Guide to the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules*

Compliance with the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules* is mandatory for every institution that receives NIH funding for research involving recombinant DNA or synthetic nucleic acids (hereby referred to as "rsNA"). It is the responsibility of each PI to make sure that his/her laboratory is in compliance. If your experiments require registration, register the work with the IBC. 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.

Sections III-A,B,C – Experiments that require 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 LD_{50} of less than 100 ng / kilogram body weight.
3. Transfer of rsNA to human research participants.

Section III-D - Experiments that require 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 BL1 containment. See III-E and III-F).
5. Experiments involving viable rDNA-modified microorganisms tested on whole animals.
6. Experiments involving whole plants that require BL3 or BL4 containment.
7. Experiments involving more than 10 liters of culture.
8. Experiments involving human influenza strains H2N2, 1918 H1N1, and/or highly pathogenic H5N1.

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

1. Introduction into cultured cells of any rsNA 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 by embryo injection of transgenic rodents requiring BL1 containment.
4. Breeding experiments to generate transgenic rodents that contain more than 50% of the genome of an exogenous eukaryotic virus, or in which the transgene is under the control of a gammaretroviral LTR.
5. Experiments involving whole plants that require BL1 or BL2 containment.
6. Experiments not specified on this sheet.

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

1. Experiments that use synthetic nucleic acids that can neither replicate nor generate nucleic acids capable of replicating in any living cell; are not designed to integrate into DNA; and do not produce a toxin that is lethal for vertebrates at an LD_{50} of <100 ng/kg body weight.
2. Those that are not in organisms, cells, or viruses and that have not been modified or namipulated to render them capable of penetrating cellular membranes.
3. Cloning DNA in *E. coli* K12, *S. cerevisiae*, and *B. subtilis* host-vector systems (except DNA from RG3 or 4).
4. Introduction into cultured cells of any rsNA containing less than half of a eukaryotic viral genome (with the exception of Risk Group 3 or 4 pathogens).
5. Propagating nucleic acids from a prokaryote or eukaryote, including its indigenous plasmids or viruses, back into the same host.
6. Experiments that consist solely of the exact rsNA sequence from a single source that exists contemporaneously in nature.
7. Breeding experiments to generate transgenic rodents that may be housed at BL1, with the exception of those listed in Section III-E.

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 rsNA work. Ensure all persons working in the lab are compliant and have received the necessary training.
   PIs should be trained on the NIH Guidelines annually.
2. Notify the biosafety officer 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 for handling accidental spills and personnel contamination.
5. Comply with shipping requirements for rsNA 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. PI is responsible for ensuring lab staff has received any regulatory-required training. Instruct and train lab staff in safety practices and procedures to deal with accidents, and maintain documentation of such.
3. Inform lab staff of precautionary medical practices advised or requested (e.g. vaccinations, medical contraindications).
4. Ensure the laboratory is operating under the conditions approved by the IBC and that the lab is safe for work with the hazards present.

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 rsNA materials, and ensure the physical and biological containment of such materials.