte	alalibe@uwo.ca	October 2008
IINDIVIDUALS ***NOT*** WORKING WITH BIOLOGICAL AGENTS		
Morgan Kleiber	mlkleibe@uwo.ca	Sept 2005
Katarzyna Janus	kjanus@uwo.ca	Sept 2009
Eric Diehl	ediehl@uwo.ca	May 2009
Ben Laufer	blaufer@uwo.ca	
Aniruddho Chokroborty Hoque	ahoque2@uwo.ca	
Sujit Maiti	smaiti@uwo.ca	
Patrick McDonald	pmcdona5@uwo.ca	
Kiran Kumar	kgowda@uwo.ca	

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.

HUMAN BLOOD, SALIVA AND BUCCAL SAMPLES

The biohazardous substances used include human blood, saliva, and buccal swab samples. They are stored in the -80 freezer in the WSC core facility. DNA is extracted using commercially-available DNA processing kits (Qiagen, Salimetrics). All biohazardous waste generated is disposed of in the biohazard waste containers before incineration.

MOUSE TISSUE SAMPLES AND PRIMARY NEURONAL CELL CULTURE

Primary neuron culture is obtained from embryonic day 16-18 mice (C57BL/6J and *Syntaxin12* (*Stx12*) knock-outs on C57BL/6J genetic background). Cells are trypsinized and dissociated neurons were plated in Neurobasal medium supplemented with B27, glutamine and glutamate in 12-well plates. Cultures are incubated in designated tissue culture facility (WSC 357) for a period of two weeks. All samples generated are immediately used. Following experiments, cell culture medium and plates are aspirated and bleached, then sent for incineration.

Please include a one page research summary or teaching protocol.

RESEARCH SUMMARIES

Genetic variation in monozygotic twins discordant for schizophrenia

Blood and buccal swab samples are collected from monozygotic twins discordant for schizophrenia and in some cases parental samples are also included. Samples are collected following informed consent. DNA is extracted from the samples and used for a variety of downstream applications. This includes microarray and quantitative PCR analysis using various pre-designed platforms such as the Affymetrix Human SNP Array 6.0. Analysis is performed using multiple software suites such as Affymetrix Genotyping Console, Partek Genomics Suite, Ingenuity Pathways Analysis among others.

Genetic Correlates of Preschool Age Human Stress Response

The aim of this study is to examine the genetic factors that contribute to stress vulnerability and resilience in early childhood. Specifically, the research is an investigation of natural differences in genes that are involved in biological stress response and their association with stress vulnerability. Methods include: 1. Collection of individual DNA by buccal swabs which is subsequently used for genotyping by standardized protocols; 2.Collection of saliva after a standardized stress task conducted at the participant's residence. The later is used for cortisol quantification using enzyme-linked Immunosorbent Assay (ELISA) protocol. The methods employed are described in further detail in our laboratory's recent publications (Sheikh et al., 2010; Kryski et al., 2011).

Genetic regulatory mechanisms in mice

Syntaxin 12 (*Stx12*) is a gene which was previously identified in a screen of genes related to ethanol preference in mice. In order to identify the effect of reduced Stx12 expression on behaviour, our lab has generated a mouse knockout model of this gene. Although the heterozygote for the *Stx12* knockout is relatively normal, the homozygote does not survive past post-natal day 0. Previous attempts to identify pathological features in embryos and pups have been inconclusive, suggesting that the post-natal lethality is likely dependent on physiological and not anatomical differences in the homozygous knockout. In order to study this possibility, primary neuron culture from E16-E18 pups (wildtype C57BL/6J and *Stx12* knockout on a C57BL/6J background) will be generated and tested for physiological differences in neurotransmission. Stx12 is thought to be involved in the recycling of internalized AMPA receptors; therefore a modified protocol from Lin et al (2000, *Nature Neuroscience*) will be used to examine the internalization of AMPA receptors in neuron cultures from Stx12-deficient mice.

1.0 Microorganisms

1.1 Does your work involve the use of biological agents? O YES X 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 O NO
If YES, please give the name of the species. _____
What is the origin of the microorganism(s)? _____
Please describe the risk (if any) of escape and how this will be mitigated:

_____
_____
_____

Please attach the CFIA permit.
Please describe any CFIA permit conditions:

_____
_____
_____

1.2 Please complete the table below:

Name of Biological Agent(s)* (Be specific)	Is it known to be a human pathogen? YES/NO	Is it known to be an animal pathogen? YES/NO	Is it known to be a zoonotic agent? YES/NO	Maximum quantity to be cultured at one time? (in Litres)	Source/ Supplier	PHAC or CFIA Containment Level
	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
	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? X YES O NO
If no, please proceed to Section 3.0

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

Cell Type	Is this cell type used in your work?	Source of Primary Cell Culture Tissue	AUS Protocol Number
Human	O Yes X No		Not applicable
Rodent	X Yes O No	Mouse brain	2007-059-10
Non-human primate	O Yes X No		
Other (specify)	O Yes X No		

2.3 Please indicate the type of established cells that will be grown in culture in: N/A (primary culture)

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	O Yes O No			
Rodent	O Yes O No			
Non-human primate	O Yes O No			
Other (specify)	O Yes O 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 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? X YES O NO
If no, please proceed to Section 4.0

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

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

Containment Level?

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 X NO If no, please proceed to Section 5.0

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

Bacteria Used for Cloning *	Plasmid(s) **	Source of Plasmid	Gene Transfected	Describe the change that results from transformation or tranfection

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

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

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

* Please attach a Material Safety Data Sheet or equivalent.

4.4 Will genetic sequences from the following be involved?

- HIV O YES, please specify _____ 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 X NO
(including but not limited to microorganisms, viruses, prions, parasites or pathogens of plant or animal origin)
If no, please proceed to Section 6.0

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

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

5.3 How will the biological agent be administered? _____

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

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

6.0 Animal Experiments

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

6.2 Name of animal species to be used_____mouse__(Mus musculus)_____

6.3 AUS protocol # _____2007-059-10_____

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

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

_____

_____

7.0 Use of Animal species with Zoonotic Hazards

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

7.2 Will live animals be used? O YES O No

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

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

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

_____

8.0 Biological Toxins

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

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

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

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

8.5 How much of the toxin is stored*? _____

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

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

9.0 Insects

9.1 Do you use insects? O YES X NO If no, please proceed to Section 10.0

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

9.3 What is the origin of the insect? _____

9.4 What is the life stage of the insect? _____

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

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

_____
_____

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

_____
_____

10.0 Plants

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

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

10.3 What is the origin of the plant? _____

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

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

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

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

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

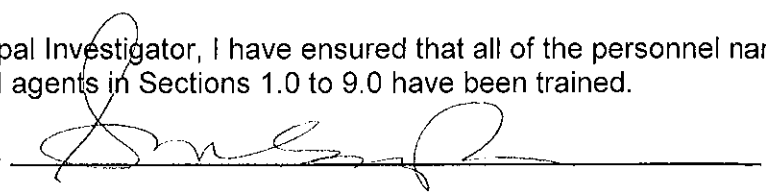
11.4 Has the import permit been sent to OHS? O YES, please provide permit # _____ O NO

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 

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. X 1 O 2 O 2+ O 3

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

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

13.3 Please indicate permit number (not applicable for first

Level 2 inspection
August 11, 2010

14.0 Procedures to be Followed

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

_____
_____
_____

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

_____
_____

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

SIGNATURE _____ Date: June 27, 2011.

15.0 Approvals

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

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

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

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

Special Conditions of Approval: