

Guide to the NIH Guidelines for Research Involving Recombinant DNA Molecules University of Maryland

Compliance with the *NIH Guidelines for Research Involving Recombinant DNA Molecules* (<http://www4.od.nih.gov/oba/rac/guidelines/guidelines.html>) is mandatory for every institution that receives NIH funding for research involving recombinant DNA (rDNA). It is the responsibility of each investigator to make sure that his/her laboratory is in compliance. If your experiments require registration, go to <https://des.umd.edu/research/login.cfm> to register. This outline is intended only to serve as a guide to the NIH Guidelines. If you are unsure in which category your experiments fall, register them.

Section III-A & B – Experiments that require registration and NIH and IBC approval PRIOR to initiation:

1. Deliberate transfer of a drug resistance trait to microorganisms that are not known to acquire the trait naturally if such acquisition could compromise the use of the drug to control disease.
2. Cloning of toxin molecules with LD₅₀ of less than 100 ng / kilogram body weight.

Section III-D - Experiments that require registration & IBC approval PRIOR to initiation:

1. Experiments using Risk Group 2, 3, or 4 agents as host-vector systems.
2. Experiments in which DNA from Risk Group 2, 3, or 4 agents is cloned into nonpathogenic prokaryotic or lower eukaryotic host-vector systems.
3. Experiments involving the use of recombinant or reassortant viruses in tissue culture systems; or defective recombinant viruses in the presence of helper virus or packaging cells in tissue culture systems (this includes all eukaryotic viruses).
4. Experiments that generate transgenic animals, including insects (with the exception of transgenic rodents requiring BSL1 containment).
5. Experiments involving viable rDNA-modified microorganisms tested on whole animals.
6. Experiments involving whole plants that require BSL3 or BSL4 containment.
7. Experiments involving more than 10 liters of culture.

Section III-E - Experiments that require registration simultaneous with initiation:

1. Introduction into cultured cells of any rDNA containing greater than half but less than 2/3 of a eukaryotic viral genome (with the exception of Risk Group 3 or 4 agents).
2. Cloning in non-pathogenic prokaryotes and non-pathogenic lower eukaryotes.
3. Generation of transgenic rodents requiring BSL1 containment.
4. Experiments involving whole plants that require BSL1 or BSL2 containment.
5. Experiments not specified on this sheet.

Section III-F - Experiments that are exempt but still require registration:

1. Cloning of all other DNA in *E. coli* K12, *S. cerevisiae*, and *B. subtilis* host-vector systems (with the exception of DNA from Risk Group 3 or 4 pathogens).
2. Introduction into cultured cells of any recombinant DNA containing less than half of a eukaryotic viral genome (with the exception of Risk Group 3 or 4 pathogens).
3. Purchase or transfer of transgenic rodents.

Experiments that are exempt and do not require registration:

1. Use of rDNA that is not in organisms or viruses.

Guide to the NIH Guidelines for Responsibilities of the Principal Investigator

Section IV-B

General Responsibilities of the PI:

1. Comply with all NIH Guidelines in the conduct of rDNA work. Ensure all persons working in the lab are compliant and have received the necessary training.
2. Notify the BSO of any modifications or changes in research conducted in lab and receive proper approval before commencing with the new research.
3. Report any significant problems, violations of the NIH Guidelines, or research-related accidents or illnesses, or new information bearing on the NIH Guidelines to the BSO. Some examples of reportable incidents are:
 - a. Events involving a personal injury or loss of containment
 - b. Accidental needlesticks
 - c. Escape or improper disposal of animals used in research
 - d. Spills of high-risk recombinant materials outside of the biosafety cabinet.
4. Adhere to the IBC approved emergency plans, located in the UM Biosafety Manual at <http://www.des.umd.edu/biosafety/rest/manual.html>, for handling accidental spills and personnel contamination.
5. Comply with shipping requirements for rDNA molecules per Appendix H of NIH Guidelines.

Responsibilities of the PI to Laboratory Staff:

1. Make available to lab staff all protocols describing potential biohazards and precautions to be taken.
2. Instruct and train lab staff in safety practices and procedures to deal with accidents.
 - a. Some suggested trainings from DES:
 - i. BL2 online training-- <https://des.umd.edu/Training/bsl2/login.cfm>
 - ii. Chemical hygiene online training-- <https://des.umd.edu/Training/ch/login.cfm>
 - iii. New Lab Researcher training-- <https://des.umd.edu/TrainingClass/index.cfm>We highly recommend lab personnel attend at least the New Lab Researcher training.
3. Inform lab staff of precautionary medical practices advised or requested (e.g. vaccinations).

Ongoing Responsibilities of the PI throughout Research:

1. Supervise the safety performance of lab staff to ensure appropriate practices are employed.
2. Investigate and report any significant problems pertaining to the operation and implementation of containment practices and procedures in writing to the BSO.
3. Correct work errors and conditions that may result in the release of rDNA materials, and ensure the physical and biological containment of such materials.

Biosafety Officers (BSOs):

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