

# POLICY– Use of Recombinant DNA and Infectious Agents in Research

Version 2.0

## Office for the Protection of Research Subjects (OPRS) Institutional Biosafety Committee (IBC)

1737 West Polk Street (MC 672)  
206 Administrative Office Building  
Chicago, IL 60612

Phone: 312.996.1972 Fax: 312.996.9088  
www.research.uic.edu

### I. Introduction

The University of Illinois at Chicago is committed to compliance with current federal regulations concerning the use of recombinant DNA (rDNA) in research and to the safe conduct of research involving infectious agents. The purpose of this document is to present policy and guidelines to accomplish these goals.

### II. Federal Regulations & Guidelines:

#### A. Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines)

The Department of Health and Human Services' policy regulating the use of rDNA in research is entitled Guidelines for Research Involving Recombinant DNA Molecules. The Office of Biotechnology Activities (OBA) is the office within NIH that is responsible for reviewing and coordinating all activities relating to the NIH Guidelines.

The NIH Guidelines are applicable to all rDNA research within the United States or its territories that is conducted at or sponsored by an institution that receives any support for rDNA research from NIH, including research performed directly at NIH. As a condition for NIH funding rDNA research, UIC shall ensure that all research involving rDNA, irrespective of the source of funding, complies with the NIH Guidelines.

#### B. Possession, Use and Transfer of Select Agents (42 CFR Part 73 & 42 CFR Part 1003) and Agricultural Bioterrorism Protection Act of 2002; Possession, Use and Transfer of Biological Agents and Toxins (7 CFR Part 331 & 9 CFR Part 121)-

The Department of Health and Human Services (DHHS) and the United States Department of Agriculture (USDA) published interim final rules in the Federal Register on December 13, 2002. The interim final rule became effective on February 7, 2003 for DHHS and on February 11, 2003 for the USDA. Both rulings regulate the possession, use and transfer of a select list of biological agents and toxins. The list of agents and toxins is available on the UIC IBC web site listed on this policy.

All investigators contemplating the use of any agent or toxin on this list must contact the UIC Environmental Health and Safety office at 996-7411.

### III. Institutional Policies

#### A. Institutional Biosafety Committee (IBC)

In compliance with the NIH Guidelines, the UIC IBC oversees all aspects concerning the use of rDNA in research. The UIC IBC is also responsible for the safe conduct of research involving the use of infectious agents.

In accordance with the NIH Guidelines, the institution shall appoint the Committee. The institutional official at UIC with responsibility for appointing all members of the IBC, including the chair, is the Vice Chancellor of Research. Members of the Committee shall be appointed from recommendations by faculty and others for open terms. Membership of the Committee shall be in compliance with the NIH Guidelines. The Office for the Protection of Research Subjects (OPRS) - IBC office shall staff all activities of IBC.

### Definitions

*Recombinant DNA* - rDNA molecules are defined as either of the following:

- a. Molecules that are constructed outside living cells by joining natural or synthetic DNA segments to DNA molecules that can replicate in a living cell
- b. Molecules that result from the replication of those described in (a) above

*Infectious agents* - any microorganism or toxin produced by a microorganism that is pathogenic to humans, animals or plants.

*Institutional Official* - the UIC official with responsibility for appointment of Committee members and to whom the IBC reports on matters related to the use of rDNA in research and the safe conduct of research involving infectious agents. At UIC this official is the Vice Chancellor for Research.

*Responsible Official* - the UIC official with responsibility for the registration, possession, use and transfer of select agents. At UIC this official is the Vice Chancellor for Administration.

*Biosafety Officer* - the UIC safety person responsible for overseeing all aspects of biological safety on the UIC campus.

*Risk Group* - the classification assigned to microorganisms based on their relative pathogenicity for healthy adult humans. There are four risk group (RG) classifications:

- a. RG1- agents are not associated with disease in healthy adult humans
- b. RG2- agents are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available.
- c. RG3- agents are associated with serious or lethal human disease for which preventive or therapeutic interventions may be available.
- d. RG4- agents are likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available.

*Biosafety Level (BSL)* - refers to the combination of laboratory practices and techniques, safety equipment and laboratory facilities under which the project can be conducted safely.

*Select/Restricted Agent* - a biological agent or toxin that requires registration for the possession, use and transfer of the agents under either of the federal regulations listed below. These agents will be referred to as select agents throughout the remainder of this policy.

- a. 42 CFR Part 73 & 42 CFR Part 1003
- b. 7 CFR Part 331 & 9 CFR Part 121

### **B. Applicability**

1. All UIC faculty, staff, and students utilizing rDNA molecules in research at UIC shall submit an IBC Protocol for the Use of Recombinant DNA in Research to the UIC OPRS-IBC office (201 AOB) prior to initiation of that research. If the work described in the application uses a select agent, the UIC Environmental Health and Safety Office (996-7411) must be contacted for registration of possession, use and transfer of the select agent in addition to completion of the IBC protocol.

2. All UIC faculty, staff, and students utilizing monies administered by UIC and conducting research involving rDNA molecules at the Jesse Brown VA Medical Center shall submit an IBC Protocol for the Use of Recombinant DNA in Research to the UIC OPRS- IBC office (201 AOB) prior to initiation of that research. If the work described in the application uses a select agent, the investigator must contact the Jesse Brown VA Medical Center for registration of possession, use and transfer of the select agent in addition to completion of the IBC protocol..
3. All UIC faculty, staff, and students utilizing infectious agents in research at UIC shall submit an IBC Protocol for the Use of Infectious Agents in Research to the UIC OPRS- IBC office (201 AOB) prior to initiation of that research. If the work described in the application uses a select agent, the UIC Environmental Health and Safety Office (996-7411) must be contacted for registration of possession, use and transfer of the select agent.
4. All UIC faculty, staff, and students utilizing rDNA molecules in research must obtain and read the relevant portions of the current NIH Guidelines prior to initiation of any rDNA research protocol. The NIH Guidelines are available from the OBA office or may be accessed at the following URL:  
(<http://www4.od.nih.gov/oba/rac/guidelines/guidelines.html>).
5. All UIC faculty, staff, and students utilizing infectious agents in research (BSL2 and above) must obtain and read the relevant portions of Biosafety in Microbiological and Biomedical Laboratories (BMBL) 4th Edition from the CDC and NIH accessed at [http://www.cdc.gov/od/ohs/pdffiles/4th\\_BMBL.pdf](http://www.cdc.gov/od/ohs/pdffiles/4th_BMBL.pdf) and the UIC Biological Safety Program Manual accessed at the following URL: <http://www.uic.edu/depts/envh/>
6. The *NIH Guidelines* differentiate rDNA research into six categories; however UIC only recognizes five of these categories. **NO rDNA RESEARCH IS EXEMPT AT UIC.** All rDNA research conducted at UIC must be submitted to the IBC. While some research may begin simultaneously with submission, none may begin prior to submission.
  - a. **Research requiring submission to the IBC simultaneously with initiation**

This research is covered under Review Category III of IBC Form A- Protocol for Use of Recombinant DNA in Research.

    - i. Using rDNA **outside of organism (e.g., cell culture)**
    - ii. Forming recombinant molecules containing DNA segments from a **single non-chromosomal or viral DNA source** (See Appendix C-V of NIH Guidelines at [http://www4.od.nih.gov/oba/rac/guidelines\\_02/APPENDIX\\_C.htm](http://www4.od.nih.gov/oba/rac/guidelines_02/APPENDIX_C.htm))
    - iii. Cloning DNA from a **prokaryotic source** and propagating it only in the **same host**
    - iv. Cloning DNA from a **eukaryotic source** and propagating it only in the **same host**
    - v. Cloning DNA segments and propagating it in hosts where the **source and host exchange DNA by known physiological processes** (See list of natural exchangers at [http://www4.od.nih.gov/oba/rac/guidelines\\_02/APPENDIX\\_A.htm](http://www4.od.nih.gov/oba/rac/guidelines_02/APPENDIX_A.htm))
    - vi. rDNA molecules that contain **no more than two-thirds of any eukaryotic**

- viral genome** that are propagated and maintained in cells in tissue culture
- vii. Cloning DNA and propagating it using **plasmids in certified host-vector systems** (See list of certified host-vector systems and non-exemptions in Appendix C at [http://www4.od.nih.gov/oba/rac/guidelines\\_02/APPENDIX\\_C.htm](http://www4.od.nih.gov/oba/rac/guidelines_02/APPENDIX_C.htm) and in Appendix E at [http://www4.od.nih.gov/oba/rac/guidelines\\_02/appendix\\_e.htm](http://www4.od.nih.gov/oba/rac/guidelines_02/appendix_e.htm))\*
  - viii. Experiments involving **whole plants**\*
  - ix. Experiments involving **transgenic rodents** (UIC Animal Care Committee (ACC) approval also required prior to initiation of animal work)\*

*\* If research has the potential to cause significant risk to health or environment then it must receive approval from IBC prior to initiation*

b. **Research requiring approval of the IBC prior to initiation.**

This research is covered under Review Category II of IBC Form A- Protocol for Use of Recombinant DNA in Research.

- i. Using risk group 2,3, or 4 agents as host or vector
- ii. Cloning DNA for risk group 2, 3, or 4 agents into nonpathogenic prokaryotic or lower eukaryotic host-vector systems
- iii. Using infectious or defective DNA or RNA viruses in the presence of helper virus in tissue culture systems.
- iv. Using whole animals. UIC ACC protocol approval is also required.
- v. Using more than 10 liters of culture.

c. **Research requiring approval of the IBC, review by RAC, and specific approval of the NIH Director prior to initiation.**

This research is covered under Review Category I of IBC Form A- Protocol for Use of Recombinant DNA in Research. Investigators considering this type of research should contact the IBC office prior to submission to the UIC IBC or NIH/OBA.

- i. Deliberate transfer of a drug resistant trait to microorganisms not known to acquire this trait naturally, if such acquisition could compromise the use of the drug to control disease agents in humans, veterinary medicine, or agriculture.

d. **Research requiring approval of the IBC and NIH/OBA prior to initiation.**

This research is covered under Review Category I of IBC Form A- Protocol for Use of Recombinant DNA in Research. Investigators considering this type of research should contact the IBC office prior to submission to the UIC IBC or NIH/OBA.

- i. Cloning of toxin molecules with LD50 of less than 100 nanogram per kg of body weight. (See NIH Guidelines for E. coli exceptions).

e. **Research requiring IBC and Institutional Review Board (IRB) and NIH/OBA registration prior to initiation.**

This research is covered under Review Category I of IBC Form A- Protocol for Use of Recombinant DNA in Research. Investigators considering this type of research should contact the IBC office prior to submission to the IBC, IRB or NIH/OBA.

- i. Deliberate transfer of recombinant DNA, or DNA or RNA derived from recombinant DNA into one or more human subjects (in vivo transfer).

- ii. Deliberate transfer of recombinant DNA, or DNA or RNA derived from recombinant DNA into cells that will be transferred into one or more human subjects (ex vivo transfer).
7. All investigators conducting research with infectious agents without rDNA (BSL2 or greater), with animal etiologic agents that are infectious to human cells or an agent listed on the select agent list must submit a protocol to the IBC. This research is covered under IBC Form B- Use of Infectious Agents in Research.
8. Investigators must determine (initially) that their research does not require approval prior to initiation. All protocols submitted to the IBC will be distributed to members of the Committee for pre-review. Following pre-review by the IBC, the investigator will be contacted if it is determined by the Committee that Full committee approval is needed prior to initiation. If the protocol does not require full Committee approval it will be eligible for expedited review and approval. Protocols in this category must meet the following criteria:
  - a. The research being conducted is exempt from the NIH Guidelines, and
  - b. The research is being conducted at a BSL1 level, and
  - c. All Committee members pre-reviewing the protocol must indicate that the protocol is eligible for expedited review and there are no concerns or clarifications.

Protocols that do not meet the above criteria will be reviewed by the Full IBC Committee at a convened monthly meeting.

9. The IBC office shall contact all investigators by campus mail following review of their protocol by the Committee. If the Committee approves the protocol, the investigator may proceed with the work if no conditions are placed on the approval. If conditions are placed on the approval all conditions must be met, prior to initiation of the protocol. If the Committee approves the protocol pending clarifications, the investigator has 60 days in which to respond to the Committee's concerns or the protocol will be terminated. Approved pending protocols that fall into review category I or II may not be initiated until final approval is granted by the IBC. If the Committee defers the protocol pending major clarifications, the investigator has 60 days to respond to the Committee's concerns or the protocol will be terminated. Deferred protocols that fall into review category I or II may not be initiated until final approval is granted by the IBC.
10. The investigator must report significant changes in the research protocol prior to initiation of the change. These changes must be approved prior to their initiation. Proposed changes can be reported to the IBC via a letter of modification addressed to the chair of the IBC. Significant changes include, but are not limited to the following:
  - a. Change in review category
  - b. Change in biosafety level
  - c. Change requiring additional approvals (e.g., IRB, ACC, etc)
  - d. Change in infectious agent
  - e. Any change involving a select agent\*
  - f. Any change involving research in review category I of IBC Form A- Use of

**Recombinant DNA in Research.**

*\*Note: All changes regarding a select agent must also be reported to the EHSO prior to the initiation of the changes*

11. Periodic review of all rDNA research is required by the NIH Guidelines; therefore, all protocols involving rDNA and/or infectious agents shall be reviewed on an annual basis via a request for updated information (personnel and modifications). Investigators involved in human gene transfer research will need to complete additional information for continuation of these protocols. Note any modification or personnel change on protocol involving the use of a select agent must be reported to EHSO and approved prior to the initiation of any such change.

All protocols shall undergo a full review every three years via resubmission regardless of whether or not the work being conducted under the protocol has changed.

12. Any protocol utilizing humans or animals must receive independent approval of the IRB or the ACC, respectively. IBC must be obtained prior to final IRB approval. All required approval must be obtained prior to initiation of the work.
13. Any protocol requiring select agent registration and approval must receive that approval prior to the initiation of the work