Mission and Oversight

The mission of the Duke University IBC is to:
1) ensure that all recombinant DNA research conducted at the institution or sponsored by the institution is conducted in compliance with the National Institutes of Health Recombinant DNA Guidelines, and
2) ensure that protocols of research involving Select Agents (defined by the Centers for Disease Control and Prevention), including but not limited to recombinant DNA, are reviewed and found to comply with all national, state, and local requirements.

The Duke University IBC has responsibility for such research throughout the Duke Health System, Medical Center, and University. IBC members are appointed by the Chancellor of Health Affairs and the Provost of Duke University. The Duke Occupational and Environmental Safety Office staff will support the IBC in carrying out its mission. The IBC is authorized to inspect research facilities, approve research practices and procedures, and to take actions, such as enforcement of cessation of research activities, in the event of an unsafe workplace situation.

Structure and Function of the IBC

I. Membership

The committee consists of at least five members appointed by Duke authorities (see above), including the Biological Safety Officer, and at least two members external to the institution (community members). Membership and qualifications are in compliance with Sections IV-B-2-a and –b of the NIH Guidelines. In addition, there is representation from the medical faculty for review of Gene Transfer or Therapy protocols. Other ad hoc members may be called upon for specific expertise needs, depending on the research involved (ex., plant experts for plant protocols).

II. Staff, Meeting Schedules, and Voting
a. The Biological Safety Division Office will be responsible for keeping records, recording minutes, and scheduling meetings for the IBC. This will include review of submitted protocols for completeness of information required for IBC review.

b. The Executive Committee (consisting of the Chairs, the Biological Safety Officer, and Biological Safety Division Office staff) will oversee monthly the Screening Meeting. The Executive Committee has been given authority by the Full IBC to make decisions regarding the initial review of protocols, and will follow these procedures:
   i. When the Executive Committee determines during a Screening Meeting that an rDNA project registration has met all the requirements for approval, this shall be communicated to the larger Committee via email. At least three days prior to the Screening Meeting, the Full Committee will be notified that the new protocols for review are posted on the secured IBC website. They will be asked to provide feedback within two work days post the Screening Meeting. If no concerns or requests for clarification are received after two days, the PI may be notified of the Committee’s findings. This communication will also include an explanation that the Full Committee reserves the right to request additional information, or even halt the related rDNA research if concerns arise during the Full Committee meeting or anytime in the future.
   ii. If any IBC member has any questions or concerns regarding these protocols, the protocol will be reviewed at the next Full IBC meeting.
   iii. The Screening IBC will refer all Human Gene Transfer or Therapy and all Select Agent protocols to the Full IBC for review.
   iv. The Screening IBC will meet at least every two months, and will notify the full IBC of any actions via the secured website.

c. The Full IBC will meet at least every six months, and when necessary, to expedite the approval process. The Full IBC will follow the following procedures:
   i. The Full IBC approves protocols by a majority vote of the membership at the meeting. Although information regarding protocols may be communicated by e-mail, voting must occur at the designated meeting.
   ii. No member of the IBC will vote on a protocol with which he or she has any connection or in which he or she has a personal or professional interest other than as a member of the IBC.
   iii. The final result of the voting for each protocol will be recorded, along with any comments and recommendations,
and will be communicated to the PI of the protocol. Any recommendations for other committee review (i.e., Institutional Review Board (IRB) or Institutional Animal Care and Use Committee (IACUC)) will be communicated by the IBC Chair (s).

d. No project requiring IBC approval will commence prior to IBC approval of the protocol.

e. PIs will be notified annually and asked to complete an annual update form for continuing projects to document that information regarding gene constructs, work procedures, locations, animal use, new personnel training, or other significant changes are current with the IBC records. Any problems associated with the work, including violations of guidelines, accidents or illnesses associated with the protocol, or adverse events (in the case of human clinical trials) must be reported to the IBC, and, after review, may require a significant change or amendment to the protocol, re-review of the protocol by the IBC, and/or reporting to the NIH Office of Biotechnology Activities (OBA).

**General Policy for IBC Oversight**

All work involving rDNA must be registered with the Biological Safety Office. In addition, the following types of rDNA experiments must be **reviewed and approved** by the IBC:

a. The deliberate transfer of a drug resistance trait to microorganisms that are not known to acquire the trait naturally, if such acquisition could compromise the drug to control human, animal, or plant diseases,

b. The cloning of toxin molecules with LD50 of Less than 100 nanograms per kilogram body weight, and

c. The deliberate transfer of rDNA into humans.

**NOTE:** The 3 types of experiments above must also be approved by the NIH RAC and/or OBA.

d. The use of Risk Group 2, 3, or 4 or restricted organisms as Host-vector systems,

e. The cloning of DNA from Risk Group 2, 3, or 4 or restricted organisms into non-pathogenic prokaryotic or lower eukaryotic host-vector systems,

f. The use of infectious or defective DNA or RNA viruses in the presence of helper virus in tissue culture systems,

g. The involvement of rDNA with whole animals,

h. The involvement of rDNA with whole plants,
i. The involvement of more than 10 liters of culture involving rDNA,
j. Those not included in the above categories in which all components are derived from non-pathogenic prokaryotes and lower eukaryotes,
k. Those involving the formation of rDNA molecules consisting of no more than two-thirds of the genome of any eukaryotic virus,
l. Any work with the CDC Select Agents (PI must be registered with the CDC, as well as receive approval from the IBC)

The following experiments are EXEMPT from the NIH Guidelines and only require registration with the Biological Safety Office:

a. rDNA molecules that are not in organisms or viruses,
b. Those that consist entirely of a single DNA segment from a single nonchromosomal or viral DNA source, though one or more may be a synthetic equivalent,
c. Those that consist entirely of DNA from a single prokaryotic host (including its plasmids or viruses) when propagated only in that host (or closely related strain) or when transferred to another host by well established physiological means,
d. Those that consist entirely of DNA from a single eukaryotic host (including chloroplasts, mitochondria, or plasmids) when propagated only in that host (or closely related strain),
e. Those that consist of DNA segments from different species that exchange DNA by known physiological processes, though one or more of the segments may be a synthetic equivalent (see NIH Guidelines for a list of these exempt exchangers),
f. Those that do not present a significant risk to health or the environment (see NIH Guidelines for this list).

Procedure for IBC Protocol Registration and Review:

Principal Investigators must submit a rDNA registration form for all protocols involving experiments involving rDNA to the Biological Safety Division Office at least two weeks prior to the IBC Executive or Full Committee meeting. An algorithm has been developed to assist PIs in determination of other forms or requirements for IBC approval (see Appendix A). Generally, other requirements for protocol submission are as follows:

a. Experiments involving deliberate transfer of rDNA into human subjects must also be reviewed by the NIH OBA (Appendix M of the NIH Guidelines) and the Duke IRB. The PI must also notify the Duke Clinical Research Pharmacy for approval of a process for handling the material for patient delivery and Duke Hospital Infection Control for proper patient care precautions when a viral vector is used in a clinical trial.
b. PIs using viral vectors in research must submit a Viral Vector Registration Form to the Biological Safety Division Office for IBC
approval. In addition, if animals are to be used in the research, a "Standard Operating Procedure" for handling these animals must be submitted to the Biological Safety Office and approved.

c. Experiments involving any animal work must also be approved by the IACUC by submitting an "Animal Protocol Application" to the Grants and Contracts Office.

d. Experiments using any Select Agents as defined by the CDC must be registered by the CDC or USDA. These protocols must be submitted to the Biological Safety Office to begin the CDC/USDA registration process and have approval from the IBC.

Specific Responsibilities

a. IBC:
   a. Reviews protocols for compliance with the NIH rDNA Guidelines including the following
      i. Assessment of the containment levels required by NIH, OSHA, and CDC Guidelines for the proposed activity
      ii. Assessment of the laboratory facility, practices and procedures, and training as presented for the protocol
      iii. Assessment of the emergency plan covering spills and personnel exposures resulting from such activities
   b. Periodically reviews guidelines for activities involving rDNA to ensure compliance with all federal agencies
   c. Reports to NIH on an annual basis:
      i. A roster of IBC members and noting the chair
      ii. Biographical sketches of all IBC members, including community members
   d. Reports to NIH OBA within 30 days of:
      i. Any substantial problems or violations of the NIH Guidelines
      ii. Significant research related accidents or illnesses
   e. Establishes procedures that the IBC shall follow in its initial and continuing review and approval of applications, proposals, and activities
   f. Insures that all DNA research involving human subjects be addressed by requirements in Appendix M of the NIH Guidelines, consider the recommendations made by the NIH RAC review, insure that research participants are not enrolled in the proposed study until the RAC review process has been completed and approval has been given by the IBC, IRB, and any other applicable regulatory authorizations.

b. Biological Safety Division Office
   a. Keeps a database of Duke IBC registered and approved protocols
b. Receives protocol applications and prepares them for IBC review and/or approval

c. Ensures that all laboratories submitting IBC registrations for approval have been audited for compliance with the proper safety levels, and conducts annual laboratory audits to ensure compliance with the NIH Guidelines

d. Keeps records of IBC registrations, viral vector registrations, any correspondence with PIs and the IBC members, and minutes of both the Executive and Full IBC meetings.

e. Annually records the renewals of continuing projects, or discontinues completed ones.

f. Schedules meetings with the IBC.

g. Communicates decisions of the IBC with the PIs

c. Principal Investigator:

a. Makes an initial determination of the required levels of physical and biological containment, and practices and procedures in accordance with the NIH Guidelines; determines if the protocol is exempt or requires IBC approval

b. Submits the appropriate paperwork for the proposed work (see procedure above)

c. Is responsible for adherence to all requirements of the NIH Guidelines, including required safety practices

d. Submits an annual update of the continuing protocols to the IBC

e. Trains all laboratory workers regarding the potential hazards of the work and precautions to be taken

f. Investigates and reports any significant problems or illnesses pertaining to the operation and implementation of containment, or any adverse reactions occurring during clinical studies to the Biological Safety Office for review by the IBC

g. Complies with any shipping requirements for rDNA molecules

h. Insures that laboratory workers who work with animals involved in the work participate in the Duke Health Surveillance for Animal Handlers
Appendix A
Algorithm for IBC Protocol Approval

Approval Process for Research Involving rDNA
Duke University

RECOMBINANT DNA RESEARCH?

YES

Complete rDNA Project Application and send to Biosafety Office for IBC Registration

Human Gene Therapy?

Viral Vectors Used?

Animal Use Involved?

Select Agents or Toxins?

Viral Vectors Used in Animals?

IBC, IRB & NIH RAC Review, Notify Pharmacy and Infection Control

Complete Viral Vector Registration

Complete Animal Protocol Application, IBC & IACUC Review

Notify Biosafety, IBC Review plus CDC Registration

SOP for Biohazards in Animals